



20 | IBO
24 | REPORT



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Since 1978, Fall Creek® has been at the forefront of blueberry genetics, nursery, and horticulture, continuously driving the industry forward with an unwavering commitment to excellence and innovation.

As we celebrate the sponsorship of the 2024 IBO report, now in its 11th edition, we remain dedicated to supporting our partners and offering the world's favorite varieties with our industry-leading support.

This year's report is packed with valuable insights and the latest trends, providing the tools and knowledge needed to thrive in the ever-evolving blueberry market. We truly believe that a more informed industry is a more successful industry. We send a special thanks to the IBO for their ongoing work in supporting this effort.

Join us in our journey in building a world with better blueberries, increasing efficiency, productivity, and quality to new heights.

We cherish your trust and partnership as we continue to push for excellence in blueberries and ensure a prosperous future for all stakeholders in the industry.



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INTRODUCTION

A MESSAGE FROM THE IBO PRESIDENT

It is with gratitude and a full commitment to the legacy generated by those that have led the IBO since its inception, that I write this first message for the 2024 IBO Report, a document that is an example of cooperation, creativity, high-level execution and value.

Reviewing some of the reflections and trends presented in past reports, many themes remain current: growth and new production areas, market expansion, impact of breeding programs, weather patterns, and the global nature of blueberries. Yet, as shared with the IBO Board in Berlin this year, it would seem that we could be reaching an inflection point where much of what has been an opportunity could become a challenge if not analyzed, managed, worked and acted upon in an organized and integrated manner.

Increased volumes have resulted from planted areas coming into production, and these should be increasing significantly from 2025 onwards as an expansion of growing areas continues at an accelerated rate not only in Peru, but also in other more traditional areas like Eastern Europe, the Mediterranean, parts of North America, and China. New regions in Asia, both west and east, are emerging, and in Africa recent plantings beyond Morocco and South Africa will add to what is expected to be a preliminary total industry volume (fresh and processed, 000 MT) of 2,050.00 for 2024, compared to 1,873.32 in 2022 and 1,818.55 in 2023.

As we look ahead, many of the following ideas have been analyzed within the industry trends section of the Report, these are the areas we believe will remain, will be elevated, or will be incorporated into our global blueberry industry:

1. Expansion of growing areas in traditional and new regions, generating further diversification of sourcing and closing the remaining relevant gaps in year-round production.
2. Variety introductions and the reconversion of older genetics will continue to elevate the quality offering, which will be good for consumers and should allow for expansion in current and new markets.
3. Being creative in defining the next central message of what makes blueberries unique, and having a coordinated effort with retailers and other customers to promote it, should be one of our central strategies.

4. We should become even more obsessed with two fundamental areas:
 - a. How to generate value for our production, avoiding commoditization and what Dr. David Hughes has referred to as “don’t let blueberries go bananas”, being able to compete and keep ahead of other produce offerings like table grapes, kiwifruit, avocados, mangoes, and certainly other berries.
 - b. Increasing our efficiency in terms of costs of production and distribution, and of resources used, with water and labor being essential focus areas.
5. Weather impacts will continue to increase, as exemplified by what happened in Peru with El Niño during the 2023-2024 production season, or by Agadir reaching 52°C in August of 2023, and heat spells in many other locations. Information sharing as to impacts on volumes and to plan distribution and changes to sales and marketing strategies, will be even more relevant.
6. As consistently communicated by Peter in previous messages, we should continue to strive for free and open trade. We must ensure that all members of the industry, from production through the supply chain and into the markets, follow fair and proper social, environmental and food safety practices and standards which will become even more relevant. “Reporting” based on the Corporate Sustainability Reporting Directive is now a reality and an obligation. As also addressed on a previous message, we must respect legal frameworks, particularly the protection of intellectual property genetics IP
7. As interest in the sector continues and the financial community expands its support in several regions, we need to remember that it is about the money but it is not about the money, as the nature of our activity is an expression of farming at its best with a very special opportunity to respond to consumer needs, expectations and demands.
8. Based on these perspectives, we will certainly be presented with more significant challenges and opportunities in the coming years. It is also important to recognize that the idea of forming IBO by Cort Brazelton, Peter Mcpherson, Mark Villata, Andres Armstrong, Steve Taylor, and Trevor Mckenzie, over 12 years ago was useful and relevant, it has to be accepted that what IBO represents, implies and provides today has to be strengthened and consolidated.
9. We can all agree that this 2024 IBO Report is one example of the Organization at its best, to which we can add our Industry Summit, the next one to be held in South Africa in September of 2025, and our new industry reception in Madrid during Fruit Attraction 2024.

Mario Steta
IBO President

FOREWORD

This report exists to empower participants throughout the blueberry industry with improved information. We hold a conviction that a more informed industry and market is a healthier one. This project is producer focused and intended as a tool for producers large and small in making decisions such as how and where to bring their fruit to market, whether to expand their production or invest in their operations, or to change varieties or growing methods. The international nature of this report is also intended to help offer perspective on how the supply and market trends of one region are comparable to and affect others. We thank you for your interest and support.

This report follows an established methodology seeking to complement interviews from experts and industry leaders on the ground with the most reliable data available. These tools have proved adept at telling the story of the industry as it has grown and continues to evolve as one of the most desirable categories in the produce aisle. New to this year's version of the report is the producer survey, helping add a qualitative dimension to the global industry unavailable in previous versions.

Background on this Report: This 2024 IBO Report represents the 12th iteration under the current editor. The project began under the direction of the United States Highbush Blueberry Council and North American Blueberry Council in 2007. Responsibility was transferred to the IBO as the organization came into its own in the early 2010's. The transition from the USHBC oversight to the IBO arena was made in consideration of the increasingly global nature of the industry and the need for a comprehensive and global perspective. The scale and scope of the 2007 project was markedly smaller when compared to what the endeavor has come to involve in recent years. As the industry grows and expands in current and new geographies, both new consuming markets and new production regions, the task of ensuring this project is comprehensive becomes ever more daunting. From 2007 through the 2017/18 report, the project was produced and led by Cort Brazelton. For the 2019 report, Colin Fain of Agronomics

partnered with Cort Brazelton to co-lead the project. At the conclusion of that project, it became clear this project needed a broader team. The IBO Board was in full support and approved the new expanded team and approach in early 2020.

Many thanks to the IBO board for this opportunity to serve the industry. Also, many thanks to the many contributors who magnanimously and often anonymously gave their time to provide useful insights and information. As always, please forgive the errors and generalizations which fall short of desired precision. They are not intentional. We hope readers can make good use of this year's product and, if they are not members of the IBO, are inspired to join the effort!

We would like to extend a special thanks to Leslie Wada from the USHBC for her contribution on the health research update and Tamara Muruetagoiena from the IFPA for insights on ESG and general sustainability trends in fresh produce. Thank you to all Country Members for their contributions in the country sections.

Blueberries are a truly special crop, bringing a healthy choice to consumers around the globe while presenting an incredible development opportunity to improve the lives of people and their local economies. Those of us who work in service of this wonderful fruit, our many blueberry colleagues around the world, and those who enjoy it are truly blessed.

Until next time, best wishes and happy reading.

Cort Brazelton
IBO SOTIR, Chief Editor

Colin Fain
Report Team Leader

Matt Ogg
Narrative and Lead Writer



WHAT IS THE IBO?

Who we are

The IBO is a global voluntary organization bringing together leaders from around the blueberry world in all segments of the industry, including blueberry producers and marketers, affiliated business, social groups, and governmental organizations worldwide.

We come together to learn, share, increase understanding, distribute information, address mutual challenges, coordinate potential solutions and explore opportunities. Ultimately, the organization exists to advance the health and sustainability of the blueberry industry.

The IBO board consists of official industry commissions, guilds, and associations from members' countries.

Association members consist of companies and other entities who wish to support the IBO and access the growing suite of data and services offered to members. Associate members pay an annual fee for access to the expanding library of data and intelligence as well as promotional opportunities created by the platform.

Mission

Our mission is to collect and share blueberry information, fostering a common goal of increased worldwide blueberry consumption in all forms.

The IBO seeks to promote a better understanding of the common interests shared by all participants in the blueberry industry.

The 10 Objectives of the IBO

1. To collect and share blueberry information.
2. To foster the common goal of increased worldwide consumption of blueberries in all forms.
3. To provide the opportunity for a united voice on issues in an international forum.
4. To provide representatives of blueberry-producing nations a consultative forum for better mutual understanding of items of common interest.
5. To maximize the IBO's sphere of influence within the blueberry industry.
6. To promote a better understanding of the common interests of the blueberry producers and marketers and affiliated businesses, social and governmental organizations throughout the world.
7. To encourage the compilation and publication of production and non-proprietary marketing information.
8. To encourage worldwide free trade of blueberries and associated by-products, and to dissociate itself with the artificial protection of markets.
9. To assist countries in mitigating regularity items that can inhibit growth of the industry, e.g., artificial competition barriers and pesticides registration.
10. To target assistance in order to maximize the continued success of the international blueberry industry.

ABOUT THE AUTHORS

This report has been elaborated on behalf of the IBO by Agronomics, with the help, guidance and support of Cort Brazelton.

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About Agronometrics



Agronometrics has the mission of helping the fresh produce industry make data-driven commercial decisions, identify

market opportunities and project market trends to help decision makers best position themselves in an ever-changing commercial landscape. Our team has been working as a consulting firm within the industry since 2012, getting our start in Chile working with avocado producers. Since then, our product line has expanded to 21 different fresh commodities across a global audience including the International Blueberry

Organization (IBO), the US National Mango Board and some of the world's most important fresh produce companies.

Our analytics products range from market reports synthesizing global trade data to interactive dashboards automatically updated daily, and everything in between. This wide range of products has honed our skills in data acquisition, management, and interpretation, allowing us to bridge the gap between technical implementation, academic theory and actionable insights for an increasingly demanding industry.

For more information visit the website:

www.agronometrics.com

Special Thanks

Special thanks Cristian Crespo for his support on data collection, as well as Pablo Cortes and Thomas Grandperrin for their help in setting up the sponsorships and advertising that is financing this report.

HEALTH RESEARCH UPDATE

By Leslie Wada

Leslie presents this update for 2024 as the Senior Director of Nutrition and Health Research at the USHBC/NABC

Health Research continues to be a focus and priority of the U.S. Highbush Blueberry Council. Human clinical studies require many years to complete and despite the delays in progress during the Covid years, we now have studies that are completed and being published in scientific journals.

One recent publication (1) describes a study that was a sub-study of the original Circle Study. The original Circle Study enrolled 115 participants with Metabolic Syndrome and no self-reported cognitive dysfunction. The results demonstrated

that 6 months of daily supplementation with the equivalent of 1 cup of fresh blueberries resulted in cardiovascular benefits such as an increase in the flexibility of blood vessels, and an increase in HDL levels.

In this additional study, the researchers evaluated the effect of blueberry feeding on cognitive performance in these participants after chronic 6-month feeding and after an acute feeding of a high-fat, high-sugar liquid meal. They did not observe an effect on cognitive performance, however self-reported

rating of calmness improved in the blueberry group after the acute meal.

The researchers acknowledged that in other studies that have reported an effect of blueberry supplementation on cognitive function, those participants often had some degree of pre-existing cognitive impairment, whereas these participants did not.

Another recently published study (2) looked at blueberry intake and age-related macular degeneration (AMD) in women. AMD causes the blurring of central vision and is a significant cause of blindness worldwide. It is the leading cause of vision loss for Americans sixty-five years of age and older and can impact daily activities such as driving, viewing television, or reading text on a computer, phone or newspaper (3).

For many years there has been speculation that blueberry intake is associated with eye health. Dr. Howard Sesso and his team in the Division of Preventive Medicine at Brigham and Women's Hospital and Harvard Medical School evaluated data from the Women's Health Study, a large-scale study in which a team of investigators followed a large cohort of middle-aged

women for over a decade. The women recorded their diet, including blueberry intake, and filled out annual questionnaires on health outcomes. Their data on over 35,000 women showed that women who ate ≥ 1 serving of blueberries weekly had a significant 28% reduction in total AMD, but not visually significant AMD. Blueberry intake has increased significantly from the early 1990's when this survey was conducted, and it would be interesting to see the effect in a larger group of women with higher intakes.

This past year, members of the Health Research Advisory Board, USHBC Executive Committee and the Chair of the Promotions Committee met to develop a health research doctrine to guide long term strategic plans for the health research

Given that the vision of the USHBC is to empower the industry to make blueberries the world's favorite fruit, the Council will continue to identify health research studies that have the potential to drive measurable demand of blueberries both domestically and internationally while also maintaining the quality of research that the Council has funded over the past 20 years.

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https://www.cdc.gov/vision-health/about-eye-disorders/age-related-macular-degeneration.html?CDC_AAref_Val=https://www.cdc.gov/visionhealth/resources/features/macular-degeneration.html

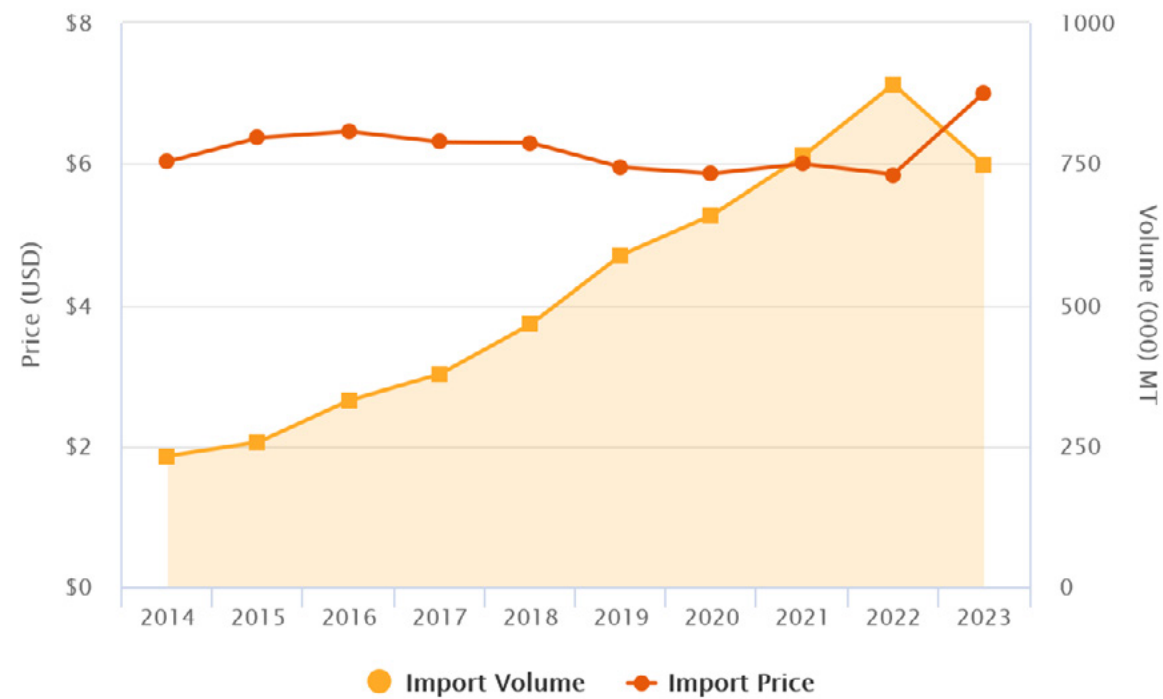
For other blueberry-related scientific studies, please visit

<https://healthprofessionals.blueberry.org/research/>

GLOBAL PRICING TRENDS

Please note that global border crossing prices for imports are used as a corollary for general pricing trends as the data are more reliable and widely available. At this juncture there is insufficient data on pricing for blueberries produced and sold 'in market' to incorporate into this data.

Global Blueberry Import Volumes and Average Prices



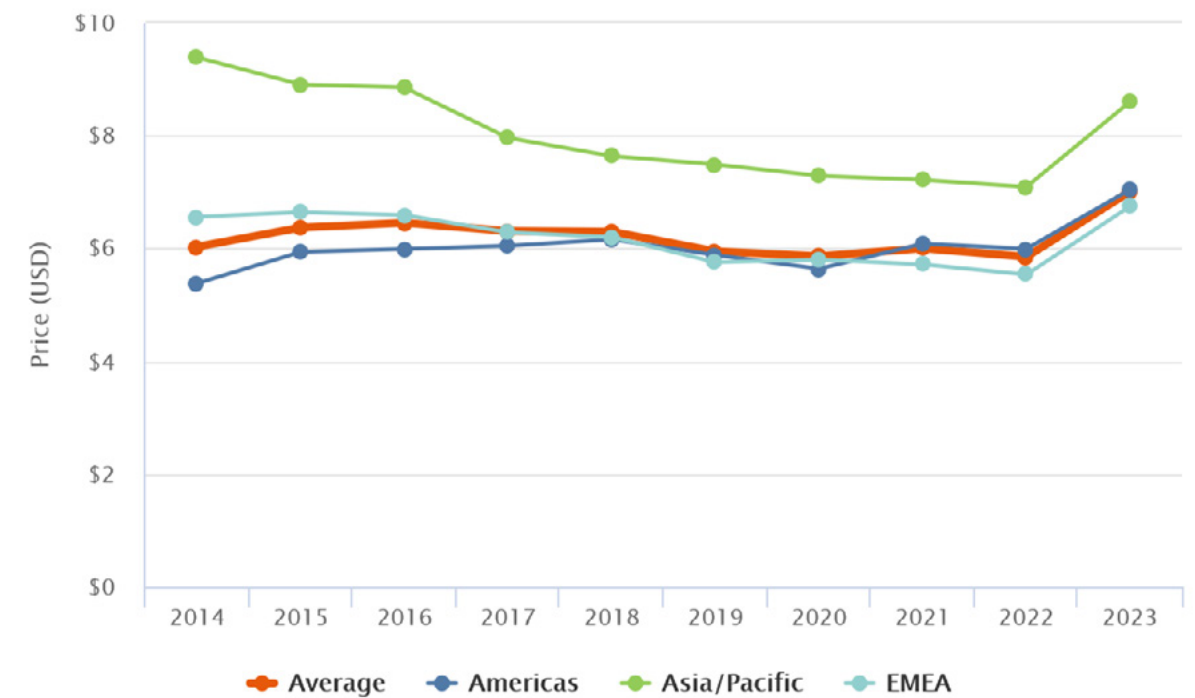
Source: Agronometrics Global Trade Data

The 2022/23 witnessed disruptions to global fresh blueberry pricing. Various issues in multiple origins contributed to the elevated prices we saw as an industry, but the most significant by far was the El Niño climate event in the Eastern Pacific. The effects of the warmer temperatures felt by Peru, the world's biggest exporter, saw exports from the country reduce by 23% compared to the previous season, while many importers were expecting, and perhaps counting on, imports from the origin

to increase. The mismatch between expectations and reality sent the average global price to \$7.01, a level we haven't seen before, exceeding the previous highpoint of \$6.48 in 2016.

Taking 2016 as a point for comparison, and even accounting for the decrease in volume in 2023, the category today is worlds away from what it was 8 years ago, with a measured increase in imports of 226% over that time period.

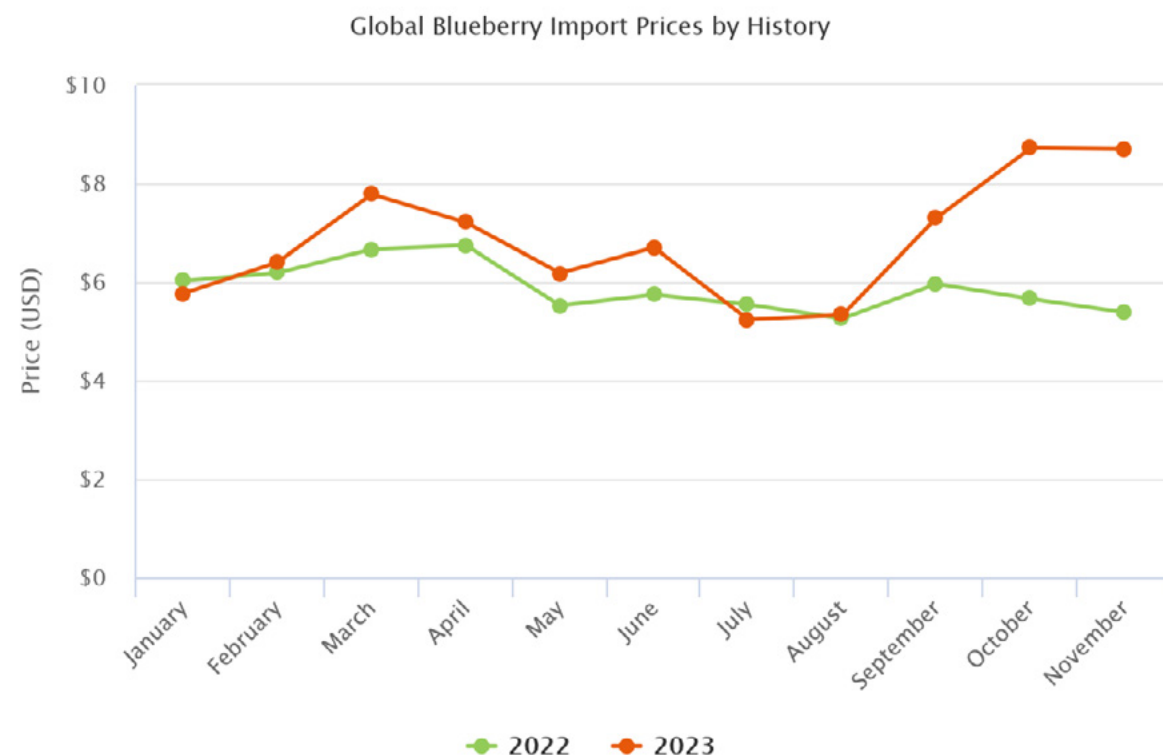
Global Blueberry Import Prices by Reporter Region



Source: Agronometrics Global Trade Data

Peru's decrease in volume had global ramifications with every single region seeing an increase in price in 2023. Peru, however, was not the only region which influenced pricing. The biggest percentage jump in prices were seen in Europe, where production issues in Morocco and Spain added to the complexity of a season which was then further impacted by the lack of fruit from Peru. Asia, which is more heavily

dependent on South America for their imports, with limited alternative sources of supply, saw the second highest jump in prices. Finally, the Americas, driven primarily by US imports, saw modestly less increase in prices than the other two regions, but prices also increased substantially and roughly in line with the other major regions, which can be appreciated in the chart above.



Source: Agronometrics Global Trade Data

If we look at global import pricing on a monthly basis it offers a picture in time of some of the challenges that the industry faced this year. In the first half of the year as weather issues impacted the production of Morocco and Spain, prices began to rise. In the middle of the year markets normalised as suppliers generally had improved availability (although the pacific northwest in the US also had a very short crop), then pricing again began to deviate from expectations with less volume than expected from Canada, Peru and Chile resulting in markedly higher prices, the defining feature of the 2023 season.

Noteworthy in these numbers is the relationship between Value and volume. 2023 saw a growth in Value (Price x Volume) of exports at a stable 8.03%, compared with 7.26% last year. This suggests that the global demand for blueberries is growing at a steady pace and the high prices observed are in line with expected impact on price given the shortfalls in supply observed.

It should also be mentioned that the measures used in this analysis are by no means a perfect representation of the industry as a whole. For one, imports by definition exclude all movement of blueberries in the internal market. In the case of volume and value, they also don't exclude re-exports from countries such as the Netherlands and Hong Kong, meaning that some unit sales and their values will be double counted. This does not invalidate the use of this data for analysis as it has been used consistently for some time and currently represents the most complete data set available to understand the impact of pricing on the industry at a global scale. This is an indicator of an industry need, to secure an accurate measure of year round pricing data from all sources. Global industry pricing will need to be complemented by other data/information. Keen observers who are comparing this analysis to last year might notice a slightly different trend in movement in prices, the cause of this is a shift in methodology to include organic volume and pricing into our global averages, offering a more representative picture of global movements.

ENVIRONMENTAL, SOCIAL, AND GOVERNANCE (ESG)

In today's business landscape the demonstration of Environment, Social and Governance (ESG) credentials is multi-faceted, and has become increasingly pertinent to maintaining a mandate to operate in the eyes of investors, partners, customers and consumers. ESG comprises a nuanced arena of disparate subjects that are difficult to measure, and where relativism abounds. Therefore, there is no prescriptive action that a grower, marketer, retailer or supplier must undertake in order to best address this responsibility. As a rule of thumb, a proactive approach to assessing the environmental and social impacts of operations – whether it be from packaging, transport, energy supply, agronomic practices, water usage, labor treatment or community engagement – is a good start, and where possible the execution of programs, activities or practices that will engender improvement. ESG is not just another narrative tool for marketing purposes; it requires being ahead of the curve and being transparent about a company or industry's efforts to make a positive difference, and its faults.

After previous editions whereby ESG had been a sub-header within the industry trends section, last year the decision was made based on stakeholder requests to give this topic more prominence as its own section. There have been numerous contributions to this subject from the interviews undertaken with industry stakeholders (see Acknowledgments section), and we have also sought insights from the International Fresh Produce Association's (IFPA) director of sustainability, Tamara Muruetagoiena.

The IFPA now has 130 members within its Sustainability Council, and has working groups on the following five key areas:

- Climate change
- Packaging
- Regenerative agriculture
- Food Waste
- Social responsibility

Different retailers will place different emphases on these different components of ESG, but it has become a standard practice that questions will be asked on these matters, whether it be through questionnaires or data collection applied company-wide or to the specific farm operations that are supplying the berries.

The area that has arguably been the most active over the past 12 months is packaging as government-led change went into overdrive. "In 2023 the whole world decided to create new packaging regulations all at once, and they're all contradictory," Muruetagoiena explained.

Whilst the European Union has often been the flag bearer of change with its Green Deal and a whole roster of waste and packaging regulations, last year Canada suddenly introduced the most stringent of all packaging regulations globally. The initial document in Canada indicated that by 2026, 75% of all produce in supermarkets would be voided of plastic, and that percentage would rise to 95% by 2028. In the absence of dramatic technological advancements in packaging materials and processes, numbers like this are nothing short of threatening to the survival of the blueberry industry which relies heavily on plastic clamshells or punnets. Under such regulatory conditions, blueberries and other berries would need to share that 5% space allowed for plastic with a myriad of produce items that are heavily reliant on plastic including high-volume items like pre-made salads and table grapes.

The resistance from industry to such plans is not one borne out of stubbornness or a desire to cut costs. The blueberry industry, which itself has a very low environmental footprint relative to other foodstuffs, has endeavoured to lift its game on multiple environmental fronts including packaging, and slow progress is being made such as the increased use of sealable lids and also large packaging sizes; initiatives that ultimately reduce the amount of plastic used per kilogram or pound of blueberries sold. In Germany now there are two retailers that will not accept traditional clamshells with berries and will

only receive plastic packages with a thin seal top, which takes some of the bulk and volume out of the unit, and therefore reduces the volume of plastic.

Around 8% of berry packaging in the U.S. is from recycled plastic, and it is likely that percentages are similar in other developed world markets. Experimentation has also taken place with paper or cardboard packaging and this occupies a niche space of the market, but for the large-scale commerce of blueberries there is a consensus that this type of packaging would be unviable given pulp-based materials absorb moisture, and would thus have impacts on shelf life and food waste. Relatively less extreme than a reduction in all plastic would be a ban on single-use plastics, although its effect would still be extreme on berries. The trouble with using recycled plastic in berry punnets (not to mention the more intractable challenge of creating a system where they could be reused) is that when plastic is recycled it loses some of its transparency, making it more difficult for consumers to see the product, and thus has implications for sales unless a bold retailer or marketer were to attempt turning that negative into a positive through effective sustainability-focused marketing. The economic viability of recycled plastic punnets also fluctuates with the price of oil which is used to make new plastic.

In Europe, Canada and other markets there is an impetus from regulators to eliminate single-use plastic and sell more fresh produce in bulk, which is also very complicated for fruit and vegetable suppliers, particularly in the berry category. Any industry stakeholder reading this would understand very well how brands seek to demarcate their products from others, in the hope of gaining a premium or at least more sales as a return on investments they made in ensuring high quality berries, as well as the negative shelf life and food waste implications of selling in bulk, which are very high and would likely damage sales severely. As a peripheral comment, such a shift to bulk would put more buying power in the hands of retailers over suppliers, which is also a growing challenge for food suppliers everywhere who are struggling to achieve the margins necessary to stay afloat. But such a scenario would also be completely against the interests of supermarkets, for whom the berry section is an influential factor of sales growth and customer retention. The idea itself has been likened to asking Coca Cola and Pepsi to share a common fountain where shoppers can fill up their bottles – no doubt a ludicrous proposition,

but this is effectively what selling berries in bulk would mean to the far less capitalized businesses dealing with berries.

Another alternative is compostable packaging with innovations being led greatly by packaging companies in the United States, although regulators in the world's most green-forward market the European Union are reluctant to embrace this given adequate systems have not been set up for a composting economy like they have been for recycling. Compostable packaging is also made from plant materials that may struggle with high temperatures and UV radiation in the field, and the strain of rapid temperature fluctuations from that environment to the cold store.

One seldom discussed use of plastic in the industry is also field plastic. On the one hand plastic beds help prevent erosion on farms, aid with water management, and assist with managing weeds, thus implying fewer herbicides, but they do ultimately lead to plastic waste. Thankfully these are fairly long-life products, but when they do reach their end of life there is not much demand from recyclers as they are both dirty and difficult to recycle. Plastic hoops used for shading purposes also have a fairly long usage life, and have the added benefit that with the right design they can be used for rainwater capture to reduce irrigation requirements. Plastic is also used in the pots that are commonly being deployed in substrate farming for blueberries, although this method also has environmental benefits regarding water efficiency and soil protection as it isn't planted directly into the ground (however, the substrate and its composite nutrients still need to be extracted from somewhere).

Today's consumer cares much more about the supply chain of what they eat, and the impact of their purchasing decisions on the world. This is why retailers – especially in Europe – are so demanding in terms of social certifications, and blueberry growers worldwide are meeting those stricter requirements. For last year's report, one industry representative described the various certifications available as like "passports" to gain access to retail nowadays, noting the most relevant ones are those that require strict and independent auditing.

One of the impressive revelations from interviews in this report was that a major U.S. berry company was in the final stages of securing B Corp certification – one of the hardest to attain

in the ESG space, and further research revealed that leading fresh blueberry player Hortifrut Chile achieved this certification in 2019, and in that same year another Chile company, frozen market-focused Fruticola Olmue, also received this distinction. The process of applying for B Corp certification, even in the way it requires leaders to think and reflect on their company's impact, has been described as a beneficial exercise even for organizations that may not be ready to meet its stringent requirements.

There are many ways in which blueberries stand to benefit from the impetus around ESG. Yes, there are challenges with the industry's carbon footprint and the food miles associated with global shipping (hence the ongoing trend of preferences around proximity to market, whether that's local or peri-local), and one Dutch retailer is even completely rejecting any fruit that is shipped by air. But blueberry bushes themselves have a role to play in carbon capture through the photosynthesis of the plants, and they are not as demanding of water as other crops. That said, in some regions there has been perhaps an overuse of non-renewable underground water resources, and this gives even more reason for farms to attempt to find new ways to find water that can be renewed, such as by using reverse osmosis plants. "Low till and no till practices are the building blocks of regenerative agriculture," as noted by Muruetagoiena in an interview for the 2023 report, and luckily blueberries are a crop that fits this mold.

Carbon farming is another of the hot-button topics discussed in the industry at the moment, and this could present great opportunities to blueberry farmers wanting to lift their environmental credentials to build soil carbon and also prevent nitrous oxide emissions.

Microbial technologies have been developed that maximize carbon sequestration in the soil, often to the benefit of yields, but the companies driving these developments tend to focus much more on larger-scale row crops due to the easily scalable impact that is possible in this space of agriculture. The fresh produce industry, including the blueberry sector, ought to engage more with the businesses deploying these technologies to convince them of the strong business case in horticulture. One very significant development is the receipt by the IFPA of a \$15 million grant from the U.S. Government to have a climate-smart carbon farming project with farmers in

different states. At the time of writing this project is in the onboarding stage, but it is understood that blueberry companies have signed on.

Blueberries are a very labor-intensive crop, directly generating a livelihood for hundreds of thousands of people worldwide and with an indirect economic impact of hundreds of thousands or more. From harvest workers, to packhouse employees, to all of the people who service the sector, and all of the industries in regional areas where itinerant workers and staff spend their earnings. Schools, health clinics, chemical run-off mitigation schemes, sound environmental planning, and vocational training for local populations are all ways that the blueberry industry is making a positive contribution, illustrating its long-term benefits not just for the health and well-being of consumers, but the communities where the fruit is grown as well.

Almost anywhere you go, something has changed in the weather conditions that affect blueberry production. Growers who planted particular varieties targeting certain production windows are finding their plans disrupted by variable weather conditions, which come in many forms. It could be warmer winter spells that induce bloom before a cold snap hits the plants, reducing fruit yields; more frequent rains during harvest that didn't used to happen 10 years ago; increased pest pressures due to warmer temperatures or unseasonal rain; increasingly earlier harvests due to warmer weather; or drought which is a pressing concern in many regions throughout the world, leading to increased utilisation of desalination plants for dry, coastal farms. These are all trends that have been felt for many years now, but they were greatly accentuated in 2023, as referenced throughout this report.

Climate change, climatic unpredictability, and the increased frequency of intense weather events that comes with it, will undoubtedly have an impact on the blueberry industry at a production level. This will shape the kind of approaches growers take when it comes to crop protection, growing structures to protect against the elements, and varietal selection. Given the high cost of desalination and the role southern highbush blueberries in warmer, drier environments have played in the industry's recent growth, the search for drought-hardy blueberry varieties will also be a consideration in the future.

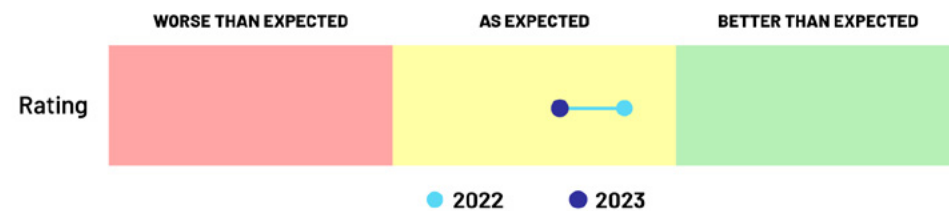
2024 GLOBAL PRODUCTION SURVEY

The International Blueberry Organization, in collaboration with Agronometrics, is pleased to present the findings from its second Global Production Survey.

The survey results represent the volunteered opinions of :



Overall Evaluation of the 2023 Season

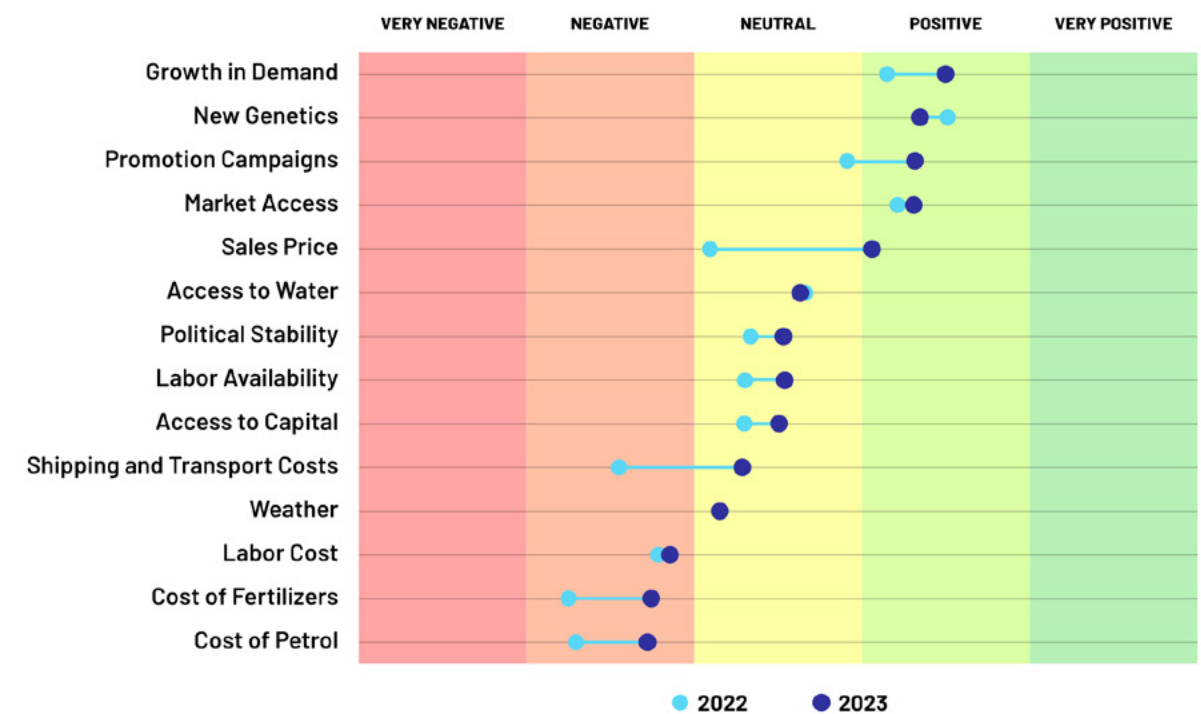


The first question asked of participants was: Over all, how would you evaluate the previous blueberry season (crop, yield, costs, operating environment, pricing, etc). The evaluation of the previous blueberry season varied across different geographies. The overall response shows a surprising decline on last year's rating closer to neutral, which is a move in contrast with most of the individual parameters identified in the following question.

Where we had sufficient respondents we are able to offer greater depth for each origin. In Mexico, where producers saw production decrease due to a particularly warm spring, responses were mixed with evaluations mostly on the neutral side. China saw more positive responses, particularly from Yunnan, whose southern highbush crop began seeing significant exports for the first time in 2023 fetching significant

prices abroad. Europe showed a generally positive trend, with several countries rating the season highly. Despite the shock that Peru gave the world, promoting prices to spike, they also had predominantly positive evaluations, most likely helped by the positive effect that the same highprices had on exporters' bottom line. On the other hand, the United States had a range of responses with some states like North Carolina and Michigan reporting positive feedback, whereas states like Oregon and New Jersey had lower evaluations. Chile had mostly positive responses, reflecting a successful season overall. Similarly, South Africa, Australia, and Morocco showed favorable outcomes. Countries like Serbia and Poland had lower ratings, indicating potential challenges faced during the season. Overall, the evaluations indicate a varied experience across different regions, highlighting areas of success and those

Factors Affecting Global Blueberry Production in 2023



One striking observation is the general positive shift observed nearly across the board. From Growth in Demand to the cost of consumables such as Fertilizers and Petrol, the industry's perception is a marked improvement compared to the 2022 season. The biggest improvement came from Sales Price prices further enhancing the economic viability of blueberry production. However, challenges were evident with labor availability, and the costs of fertilizers, and petrol, all showing negative impacts on production, albeit all of them showing an

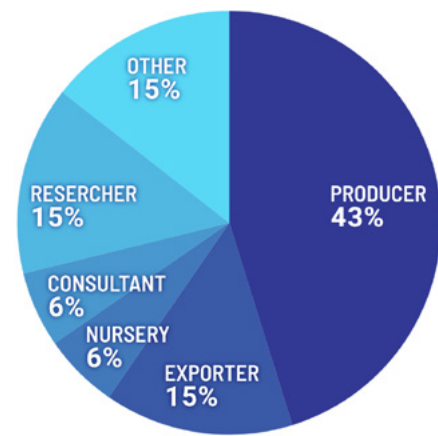
improvement in 2022. Transport costs in particular showed an important improvement in 2023 compared to the previous year, however, in 2024 it is anticipated to worsen due to the closure of the Red Sea to container traffic, which has increased spot maritime shipping prices, further straining the supply chain. Despite these challenges, the consistent positive ratings for demand growth, new genetics, and promotional campaigns highlight key areas of strength and opportunity for the blueberry industry.

Blueberry Industry Net Promoter Score



Looking at the industry in a more holistic sense, the Net Promoter Score reflects the industry's appeal and potential for growth as perceived by those within it. The survey posed the question: "How likely are you to recommend a friend or colleague to invest in, join, or work in the blueberry industry?". An NPS of 4.32 indicates a very positive sentiment, suggesting that the majority of respondents see significant value and

opportunities within the blueberry sector and nearly half are strong advocates of the category. This is the first year that this measure has been taken. As we continue to collect and measure the Net Promoter Score from the industry over time we will be able to add depth and meaning to the metric as it helps us gain a better measure of the direction the industry is moving in relation to previous years.

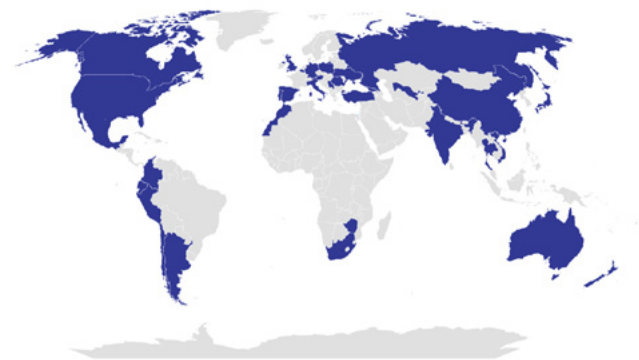


Respondents By Industry Sector

The IBO primarily functions as a producer organization, a fact reflected in the survey respondents, of whom 58% identified themselves as producers or exporters. The opinions gathered originate from individuals who are best positioned to guide and influence the industry, with 'CEO' being the most commonly reported job title among the respondents.

Respondents By Origin

Another defining characteristic of the IBO is its international scope. This is evidenced by the responses collected from participants in 34 countries, representing the most significant blueberry growing regions worldwide.



INDUSTRY TRENDS

The following Trends section provides the report team's summary of predominant themes which stood out most consistently in interviews with industry participants around the world, as well as integrating the team's own knowledge and experience. The following trends do not represent the opinion of the IBO, nor that of any individual team member, but rather seek to synthesize and summarize. Any given trend is unlikely to apply to all growing regions or markets, or even all growers or traders in the regions and markets where they have been observed.

Weather events disrupt markets with supply shortages, prompting industry introspection throughout the value chain

With such a high dependence on Mother Nature, it is inevitable that a global crop like blueberries will always face some disruption from weather events at least somewhere in the world. What made 2023 unique was the scale and severity of weather events across numerous geographies, most notably the impact of the El Niño phenomenon on Peru. The South American country is the world's leading exporter of the fruit and supplies practically year-round, but its peak window between September and December has come to galvanize demand after the Northern Hemisphere season has finished, helping to ensure a continued pattern of consumption before Chile enters the market. Mexico and Morocco then play similar roles regarding supply continuity in major markets in the Northern Hemisphere springtime before the U.S. and European seasons begin. Both these countries have also faced weather difficulties of their own, with elevated heat pressure putting plants under stress in Mexico, and Morocco suffering from a heat spell at the start of 2023. South Africa, whose peak runs a little bit later than Peru's but still has significant overlap, was unable to fully capitalize on its competitor's shortfall due to a prolonged cold and wet winter that delayed the crop, but the relative scarcity was still very remunerative for South African growers, and even more so for their earlier neighbors in Zimbabwe (in fact, the shortfall was also highly remunerative for Peruvian exporters courtesy of strong pricing). Growers in

North America's Pacific Northwest also suffered greatly due to yet another year of problematic weather.

But it was the disruption caused by Peru's short crop that was the dominant issue in almost all discussions with sources relating to this report – such is the influence of this titan of the blueberry industry, which is really the only jurisdiction that can make or break markets to such a degree. El Niño's disruption to the market was relative, as Peru's volumes shipped in 2023 were still similar to figures for 2021 and much higher than any year prior to that; the shortfall could only be described as such in relation to the prior 2022 season and industry expectations for further growth in 2023.

In the wake of disruption of such scale, opinions abound about what this means for the global blueberry industry, but here are a few consequences and learnings:

-The instigation or reinforcement of sourcing diversification strategies: Retailers and marketers need to hedge against events like this, and many are taking further steps to strengthen their relationships with growers in other regions, as well as those in emerging cultivation regions. This has also emboldened existing initiatives from growers and investors to plant blueberries in completely new production regions, given the ability of new genetics to grow almost anywhere; usually these areas have relative proximity to major markets.

-Price rises were not just attributable to supply gaps: The view from some of the most brilliant minds and experienced hands in the blueberry industry is that whilst the high prices of the past year can be attributable to the supply shortage, that is not the full story. The momentum experienced by the industry in recent years has flowed through to a robust demand scenario that kept rotation high even as pricing was much more expensive year-on-year, while pricing remained buoyant even as volume started to stabilize. In the U.S. in particular the retail sector must be commended for the way it stuck to larger pack sizing relative to other markets even as the price per pound was up significantly; the U.S. proved itself to have the most inelastic demand of the world's top markets, meaning it has the greatest appetite and consumers are willing to pay much more if they have to when supply is low.



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-Certain varieties perform better than others under pressure: One reason El Niño’s impact was so severe in Peru is the industry’s continued reliance on certain public varieties that are more susceptible to reverting to vegetative growth instead of fruit growth when faced with hot conditions. Usually this comment relates to the dominant Biloxi and Ventura varieties, although whether or not Ventura should be lumped in with Biloxi in this regard is disputed as on some farms it fared substantially better. Overall it can be stated that El Niño ‘sorted out the wheat from the chaff’, to use another agricultural analogy. Varieties that have been bred for resilience to hot conditions performed very well, which proved the value – in certain microclimates – of growing truly no-chill varieties rather than low-chill varieties. The Peruvian section discusses this, and the impact on different microclimates, in greater detail. Similar principles can be applied to other regions at risk of extreme weather events as well, although ‘no-chill vs low-chill’ will obviously not always be the deciding factor as every region has its own unique weather risks.

-Disruptions reinforced a pre-existing priority for the industry to improve its real-time data gathering and predictive capabilities: The wide-reaching effects of El Niño took the industry by surprise, but they didn’t have to. The Peruvian industry simply hadn’t existed for long enough to predict what transpired, although some experts – both Peruvian and non-Peruvian – had a strong inkling from the vegetative growth they saw in the fields, and particular operations have invested heavily in on-field crop prediction capacity in order to present the best possible forecasts to their retail partners. Growers that lacked such capacity will likely be taking note, and executing similar strategies if resources permit. However, under conditions of uncertainty it also pays to consider what else may have occurred. Observations from one company that has high-level predictive capacity for its own fields cannot necessarily be extrapolated to apply to others in the same country. The fruit industry has historically been rife with instances of speculation of major crop losses that actually never transpired, or were isolated to specific areas, leading to unnecessarily high prices and retailers dedicating less shelf space than they would have done with better information. In other words, an underestimation of supply can have just as negative effects as an overestimation of supply, so a prudent strategy for growers and industry associations is to take caution in their pronouncements to avoid setting off false alarm bells. This is why calls for more precise data analysis and real-time data transparency have been embraced by so many industry associations and stakeholders, putting the onus more on the

numbers and processes than the decision of any individual or individuals to tailor specific messages for the market.

These take-aways from the Peruvian season could have parallels and consequences in any number of jurisdictions, and we would welcome the further contribution of ideas from stakeholders.

Higher benchmarks on quality

The blueberry industry still has a long way to go in achieving consistency on fruit characteristics, but the sector has picked up its game on quality when it comes to such attributes as firmness (a function of both genetics and post-harvest practices to lengthen shelf life), flavor (either sweetness, achieving a certain sweetness-to-acidity ratio, or triggering the flavor sensations created by certain chemical compounds called ‘metabolites’), texture, and eye appeal, which are all essential to encourage repeat purchases. In parallel, and certainly part of the eye appeal aspect, there has been a greater prevalence of larger berries or jumbos; another desired attribute in the market which tends to attract a premium, although sizing is not to be conflated with quality because it does not necessarily have implications for flavor. The ultimate goal is to delight consumers every time they buy blueberries, and this is no easy task.

In this regard, corners of the industry worry about the emphasis on sizing as an indicator of a berry’s premium nature. “You don’t want to eat by the slice,” as one source quipped, but super jumbo blueberries with good firmness and flavor can attract astronomical prices.

At times throughout the past two years the industry has reverted to the “if it’s round and blue it moves” approach to blueberries in light of shortages of supply. One observation though is that as supply dynamics shift and greater volumes comes on board, there tends to be more drastic drops in price for what could be described as standard or even sub-standard fruit, whereas premium-grade blueberries tend to hold their value. Segmentation has been described as more prevalent now than it was 12 months ago, and has even extended to emerging markets within Asia and South America, with Colombia and Ecuador referenced as markets that have surprisingly embraced a more tiered system on quality.

Broadly speaking, there is a major drive for improvement and some of this can already be seen by virtue of the maturing

of fields with newer genetics planted, predominantly with southern highbush varieties although in certain regions – from Michigan in the U.S. to Romania in Eastern Europe - one can start to see the emergence of more premium northern highbush plantings with genetics that have been sought to mimic some of the desired attributes of their southern highbush counterparts.

This push to premium northern highbush blueberries is an emerging trend whose impacts may only be felt 3-5 years from now. Following the boom in southern highbush genetics that has transformed the industry by opening up warmer regions to blueberries, some of the sector's largest, most influential companies have their sights on significant northern highbush variety renewal as the next transformational wave. There is some reticence around this in the grower community about the suitability of cultivars to their specific geographies or the economics of conversion given the lengthy time it takes for this class of blueberries to change over, but there is a portion of the retail segment that is encouraging this trend in order to lift quality benchmarks for berries grown closer to leading markets such as the USA, Canada and Western Europe. This push also helps retailers avoid the emergence of seasonal premiums for imported fruit and helps foster higher quality year-round.

Views vary on the benefits of southern highbush versus northern highbush varieties, usually drawn along climatic lines, with many stakeholders in cooler climes who either grow or sell northern highbush genetics extolling the positive impacts of more extreme temperature variance on sweetness.

Southern highbush renewal with new genetics is also in full swing. With the exception of South Africa and to some extent Morocco (both countries with a high percentage of vertically integrated export operations built around proprietary genetics), most of the world's fastest-growing blueberry regions were established with a focus more on filling in supply gaps than necessarily having the most premium-quality fruit. That does not mean the fruit is of poor quality, but that varieties that consistently garner that “wow” factor are not in the majority. Now that the investments in volume have come to bear, transitions to new cultivars have become part and parcel with planning for future prosperity.

The growth in new varieties has led to an identity crisis for blueberries, now a more heterogeneous product on the shelf than ever. The difference in the eating experience between varieties can vary greatly, and size is by no means an indicator of

taste, so consumers are left taking a gamble every time they purchase blueberries unless they know of certain brands or retailers that always meet their expectations, and ideally on a year-round basis.

The next wave of varietal conversion

Whilst most of core fundamentals driving varietal conversion have already been described, the current aggressive roll-out of new genetics from a couple of companies in particular warrants its own sub-header. Readers will note that in this report we tend to lean toward descriptors of companies rather than providing their names in most instances, in order to avoid what could be perceived as branding or the reflection of biases that ultimately favor particular entities. What's most important is the story at hand and what it means for the broader industry, but in this instance it is difficult to omit the fact that two, less exclusive varietal programs – Sekoya and Planasa – are dramatically changing the face of the industry through rapid expansion and replanting of their varieties all over the world. When new plantings of their varieties reach full maturity, an unprecedented step-change in fruit quality is due to occur at a scale that hasn't been seen before, enabling more advanced genetic selections to become more ‘mainstream’ than they have been previously. It is worth noting that this is not just a self-interested claim made by representatives of these companies, but rather an accepted likelihood claimed by industry stakeholders the world over, including those with no connection to either company (although of course, due to a competitive spirit that exists, comments range from circumspection about the significance to singing their praises). Not all will agree that Sekoya and Planasa should be lumped together, because they are very different companies, but what they share is this similar theme of rapid expansion and a more open accessibility model – at a fee – than their incumbent competitors.

Demand for these companies' plants is sky high, but the same can be said of companies that have traditionally occupied the more premium end of the market, which to date remains a niche and is by no means mainstream. The leaders in this exclusive space, in no particular order, are MBO, Hortifrut/Naturipe, OzBlu and Driscoll's/Costa Group, all of which are seeing exceptional results. On a more public front, there has also been a significant proliferation of new varieties from universities, especially the University of Florida which has generated excitement in the U.S. Southeast. There are also multiple other breeding programs across several jurisdictions led by both

independent breeders and the internal research of companies and cooperatives.

Breeders lay the groundwork for IP litigation

This is arguably the most controversial trend within the report, but one that could not be ignored. The matter of alleged intellectual property (IP) infringements has been alluded to in past reports, but the tone and level of intent within private conversations this year has escalated. This report does not intend to cast aspersions on any particular company or take sides in this issue, but certain corners of the breeding industry have expressed serious grievances of alleged copyright infringements. These allegations take on two dimensions, targeting growers that have allegedly planted IP-protected material without the right knowingly, and also breeders that have allegedly used IP-protected material in breeding their selections and released those selections to the market.

It is uncertain at this stage what nature of legal actions will take, which companies exactly they will target, and what the ultimate consequences will be. This will be a matter for the courts and regulators to decide, and our only hope as neutral observers is that regardless of the verdicts there can be an orderly and legally-binding response that does not disrupt markets or cause excessive division in an industry that has taken impressive strides in achieving unity towards common goals.

Field optimization and productivity remain in focus

As mentioned in the previous report, the blueberry sector has been forced to rethink the unit cost of production per pound or kilogram of blueberries, per hour of labor worked, and per hectare (or even per square metre or square foot) of land utilized. Growers are continuing to push the limits of yield in the way that they structure their farms (whether that's in open field or substrate farms), how they prune or plant for certain harvest timing windows, how they space out picking to ensure they have enough workers at peak harvest times, how they irrigate to optimise water usage so that every drop counts, what formulas they combine in their pest control programs, and many other considerations. The aforementioned varietal conversion plays into this from an agronomic perspective as well as an eating quality perspective, aiming for superior yields to alleviate margin pressure after years of inflation.

Some higher yielding varieties simply have larger berries, which has implications from a labor efficiency perspective as if there are the same number of berries on a bush but each one is larger, in the same time a picker can harvest a heavier weight in berries. Genetics companies are also focusing on the detachability of berries so they come off the stems more easily (but at the right time when they are at the optimum ripeness and not still green), which also makes the job easier for pickers.

Overlaying all of this is a larger trend of economies of scale and consolidation; the companies that are driving the huge increases in volume worldwide are not setting up the small, family-run operations the industry was originally built on; these are highly capitalized operations established with efficiency and productivity in mind, with the associated benefits of high yields across large tracts of land, and very often integrated supply chain operations that go all the way to retail.

Industries in countries that have relatively lower wages than their target markets, ideal growing conditions, and ease of transport (for example Mexico and Morocco) have flourished despite the challenges of input inflation, and a great deal of new planting is occurring in areas that have these attributes, including others that are further from their target markets.

In countries with higher wages, machine harvesting for fresh remains a priority. Where possible, it is used for a portion of the crop but not necessarily all of it, depending on price points and how well-suited the varieties in any particular farm are suited to this practice. Most leading genetics companies are breeding for ‘machine-harvestability’ and some are reporting encouraging results in this regard, although for most of the industry currently – based on the mix of genetics that is planted – the status quo is that the practice leads to a deterioration of packouts, even though proponents would argue otherwise with the right farm management and equipment.

If successful (i.e. with few rejections) and if a grower can afford the capital cost of the machine or machines, renting one, or sharing it across several farms, their cost base can be reduced. As the blueberry industry climbs up the steep learning curve of machine harvesting for fresh, the impact of the practice on yield varies greatly, as does the choice of variety and orchard structure. As it stands currently it is almost guaranteed that a portion of machine harvested blueberries will be wasted due to fruit damage, as well as the fact the harvesters will take off berries that are unripe and would otherwise have been handpicked later. Some specialists in the area attest that

they are able to achieve the same pack-outs and retail acceptance as they would for handpicked fruit (one even says the results are better because human beings do not necessarily handle fruit so carefully, and there are hygiene implications of not a single berry being touched by a person before it reaches the clamshell), while others are adamant that the practice is negative for the category and will not deliver the high quality required to grow demand.

Plants need to be trellised and pruned such that the structure stays upright and machines can gently detach berries as they're moving through the row, and northern highbush varieties have a comparative advantage over southern highbush in that they tend to require fewer runs in the rows throughout the season due to harvest concentration.

Machine harvesting experimentation – from equipment design, to varieties, some robotics, and new growing techniques – is underway across the developed world, but remains a divisive topic with regards to the quality consistency angle the industry is striving for. However, most growers turning to this harvesting technique are doing so because they have to and not necessarily because they want to, and in the short-term at least it is still unclear to what degree its adoption will impact volumes of marketable fresh fruit due to bruising, damage, and reduced shelf life. There is a consensus among leading breeders and growers that successful machine harvesting for fresh will likely involve technology, equipment, varieties, and field design that are not in wide-scale commercial use today.

The recalibration of pots and substrate layouts has become an emerging trend within the theme of field optimization, across several jurisdictions that have witnessed a boom in this production method. In essence, the practice of growing blueberries in pots came about as a way to expedite production,

maintain flexibility regarding field structure and density, better manage irrigation, and often to grow blueberries in areas with sub-optimal soil for the crop. But growing in pots with substrate is a more expensive endeavour than planting in an open field, and in the early days it was quite common to plant in 25-liter pots. What has been observed with the passage of years is that this pot size, whilst cheaper and still enabling rapid production, is likely too small to get the best performance out of the plants and there are now instances of yield reductions as the roots are constricted, and even what has been described as 'pot die-off'. As a rule of thumb, these problems are being observed at the 7-8 year mark since planting, but growers assert that with the correct agronomic management, a careful transition to larger 40-litre pots or bags can be undertaken in a way that extends the useful life of the bushes and maintains good plant health. In isolated cases producers are even opting to transplant potted plants directly into the soil, and have found this works well. It is also worth noting that views vary greatly about which mix of nutrients and core substrate materials (such as coir or peat) are optimal for growing blueberries, and this is likely a result of different experiences and varieties that may show a preference for one substrate type over another.

Environment, Social and Governance (ESG)

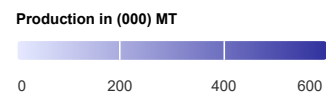
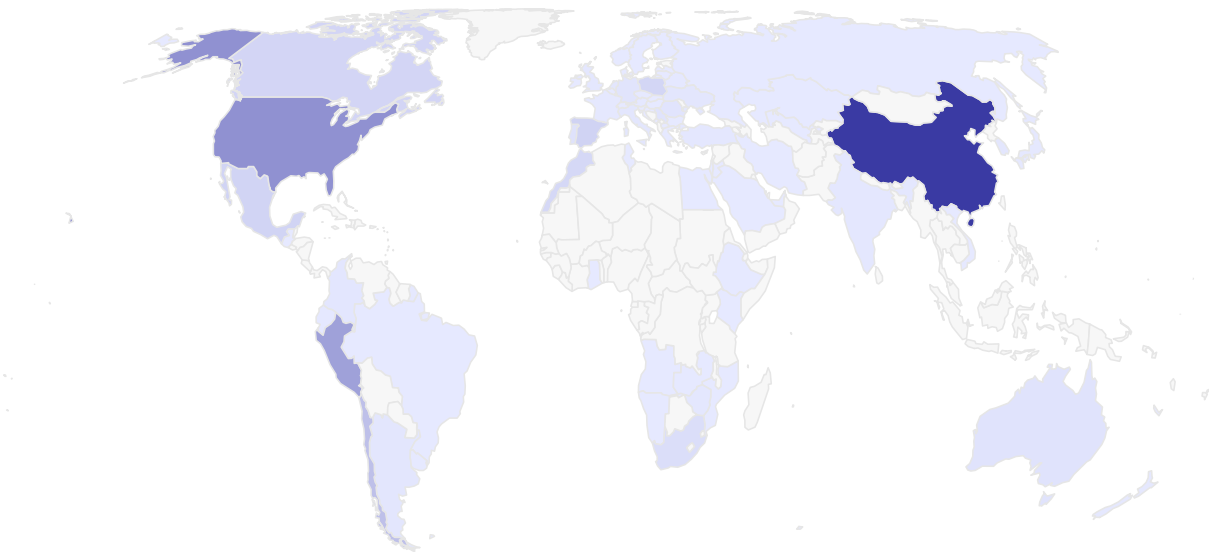
Climate change, sustainability and social license are all major themes in the blueberry industry globally, with the former most evident in the erratic and severe weather conditions and events that are affecting growers more often in different parts of the world. For the second time since its introduction last year, this report includes a separate ESG section which we would encourage all stakeholders to peruse.

GLOBAL CULTIVATED

GLOBAL CULTIVATED FRESH

Planting and Production Data, Figures & Commentary
(Denominated in Hectares and Thousands of Metric Tons)

2023 Global Cultivated Production by Country



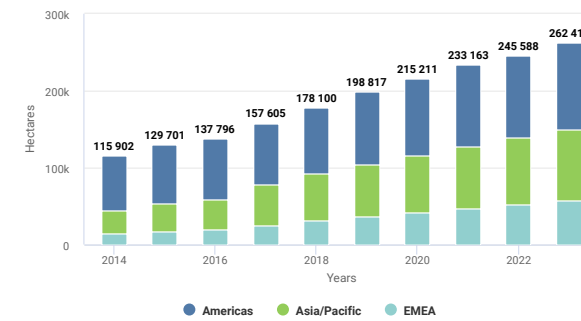
Source: IBO

Global Cultivated Hectares by Subregion

Global Cultivated	Hectares Planted					2023 Production (000) MT		
	2019	2020	2021	2022	2023	Fresh	Process	Total
Growth Totals								
Americas	94,886	99,042	105,649	107,119	112,819	601.49	201.44	802.93
<i>South America</i>	31,619	37,187	40,928	41,555	41,631	329.03	60.17	389.20
<i>US & Canada</i>	56,532	53,915	55,578	54,118	59,170	208.07	137.99	346.06
<i>Mexico / Central America</i>	6,735	7,940	9,143	11,446	12,018	64.39	3.28	67.67
Asia / Pacific	67,461	74,405	80,233	85,985	92,677	325.84	283.81	609.65
<i>Asia</i>	64,279	70,804	76,241	82,095	88,527	295.26	282.81	578.07
<i>Pacific</i>	2,737	3,106	3,430	3,277	3,350	24.23	0.70	24.93
<i>Central Asia / Indian Subcontinent</i>	445	495	562	613	800	6.35	0.30	6.65
EMEA	36,470	41,764	47,282	52,484	56,921	338.06	31.62	369.68
<i>So. Europe / N. Africa</i>	10,428	10,924	11,689	12,822	14,150	146.54	14.13	160.67
<i>Eastern Europe</i>	16,635	20,268	25,219	28,436	30,912	113.56	5.75	119.31
<i>Western / Central Europe</i>	5,920	6,084	5,894	6,316	6,186	30.64	8.15	38.79
<i>Africa</i>	3,126	3,998	3,801	3,692	3,645	41.24	3.20	44.44
<i>Middle East</i>	360	490	680	1,218	2,028	6.08	0.39	6.47
Global Cultivated Totals	198,817	215,211	233,163	245,588	262,417	1,265.39	516.87	1,782.26

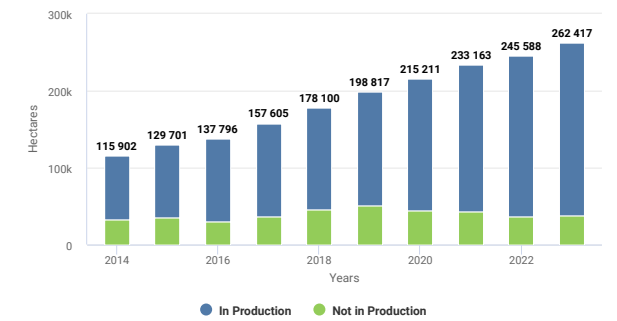
Source: IBO

Global Cultivated Hectares by Region



Source: IBO

Global Cultivated Hectares by Status



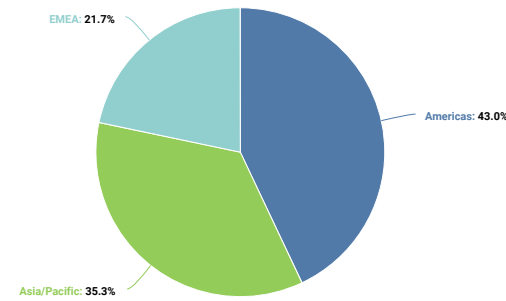
Source: IBO

Global Cultivated Production by Subregion (000) MT

Global Cultivated	2021			2022			2023		
	Fresh	Process	Total	Fresh	Process	Total	Fresh	Process	Total
Productions Totals									
Americas	666.23	287.45	953.68	671.89	248.76	920.65	601.49	201.44	802.93
<i>South America</i>	382.78	87.80	470.58	404.30	85.81	490.11	329.03	60.17	389.20
<i>US & Canada</i>	210.35	198.15	408.50	192.34	162.01	354.35	208.07	137.99	346.06
<i>Mexico / Central America</i>	73.10	1.50	74.60	75.25	0.94	76.19	64.39	3.28	67.67
Asia/Pacific	264.14	247.60	511.74	297.53	270.48	568.01	325.84	283.81	609.65
<i>Asia</i>	238.68	246.60	485.28	270.46	269.48	539.94	295.26	282.81	578.07
<i>Pacific</i>	21.40	0.70	22.10	22.13	0.70	22.83	24.23	0.70	24.93
<i>Central Asia / Indian Subcontinent</i>	4.06	0.30	4.36	4.94	0.30	5.24	6.35	0.30	6.65
EMEA	277.76	28.44	306.20	335.98	30.67	366.65	338.06	31.62	369.68
<i>So. Europe/N. Africa</i>	134.86	13.50	148.36	142.07	13.61	155.68	146.54	14.13	160.67
<i>Eastern Europe</i>	79.35	5.61	84.96	119.42	6.08	125.50	113.56	5.75	119.31
<i>Western/Central Europe</i>	28.93	6.96	35.89	33.62	8.02	41.64	30.64	8.15	38.79
<i>Africa</i>	31.37	2.20	33.57	36.11	2.70	38.81	41.24	3.20	44.44
<i>Middle East</i>	3.25	0.17	3.42	4.76	0.26	5.02	6.08	0.39	6.47
Global Cultivated Totals	1,208.13	563.49	1,771.62	1,305.40	549.91	1,855.31	1,265.39	516.87	1,782.26

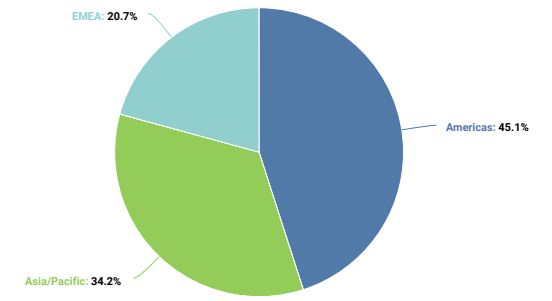
Source: IBO

2023 Global Cultivated Hectares by Region



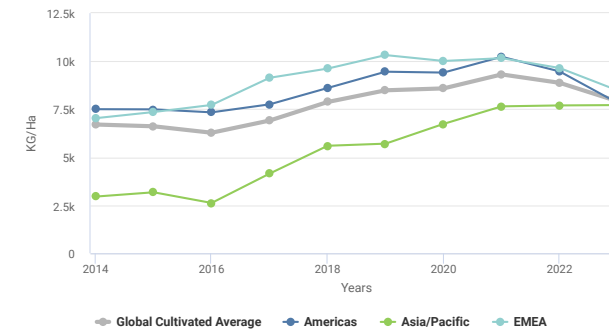
Source: IBO

2023 Global Cultivated Production by Region



Source: IBO

Global Cultivated Yield by Region



Source: IBO

Global Cultivated 2023 Production Metrics

Hectares Planted:	262,417 Ha
Hectares in Production:	225,235 Ha
Production:	1,782.26 (000) MT
Growth in Production ¹ :	▼73.05 (000) MT (-3.94%)
Growth from Hectares ² :	▲135.07 (000) MT (184.89%)
Growth from Yield ³ :	▼208.08 (000) MT (-284.85%)
Yield:	7,912.82 (Kg/Ha)

Source: IBO and Agronometrics

¹ Volume change compared to previous season

² Change in volume due to hectares entering or leaving production

³ Change in volume due to field productivity (yields)

Global Cultivated Fresh Report Team Narrative

In 2023, the global production of fresh blueberries experienced a decline. The total global production amounted to approximately 1,302,000 MT, representing a decrease of around 6% compared to the 1,323,000 MT recorded in 2022.

The Americas experienced a notable reduction in fresh blueberry production, falling to 601,000 MT in 2023 from 672,000 MT in 2022, marking a decrease of about 11%. This decline was primarily driven by a substantial reduction in production in South America, which collectively produced 329,000 MT, down from 404,000 MT in 2022. This sharp decline can be attributed to adverse weather conditions, notably the El Niño phenomenon, which severely impacted yields in Peru. Despite these challenges, South America maintained its position as a major producer. Mexico and Central America saw a marginal decline, producing 64,000 MT in 2023, compared to 75,000 MT in 2022. The US and Canada saw a growth of about 8.3%.

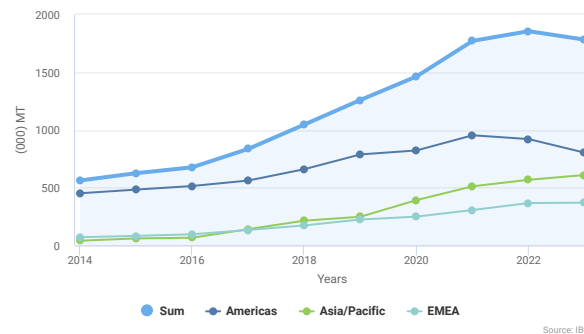
The Asia/Pacific region demonstrated strong growth in fresh blueberry production, increasing to 324,000 MT in 2023 from 297,000 MT in 2022, a rise of about 9%. Asia, led by

significant contributions from China, continued to be a major driver of this growth. The Pacific subregion also saw a slight increase, producing 24,000 MT.

The EMEA region exhibited robust growth in 2023, with fresh blueberry production rising to 376,000 MT from 353,000 MT in 2022, an increase of around 6.5%. Southern Europe and Northern Africa led this growth with production reaching 164,000 MT. The production in Africa saw a significant growth, contributing 44,000 MT. Eastern Europe showed a modest increase, producing 131,000 MT, up from 134,000 MT in 2022.

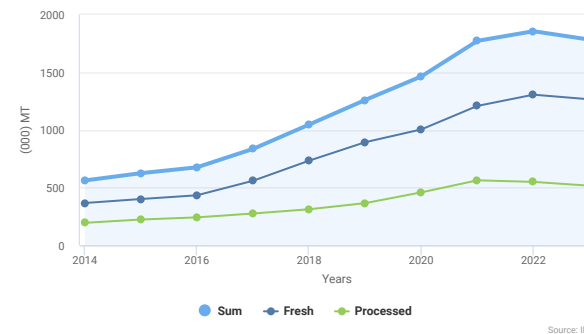
Against a backdrop of lower global production in 2023, the continued expansion of fresh blueberry consumption is encouraging. Established regions like Peru faced challenges, but emerging regions such as Africa and the Indian subcontinent are progressively contributing to the global market. This diversification and resilience in consumption patterns highlight the potential for future growth and stability in the blueberry industry.

Global Cultivated Production by Region



Source: IBO

Global Cultivated Production by Use



Source: IBO

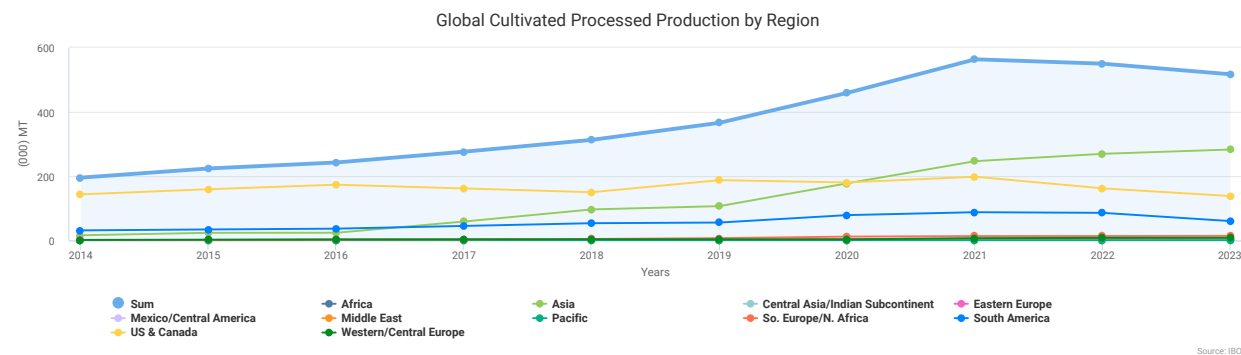
GLOBAL CULTIVATED PROCESSED

Planting and Production Data, Figures & Commentary (Denominated in Hectares and Thousands of Metric Tons)

Global Cultivated Processed Production by Region(000) MT

Global Processed Productions Totals	2021			2022			2023		
	Fresh	Process	Total	Fresh	Process	Total	Fresh	Process	Total
Asia/Pacific	-	247.60	247.60	-	270.48	270.48	-	283.81	283.81
Asia	-	246.60	246.60	-	269.48	269.48	-	282.81	282.81
Pacific	-	0.70	0.70	-	0.70	0.70	-	0.70	0.70
Central Asia/Indian Sub-continent	-	0.30	0.30	-	0.30	0.30	-	0.30	0.30
Americas	-	287.45	287.45	-	248.76	248.76	-	201.44	201.44
US & Canada	-	198.15	198.15	-	162.01	162.01	-	137.99	137.99
South America	-	87.80	87.80	-	85.81	85.81	-	60.17	60.17
Mexico/Central America	-	1.50	1.50	-	0.94	0.94	-	3.28	3.28
EMEA	-	28.44	28.44	-	30.67	30.67	-	31.62	31.62
So. Europe/N. Africa	-	13.50	13.50	-	13.61	13.61	-	14.13	14.13
Eastern Europe	-	5.61	5.61	-	6.08	6.08	-	5.75	5.75
Western/Central Europe	-	6.96	6.96	-	8.02	8.02	-	8.15	8.15
Africa	-	2.20	2.20	-	2.70	2.70	-	3.20	3.20
Middle East	-	0.17	0.17	-	0.26	0.26	-	0.39	0.39
Global Cultivated Processed Totals	-	563.49	563.49	-	549.91	549.91	-	516.87	516.87

Source: IBO



Source: IBO

Global Cultivated Processed Report Team Narrative

While the global blueberry industry tends to focus most of its attention on the fresh category, given fresh blueberries are the highest-paying segment and are the target of practically all new plantings, the processed sector acts as an important channel of value capture that growers can turn to if weather events render part or all of their crops unfit for the fresh market, or if markets become oversupplied. Indeed, numerous mature industries, from the Pacific Northwest to Chile and Argentina (although these South American countries less so in 2023), have increased their portions of processed-oriented orchards of blueberries as an adaptation to the commercial and competitive realities they face – broadly speaking, relatively lower market prices and higher costs of production.

The substitution effect of frozen blueberries with their fresh counterparts remains an important buffer for the industry as a whole, especially as it grapples with the overall trend of rising supply growth and changing retailer preferences within the fresh category. Consumers tend to show a preference for the more perishable fresh category, hence its price premium, and an increase in fresh volume is cited as the biggest challenge to the processed sector. On the other hand, the rising tide of volume way well “lift all boats” if it translates to a corresponding transfer from the fresh into the processed category, with that critical mass of volume potentially opening the door for more price and volume stability for recipe and food development; in other words, an opportunity to get more people consuming blueberries in a wide variety of ways, from yogurts to muffins to smoothies to even pet food.

To showcase the potential of blueberries beyond just as a fresh product, and also to lift general awareness, at the time of writing one U.S. industry leader is currently involved in shooting a television series in the Great Lakes that will raise awareness of blueberries by visiting farms and covering businesses that use the fruit in unique and exciting ways, from blueberry sausage makers to blueberry breweries.

These novelties may be just a small part of the overall market, but every new channel explored is an opportunity for growth. As referenced in the South America section of this report, even in a country like Colombia where blueberries were relatively unknown a decade ago, the fruit is increasingly being used in more fast-moving consumer goods (FMCG) and food-service products. The “health halo” effect of blueberries, that was previously such a major driver of consumption growth in the 90’s and early 00’s, came back with force during the

covid-19 pandemic and many people saw frozen blueberries as a budget-friendly option to help lift immunity, and probably grew a preference for the taste as well in the process. Even though the pandemic is now over, that momentum continues – many might be surprised to know that in 2023, despite a fresh blueberry supply shortfall from Peru that plagued the market in the second half, there were 9% more frozen blueberries imported around the world than in the previous year, and the USA (the world’s largest shipper of frozen blueberries) exported more than ever before. Most of this was shipped to Canada, which was far ahead of the next-biggest market South Korea, followed by Japan, one of the world’s best-paying markets and one where a technical error led to U.S. exporters missing out on a tariff reduction that applied to their fresh and dried products, but not frozen. This puts U.S. frozen blueberry exporters at a disadvantage to their Canadian and Chilean counterparts in the Japanese market.

This lift in exports was aided by very low frozen blueberry pricing in mid-2023, much to the chagrin of already struggling growers in the Pacific Northwest, at a time when there was a reported inventory overhang from 2022 that needed to be sold, and no real awareness of the frozen blueberry volume declines that would come as a result of firm sales, and the El Niño-induced supply shortfall from Peru which had a domino effect of diverting more would-be frozen supply from Chile (and to an extent Argentina) into the fresh market, leading to an increase in prices year-over-year in early 2024, with Chile recording its third-highest monthly exports ever for frozen blueberries in April 2024.

The fact that so many blueberry growers in North America sold their fruit to processors at such low prices in the summer of 2023, before a shortfall would lift pricing dramatically, illustrates the speculative and challenging nature of this sub-segment of the blueberry industry. Even as the USDA was reporting near-record inventory levels earlier this year, the market appeared to be behaving as if this weren’t the case with indications of improved pricing and contracts for the 2024 North American season.

Whilst the USDA and industry stakeholders try to produce estimates, the data is currently incomplete and leads to decisions that benefit or disadvantage stakeholders on opposing sides of any transaction, with strategy and luck playing more of a role than they arguably should.

It is against this backdrop of volatility and unclear information that the USHBC and NABC are collaborating with industry stakeholders to gather more regular data in the interest of transparency, in moves that mimic what they have achieved in the fresh market, which has been to the great benefit of growers.

“Everybody wants a better cold storage report,” said one expert who is involved in this initiative, which is in its early stages at the time of writing.

It is hoped by many in the industry that improvements in the transparency of cold storage stock in North America will extend through to other major industry players in South America. At the same time as transparency will help growers make better decisions, the dynamics of increased supply present great opportunities and challenges to the industry. Regarding the aforementioned ‘critical mass’ effect, greater reliability could end up being factored into the decision-making of prospective foodservice buyers wishing to implement large-scale roll-outs with new menu items. The blueberry industry is now reaching the scale whereby marketers or packers of processed product would be able to commit with greater confidence to contracts at a critical mass level. The diversity of different blueberry varieties present in the market could work against this development (but not necessarily), as product developers are highly scientific in their assessments of a berry’s brix, soluble solids, color consistency, size consistency, pH levels, and how the components of the fruit interact with ingredients like sugars, emulsifiers, stabilizers or guar gums. It could well be that these results vary if they use a Duke or a Bluecrop, or southern highbush cultivars like Biloxi or Ventura, to name a few examples. Ultimately, for the processed blueberry industry to succeed, flavor must be one of the top priorities and ought to be a core point of focus, regardless of the variety.

The IQF (individually quick frozen) market remains the primary target at the higher end of the processed market. This marks very little change over the last two decades with limited innovation on the product side among the growing, packing, and first handler side of the business. While there are exceptions, the majority of the value creation in processed blueberries is done by CPG (consumer packaged goods) companies (small and large) with the packing industry filling the role of an input supplier or at best a vendor of IQF polybags to retail.

No doubt there is room for further downstream integration in the industry. Examples of this happening today include growing and packing companies introducing new dried and infused products as well as some new ‘fresh like’ ready-to-eat (RTE) products. Looking to the future it is not unreasonable to assume that there will be a substantial opportunity to create new uses for the market. The question remains as to whether this innovation can also be led by organizations which actually have established supply chains close to the raw product.

Industry efforts to boost consumption of processed blueberries are a key piece of the puzzle for lifting demand and returns for growers. As the product is less difficult to ship than highly perishable fresh blueberries, export market development is a logical pathway to lifting demand, but there is also a need to push more food manufacturing channels within categories such as baking, confectionery, smoothies and yogurts. To be effective, large-scale incorporation is required for this strategy to have a real impact as often a finished food such as a muffin or a protein bar has a very low gram-count of blueberries. What is also problematic is that whilst the fresh market is increasingly seeking out larger-sized berries, some food manufacturers such as bakers tend to seek out smaller-sized frozen blueberries, leaving less margin of error for fresh-oriented growers that shift to larger cultivars.

One sub-division of the processing industry that has struggled the most is juice-grade concentrate, for which inventories are at times high relative to demand. Unlike their peers in crops such as pomegranates, the industry has been unable to achieve the same levels of success for blueberry juice even though the product has similarly flavorful and high-antioxidant attributes. Worthy of inclusion is also the example of the Brazilian acai industry, which has capitalized on the Amazonian fruit’s high antioxidant content with acai bowls and smoothies sold in far-flung trendy cafes and eateries across the developed world. When concentrates are considered across the full spectrum of the berry category, blueberries feature at the lower end of the price scale, and therefore would present a reasonable opportunity for new product developers.

“I think long term, we’re going to begin to see some excitement around the lower grades – concentrates and purees – just because the price point is so low, and I think that’ll help blueberries,” as one source noted.

GLOBAL CULTIVATED TOP 10

Planting and Production Data, Figures & Commentary (Denominated in Hectares and Thousands of Metric Tons)

2023 Top 10 Cultivated Hectares by Country

#	Country	2020 Hectares	2021 Hectares	2022 Hectares	2023 Hectares
1	China	66,400	71,781	77,641	84,420
2	United States	42,219	43,214	42,084	46,709
3	Peru	15,406	18,381	19,500	20,000
4	Chile	18,185	18,802	18,375	18,071
5	Poland	9,500	11,000	11,913	12,594
6	Canada	11,696	12,364	12,034	12,461
7	Mexico	7,900	9,100	11,400	11,970
8	Ukraine	4,383	5,318	5,500	5,700
9	Spain	4,210	4,570	4,810	5,496
10	Morocco	2,850	3,136	3,800	4,300

2023 Top 10 Cultivated Production by Country (000) MT

#	Country	2020 Production	2021 Production	2022 Production	2023 Production
1	China	347.20	468.22	525.31	563.46
2	United States	282.64	328.18	278.19	282.82
3	Peru	179.58	261.73	299.67	233.87
4	Chile	195.76	185.44	166.35	132.33
5	Spain	55.66	73.94	69.19	70.86
6	Mexico	57.67	74.20	75.87	67.32
7	Canada	82.42	80.32	76.16	63.24
8	Poland	54.10	55.50	68.50	62.00
9	Morocco	35.96	47.21	56.50	56.06
10	South Africa	15.80	26.00	30.50	35.00

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Japan Import Prices by History

Japan Import Volumes by Origin

Blueberry 2021 Exports by Country

2023 Top 10 Cultivated Fresh Production by Country (000) MT

#	Country	2020 Fresh Production	2021 Fresh Production	2022 Fresh Production	2023 Fresh Production
1	China	171.66	223.57	258.53	283.35
2	Peru	162.73	243.53	285.58	223.87
3	United States	153.03	177.06	159.73	173.95
4	Chile	138.78	123.04	101.35	86.27
5	Spain	49.80	66.71	62.57	64.38
6	Mexico	57.00	72.70	74.93	64.04
7	Poland	52.10	52.50	65.50	59.00
8	Morocco	33.85	44.44	53.51	52.51
9	Canada	31.72	33.29	32.61	34.12
10	South Africa	15.33	24.00	28.00	32.00

2023 Top 10 Cultivated Processed Production by Country (000) MT

#	Country	2020 Processed Production	2021 Processed Production	2022 Processed Production	2023 Processed Production
1	China	175.54	244.65	266.78	280.11
2	United States	129.61	151.12	118.46	108.87
3	Chile	56.98	62.40	65.00	46.06
4	Canada	50.70	47.03	43.55	29.12
5	Peru	16.85	18.20	14.09	10.00
6	Spain	5.86	7.23	6.62	6.48
7	Germany	1.70	4.20	5.70	5.70
8	Argentina	4.80	7.02	6.50	4.00
9	Morocco	2.11	2.77	2.99	3.55
10	Mexico	0.67	1.50	0.94	3.28

2023 Top 10 Fresh Cultivated Exports by Country (000) MT

#	Country	2020 Exports	2021 Exports	2022 Exports	2023 Exports
1	Peru	-	215.20	285.77	217.21
2	Netherlands	-	91.52	117.28	95.18
3	Mexico	-	72.46	75.90	83.16
4	Chile	-	111.86	104.16	80.37
5	Morocco	-	42.01	51.84	49.09
6	Spain	-	55.23	57.69	46.01
7	South Africa	-	21.89	26.91	26.31
8	United States	-	22.38	20.55	23.44
9	Canada	-	19.48	18.83	22.59
10	Poland	-	21.05	23.09	21.89

2023 Top 10 Fresh Cultivated Imports by Country (000) MT

#	Country	2020 Imports	2021 Imports	2022 Imports	2023 Imports
1	United States	214.30	253.54	289.24	248.26
2	Netherlands	101.23	115.47	149.58	104.39
3	Germany	61.49	62.29	70.72	61.86
4	United Kingdom	54.73	63.39	60.37	58.04
5	Canada	46.58	55.89	51.62	47.03
6	Spain	29.87	33.30	42.77	36.19
7	China	25.16	29.60	42.85	29.59
8	Poland	9.91	14.25	21.44	18.20
9	France	11.51	13.63	14.27	15.67
10	Hong Kong	18.61	27.41	25.39	15.29

GLOBAL CULTIVATED PRODUCTION FORECAST

Unfortunately the Global Cultivated Production Forecast is not being made available this year as our methodology is being retooled to better account for the complexity that our industry continuously challenges us with. Please stay tuned next year for an updated forecast published in time for the IBO Summit in South Africa.

AMERICAS

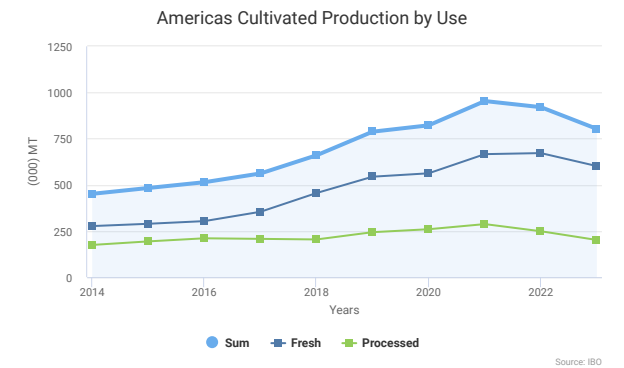
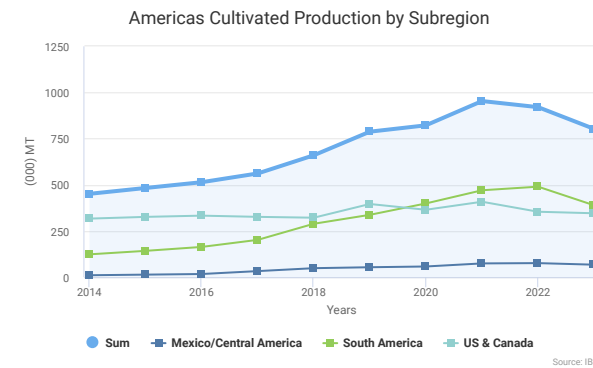
AMERICAS

Planting and Production Data, Figures & Commentary (Denominated in Hectares and Thousands of Metric Tons)

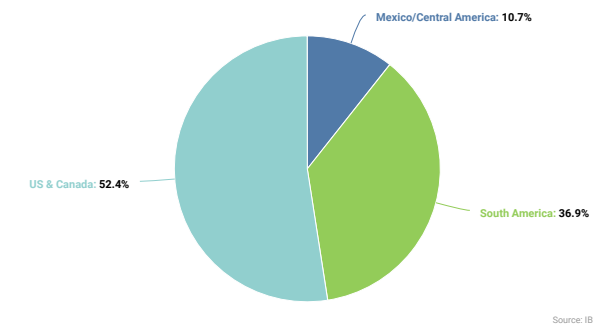
Americas Cultivated Hectares by Subregion

Americas	Hectares Planted					2023 Production (000) MT		
	2019	2020	2021	2022	2023	Fresh	Process	Total
South America	31,619	37,187	40,928	41,555	41,631	329.03	60.17	389.20
US & Canada	56,532	53,915	55,578	54,118	59,170	208.07	137.99	346.06
Mexico/Central America	6,735	7,940	9,143	11,446	12,018	64.39	3.28	67.67
Americas Totals	94,886	99,042	105,649	107,119	112,819	601.49	201.44	802.93

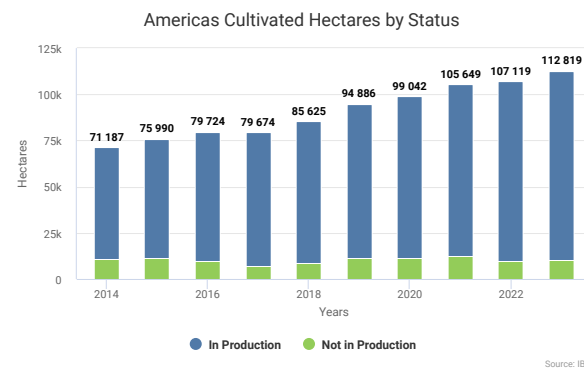
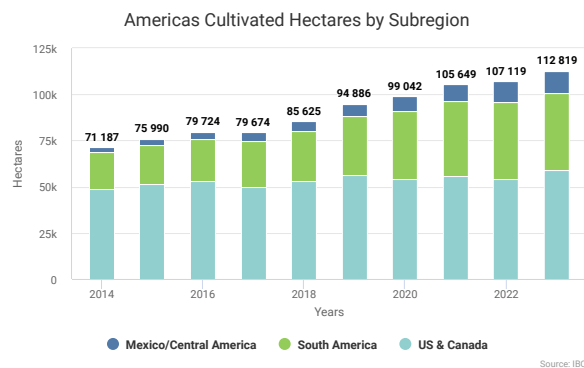
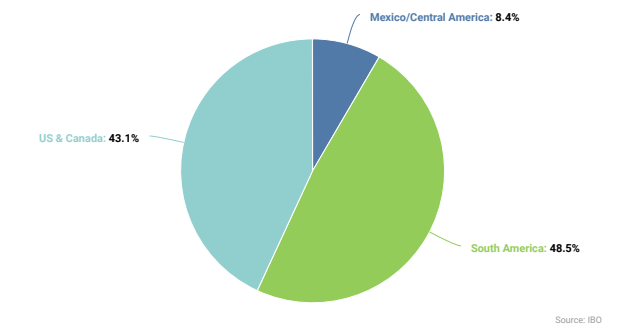
Source: IBO



2023 Americas Cultivated Hectares by Subregion



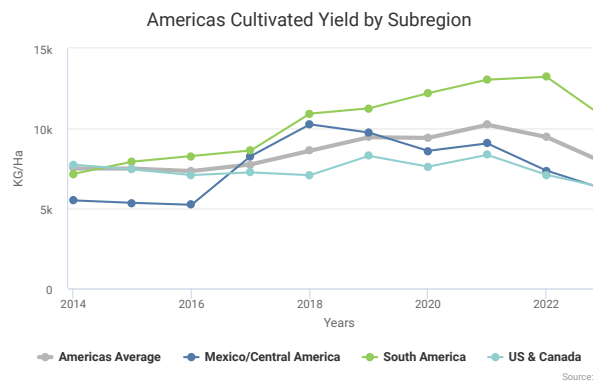
2023 Americas Cultivated Production by Subregion



Americas Cultivated Production by Subregion(000) MT

Americas	2021			2022			2023		
	Fresh	Process	Total	Fresh	Process	Total	Fresh	Process	Total
South America	382.78	87.80	470.58	404.30	85.81	490.11	329.03	60.17	389.20
US & Canada	210.35	198.15	408.50	192.34	162.01	354.35	208.07	137.99	346.06
Mexico/Central America	73.10	1.50	74.60	75.25	0.94	76.19	64.39	3.28	67.67
Americas Totals	666.23	287.45	953.68	671.89	248.76	920.65	601.49	201.44	802.93

Source: IBO



Americas 2023 Production Metrics

Hectares Planted:	112,819 Ha
Hectares in Production:	102,610 Ha
Production:	802.93 (000) MT
Growth in Production ¹ :	▼117.72 (000) MT (-12.79%)
Growth from Hectares ² :	▲37.72 (000) MT (32.04%)
Growth from Yield ³ :	▼155.41 (000) MT (-132.02%)
Yield:	7,825.12 (Kg/Ha)

Source: IBO and Agronometrics

¹ Volume change compared to previous season
² Change in volume due to hectares entering or leaving production
³ Change in volume due to field productivity (yields)



Integrated blueberry solutions: Post harvest to pack

With over 2,800 lanes of optical sorting and installations in over 35 countries, TOMRA Food is the leader in integrated solutions for the Blueberry industry.

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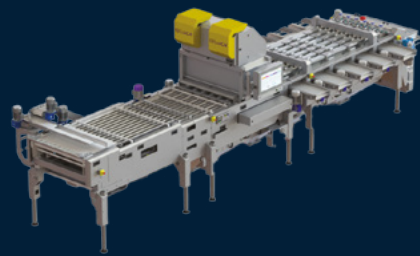


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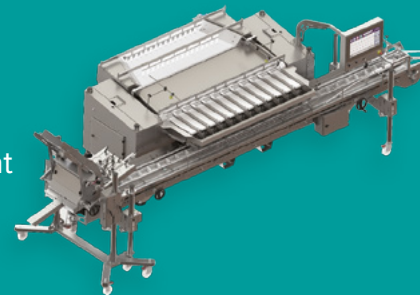
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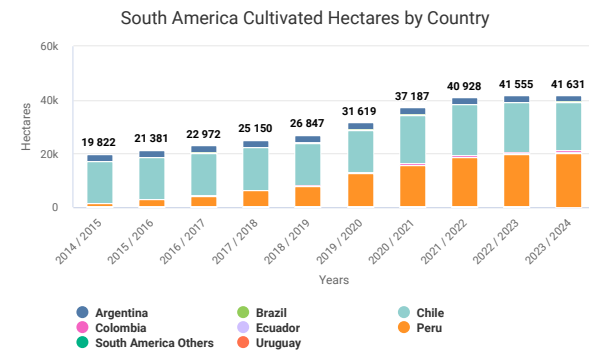
SOUTH AMERICA

Planting and Production Data, Figures & Commentary (Denominated in Hectares and Thousands of Metric Tons)

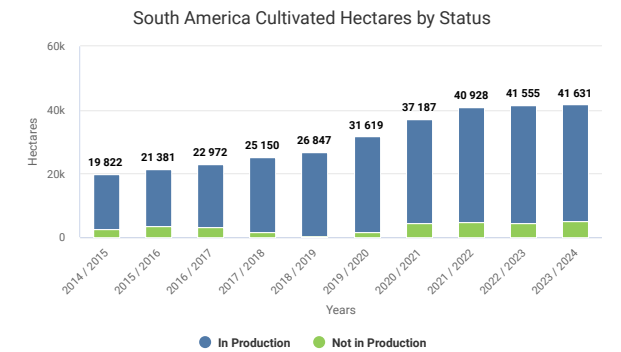
South America Cultivated Hectares by Country

South America	Hectares Planted					2023/2024 Production (000) MT		
	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	Fresh	Process	Total
Peru	12,292	15,406	18,381	19,500	20,000	223.87	10.00	233.87
Chile	15,784	18,185	18,802	18,375	18,071	86.27	46.06	132.33
Argentina	2,650	2,515	2,500	2,300	2,100	6.40	4.00	10.40
Colombia	320	500	600	600	766	8.36	-	8.36
Ecuador	80	120	185	320	350	3.00	-	3.00
Brazil	220	220	220	220	220	0.70	-	0.70
Uruguay	273	241	240	240	124	0.43	0.11	0.54
South America Totals	31,619	37,187	40,928	41,555	41,631	329.03	60.17	389.20

Source: IBO



Source: IBO



Source: IBO

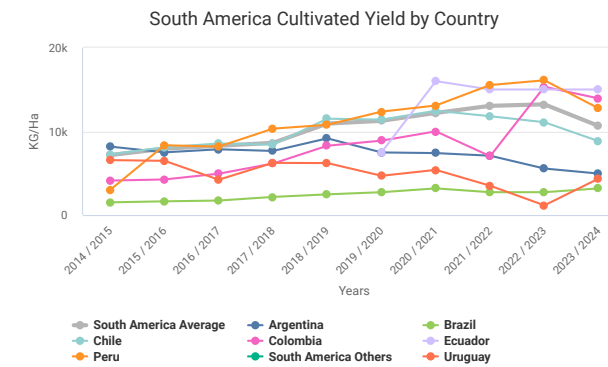
For more information, visit:
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South America Cultivated Production by Country(000) MT

South America	2021/2022			2022/2023			2023/2024		
	Fresh	Process	Total	Fresh	Process	Total	Fresh	Process	Total
Peru	243.53	18.20	261.73	285.58	14.09	299.67	223.87	10.00	233.87
Chile	123.04	62.40	185.44	101.35	65.00	166.35	86.27	46.06	132.33
Argentina	10.69	7.02	17.71	6.28	6.50	12.78	6.40	4.00	10.40
Colombia	3.40	0.11	3.51	7.46	0.20	7.66	8.36	-	8.36
Ecuador	0.75	-	0.75	2.78	-	2.78	3.00	-	3.00
Brazil	0.60	-	0.60	0.60	-	0.60	0.70	-	0.70
Uruguay	0.77	0.07	0.84	0.25	0.02	0.27	0.43	0.11	0.54
South America Totals	382.78	87.80	470.58	404.30	85.81	490.11	329.03	60.17	389.20

Source: IBO



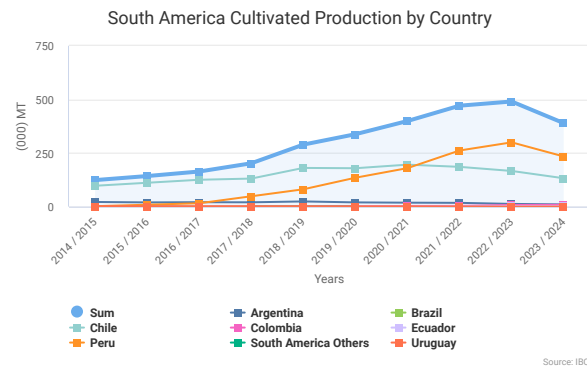
Source: IBO

South America 2023/2024 Production Metrics

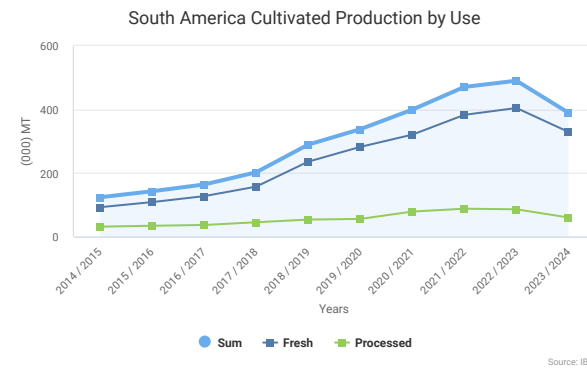
Hectares Planted:	41,631 Ha
Hectares in Production:	36,586 Ha
Production:	389.20 (000) MT
Growth in Production ¹ :	▼100.91 (000) MT (-20.59%)
Growth from Hectares ² :	▼3.87 (000) MT (-3.83%)
Growth from Yield ³ :	▼97.04 (000) MT (-96.17%)
Yield:	10,638.17 (Kg/Ha)
Exports:	322.32 (000) MT
Imports:	2.63 (000) MT

Source: IBO and Agronometrics

¹ Volume change compared to previous season
² Change in volume due to hectares entering or leaving production
³ Change in volume due to field productivity (yields)

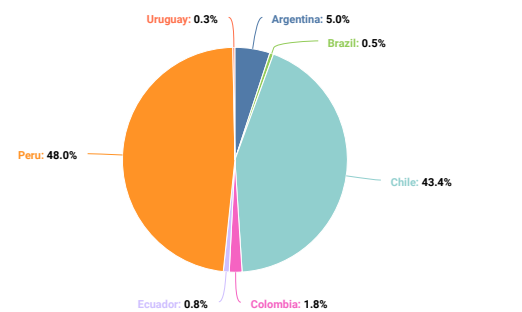


Source: IBO



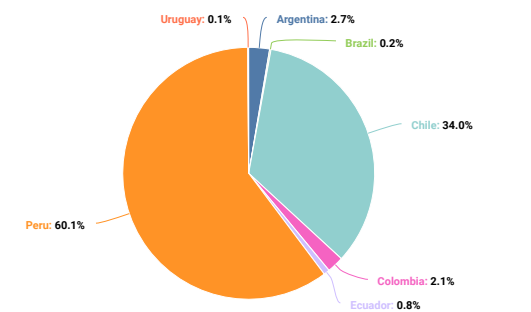
Source: IBO

2023/2024 South America Cultivated Hectares by Country



Source: IBO

2023/2024 South America Cultivated Production by Country

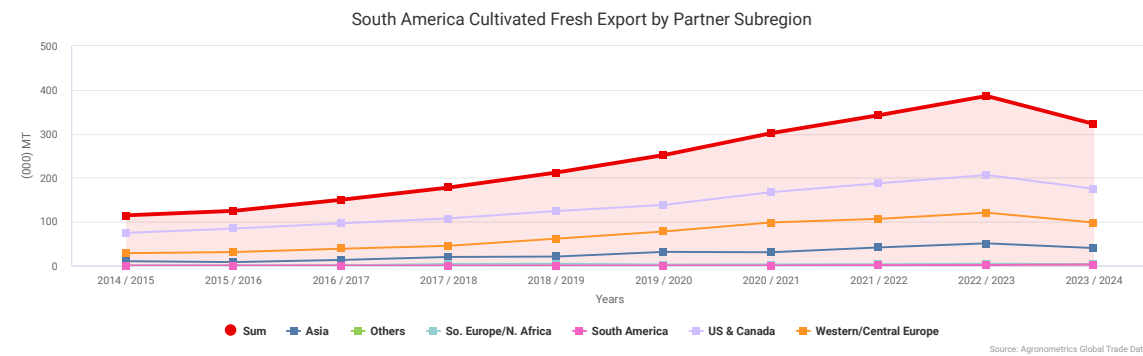


Source: IBO

South America Exports by Partner Subregion (000) MT

Subregion	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024
US & Canada	138.42	167.43	187.69	206.37	175.03
Western/Central Europe	77.89	98.50	106.64	120.70	98.18
Asia	31.48	30.63	41.62	50.98	40.11
So. Europe/N. Africa	2.73	3.01	3.33	4.47	3.43
South America	0.57	0.58	1.32	1.64	2.83
Others	0.69	1.64	1.95	2.12	2.75
South America Totals	251.78	301.80	342.55	386.28	322.32

Source: Agronometrics Global Trade Data



South America Report Team Narrative

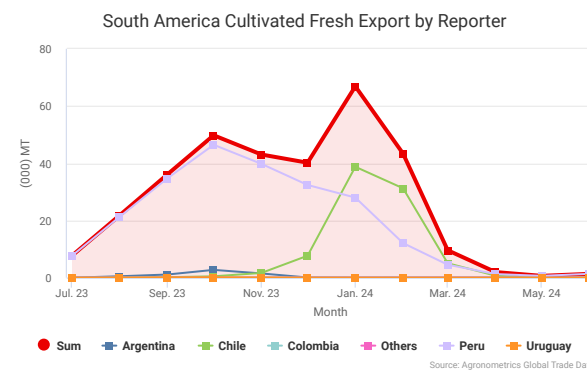
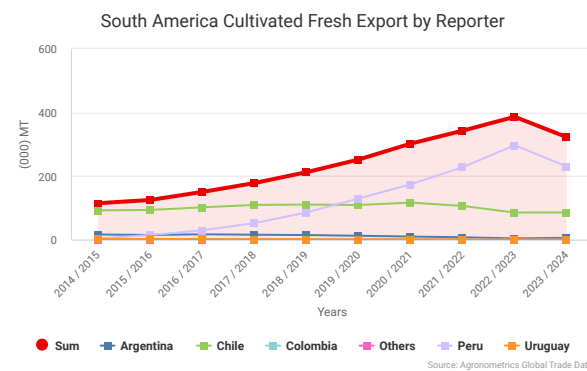
For an in-depth review of the leading producing countries of South America, please see the individual reports including official country member reports and IBO Report Team narratives for:

- Peru
- Chile
- Argentina

South America Exports by Reporter (000) MT

Subregion	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024
Peru	129.26	173.81	227.84	296.82	230.15
Chile	108.94	116.62	106.17	85.18	85.71
Argentina	12.28	9.84	7.59	3.96	5.83
Uruguay	1.07	0.94	0.56	0.19	0.30
Colombia	0.21	0.55	0.37	0.12	0.30
Others	0.02	0.06	0.01	0.02	0.03
South America Totals	251.78	301.80	342.55	386.28	322.32

Source: Agronomics Global Trade Data



As Ecuador and Colombia now have nascent blueberry industries, the IBO team has collected the following information to complement the South America narrative.

Colombia

Colombia may not yet be a substantial player in the global blueberry industry, but the country's close proximity to the USA, its interesting local consumption story, and its ability to produce blueberries practically year-round have made it an emerging industry of interest for several years now, particularly considering Colombia's recent proven export success in other fruit crops such as avocados, limes and physalis/goldenberries. The operation and logistics models of the highly competitive cut flower industry also provide both reference as well as strong horticulture industry operators.

Colombia's blueberry export industry is yet to start on any substantial upward trajectory, due primarily to supply being unable to keep up with rising domestic demand but also the

slow rate of new plantings. To understand how strong the domestic industry has become, in 2023 imports rose 29-fold year-on-year to 352MT, with most coming from Peru plus a small volume from Chile.

The major rise follows a dip in import volumes the previous year, but it is still almost triple the previous annual import record set in 2021. Furthermore, in the first two months 2024 Colombia's imports were up 136% to reach 130MT, which in a short period is greater than all imports in 2021. What makes this recent statistic more noteworthy is the fact that it immediately followed Colombia's highest-volume production months of November and December, and came as the country exported 99MT in January 2024 – a record for that month by a wide margin, representing almost a monthly record for the country overall as it was just shy of the 100MT shipped in December 2020.

These are not significant numbers for exports, and for context are still magnitudes lower than even Argentina which itself has been on a downward export trend over the past decade. But

sales volumes domestically are rising strongly. Even though many Colombians buy their fruit in open markets that are unlikely to see the highest-quality blueberry varieties being sold, sources have indicated more premium blueberries being sold in certain supermarkets.

“I’m seeing differentiation in Colombia, I’m seeing differentiation in Ecuador. The supermarkets are now prepared to pay for a much better product, which I’ve never seen before,” as one source noted.

Approximately 95% of Colombia’s domestic volume stays in-country with most of that sold fresh, but there is also a growing industrial processing market with more and more processed foods including blueberries as an ingredient.

Meanwhile, Colombia’s export prospects depend on executing a systems approach for its main market, the U.S., with select growers currently undergoing monitoring and testing to deliver on this ambition. Currently the protocol options for shipping to the USA are either the less preferred methyl bromide treatment on arrival, or cold treatment in transit for 14 days. In 2023 there was a breakthrough with industry representatives advising that the U.S. had approved a systems approach, but it was expected this would take two years to be implemented. That would pave the way for a potential seven-day timeframe from harvest to arriving in the ports of Florida. However, trucking within Colombia itself is expensive, so when that is combined with the cost of sea freight the difference versus shipping via air is not so pronounced as in other growing regions.

Last year market access was gained for the Canadian market, where the first trial shipments were sent in early 2024, while there is evidence of a very small degree of export diversification away from the United States in Thailand and Saudi Arabia, as well as nearby Panama and Curaçao.

The domestic supply gap is further impeded by a lack of availability of plant material, particularly proprietary varieties. As in many nascent industries, there is a predominance of the Biloxi variety, followed by Emerald, Legacy and Victoria – cultivars that are increasingly falling out of favour with retailers; growers would rather plant other cultivars, but there are long backlogs in the order books of nurseries that propagate material for newer genetics. Companies affiliated with large blueberry companies or breeders from the U.S., Chile, Spain and Australia are producing limited volumes of proprietary genetics, and are also undergoing trials. No more than 30ha of new blueberry orchards were planted in the past year, mostly comprising the open varieties Emerald and Legacy, but there are reports that nurseries are expecting greater order numbers for the 12 months ahead.

While blueberry cultivation in Colombia technically dates back to the 1980s, the industry’s incipient growth began in earnest in the late 00’s. Unlike the South American sector’s northward push into Peru that relied on low-chill genetics along the coast, the international ventures from Chile, the U.S. and elsewhere that entered Colombia have planted between 2,600-3,000 meters above sea level, under the moniker of ‘tropical blueberries at altitude’. The growing systems are

more reminiscent of Central Mexico no-chill evergreen production but without the punctuation of seasonality. There are approximately three peaks in production, the first and largest being in November-December, then May-June, and again in September.

Most of this production sits in the mountainous plains of Boyacá and Cundinamarca to the north of Colombia’s capital Bogota, where very little difference in daylight hours throughout the year allows for pruning to induce production as desired by farm managers. It is a challenging region to produce in however, with growers needing to contend with cold, rainy nights and warm days. Open field is the standard production method for most crops in Colombia, including blueberries, but for those who do grow under protected systems, macro-tunnels similar to what are utilised in Mexico have become the preferred choice over greenhouses, for which there is also a portion of production.

The remainder of plantings is split between the department Antioquia – where a recent census revealed there was less planted than previously thought - and in the country’s south near the border with Ecuador.

Blueberry plantings have increased around tenfold since 2016 in Colombia with an industry that is now much larger than longstanding South American producer Uruguay, for example, but still much smaller than Argentina, to put its size into perspective. There are an estimated 600 growers in the country but only three that have farms larger than 20ha. The

largest of these is a Colombian grower that has accounted for the highest share of an incipient export program, predominantly focused on the USA. Larger plantings are in the pipeline over the next two years from domestic and foreign investors, including a joint venture with Australian proprietary varieties that intends to reach 50ha planted within two to three years as well as various American and Chilean supported ventures underway.

Ecuador

Ecuador’s industry is much younger, having begun in 2015 with its production spread along the Andes Mountains in various locations on both sides of the equator. There are also trial plantings in coastal areas such as Santa Elena, Manabi and El Oro; the latter two being more often associated with Ecuador’s world-leading banana export sector. Like Colombia, Ecuador is able to produce blueberries year-round, and it has a nascent export industry although most fruit is sold domestically.

Around 95% of volume from Ecuador’s estimated plantings are currently concentrated in the Andes, and most of those plantings are still very young. Both Ecuadorian and multinational companies are conducting trials and tests with new varieties with the goal of meeting demand in overseas markets. The varietal mix is around a third Biloxi, 27% Atlas Blue and 13% Emerald, with other varieties planted include Apollo, Stellar, Presto, Jewel, Legacy, Star, Eureka and Dazzle.



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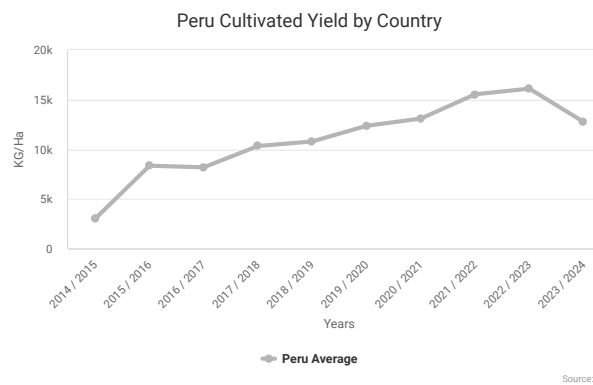
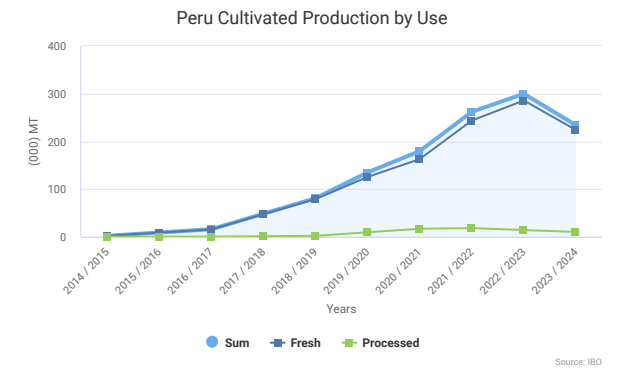
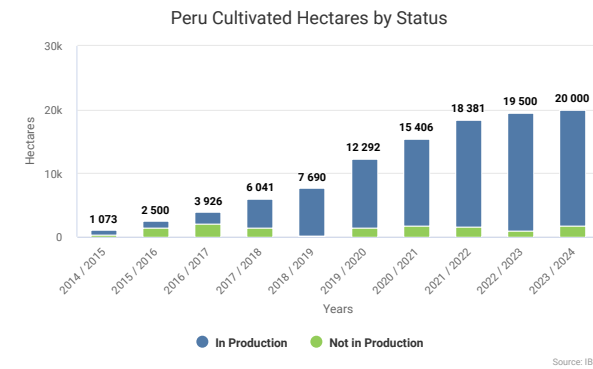
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PERU

Planting and Production Data, Figures & Commentary (Denominated in Hectares and Thousands of Metric Tons)



Peru 2023/2024 Production Metrics

Hectares Planted:	20,000 Ha
Organic:	13.00%
Under Structure:	3.00%
Hydroponics:	Not Reported
New Genetics:	Not Reported
Hectares in Production:	18,342 Ha
Production:	233.87 (000) MT
Growth in Production ¹ :	▼-65.80 (000) MT (-21.96%)
Growth from Hectares ² :	▼-4.38 (000) MT (-6.66%)
Growth from Yield ³ :	▼-61.42 (000) MT (-93.34%)
Yield:	12,750.52 (Kg/Ha)
Exports:	230.15 (000) MT
Imports:	0.00 (000) MT

Source: IBO and Agronomics

¹ Volume change compared to previous season

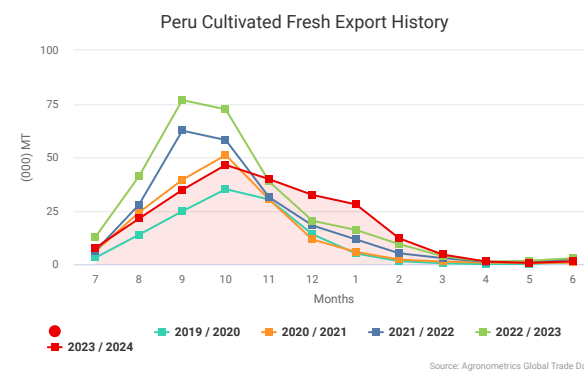
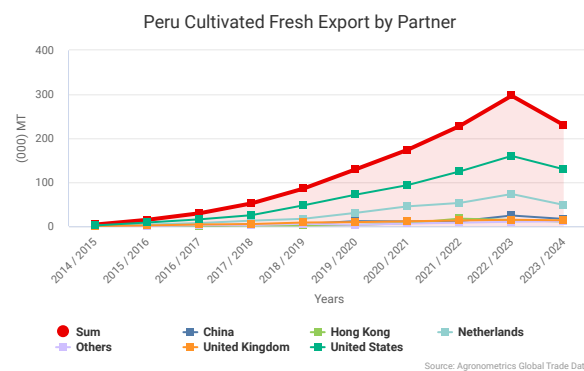
² Change in volume due to hectares entering or leaving production

³ Change in volume due to field productivity (yields)

Peru Cultivated Fresh Exports by Partner (000) MT

Reporter	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024
United States	71.70	93.50	124.63	159.95	129.61
Netherlands	30.36	45.22	52.98	73.26	48.55
China	11.70	10.93	11.55	24.43	16.61
United Kingdom	9.31	11.32	13.19	14.77	13.52
Hong Kong	3.02	6.83	17.33	14.21	10.66
Others	3.17	6.02	8.15	10.20	11.20
Peru Totals	129.26	173.81	227.84	296.82	230.15

Source: Agronometrics Global Trade Data



Peru Country Member Summary

Adapted from a Report by the Peruvian Blueberry Growers & Exporter Association, ProArándanos

Commentary

2023 was a very particular year for our industry with a fall in production for the first time in more than a decade of sustained, unprecedented growth. The El Niño phenomenon and Cyclone Yaku significantly lifted minimum temperatures, altering the phenological cycles of the plants and impacting the production of our blueberries. This situation was most evident in the northern region, especially harming blueberry varieties that genetically require a higher quantity of cold hours, which suffered from large falls in production.

competitive, with a clear focus on genetic innovation, diversifying markets, optimizing international logistics, as well as being the industry and origin of reference in sustainability policies. And even though this last season had a deterioration in production due to the aforementioned factors, Peru remained a leader in global blueberry exports with more than 220,000 metric tons (MT) exported directly to 30 countries, and with around 18,500 hectares of blueberries nationwide growing 65 varieties. Due to Peruvian blueberries' high level of participation in global commerce, the lower production had a very positive impact on global pricing.

The last campaign leads us to reflect upon the importance of not letting our guard down and being ever more

General Statistics

Evolution of blueberry exports until the 2023-24 campaign

Blueberries are part of a Peruvian agricultural export industry that has grown significantly in recent years in response to growing global demand. This growth would not have been possible without the professionalism of the Peruvian industry's agricultural operations, the phytosanitary care, and the opening and improvement of access to international markets, amongst other determining factors.

Peru went from exporting a total of 12,951MT at the end of the 2015-16 season to 224,889Mt in the 2023-24 season, with a decline of 21% compared to the 2022-23 season, which is the first time that exported volume has decreased.

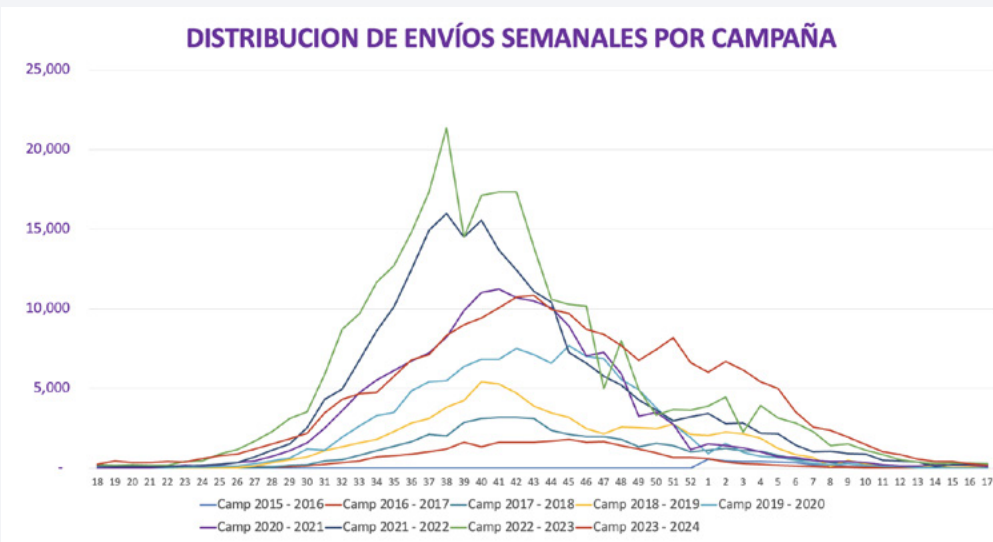
In the same way, Peru consolidated its fifth consecutive campaign as the main exporter of fresh blueberries globally. The figures and growth percentages can be found in the graph below:

However, last year exported volumes were affected by El Niño with high temperatures year-round, affecting fruit production.



Source: SENASA
Elaboration: PROARANDANOS

In terms of annual export values, during the 2023-24 season Peruvian fresh blueberry exports reached \$1.676 billion, representing 19% growth over 2022-23 when exports were US\$1.404 billion (Source: SUNAT).



Source: SENASA
Elaboration: PROARANDANOS

The export peak during the 2023-24 campaign occurred in week 43 with a total of 10,833MT, representing a 49% decline compared to the previous season's peak at 21,333MT.

During the 2023-24 season there were weekly exports of more than 5,000MT for 22 consecutive weeks (from week 35 to week 4). In the 2022-23 season this was achieved for 17 weeks (from week 31 to weeks 46 and 48); in the

2021-22 season this benchmark was exceeded for 16 consecutive weeks (weeks 33 to 48) and in 2020-21 it was for 15 consecutive weeks (weeks 34 to 48).



Source: PROARANDANOS
Elaboration: PROARANDANOS

With regards to organic blueberries, 22,874MT were exported, representing 10% of the total volume of fresh blueberry exports. This volume represents a decline of 35% compared to the previous season. At the same time, the U.S. continues to be the main destination for this type of blueberry with a 95% share.

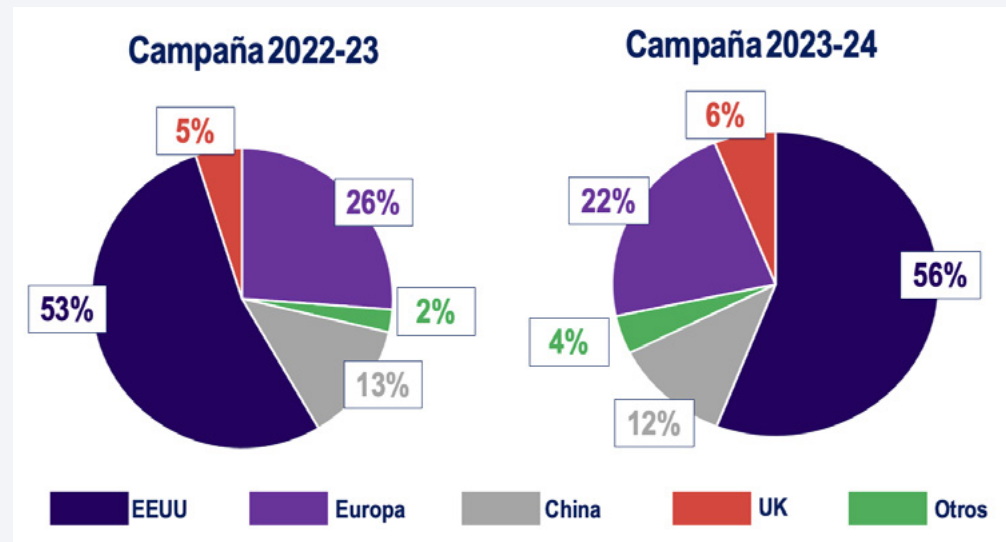
The graph below shows Peru's total exports of frozen and processed blueberries:



Source: SUNAT
Elaboration: PROARANDANOS

Main export destinations for Peruvian blueberries in the 2023-24 season

The main destination was the United States receiving 56% of the total exported volume, followed by Europe (ex-U.K.) with 22%, China with 12%, the U.K. with 6%, and others with 4%. Peru sent shipments to 38 destinations globally during the 2023-24 campaign, compared to 33 in the previous season.



Source: SENASA
Elaboration: PROARANDANOS

United States

During the 2023-24 season 125,692MT of fresh blueberries were exported to the U.S., representing a reduction of 18% compared to the previous season when 153,178MT was shipped.

Europe

During the 2023-24 campaign 50,048MT of fresh blueberries were exported to Europe (ex-U.K.), representing a 33% reduction compared to the prior season with 74,859MT.

United Kingdom

During the 2023-24 campaign 13,685MT of fresh blueberries were exported to the United Kingdom, representing a 4% reduction compared to the prior season with 14,237MT.

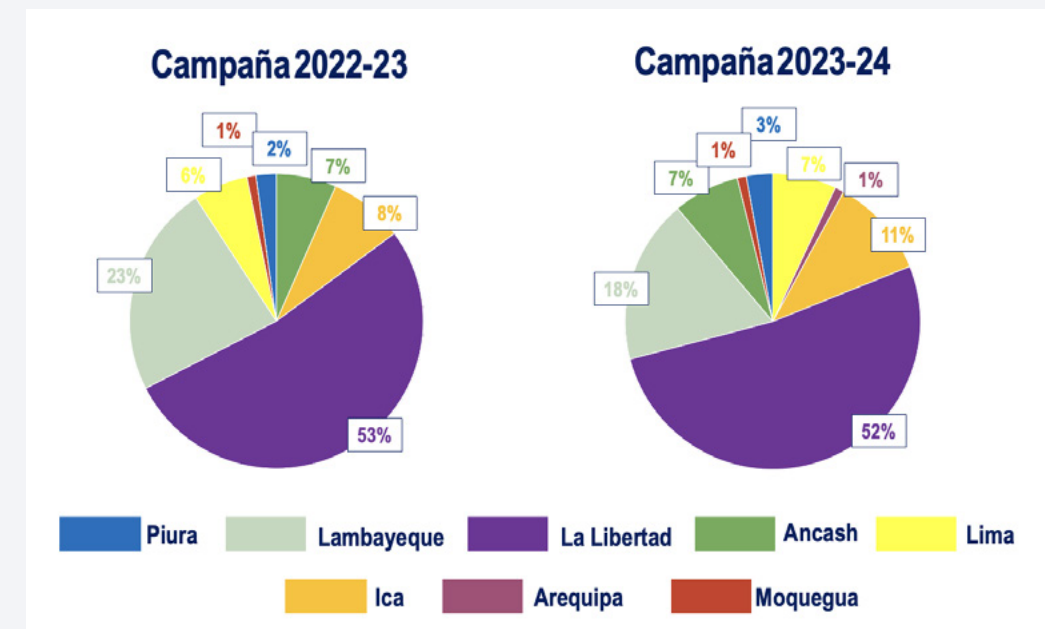
China

During the 2023-24 campaign 26,292MT of fresh blueberries were exported to China, representing a 29% reduction compared to the prior season when 36,973MT were exported.

Others

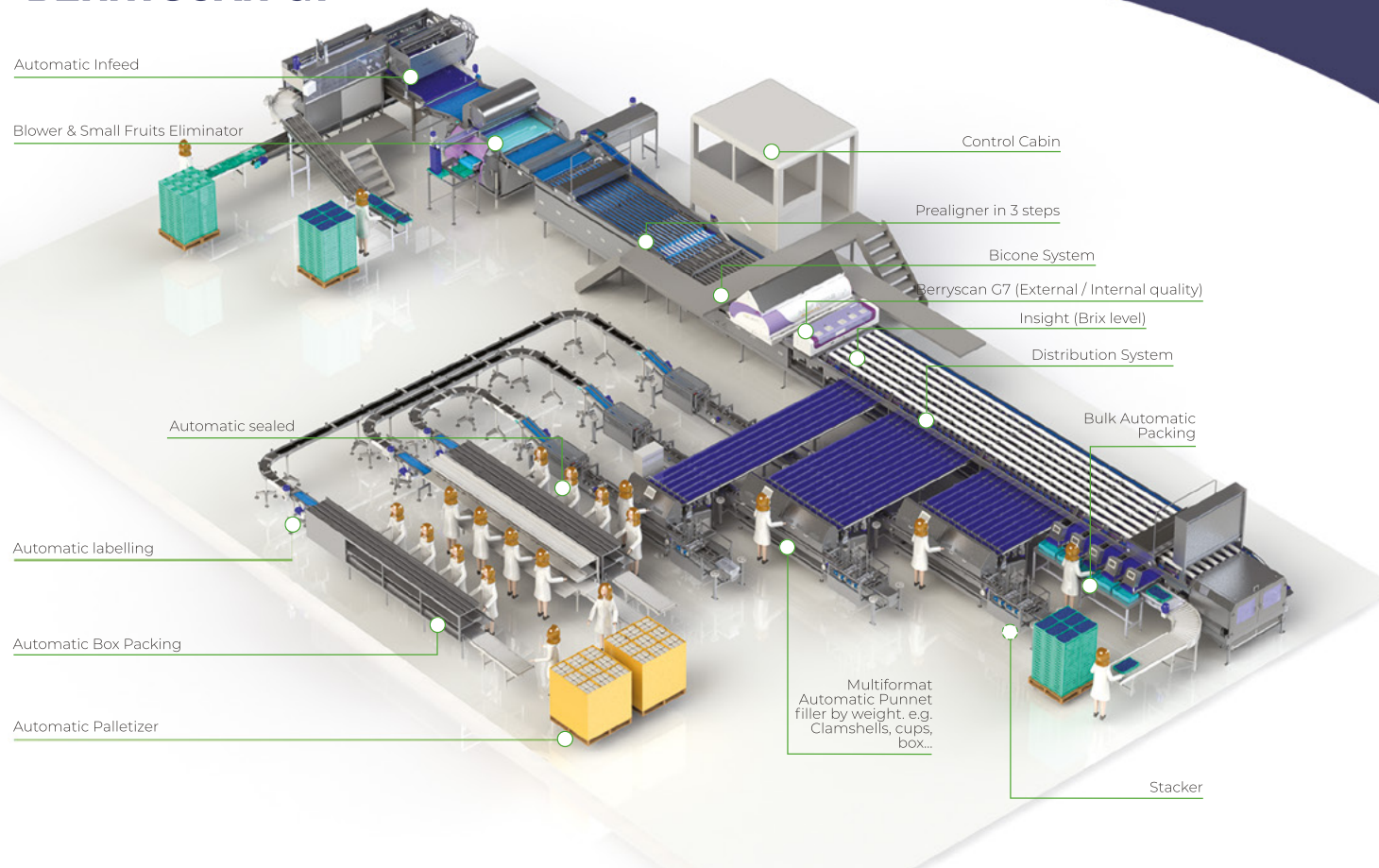
Exports to other export destinations rose to 9,172MT, representing growth of 31% compared to the previous season, being the only destination group that saw an increase in these figures.

Export regions for blueberries and varieties



Source: SENASA
Elaboration: PROARANDANOS

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The regions of Peru with the most blueberry exports during the 2023-24 season were La Libertad with a 52% representation, consolidating itself as the most important export region for this crop, followed by Lambayeque with 18% and Ica with 11% of the total. The remaining 19% is found in the regions of Piura, Ancash, Lima, Arequipa and Moquegua.

VARIEDAD	HECTÁREAS (Ha)				PORCENTAJE (%)	
	CAMPAÑA 2020-2021	CAMPAÑA 2021-2022	CAMPAÑA 2022-2023	CAMPAÑA 2023-2024	VARIACIÓN 21/22vs22/23	VARIACIÓN 22/23vs23/24
VENTURA	4,779.38	5,724.97	5,668.45	5,085.02	↔ -1.0%	↓ -10.3%
BILOXI	5,276.36	5,159.73	5,032.43	3,716.54	↔ -2.5%	↓ -26.1%
FCM14-052 (SEKOYA POP)	55.17	424.65	915.00	1,879.44	↑ 115.5%	↑ 105.4%
ROCIO	1,016.89	1,082.00	1,290.08	1,263.94	↑ 19.2%	↔ -2.0%
EMERALD	876.11	1,042.29	1,092.29	922.24	↔ 4.8%	↓ -15.6%
FCM12-045 (ATLASBLUE)	244.71	425.65	703.24	882.27	↑ 65.2%	↑ 25.5%
MAGICA	168.13	215.56	363.85	651.28	↑ 68.8%	↑ 79.0%
FCM12-097 (SEKOYA BEAUTY)	45.43	365.62	490.61	466.26	↑ 34.2%	↔ -5.0%
RIDLEY 1602 (EUREKA SUNRISE)	31.79	82.24	183.06	277.62	↑ 122.6%	↑ 51.7%
KESTREL	67.80	258.46	420.33	252.03	↑ 62.6%	↓ -40.0%
C99-42 (KIRRA)	102.55	231.44	255.74	210.12	↑ 10.5%	↓ -17.8%
MATIAS			24.28	208.50		↑ 758.7%
ARANA	28.58	43.88	147.16	190.88	↑ 235.4%	↑ 29.7%
DRISBLUETWENTYSIX (RAYMI)			3.42	182.32		↑ 5231.0%
RIDLEY 1403 (EUREKA)	224.77	260.48	175.15	179.19	↓ -32.8%	↔ 2.3%
DRISBLUETWENTYTHREE (ROSITA)		1.26	67.03	178.85	↑ 5219.8%	↑ 166.8%
PLABLUE 15.02 (MADEIRA)	8.41	11.07	85.24	170.46	↑ 670.0%	↑ 100.0%
FCM12-087 (BIANCABLUE)	25.46	77.68	361.66	157.63	↑ 365.6%	↓ -56.4%
SALVADOR	32.05	119.74	316.46	151.40	↑ 164.3%	↓ -52.2%
DRISBLUESEVEN (STELLA BLUE)	142.34	344.38	220.11	149.99	↓ -36.1%	↓ -31.9%
ABRIL BLUE+				143.56		
ALESSIA BLUE+				101.89		
DRISBLUETHIRTEEN (TERRAPIN)	77.77	122.65	122.07	101.43	↔ -0.5%	↓ -16.9%
SCINTILLA	220.94	210.65	109.09	97.76	↓ -48.2%	↓ -10.4%
BONITA	55.76	43.84	65.40	96.01	↑ 49.2%	↑ 46.8%
PLABLUE 15.122 (MALIBU)	10.52	32.60	59.46	86.70	↑ 82.4%	↑ 45.8%
FCM12-131 (JUPITERBLUE)	71.96	73.54	68.72	64.58	↓ -6.6%	↓ -6.0%
HT-78 (BB14-321NA-1) (IMPERIAL)			1.38	63.00		↑ 4465.2%
HT-73 (BB14-232PT-2) (MILAGRO)			18.28	55.43		↑ 203.2%
PLABLUE 15.45 (MANILA)		10.58	15.21	43.62	↑ 43.8%	↑ 186.8%
OTRAS VARIEDADES	373.37	428.11	385.13	312.50	↓ -10.0%	↓ -18.9%
Total general	13,936.25	16,793.07	18,660.33	18,342.46	↑ 11.1%	↔ -1.7%

Source: SENASA
Elaboration: PROARANDANOS

In 2023 there was a certified total of 65 different blueberry varieties in Peru – a significant varietal increase considering that in 2016 there were just 13 varieties certified and in 2019 there were 32 registered. In the table below you can see the hectareage for each variety at the close of 2023 by region:

VARIEDAD	REGIONES (Ha) [CAMPAÑA 2023-2024]									
	LA LIBERTAD	LAMBAYEQUE	ICA	LIMA	ANCASH	PIURA	MOQUEGUA	AREQUIPA	CAJAMARCA	Total
VENTURA	2,379.58	1,600.38	405.37	189.83	255.28	197.58	54.14	2.86		5,085.02
BILOXI	2,632.39	95.69	200.87	312.56	43.39	409.89	17.25		4.50	3,716.54
FCM14-052 (SEKOYA POP)	615.64	830.37	109.26		50.20	273.97				1,879.44
ROCIO	787.50	376.53		99.91						1,263.94
EMERALD	60.60	100.91	125.18	162.65	472.90					922.24
FCM12-045 (ATLASBLUE)	160.82	240.42	45.29	11.82	335.18	87.22		1.52		882.27
MAGICA	269.93	24.88	356.47							651.28
FCM12-097 (SEKOYA BEAUTY)	57.36	341.50	3.30		30.82	33.28				466.26
RIDLEY 1602 (EUREKA SUNRISE)			171.60	106.02						277.62
KESTREL	88.56	9.35		42.35		111.77				252.03
C99-42 (KIRRA)	162.74	47.38								210.12
MATIAS	1.43	155.64	0.16	46.13	1.00	4.14				208.50
ARANA	138.37	50.47	1.09					0.95		190.88
DRISBLUETWENTYSIX (RAYMI)	133.73	45.95	1.02					1.62		182.32
RIDLEY 1403 (EUREKA)			35.50	143.69						179.19
DRISBLUETWENTYTHREE (ROSITA)	112.43	53.35	12.12					0.95		178.85
PLABLUE 15.02 (MADEIRA)	151.60	8.41			1.19	3.80		5.46		170.46
FCM12-087 (BIANCABLUE)	10.02	140.70	1.38	5.03	0.50					157.63
SALVADOR	6.76		3.96	136.94		3.74				151.40
DRISBLUESEVEN (STELLA BLUE)	149.99									149.99
ABRIL BLUE+		132.65		10.91						143.56
ALESSIA BLUE+		101.89								101.89
DRISBLUETHIRTEEN (TERRAPIN)	97.04	4.39								101.43
SCINTILLA	93.08			1.18		3.50				97.76
BONITA	80.80	15.21								96.01
PLABLUE 15.122 (MALIBU)	68.31	6.30			0.57	10.80		0.72		86.70
FCM12-131 (JUPITERBLUE)	1.15	62.30	1.00	0.13						64.58
HT-78 (BB14-321NA-1) (IMPERIAL)	61.10		0.65			1.25				63.00
HT-73 (BB14-232PT-2) (MILAGRO)	53.40		0.65			1.38				55.43
PLABLUE 15.45 (MANILA)	36.85	0.91				2.20		3.66		43.62
OTRAS VARIIDADES	80.11	84.98	92.14	43.10	1.70	9.67		0.80		312.50
Total general	8,491.29	4,530.56	1,567.01	1,312.25	1,192.73	1,154.19	71.39	18.54	4.50	18,342.46

Source: SENASA

Blueberry export companies

During the 2023-24 season there were 105 Peruvian blueberry export companies registered, with Camposol having the highest participation in terms of volume at 16% with 35,351MT, followed by Hortifrut Peru (12%), Agrovisión Peru (7%) and Complejo Agroindustrial Beta (7%). Below is a ranking of the top 10 companies that exported the highest volume of blueberries during the 2023-24 season:

Campaña 2023-24		
Empresa	Volumen (kgs)	Participación
CAMPOSOL S.A.	35,350,776	16%
HORTIFRUT - PERÚ S.A.C.	27,292,208	12%
AGROVISION PERU S.A.C.	16,880,449	7%
COMPLEJO AGROINDUSTRIAL BETA S.A.	14,777,054	7%
AGRICOLA CERRO PRIETO S.A.	12,640,007	6%
HASS PERU S.A.	9,058,338	4%
DANPER TRUJILLO S.A.C.	8,905,518	4%
EXPORTADORA FRUTICOLA DEL SUR SA	8,723,333	4%
LARAMA BERRIES S.A.C.	8,306,977	4%
BLUEBERRIES PERU S.A.C.	7,385,283	3%
OTROS	75,568,968	33%
TOTAL	224,888,912	100%

Source: SENASA

Peru Report Team Narrative

The international blueberry market disruption caused by lower production from Peru, occasioned by the El Niño weather phenomenon, was by far the biggest talking point in the industry in the second half of 2023 with the ripple effects continuing at the time of publication. As one industry source noted, “Peru is the only country in the world that has an ability to impact the world price.”

Peru’s blueberry volumes in the 2023-24 season fell by 25% to 215,000MT – a “dramatic” fall according to industry body ProArandanos, although the headline number is still well above the 2020-21 campaign and only just shy of the 222,971MT exports achieved in 2021-22. It is important to note that while Peru’s final 23-24 season shortfall was not as drastic as some industries have experienced during major climatic disruptions (some have seen more than 50% drops), the reallocation of timing of the volume was significant. What took the industry by surprise was the rupture to a previously unbroken trend of upwards growth for Peru, which in 2019 overtook Chile as the world’s largest blueberry exporter. The movement of substantial volumes out of the Northern Hemisphere fall window into the winter and early spring was impactful.

Indeed, the decline of 25% is clearly significant in that context, but this number by itself does not fully reflect the vicissitudes of the season itself. In Peru’s peak export months of September and October, shipments were down 55% and 36% respectively, with the shortage prompting buoyant pricing that continued even as Peru started to improve tonnages year-over-year from November onwards.

To emphasize the financial benefit gained by exporters in a scarce market, in October returns for Peruvian exporters were up 38% year-on-year. In November, export volume was up marginally by 2.9%, yet value surged by 85%, bringing the Peruvian industry an incremental return of US\$151 million in that month alone versus November 2022. In December the rebound in volume and value growth continued. The revenue increase experienced by the Peruvian blueberry industry just in November and December – of approximately US\$289 million – is almost equivalent to the entire 2023 export campaign from Spain. As occurred in other jurisdictions affected by weather problems this past year, there was a belief among some industry parties that the volume would merely be delayed with a rush of volume towards the end of the campaign, only it didn’t eventuate quite that way. Peru did indeed

experience a relative influx in late volumes, which clashed with supply from Chile and Mexico, but this nowhere near compensated for the volume declines experienced earlier in the campaign.

But why did this happen? And could the industry have better prepared for the shock? Many industry stakeholders were already aware that a short season was likely afoot around April and May when it became apparent that vegetative growth in plants was much more pronounced than in previous years due to hot conditions, which generally indicates less fruit growth. Downward projections were communicated to supermarkets by certain Peruvian companies that had made the investments to conduct in-depth analysis in the field (following bud production with flower counts), but that said, the industry also hadn't been around long enough to adequately understand the consequences of an El Niño like this with such prolonged warm temperatures. Many did not pay great importance to the physiological signs that were appearing in blueberry bushes, knowing well the overall upward trajectory that Peru had been on (and remains on). Save for a minority of experts, the industry at large outside of Peru had no idea what was coming.

The extent of negative effects on blueberry fields in Peru varied according to geography, altitude and variety. As a rule of thumb, but by no means consistently across the board, the further north you were the worse it was, the higher you were into the Andes the better it was, and those with proprietary genetics designed for heat tolerance also fared much better; the latter actually reaped enormous rewards (as did most growers in southern Peru) with largely stable production while national volume fell and prices rose. As one breeder noted, "In Peru we had no impact on timing or volume or anything", and this sentiment was echoed by many representatives of leading genetics programs. Thus, the appetite in Peru for new plantings of high quality genetics or conversions to them remains strong, from practically every global breeding company of note and also autochthonous Peruvian companies that have their own genetics programs.

Despite the relatively better performance for growers in southern Peru, geographic diversification southward in response to this El Niño year seems unlikely, aside from the generalized trend seen over recent years of more plantings outside of where the industry began in La Libertad, although this diversification has occurred in both the north and south of the country. One of the hotbeds of Peru's industry growth in recent years, Olmos, which around a decade ago was opened up by a large-scale irrigation project that activated new plantings from some of the world's largest blueberry companies, was particularly badly affected by the El Niño phenomenon.

A large portion of Peru's surface area dedicated to blueberries comprises the varieties Biloxi and Ventura, and it is the industry consensus that overall these varieties suffered from

much worse falls than others. What became apparent in 2023 is that whilst low-chill and no-chill blueberries will tend to both grow fairly well under normal conditions in warmer climates, that can only be said around average conditions within the bell curve; at the high extremes of that bell curve with hot weather, the zero-chill varieties tend to prove their worth due to breeding that has conditioned them for heat tolerance, and a genuine lack of need for cool nights to spur fruit bud and flower differentiation for production.

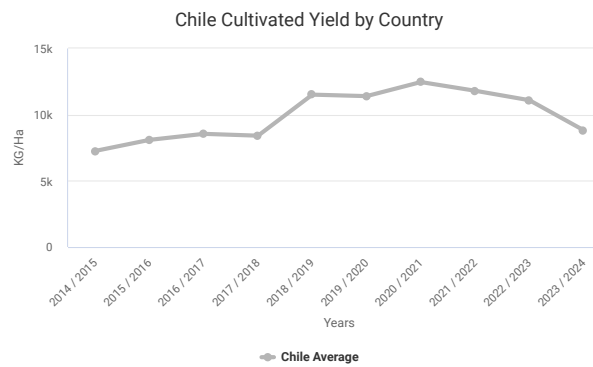
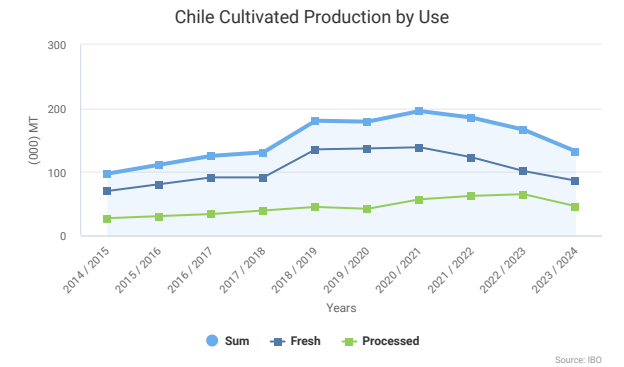
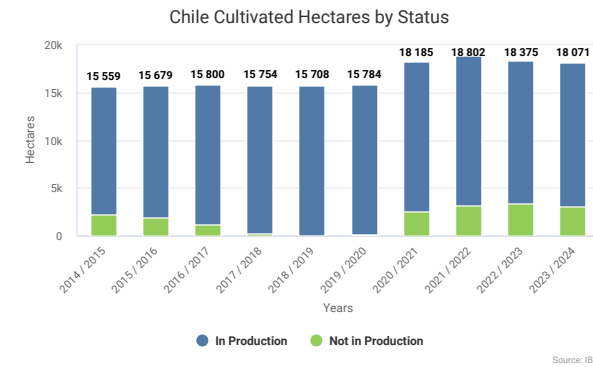
Whilst such discussions tend to lump Biloxi and Ventura together, one grower claims that of those two varieties in their operations, the drop-off for Ventura (-50%) was far greater than for Biloxi (-15%), which actually proved quite resilient for their specific farms. It must be emphasized that this is the localized comment of one grower and may not apply to others, but in this case it has prompted plans by some growers to keep Biloxi as a reliable buffer for such weather events. For that company, and others, pruning is usually undertaken to produce Ventura first so that its relatively larger-sized berries can be shipped to China at the start of the season, but as a kind of "insurance" policy that same producer will be aiming for later production of Ventura so that it can build up more cool hours, and instead will prune the Biloxi bushes earlier for targeting the Chinese market.

In general, the industry – particularly larger growers - has been recalibrating over the course of recent years to "flatten the curve" from its traditional peaks of September and October, and there is often a relatively strong focus on supplying Asia in July, and sending more to Europe over the Northern Hemisphere winter. This is an important trend to watch as Peruvian companies, particularly in the regions in a closer band to the equator, do have the option of manipulating production timing through pruning, fertility and other practices, more so than lower latitude growers in the 15-25 degree photoperiod band such as Central Mexico, where more moderate swings in timing can be achieved via such means. As labor becomes less available and the need to increase efficiencies with existing infrastructure increases, many large companies anticipate the need to extend their season and flatten their curve.

It has also been noted that Peru is well positioned for China-bound exports in the future - this has the potential to be reinforced by a Chinese backed port project in Chancay north of Lima which has many elements of 'belt and road' initiative projects elsewhere in the world. It is reported that operations from this port will be able to serve vessels with 18-day voyages to China, which compares to the current duration of circa 30 days, implying great logistical benefits for improving the freshness and quality of blueberries arriving in China, provided that vessels are allocated. There is also tempered optimism after India cut tariff rates for blueberries from 30% to 10% this year.

CHILE

Planting and Production Data, Figures & Commentary (Denominated in Hectares and Thousands of Metric Tons)



Chile 2023/2024 Production Metrics

Hectares Planted:	18,071 Ha
Organic:	25.00%
Under Structure:	Not Reported
Hydroponics:	Not Reported
New Genetics:	30.00%
Hectares in Production:	15,000 Ha
Production:	132.33 (000) MT
Growth in Production ¹ :	▼-34.02 (000) MT (-20.45%)
Growth from Hectares ² :	0 (000) MT (0.00%)
Growth from Yield ³ :	▼-34.01 (000) MT (-99.98%)
Yield:	8,822.53 (kg/Ha)
Exports:	85.71 (000) MT
Imports:	0.00 (000) MT

Source: IBO and Agronomics

¹ Volume change compared to previous season

² Change in volume due to hectares entering or leaving production

³ Change in volume due to field productivity (yields)



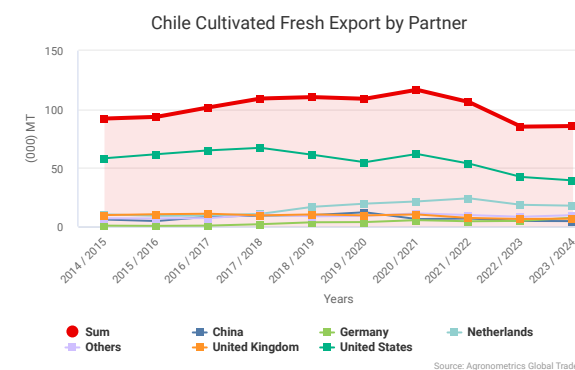
Chile Cultivated Fresh Exports by Partner (000) MT

Reporter	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024
United States	54.84	61.88	53.68	42.30	39.33
Netherlands	19.51	21.39	24.09	18.53	17.77
United Kingdom	9.53	10.31	7.31	6.44	6.74
Germany	3.80	5.45	4.48	4.83	7.54
China	12.17	6.35	6.83	4.75	4.62
Others	9.10	11.22	9.79	8.33	9.71
Chile Totals	108.94	116.62	106.17	85.18	85.71

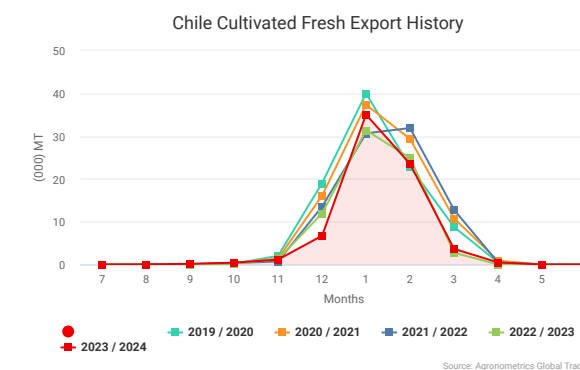
Source: Agronometrics Global Trade Data

Innovadoras soluciones UNITEC para la clasificación de la calidad externa e interna de tus arándanos

Con Blueberry Vision 3 y UNIQ Blueberry tus arándanos tienen más valor. Nada ha sido dejado al azar gracias a una eficaz y completa clasificación de las calidades: **calidad externa, calidad interna, defectos de forma**, además del **calibre óptico** y del **color**.



Source: Agronometrics Global Trade Data



Source: Agronometrics Global Trade Data





Chile Country Member Summary

Adapted from a Report by the Chilean Blueberry Committee, ASOEX

Chilean fresh blueberry exports exceeded 86,000MT in the 2023-2024 season, representing an increase compared to the initial estimate and a change in the adjusted trend for the Chilean supply in recent years. The initial estimate pointed to a new decline, basically due to the balance of hectares uprooted and planted, as well as the migration of orchards that no longer have space in the fresh market into the frozen industry.

However, the supply situation in the market generated opportunities for Chilean exporters that allowed exports to increase above the initial estimates, marking the importance of Chile's supply for global markets. During the first stage of the season the quality was very good, and the delay in the fruit ripening allowed harvesting at a good pace and being able to reach the markets with very good quality and consistency. Then came the much-announced delayed production from Peru, which, together with the highly concentrated volume from Chile, generated aggregated volumes in export markets that were higher than in previous seasons, with the consequent impact on prices.

The Chilean blueberry industry must continue to think about a well-supplied market, where there is supply from different origins and where the firmness and flavor of the fruit are key factors to participate in this industry. From the Chilean Blueberry Committee's perspective, we continue working with growers and exporters to promote a competitive offering from Chile. With current conditions requiring quality and productivity, we are seeking logistical improvements and new technologies in different parts of the productive chain, which will allow us to generate space for the Chilean supply in order to grow again.

We have the experience of years and data to make the best decisions in terms of technologies and varieties, whose replacement is already beginning to show a varietal mix exported from Chile that is renewed year after year.

Chile Report Team Narrative

For decades Chile enjoyed a position as the world's leading blueberry exporter before its relatively competition-free window was squeezed by Peru and others such as Mexico and Morocco. The country has faced difficulties with profitability and market positioning for several years, amidst a slow-moving transition to better-performing cultivars that is yet to gain the necessary traction for its impact to be felt globally and improve the industry's fortunes.

This change has been slow-moving due to a multitude of factors, including the "atomized" nature of a sector characterized by many smaller growers and exporting companies. It is worth noting that a Rabobank report shows industry consolidation on the handling side with the number of exporting firms declining from 190 to 110 in the five years to 2022-23. Other influencing factors include a climate that is more conducive to mid and high chill northern highbush type cultivars that have a longer timeline from field establishment to commercial yield when converting to new varieties (although southern highbush are grown in certain areas), and the challenging commercial cocktail of increased costs, labor constraints, lower market prices, and higher interest rates, which all conspire against the procurement of loans to invest in new varieties. In summary, margin compression and distinct ROI dynamics together with cautious industry psychology have conspired to create a lag in response to competitive positioning opportunities in the Chilean industry. In response, medium-sized growers are increasingly receiving loans from export businesses to pay for the replanting of orchards.

Chile's industry and talent helped pave the way for the 52-week blueberry supply dynamic the industry experiences today. Its investors and agronomists (together with American and Spanish colleagues) were instrumental in the development of Peru's sector, received some alleviation from its woes in the 2023-24 season thanks to the shortage of supply from its northern neighbor due to the El Niño weather phenomenon; hot weather that didn't affect Chilean production nearly to the same degree.

Unlike Peru, Chile's fresh blueberry exports declined marginally (and much less than initially expected) in 2023-24 as exporters sought to capitalize on higher global prices, including growers who had previously shifted their focus to processing due to low prices but reverted to the fresh market opportunistically; an outcome that was predictable under the circumstances, but also undermined serious efforts to improve the reputation of Chilean blueberries. As referenced in last year's report, the Chilean Blueberry Committee has introduced a non-mandatory 'traffic light' system to guide growers on which varieties to export. The guidance is subject to ongoing reclassification and comes with the important caveat that field and post-harvest management as well as geographical selection are also highly important, but on the simplest level it comprises 'green light' varieties both new and old that are known to perform well on longer journeys and are well received in the market, 'yellow light' varieties which can be exported but require more care, and a batch of 'red light' varieties whereby it is recommended not to export, selling to the frozen market or the domestic fresh market instead. It should also be noted that the domestic market continues to grow strongly and does not only comprise export rejects; some growers of proprietary varieties are even finding that early in the season, around October, they can receive export-level prices for a limited volume locally.

It is remarkable to note that despite the opportunities to be gained from high market prices, and in a year when Chilean exports were up overall, the volume of "red light" varieties was still down 27%. This likely reflects growers pulling out these less desirable cultivars and/or diverting them to processing, while an only marginal increase in "green light" varieties is a product of the delay for new plantings of newer proprietary genetics to reach maturity.

Indicative of Chile's future prospects, the presence of some of the world's leading plant genetics companies shows that opportunity abounds for successful varietal transition, and there are proven examples that the industry would like to see given more prominence in discussions with growers as

a shining light to follow, and also banks when assessing loan applications.

The genetic introductions taking place in Chile can be put into two categories: higher chill genetics that represent most of the change taking place and driven primarily by North American partners; and low-chill genetics with a more diverse global participation from a variety of continents. The southerly limit for planting of the latter is regarded as the Maule region, which is about 100km north of Chile's blueberry epicentre around Chillan in the region of Ñuble. The northerly band for such low-chill varieties is around the nation's capital Santiago, as well as in limited volumes a few hours' drive north of there in Ovalle. Such low-chill genetics have been grown in Chile since around 2014 in pots and under tunnels, or at least under netting depending on the microclimate. This fruit competes with Peru, but is generally targeted at markets where Peru does not have much of a presence, and if it does compete with Peru it is mostly up against open Biloxi varieties which are not as highly regarded on flavor or size.

One consultant who is assisting in Chile's varietal transition claims that in order for the country to be competitive, new cultivars introduced must be able to yield 18-20MT/ha, and importantly, at least 80% of that yield must be "exportable", meaning it would comply with all the market requirements around a truly desirable fruit that would encourage repeat sales. Currently the Chilean supply is dominated by the Duke variety which only tends to yield around 10MT/ha, while Legacy can yield up to 30MT/ha but is seen as less attractive to many global buyers. Based on Chile's current surface area and production, it has been estimated that the average yield

is 8MT/ha, however such a figure is inevitably driven down by the prevalence of younger plantings with new varieties that are still in the early stages of maturity; a fact itself which is encouraging.

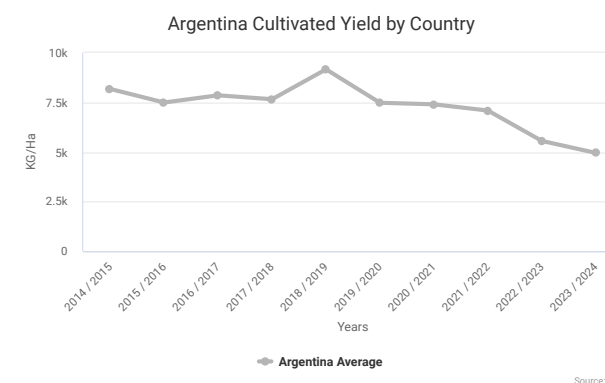
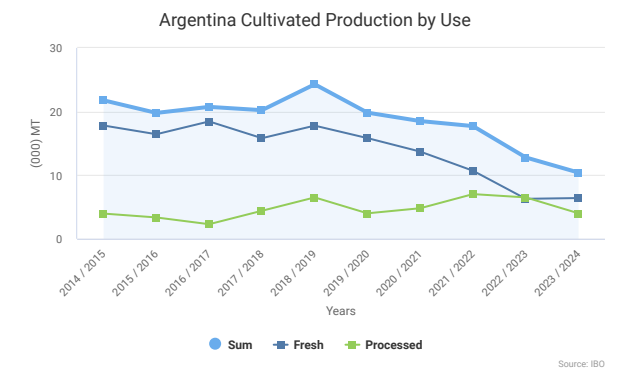
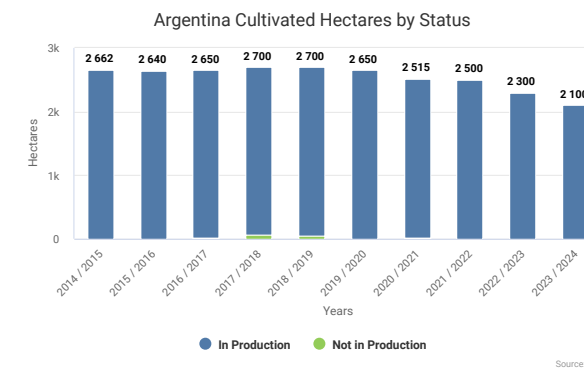
Looking at the numbers during Chile's peak export months of January and February, exports were higher by 8.9% and 1.9% respectively, although the average price increase is reflected in respective value jumps of 24.8% and 16.5% respectively. Unlike in previous years where we have highlighted an increased importance on the organic market, the sentiment now is that this category is no longer as attractive due to a narrowing gap between conventional and organic prices for fresh blueberries. In frozen, however, the difference is greater, and even in fresh, the vast majority is exported to the United States. For the category overall, one interesting development this past season was a 10% lift in exports to Europe (including the UK), while exports to the United States and Asia declined. Whilst many growers who are normally in the frozen category shifted to fresh, frozen exporters received improved returns thanks to a surge in pricing.

Despite these windfalls in 2023-24, the message that the industry is giving growers is more circumspect, describing the past season as an anomaly and encouraging stakeholders to anticipate a return to extraordinarily large Peruvian volumes in the future and continue on the path to recalibrating their operations around quality genetics and improved shelf life. In the words of one source, if Peru had exported what was initially forecasted last year, the difference alone was equivalent to the total campaign from Chile, so productivity and quality must continue to be top of mind.

ARGENTINA



Planting and Production Data, Figures & Commentary (Denominated in Hectares and Thousands of Metric Tons)



Argentina 2023/2024 Production Metrics

Hectares Planted:	2,100 Ha
Organic:	70.00%
Under Structure:	60.00%
Hydroponics:	Not Reported
New Genetics:	5.00%
Hectares in Production:	2,100 Ha
Production:	10.40 (000) MT
Growth in Production ¹ :	▼-2.38 (000) MT (-18.62%)
Growth from Hectares ² :	▼-1.11 (000) MT (-46.69%)
Growth from Yield ³ :	▼-1.27 (000) MT (-53.31%)
Yield:	4,952.38 (Kg/Ha)
Exports:	5.83 (000) MT
Imports:	0.21 (000) MT

Source: IBO and Agronomics

¹ Volume change compared to previous season

² Change in volume due to hectares entering or leaving production

³ Change in volume due to field productivity (yields)



Argentina Country Member Summary

Adapted from the report by the Argentinean Blueberry Committee Argentine

Overview of the 2023 Export Campaign

The 2023 Argentine blueberry export campaign saw a remarkable increase, with total exports rising nearly 20% compared to the previous year. Argentina exported 10,224 metric tons (MT) of blueberries in the 2022 season of which 6,336MT were fresh and 3,888 MT were frozen, while around 4,000MT were destined for the domestic market.

Fresh Blueberry Exports

One of the most notable achievements of the 2023 campaign was the substantial increase in the export of fresh blueberries. There was a 50% increase in fresh blueberry exports compared to the previous year. This surge was primarily driven by a decrease in blueberry volumes from Peru during Argentina's peak season, providing a competitive advantage for Argentine exporters. Argentina could respond to the markets on time by using air transport providing certainty and predictability.

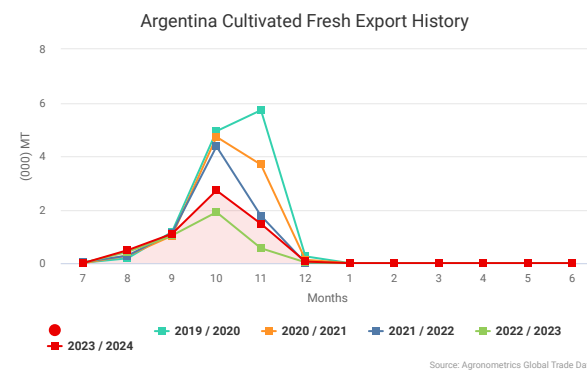
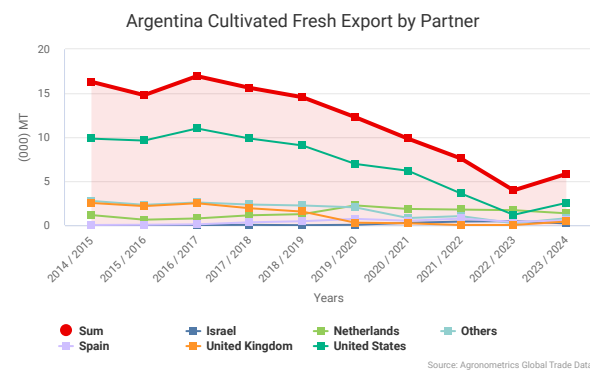
Key Export Markets

The European Union continues to be the leading market for Argentine fresh blueberries, accounting for 50% of the total export volume (3,145 MT). This consistent demand from the EU underscores the quality and reliability of Argentine blueberries in the European market. There was a significant increase in exports to North America (United States and Canada). The volume of fresh blueberries exported to these markets rose by an impressive 121% compared to the previous year, representing 45% of the total export volume (2,717 MT).

Argentina Cultivated Fresh Exports by Partner (000) MT

Reporter	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024
United States	6.96	6.19	3.61	1.18	2.53
Netherlands	2.25	1.85	1.77	1.71	1.35
Spain	0.72	0.51	0.74	0.38	0.54
United Kingdom	0.28	0.22	0.02	0.02	0.42
Ireland	0.08	-	-	-	0.27
Others	1.98	1.08	1.44	0.68	0.72
Argentina Totals	12.28	9.84	7.59	3.96	5.83

Source: Agronometrics Global Trade Data



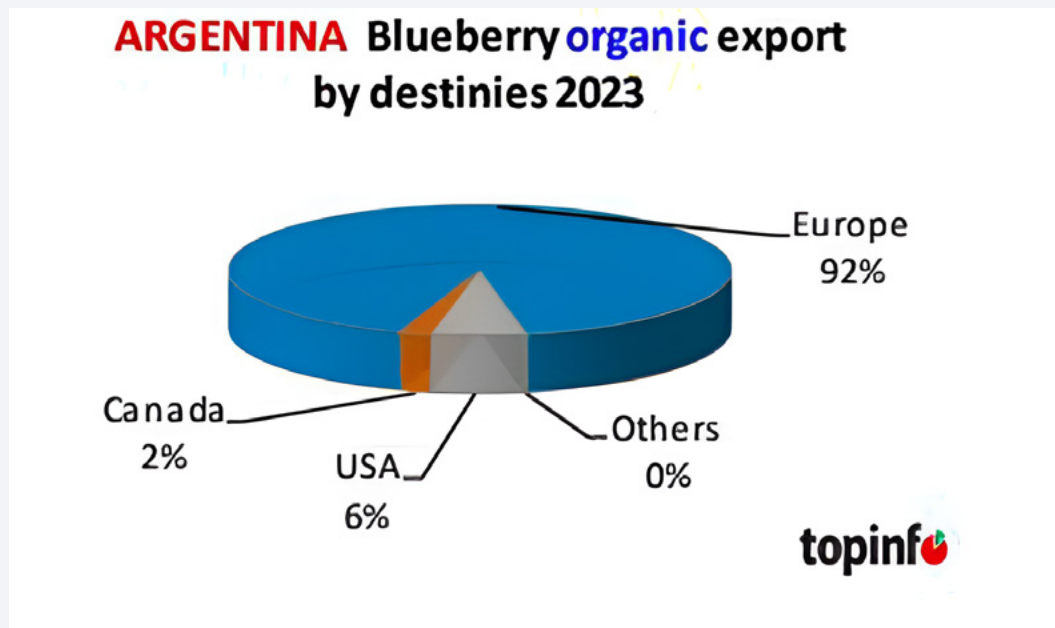
ARG: Blueberry Expo 23/24 vs 22/23

Region	2022/23	2023/24	Dif (%)
USA	2.555	1.185	116%
Canada	162	45	256%
NorthAm	2.717	1.230	121%
UE	2.677	2.290	17%
UK	467	38	1140%
Total EU	3.145	2.328	35%
Asia	292	569	-49%
Latam	182	154	18%
TOTAL	6.336	4.280	48%

Source: INDEC, Senasa

Organic Production and Market Trends

Another aspect to highlight from this campaign is the volume of organic blueberry production, which reached nearly 50%. The principal destination for organic blueberries is Europe, which absorbs 92% of Argentina’s total organic exports. Within Europe, Germany and the United Kingdom showed the most significant growth, with increases of 445% and 125% respectively. Some companies have achieved 100% organic production, reflecting a growing trend towards sustainable production models.



Transportation Logistics

This campaign was also characterized by a high volume of air shipments, accounting for 90% of the total. This shift towards air transport was driven by market demands, ensuring the timely delivery of fresh produce to meet consumer expectations.

Commercial Strategy

For the past five years, the national blueberry sector in Argentina has shifted towards a triple-impact business model. This approach emphasizes not only the taste and quality of the product but also the methods of production. As part of this strategy, a due diligence system focusing on decent work conditions and the promotion of education has been developed. Currently, 50% of the production is certified under these standards. This commitment allows Argentina to position itself in more demanding markets and to tap into niche markets that seek and value these sustainable and ethical production processes

- 1** SOCIAL AND NATIONAL DUE DILIGENCE SYSTEM FOCUSED ON PREVENTING CHILD LABOR AND PROMOTING EDUCATION.
- 50%** 50% OF THE NATIONAL PRODUCTION WITH SOCIAL TRACEABILITY: 4,788,000 KGS IN 2023.
- +29,000** WORKERS TRAINED OVER THE PAST 3 YEARS.
- 7** COMMUNITY SERVICES (CHILD CARE CENTERS AND YOUTH SPOTS CENTERS) BENEFITTING OVER 550 CHILDREN PER YEAR.
- +\$44** MILLION IN SOCIAL INVESTMENT IN 2023.

Argentina Report Team Narrative

Argentina was perhaps the first producing country to feel the heat of Peru’s ascendance as a serious blueberry exporter. As one of the pioneers of South American production at the turn of the Millennium, harvesting earlier than Chile with a privileged position in overseas markets in September and early October. But the rise of Peru eroded this timing advantage, forcing Argentina to lift its competitiveness through various means.

Between 2016 and 2022, Argentina’s annual exports of fresh blueberries fell 74% to 4,280MT, however – as referenced by the Argentinean Blueberry Committee (ABC) in its country member summary for this edition – exports of fresh blueberries rose by more than half in 2023 to 6,336MT. This uplift was in direct response to the shortage of Peruvian blueberries in global markets during Argentina’s prime window with overseas sales starting in August, peaking in October, and carrying

through to December in limited volumes. Unlike other supplier countries that capitalized on these market opportunities, Argentina's average pricing for the season was practically unchanged, which likely reflects the pivots made by some many growers who had originally planned to send their fruit to processing or to the local market (with relatively lower shelf life requirements) ended up shipping that same fruit abroad as fresh product. In contrast to trends over many years where the share of shipments sent to the U.S. (its traditional market) has been on the decline (actually falling below the Netherlands in 2022), it returned to the number one spot last year with a 43% share (versus 30% in 2022).

It is worth mentioning that the overall decrease in Argentina's blueberry export on the trend line belies improvements in yield and operational efficiency for the country, which has seen a large reduction in surface area dedicated to the crop over the past decade, with several high-profile exits over the past couple of years.

The industry's relatively small operations have embraced technology and vertical integration. With a climatic tendency towards rain and hail events, the majority of blueberry orchards are now planted in protected systems. Most Argentine growers close the containers for export within their own packhouses, but not all have been able to keep pace with the rapid operational changes required to survive.

Due to the opportunistic pivot to fresh, the numbers were down in 2023 for frozen, but not by all that much (-12%). The infrastructure that exists for processing is predominantly in

Buenos Aires, which represents part of Argentina's production but the majority is grown in the Northeast (Corrientes, Entre Rios) and Northwest (Salta, Tucuman, Catamarca).

Following a 32% uptick in the previous year for fresh blueberry volume sold domestically, the export boost offset some of this momentum but also not to a great degree with just a minimal drop of around 2.5%.

For several years now the industry has been attempting to reduce its costs through a higher share of sea-freight shipping, but these efforts were hampered by the pandemic's disruption to maritime services – an issue that was felt keenly toward the end of the 2021 season. Even as logistical services for air and seafreight improved, some exporters opted to only send fruit by plane to capitalize on niche opportunities in very specific markets that can be accessed quickly by air, thus preserving shelf life; Israel, the UAE and Southeast Asia are prime examples of this strategy. This approach was seen prior to the El Niño year and was accentuated in 2023 amidst the shortage in Peru – as noted by the committee, it accounted for 90% of shipments.

The adoption of new varieties has been another strategy for Argentina's growers to lift their competitiveness. A U.S.-headquartered nursery led the way in introducing new cultivars to the country in the 90s and its genetics contributed to a boom around 14 years ago and has a new lines it is rolling out aggressively, while one leading Australian breeder has an Argentine partner that had its first commercial crop with new genetics in 2022 and has expressed intentions to ramp over time.

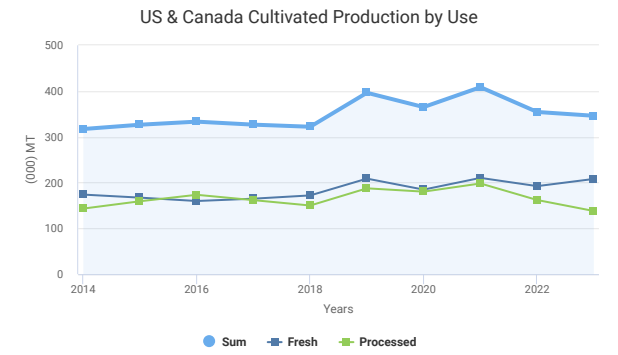
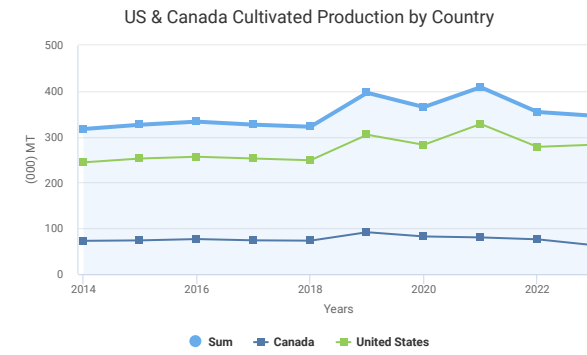
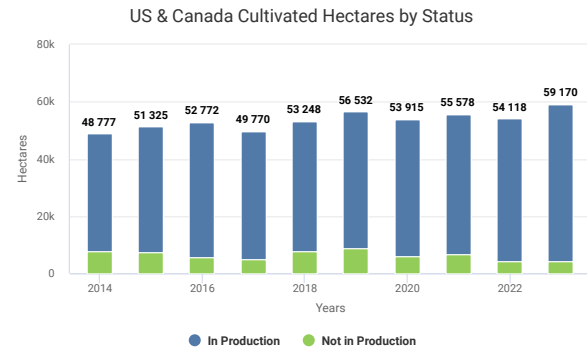
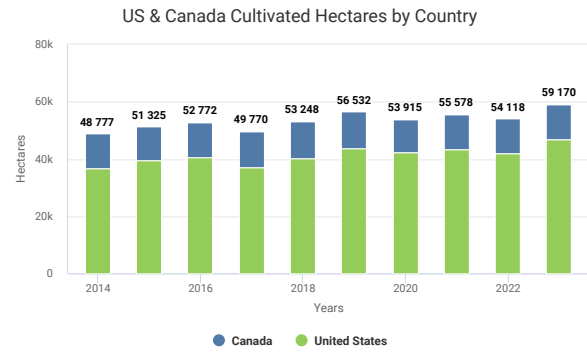
US & CANADA

Planting and Production Data, Figures & Commentary (Denominated in Hectares and Thousands of Metric Tons)

US & Canada Cultivated Hectares by Country

US & Canada	Hectares Planted					2023 Production (000) MT		
	2019	2020	2021	2022	2023	Fresh	Process	Total
Growth Totals								
United States	43,530	42,219	43,214	42,084	46,709	173.95	108.87	282.82
Western:	15,095	16,268	17,361	17,604	18,299	68.43	75.34	143.77
<i>Washington</i>	6,758	8,053	8,175	9,024	9,926	18.50	43.16	61.66
<i>Oregon</i>	5,382	5,463	5,666	5,342	5,500	26.53	26.75	53.28
<i>California</i>	2,954	2,752	3,521	3,238	2,873	23.40	5.43	28.83
Southern:	14,871	14,097	15,093	13,919	16,722	69.32	12.31	81.63
<i>Georgia</i>	6,556	7,203	7,810	6,799	8,660	36.00	8.15	44.15
<i>North Carolina</i>	3,521	2,954	2,995	3,035	3,764	18.37	3.94	22.31
<i>Florida</i>	2,064	2,145	2,469	2,266	2,469	12.00	-	12.00
<i>Texas</i>	600	655	720	720	725	1.50	0.00	1.50
<i>Miss/Louisiana</i>	1,850	850	809	809	815	0.90	0.22	1.12
<i>Southern Others</i>	280	290	290	290	290	0.55	0.00	0.55
MidWest:	9,282	7,889	7,281	7,038	8,016	22.46	17.60	40.06
<i>Michigan</i>	8,336	6,961	6,151	5,908	6,839	20.40	17.24	37.64
<i>Indiana</i>	300	283	485	485	530	1.36	0.36	1.72
<i>Midwest Others</i>	645	645	645	645	647	0.70	-	0.70
Northeastern:	4,283	3,964	3,479	3,522	3,671	13.74	3.62	17.36
<i>New Jersey</i>	3,723	3,399	2,914	2,954	3,100	13.60	3.62	17.22
<i>New York</i>	560	565	565	568	571	0.14	0.00	0.14
Canada	13,002	11,696	12,364	12,034	12,461	34.12	29.12	63.24
<i>British Columbia</i>	12,140	10,705	11,215	10,810	11,300	30.12	29.12	59.24
<i>Canada Other</i>	862	991	1,149	1,224	1,161	4.00	-	4.00
US & Canada Totals	56,532	53,915	55,578	54,118	59,170	208.07	137.99	346.06

Source: IBO

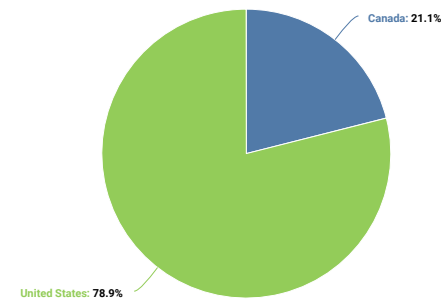


US & Canada Cultivated Production by Country(000) MT

US & Canada	2021			2022			2023		
	Fresh	Process	Total	Fresh	Process	Total	Fresh	Process	Total
Productions Totals									
United States	177.06	151.12	328.18	159.73	118.46	278.19	173.95	108.87	282.82
Western:	90.50	104.00	194.50	75.12	104.50	179.62	68.43	75.34	143.77
Washington	30.00	56.00	86.00	23.14	56.25	79.39	18.50	43.16	61.66
Oregon	31.50	40.50	72.00	28.57	42.81	71.38	26.53	26.75	53.28
California	29.00	7.50	36.50	23.41	5.44	28.85	23.40	5.43	28.83
Southern:	50.11	25.47	75.58	43.59	11.80	55.39	69.32	12.31	81.63
Georgia	23.00	20.15	43.15	17.23	7.26	24.49	36.00	8.15	44.15
North Carolina	12.15	5.10	17.25	12.02	4.54	16.56	18.37	3.94	22.31
Florida	12.00	0.00	12.00	11.38	-	11.38	12.00	-	12.00
Texas	1.65	0.00	1.65	1.50	0.00	1.50	1.50	0.00	1.50
Miss/Louisiana	0.81	0.22	1.03	0.91	0.00	0.91	0.90	0.22	1.12
Southern Others	0.50	0.00	0.50	0.55	0.00	0.55	0.55	0.00	0.55
MidWest:	20.30	17.65	37.95	27.27	0.34	27.61	22.46	17.60	40.06
Michigan	18.00	17.50	35.50	25.15	0.26	25.41	20.40	17.24	37.64
Indiana	1.60	0.15	1.75	1.42	0.08	1.50	1.36	0.36	1.72
Midwest Others	0.70	-	0.70	0.70	-	0.70	0.70	-	0.70
Northeastern:	16.15	4.00	20.15	13.75	1.82	15.57	13.74	3.62	17.36
New Jersey	16.00	4.00	20.00	13.61	1.82	15.43	13.60	3.62	17.22
New York	0.15	0.00	0.15	0.14	0.00	0.14	0.14	0.00	0.14
Canada	33.29	47.03	80.32	32.61	43.55	76.16	34.12	29.12	63.24
British Columbia	30.04	47.03	77.07	29.03	43.55	72.58	30.12	29.12	59.24
Canada Other	3.25	-	3.25	3.58	-	3.58	4.00	-	4.00
US & Canada Totals	210.35	198.15	408.50	192.34	162.01	354.35	208.07	137.99	346.06

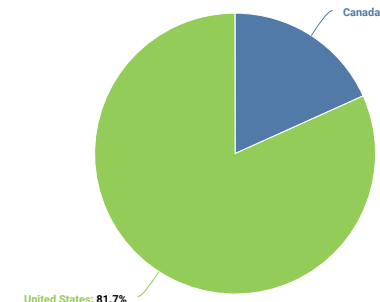
Source: IBO

2023 US & Canada Cultivated Hectares by Country

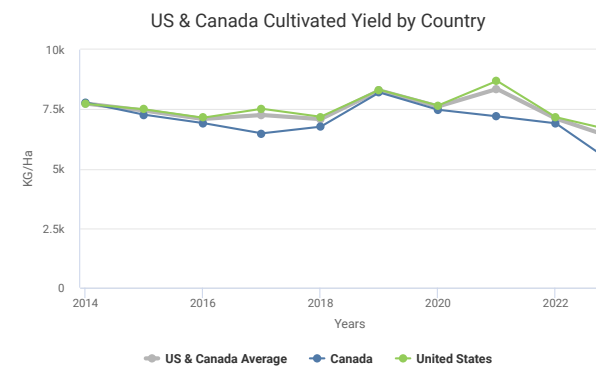


Source: IBO

2023 US & Canada Cultivated Production by Country



Source: IBO



Source: IBO

US & Canada 2023 Production Metrics

Hectares Planted:	59,170 Ha
Hectares in Production:	55,086 Ha
Production:	346.06 (000) MT
Growth in Production ¹ :	▼8.29 (000) MT (-2.34%)
Growth from Hectares ² :	▲37.20 (000) MT (448.75%)
Growth from Yield ³ :	▼45.47 (000) MT (-548.53%)
Yield:	6,282.02 (Kg/Ha)
Exports:	46.03 (000) MT
Imports:	295.29 (000) MT

Source: IBO and Agronomics

¹ Volume change compared to previous season

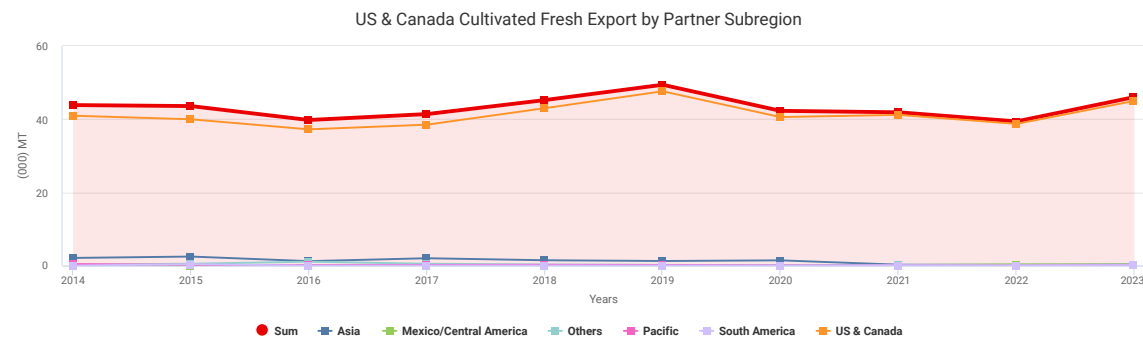
² Change in volume due to hectares entering or leaving production

³ Change in volume due to field productivity (yields)

US & Canada Exports by Partner Subregion (000) MT

Subregion	2019	2020	2021	2022	2023
US & Canada	47.60	40.56	41.17	38.71	44.98
Asia	1.26	1.44	0.25	0.22	0.31
Mexico/Central America	0.11	0.08	0.15	0.35	0.29
Pacific	0.18	0.08	0.05	0.02	0.16
South America	0.03	0.02	0.06	0.06	0.13
Others	0.21	0.08	0.19	0.03	0.15
US & Canada Totals	49.39	42.26	41.87	39.38	46.03

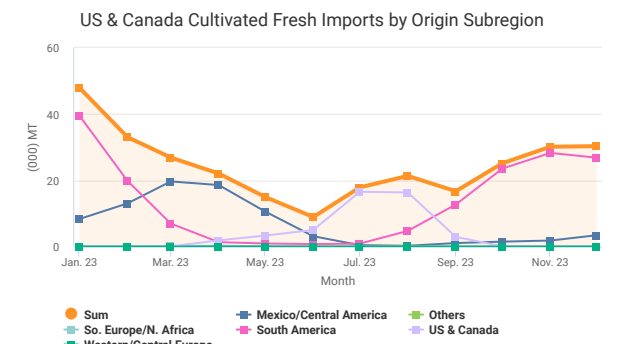
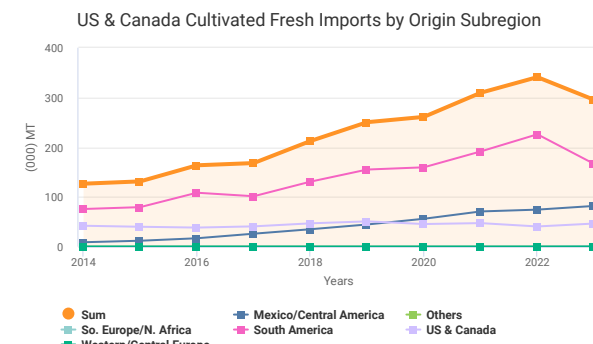
Source: Agronometrics Global Trade Data



US & Canada Imports by Origin Subregion (000) MT

Origin	2019	2020	2021	2022	2023
South America	154.97	159.47	191.38	225.88	166.34
Mexico/Central America	44.49	55.96	70.72	74.37	81.78
US & Canada	50.75	45.40	47.25	40.51	46.38
So. Europe/N. Africa	0.01	0.04	0.08	0.11	0.76
Western/Central Europe	0.00	0.00	-	-	0.02
Others	0.01	0.00	0.00	-	0.02
US & Canada Totals	250.24	260.88	309.44	340.86	295.29

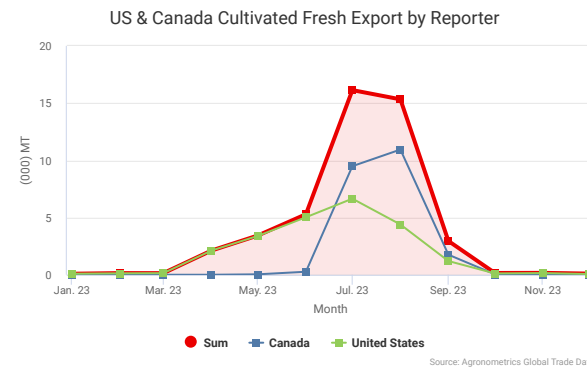
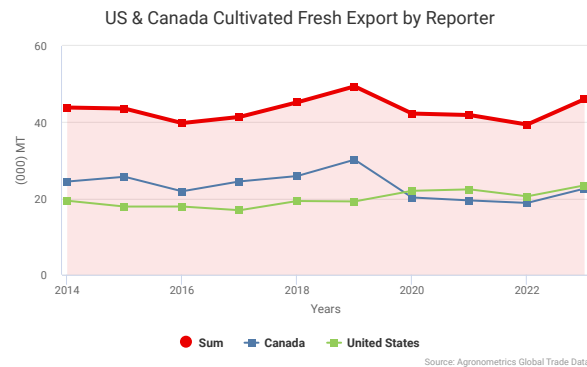
Source: Agronometrics Global Trade Data



US & Canada Exports by Reporter (000) MT

Subregion	2019	2020	2021	2022	2023
United States	19.22	22.00	22.38	20.55	23.44
Canada	30.17	20.26	19.48	18.83	22.59
Others	-	-	-	-	-
US & Canada Totals	49.39	42.26	41.87	39.38	46.03

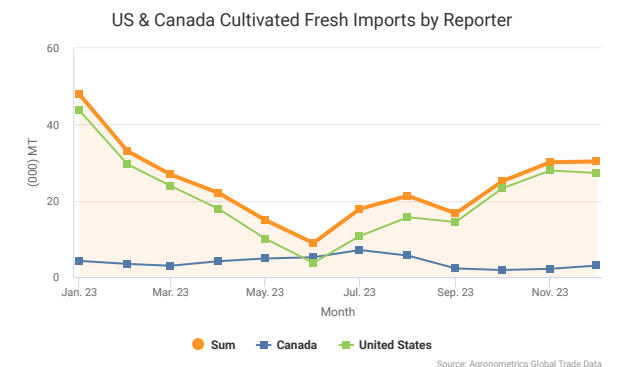
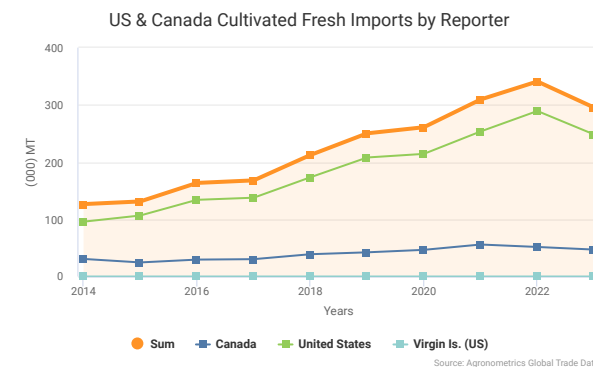
Source: Agronometrics Global Trade Data



US & Canada Imports by Reporter (000) MT

Reporter	2019	2020	2021	2022	2023
United States	207.98	214.30	253.54	289.24	248.26
Canada	42.25	46.58	55.89	51.62	47.03
Others	-	0.00	-	-	-
US & Canada Totals	250.24	260.88	309.44	340.86	295.29

Source: Agronometrics Global Trade Data



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US & Canada Report Team Narrative

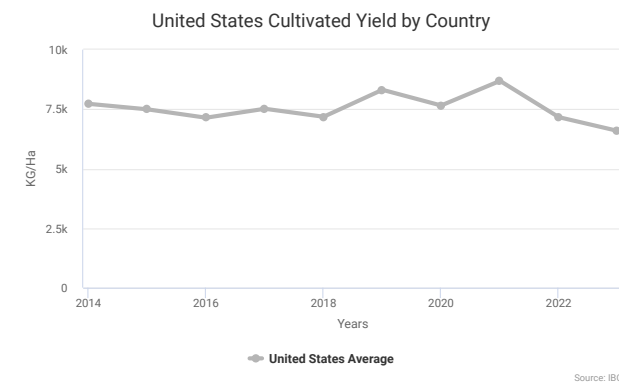
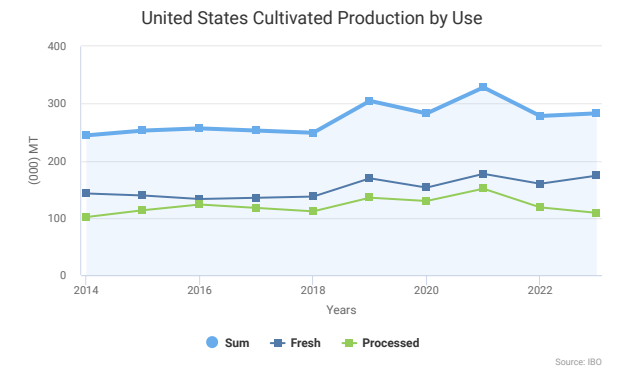
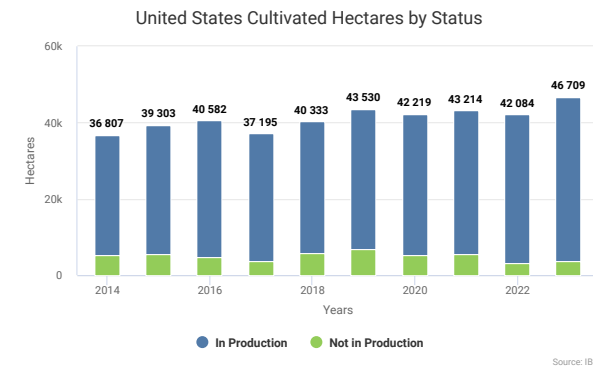
Here we provide an in-depth review of the state of the industry in the United States and Canada. Please visit the following country reports:

- United States
- Canada

UNITED STATES



Planting and Production Data, Figures & Commentary (Denominated in Hectares and Thousands of Metric Tons)



United States 2023 Production Metrics

Hectares Planted:	46,709 Ha
Hectares in Production:	42,927 Ha
Production:	282.82 (000) MT
Growth in Production ¹ :	▲4.63 (000) MT (1.66%)
Growth from Hectares ² :	▲28.83 (000) MT (622.65%)
Growth from Yield ³ :	▼24.18 (000) MT (-522.31%)
Yield:	6,588.06 (Kg/Ha)
Exports:	23.44 (000) MT
Imports:	248.26 (000) MT

Source: IBO and Agronomics

¹ Volume change compared to previous season

² Change in volume due to hectares entering or leaving production

³ Change in volume due to field productivity (yields)

United States Cultivated Fresh Exports by Partner (000) MT

Reporter	2019	2020	2021	2022	2023
Canada	17.55	20.44	21.78	19.96	22.53
Mexico	0.10	0.07	0.14	0.35	0.29
Japan	0.19	0.11	0.03	0.02	0.16
Australia	0.12	0.07	0.04	0.01	0.16
South Korea	0.59	0.68	0.09	0.09	0.08
Others	0.67	0.63	0.31	0.13	0.23
United States Totals	19.22	22.00	22.38	20.55	23.44

Source: Agronomics Global Trade Data



United States Country Member Summary

Adapted from the report by the North American Blueberry Council (NABC)

USA Blueberries 2023 Season Production and Historical Trends

2023 brought challenging growing conditions for both domestic producers and importers. According to the 2023 NABC Crop Report, the U.S. market, between domestic and import supply, saw production/market volume decrease by 9.6% compared to the previous year.

Table 1. Highbush Blueberry U.S. Production and Imported Volumes in 2023 (in millions of pounds)

	Total lbs (MM)	Volume % Change	
		vs. 2022	vs. 2021
	2023		
Domestic	637.2MM	+3.3%	-6.2%
Import	489.1MM	-26.5%	+7.7%
Total	1,126.3MM	-9.6%	+0.8%

Source: NABC CROP REPORT 2023

Total blueberry imports from Peru were down 25% in total volume from 2022 to 2023, with a flatter distribution curve and a peak month of November in 2023 compared to October in 2022. The challenge of El Niño pushed the Peruvian season later and resulted in less volume overall. The top importing countries into the U.S. were Peru at 44%, Mexico at 29%, Chile at 16%, and Canada at 9%, with total imports in 2023 reaching 547,324,649 pounds.

On the supply side, the U.S. had a record year for exports, reaching 120 million pounds of fresh and processed blueberries, surpassing the previous record of 108 million pounds. Of these exports, 79% went to Canada, 11% to Korea, 3% to Australia, and 3% to Japan. This made 2023 a record-breaking year for U.S. blueberry exports.

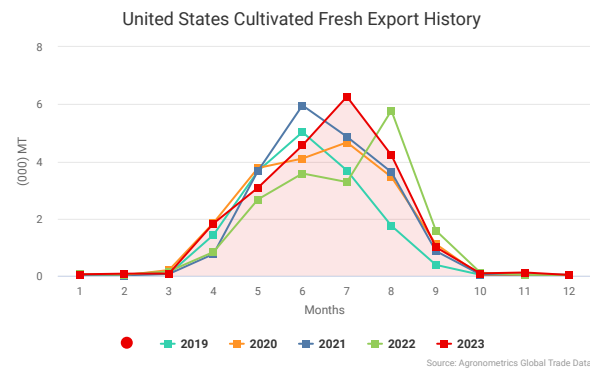
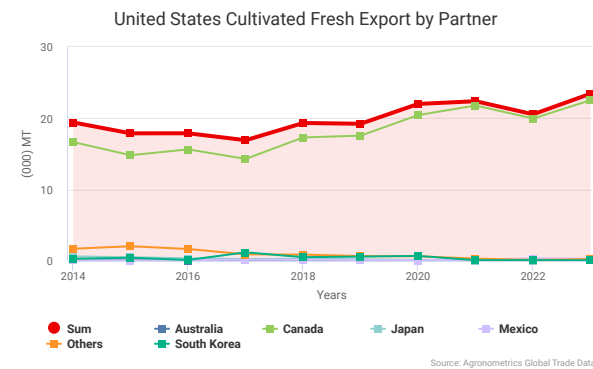
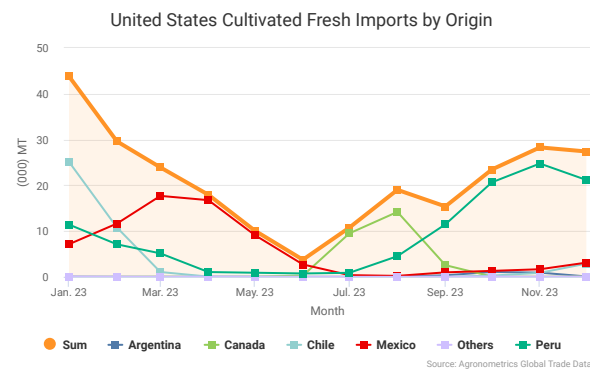
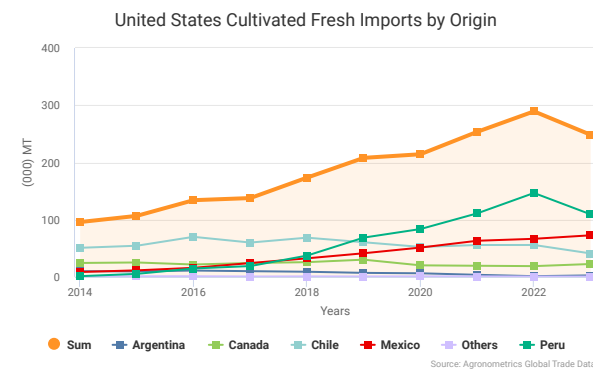
2023 Overview: Performance at Retail

Despite rising inflation reducing the purchasing power of some consumers, blueberry consumption in the United States showed strong positive trends in 2023. Total blueberry sales (including fresh and frozen) increased by 7.8% in dollars, adding an additional \$242 million in value to the retail category, demonstrating significant growth in

United States Cultivated Fresh Imports by Origin (000) MT

Reporter	2019	2020	2021	2022	2023
Peru	68.60	83.56	111.02	146.60	109.23
Mexico	41.23	51.17	63.09	66.50	72.63
Chile	60.49	52.33	55.67	55.70	40.92
Canada	30.05	20.12	19.39	18.75	22.45
Argentina	6.96	6.23	3.57	1.20	2.56
Others	0.65	0.90	0.80	0.49	0.47
United States Totals	207.98	214.30	253.54	289.24	248.26

Source: Agronomics Global Trade Data



The Next Blue Wave Is Coming!

The blueberry industry is expecting an unprecedented crop to come to market over the next three years. Are we prepared?

The U.S. Highbush Blueberry Council (USHBC) leads the industry in ensuring blueberries make their way onto shopping lists and into consumers' carts. We're the industry's only organization dedicated to growing consumer demand for blueberries through direct consumer marketing and promotions, empowering the industry to make blueberries the world's favorite fruit!

Be part of ALL the inspiring possibilities!



Visit ushbc.blueberry.org to learn more about the extraordinary progress we've made as an industry and the inspiring possibilities that lie ahead.

market value. Fresh blueberry sales saw an impressive 8.1% increase in dollars despite a slight 0.4% decrease in volume, indicating strong price resilience and consumer willingness to pay more for fresh blueberries.

Frozen blueberry sales also exhibited positive trends, with a 1.4% increase in dollars, showing steady demand even with a 2.4% decrease in volume. Blueberries continue to grow their share of the total berry market. In comparison to other berries, fresh blueberries saw a 7.8% dollar increase over 2022, while other fresh berries increased by only 2.3% in dollars. Additionally, blueberries' presence in the frozen berry market is notable, with a 1.4% advantage in dollar growth over other frozen berries. This underscores blueberries' robust position and growing importance within the overall berry category.

Domestic and imported blueberries create a year-round market for blueberries in the United States, which helps keep blueberries top-of-mind and at the top of consumers' weekly shopping lists. Continuous access to high-quality fresh and frozen blueberries remains a driver for retailer enthusiasm to prominently feature and promote blueberries in the berry patch and the frozen aisle.

Table 2. Blueberry Annual Retail Sales: 2023 vs. 2022 and 2021

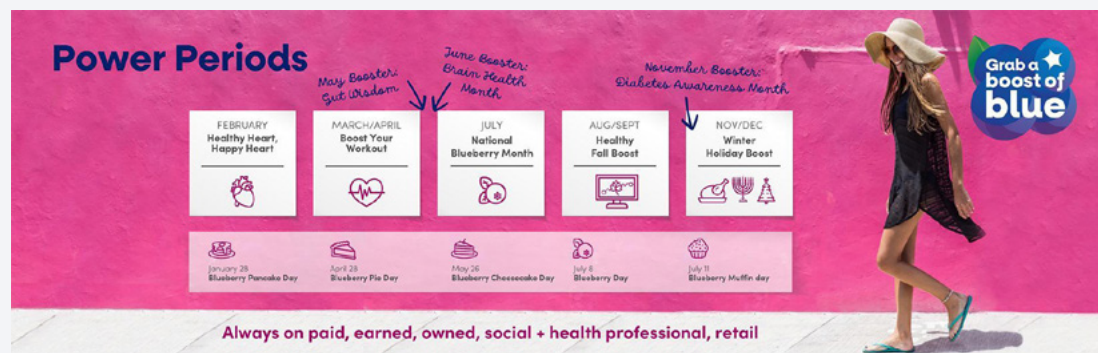
	Dollars (\$)	% Dollar Chg.		Volume (Lbs)	Volume % Chg.	
	2023	vs. 2022	vs. 2021	2023	vs. 2022	vs. 2021
Total Category	\$3,110,004,776	+7.8%	+5.5%	593,426,389	-0.5%	+2.0%
Fresh Segment	\$2,969,891,405	+8.1%	-0.4%	565,017,777	-0.4%	+1.7%
Frozen Segment	\$140,113,371	+1.3%	+13.6%	28,408,612	-2.4%	+8.9%

Source: SPINS MULO TOTAL US & NATURAL CHANNELS



Growing Consumer Demand

USHBC's Grab a Boost of Blue marketing program continued to drive consumer enthusiasm and demand for blueberries in 2023 ([USHBC 2023 Annual Impact Report](#)). To remind consumers of the healthy boost they get from a handful of blueberries, USHBC's strategic positioning and call to action, "Grab a Boost of Blue," was featured in advertising, at point of sale, in social media channels and on packaging.



USHBC’s marketing and retail efforts in 2023 were strategically aligned with power periods, including American Heart Month, which featured participation from nine retailers operating nearly 1,600 stores; and National Blueberry Month, with participation from 30 retailers who collectively operate 9,400 stores.

Health Research Commercialization Engine

USHBC’s health research and marketing programs work together as a coordinated commercialization effort to maximize the value of the industry’s investment in health research and drive daily consumption of blueberries across consumer and stakeholder audiences. In 2023, several new USHBC sponsored research studies were published, highlighting the many health benefits of blueberries. These studies included:

- [New Research Illustrates Change in Habitual Intakes of Eating More Flavonoid-Rich Foods Like Blueberries and Mortality](#)
- [New Research Links Blueberries to Gut Health Benefits](#)
- [New Research Illustrates That Daily Consumption of Blueberries Improves Endothelial Function in Postmenopausal Women With High Blood Pressure](#)

MOU Funding – Providing More To Accomplish More

The USHBC also greatly benefited from the contributions of a growing list of companies that remain committed to unified success of the blueberry category.

The NABC’s Memorandum of Understanding (MOU) was established in 2021 with leading importers to support driving profitable demand of fresh and processed blueberries. In 2023, the MOU raised over \$2.5 million, with over \$2.2 million going to USHBC to increase demand-driving marketing opportunities, advance nutrition affairs and improve the blueberry industry’s data and analytics.

Thank you to the following MOU Signatory Organizations for their leadership and support:

- | | |
|---|----------------------|
| ACP Agro | Driscoll's |
| Agriculture Capital/Firestone Pacific Foods | Family Tree Farms |
| Agroberries/BerryFresh LLC | Hortifruit |
| Berries Paradise | North Bay Produce |
| Berryhill Foods | The Fruitist Company |
| California Giant Inc. | Wish Farms |
| Camposol | |

United States Report Team Narrative

Whilst the El Niño phenomenon in Peru had the greatest impact on global blueberry markets in 2023, the USA market proved itself once again to be the most critical piece in the industry puzzle – a mainstay where supermarkets and consumers are more likely than anywhere else to, at scale, pay more when supply is short, and where larger pack sizing is retained to the greatest degree in such scenarios of scarcity. This last observation is in contrast to years past when shortages would prompt most to scale-down to 6oz and 4.4oz clamshells; a response that certainly still occurred in 2023 (especially on the open market), but as one industry sourced noted, “the game’s changed” with multiple retailers sticking to their respective larger packaging despite the significantly higher prices per pound – a decision that is more conducive to the category’s long-term growth from a volume perspective, and a repeat purchase perspective if quality is sufficient. While also a global trend, the US market leads the way in the growing trend of more inelastic demand and the blueberry category becoming a fundamental staple item in the produce category.

Supply-side factors within the USA blueberry industry will be explored later in this section, but it is the state of demand that is the country’s standout feature of the past 12 months, assisted by several campaigns from industry to increase awareness of the fruit (such as the ‘Grab a Boost of Blue’ marketing campaign discussed in the past edition) and business-to-business (B2B) initiatives that improve market clearance, industry decision making and value creation, such as the North American Blueberry Council’s (NABC) real-time data platform that now has the majority of the sector’s leading players signed up, and the council’s Business of Blueberries podcast that fosters high-level and practical discussion within the sector. The aims of the IBO Report are of a similar spirit for B2B enhancement, albeit from a global standpoint.

An appreciation of just how well the USA blueberry market rose to the challenges of negative supply shocks in 2023 can be gained from a few simple statistics: fresh blueberry import volume declined by 15%, which is a much less accentuated drop than the other leading markets of Central and

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Western Europe (-19%) and Asia (26%), signifying the relative attractiveness of the USA for selling blueberries; and even though import volume was down, import value rose by 2% to almost \$1.8 billion. One in every three dollars spent on imported blueberries worldwide takes place in the USA.

The average price per pound of imported blueberries was up 40% for the year overall, although it varied greatly by month with the price practically doubling year-on-year in September, and almost tripling versus the same month in 2022. Domestically, states that grow earlier in the season such as Florida and Georgia benefited from higher pricing in the period from March to May, but by June the average price was down year-over-year, and in July the reduction was drastic, spurred in part by a late peak for California that ran six weeks later than normal; the state experienced flooding in late 2022 and early 2023, and it is understood that heavy rain during the blueberry bushes' pollination period is what caused the delay, and thus an unprecedented level overlap with other growing regions. The total market movement in June was up by almost half with 39% of all volume sold in that month coming from Central California as the market leader in that month. In July, the total volume of blueberries sold in the USA was up 9%, while in August it was down by 10%, with a huge jump in supply from Michigan offset by Peru's shortfall and relatively less later-season fruit from the Pacific Northwest, a region that had yet another extremely challenging year – its fifth in a row – due to weather-related problems.

Variable effects from Mother Nature

One industry representative said the yield in Oregon was the poorest they had seen in 25 years, wrought by a mix of cool, rainy days and also very hot days both deterring pollinators in different ways. The Oregon blueberry industry is more concentrated geographically than in Washington State, so its volumes were relatively more affected by this weather

phenomenon, but both states and British Columbia saw significant declines in volume. All these regions traditionally have yields that are very high by the standards of the USA and Canada, and have sizeable blueberry processing industries too although in 2023 Oregon's industry shifted a large portion of its volume to the fresh market than in past years. Both Oregon and Washington State often sell a sizeable volume of late-season fruit in the September window, but that was not the case in 2023 as weather effects prevented them from capitalizing on the scarcity induced by Peru. Michigan, however, which has been undergoing aggressive varietal renewal with younger plantings starting to increase their yields, saw a five-fold increase in its volume shipped in September at average prices that were 51% higher. This does not mean that all is well in the Michigan industry, as challenges for smaller operations, succession planning issues for longstanding intergenerational farms, and a real estate boom in areas with proximity to Lake Michigan (which many blueberry farms have) are all contributing to a decline in acreage.

There is a desire from some in the Pacific Northwest to replant new genetics as well, and indeed private breeders that are aiming to revolutionize the quality standards of the Northern Hemisphere summer supply (as covered in last year's IBO Report) are targeting this region as well as Michigan and New Jersey. But after five years of problems with Mother Nature, the economics of such a transition have been put under strain. Many are opting to wait and observe what transpires with new varieties in machine picking for fresh, as well as what the latest developments in the technology around this practice can achieve. "As you look forward for the next 10-15 years, you really get one shot at replacing varieties, and certainly you've got to get it right," as one source explained. At the time of writing the situation for 2024 was looking better for this region, where under "normal" conditions it is possible that they would ship 100 million pounds more into the market than in 2023, although that won't necessarily be the case this year.

¹Top Performance from OZblu® Magica in Peru', Fruitnet.com, June 2023.

²'OZblu® Magica Stands Up to El Nino', Fruitnet.com, October 2023.

³'OZblu® Claims Record Blueberry Sea Voyage Length', Freshfruitportal.com, June 2021.

⁴Machine harvesting for fresh tested successfully on a commercial scale close to point of consumption.

In the Southeast, both North Carolina and Georgia bounced back from terrible freeze events in 2022 to harvest very strong crops in 2023 – a record crop in Georgia’s case, and at the time of writing the state is expecting yet another record year in 2024. Georgia currently has one of the largest acreages of blueberries in the country, but its yield lags well behind the western states. That said, there has been an expansion of new acres for southern highbush amidst a decline in the surface area dedicated to rabbiteyes, which have not only become less desirable for marketers but are also showing signs of age with a large portion of rabbiteye farms in Georgia being 15-20 years old. There has been a lot more planting of the reportedly machine-harvestable-for-fresh Optimus variety and others from the University of Florida, while the Farthing variety is widely adopted as the leading Southern Highbush cultivar in Georgia.

2023 was a year of reprieve for North Carolina, which was very close to matching previous crop records after several years of windborne freezes that so frequently plague the industry in the springtime and are unable to be mitigated by overhead irrigation. The state managed to largely avoid this problem last year, but it isn’t going away; the industry carries the legacy of a previous strategy oriented towards early production, so there is a large portion of plantings that, until replaced with other cultivars, will always be susceptible to March freezes, and even if they do get through those challenges they still have to compete with an increasingly larger crop from Georgia. “On the highbush side there’s also a trend towards varieties that ripen later, but it’s a really slow process to take acres out and replant,” as one North Carolina stakeholder noted. “That’ll be a long, slow trend to take out the early bloomers.” At the time of writing, North Carolina’s industry is anticipating a large decline in its total crop shipped, both due to weather factors and a big drop in pricing year-on-year.

Further south, in Florida a hurricane in the fall of 2022 had a very significant impact on production in the south-central

part of the state, while unprecedented temperatures over the Christmas period of 2022 also affected some of the early crop from central Florida to north Florida. In the end the crop was about 20% short of what the industry was hoping for, but leading into the 2024 season there were no such weather events to such an extreme – as a result, at the time of writing the sector is forecasting a significant rebound in 2024, although the final number will still be short of initial expectations as many growers leave late-season fruit on the bushes due to low market pricing and high costs of labor.

Florida is one of the most cited states in the USA for the revitalization of fields with new genetics, and 2024 was expected to be the first year where commercial volumes of newer releases – from a variety of public and private breeders – would be visibly seen, as many are now in their third year since planting. Florida is diverse in terms of its grower profile versus other states, with a lower proportion of intergenerational farms, and the number of operations with more than 50, 100 or 200 acres has increased in recent years. With a prevalence of farms with plants that are 10-12 years old, many are being changed to higher-yielding varieties from the University of Florida/IFAS breeding program with a particular focus on machine harvestability, but also private companies from all over the world. One company with a focus on substrate blueberry production is now taking their learnings from Mexico and applying them in Florida. The state now occupies just 10% of a March-April-May window in which it used to account for practically 100% of supply, but the industry appears intent on clawing some of that market share back.

For an industry that often has to leave fruit on the trees for later picks if the market price isn’t high enough (as seems to be the case in 2024) because the cost of labor is too high, a wider adoption of machine harvesting could represent a step-change for the Florida blueberry industry, which could potentially enable another ‘boom’ as there are large tracts of land in the state’s central and southern areas that are currently dedicated to citrus groves but are struggling with

citrus greening disease, and could be converted to blueberries if the economic viability were to change.

But Florida is not the only state undergoing renewal – it is a process that is occurring to some degree in every blueberry-growing state, and even in states not traditionally associated with the crop in light of advances in growing methods and genetics. One of the world’s fastest-growing genetics program has a firm emphasis on its partners needing to include plantings in their portfolio that are able to service the North American market during the summer, which lends itself to more local-for-local introductions of mid or high chill cultivars that exhibit the same attributes as some of the southern highbush material that has taken the world by storm, and in fact some retailers are requesting growers consider this opportunity.

Exports rebound in Asia

As referenced in the U.S. Country Member Summary provided by the North American Blueberry Council, 2023 was a record year for export with Canada continuing to be the leading destination market and a key source of growth. As explored in the Canadian section of this report, this is partly due to a large drop in the 2023 crop from British Columbia, but is also due to strong demand from a country that has a very high level of blueberry consumption per capita. Industry stakeholders are bullish on the role that Canada will continue to play in driving sales volume of the crop, and this is also facilitated by the USA’s proximity for shipping.

Cognizant of the fact that exports can take the pressure off a booming domestic market, the U.S. industry is well aware of the imperative to lift exports but this also requires a high degree of caution to ensure quality standards are met. Unlike sectors in South America and Southern Africa that have been developed around long shipping times, U.S. blueberry farmers have had the relative luxury of proximity to their core

market with the longest haul being a trans-continental truck drive. Shipping across the Pacific Ocean is a different undertaking, and mistakes can be costly for reputations.

Select growers and particularly vertically integrated grower/packer/shippers have long been building relationships with overseas importers, but for most, export development is still on the to-do list. This is the case even for some major players that are experienced in facilitating moving of blueberries from Peru or Chile into Asian markets, and therefore have the expertise to execute successful programs if they are able to align their learnings with U.S. growers.

Outside of Canada, leading U.S export markets for fresh blueberries include South Korea (where only Oregon has access), Japan (which almost tripled in 2023) and Mexico (which has had volume go up by 2.5x since 2021). Following a great deal of industry excitement a few years ago for Southeast Asia in particular, especially Vietnam, Asia-bound fresh blueberry exports last year were around half their 2020 levels but were showing signs of a rebound with 58.7% year-on-year growth, the bulk of which was driven by Japan. The Japanese market has historically been much more relevant for shipping frozen blueberries (despite tariff challenges referenced in the Processed section), but if 2023 trends were to continue the gap between fresh and frozen would have the potential to close. Regarding Southeast Asia, one industry stakeholder has recommended the industry go beyond standard sampling tactics and digital marketing into more consumer advertising to support branding and pricing strength.

In 2020 market access was gained in China for the U.S. industry, although only West Coast growers are able to do so without fumigating the fruit. The combination of high tariffs and supply chain problems have meant little progress has been made on capitalizing on this opportunity to date, not to mention the fact the Pacific Northwest partially overlaps with a period of large domestic blueberry volumes in China. Exports of note were shipped there in 2021, but steadily

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declined to tiny levels last year; this is true of both mainland China and Hong Kong.

It is worth noting some of the regions that have been hit the hardest by imports in the U.S. – such as Florida, Georgia and California – harvest during periods of relative scarcity in Asia more broadly. In terms of improving Chinese market access, Florida was one of three states (also Michigan and New Jersey) where data has been collected on a systems approach without methyl bromide to treat blueberry maggot, but this is yet to go through the review process with Chinese phytosanitary authorities.

Another recent breakthrough is that India - a market with very high barriers to entry - has this year instituted a 20% tariff reduction on fresh U.S. blueberries, alongside tariff cuts for Peru and Chile. The U.S. industry would have to build from scratch in developing this market for fresh blueberries, although there could be opportunities to leverage an existing presence with frozen blueberries, as well as consumer knowledge of blueberries from other origins.

Machine harvesting development

Machine harvesting for fresh has become a lot more mainstream in the USA. No definitive data exists as to how much of the fresh crop is picked by machine, and most sources can only hazard a guess as to what portion of growers in a particular state might use the technology, which does not mean the same thing as using the technology for the entire crop, but rather an undefined portion of it. The highest level is likely in the Pacific Northwest where sources have cited percentages of 60-65% of growers using it for a portion of their crops when labor is short, compared to 40% in California's Central Valley, while the practice is also common in Florida and Georgia. Industry stakeholders were emboldened this year at a meeting where a representative from one of the USA's

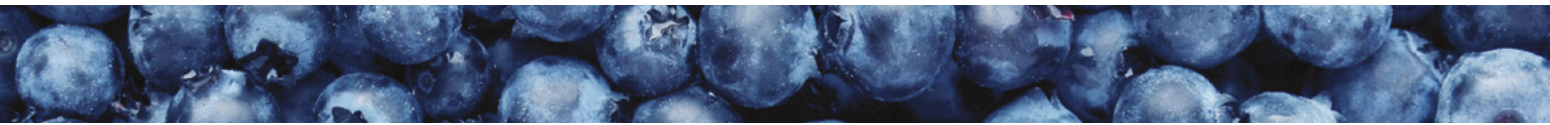
leading retailers affirmed that machine harvesting for fresh blueberries would be critical for the future of the category. To quote one northwest grower, "every variety is a machine harvest variety when you can't get labor".

If this harvesting method becomes successful, and if a grower can afford the capital cost of the machine or machines, renting one, or sharing it across several farms, their cost base can be reduced. However, the cost-benefit analysis is often framed as a matter of necessity as to date there are no reported examples of machine harvesting at scale improving blueberry quality.

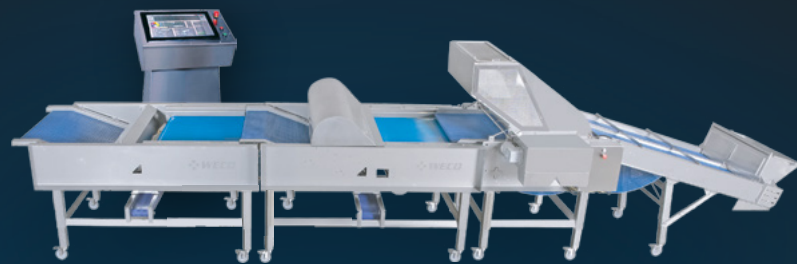
As the blueberry industry climbs up the steep learning curve of machine harvesting for fresh, the impact of the practice on yield varies greatly, as does the choice of variety and orchard structure. As it stands currently it is almost guaranteed that a portion of machine harvested blueberries will be wasted due to fruit damage, as well as the fact the harvesters will take off berries that are unripe and would otherwise have been handpicked later.

Plants need to be trellised and pruned such that the structure stays upright and machines can gently detach berries as they're moving through the row, and northern highbush varieties have a comparative advantage over southern highbush in that they tend to require fewer runs in the rows throughout the season due to harvest concentration. The other advantage lies in the fact the Pacific Northwest growers have been doing machine harvesting for fresh for longer than elsewhere, and have worked on techniques with established commercial varieties that are, according to grower contributors to this report, more conducive, such as Duke, Blue Ribbon, Draper, Calypso, Top Shelf, Envoy, and Titanium, as well as hybrids like Legacy. Various new high chill cultivars, many developed in the Pacific Northwest, are under trial for machine harvest fresh potential with hopes for a step change in quality and shelf life using the practice with these new genetics. Some Southern highbush cultivars are demonstrating

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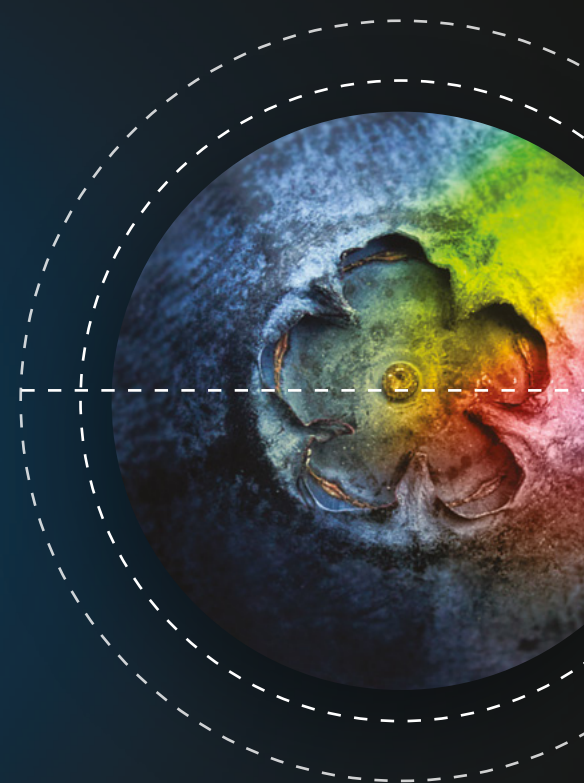


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Decay, rot, mold



machine-harvest potential include Meadowlark, Suziblue and Optimus, but many leading breeders worldwide are focusing on up-and-coming varieties in this space that are yet to be named. Some producers, marketers and breeders however are skeptical about the quality assurance (QA) implications of this trend.

The outcome of machine harvest fresh while targeting improved quality remains a key objective for industry leaders, and many see the breakthrough coming in the high chill category first due to unique physiological attributes of the plants, the capacity for concentration, and advances in fruit quality, together with detachment at ripeness and adhesion when green and red. New and innovative machine harvest technology has begun to enter trials at scale in the U.S. A Dutch company backed by an investment from a U.S.-headquartered nursery and genetics company has recently entered the U.S. industry with a new machine which challenges many of the industry norms of blueberry harvest machines, and together with new genetics and field design, industry experts believe the next 10 years will see a paradigm shift. Leading breeders from various companies are actively trialing this machine within their breeding program to assess potential of the combined tools.

Increase labor costs and advocacy efforts

What is underpinning the trend towards machine harvesting is the increased cost of labor. Over recent years more growers have become dependent on the H2A visa program to ensure they can secure a sufficient workforce, but every year the Department of Labor sets what is known as an 'Adverse Effect Wage Rate' (AEWR), which comes into effect at the start of the year and has been increasing every year. The

NABC believes the methodology for calculating this rate is flawed, and the surveys it is based upon that are conducted by the USDA were not made for this purpose. Some also emphasize that the surveys themselves don't cover enough of the industry to be fully reflective, while the timeframe for the setting of new rates is generally not enough for growers to adequately prepare for the change. The NABC has been urging politicians to revisit this policy, and at the time of writing there are bills before the House of Representatives and the Senate to put a two-year freeze on further AEWR increases. In other labor challenges, in 2023 Oregon joined Washington State and California in having time-and-a-half rules for overtime, so if a worker does anything more than 40 hours a week it must be paid at a rate of 1.5x.

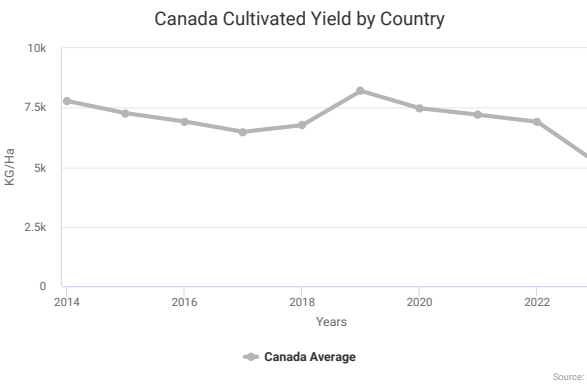
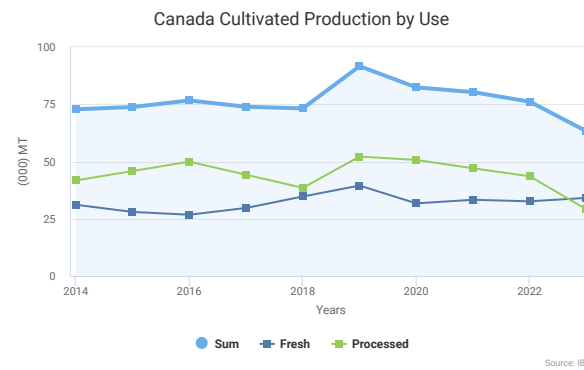
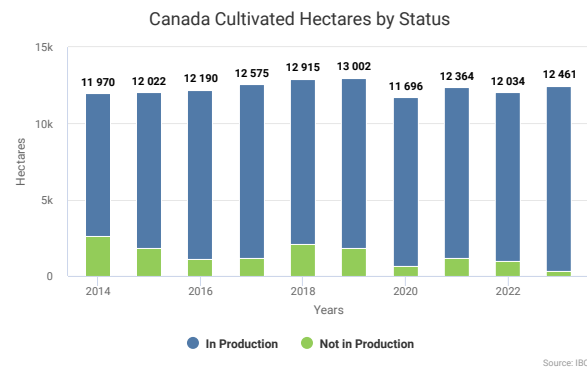
Regarding other advocacy efforts, the NABC is also pushing for the next Farm Bill to include funding for research and development (R&D) into mechanization and automation tools, and provide more support for crop insurance. The NABC's argument is that if the Farm Bill could provide premium support for 80% coverage (above the current level of 65%), more growers would be able to afford it, and as a consequence the industry would rely less on ad hoc disaster programs. "We need to redirect resources and invest in crop insurance so that more producers are buying a coverage level that adequately protects them," one stakeholder says, noting that this request is being made at a time when natural disasters are happening almost on an annual basis.

The United States blueberry industry is one that continues to attract excitement and gather momentum, despite its many challenges with weather and the growing pains of increased supply and varietal adaptation. Demand is among the world's highest, but as one source noted, "half the country's buying them, half aren't. Even if we focus on just the half that are and if they all buy an extra clamshell, that's what we're looking for."

CANADA



Planting and Production Data, Figures & Commentary (Denominated in Hectares and Thousands of Metric Tons)



Canada 2023 Production Metrics

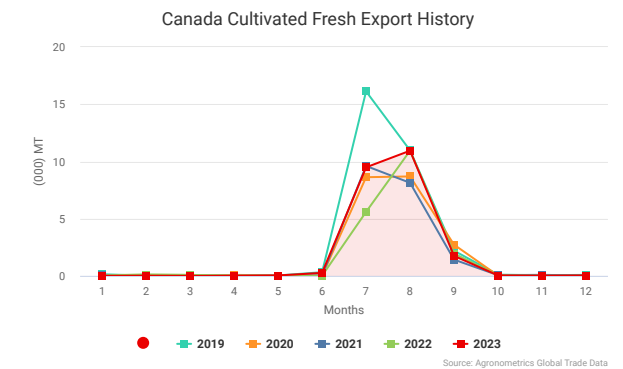
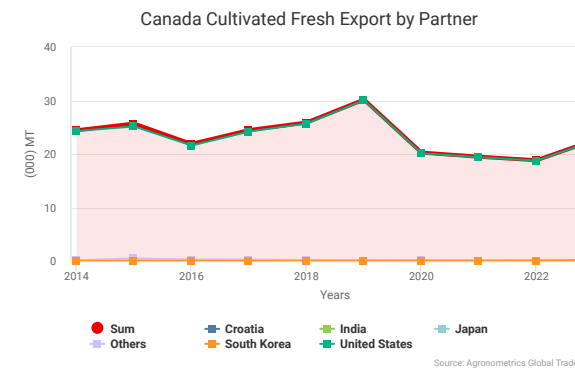
Hectares Planted:	12,461 Ha
Hectares in Production:	12,159 Ha
Production:	63.24 (000) MT
Growth in Production ¹ :	▼12.92 (000) MT (-16.96%)
Growth from Hectares ² :	▲8.37 (000) MT (64.80%)
Growth from Yield ³ :	▼21.29 (000) MT (-164.79%)
Yield:	5,201.58 (Kg/Ha)
Exports:	22.59 (000) MT
Imports:	47.03 (000) MT

¹ Volume change compared to previous season
² Change in volume due to hectares entering or leaving production
³ Change in volume due to field productivity (yields)

Canada Cultivated Fresh Exports by Partner (000) MT

Reporter	2019	2020	2021	2022	2023
United States	30.05	20.12	19.39	18.75	22.45
Croatia	-	-	-	-	0.12
India	-	0.00	0.00	0.02	0.01
Taiwan (CN)	0.00	0.01	-	0.01	0.00
UAE	-	0.00	-	-	0.00
Others	0.12	0.13	0.09	0.05	0.00
Canada Totals	30.17	20.26	19.48	18.83	22.59

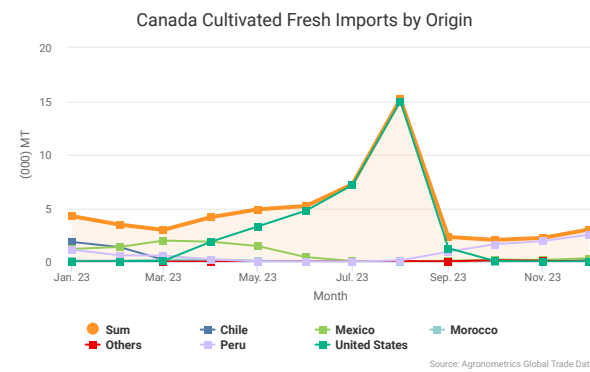
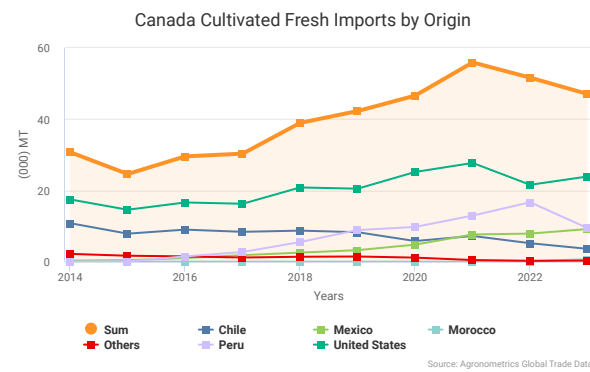
Source: Agronometrics Global Trade Data



Canada Cultivated Fresh Imports by Origin (000) MT

Reporter	2019	2020	2021	2022	2023
United States	20.47	25.16	27.69	21.56	23.89
Peru	8.85	9.74	12.92	16.67	9.41
Mexico	3.22	4.77	7.63	7.87	9.15
Chile	8.26	5.78	7.20	5.17	3.59
Morocco	-	-	0.00	0.11	0.69
Others	1.44	1.13	0.45	0.24	0.29
Canada Totals	42.25	46.58	55.89	51.62	47.03

Source: Agronometrics Global Trade Data



BC blueberries
Powered by nature.

Canada – British Columbia Country Member Summary

Adapted from the report by the British Columbia Blueberry Council (BCBC)

Season Overview:

The British Columbia (BC) blueberry crop was down significantly in 2023. The 2023 season was characterized by cool early spring conditions followed by a very sudden onset of heat during bloom and subsequently dry summer.

Most blueberry fields came out of the winter with good flower bud set and potential for a large crop, and bloom was delayed until May in many regions due to the cool spring weather. When abnormally hot weather came on suddenly in mid-May, with daily maximum temperatures exceeding 30° C for a few days in May, pollination was severely impacted.

The cool spring and sudden onset of high temperatures caused a very concentrated bloom period in most regions of the Fraser Valley. Early and mid-season varieties entered bloom in early May and petal fall occurred by early June. Pollination experts believe that these high temperatures during bloom led to adverse effects on pollen viability, pollen-tube growth, and bee activity as well as concentration of the bloom period, all likely contributing to poor fruit set and small fruit size. The impact varied depending on the region of the Fraser Valley and the cultivar.

Hand harvest started in the Fraser Valley in the first week of July, with machine harvest starting in mid-July. Peak harvest occurred in the last two weeks of July. In many ‘Duke’ fields, there wasn’t much fruit left after the first pick and fruit size was smaller than average. ‘Calypso’ harvest started at the end of July and ‘Elliott’ harvest started in mid-August.

Overall, fruit quality was average, fruit size was small, and spotted wing drosophila (SWD) pressure was relatively low throughout the harvest season. Fruit firmness was an issue due to leader berries ripening earlier than the main crop in some varieties.

Scorch Virus symptoms were less apparent in 2023 than in the two previous years. ‘Bluecrop’, in particular, performed much better in 2023 than in 2022. Field observations suggest that plant stress may play a role in symptom expression. It is possible that extreme heat in 2021 and early-season cold stress in 2022 accentuated Blueberry Scorch Virus symptom expression in 2022, and that a lack of these stresses leading into 2023 resulted in less severe symptom expression.

Varieties and New Plantings:

‘Duke’ comprises more than half of the current acreage and is the most widely planted cultivar, followed by ‘Bluecrop’, ‘Elliott’, ‘Calypso’, and ‘Draper’. ‘Elliott’ fields are starting to be removed in favour of other cultivars, primarily ‘Calypso’, which will soon become the third most important cultivar in the region in terms

of volume as new acreages enter production. A small amount of ‘Top Shelf’ and ‘Valor’ are still being planted in smaller blocks, but growers continue to look for new cultivar opportunities. Consequently, ‘Duke’ remains consistent as a “go-to” cultivar for new plantings behind ‘Calypso’.

Production Challenges and Opportunities:

Variable weather patterns continue to impact plant development, making it difficult to predict the size of the crop and the timing of harvest each year. Pollination is often impacted when cool and rainy or overly warm weather conditions coincide with bloom. Moreover, there is an insufficient number of honeybee colonies available for rental in the region to pollinate the crop.

The rising cost and limited labor availability are primary concerns for producers. Costs of production are high in BC due to high labor costs, land values, and prices for agricultural inputs, particularly for pollination services and pesticides. High costs of production have pushed growers towards more efficient methods of production. Over half of BC’s blueberry crop is harvested by machine for processed markets, and machine harvesting for fresh market has been steadily increasing as well.

Blueberry Scorch Virus is prevalent, particularly in older plantings, and is resulting in reduced yields and plant decline in some fields. BC blueberry growers are prioritizing aphid control and removal of infected plants or

entire plantings to minimize the spread of the Blueberry Scorch Virus. Fungal diseases such as Phomopsis and Godronia cankers, mummyberry and Botrytis, and Anthracnose fruit rots can be challenging to control in this region due to the high precipitation in the spring and fall. Spotted-Wing Drosophila (SWD) and root weevils are the most difficult insect pests to manage in this region.

To deal with these production challenges, BC growers have invested in applied field research in the areas of pest, disease, and horticultural management as well as improving pollination and developing new varieties. The British Columbia Blueberry Council (BCBC)’s breeding program aims to develop new varieties that are locally adapted, tolerant of pests, higher yielding, and possess superior fruit quality traits including suitability for machine harvest (e.g., increased fruit firmness and resistance to bruising and splitting). Advanced selections are currently in grower trials, the final step prior to their future commercialization.

Market Trends and Projections:

BC has approximately 600 growers, primarily producing conventional blueberries, and there are around 30 large-scale packers and processors. The industry will likely see consolidation in the coming years as small-scale producers with less than 20 acres are finding it difficult to compete.

In years with adequate pollination, the abundance of blueberry fruit that hits the market across the Pacific Northwest during BC’s ‘Duke’ season puts significant strain on both fresh packing and processing capacity.

BC growers are looking to early and mid-season varieties (July and August harvesting dates), especially for marketing fresh products, to reduce the overlap with fresh blueberry imports from Peru in the late season.

Depending on the size of the crop, between 45-65% of BC’s production goes to the processed market.

The US is the largest market for BC’s exports, but other important markets include Japan, South Korea, Vietnam, India, and Taiwan.

Canada Report Team Narrative

Canada, one of the world’s highest if not the highest consumers of blueberries per capita, has been reckoning with severe weather challenges over several years in its predominant cultivation region of British Columbia that accounts for the lion’s share of production. Every year the industry appears to be grappling with a different climatic problem, although difficulties with pollination and excessive heat are common themes. According to one source, the 2023 season was initially thought to be shaping up to be a “barn burn” with huge volume and even concerns that the industry wouldn’t have the capacity to pick, pack and store all the fruit. Those expectations came crashing down at the end of the blooming period, with a lot of growers left asking themselves: ‘Where are all the berries?’

The reasons for this are described in depth within the British Columbia Blueberry Council’s Country Member Summary, pertaining to an extreme heat spell’s impact on pollination.

Whilst perspectives around global blueberry production in 2023 have inevitably homed in on the shortfall from Peru, with its exports down 21% on the prior season due to the consequences of the El Niño phenomenon, far fewer have referenced the drastic drop in volume from Canada as a key event, most likely due to the industry’s limited impact outside of Canada and the USA. But the country is nonetheless traditionally in the Top 5 for both blueberry production and planted hectares of the crop.

It is astounding to observe that levies collected indicate a crop of just 104 million pounds for British Columbia in 2023, signifying a precipitous drop of nearly 39%. To contextualize the (literal) weight of this, Canada’s blueberry shortfall was equivalent to the entire 2023 export season from South Africa and Zimbabwe combined.

This shortfall, combined with other shortages during the summer in parts of the USA, incentivized British Columbian growers to shift more of their production to fresh over processed. Despite the lower production, fresh blueberry exports rose slightly with 93.5% sent to Canada’s southern neighbor the USA, and the remainder spread across multiple markets such as the European Union and South Korea, the latter more than quadrupling off a low base as tariffs were cut to zero. Canadian fruit also has had fresh market access to China since 2016, but exports have been limited due to high tariffs and the congested Chinese blueberry market.

It is understood that growers selling within the processed blueberry market received low pricing for their fruit, especially in retrospect given what would transpire with Peru and the domino effect on Chilean processed blueberries supplies; an issue that is discussed in greater depth within the processed section of this report. From a fresh market standpoint, for Canadian growers selling in the USA their prices were much lower year-on-year when the season began in in July, but prices picked up in August and for the late season fruit the average price in September (a period accounting for 28% of exports) was up 42.6%.

In a year when most Northern Hemisphere markets saw their import volumes go down significantly due to the events in Peru, Canada was a rare exception with its imports actually slightly rising (although certainly not from Peru, which was down significantly). Most of that stability is explained by up-ticks from the USA – likely to offset Canada’s own volume shortfall - and Mexico.

In one interview Canada was referred to as having the world’s highest blueberry consumption per capita, and any data the

authors could find to corroborate that claim felt outdated in a rapidly-changing global consumption environment. This claim cannot thus be confirmed. However, what can be said with certainty is that Canada’s consumption of imported fresh blueberries per capita in 2023 was almost double that of the USA at approximately 1.46kg, and also substantially higher than the United Kingdom which imports more per person than the USA. In fact, while Canada’s population is roughly 57% of the UK’s, their total fresh blueberry import volume levels are fairly similar.

Whilst benefiting from such high demand at home for the fruit, Canada’s blueberry industry is at a crossroads as its mostly open varieties fall further out of favor with retailers, but there

are indications that a lot of cultivars are being replaced with newer varieties with greater consumer appeal, including those mentioned in the industry’s summary as well as others, with the Sekoya program indicating ambitious plans to roll out proprietary high-chill genetics in British Columbia (as well as other proprietary high chill cultivars from the same breeding program), and an interest from Canadian retailers to lift local supply with characteristics that have come to be more commonly associated with premium southern highbush cultivars. On the other end of the spectrum, the economic woes inflicted by years of challenging weather and markets have meant that there are still many blueberry farms for sale in Canada as producers opt to exit the industry.

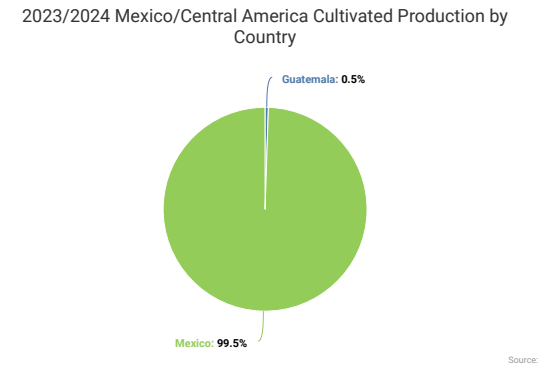
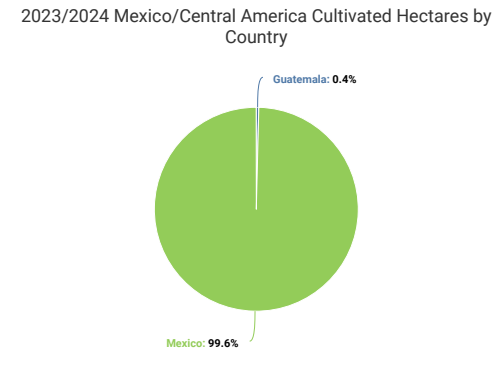
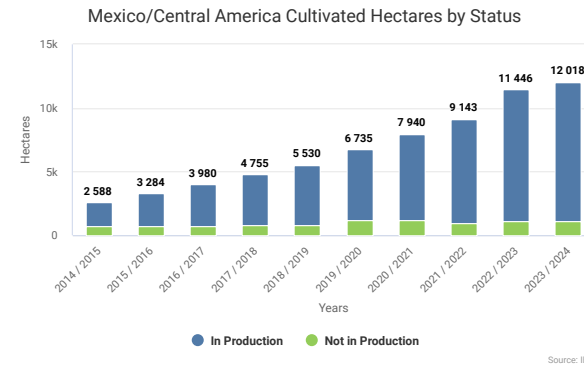
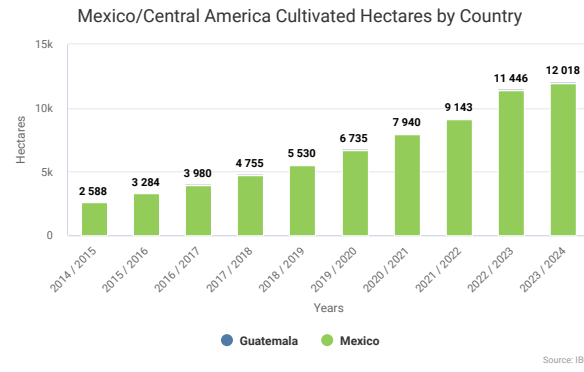
MEXICO / CENTRAL AMERICA

Planting and Production Data, Figures & Commentary (Denominated in Hectares and Thousands of Metric Tons)

Mexico/Central America Cultivated Hectares by Country

Mexico/Central America	Hectares Planted					2023/2024 Production (000) MT		
	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	Fresh	Process	Total
Mexico	6,700	7,900	9,100	11,400	11,970	64.04	3.28	67.32
Guatemala	35	40	43	46	48	0.35	-	0.35
Mexico / Central America Totals	6,735	7,940	9,143	11,446	12,018	64.39	3.28	67.67

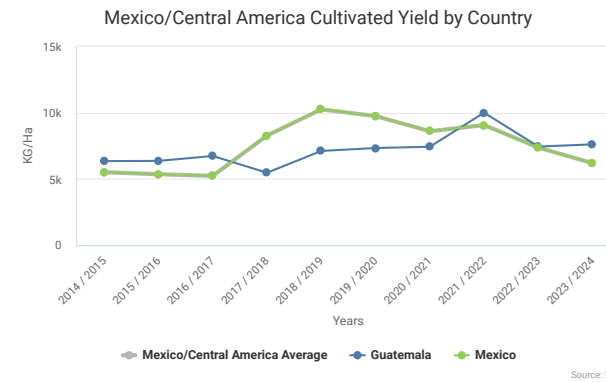
Source: IBO



Mexico/Central America Cultivated Production by Country(000) MT

Mexico/Central America	2021/2022			2022/2023			2023/2024		
	Fresh	Process	Total	Fresh	Process	Total	Fresh	Process	Total
Mexico	72.70	1.50	74.20	74.93	0.94	75.87	64.04	3.28	67.32
Guatemala	0.40	-	0.40	0.32	-	0.32	0.35	-	0.35
Mexico / Central America Totals	73.10	1.50	74.60	75.25	0.94	76.19	64.39	3.28	67.67

Source: IBO



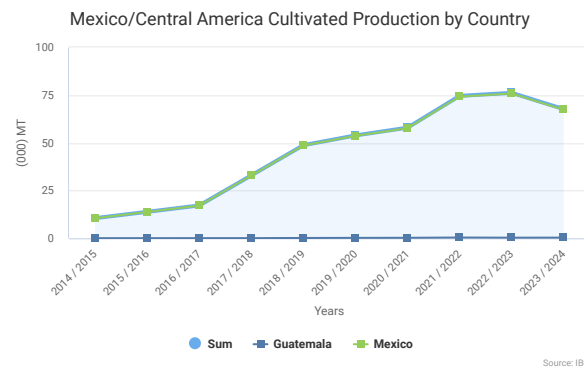
Source: IBO

Mexico/Central America 2023/2024 Production Metrics

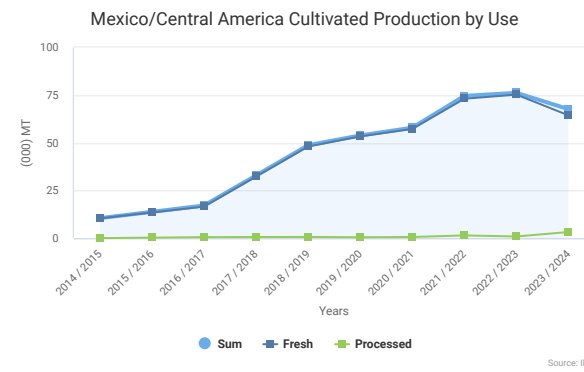
Hectares Planted:	12,018 Ha
Hectares in Production:	10,938 Ha
Production:	67.67 (000) MT
Growth in Production ¹ :	▼8.52 (000) MT (-11.18%)
Growth from Hectares ² :	▲4.38 (000) MT (51.44%)
Growth from Yield ³ :	▼12.90 (000) MT (-151.36%)
Yield:	6,187.24 (Kg/Ha)
Exports:	73.08 (000) MT
Imports:	1.15 (000) MT

Source: IBO and Agronomics

¹ Volume change compared to previous season
² Change in volume due to hectares entering or leaving production
³ Change in volume due to field productivity (yields)



Source: IBO

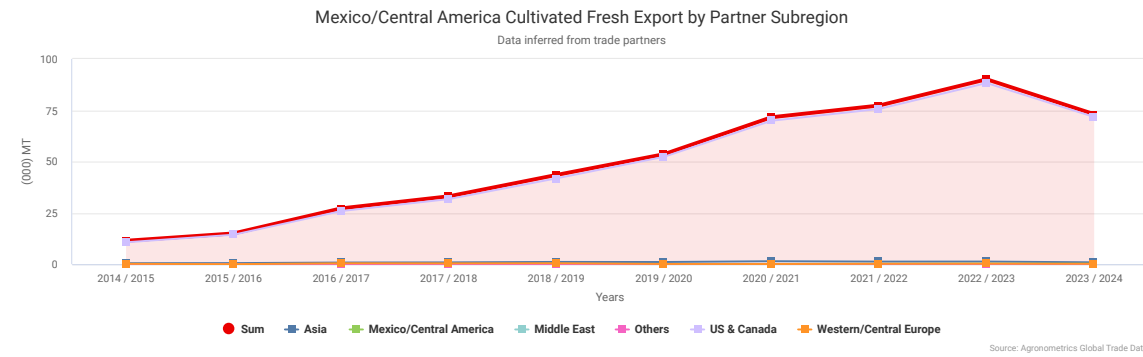


Source: IBO

Mexico/Central America Exports by Partner Subregion(000) MT (Inferred from Partners)

Subregion	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024
US & Canada	52.30	69.87	75.63	88.23	71.71
Asia	1.08	1.47	1.29	1.30	0.93
Western/Central Europe	0.15	0.11	0.21	0.27	0.22
Mexico/Central America	0.04	0.13	0.16	0.27	0.23
Middle East	0.00	-	-	0.00	-
Others	0.00	-	0.00	0.00	0.00
Mexico/Central America Totals	53.57	71.58	77.29	90.07	73.08

Source: Agronomics Global Trade Data



Mexico/Central America Report Team Narrative

For an in-depth review of the leading producing countries of Mexico/Central America, please see the individual reports including official country member reports and IBO Report Team narratives for:

➤ Mexico

Mexico/Central America Exports by Reporter(000) MT (Inferred from Partners)

Subregion	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024
Mexico	53.51	71.49	77.20	89.92	72.92
Guatemala	0.06	0.09	0.09	0.13	0.14
Costa Rica	0.00	0.00	0.01	0.02	0.02
El Salvador	-	-	-	-	0.00
Honduras	0.00	-	0.00	-	-
Others	-	-	-	-	-
Mexico/Central America Totals	53.57	71.58	77.29	90.07	73.08

Source: Agronomics Global Trade Data

Below is a brief review on the other commercial source of supply today in Central America, Guatemala.

Guatemala

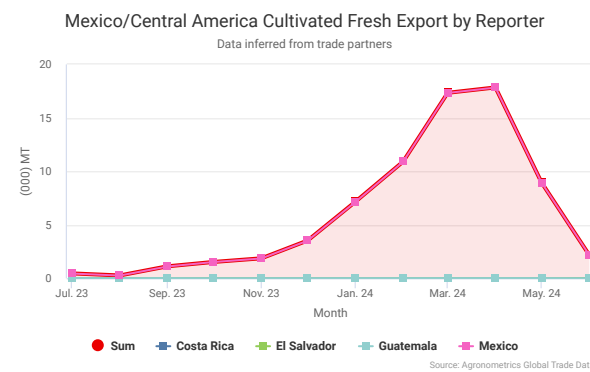
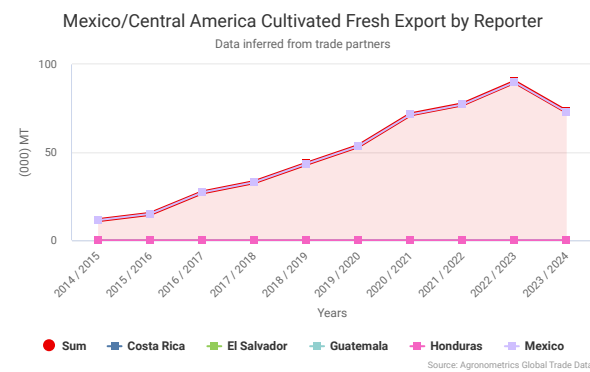
Whilst pre-clearance protocols have been approved by the U.S. Animal and Plant Health Inspection Service (APHIS) for blueberries from Guatemala - the only noteworthy producer of the fruit in Central America – the program has not yet come to fruition due to limited budgets and the need to train inspectors.

To date Guatemala has been limited in its export options, shipping small volumes to neighboring countries such as Honduras, El Salvador and Nicaragua, as well as to the U.S. where shipments need to have undergone treatment such as methyl bromide – a chemical that is difficult for growers to secure outside of programs administered by Guatemalan phytosanitary authorities. Fruit exported to the U.S. must also arrive

north of the Mason-Dixon line, prohibiting imports in ports such as McAllen, TX or Miami, FL.

Since its emergence around 2005 and having been built on the variety Biloxi, the Guatemalan sector has been turning to new varieties and production techniques such as growing under tunnels with substrate. Volume is led by a small group of companies, most of which also produce blackberries, sugar snaps, and other produce for export. The growing regions are at a lower latitude but higher altitude than Central Mexico.

With a production window traditionally between November and February, Guatemalan growers have felt increased competitive pressure from Peru and Mexico, while their logistical channels to reach the Americas' largest market - the USA - are more challenging. There are also limitations around the availability of large extensions of land suitable for the crop, so whilst plantings have grown somewhat in recent years it has been at a very slow rate.





Since 1982, Gourmet Trading Company has been a leading importer and distributor of fresh fruits and vegetables. We operate on the principle that cultivating relationships is as important as cultivating produce. We partner with the finest growers in the U.S., Mexico, Peru, Ecuador, Chile, Australia, and New Zealand in order to consistently deliver the best produce to our customers. Our strong grower relationships, management of our own farms and continual investment in our business enable us to provide high-quality blueberries and asparagus all year round.

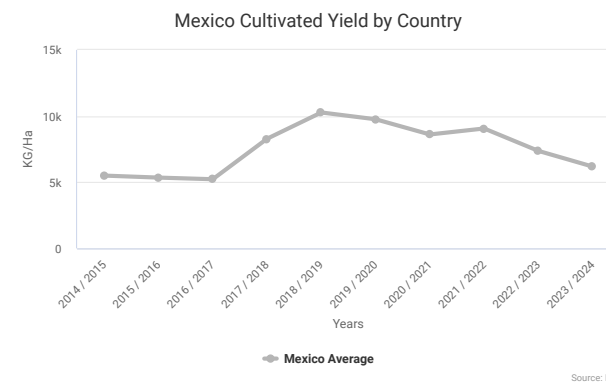
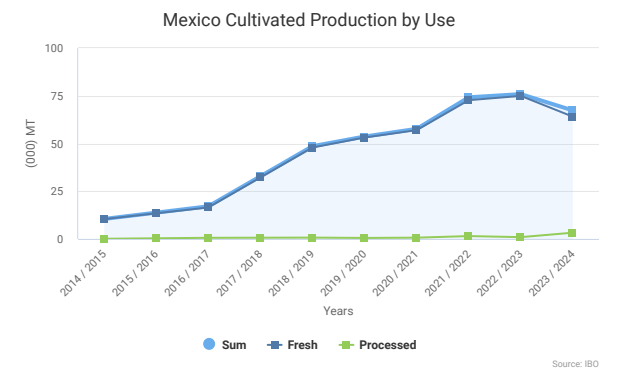
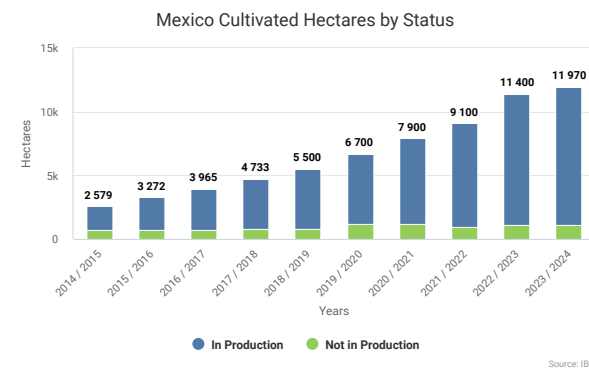
CONVENTIONAL & ORGANIC

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MEXICO



Planting and Production Data, Figures & Commentary (Denominated in Hectares and Thousands of Metric Tons)



Mexico 2023/2024 Production Metrics

Hectares Planted:	11,970 Ha
Organic:	8.00%
Under Structure:	80.00%
Hydroponics:	Not Reported
New Genetics:	15.00%
Hectares in Production:	10,892 Ha
Production:	67.32 (000) MT
Growth in Production ¹ :	▼8.55 (000) MT (-11.27%)
Growth from Hectares ² :	▲4.36 (000) MT (51.00%)
Growth from Yield ³ :	▼12.90 (000) MT (-150.92%)
Yield:	6,181.23 (Kg/Ha)
Exports:	72.92 (000) MT
Imports:	0.30 (000) MT

Source: IBO and Agronometrics

¹ Volume change compared to previous season

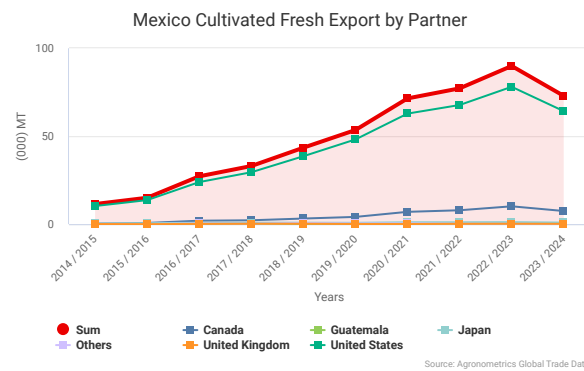
² Change in volume due to hectares entering or leaving production

³ Change in volume due to field productivity (yields)

Mexico Cultivated Fresh Exports by Partner (000) MT (Data inferred from trade partners)

Reporter	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024
United States	48.16	62.85	67.73	78.08	64.24
Canada	4.12	7.00	7.90	10.15	7.47
Japan	0.76	1.09	1.08	1.16	0.89
United Kingdom	0.09	0.07	0.19	0.23	0.18
Guatemala	0.00	0.03	0.06	0.12	0.08
Others	0.38	0.44	0.24	0.19	0.06
Mexico Totals	53.51	71.49	77.20	89.92	72.92

Source: Agronometrics Global Trade Data



This has been an extraordinary year in every sense of the word for Mexican berries. On the one hand, it is extraordinary to see the boom that has continued and increased within global diets and palates, as this category is increasingly showing greater acceptance among both overseas and domestic consumers, who are increasingly showing greater interest in the benefits that berries bring to a balanced and delicious diet, as well as perceptions around product being 100% Mexican.

What is also extraordinary is the progress that the production chain shows not only in the implementation of technologies, research and development, but also in the adaptability of the sector to face the extraordinary challenges that we must overcome, which brings me to the next point.

It has been an extraordinary season in the sense of its challenges, because after more than 10 years in which the sector showed positive growth year after year, today we face a reality whereby volumes have decreased; a situation that forces us to be concerned rather than alarmed, as it is an opportunity to face environmental and labor challenges, and to push further to continue being an orderly sector that invests in its people, and that above all is united and associated.

This new year, change comes for everyone, and that is why Aneberries as an association has implemented changes in its foundations, with a restructuring of our mission, vision and values that are in our very soul. Changes in our operations seek to bring all of us closer to each step within the productive chain of Mexican berries, and these are changes we are proud to work on as a family. Without further ado, let's take advantage of this new season to work in favor of those changes that are coming, and that allow us to evolve.

Mexico Report Team Narrative

As a natural extension of the world's most significant fresh blueberry market, the United States, Mexico continues to be a hotspot of blueberry industry activity – a fact that is not fully reflected in recent export statistics due to production challenges and transitions underway, both in varietal replacement and the agronomic learning curve associated with certain growers attempting to shift volume concentration out of the winter-spring harvest window into spring, in order to avoid clashing with competition from Peru; a supply source that was undersupplied during the period last year, leading to “extraordinarily high” pricing for growers who had persisted in targeting the September-November window, but one that for the longer term will likely return to put pressure on markets in that time of the year.

In 2023 the sector had to contend with not only the usual threats posed by the pest thrips, but also elevated temperatures that put plants under stress and even induced plant death in some cases – an issue that was felt more acutely in Sinaloa but was nationwide, and did not affect large swathes of orchards but in particular cases was reportedly killing off

around 3-4% of plants on some farms. These factors also led to delays of two to three weeks.

In addition, interest rates are very high in Mexico which makes it harder for local companies to invest, and this challenge is compounded by the fact that the relative positioning of interest rates to those of other countries have an influence on exchange rates, with the Mexican peso now much stronger than has historically been the case, leading to lower returns from exports in the domestic currency. Moreover, labor scarcity is a pressing problem for Mexican farming in general, and the difficulties of agriculture could be exacerbated by new laws that place greater burdens on farming employers, requiring they provide medical, schooling and childcare services to the families of workers if such services are not readily available in the area. What radius is applied to determine whether such services are “nearby” is as yet unclear according industry sources, with the finer details of these policies in need of more accurate definition. There are also new rules around how long a farmworker is allowed to be standing, with requirements around supported seating and work breaks that have



Mexico Country Member Summary

Adapted from the report by Juan José Flores García, general director of the National Association of Berry Exporters (Aneberries)

Amidst this new year of collaborating in the berry industry, experience has taught me a couple of lessons, the most important being that nothing should be taken for granted in this or any project; everything is in a state of constant change.

implications for how farm operations are organized. In short, Mexico's economy is maturing and with that comes industry challenges.

Factors influencing recent year-on-year declines in Mexican blueberry shipments are thus multi-pronged, pertaining to weather and pest-related issues, and also the more structural change of temporarily lower yields occasioned by a large-scale transition to new blueberry varieties. For a sector that used to be dominated by open varieties, the cultivar make-up of Mexico's blueberry has been overhauled to an extent with 70% of cultivated hectares now comprising proprietary varieties with practically every single global blueberry genetics company of note having a presence in Mexico with proactive plans in the pipeline for both the reconversion of existing hectares and the planting of new ones. One particular early-producing variety from a leading U.S.-headquartered nursery and genetics company has gone from representing around 5% of Mexico's blueberry surface area to projections of reaching 15% by the end of the year. In contrast, the predominant open variety Biloxi accounted for more than a third of farms two years ago but now that share is down to 20%.

A large proportion of these proprietary variety plantings are still young and are therefore in the early stages of the exponentially rising yield curve, implying lower volumes in the short-term, and – if expectations are met – higher yields and quality in the medium-to-longer term. Jalisco, which is home to around 40% of Mexico's surface area dedicated to blueberries, has a lower percentage growth rate than many other states but is still the growth leader in absolute terms with some estimates that it will grow by 800ha in 2024 alone. High levels of growth were also seen last year in more under-developed states in terms of blueberries: Guanajuato, where there are various local players and the presence of a major British-American partnership with domestic industry, and a few companies looking to develop new plantings from a different U.S. company; and Puebla, where a Mexican company has been conducting trials for a few years and is now ramping up plantings. Other key states for the industry also saw double-digit growth last year, such as Michoacan (20%) Sinaloa (27%) and Baja California (38%). Further to the point of substrate-pot optimization referenced in the trends section of this report, it is estimated that around 90% of substrate plantings in Mexico are in smaller pots of 25-30 litres in size. Whilst expert observations are that larger pots of 35-40l are preferable, these are mainly being deployed in new plantings, but plants in existing pots are not being transplanted to larger ones to any great degree.

As referenced in last year's report when we highlighted an export slowdown from Mexico, this was attributed to Central Mexican growers shifting away from the fall production window of September to December in favour of the industry's more 'natural' timing of late winter into the spring with peak volumes in March and April. On the other hand, for growers located at higher altitudes such as parts of Michoacan, the likelihood of hail and frosts impedes their ability to change

outside their more natural window of September to November. There is also operational knowhow to be attained by growers attempting to move away from this fall window, and the potential for mistakes to be made around optimising picking times, agronomic methods, and so on.

Mexico's exports have risen more than 10-fold in the past decade, and current plantings indicate they will grow much further despite recent setbacks. From around 2005, pioneering nurseries, marketers, growers and breeders from Chile and the U.S. teamed up with Mexican producers and agronomists to 'tropicalize' southern highbush blueberries in the states of Jalisco and Michoacan, fine tuning practices around pruning, varietal selection, chemistry, soil management and protective systems such as tunnels. The latter is critical in Central Mexico as radiation has the potential to burn the berries, but in Sinaloa there is less need and one is more likely to encounter open fields or less capital-intensive protective infrastructure such as shaded netting.

As noted earlier Jalisco is the leading producing area, and is a part of the country where there is a prevalence of farms under tunnels with a mix of both substrate and in-ground farms. Meanwhile, some of the world's leading blueberry companies invested heavily in the northern state of Sinaloa in recent years; a state where investors are more likely to find large, contiguous tracts of land than in Central Mexico where land sizes tend to max out at about 40-50ha. The cost of production is also cheaper in Sinaloa as tunnels are mostly not needed, and the majority of fruit is grown in substrate and is harvested slightly later than in Central Mexico. That said, it has been noted that there is not the same appetite for increased production in Sinaloa as there was just a few years ago, due to weather-related challenges and thrips.

The USA remains Mexico's leading export market, accounting for almost 88% of the total in 2023, with Canada also remaining a key market. Stakeholders view exports to Europe as more of an opportunistic endeavor when Spain and Morocco are short on supply, while exports to Japan have been steady over time with Mexico holding a leading position in the country's import market by a significant margin.

Encouragingly, Mexico's domestic market for blueberries is growing. Aneberries is attempting to raise domestic consumption amongst Mexico's population of more than 120 million people. The hope is that this could pave the way for a year-round program in Mexican supermarkets, encouraging more counter-seasonal imports which last year rose by 45% (for fresh blueberries) with almost the entirety of that volume coming from the USA. Sources report high rates of growth in domestic consumption with blueberries mostly sold in 6oz packs, although the fruit is sometimes sold in 9.8oz jumbo packs and pints in club stores. Notably, growers are also sending high-quality, proprietary genetics to domestic supermarkets as well in a bid to enhance the consumer experience and encourage market development. Consumption per capita still remains very low at approximately 70g per person.

ASIA / PACIFIC

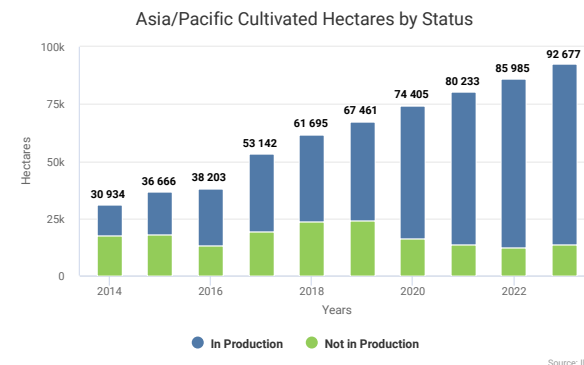
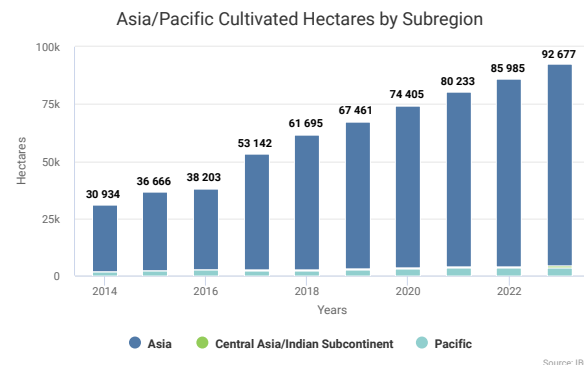
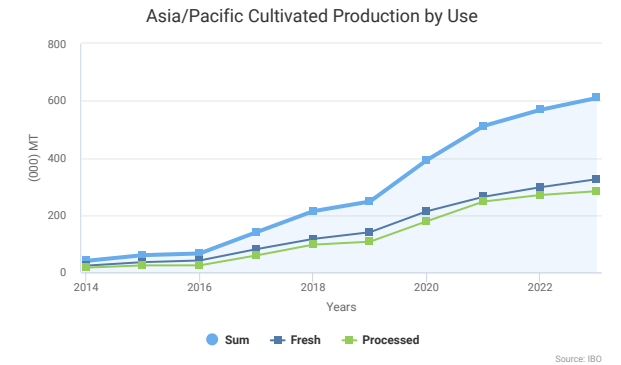
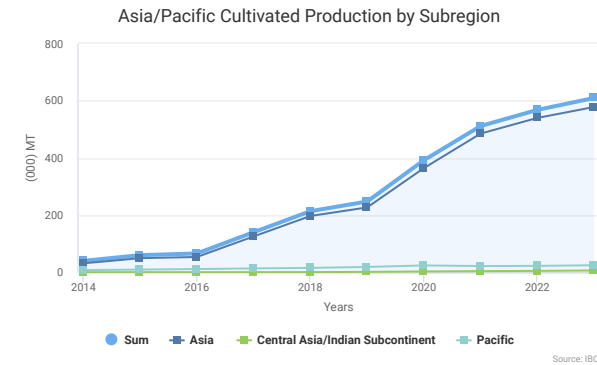
ASIA / PACIFIC

Planting and Production Data, Figures & Commentary (Denominated in Hectares and Thousands of Metric Tons)

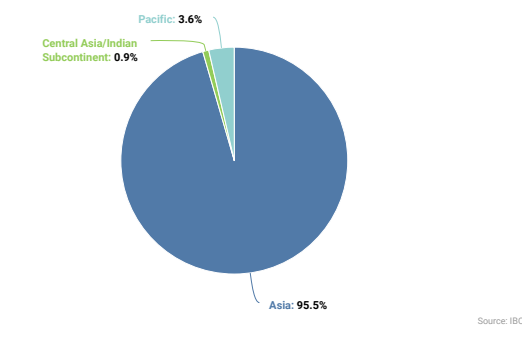
Asia/Pacific Cultivated Hectares by Subregion

Asia/Pacific	Hectares Planted					2023 Production (000) MT		
	2019	2020	2021	2022	2023	Fresh	Process	Total
Growth Totals								
Asia	64,279	70,804	76,241	82,095	88,527	295.26	282.81	578.07
Pacific	2,737	3,106	3,430	3,277	3,350	24.23	0.70	24.93
Central Asia/Indian Subcontinent	445	495	562	613	800	6.35	0.30	6.65
Asia/Pacific Totals	67,461	74,405	80,233	85,985	92,677	325.84	283.81	609.65

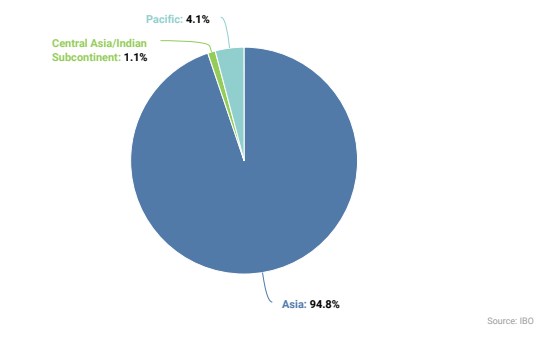
Source: IBO



2023 Asia/Pacific Cultivated Hectares by Subregion



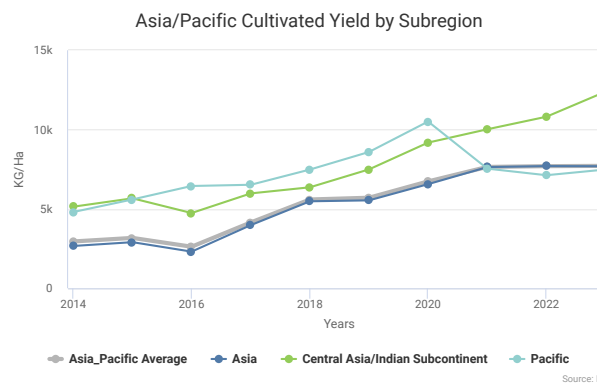
2023 Asia/Pacific Cultivated Production by Subregion



Asia/Pacific Cultivated Production by Subregion(000) MT

Asia/Pacific	2021			2022			2023		
	Fresh	Process	Total	Fresh	Process	Total	Fresh	Process	Total
Productions Totals									
Asia	238.68	246.60	485.28	270.46	269.48	539.94	295.26	282.81	578.07
Pacific	21.40	0.70	22.10	22.13	0.70	22.83	24.23	0.70	24.93
Central Asia / Indian Subcontinent	4.06	0.30	4.36	4.94	0.30	5.24	6.35	0.30	6.65
Asia / Pacific Totals	264.14	247.60	511.74	297.53	270.48	568.01	325.84	283.81	609.65

Source: IBO



Asia/Pacific 2023 Production Metrics

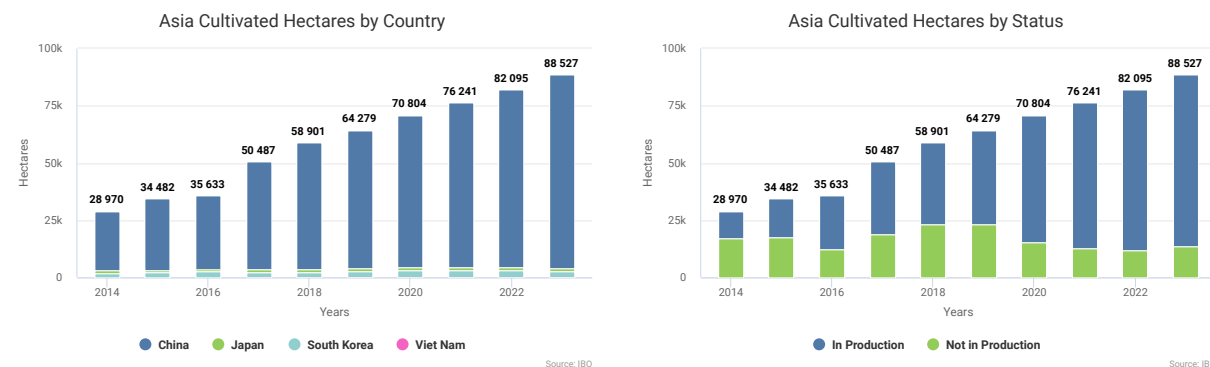
Hectares Planted:	92,677 Ha
Hectares in Production:	79,022 Ha
Production:	609.65 (000) MT
Growth in Production ¹ :	▲41.64 (000) MT (7.33%)
Growth from Hectares ² :	▲43.36 (000) MT (104.12%)
Growth from Yield ³ :	▼-1.72 (000) MT (-4.13%)
Yield:	7,714.71 (Kg/Ha)

Source: IBO and Agronometrics

¹ Volume change compared to previous season
² Change in volume due to hectares entering or leaving production
³ Change in volume due to field productivity (yields)

ASIA

Planting and Production Data, Figures & Commentary (Denominated in Hectares and Thousands of Metric Tons)



Asia Cultivated Hectares by Country

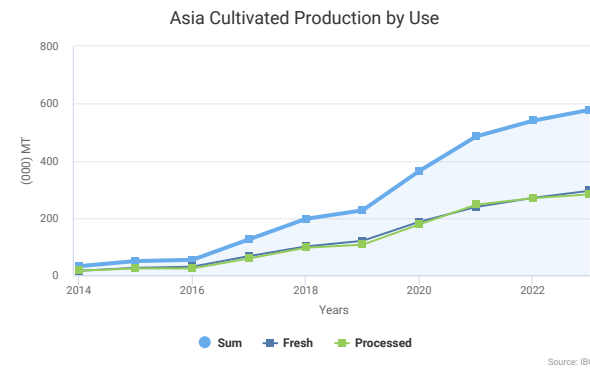
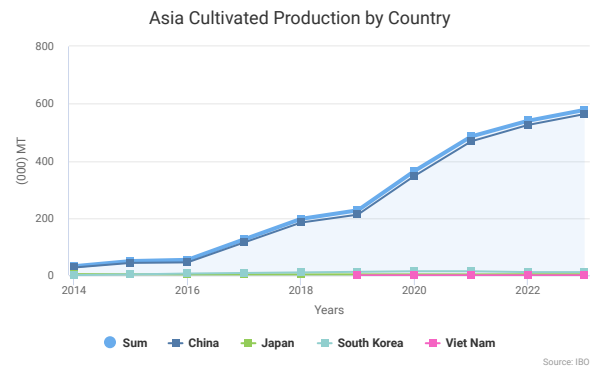
Asia	Hectares Planted					2023 Production (000) MT		
	2019	2020	2021	2022	2023	Fresh	Process	Total
Growth Totals								
China	60,300	66,400	71,781	77,641	84,420	283.35	280.11	563.46
<i>Guizhou</i>	15,000	15,000	15,008	15,016	15,090	11.98	109.36	121.34
<i>Liaoning</i>	7,560	7,800	8,149	8,530	8,843	25.91	60.13	86.04
<i>Sichuan</i>	5,800	6,667	7,522	8,453	9,271	76.32	8.59	84.91
<i>Yunnan</i>	5,232	6,573	7,900	9,344	12,000	55.20	6.13	61.33
<i>Shandong</i>	6,308	7,333	8,028	8,785	9,392	29.85	29.85	59.70
<i>Anhui</i>	6,000	6,667	7,636	8,692	9,500	33.43	13.96	47.39
<i>China Others</i>	4,210	5,513	6,251	7,054	8,185	14.65	21.89	36.54
<i>Jilin</i>	4,000	4,000	4,000	4,000	4,020	5.53	13.07	18.60
<i>Hubei</i>	2,400	2,667	2,778	2,899	2,945	12.12	5.54	17.66
<i>Jiangsu</i>	1,950	2,000	2,100	2,209	2,301	6.38	6.75	13.13
<i>Zhejiang</i>	650	700	817	944	1,015	7.97	0.91	8.88
<i>Chongqing</i>	900	1,150	1,241	1,341	1,454	3.84	3.91	7.75
<i>Shaanxi</i>	290	330	350	372	404	0.17	0.02	0.19
South Korea	2,600	3,000	3,000	3,000	2,600	9.00	2.00	11.00
Japan	1,375	1,400	1,455	1,448	1,500	2.90	0.70	3.60
Viet Nam	4	4	5	6	7	0.01	-	0.01
Asia Totals	64,279	70,804	76,241	82,095	88,527	295.26	282.81	578.07

Source: IBO

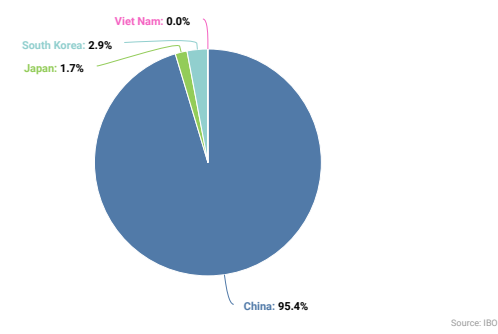
Asia Cultivated Production by Country(000) MT

Asia	2021			2022			2023		
	Fresh	Process	Total	Fresh	Process	Total	Fresh	Process	Total
Productions Totals									
China	223.57	244.65	468.22	258.53	266.78	525.31	283.35	280.11	563.46
<i>Guizhou</i>	11.39	102.53	113.92	11.97	107.74	119.71	11.98	109.36	121.34
<i>Liaoning</i>	22.17	51.72	73.89	24.59	57.37	81.96	25.91	60.13	86.04
<i>Sichuan</i>	56.10	6.23	62.33	67.71	7.52	75.23	76.32	8.59	84.91
<i>Yunnan</i>	38.43	4.27	42.70	48.49	5.39	53.88	55.20	6.13	61.33
<i>Shandong</i>	23.00	23.00	46.00	26.37	26.37	52.74	29.85	29.85	59.70
<i>Anhui</i>	30.80	13.20	44.00	32.34	13.86	46.20	33.43	13.96	47.39
<i>China Others</i>	12.00	18.00	30.00	13.47	20.20	33.67	14.65	21.89	36.54
<i>Jilin</i>	5.22	12.18	17.40	5.48	12.79	18.27	5.53	13.07	18.60
<i>Hubei</i>	9.84	4.22	14.06	11.48	4.92	16.40	12.12	5.54	17.66
<i>Jiangsu</i>	5.94	5.94	11.88	6.24	6.24	12.48	6.38	6.75	13.13
<i>Zhejiang</i>	5.85	0.65	6.50	6.62	0.74	7.36	7.97	0.91	8.88
<i>Chongqing</i>	2.70	2.70	5.40	3.62	3.62	7.24	3.84	3.91	7.75
<i>Shaanxi</i>	0.13	0.01	0.14	0.15	0.02	0.17	0.17	0.02	0.19
South Korea	12.60	1.40	14.00	9.00	2.00	11.00	9.00	2.00	11.00
Japan	2.50	0.55	3.05	2.92	0.70	3.62	2.90	0.70	3.60
Viet Nam	0.01	-	0.01	0.01	-	0.01	0.01	-	0.01
Asia Totals	238.68	246.60	485.28	270.46	269.48	539.94	295.26	282.81	578.07

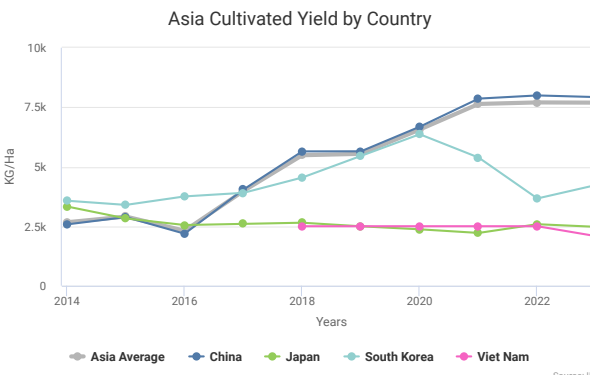
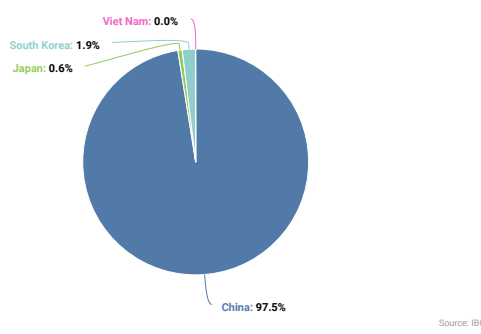
Source: IBO



2023 Asia Cultivated Hectares by Country



2023 Asia Cultivated Production by Country



Asia 2023 Production Metrics

Hectares Planted:	88,527 Ha
Hectares in Production:	75,155 Ha
Production:	578.07 (000) MT
Growth in Production ¹ :	▲38.13 (000) MT (7.06%)
Growth from Hectares ² :	▲41.83 (000) MT (109.69%)
Growth from Yield ³ :	▼-3.69 (000) MT (-9.69%)
Yield:	7,691.54 (Kg/Ha)
Exports:	12.22 (000) MT
Imports:	57.23 (000) MT

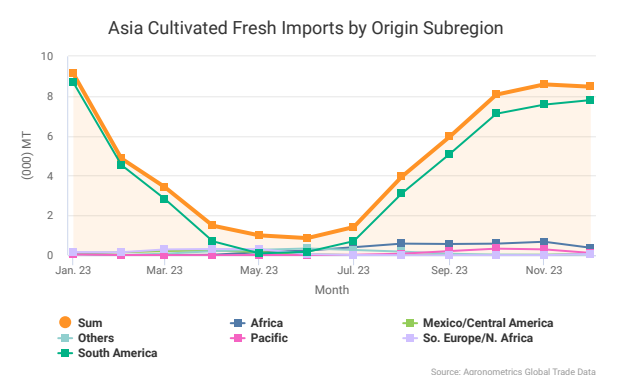
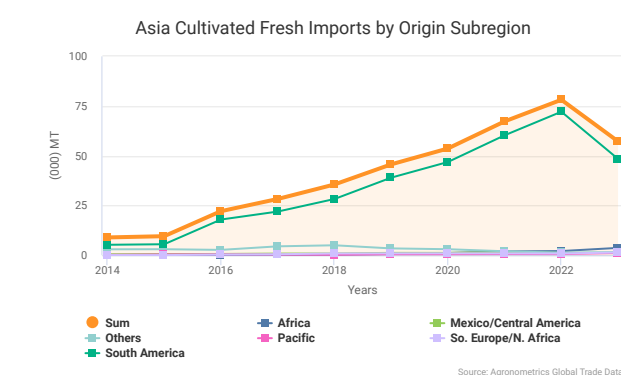
Source: IBO and Agronomics

¹ Volume change compared to previous season
² Change in volume due to hectares entering or leaving production
³ Change in volume due to field productivity (yields)

Asia Imports by Origin Subregion (000) MT

Origin	2019	2020	2021	2022	2023
South America	39.00	46.87	60.32	72.15	48.41
Africa	0.62	1.13	1.91	2.10	3.69
So. Europe/N. Africa	0.96	0.97	0.95	0.87	1.36
Mexico/Central America	1.19	1.17	1.56	1.18	1.06
Asia	0.10	0.12	0.22	0.22	0.66
Others	3.82	3.41	2.36	1.64	2.05
Asia Totals	45.69	53.66	67.31	78.16	57.23

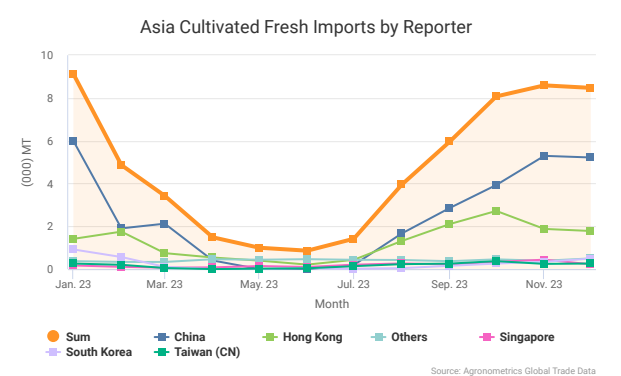
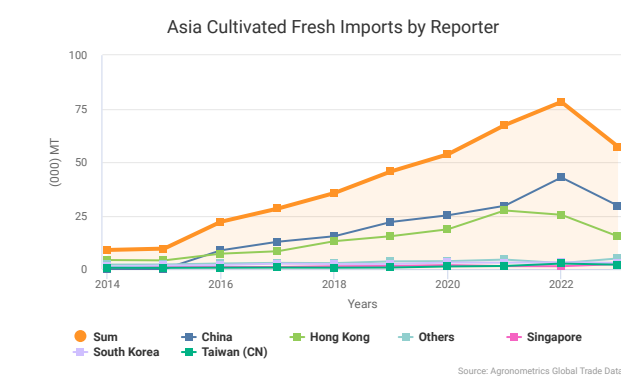
Source: Agronomics Global Trade Data



Asia Imports by Reporter (000) MT

Reporter	2019	2020	2021	2022	2023
China	22.05	25.16	29.60	42.85	29.59
Hong Kong	15.40	18.61	27.41	25.39	15.29
South Korea	2.43	3.08	3.01	3.19	2.94
Taiwan (CN)	0.74	1.23	1.45	2.58	2.07
Singapore	1.47	1.88	1.39	1.34	2.36
Others	3.62	3.71	4.45	2.81	4.98
Asia Totals	45.69	53.66	67.31	78.16	57.23

Source: Agronomics Global Trade Data



Asia Report Team Narrative

For an in depth complement to the happenings in the most established regions of Asia, please visit the following country reports:

➤ [China](#)

Apart from China (See China Report Team Narrative) which is, according to official Chinese data, the world's largest blueberry producer and a major import market, the only country in Asia with a sizable level of production is South Korea – a nation whose hectarage and volume in 2022 was just below that of Germany.

South Korea's production volume has been steadily increasing since overtaking Japan in 2016, doubling in size over the three years that followed to 2019. Much of this growth has come from higher-yielding early season southern highbush varieties under tunnels as plantings mature, although the shift in timing has led to a return in interest towards earlier northern highbush cultivars for open field production. A lot of the varietal conversion in Korea is being led by a private nursery and genetics company from the U.S. Pacific Northwest.

Varietal and agronomic changes have led to a generalized improvement in fruit quality, with local Korean blueberries available from January to October, competing against imported Chilean blueberries in the early season and usually at higher prices to reflect a consumer preference for local fruit.

South Korea's fresh blueberry imports were down marginally in 2023, which bucks the trend of Northern Hemisphere markets overall. With higher prices paid on average, Koreans spent more on imported fresh blueberries than ever before (+7% on 2022). More than 91% of imported value was attributed to Chilean supply, and that momentum carried through to early 2024 with Chilean imports far exceeding previous monthly records in both January and February. At levels far below those of Chile, Canada and the USA were the second- and third-leading import suppliers respectively for fresh product, with Oregon as the only U.S. state that is allowed to ship to the market.

Reflecting broader demand for the category, imported volumes of frozen blueberries achieved new records in 2024 as well, up almost 17% year-on-year and surpassing a previous record set in 2014. Chile overtook the USA as the leading supplier in this category for the first time since 2019, although when including Canada, North America would be considered as the leading source of frozen blueberry supply in the Korean market.

In 2023 South Korea's import volume of fresh blueberries was around nine times greater than that of Japan, which has been a relatively static import market in recent years. Last year Mexico accounted for around half the supply (and its volume was higher still in early 2024), followed by the United States and Chile.

For a country with a population of more than 125 million people, Japan's per capita blueberry production and imports are now much smaller than their Korean neighbors and have been static for years. This may signal opportunities for growth with concerted efforts, especially considering Japan's strong horticultural reputation in other crops such as strawberries.

Southeast Asia has been a focal point for market development amongst blueberry export industries worldwide, as evidenced by the fact non-protocol import markets attract supply from all corners of the globe.

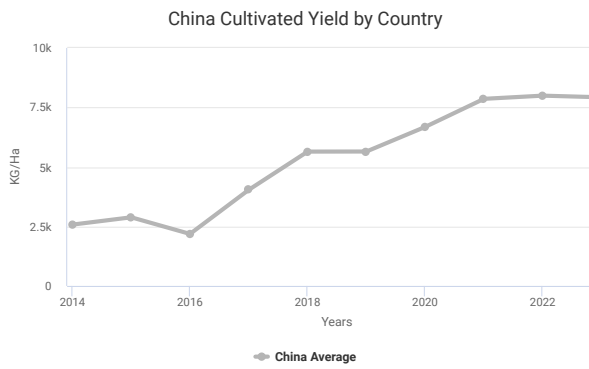
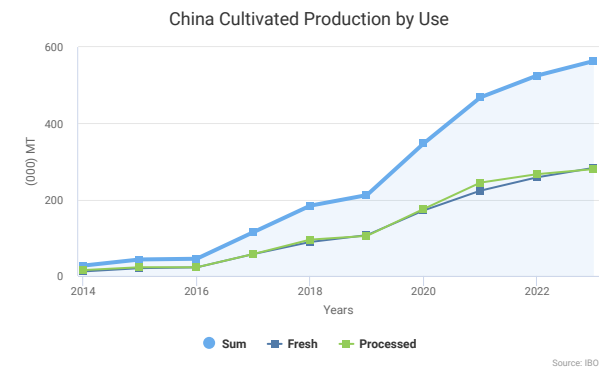
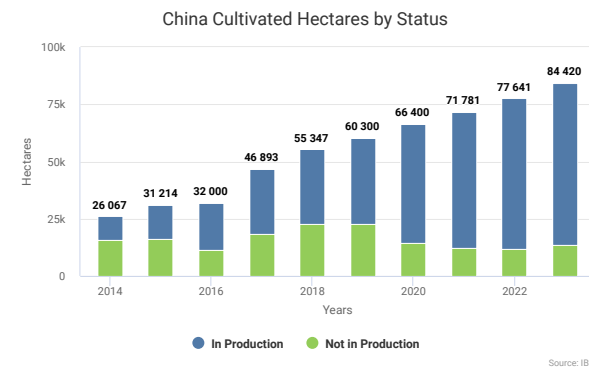
Singapore's blueberry imports surged by 73% year-on-year in 2023 to an all-time high. South Africa accounted for more than two-fifths of the total, with the rest spread amongst numerous sources, led by Peru, Australia, China (whose market presence in Singapore is a recent phenomenon as a byproduct of increased quality in China and competition from its province of Yunnan, combined with concerted marketing strategies from leading Chinese producers) and Chile. Furthermore, the Singaporean fresh blueberry import market notched a monthly record in November 2023, and then again in March 2024. For the spike seen in March, most of the volume came from Hong Kong so it can be reasonably deduced that these were re-exports; without being able to determine the exact origins of this fruit, we can point out that Hong Kong's imports almost doubled in that month year-on-year, with a massive jump in particular for Peruvian blueberries and to a lesser extent Moroccan blueberries.

In terms of other markets in the region, Thailand's fresh blueberry imports rose strongly for the fourth consecutive year in 2023, more than doubling since 2020 with Peru accounting for three-quarters of supply and other suppliers of note including China, Australia and Chile.

CHINA



Planting and Production Data, Figures & Commentary (Denominated in Hectares and Thousands of Metric Tons)



China 2023 Production Metrics

Hectares Planted:	84,420 Ha
Hectares in Production:	71,094 Ha
Production:	563.46 (000) MT
Growth in Production ¹ :	▲38.15 (000) MT (7.26%)
Growth from Hectares ² :	▲43.15 (000) MT (113.10%)
Growth from Yield ³ :	▼-5.00 (000) MT (-13.10%)
Yield:	7,925.33 (Kg/Ha)
Exports:	1.01 (000) MT
Imports:	29.59 (000) MT

Source: IBO and Agronomics

¹ Volume change compared to previous season

² Change in volume due to hectares entering or leaving production

³ Change in volume due to field productivity (yields)

China Cultivated Fresh Exports by Partner (000) MT

Reporter	2019	2020	2021	2022	2023
Hong Kong	-	-	-	-	0.31
Singapore	-	-	0.00	0.00	0.25
Russia	0.07	0.11	0.12	0.15	0.22
Thailand	-	-	-	-	0.10
Malaysia	-	-	0.00	-	0.05
Others	-	-	-	0.02	0.08
China Totals	0.07	0.11	0.12	0.18	1.01

Source: Agronomics Global Trade Data

No.1 Blueberry Brand in China



Constant Pursuit of Leading Varieties

collaboration with global leading berry companies for licensed large-scale planting based on the preference of Chinese consumers

Global Production for 52-week Supply

52-week supply every year with production in key regions including Chile, Peru, and Yunnan Province in China

Self-owned growing areas in China

self-owned growing areas in Yunnan and Qingdao with smart plantation technology, empowering efficient operation of the blueberry industry

Quality Fruits Delivered with Smart Cold Chain Logistics

pioneer in fruit and vegetable cold chain, with over 30 self-built cold chain distribution centers. Joy Wing Mau Binhai Tower in Shenzhen, the first fully-automated intelligent fruit and vegetable cold storage in Asia

Omni-channel Sales, China Market at its Core to Reach Southeast Asian Markets

coverage of over 50 wholesale markets, 10,000 supermarkets, and 5 leading e-commerce platforms across Mainland China; expansion to HK, Singapore, Malaysia, Thailand, and Indonesia

Strategic Partnership with China's Aerospace Industry

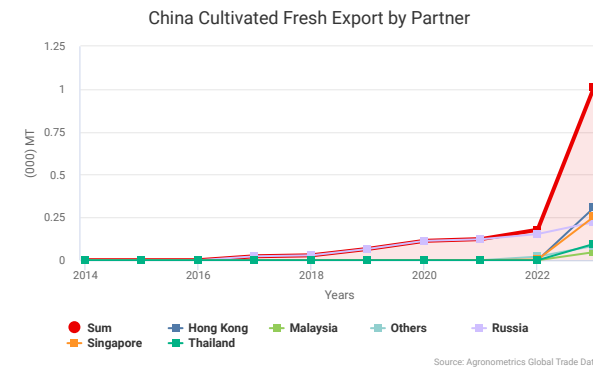
certified provider of agricultural products for China's aerospace industry, covering 200 million households nationwide.



Do Your Eyes A Favour
Enjoy JOYVIO Blueberries



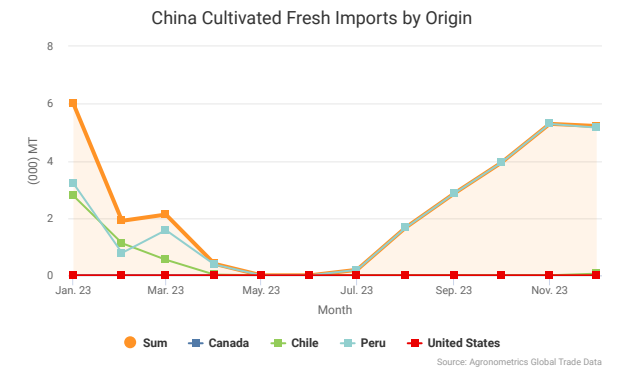
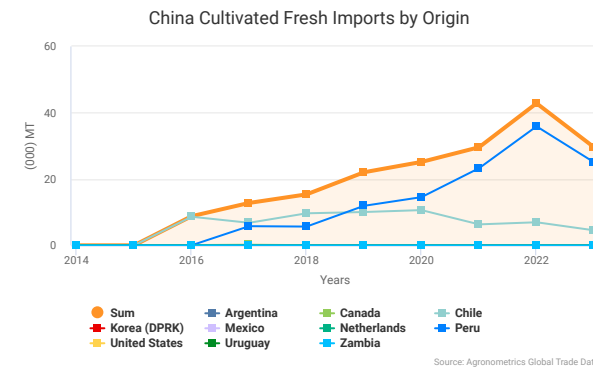
For collaboration, please contact: dani@joywingmau.com



China Cultivated Fresh Imports by Origin (000) MT

Reporter	2019	2020	2021	2022	2023
Peru	11.92	14.54	23.27	35.89	25.05
Chile	10.05	10.62	6.32	6.96	4.53
Canada	0.07	0.00	-	-	0.00
United States	-	0.00	0.00	0.00	0.00
Others	0.01	0.00	-	-	-
China Totals	22.05	25.16	29.60	42.85	29.59

Source: Agronometrics Global Trade Data



China Report Team Narrative

An air of optimism and momentum pervades the Chinese blueberry industry, where two years ago the mood was one of frustration over restrictions in converting crops to non-essential crops such as berries, and COVID lockdowns that limited sales in major coastal cities. The same land use restrictions remain (see below for further details), and the demand amongst growers to plant new blueberry hectares is high when they are able to procure the space to do so, but the sector is still replete with growers who already have thousands of blueberry hectares planted and are interested in converting to higher-yielding genetics with better flavor, size and shelf-life characteristics.

Some international genetics companies are engaged in China, and a few – primarily from the US, Australia and Spain – are ramping up their introduction of new varieties and plant material, although there are some notable absences from particular global leaders in this space (as well as inclusions from up-and-comers who are reluctant to divulge their plans). This is happening at the same time as the intensity has lifted on investigations into illegal plantings of proprietary plantings (see [Discrepancies in Status of Intellectual Property](#) below for more information).

Movement of plant material into China remains complex. After a series of years during which companies were “scraping by” to get an import permit, some companies have developed systems to bring in material. While still complex, many have invested in having a local presence such that business in China is now more economically viable. The aforementioned Spanish company has bought out the joint venture with its Chinese nursery partner and its supply is “sold out” at the time of writing, while a major U.S.-based group has secured facilities to propagate more plants while working towards its own wholly owned expanded operations to meet future needs. Both these companies have more and more licensees setting up operations in China from all over the world, while planting continues amongst affiliates from other genetics ecosystems. There are also reports of Chinese businesses reaching out to public

and private blueberry genetics programs globally in pursuit of new options.

The state of an industry is not defined by the activities of intellectual property companies, but we have chosen to lead with this narrative this year because it is one indicator of the degree of bullishness in the sector; a sector that is notoriously challenging to adequately gauge for non-Chinese and Chinese stakeholders alike, with the former sometimes baffled by the fact that China is now the largest blueberry grower and market in the world, and one that keeps on growing. But China is a land of big numbers, and its population size means that market penetration and per capita consumption of this antioxidant-rich superfruit remain very low -including processed and fresh blueberries, probably just 200g per person as a rough estimate, but the average Chinese citizen does not know much about them.

China’s market is frequently described as “bimodal” for blueberries and other high-value produce items, indicating that high quality fruit is handsomely rewarded on price, and average-quality fruit is punished on price without much gradation between the two. There are several reasons for this; one is the great wealth that exists in certain pockets of the population where consumers are willing to pay significant premiums for healthy and flavorful food of all types, while for consumers outside this demographic who may buy blueberries they will always be at a high price relative to the household budget. This puts premium blueberries in more of a luxury category of consumption, and psychologically this is an important distinction in understanding the Chinese consumer; if you are buying a product that fits into an expensive or luxury category, the highest qualities are built into expectations and there is minimal tolerance for defects. Just because some consumers are willing to pay high prices, blueberry exporters targeting China take this for granted at their peril; at a certain price limit, and especially if the fruit is not of high enough quality, it will not move as traders (especially in 2nd, 3rd and 4th tier cities) are less willing to take on the risk of thin or negative margins in-market. This niche status has some reference in

other markets in their earlier phases of development. For China the great distinction is the role of fruit, particularly quality and specifically sweet fruit, in the culture as traditional sugary sweet foods are less common and quality fruit is viewed as highly desirable, often given as a gift in a gift-giving culture. In blueberries, the rewards have been high for players creating premium quality in China, while those pursuing a more standard approach have generally secured less momentum and compelling returns.

The heady pace that has historically accompanied so many growth spurts for a variety of industries in China led to what some have described as a “wild west” scenario for the conversion of farmland to uses other than staple agricultural crops, whether it be for the development of advanced horticultural systems and greenhouses or even commercial property. Both food security concerns and societal backlash (by Chinese standards) over so-called ‘nail house’ hold-outs against large developments led to an adjustment in land use policy from Beijing that has placed a greater emphasis on utilizing arable land for rice, wheat, and corn, whilst also giving more negotiating power to individual plot holders; a major issue because the establishment of new blueberry farms often involves the agglomeration of sometimes hundreds of small landowners to negotiate with a local government enterprise that then signs a lease to the prospective grower, often with significant financial compensation from US\$30,000-100,000 per hectare required.

In recent decades, land in categories such as “Basic Farmland” were available for use in a variety of agricultural and horticultural endeavors. During the pandemic, the restriction for high-value horticultural use changed suddenly. Importantly, local governments, in an effort to effectively comply with new policies set out by Beijing, continue actively recategorizing land which may have been available for horticultural (e.g. the “Garden Land” category) to ensure minimum quotas of basic farmland and hectares/Mu planted in food staple crops are met. In practice, this has made securing farmland very difficult as laws are now applied more strictly, and implies

much of the new growth in blueberry plantings will be taking place by converting existing orchards of other crops already classified as non-essential. This new dynamic has profoundly impacted the growth dynamics for domestic and international firms alike. Investment continues but with so many land access controls in place, there are strong incentives for higher capital expenditures and operational efficiency to increase output per hectare/Mu as well as moving up market in pursuit of genetics the market considers to be premium. As a result yield increases on a per hectare basis are anticipated in many growing regions. An extension of production to a more diverse number of provinces with acceptable climates and available land is also underway.

One question which has not been answered is the impact these new land access dynamics will have on the extent of illegal plantings of proprietary genetics. If land available for blueberries remains scarce, and IP infringement begins to have consequences, the pressure to mitigate legal risk on usable land could increase. To reference one industry expert interviewed, “if there are favorable rulings in the interest of breeders rights, there will be a rush to clean up the industry. If there are not, this will get more complicated and may impact the speed at which the Chinese industry gains access to new and better genetics in future.”

Blueberries were first introduced to China in the 1980s in the northeastern province of Jilin and the province of Jiangsu to the north of Shanghai. But it wasn’t until around 2010 that an exponential rise in production started to be seen with the province of Shandong as a major focal point, built mainly around northern highbush varieties. In 2012 China’s largest blueberry grower at the time, based in Shandong’s largest city Qingdao, was acquired by a large corporate fruit company owned by the parent of Lenovo Group. That company then merged three years later with China’s largest fruit distributor, and in that same year it had entered into a joint venture with the world’s largest blueberry company – based in Chile – to bolster production of the crop in China with leading genetics.

That joint venture partnership is now one of many that are growing IP blueberries successfully in the southwestern province of Yunnan, the figurative engine room of China's modern fresh blueberry industry, where open varieties are nonetheless the norm. Yunnan's blueberry production starts in December with small volumes, peaks from February to mid-April and continues until May, although the timing extremes are progressively being extended – to November at the earliest stage and June at the late stage. There are reports of Yunnan growers producing mid and high-chill blueberries at 2,000 meters above sea level in the hope of hitting the market in the scarcest months of September and October, although this is rather an anomaly at this point in time and yields are reportedly affected due to the low photoperiod at that latitude. The reason Yunnan has an extended season is due to its richness of microclimate diversity, proximity to the equatorial latitude band, and mild growing conditions, from the lower altitude tropical area around Xishuangbanna to Jianshui at 1,500m and Qujing at 2,000m. The area has a latitude, elevation, and climatic tendencies reminiscent of, but not identical to, Central Mexico.

Industry stakeholders estimate a 10-15% increase in production for Yunnan in the 2023 season, largely due to the impact of maturing fields because the province was affected by weather-related challenges, including a cold snap in January that heavily impacted crops in certain areas, especially those with open fields.

In close proximity to Yunnan, the province of Sichuan is also characterized by high altitudes and has a colder climate, which has implications for the varietal mix that can be planted with a slightly later season. But the province is known for its spring rains and heat during the harvesting period, with a broad reputation for inconsistent quality. The same could be said of some other southern highbush-growing provinces such as Anhui and Guizhou. Readers will note that Guizhou has the highest plantings of blueberries in China, but for context most of its production is from small growers producing rabbiteye

cultivars that mainly go to juice grade processing with minimal impact on the fresh blueberry market.

Despite this, because of the high saturation of plantings in Yunnan and agricultural land restrictions more broadly, growers are investigating the potential of other warm – although much more humid - regions for southern highbush blueberry production, including Guizhou, Guangxi and Guangdong.

China's fresh blueberry prices usually start to plummet when large volumes of blueberries from the Yangtze River Delta area near Shanghai (Jiangsu, Zhejiang, Anhui) and the Shandong province come on-line. The season finishes in the northeastern provinces of Liaoning and Jilin, often winding up in August when late summer rains arrive. Some northern growers start earlier as growers cultivate their blueberries in greenhouses to induce earlier production and protect their crop from the harsh winter and spring climatic events. Many of these greenhouses follow the traditional 'half hoop' design with north-facing earthen walls, used for decades in other crops as well.

As mentioned earlier, Shandong was where China's modern blueberry industry began, selected for its sandy and acidic soil conditions in select locations of the province, and a more temperate coastal climate than other more extreme areas of the northeast, where distant vaccinium cousins of wild blueberries already grow naturally. It is important to note that while comparatively mild, the coastal growing regions of the northeast still have harsh winter cold conditions with intense dry winds as well as disruptive spring freezes and untimely summer rains. Liaoning and Shandong play a critical role in servicing China during summer with production in June and July, while Shandong growers producing in greenhouses with back walls are able to achieve overlap with Yunnan with a March to late May window. However, this growing method only represents around 10% of the planting area, with most Shandong production grown in open fields under tunnels. Yields and fruit quality vary greatly in the region with more sophisticated operations yielding 15MT per hectare while smaller farms yield

around half that level. Yunnan, in contrast, has much higher yields that are more akin to what is achieved in Morocco, according to industry sources.

In Shandong, where the varieties Bluecrop and Duke predominate, the industry was hit by floods for several seasons but conditions were better in 2023, although there was an extreme heat spell in June and early July that led to incidences of fruit shrivel. In general, the season in Shandong and the surrounding provinces winds up when rains come in August, and this was the case last year as well.

Frosts tend to be more prevalent in Liaoning and Jilin, which are to the north of Shandong and are a bit later in their production, and when it comes to open field production such weather events often lead to crop diversions towards processing (as did the aforementioned fruit shrivel problems for a portion of the Shandong crop).

As proximity-to-market becomes of increasing importance for the global fruit trade, some industry experts believe these northeastern provinces have the potential to consolidate their strength in summer months, and genetics companies with northern highbush varieties have this region in their sights (although they emphasize and desire to explore growing regions with better conditions in the country), albeit not to the same extent as Yunnan currently. Such varietal conversion would directly compete with Peruvian imports, which have shown a trend over recent years of focusing on China at the start of their season in July, although in terms of absolute volume they usually peak in November and December. Peru's exports to China declined significantly in 2023 due to the El Niño phenomenon (down 30%), but the fairly limited volumes in July and August were higher year-on-year

Demand continues to exceed supply in China, but there is a belief within the industry that the market will become more selective about quality over the next three to five years. Brands take precedence over B2B company names and are often applied within retail segmentation strategies. You can now find

blueberries deep into the country but most commonly still in smaller pack sizes of 125g, although certain retailers sell larger pack sizes of between 300-500g. As a niche innovative concept that is gaining traction in China, and garners high premiums, more brands are selling blueberries in clusters, similarly to how grapes are sold, evoking a 'fresh field picked' aesthetic and experience. Opinions vary regarding the practices that underpin this marketing method, although many assert that it makes harvesting more efficient (especially with more sensitive varieties) and requires less labor; an issue that, like so many jurisdictions, is also affecting China's industry.

As volumes from Yunnan increase with berries exhibiting longer shelf life, an emerging trend has been the increased presence of Chinese fresh blueberry exports in other Asian markets such as Singapore and Thailand; a phenomenon that may also stem from cost competitiveness and proximity to market given it has also been seen with other Chinese-grown fruit. In 2023 blueberry exports from mainland China rose nearly six-fold to more than 1,000MT, while in March and April alone in 2024 this same level was almost achieved at more than 800MT, which bodes well for a further significant increase in exports this year. Singapore has been a major driver of this growth, with one of the Chinese JV partners growing in Yunnan having been very proactive with supermarket promotions and outdoor advertising in the city state. Like Singapore, Hong Kong lacks the adequate land or conditions to grow blueberries, and is also starting to become a market for blueberries from mainland China. The rise of Chinese exports into greater Southeast Asia provides an indication of the broader long term market potential for the entire region.

Discrepancies in Status of Intellectual Property

The current dynamics regarding IP, draws into question the risk-reward considerations as IP holders seek to effectively litigate under Chinese law. The hope among some is that a more effective litigious environment for protecting plant breeders

rights is in the offing in that regard. It cannot be ignored that the infringement of proprietary varieties in China today is considerable, with local industry participants estimating between 3,000-5,000 hectares of illegal plantings in Southwestern China today alone (a similar number may be established in the north but less data beyond anecdotes and online rumours is available). It has been reported that an estimated 7-9 lab and nursery companies provide the illegal young plants with relative impunity, mainly via complex subsidiary structures as they gain renown for being a source of such material. The results of the legal actions against allegedly infringing nurseries and growers underway will have a profound impact on industry dynamics in years to come. Recent rulings in proprietary apple varieties may be a harbinger of what's to come in blueberries, but the outcomes are not certain.

Some plant IP protection experts remain highly skeptical on the degree to which plant breeders IP rights will actually be respected in China for a number of reasons. Speaking confidentially, their assessment of the terrain is somewhat different from others. Politically, there are unique protections for small growers in China and the government at all levels is unlikely to take action against this group (it is the larger and more professional companies that the government is more willing to subject to authority and regulatory enforcement of all forms). More concerning is the trend in the actual implementation of UPOV and plant breeders rights in the country. Distinctive, Uniformity and Stability (DUS) testing, a traditional pre-modern DNA fingerprinting and genomic mapping process by which individual genotypes are observed in an environment and their unique physical attributes are recorded

Note - Information in the section above was gleaned from interviewing broader experts in IP in China observing the blueberry space towards the end of the production of this report. The perspective shared was current but not fully investigated, but the point of view appeared sufficiently important that the report team chose to publish. This issue is anticipated to be an area of consistent focus when reporting on China in the coming years due to the profound impact development in plant breeders rights and plant IP have on the industry.

and registered to prove novelty, will soon be required to occur in China to secure protection and variety registration and no longer accept international DUS data. This is unique as most countries will accept DUS testing data as part of the registration process from other International Union for the Protection of New Varieties of Plants (UPOV) countries. Furthermore, there is growing concern that slight variances in phenotype expression in China is being treated as grounds for an existing registered genotype to be considered “distinctive and unique”. This is playing out in real time in the country’s variety registrations. There are more than 600 blueberry varieties currently being registered in China with more coming. Many registrations are from known breeders and known varieties from around the world. Surprisingly, there are substantial numbers of registrations from organizations associated with companies, as well as company-university partnerships, in China. Some of the registered “varieties” from this group of local registrants have been observed in commercial fields in recent years, and according to some sources appear to actually be existing varieties belonging to another company from abroad. Additionally some of these parties registering varieties have colored histories in plant supply. “It is very possible that the same varieties are being registered multiple times by different parties, by the owner and non-owners” said one source. “We have seen this in some other crops and now it may be happening in blueberries. Worst scenario case [sic], it is thus possible that even if plant breeders rights were enforced some day in China, that the plant breeders themselves may not be able to own any rights on the varieties they developed.”

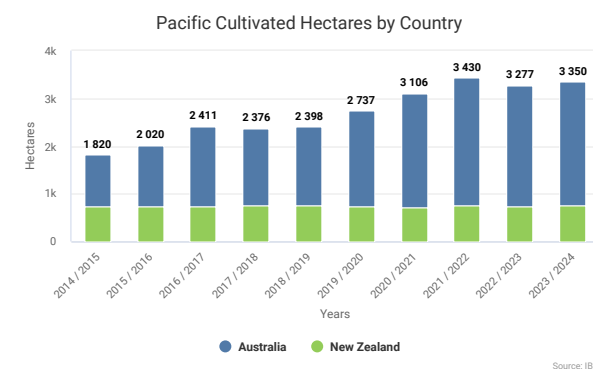
PACIFIC

Planting and Production Data, Figures & Commentary (Denominated in Hectares and Thousands of Metric Tons)

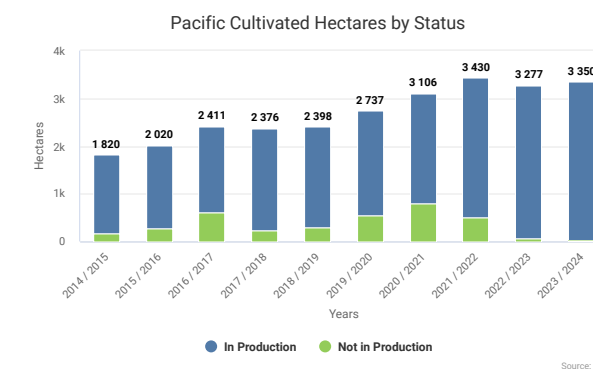
Pacific Cultivated Hectares by Country

Pacific	Hectares Planted					2023/2024 Production (000) MT		
	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	Fresh	Process	Total
Australia	2,002	2,386	2,680	2,537	2,602	20.23	-	20.23
New Zealand	735	720	750	740	748	4.00	0.70	4.70
Pacific Totals	2,737	3,106	3,430	3,277	3,350	24.23	0.70	24.93

Source: IBO



Source: IBO

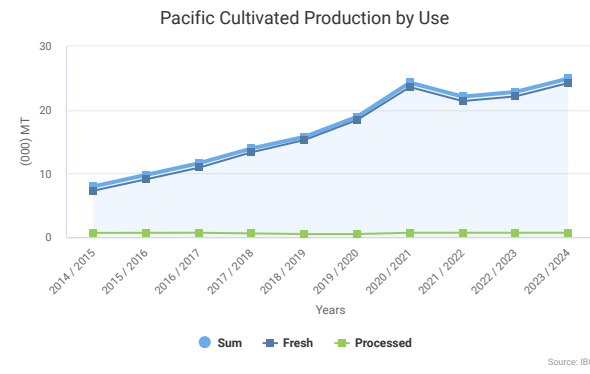
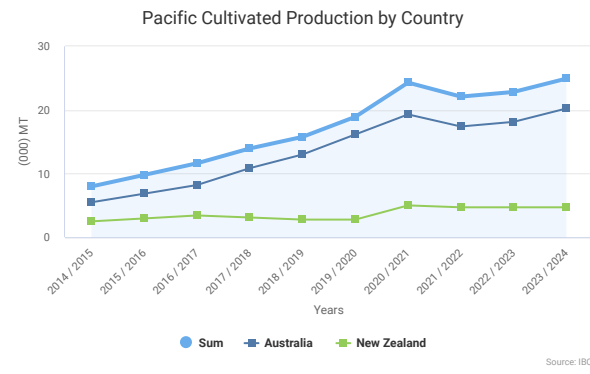


Source: IBO

Pacific Cultivated Production by Country(000) MT

Pacific	2021/2022			2022/2023			2023/2024		
	Fresh	Process	Total	Fresh	Process	Total	Fresh	Process	Total
Australia	17.40	-	17.40	18.13	-	18.13	20.23	-	20.23
New Zealand	4.00	0.70	4.70	4.00	0.70	4.70	4.00	0.70	4.70
Pacific Totals	21.40	0.70	22.10	22.13	0.70	22.83	24.23	0.70	24.93

Source: IBO

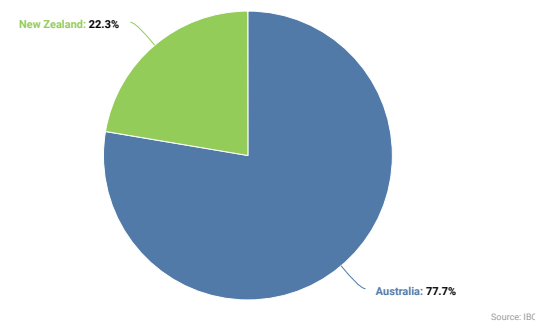


Pacific Exports by Partner Subregion (000) MT

Subregion	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024
Pacific	1.75	1.60	1.28	0.87	1.38
Asia	0.49	0.46	0.58	0.49	1.08
US & Canada	0.00	-	0.00	0.00	0.01
Western/Central Europe	0.00	-	0.00	-	-
Middle East	0.00	0.00	0.00	0.00	0.00
Others	0.01	0.00	-	0.00	0.00
Pacific Totals	2.26	2.06	1.86	1.37	2.47

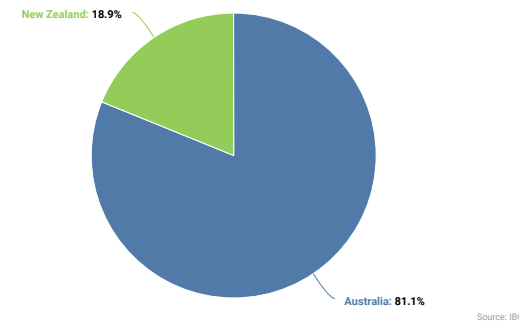
Source: Agronometrics Global Trade Data

2023/2024 Pacific Cultivated Hectares by Country



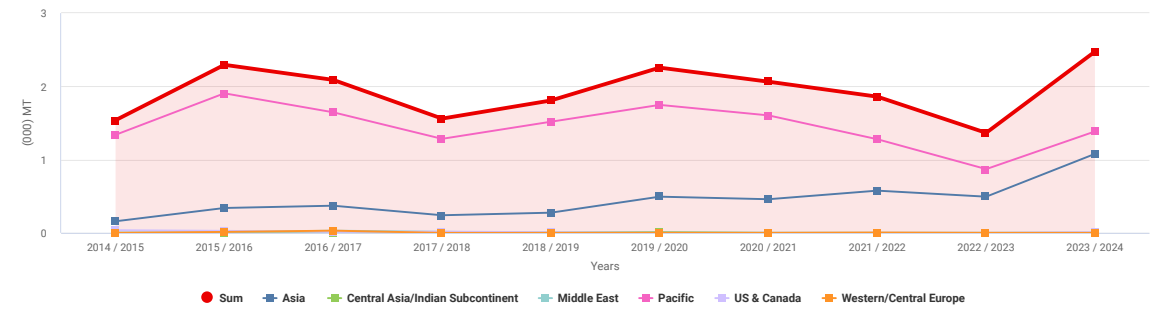
Source: IBO

2023/2024 Pacific Cultivated Production by Country

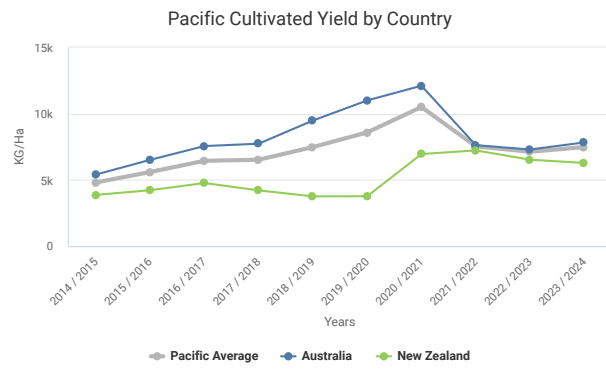


Source: IBO

Pacific Cultivated Fresh Export by Partner Subregion



Source: Agronometrics Global Trade Data



Source: IBO

Pacific 2023/2024 Production Metrics

Hectares Planted:	3,350 Ha
Hectares in Production:	3,331 Ha
Production:	24.93 (000) MT
Growth in Production ¹ :	▲2.10 (000) MT (9.20%)
Growth from Hectares ² :	▲0.91 (000) MT (43.11%)
Growth from Yield ³ :	▲1.19 (000) MT (56.89%)
Yield:	7,484.24 (Kg/Ha)
Exports:	2.47 (000) MT
Imports:	1.59 (000) MT

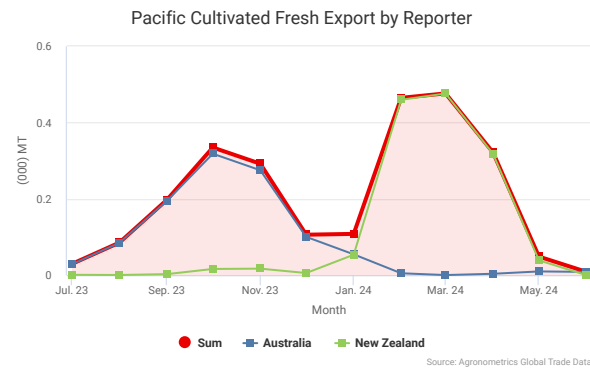
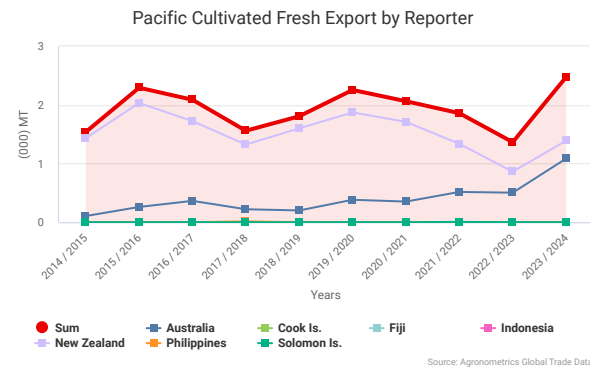
Source: IBO and Agronometrics

- ¹ Volume change compared to previous season
- ² Change in volume due to hectares entering or leaving production
- ³ Change in volume due to field productivity (yields)

Pacific Exports by Reporter (000) MT

Subregion	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024
New Zealand	1.87	1.71	1.34	0.86	1.39
Australia	0.38	0.35	0.52	0.50	1.08
Solomon Is.	-	-	0.01	-	-
Cook Is.	-	0.00	-	-	-
Others	0.00	-	-	-	-
Pacific Totals	2.26	2.06	1.86	1.37	2.47

Source: Agronometrics Global Trade Data



Pacific Imports by Reporter (000) MT

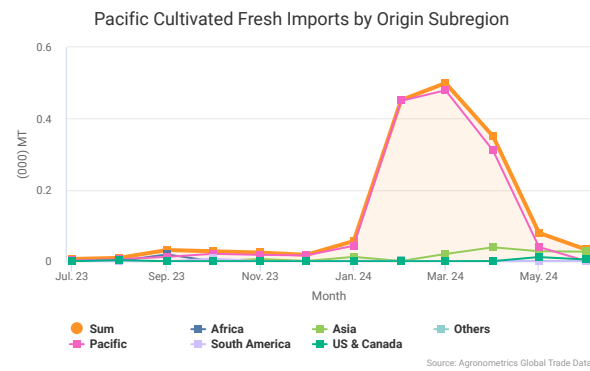
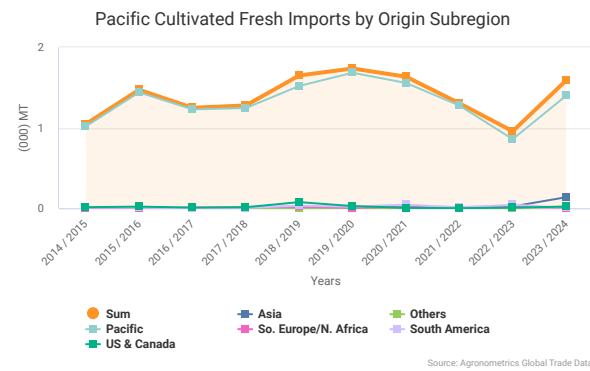
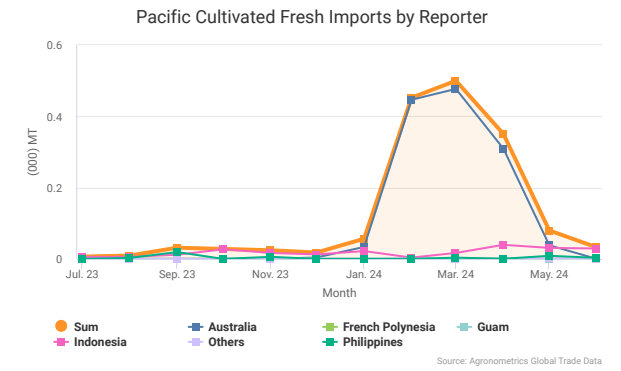
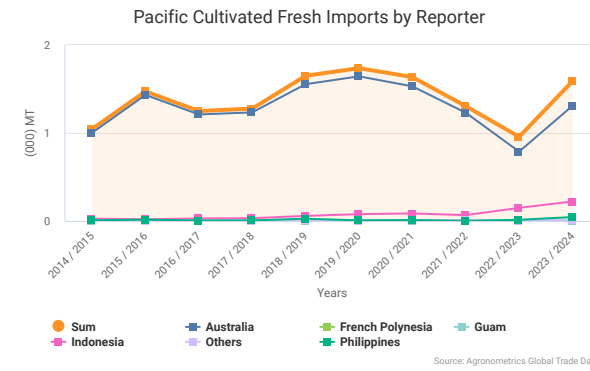
Reporter	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024
Australia	1.64	1.53	1.23	0.79	1.31
Indonesia	0.08	0.08	0.07	0.15	0.22
Philippines	0.01	0.01	0.00	0.01	0.04
New Caledonia	0.00	0.00	0.00	0.00	0.00
Kiribati	-	0.00	-	-	0.00
Others	0.01	0.00	0.01	0.01	0.01
Pacific Totals	1.74	1.64	1.31	0.96	1.59

Source: Agronometrics Global Trade Data

Pacific Imports by Origin Subregion (000) MT

Origin	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024
Pacific	1.68	1.56	1.28	0.86	1.40
South America	0.02	0.05	0.01	0.04	0.01
So. Europe/N. Africa	0.01	0.02	0.02	0.02	0.00
Asia	-	-	0.00	0.02	0.14
Africa	-	0.00	-	-	0.02
Others	0.03	0.01	0.00	0.01	0.02
Pacific Totals	1.74	1.64	1.31	0.96	1.59

Source: Agronometrics Global Trade Data



Pacific Report Team Narrative

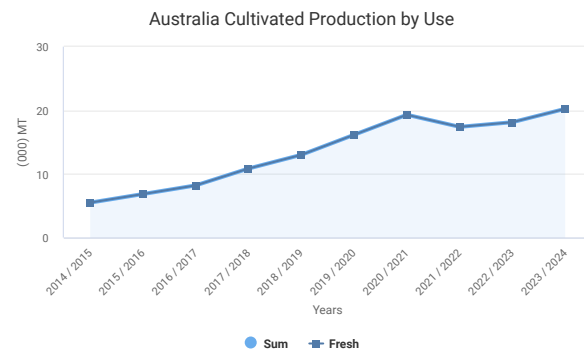
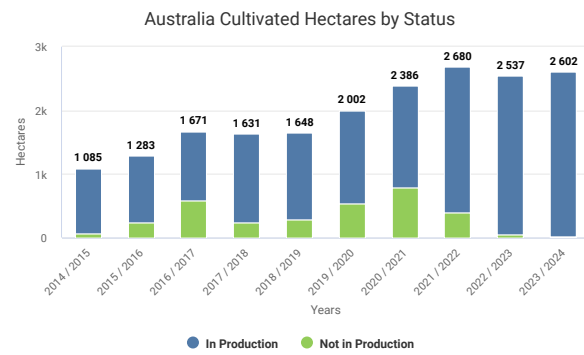
For an in-depth complement to what is happening in the Pacific please visit the following country reports:

- Australia
- New Zealand

AUSTRALIA



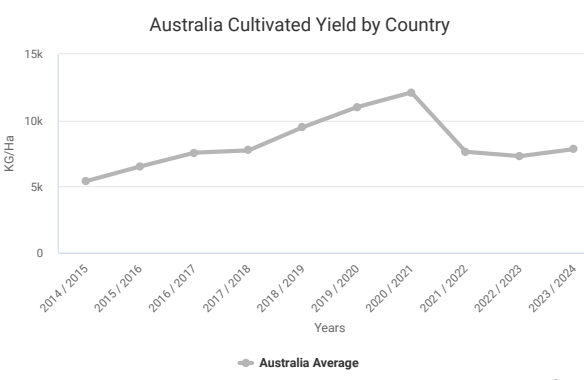
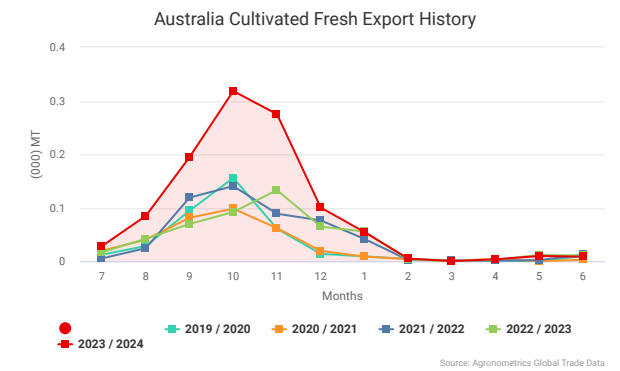
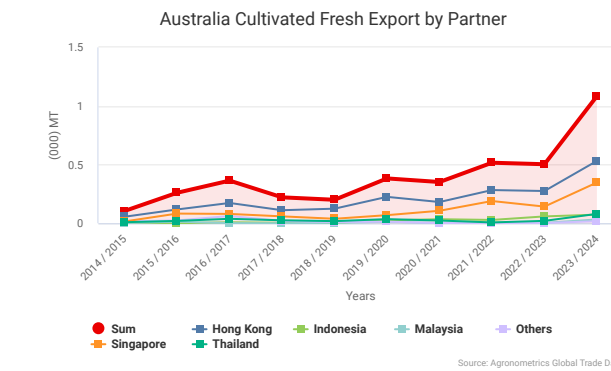
Planting and Production Data, Figures & Commentary (Denominated in Hectares and Thousands of Metric Tons)



Australia Cultivated Fresh Exports by Partner (000) MT

Reporter	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024
Hong Kong	0.23	0.18	0.28	0.28	0.53
Singapore	0.07	0.11	0.19	0.14	0.35
Indonesia	0.03	0.03	0.03	0.06	0.07
Thailand	0.04	0.02	0.01	0.02	0.08
Malaysia	0.01	0.00	0.00	0.00	0.03
Others	0.01	0.00	0.00	0.00	0.02
Australia Totals	0.38	0.35	0.52	0.50	1.08

Source: Agronometrics Global Trade Data



Australia 2023/2024 Production Metrics

Hectares Planted:	2,602 Ha
Hectares in Production:	2,583 Ha
Production:	20.23 (000) MT
Growth in Production ¹ :	▲2.10 (000) MT (11.58%)
Growth from Hectares ² :	▲0.72 (000) MT (34.41%)
Growth from Yield ³ :	▲1.38 (000) MT (65.59%)
Yield:	7,831.98 (Kg/Ha)
Exports:	1.08 (000) MT
Imports:	1.31 (000) MT

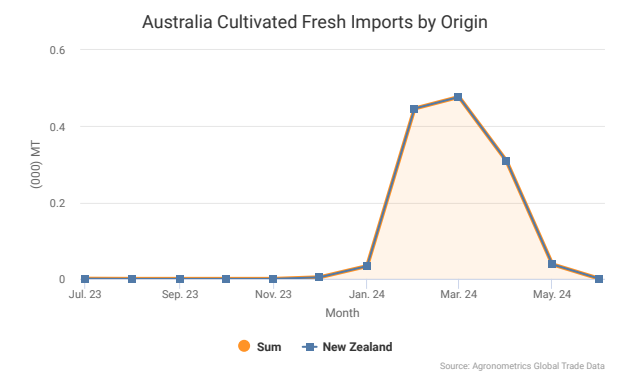
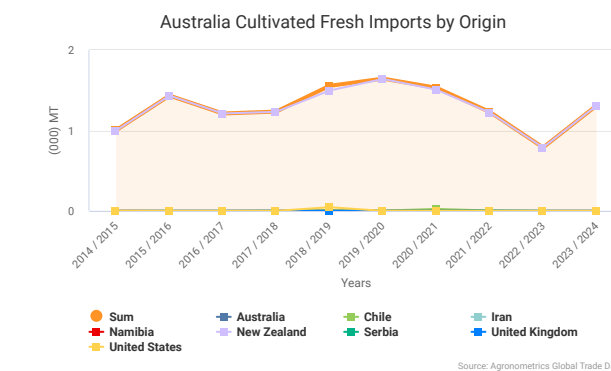
Source: IBO and Agronometrics

- ¹ Volume change compared to previous season
- ² Change in volume due to hectares entering or leaving production
- ³ Change in volume due to field productivity (yields)

Australia Cultivated Fresh Imports by Origin (000) MT

Reporter	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024
New Zealand	1.64	1.51	1.22	0.79	1.31
Others	0.00	0.02	0.01	-	-
Australia Totals	1.64	1.53	1.23	0.79	1.31

Source: Agronometrics Global Trade Data





Australia Country Member Summary

Adapted from the report by the Australian Blueberry Growers Association

After a few years of extreme weather, 2023 saw a return to more 'normal' conditions for the Australian blueberry industry. This meant yields were up considerably from the year before, however this saw a drop in value in the domestic category as supply was outstripping demand at certain points of the year. Production volumes from July 2023 to April 2024 were up 30.9% from the year before, but retail dollar value only increased by 12.7%. For comparison, the average retail price/kg was AUD \$21.79 (USD \$14.14) in April 2024 compared with more than AUD \$25/kg (USD \$16.66) in April 2023.

Exports have increased but domestic consumption remains dominant as many phytosanitary markets are not open to Australian fruit. That said, Australian varieties continue to be considered among the best in the world and are consumed by millions globally. We also have the distinction of the world's biggest blueberry being grown in Australia's Coffs Harbour region at 4cm wide and weighing in at 20.4g

The varroa mite response, which had been a major element of the previous season, ended as the pest was unfortunately determined to be unable to be eradicated. The long-term consequences of this on the industry will take many years to realise and the industry is investing heavily into research into alternative pollinators, best practice pollination, improved

understanding of the pollination dependence of different varieties on honeybee pollination.

The Berries Australia Executive Director had the privilege of attending the IBO Congress in Poland in 2023. It was an excellent learning and networking experience. It was interesting that many delegates had the misconception that the Australian horticulture industry is anti-imports, which is not the case. As we are an island nation with unique flora and fauna and freedom from some significant berry pests, we do have extremely robust biosecurity requirements for fresh produce. However, it should be noted that we are a net importer of frozen blueberries and New Zealand blueberries have access to Australia. With our year-round production, relatively small population and reputation for quality berries, the market opportunity for overseas berries is not high, but we are certainly not 'protectionist' and look forward to being a more significant player globally in the premium space in years to come.

The BerryQuest conference being held in Hobart in February 2025 represents the perfect opportunity to get to know the Australian berry industry better. We are excited to be hosting a range of international and local speakers along with farm tours in northern and southern Tasmania. We absolutely welcome international delegates so please check the berries.net.au for more information.

Australia Report Team Narrative

As a "natural laboratory" for blueberry development, the Australian industry may not have sufficient volume to make a real dent in the global market but it certainly punches above its weight in its contribution to the varietal transformation at play worldwide in warmer climates. Australia is home to three of the leading low chill blueberry breeding companies that have helped fuel the exponential rise in low- and no-chill genetics around the world. One of these, Australia's largest vertically integrated fresh produce company Costa Group, was acquired this year by an overseas consortium including leading berry company Driscoll's, a pre-existing shareholder. Meanwhile there is also an emerging fourth Australian blueberry genetics player currently in the early stages of its commercialization journey, established by a former co-owner of one of the incumbents.

A wide variety of micro-climates allowed Australia to become the first blueberry-growing nation to achieve 52-week supply, with aggressive planting in the Coffs Harbour region of New South Wales (NSW) responsible for much of the growth in recent years and consumer demand that has responded in kind, albeit with a heavy concentration of volume between August and November.

Outside of this window volumes tend to dwindle, but the market opportunities in other months or even during shoulder periods have led growers to explore geographical diversification. One region targeting a slight window extension, and where there have been recent plantings, is the Nambucca Valley to the south of Coffs Harbour. Hotspots of growth are geographically dispersed, with the northernmost plantings of note being around the mango- and banana-producing region of the Atherton Tablelands of tropical Far North Queensland, and to its west where conditions are drier. At least two major

breeding companies are trialling and/or commercializing new varieties in this region, with a view to roll them out internationally in geographies with similar conditions. The emergence of FNQ as an Australian growing region has successfully targeted the March to May window, albeit with limited volumes. Also in Queensland there is a large operation in Mundubbera, a region better known for its citrus and table grapes, as well as smaller farms in the macadamia-growing area of Bundaberg.

Western Australia (WA) is another growth region worth watching. The state has a dry climate with fewer pest pressures than in the country's concentrated east, with a wide variety of microclimates. It is here that one of Australia's and the world's leading blueberry breeders is based, and is developing new farms with next-generation genetics between Gingin north of Perth and Manjimup in the state's Southern Forests region. Last year the same company had its second commercial crop for a 50ha farm entirely focused on premium genetics harvested for the fresh market by machine, reporting high quality even amidst consecutive hot periods with temperatures above 45°C (113°F); this fruit also formed part of a very successful export season. It is expected the company will escalate similar plantings within WA. The same company is also rolling out its reportedly machine harvestable genetics in the United States, Spain and Portugal. At the time of writing, another leading Australian genetics company is set to utilize the latest machine harvesting technology from Europe, also being rolled out in the U.S., at some of its farms in northern NSW, on varieties that have already performed well with other machine harvesters.

Whilst Australian blueberry production has risen by roughly 30% this past season, as referenced in the country member

summary, this followed a 16% decline for the previous season due to wet weather, pollination challenges and disease issues. The average retail price in 2023 and early 2024 was down even though quality was reportedly much higher, but one trend noted was that varieties targeting the premium end of the market held their pricing quite well, and that most of the decline was for standard-grade fruit.

Progress has been made in the premium label segment for a few marketers, and the growers with more advanced genetics and post-harvest systems during periods of scarcity are able to secure attractive prices both at home and air-freighting into Asian markets; a trend that was boosted significantly from its low base this past year as Australia's exports of fresh blueberries more than doubled to 1,089MT, with by far the largest volumes going to Hong Kong and Singapore. In September and October the numbers roughly tripled year-on-year. As noted by one producer, the intention had originally been to divert some supply overseas during the glut in October and November, but from the start of exports in late July the export season continued "all the way through to the end of January". Even as retailers were being offered volumes from Peru that were relatively larger than Australia's, "the orders kept on growing" for airfreighted premium eating varieties from Australia.

The industry is also currently in the process of negotiating a protocol with Vietnam, and is hoping to emulate the immense success achieved by their counterparts in the Australian table grape industry with a "realistic" hope that it could become the industry's top overseas market.

But to put Australia's blueberry overseas shipments into perspective, its export volume is less than Zimbabwe's levels five years ago. The domestic market will continue to be the main point of focus, and Australia remains one of the highest paying fresh blueberry markets globally for the farmers

who have access (namely Australians and New Zealanders), although much of that benefit is offset by labor costs in Australia that are also among the highest in the world with minimum casual rates for a fruit picker now at close to AUD\$30 (US\$20.30) an hour. In addition, a piece floor has been instituted to ensure less productive pickers still make this amount, implying a higher cost per kilogram in such cases.

To rise to the challenge of a high-cost environment, Australian blueberry growers are not only pushing the envelope on fruit quality but have become much more ambitious on yield. As explained by one breeder:

"Seven years ago you were doing really well if you were producing 20MT/ha. Now it's changed so that if you aren't targeting 30-40MT/ha at least, you're not in the ballpark."

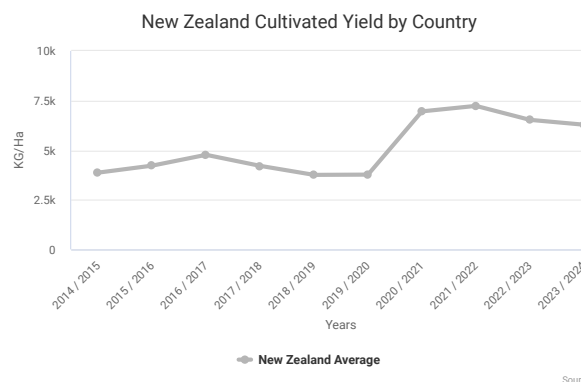
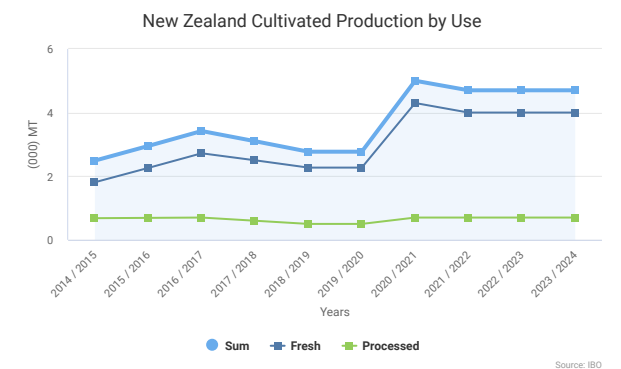
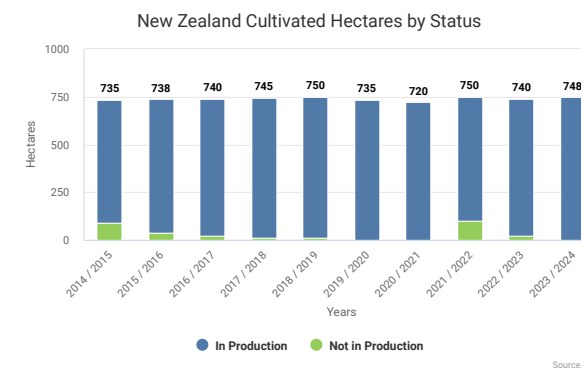
Where the Australian production mix is really lacking is in its cooler climates to service the market from December to May - a timeframe when the industry has historically struggled with sub-optimal quality. December and January are two months when almost all the domestic supply is from public varieties including rabbiteyes, even though the industry's share of proprietary varieties is expected to continue to increase. Some domestic and international breeders are attempting to bridge this gap through the development or introduction of hybrid mid-chill blueberries in the southern states of Victoria and Tasmania, although this is a process that could take several years. One company also has a breeding program in the Alpine region of Victoria where the intention is to replicate some of the characteristics of successful southern highbush varieties in low-chill cultivars that would be suitable for much cooler climates such as Poland and Canada.

Whilst northern highbush is also grown in Victoria and Tasmania, southern highbush genetics have been identified that perform well in their more temperate areas, such as around Launceston in northern Tasmania.

NEW ZEALAND



Planting and Production Data, Figures & Commentary (Denominated in Hectares and Thousands of Metric Tons)



New Zealand 2023/2024 Production Metrics

Hectares Planted:	748 Ha
Organic:	Not Reported
Under Structure:	Not Reported
Hydroponics:	Not Reported
New Genetics:	Not Reported
Hectares in Production:	748 Ha
Production:	4.70 (000) MT
Growth in Production ¹ :	(000) MT (0%)
Growth from Hectares ² :	▲0.18 (000) MT (0.00%)
Growth from Yield ³ :	▼-0.18 (000) MT (0.00%)
Yield:	6,283.42 (kg/ha)
Exports:	1.39 (000) MT
Imports:	0.00 (000) MT

Source: IBO and Agronometrics

¹ Volume change compared to previous season

² Change in volume due to hectares entering or leaving production

³ Change in volume due to field productivity (yields)

New Zealand Cultivated Fresh Exports by Partner (000) MT

Reporter	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024
Australia	1.70	1.55	1.23	0.80	1.29
Viet Nam	0.08	0.10	0.06	0.04	0.07
Indonesia	0.01	0.01	0.02	0.01	0.00
Thailand	0.04	0.03	0.01	0.00	0.01
French Polynesia	0.00	0.00	0.00	0.00	0.00
Others	0.03	0.02	0.02	0.01	0.01
New Zealand Totals	1.87	1.71	1.34	0.86	1.39

Source: Agronomics Global Trade Data



New Zealand Country Member Summary

Adapted from the report by Blueberries New Zealand (BBNZ)

Industry Statistics and Focus

The New Zealand Blueberry industry (BBNZ) consists of 68 Growers, 13 Associate members, and 5 exporting groups. The most recent figures known for yield produced is 3040 tonnes (2020) with the industry encompassing 800 hectares roughly (2020). BBNZ has a number of focuses including:

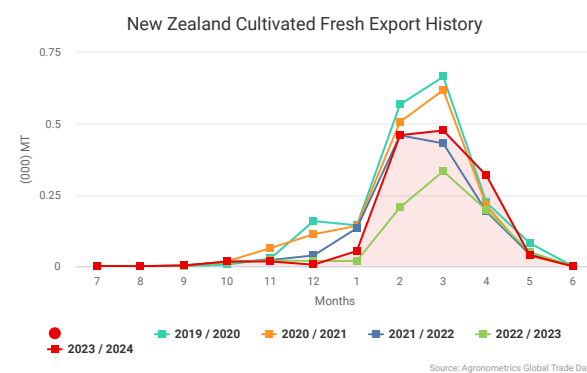
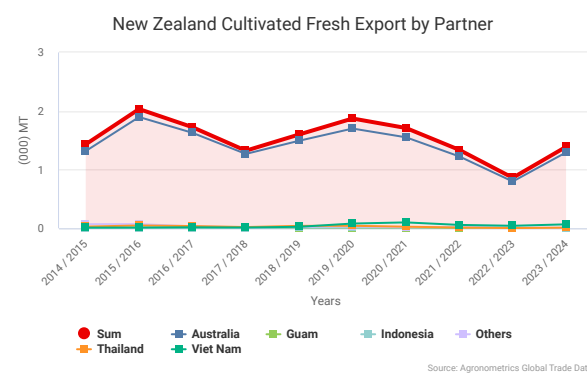
- General upskilling of growers and packhouse groups
- Market Access
- Development of new pre-harvest and post-harvest controls for pests and diseases
- Development of unified systems and processes
 - Field Scouting Protocols
 - Packhouse Inspection Protocols
 - Ethyl Formate Fumigation Use
 - Pest and Disease Thresholds for different markets
 - Export Market Strategy Documents
- Industry cohesion, retention and recognition of industry value
 - In 2023, grower numbers were 125, exporting groups were 9.
 - The major weather events can likely be the cause of the large drop off of growers.

- Biosecurity

2023/2024 Season Review

The 2023/2024 season was a stark contrast to the prior season which saw major weather events like intensive frost, flooding events, and Cyclone Gabrielle. This season, the weather was relatively mild allowing a much more conducive growing season. Many growers reported highest yields in some blocks than ever before.

Given the lower impacts of rain, disease and pathogen pressure was lower this season. This in turn resulted in a larger amount of marketable fruit and reduced lower grade fruit (i.e. jam quality). However, while disease/pathogen pressure was reduced, invertebrate pest pressure increased with the favourable weather. For growers only servicing



the local/domestic markets, their usual control regimes were sufficient. However, for groups wishing to export, a more stringent approach and higher agrichemical input was required. Currently the biggest issue facing the export side of the industry is the presence of unidentified invertebrate eggs, of which growers and packhouse groups have no suitable control measures for 74% of failed consignments to Australia were caused by invertebrate eggs.

Prices in the local market were NZD \$19 - \$32 (USD \$12 - \$20) for 12 x 125g tray from the beginning of December to the end of April for field grown fruit, while BBNZ's other major market, Australia, saw prices ranging from NZD \$26 - \$40 (USD \$16 - \$24) for 12 x 125g trays. The higher prices were at the end of the season when little production was available. As stated above, this Australian market is a challenge with NZ and Australia having extremely strict border Biosecurity procedures in place, this challenge is not helped even when we share many common pest issues.

New Zealand Report Team Narrative

After several difficult production years due to weather including a particularly severe 2022-23 campaign that was hit by frosts, floods and a cyclone., New Zealand's blueberry industry had a much more positive 2023-24 season characterized by mild, reasonably dry conditions, good yields, and an ample supply of labor from Pacific Islander workers and the traditional backpacker travellers on working holiday visas who have returned after a COVID lull. The industry is fortunate in that its peak season does not coincide to any great degree with the country's leading fruit crops, kiwifruit and apples, and any subsequent competition for labor.

In the main growing regions of the Waikato and Hawke's Bay it was a "stellar season" from a production standpoint, according to one source, although oversupply during the post-Christmas period led to weak, effectively "breakeven" pricing for six weeks.

New Zealand has its peak production period from February to May, although through the use of agronomic techniques, varietal selection, varietal cropping and geographical diversity (the fruit is grown from Northland to Southland, close to 2,000km apart) New Zealand is now approaching a 52-week supply scenario if weather conditions are conducive to it, albeit with a dip in June-July.

This production window extension is aided by a concentration of growth in the northern parts of the North Island where fruit can be produced earlier. There used to be a peak in the Southern Hemisphere summer but that has flattened out somewhat in recent years with southern highbush varieties planted to capture the August-September-October window. In the South Island conditions are more similar to North America's Pacific Northwest, albeit with reduced temperature extremes, so varieties suited to Oregon, Washington

State and British Columbia tend to be selected for that part of New Zealand.

While Rabbiteye volumes are dismissed as outdated by much of the global industry, those New Zealand producers who grow locally developed varieties insist the fruit has appealing flavor characteristics that are well received by the market. A Crown Research Institute (CRI), which has achieved great success globally in developing cultivars of other fruits that have become some of the biggest brands in the fruit industry, bred three Rabbiteye blueberries for New Zealand's climate that have proven popular domestically and have witnessed incipient interest from growers abroad. This breeding programme is very small by international standards but has resourced up in recent years, and in the past year has also released three southern highbush varieties.

Growers are increasingly turning to locally-bred varieties, not only due to the fact that trials have already taken place in New Zealand's unique conditions, but that NZ's strict phytosanitary rules for importing plant material make the process slow with delays that can last several years.

There is still a high prevalence of public varieties in the cultivar mix. Historically, most of the genetic material provided has come from one major U.S. breeder and American universities, Varieties from a major Australian breeding company have also been adopted, while a well-known U.S. blueberry grower is one of the biggest investors in NZ's blueberry industry with protected operations under greenhouses and glasshouses in Hawke's Bay. This allows for production through to the end of May, whereas frosts earlier in the month tend to signal the end of the season for many growers in the region. It can also be said that much of New Zealand's growth can also be attributed to relatively new hectareage dedicated to more premium market-oriented southern highbush varieties produced under tunnels, from a variety of genetics providers.

The aforementioned Northland region is also home to various operations including one of New Zealand's leading fruit companies, which can start production in limited volumes in late June or early July.

Certain growers in New Zealand tend to capitalize on the relative scarcity of supply in Australia from February to March, and the market continues to represent the lion's share of all of New Zealand's blueberry shipments overseas. Export volumes bounced back this year with February and March aligned with 2022 levels, while exports in April were substantially higher than they ever had been, up more than 50% on what is traditionally exported in that month, and also at historically higher prices than in previous years. This is despite New Zealand's fresh produce industry more broadly, including blueberries, having difficulties with Australian biosecurity. Due to the detection of unidentified mites, it is estimated that around 30% of shipments going into Australia are fumigated, with ramifications for shelf life.

Even though the Australian market pays attractive prices, growers are cognizant of their neighbor's efforts to close the gaps of scarcity with domestically-grown fruit (having also seen how quickly Australia was able to rapidly ramp up its own production of a previously almost non-existent Australian crop that NZ used to dominate - green kiwifruit). This along with issues at the border have reinforced a desire to reduce export dependency on Australia, and the country made a big breakthrough in this regard recently with South Korean officials agreeing in principle to a protocol, which at the time of writing is yet to be signed off but is cause for optimism. Under the one-fruit-at-a-time system for Chinese market access negotiations, New Zealand blueberries are currently at the front of the line for talks. There are also five countries that have sought market access protocols for blueberries in New Zealand – the USA, Mexico, Peru, Chile and Morocco.

CENTRAL ASIA / INDIA

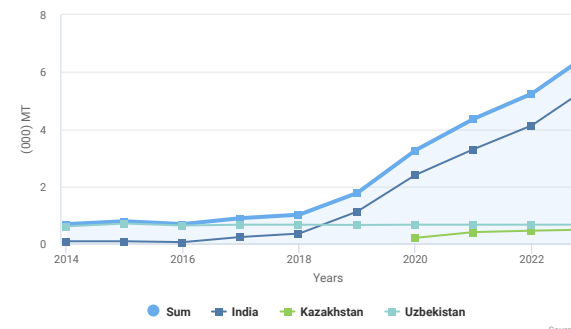
Planting and Production Data, Figures & Commentary (Denominated in Hectares and Thousands of Metric Tons)

Central Asia/Indian Subcontinent Cultivated Hectares by Country

Central Asia/Indian Subcontinent	Hectares Planted					2023 Production (000) MT		
	2019	2020	2021	2022	2023	Fresh	Process	Total
India	260	300	342	383	550	5.20	0.30	5.50
Uzbekistan	95	95	95	95	98	0.66	-	0.66
Kazakhstan	90	100	125	135	152	0.49	-	0.49
Central Asia / Indian Subcontinent Totals	445	495	562	613	800	6.35	0.30	6.65

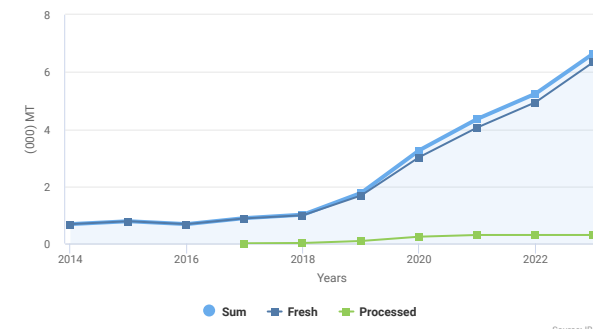
Source: IBO

Central Asia/Indian Subcontinent Cultivated Production by Country



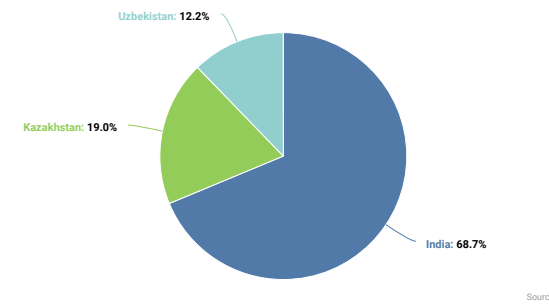
Source: IBO

Central Asia/Indian Subcontinent Cultivated Production by Use



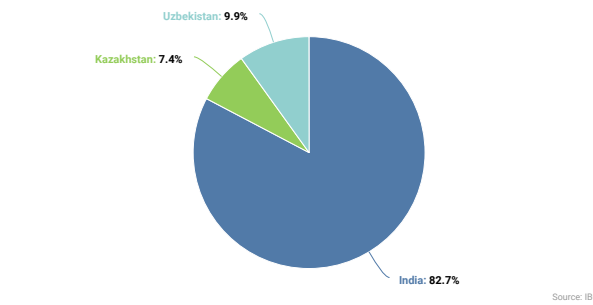
Source: IBO

2023 Central Asia/Indian Subcontinent Cultivated Hectares by Country



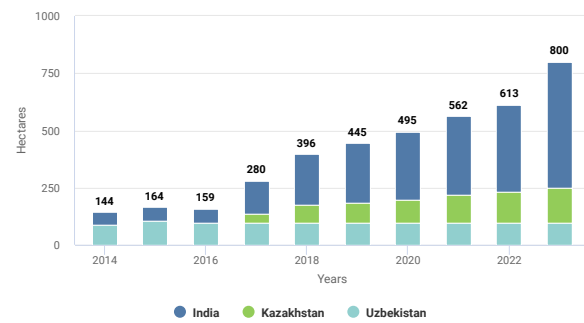
Source: IBO

2023 Central Asia/Indian Subcontinent Cultivated Production by Country



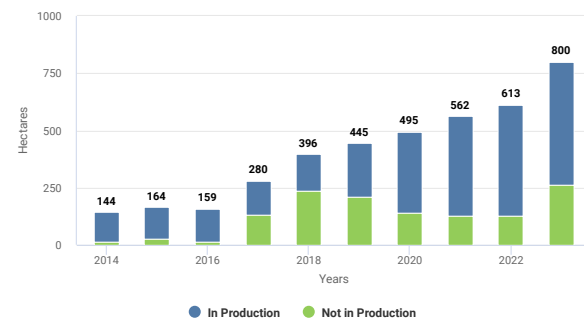
Source: IBO

Central Asia/Indian Subcontinent Cultivated Hectares by Country



Source: IBO

Central Asia/Indian Subcontinent Cultivated Hectares by Status



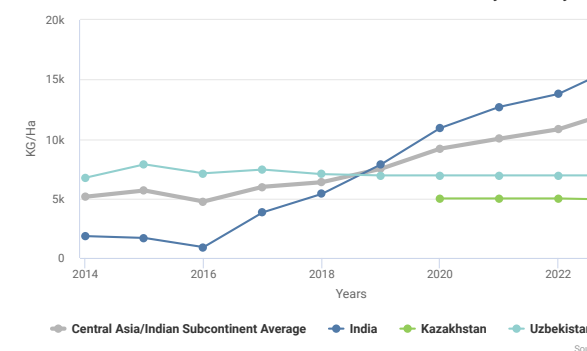
Source: IBO

Central Asia/Indian Subcontinent Cultivated Production by Country (000) MT

Central Asia / Indian Subcontinent	2021			2022			2023		
	Fresh	Process	Total	Fresh	Process	Total	Fresh	Process	Total
India	3.00	0.30	3.30	3.83	0.30	4.13	5.20	0.30	5.50
Uzbekistan	0.66	-	0.66	0.66	-	0.66	0.66	-	0.66
Kazakhstan	0.40	-	0.40	0.45	-	0.45	0.49	-	0.49
Central Asia / Indian Subcontinent Totals	4.06	0.30	4.36	4.94	0.30	5.24	6.35	0.30	6.65

Source: IBO

Central Asia/Indian Subcontinent Cultivated Yield by Country



Source: IBO

Central Asia / Indian Subcontinent 2023 Production Metrics

Hectares Planted:	800 Ha
Hectares in Production:	537 Ha
Production:	6.65 (000) MT
Growth in Production ¹ :	▲1.41 (000) MT (26.91%)
Growth from Hectares ² :	▲0.62 (000) MT (44.31%)
Growth from Yield ³ :	▲0.78 (000) MT (55.40%)
Yield:	12,388.44 (Kg/Ha)
Exports:	0.13 (000) MT
Imports:	0.90 (000) MT

Source: IBO and Agronomics

¹ Volume change compared to previous season

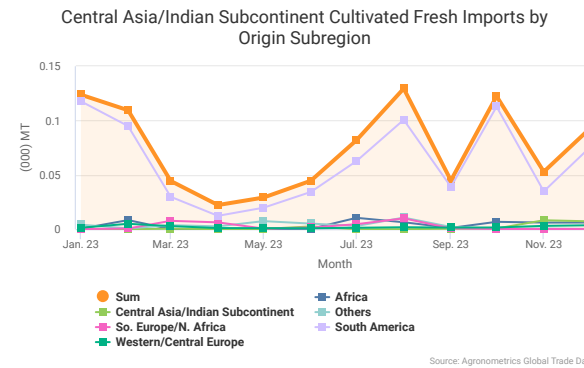
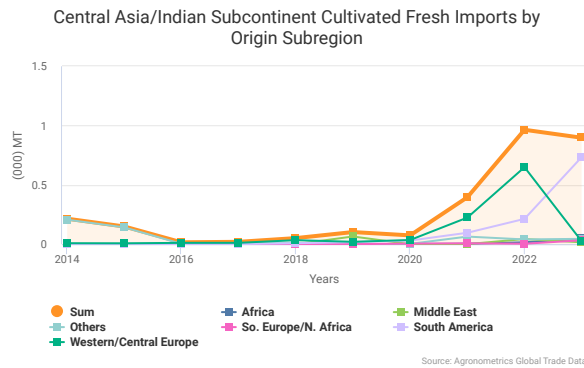
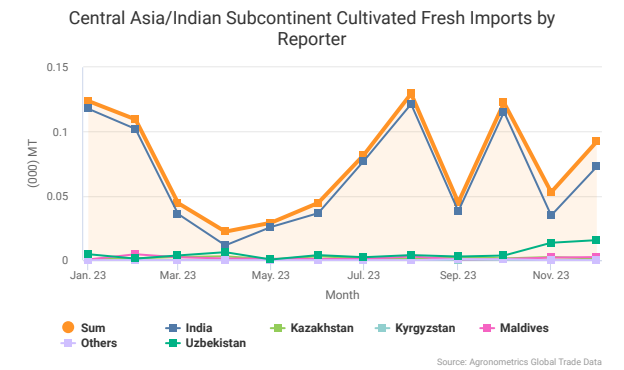
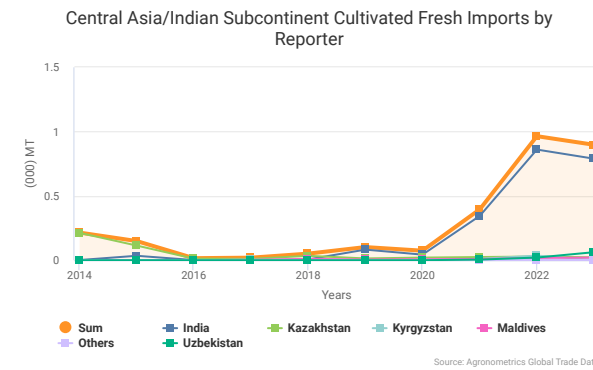
² Change in volume due to hectares entering or leaving production

³ Change in volume due to field productivity (yields)

Central Asia/Indian Subcontinent Imports by Origin Subregion (000) MT

Origin	2019	2020	2021	2022	2023
South America	0.02	0.03	0.10	0.21	0.73
Western/Central Europe	0.02	0.04	0.22	0.65	0.02
Africa	-	0.00	0.00	0.02	0.05
Middle East	0.06	0.00	0.00	0.04	0.02
So. Europe/N. Africa	-	0.00	0.01	0.00	0.03
Others	0.00	0.00	0.06	0.04	0.04
Central Asia/Indian Subcontinent Totals	0.10	0.07	0.40	0.96	0.90

Source: Agronomics Global Trade Data



Central Asia/Indian Subcontinent Imports by Reporter (000) MT

Reporter	2019	2020	2021	2022	2023
India	0.08	0.04	0.34	0.86	0.79
Uzbekistan	-	-	0.00	0.02	0.06
Kazakhstan	0.01	0.02	0.02	0.03	0.02
Maldives	0.01	0.01	0.01	0.02	0.02
Kyrgyzstan	-	0.00	0.01	0.04	0.00
Others	0.00	0.00	0.00	0.00	0.00
Central Asia/Indian Subcontinent Totals	0.10	0.07	0.40	0.96	0.90

Source: Agronomics Global Trade Data

Central Asia/India Report Team Narrative

India is the world’s largest producer of many fruits, but blueberries are not yet one of them. Whilst the nation has diverse microclimates and mountainous regions that do have cold weather, for the most part it comprises tropical and sub-tropical climates coupled with summer monsoons. To adapt to these conditions, India’s emerging blueberry industry has planted primarily low-chill southern highbush varieties, utilizing a mix of cultivar selection and agronomic techniques to avoid heavy rains with a main season that runs from mid-February to early June. Trials and small to medium-sized commercial projects are ongoing throughout the vast and diverse country with no conclusive consensus among contributors as to the regions which are most suited for competitive quality, unit costs, and logistics.

A declared intention of a company interviewed for this report provides a sense of industry ambitions, hopes, and expectations for the future of blueberries in India. One US-headquartered company conducting trials in the country aims to produce for six to eight months of the year in India. As the leading exporter of Peruvian blueberries to India (and Peru’s exports there rose 10-fold, overtaking Chile, in 2022), this company aims to combine these two sources of supply to complete a 52-week season for the growing Indian market

and is currently producing blueberries in several locations in central and northern India. The aim for that company is to first establish 500ha of farms, spread over multiple plots that are 50-100ha in size given the difficulty in securing large landholdings in India.

There have been announcements around several joint venture partnerships over the years between local and international investors, but the most advanced at this stage was established five years ago between India’s largest fruit importer and Australian investors with expertise and premium genetics. This year that same JV announced the world’s largest blueberry grower, headquartered in Chile, would join the partnership. With its farms based in the central state of Madhya Pradesh, the operation had its first small harvest last year, but at the time of writing its volume was expected to rise quite significantly in the 2023 season.

Meanwhile there are numerous blueberry farms of 5-20ha in size scattered throughout India which is likely to grow as a cottage industry in the near future, given the advances that have been made in producing blueberries in a wide range of conditions, proximity to a potentially large market, and cheap labor costs, although the warm weather does create

pest pressures and it is understood more expensive protected farming systems have been deployed. From a competitive standpoint, Indian growers are also insulated to a degree as they are protected by high tariff duties on imports.

One of the world's largest substrate coir companies reports larger Indian companies are showing increasing interest in blueberry production as well, with trials or potential operations planned in locations ranging from Pollachi in Tamil Nadu to the foothills of the Himalayas, as well as further interest in Madhya Pradesh where the aforementioned JV is present. Maharashtra is another state with known commercial plantings and plans for trials from domestic farmers in collaboration with foreign partners, ranging from South Africa to the United States.

There is an understanding amongst India's more sophisticated farming companies that blueberries require a significant amount of knowhow and pilot projects to test which varieties and growing methods work in certain regions, and at the time of writing there are currently plans to organise a delegation of Indian growers to visit a major blueberry nursery and genetics company with operations in Mexico to learn more about how to best grow the crop.

In light of the Indian market's scale as a nation of 1.4 billion people including a large, growing middle class with a taste for premium fresh produce, investors who plan to develop blueberry projects have bold ambitions to put in motion as soon as they are comfortable with the feasibility of their plans.

India has frequently been likened to how China was 10 years ago from a blueberry industry development perspective. Pioneering projects in China have illustrated what is possible for domestically grown blueberries in populous, emerging markets, but at the same time new developments in China have faced limitations in recent years due to land use laws. This has only accentuated the relative attractiveness of India for new developments from outside investors. Nonetheless, the

country is being spoken about as a more serious opportunity in industry dialogue from players around the world.

Also important to note is the current status of intellectual property in blueberries in India. To date blueberries are not a protectable crop in the country and varieties thus cannot be protected by PVR's or other means in the country. There are some concerns that the lack of a legal framework to protect breeders rights may at the very least slow the rate of access to better genetics to a broader industry.

Off a low base, fresh blueberry imports to India grew by 149% in 2021. Officially, more than two-thirds of that volume came from the Netherlands, but that was unlikely to be the original source of the fruit as it is a known re-export hub, and the peak months for arrivals in February and November are outside of the Dutch blueberry season.

Price points can be a challenge in India due to high import tariffs, although a few years ago Chile's customs tariff was cut from 50% to 15%. The two countries have a preferential trade agreement (PTA) in place, and in terms of other blueberry-exporting nations, the Australia-India Economic Cooperation and Trade Agreement (ECTA) was signed last year. Blueberries in India are mostly sold in 125g punnets and consistency tends to be lacking, but management of the fruit is improving and dedicated importers and distributors are attempting to raise the bar of consumer experience with the support of better cold chain infrastructure.

Elsewhere in the Indian subcontinent, there is currently early-stage planning underway for blueberry cultivation trials in Sri Lanka.

In Central Asia, Kazakhstan and Uzbekistan are the main producers of blueberries with fairly small industries, although even in these isolated countries there are international companies moving in with offerings of proprietary blueberry genetics.

EMEA
(EUROPE, MIDDLE EAST & AFRICA)

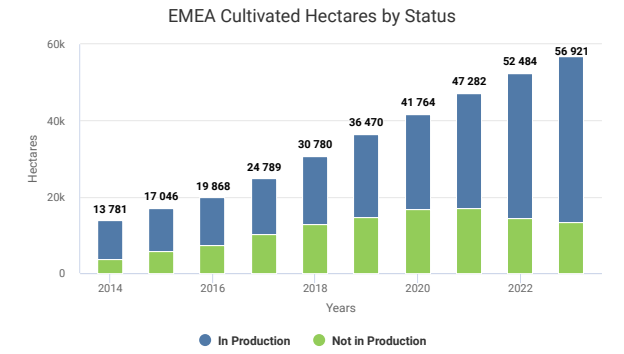
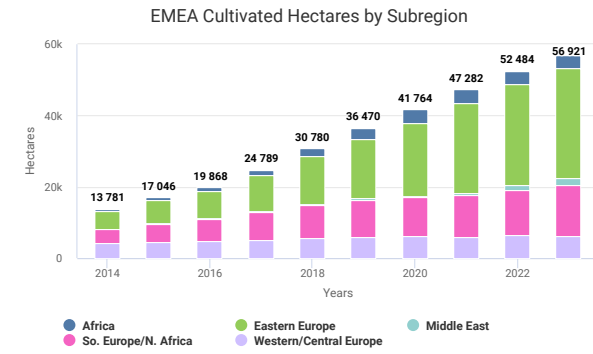
EUROPE, MIDDLE EAST & AFRICA (EMEA)

Planting and Production Data, Figures & Commentary (Denominated in Hectares and Thousands of Metric Tons)

EMEA Cultivated Hectares by Subregion

EMEA	Hectares Planted					2023 Production (000) MT		
	2019	2020	2021	2022	2023	Fresh	Process	Total
Growth Totals								
So. Europe/N. Africa	10,428	10,924	11,689	12,822	14,150	146.54	14.13	160.67
Eastern Europe	16,635	20,268	25,219	28,436	30,912	113.56	5.75	119.31
Africa	3,126	3,998	3,801	3,692	3,645	41.24	3.20	44.44
Western/Central Europe	5,920	6,084	5,894	6,316	6,186	30.64	8.15	38.79
Middle East	360	490	680	1,218	2,028	6.08	0.39	6.47
EMEA Totals	36,470	41,764	47,282	52,484	56,921	338.06	31.62	369.68

Source: IBO



EMEA Cultivated Production by Subregion(000) MT

EMEA	2021			2022			2023		
	Fresh	Process	Total	Fresh	Process	Total	Fresh	Process	Total
So. Europe/N. Africa	134.86	13.50	148.36	142.07	13.61	155.68	146.54	14.13	160.67
Eastern Europe	79.35	5.61	84.96	119.42	6.08	125.50	113.56	5.75	119.31
Africa	31.37	2.20	33.57	36.11	2.70	38.81	41.24	3.20	44.44
Western/Central Europe	28.93	6.96	35.89	33.62	8.02	41.64	30.64	8.15	38.79
Middle East	3.25	0.17	3.42	4.76	0.26	5.02	6.08	0.39	6.47
EMEA Totals	277.76	28.44	306.20	335.98	30.67	366.65	338.06	31.62	369.68

Source: IBO

FOOD SORTING AND HANDLING SOLUTIONS

BLUEBERRY *Quality* SORTING

- Sorting by size and shape
- Sorting by color: red/green
- Detection of most important quality issues:

Soft, over-ripe
Shriveled, dehydrated
Splits, scars, wounds
Stems
Decay, rot, mold

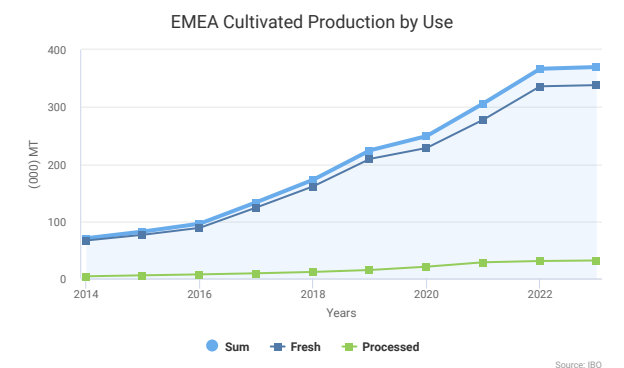
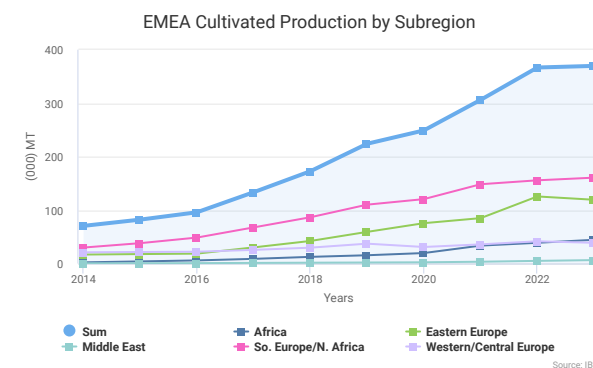
COMPREHENSIVE INSPECTION 360° ROTATION

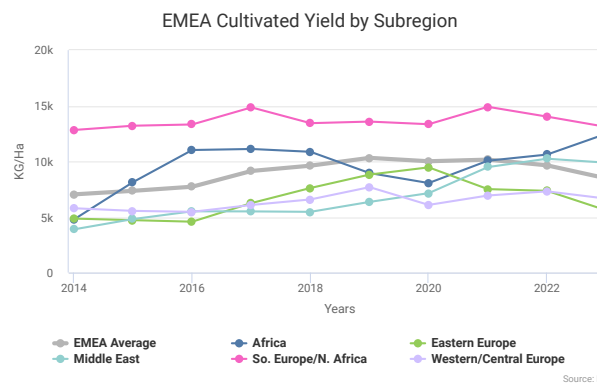
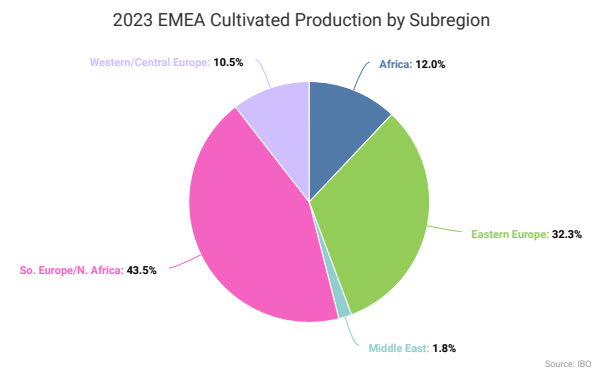
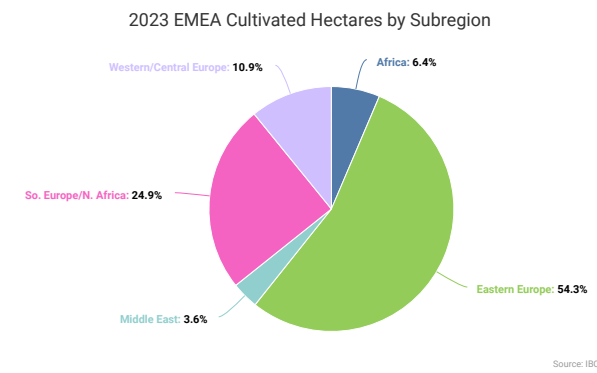


SORTIVATOR LINE
High Capacity Cleaning & Sorting Line



BB20 LINE
Premium Quality Sorting Line





EMEA 2023 Production Metrics

Hectares Planted:	56,921 Ha
Hectares in Production:	43,603 Ha
Production:	369.68 (000) MT
Growth in Production ¹ :	▲3.03 (000) MT (0.83%)
Growth from Hectares ² :	▲53.99 (000) MT (1,781.90%)
Growth from Yield ³ :	▼-50.95 (000) MT (-1,681.66%)
Yield:	8,478.26 (Kg/Ha)

Source: IBO and Agronometrics

¹ Volume change compared to previous season
² Change in volume due to hectares entering or leaving production
³ Change in volume due to field productivity (yields)

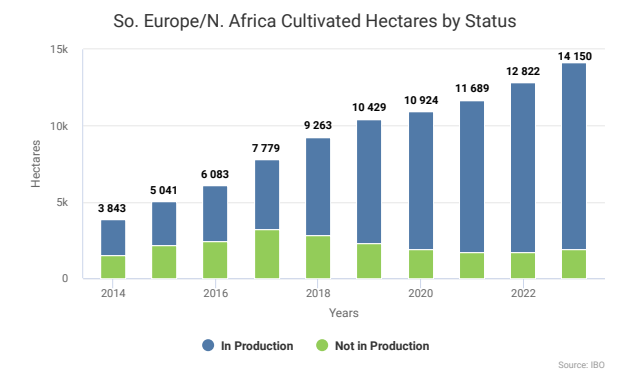
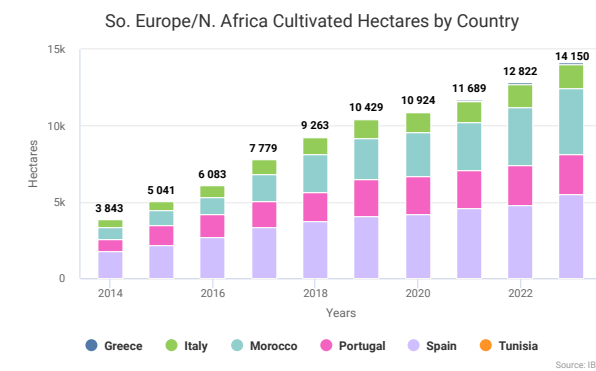
SOUTHERN EUROPE / NORTH AFRICA

Planting and Production Data, Figures & Commentary (Denominated in Hectares and Thousands of Metric Tons)

So. Europe/N. Africa Cultivated Hectares by Country

Southern Europe / North Africa	Hectares Planted					2023 Production (000) MT		
	2019	2020	2021	2022	2023	Fresh	Process	Total
Spain	4,030	4,210	4,570	4,810	5,496	64.38	6.48	70.86
Huelva	3,059	3,089	3,310	3,532	4,200	53.00	5.80	58.80
Spain Other	971	1,121	1,260	1,278	1,296	11.38	0.68	12.06
Morocco	2,675	2,850	3,136	3,800	4,300	52.51	3.55	56.06
Portugal	2,480	2,490	2,490	2,590	2,620	19.05	3.00	22.05
Italy	1,200	1,300	1,390	1,490	1,580	10.00	1.10	11.10
Greece	41	70	99	128	150	0.56	-	0.56
Tunisia	2	4	4	4	4	0.04	-	0.04
So. Europe / N. Africa Totals	10,428	10,924	11,689	12,822	14,150	146.54	14.13	160.67

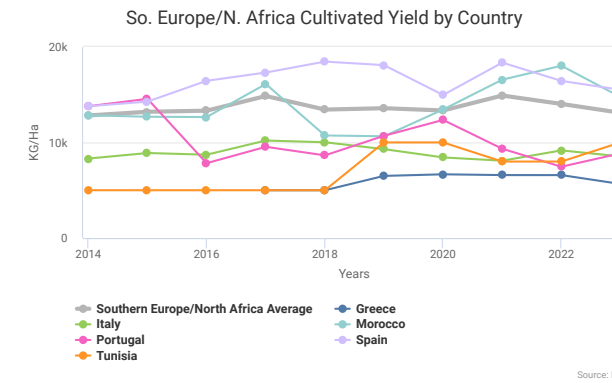
Source: IBO



So. Europe/N. Africa Cultivated Production by Country(000) MT

Southern Europe / North Africa	2021			2022			2023		
	Fresh	Process	Total	Fresh	Process	Total	Fresh	Process	Total
Spain	66.71	7.23	73.94	62.57	6.62	69.19	64.38	6.48	70.86
Huelva	51.38	6.42	57.80	52.00	6.00	58.00	53.00	5.80	58.80
Spain Other	15.33	0.81	16.14	10.57	0.62	11.19	11.38	0.68	12.06
Morocco	44.44	2.77	47.21	53.51	2.99	56.50	52.51	3.55	56.06
Portugal	15.42	2.60	18.02	15.50	3.00	18.50	19.05	3.00	22.05
Italy	8.00	0.90	8.90	10.00	1.00	11.00	10.00	1.10	11.10
Greece	0.27	-	0.27	0.46	-	0.46	0.56	-	0.56
Tunisia	0.02	-	0.02	0.03	-	0.03	0.04	-	0.04
So. Europe / N. Africa Totals	134.86	13.50	148.36	142.07	13.61	155.68	146.54	14.13	160.67

Source: IBO



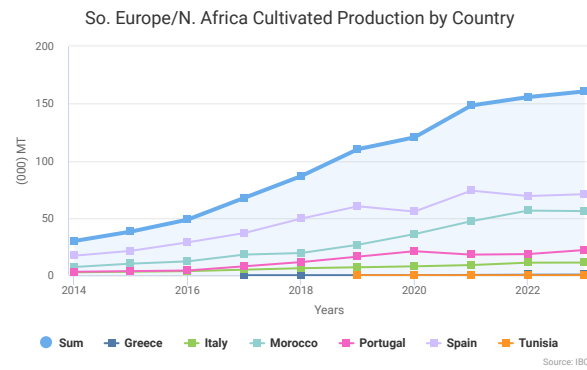
Source: IBO

So. Europe/N. Africa 2023 Production Metrics

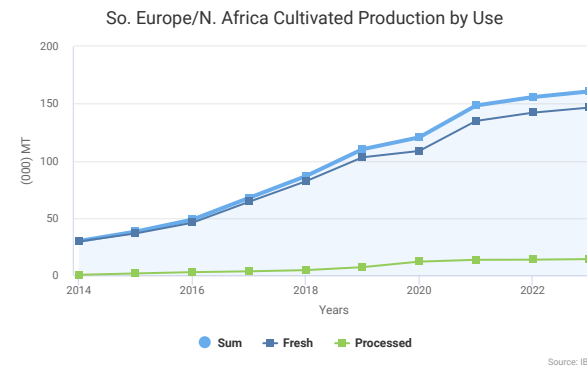
Hectares Planted:	14,150 Ha
Hectares in Production:	12,263 Ha
Production:	160.67 (000) MT
Growth in Production ¹ :	▲4.99 (000) MT (3.21%)
Growth from Hectares ² :	▲18.68 (000) MT (374.37%)
Growth from Yield ³ :	▼-13.69 (000) MT (-274.26%)
Yield:	13,102.15 (Kg/Ha)
Exports:	105.14 (000) MT
Imports:	51.82 (000) MT

Source: IBO and Agronometrics

¹ Volume change compared to previous season
² Change in volume due to hectares entering or leaving production
³ Change in volume due to field productivity (yields)

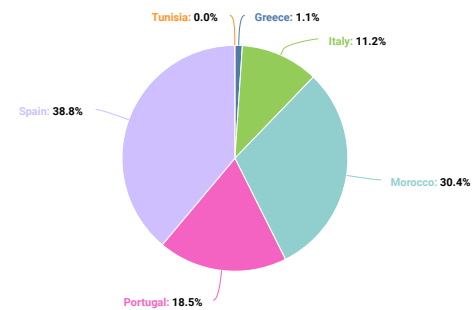


Source: IBO



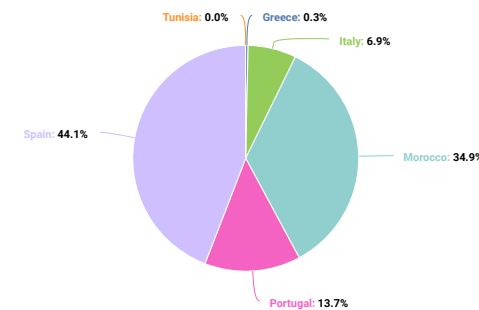
Source: IBO

2023 So. Europe/N. Africa Cultivated Hectares by Country



Source: IBO

2023 So. Europe/N. Africa Cultivated Production by Country

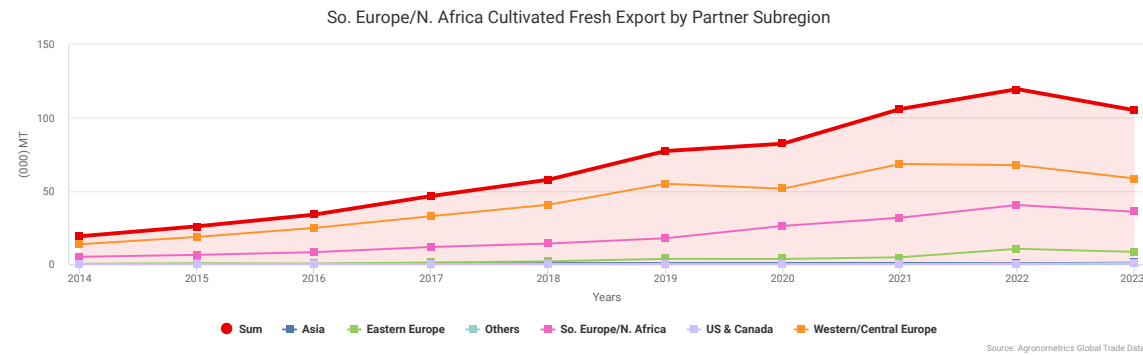


Source: IBO

So. Europe/N. Africa Exports by Partner Subregion (000) MT

Subregion	2019	2020	2021	2022	2023
Western/Central Europe	54.95	51.55	68.44	67.63	58.58
So. Europe/N. Africa	17.74	26.15	31.73	40.45	35.81
Eastern Europe	3.67	3.61	4.74	10.53	8.43
Asia	0.79	0.81	0.85	0.65	1.09
US & Canada	0.01	0.04	0.08	0.11	0.76
Others	0.15	0.10	0.11	0.16	0.47
So. Europe/N. Africa Totals	77.31	82.27	105.95	119.53	105.14

Source: Agronometrics Global Trade Data



Southern Europe/North Africa Report Team Narrative

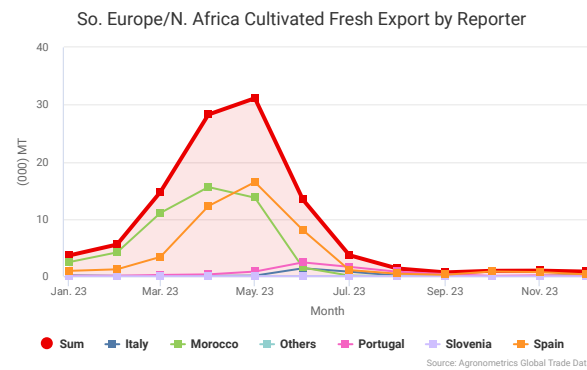
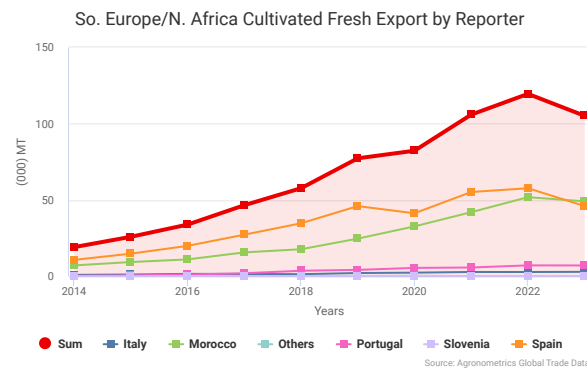
For an in depth complement to developments and trends in Southern Europe/North Africa please visit the following country reports:

- Spain
- Morocco

So. Europe/N. Africa Exports by Reporter (000) MT

Subregion	2019	2020	2021	2022	2023
Morocco	24.66	32.69	42.01	51.84	49.09
Spain	45.99	41.27	55.23	57.69	46.01
Portugal	4.17	5.47	5.74	7.13	7.07
Italy	2.12	2.36	2.81	2.79	2.91
Slovenia	0.22	0.23	0.07	0.06	0.03
Others	0.15	0.24	0.11	0.03	0.04
So. Europe/N. Africa Totals	77.31	82.27	105.95	119.53	105.14

Source: Agronomics Global Trade Data



Driven by new plantings and varietal conversion, exports from the countries of Southern Europe and Northern Africa rose eight-fold between 2013 and 2022, with the bulk of that growth coming from Morocco with a 10-fold jump in annual shipments over the period, and Spain whose shipments approximately quadrupled in size in parallel to the development of a more meaningful domestic market channel. As referenced in the Spanish and Moroccan sections of this report, both these industries suffered from weather-related challenges in 2023, and combined export volumes reverted to 2021 levels that were still more than 100,000MT, compared to less than 50,000MT in 2017. Higher average prices also meant that the steady rise in export value over the past decade continued uninterrupted.

“A good Moroccan and Iberian season sets everybody on the right foot, gets consumers behind blueberries early,” says one industry source.

The rise of Spain and Morocco has meant that the European market, and increasingly other destinations, have an ample late winter/springtime supply of blueberries between February and May, although the 2023 experience would indicate that markets remain insatiable for more. Both nations already produce blueberries in smaller volumes well before that, but aggressive varietal conversion and planting programmes in Morocco are aimed at expediting the onset of more significant volumes earlier.

An historical gap in supply between the end of Huelva’s (southern Spain) season in early June and larger volumes from Northern Europe in July has galvanized production in

other parts of the Mediterranean, most notably Portugal which is featuring more and more in the plans of blueberry marketers, retailers and breeders wishing to address the market shortfall in June.

Despite difficult growing conditions with the ongoing effects of drought last year, Portugal’s industry avoided an overall decline with volume remaining flat, likely due to yield reductions being offset by the effects of younger, maturing plantings. To contextualize the industry’s growth over the past decade, Portugal now accounts for 13% of total fresh blueberry exports from the Iberian Peninsula, compared to just 1.7% in 2013. Average price rises in 2023 meant that Portugal’s export value lifted considerably, although its average price was still below those of Morocco and Spain.

The Italian blueberry industry has not grown as much as many industry stakeholders had hoped a few years ago, and its volume is still roughly half the size of Portugal’s. Northern Italian growers centered around Piedmont, who start harvesting in late June, have seen their margins put under pressure by increased competition from Serbia amidst rising costs of inputs and labor. A nascent industry is also emerging in southern Italy, particularly in Sicily, where season timing coincides with Morocco’s peak in March, but the impact of these plantings is yet to be significantly felt in the European market and are primarily targeting a developing domestic Italian market where consumption is growing strongly each year. Nonetheless, Italy’s June 2023 export volumes exceeded their previous record for that month by almost 20%, and in value terms the record was exceeded by 37%.

Portugal

As a long country with diverse climates within a short distance, Portugal is fast becoming a viable blueberry supply alternative for European supermarkets in the late spring, early summer period, featuring in the origin stable of a few major global grower-marketers.

The geography in Portugal is such that one could have a low-chill blueberry farm within just a few hours' drive of a high-chill variety farm in the country's north. Southern Portugal has a similar although milder climate to Huelva with much production under protected tunnels, whereas in the hilly north there are more open field farms with mid-chill and high-chill varieties such as Duke, Legacy and new proprietary genetics in that category.

As has been the lesson learned elsewhere, an industry can only survive on lucrative windows for so long and Portugal's success will depend on its ability to adopt next-gen varieties – a process that is currently happening with cultivars from a handful of major players. Like Spain but not beginning the harvest as early, Portugal has the advantage of proximity to major European markets and can produce fruit from March until the end of July, although with pruning of modern genetics it is possible that smaller quantities could be made available in October-November in direct competition with Peru.

It must be clarified that filling market gaps is not the only motivator for the Portuguese blueberry industry's development; one key player with links to South America has two Portuguese farms in different geographical zones that cover a large land area by European standards of 160 hectares, and a varietal mix and farm practices that allow for the continuity of supply starting from mid-February all the way until the first Polish blueberry volumes arrive in the summer.

Like Spain and Morocco, Portugal also struggles with water availability and this is driving innovations in water efficiency such as installing systems to harvest rainwater from tunnels that cover crops, although that is specifically in the area of Odemira where tunnel production is in wider use due to a history of raspberry production.

Italy

From an industry that began in the 1960's as a frozen-focused sector in Italy's northwestern Piedmont region, the cooperative-led horticultural model Italy is known for has driven most of the production increase in the north, predominantly in the pre-Alpine climes of Piedmont and Trentino, in addition to plantings in Veneto and Lombardy as far as northern Italy is concerned.

Harvests start in late June for the northern region and continue until August, and while there is a concentrated presence of early varieties like Duke, some growers are planting new varieties. This replanting is pronounced in the later-season northeast where old plantings of Brigitta Blue are being taken out in favor of alternative cultivars. Modern, high-chill genetics are in demand in the region with varieties being grown from two Oregon-based genetics companies. Growers of other fruits such as peaches and kiwifruit, the latter having been through a difficult decade or more with vine-killing disease Psa, have also been converting their fields to blueberries in central and northern Italy. Peach and pear growers are also converting to this crop, and the new planting that is occurring is increasingly with substrate growing methods. Almost all of Italy's crop is protected by nets or plastic.

There is quite a bit of buzz around southern Italy, especially in Sicily but also in Calabria and Puglia, as a prospective growth region for blueberries, spearheaded by large cooperatives from the country's center and north. Southern Italian growers can grow during a similar timeframe as Morocco and Spain, covering the end of winter and carrying on through the springtime. Two southern highbush-focused genetics companies from Spain have introduced their varieties for trials in warmer regions of Italy, in addition to one of the aforementioned US breeders that has been actively rolling out a new club of varieties worldwide, but the genetic transition is less visible in Italy than in other growing regions. In Sicily which is the geographic focal point of these low-chill operations, at least 90% of plantings still comprise the open Ventura variety.

Another great benefit of producing blueberries in Italy is its mix of microclimates and the possibility of playing with altitude to achieve different agronomic outcomes. Each year more and more regions are adopting blueberry production,

with other regions including Emilia Romagna, Tuscany, Marche, Lazio and Campania.

Amongst Italian fruit traders there is a feeling that their blueberry export opportunities are being put under pressure from competition and Northern European retailer expectations around varieties, making domestic market development a greater imperative. Domestic consumption has been growing despite higher prices in the market, and growth is more skewed to the north where knowledge of the fruit is closer to that of northern Europe, whereas in southern Italy blueberries are culturally less known.

"It's been quite amazing. We had an increase in terms of volumes – not because the volume per buyer has increased but because the penetration has increased, so there's still a lot of people stepping into blueberries as consumers," says one local analyst.

On the other side of the coin, research found that each individual family in Italy that had purchased blueberries previously bought less last year, signifying that new consumers were responsible for the rise in overall sales.

"It's a bit threatening though because existing customers are not supporting the industry," the analyst says. "We're probably not doing enough in order to keep the existing consumers happy."

Opinions vary within the industry about the level of quality that is sent to Italy, but there is the belief in some circles that the country is receiving sub-standard fruit relative to other European countries, which may explain the waning repeat purchase statistics for blueberries, which are predominantly sold in 125g packs. A source says that only one Italian supermarket has introduced segmentation with a premium line, which indicates many Italian consumers are not being given the option to buy the high-grade genetics that have lifted the industry elsewhere. Overall, Italy's blueberry imports rose marginally in 2023.

The Italian production season in 2023 was characterized by one of the hottest summers ever with extremely hot and dry conditions, which in June led the fruit to ripen very quickly and together, followed by some rains that caused quality

problems, especially for the significant Duke crop in June. At the time of writing the 2024 season was expected to be short of the industry's potential, due to, a mild and dry 2023-24 winter that led to early flowering, followed by rain and cold weather in April that induced poor fruit set, some cold damage at flowering time, and some degree of botrytis in berries.

Greece

Blueberry production in Greece is still limited compared to the Western Mediterranean, but in recent years the country's supermarkets have been increasingly requesting the fruit from established strawberry growers in the Patras region which has a similar climatology to Huelva in Spain but with much more rainfall.

Unlike these southern Greek growers who are focused on the domestic market, three years ago a large cherry-exporting group from the northeastern Rhodope region near Turkey embarked on trials with a view to tap into the June window. This led to commercial plantings in 2021 with the first crop harvested last year with small volumes sent alongside cherry consignments to existing Western European customers. This group has since encouraged more growers in the area to follow suit, and to date the primary varieties planted have been older traditional cultivars such as Duke, Chandler and Legacy.

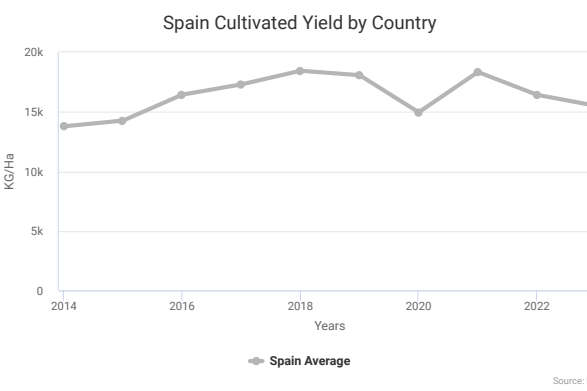
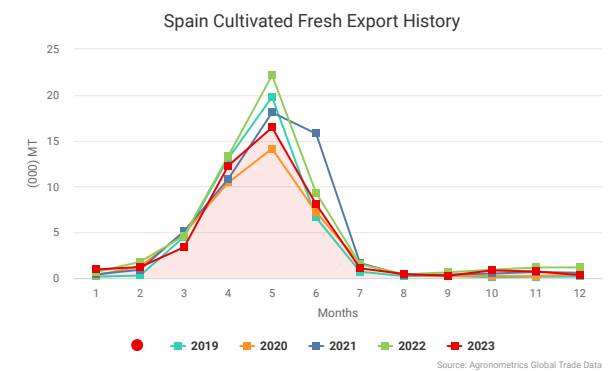
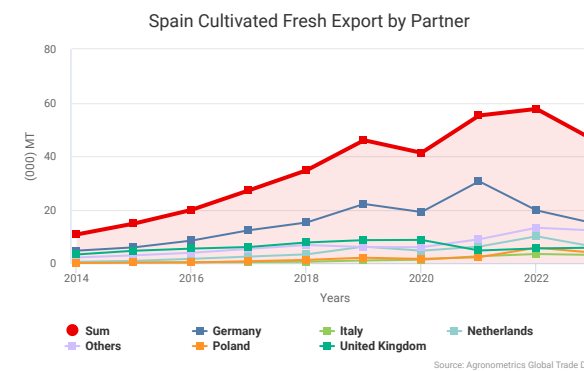
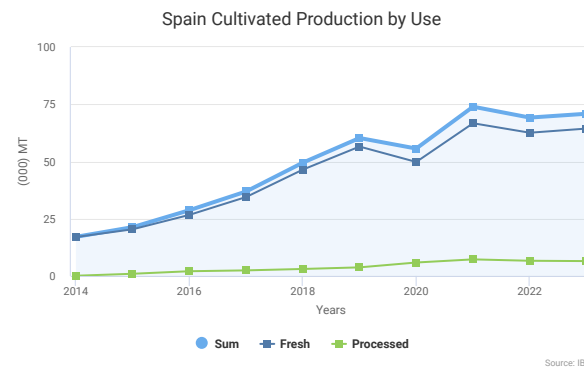
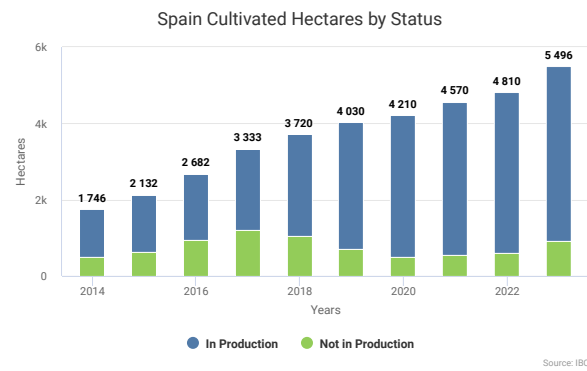
Tunisia

As it now becomes apparent that previous industry musings around developing blueberry plantings in other Mediterranean countries such as Turkey and Egypt have now taken on a more serious tone (see Middle East section), other countries with warm growing conditions and proximity to Europe and the Middle East are also under consideration although some stakeholders are not revealing too much about their intentions. At least two large Spain-headquartered companies are eyeing Tunisian market development, one of whom already has operations in raspberries and strawberries in the country's north which this year has plans to plant 20ha of blueberries, which itself would already represent five-fold growth on the IBO's 2022 figures for hectareage.

SPAIN



Planting and Production Data, Figures & Commentary (Denominated in Hectares and Thousands of Metric Tons)



Spain 2023 Production Metrics

Hectares Planted:	5,496 Ha
Hectares in Production:	4,570 Ha
Production:	70.86 (000) MT
Growth in Production ¹ :	▲1.67 (000) MT (2.41%)
Growth from Hectares ² :	▲5.54 (000) MT (331.53%)
Growth from Yield ³ :	▼3.86 (000) MT (-231.26%)
Yield:	15,505.47 (Kg/Ha)
Exports:	46.01 (000) MT
Imports:	36.19 (000) MT

Source: IBO and Agronomics

- ¹ Volume change compared to previous season
- ² Change in volume due to hectares entering or leaving production
- ³ Change in volume due to field productivity (yields)

Spain Cultivated Fresh Exports by Partner (000) MT

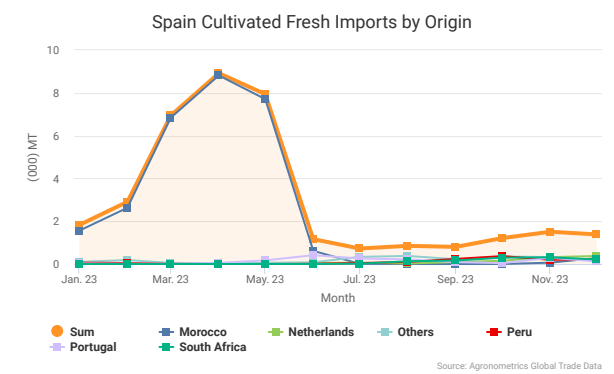
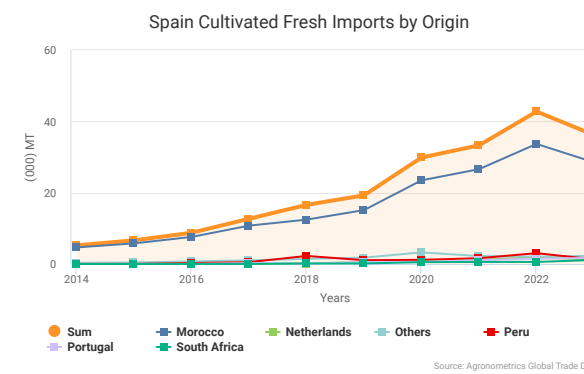
Reporter	2019	2020	2021	2022	2023
Germany	22.13	19.12	30.60	19.73	14.89
Netherlands	6.19	4.65	6.18	10.03	6.15
United Kingdom	8.60	8.69	4.72	5.50	5.79
Poland	2.02	1.59	2.21	5.77	3.90
Italy	1.01	1.28	2.59	3.41	3.06
Others	6.03	5.95	8.92	13.24	12.21
Spain Totals	45.99	41.27	55.23	57.69	46.01

Source: Agronomics Global Trade Data

Spain Cultivated Fresh Imports by Origin (000) MT

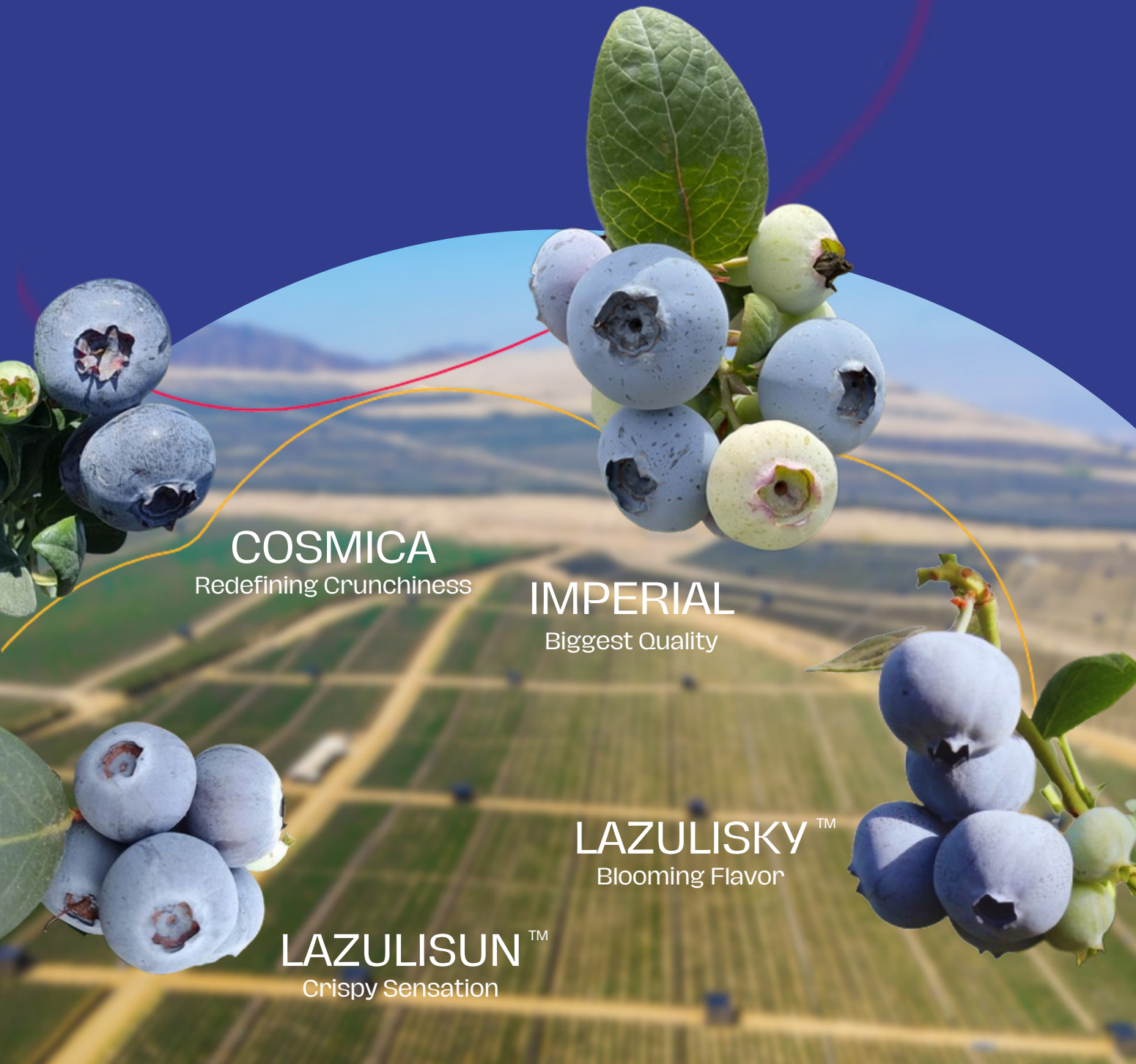
Reporter	2019	2020	2021	2022	2023
Morocco	15.13	23.47	26.61	33.69	28.52
Portugal	0.54	0.60	1.05	1.48	1.71
Peru	1.07	1.17	1.63	3.05	1.30
Netherlands	0.61	0.85	1.20	1.90	1.22
South Africa	0.16	0.52	0.58	0.58	1.13
Others	1.78	3.26	2.22	2.07	2.30
Spain Totals	19.28	29.87	33.30	42.77	36.19

Source: Agronomics Global Trade Data





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Spain Country Member Summary

Adapted from report by Freshuelva
(the association representing the Spanish industry)

Evolution of the 2023 campaign

In the 2023 season the surface area for blueberries in the province of Huelva experienced a slight increase that keeps productive land at around 4,000 hectares of the crop. The incorporation of earlier-growing varieties has allowed us to expand the range of our market and have production from January, thus gaining market share from other sources.

Blueberries have again consolidated their position as the second berry of our province behind strawberries, despite the fact that in this case it faces great competition from third countries, mainly Morocco, during the months of spring.

The climatic conditions over the course of the campaign were not favorable for the crop, as in terms of temperatures the minimums produced in November, December and January were above the average for those months, which did not favor the accumulative process for cold hours. All of this led to a decline in production of around 25%. In addition to this reduction in production, the cold of the last weeks of February and the first weeks of March led to a decrease in berry sizing.

Problems with water have added to these climatological conditions, as a factor that is very limiting for the crop as its reduction in allotments has led to negative repercussions so that the quality parameters for a good development of the crop are not present, with the water in some areas having high saline concentrations.

The weather and commercial conditions in the last phase of the season meant that it could be lengthened, which allowed for a recovery from the decline in production that had dragged down the first months, and thus reduced the margin of difference against the 2022 season.

The recovery in production during April and May, however, clashed with strong competition in markets, especially with countries like Morocco, leading to an oversupply, a collapse in prices, and a lower supply in June with a consequent rise in prices. All of these circumstances meant that the 2023 season was the most irregular of recent years.

In terms of production costs, these have remained just as elevated as in the 2022 campaign, in which there was a significant increase due to the situation with the war in Ukraine. The availability of labor is, together with water, one of the limiting factors for the crop, and this season it has become a difficult problem to manage not just in blueberries but in berries in general, and one that the sector in the province of Huelva has managed through the procedure of contracting at origin.

Evolution of exports in 2023

In terms of exports, Germany is again the leading destination for Spanish blueberries. The Netherlands holds second place in the rankings after overtaking the United Kingdom in the previous campaign. Even so, the United Kingdom continues to be one of the three main destinations for our blueberries. Exports are concentrated in the second quarter with the highest volumes in May.

Despite this, Spanish exports in 2023 declined 15% compared to the previous season. This decline is generalized, affecting mainly exports to the Netherlands, followed by Belgium and Germany.

Evolution of imports in 2023

In terms of Spanish imports, these are concentrated in the second quarter of the year with Morocco as the main importer compared to other countries. Until the 2022 season the evolution of imports had been experiencing year-on-year growth, however in 2023 there was a decline in imports from Morocco, Peru and the Netherlands.

In contrast, it must be highlighted that imports from South Africa in 2023 were almost 92% higher than in the previous season, followed by Portugal whose increase was slightly higher than 40%.

During 2023 Freshuelva and companies have continued to promote berries in general, and blueberries in particular, to incentivize consumption of the product with an objective centred on the domestic market with the understanding that it is a market with a wide margin for growth.

Spain Report Team Narrative

As a mature yet fragmented industry that pioneered southern highbush varieties in Europe, Spain remains a leading source of the crop during the springtime. The Spanish blueberry industry finds itself at a critical juncture facing several challenges, among them water shortages that have impeded both growers' expansion and varietal conversion plans, whilst contending with competition from Morocco where labor costs are relatively cheaper than in Spain where agricultural wages have risen by approximately 50% over the past five years.

Competitive pressure was less pronounced in 2023 as both Spain and Morocco experienced delayed seasons and production declines, in contrast to the dynamics of supply peaks the industry had become accustomed to in recent years over the months of April and May. Growers benefited from higher prices with a marginal lift in total export value for both, though not all growers experienced sufficient price increases to offset yield shortages.

The reasons underpinning Spain's production decline are explored in the season summary provided by Fresh Huelva,

which notes climatological factors that impacted yields, to such an extent that volume was down even though the surface area dedicated to blueberries was actually higher.

Weather does not explain the reduction entirely however, as varietal transition efforts over the past few years mean there is a large portion of young fields that are in the early stages of their upward yield curve. We do not have exact data to define exactly what this proportion is, but major international and domestic genetics programs are active in Spain, and one grower cooperative that accounts for almost a third of Spanish blueberry production has already converted a third of its hectares to new cultivars. One can then easily extrapolate that even if no one else were replanting, the renewal from this cooperative alone would account for at least 10% of the industry with yield growth that is yet to be materialized.

The industry's main two varieties are the early-season Snow-chaser and the early-midseason Ventura, both which have become less desirable for retailers if they can access the supply of other genetics with improved fruit quality.

Production in Huelva also has a history of highly concentrated production – between 70% and 80% - occurring within a three-week period in April and May, so those who can afford it and see the option as economically viable have explored switching up their cultivar mix in pursuit of a more spread out campaign with different windows, the earliest being in late November in limited volumes. Other traits growers reportedly seek include higher yields, greater heat tolerance, and characteristics that are more valued by the market (such as taste, size, firmness and shelf life).

Spain has been dealing with one of its worst droughts since 1997 and irrigation restrictions have been placed on industry. It is frequently the case that blueberry growers produce other berries, and when faced with water limitations they may be incentivized towards cutting back on berry crops that require annual planting rather than blueberry bushes that need to be maintained over time. This trade-off however contrasts with Spain's comparative advantage in the proximity to market that favors its strengths in more perishable fruits like strawberries or raspberries versus blueberries which are much more transit-robust with minimal implications of 1-2 days extra journey time.

Rainfall levels have improved since October 2023, but dams and reservoirs are not yet at a satisfactory level for water restrictions to change, although the occurrence of rain has at least meant that water restrictions haven't tightened further. The combination of uncertainty around water, and the less stringent varietal requirements from retailers in a scarce supply year of 2023, has delayed actions around replanting versus where growers would have intended under different circumstances.

In terms of other field-level trends, there have been reports of some Spanish growers purchasing mechanical harvesting machines, although there have been questions around how their deployment would look given the majority of Huelva's blueberry sector is under tunnels, which would need to be removed to facilitate these machines.

2023 saw a very hot summer though fortunately reports are that although fields suffered from abnormally extended periods of extreme summer heat, leading to plant stress and the yellowing of leaves, the 2024 season saw markedly better yields. It was reported that by October there were signs

of plant health recovery, and sources have pointed to both an early season and delays, which, depending on the region and varieties concerned, may both be true. Early statistics in February showed a 60% year-on-year uptick in Spanish blueberry exports in February, although this is amidst a large jump in Moroccan shipments and could therefore include re-exports. Late reports coming in from the season's close indicate significantly higher yields for the Spanish season and consistently good pricing throughout most of the season, indicating strong and sustained demand.

Aside from Huelva, blueberries are also grown in Galicia in northern Spain where high-chill blueberries are grown with production oriented towards June and July. One large global fruit company that is based in Spain is now looking to alternative regions within the country to grow blueberries, with the northeastern region of Zaragoza under serious consideration.

Spain is often referred to by blueberry industry stakeholders as an emblematic market of new consumption growth, and the double-digit consumption growth has continued despite the overall market shortage witnessed in 2023. This is encouraging in a country where just a few years ago it was not normal to see blueberries on the shelves of supermarkets year-round. One domestic retailer that accounts for a major portion of the Spanish retail market, Mercadona, was an early adopter of stocking blueberries on the shelves and now most others have followed suit.

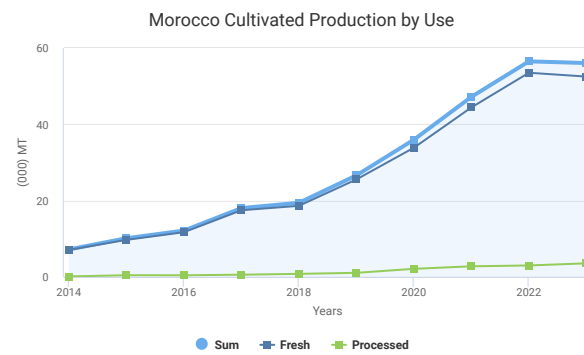
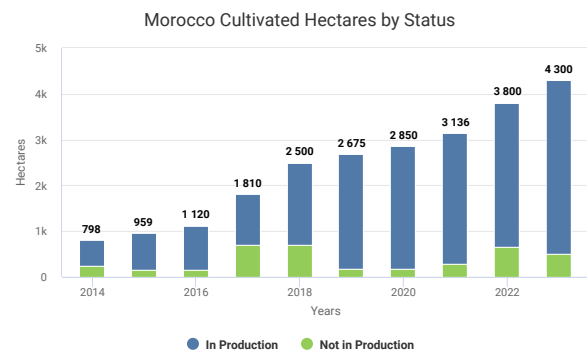
Not only is it normal now to see blueberries sold throughout the year all over Spain, but in times of more stable supply dynamics there are larger packaging sizes too with 400g or 500g seen as the norm just as it is in other parts of Western Europe – a trend which was less able to flourish in 2023 as pack sizes were downgraded on average due to scarcity. In Spain, more people are discovering blueberries, consumers are purchasing blueberries more often, and they are buying more than before; all trends that are facilitated by counter-seasonal supply and the promotional efforts of local industry.

It is also worth noting that one of the world's fastest-growing berry nursery and genetics companies which has an active blueberry genetics program, Spain-based Planasa, saw its private equity ownership exit and was acquired by family-owned German investor EW Group in late 2023.

MOROCCO



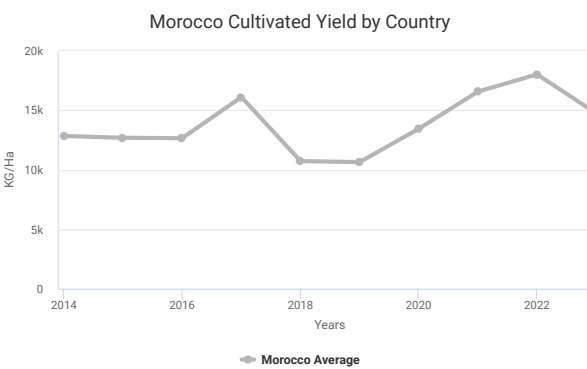
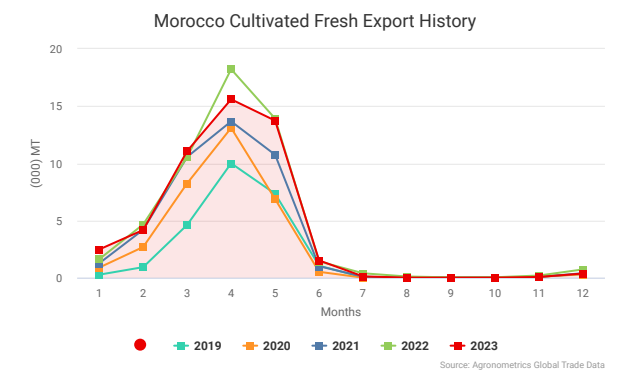
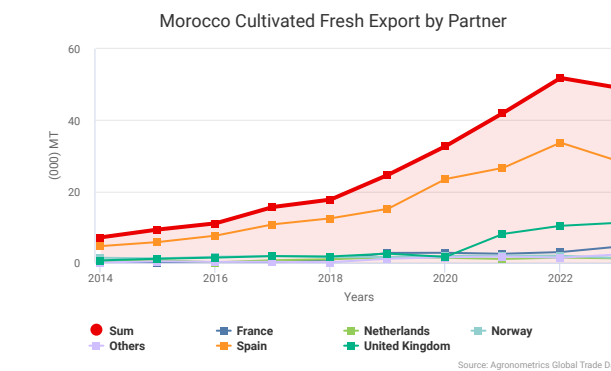
Planting and Production Data, Figures & Commentary (Denominated in Hectares and Thousands of Metric Tons)



Morocco Cultivated Fresh Exports by Partner (000) MT (Data inferred from trade partners)

Reporter	2019	2020	2021	2022	2023
Spain	15.13	23.47	26.61	33.69	28.52
United Kingdom	2.55	1.64	8.08	10.35	11.19
France	2.75	2.78	2.51	2.99	4.50
Norway	1.61	1.89	2.00	1.96	1.33
Netherlands	1.50	1.38	1.05	1.44	1.22
Others	1.13	1.52	1.76	1.40	2.32
Morocco Totals	24.66	32.69	42.01	51.84	49.09

Source: Agronomics Global Trade Data



Morocco 2023 Production Metrics

Hectares Planted:	4,300 Ha
Organic:	Not Reported
Under Structure:	Not Reported
Hydroponics:	Not Reported
New Genetics:	Not Reported
Hectares in Production:	3,800 Ha
Production:	56.06 (000) MT
Growth in Production ¹ :	▼0.44 (000) MT (-0.78%)
Growth from Hectares ² :	▲11.96 (000) MT (2,718.75%)
Growth from Yield ³ :	▼12.40 (000) MT (-2,817.84%)
Yield:	14,753.08 (Kg/Ha)
Exports:	49.09 (000) MT
Imports:	0.01 (000) MT

Source: IBO and Agronomics

¹ Volume change compared to previous season
² Change in volume due to hectares entering or leaving production
³ Change in volume due to field productivity (yields)

Morocco Report Team Narrative

Moroccan blueberry production declined for the first time in 2023 following more than a decade of breakneck growth, as yields fell due to weather-related issues including a cold spell in late January and early February. Fruit sizing was down slightly, although quality remained strong for an industry that has built a reputation for consistency in terms of the fruit’s organoleptic characteristics, driven in part by a relatively high proportion of premium-grade cultivars in the ground as well as the benefits of knowhow (most of the world’s leading blueberry industry players have a presence there), market proximity and labor availability.

Amidst high prices, export value increased marginally despite the 9% drop-off year-on-year in supply, reaching a level that was still eight times higher than in 2013, shipped not just to the European market for which Morocco is a natural extension for late winter and early spring production, but also markets further afield including Russia, the Middle East, Far East and even North America. Earlier this year a Moroccan mission visited China, where the industry expects a market access opening will be in the pipeline.

The trend of growers diversifying to blueberries from Morocco’s mainstay crops of tomatoes and citrus continues, but stakeholders envision a more measured approach to expansion following recent boom years. In the southern area of Agadir the cost of production has risen due to severe drought conditions which mean many rely on desalinated water. “Water is available. It’s of lower quality and at a higher price, and you still need reverse osmosis plants to bring it to a lower level of electrical conductivity, but it works,” as one grower stated.

That said, replantings and new plantings of blueberries in Morocco are still significant compared to Spain, for example. One of the world’s leading blueberry companies is planning to increase its hectares in Morocco from 240ha to 500ha over the next 18 months, enticed by the ideal growing conditions. “You just have a perfect climate to grow sweet fruit,” the source explains.

Until recently Agadir was the heartland of Morocco’s blueberry industry expansion. Unlike in the north where most farms

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are open field, blueberry cultivation in Agadir was pioneered with substrate production of proprietary southern highbush genetics, good agronomic management and tall 'canary greenhouse' protection. It is a geographical expansion that has allowed the country to produce earlier with a peak window from January to April.

However, the shortage of water is not as serious in the north of Morocco where the country's blueberry industry began and growing conditions are more similar to southern Spain. That region has been undergoing something of a renaissance with growth actually outpacing Agadir of late.

This northern region, around Larache and Rabat, is where there were the first forays into low-chill blueberry production in Morocco in the mid-2000s, with a lot of activity coming from Spanish interests before Morocco became a hub for a veritable who's who of blueberries globally.

Morocco's benefits have attracted companies and investors from the Americas, Europe, South Africa, Israel, Australia, and Morocco itself – including citrus companies wishing to diversify – to plant blueberries. Many view the country as an extension of European industry however, and a lot of the companies present also have production in Spain, thus offering diversification benefits to retailers. This is especially beneficial when cold snaps in Europe prompt later Spanish seasons so Morocco can fill the gaps.

Following a "satisfactory" season in 2023 with high pricing, at the time of writing Morocco's blueberry season has been delayed in 2024 but volume is expected to rise again, representing a return to some form of normality. Like Spain, the south of Morocco experienced a heatwave which impacted the crop, while in both the south and the north there were wind events that caused some structural damage, although this was not considered a significant contributing factor to the lower production. There was a phytosanitary alert for Hepatitis B detections in Moroccan strawberries in Europe earlier in 2024 and it has been reported in some media outlets that this impacted Moroccan blueberry shipments due to stricter controls, although some industry stakeholders claim it was more of a politically-driven scare campaign than a genuine problem with retailers or shippers.

Morocco's industry is generally discussed along north-south lines, but there is an incipient, third geographic vertical that

is much further south in the region of Dakhla, which is still limited to just a handful of rather big players that are able to access limited water and labor resources and betting on its potential for even earlier production. The preference is for flat plastic structures known as 'Canarian greenhouses' in what is a windy area, some 1,200km to the south of Agadir in the disputed territory of Western Sahara, although the geopolitical climate has shown signs of stabilizing with support for Morocco's autonomy plan for the area from more developed nations such as the United States and Spain.

The Kingdom of Morocco is set to "throw everything" at the Dakhla region to make it a success, according to one industry insider, with plans to develop a port and open up 5,000ha to agricultural projects under an irrigated perimeter with desalinated water. This project is under development but it is still uncertain when it will be operational

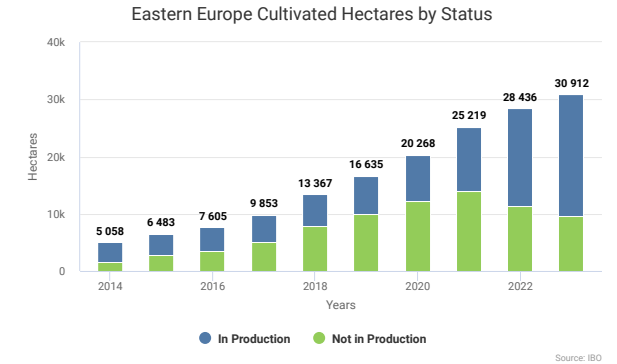
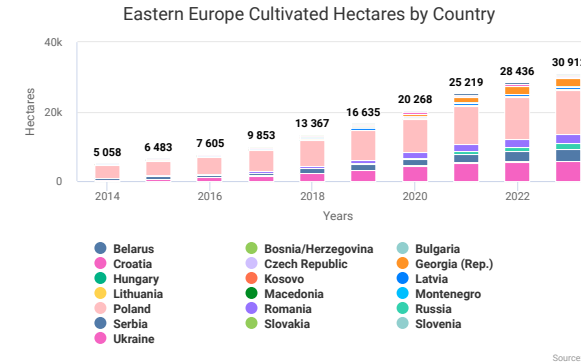
Dakhla has mild weather and its low chill climate allows for production at least a month earlier than in Agadir, but labor access is a problem as workers need to be brought in, and harvests will take two more days to get to the European market than fruit from Agadir. Any such delay however is fairly insignificant given the prospect of production in September, in competition with Peru and South Africa that both would take longer to get to the European market. One industry stakeholder remarked that "question marks still hang over Dakhla", and another that is active in the area emphasizes that growers must achieve significant earliness for the region's capital development and operating costs to be worthwhile – ideally up to six weeks – given the increasing earliness of new varieties that have been planted Agadir, which is much more convenient than Dakhla logistically.

The market is also starting to see the result of limited plantings of mid-chill blueberries grown in Morocco's Atlas Mountains, targeting the late June and July market windows. This timing is not as advantageous price-wise as Dakhla would be, but it is understood that the cost of production in the region is low while logistically it would only take a few hours more than from Agadir to reach Morocco's ports.

From a market diversification perspective, the industry's plans to start building a North American export channel came to fruition last year with shipments rising almost seven-fold to 757MT, the bulk of which went to Canada.

EASTERN EUROPE

Planting and Production Data, Figures & Commentary
(Denominated in Hectares and Thousands of Metric Tons)



Eastern Europe Cultivated Hectares by Country

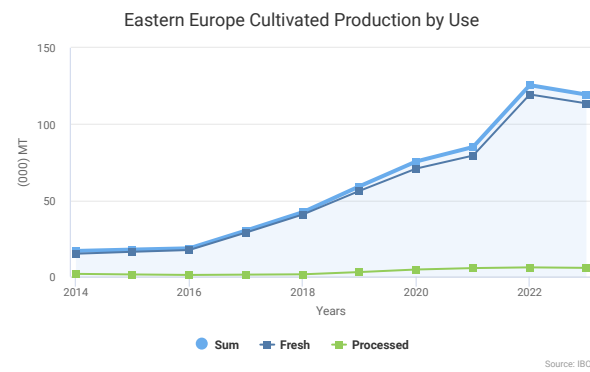
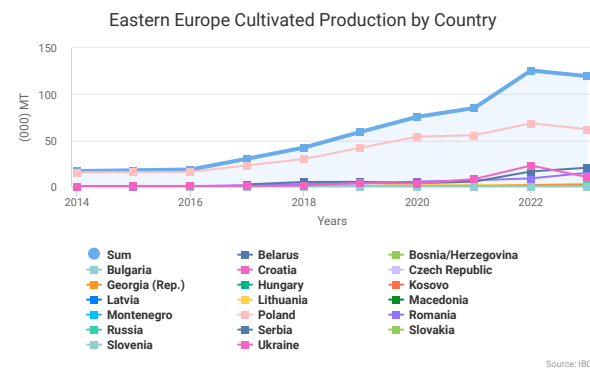
Eastern Europe	Hectares Planted					2023 Production (000) MT		
	2019	2020	2021	2022	2023	Fresh	Process	Total
Poland	8,450	9,500	11,000	11,913	12,594	59.00	3.00	62.00
Serbia	1,612	1,800	2,360	3,000	3,366	20.00	0.53	20.53
Romania	1,025	1,500	2,000	2,500	2,650	14.00	1.00	15.00
Ukraine	3,183	4,383	5,318	5,500	5,700	10.30	-	10.30
Belarus	270	290	362	400	437	1.38	0.87	2.25
Georgia (Rep.)	405	700	1,500	2,115	2,500	2.00	0.10	2.10
Croatia	290	360	380	400	370	1.54	-	1.54
Russia	205	400	750	1,000	1,600	1.05	-	1.05
Bosnia/Herzegovina	170	170	190	190	197	0.99	-	0.99
Kosovo	60	90	90	126	150	0.71	-	0.71
Lithuania	200	270	300	350	360	0.70	-	0.70
Latvia	510	500	600	550	550	0.42	0.25	0.67
Slovenia	60	60	70	70	70	0.40	-	0.40
Czech Republic	50	70	88	108	132	0.39	-	0.39
Bulgaria	30	40	70	60	80	0.23	-	0.23
Slovakia	50	70	70	80	80	0.19	-	0.19
Montenegro	15	15	18	22	23	0.12	-	0.12
Macedonia	10	10	12	12	13	0.08	-	0.08
Hungary	40	40	40	40	40	0.06	-	0.06
Eastern Europe Totals	16,635	20,268	25,219	28,436	30,912	113.56	5.75	119.31

Source: IBO

Eastern Europe Cultivated Production by Country(000) MT

Eastern Europe	2021			2022			2023		
	Fresh	Process	Total	Fresh	Process	Total	Fresh	Process	Total
Poland	52.50	3.00	55.50	65.50	3.00	68.50	59.00	3.00	62.00
Serbia	5.00	0.50	5.50	16.00	0.45	16.45	20.00	0.53	20.53
Romania	6.00	0.90	6.90	8.00	1.00	9.00	14.00	1.00	15.00
Ukraine	8.24	-	8.24	22.41	0.43	22.84	10.30	-	10.30
Belarus	0.82	0.51	1.33	1.25	0.60	1.85	1.38	0.87	2.25
Georgia (Rep.)	1.50	0.10	1.60	1.60	0.10	1.70	2.00	0.10	2.10
Croatia	0.53	-	0.53	0.73	-	0.73	1.54	-	1.54
Russia	0.05	-	0.05	0.05	-	0.05	1.05	-	1.05
Bosnia/Herzegovina	0.91	-	0.91	0.93	-	0.93	0.99	-	0.99
Kosovo	0.47	-	0.47	0.65	-	0.65	0.71	-	0.71
Lithuania	1.84	0.30	2.14	0.65	0.25	0.90	0.70	-	0.70
Latvia	0.50	0.30	0.80	0.42	0.25	0.67	0.42	0.25	0.67
Slovenia	0.26	-	0.26	0.37	-	0.37	0.40	-	0.40
Czech Republic	0.20	-	0.20	0.30	-	0.30	0.39	-	0.39
Bulgaria	0.11	-	0.11	0.14	-	0.14	0.23	-	0.23
Slovakia	0.18	-	0.18	0.17	-	0.17	0.19	-	0.19
Montenegro	0.11	-	0.11	0.12	-	0.12	0.12	-	0.12
Macedonia	0.08	-	0.08	0.08	-	0.08	0.08	-	0.08
Hungary	0.05	-	0.05	0.05	-	0.05	0.06	-	0.06
Eastern Europe Totals	79.35	5.61	84.96	119.42	6.08	125.50	113.56	5.75	119.31

Source: IBO

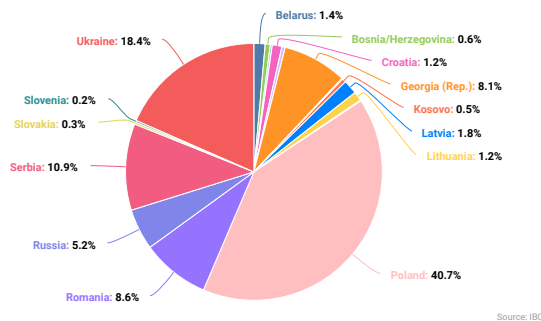


Eastern Europe Exports by Partner Subregion (000) MT

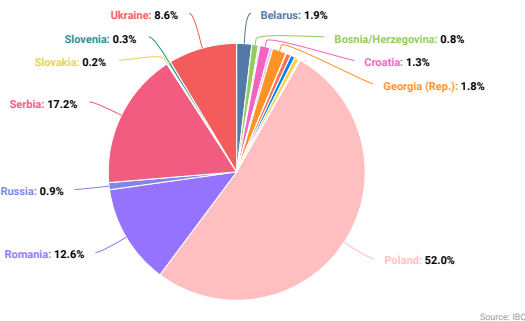
Subregion	2019	2020	2021	2022	2023
Western/Central Europe	16.40	23.63	23.26	24.72	26.74
Eastern Europe	6.53	11.57	11.70	15.01	14.08
So. Europe/N. Africa	0.48	0.40	0.56	1.33	1.67
Middle East	0.06	0.04	0.06	0.11	0.27
Central Asia/Indian Subcontinent	0.00	0.00	0.01	0.04	0.01
Others	0.09	0.01	0.03	0.01	0.01
Eastern Europe Totals	23.55	35.65	35.63	41.23	42.77

Source: Agronomics Global Trade Data

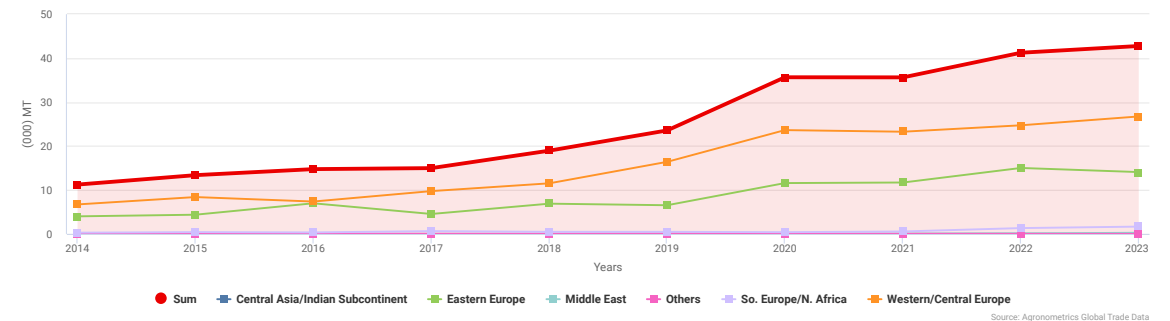
2023 Eastern Europe Cultivated Hectares by Country



2023 Eastern Europe Cultivated Production by Country



Eastern Europe Cultivated Fresh Export by Partner Subregion

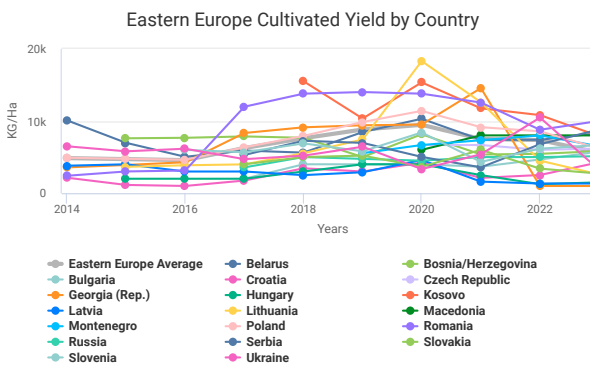


Source: Agronomics Global Trade Data

Eastern Europe Exports by Reporter (000) MT

Subregion	2019	2020	2021	2022	2023
Poland	13.62	18.30	21.05	23.09	21.89
Serbia	1.65	3.19	4.36	4.92	6.01
Romania	2.01	4.50	2.77	4.57	4.94
Georgia (Rep.)	0.20	0.67	0.95	1.39	3.46
Ukraine	2.43	1.19	1.82	3.16	4.06
Others	3.64	7.80	4.68	4.10	2.40
Eastern Europe Totals	23.55	35.65	35.63	41.23	42.77

Source: Agronomics Global Trade Data



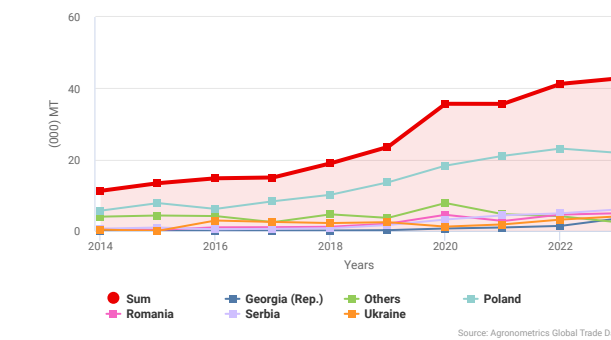
Eastern Europe 2023 Production Metrics

Hectares Planted:	30,912 Ha
Hectares in Production:	21,294 Ha
Production:	119.31 (000) MT
Growth in Production ¹ :	▼6.19 (000) MT (-4.93%)
Growth from Hectares ² :	▲33.68 (000) MT (544.13%)
Growth from Yield ³ :	▼39.87 (000) MT (-644.09%)
Yield:	5,602.84 (Kg/Ha)
Exports:	42.77 (000) MT
Imports:	51.81 (000) MT

Source: IBO and Agronomics

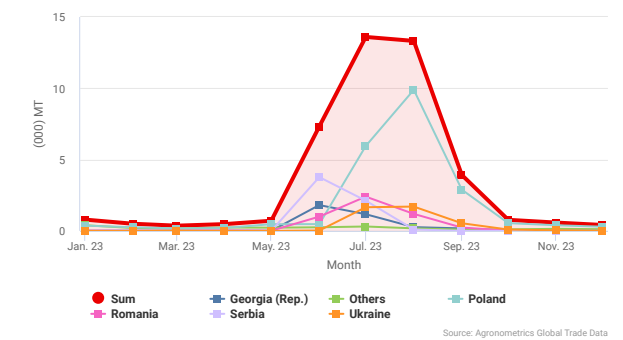
¹ Volume change compared to previous season
² Change in volume due to hectares entering or leaving production
³ Change in volume due to field productivity (yields)

Eastern Europe Cultivated Fresh Export by Reporter



Source: Agronomics Global Trade Data

Eastern Europe Cultivated Fresh Export by Reporter



Source: Agronomics Global Trade Data

Eastern Europe Imports by Origin Subregion (000) MT

Origin	2019	2020	2021	2022	2023
Western/Central Europe	12.19	15.31	19.53	34.94	28.25
So. Europe/N. Africa	5.83	5.95	8.54	11.03	10.34
Eastern Europe	6.07	11.31	10.20	12.21	12.09
South America	0.19	0.61	0.65	0.62	0.78
Asia	0.07	0.11	0.12	0.15	0.22
Others	0.08	0.19	1.15	0.14	0.14
Eastern Europe Totals	24.42	33.48	40.19	59.10	51.81

Source: Agronometrics Global Trade Data

Eastern Europe Report Team Narrative

Led by Poland, Europe's second-largest producer of blueberries and top supplier during the summer months, Eastern Europe is home to multiple earlier-stage blueberry industries in the ascendancy, each with their own unique characteristics with very different contributions to the region's outlook.

In the more southerly areas such as Romania, Serbia, Kosovo and Georgia (the latter not being technically part of Europe, but featured here given its position on the Black Sea and ability to ship to Europe, Russia and beyond), earliness is a key industry driver to fill the critical June supply gap between the end of the Spanish season and the start of the Polish season in July, while broadly speaking there are also labor cost benefits as well.

Serbia and Romania in particular are envisaged to play a critical role in an incipient revitalization of high chill genetics within Europe, whereby supermarkets in tandem with certain breeders are urging global marketers to complement their low- or no-chill southern highbush supply from outside the continent with summer-oriented, mid-to-high chill varieties with similar attributes around size, crunch, firmness and flavor.

An adequate appraisal of Eastern European blueberries requires a closer look at Poland, which has achieved significant scale over the past decade and – as per the country member summary contained in this report – continues to grow, albeit at a declining rate of 5.7% in 2023. This incremental surface area lift of almost 700ha, in the space of one year, is well above the entire industries of Belarus or France, and is close to the whole industry of the Netherlands in size.

Poland has also become an illustrative example for export-oriented industries globally about how to develop domestic demand as a buffer for increased international competition, with Polish blueberry consumption per capita of 1.84kg now exceeding that of their richer neighbors in Germany, who were at levels of 1kg in 2020 and have reportedly had double-digit annual growth since then. Over the past four years the number of Polish consumers eating blueberries in the autumn months, after the Polish season when Peru usually dominates supply, has grown 32.7%. This growth in market penetration in Poland is ever more remarkable when taking into account the high prices last year caused by the shortage from Peru.

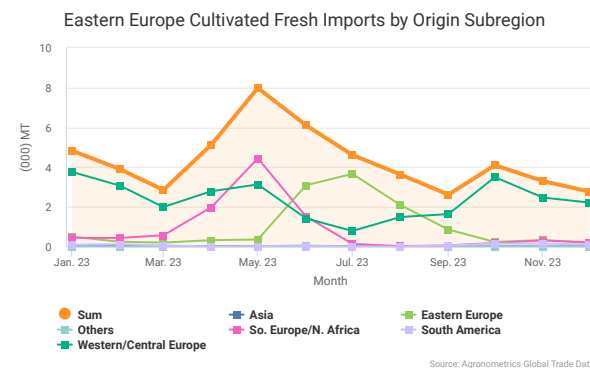
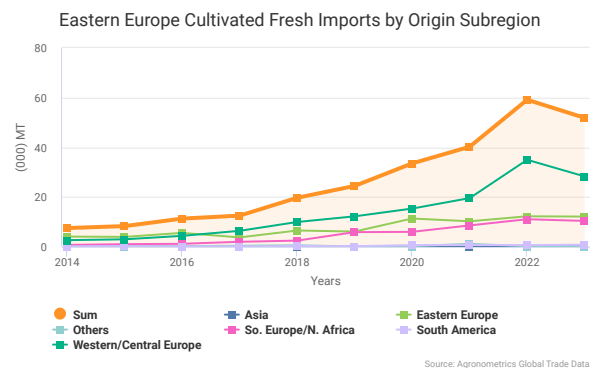
It is recommended that readers peruse the 2023 edition of the IBO report which contained a special report on Poland with comprehensive detail. For purposes of brevity, here we will also highlight that Poland has established itself as an important distribution hub for blueberries in Europe with major investments made into packinghouses and logistical infrastructure, and Polish traders have also played a strong role in re-exporting fruit from the emerging blueberry industries of the region.

Ukraine forecasts significant growth despite war

One country in the region that has historically relied heavily on Polish distributors for re-export is Ukraine, an industry that picks blueberries around one week earlier than Poland in July and finishes its harvests around the same time in September. Whilst Poland continued to be Ukraine's largest export market in 2023, shipments there fell by 37% year-on-year, compared to an overall export increase of 28% as direct sales into the Netherlands rose by a third and direct shipments to Germany skyrocketed from almost nothing to around 10% of the export total.

The Ukrainian industry's desire to diversify away from re-exports via Poland was reinforced last year by reports of lengthy delays at the Polish border, sometimes up to 10 days. As their reputation grows, these producers are securing increasingly larger contracts with the big names of the European trade in Western and Mediterranean Europe.

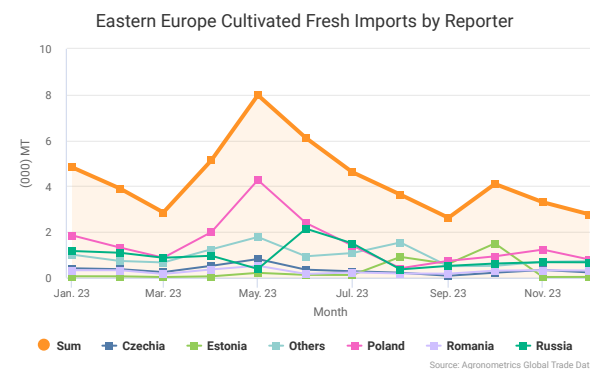
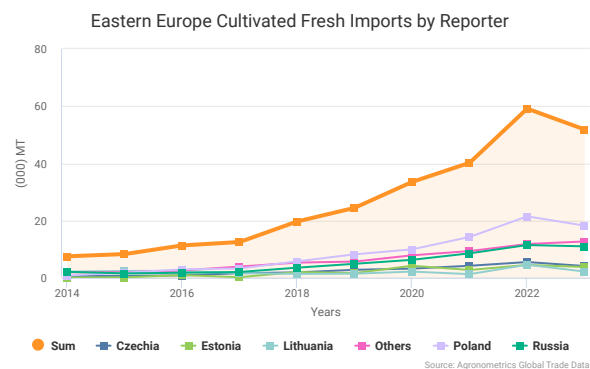
Even though the country was invaded in 2022, Ukraine's total planted area dedicated to blueberries has continued to increase, buoyed by government subsidies for farms under 20ha that are estimated to cover around 30% of the capital expenditure required for a more sophisticated operation, which Ukrainian growers pride themselves on (although investors are more likely to aim for 50-100ha operations). The average Ukrainian farm is larger than its Polish counterpart, and since around 2017 there has been growth in plantings, characterized by sizable operations by the standards of colder European countries, utilizing modern cooling facilities and sorting lines.



Eastern Europe Imports by Reporter (000) MT

Reporter	2019	2020	2021	2022	2023
Poland	8.16	9.91	14.25	21.44	18.20
Russia	4.86	6.25	8.52	11.41	10.96
Czechia	2.76	3.18	4.17	5.47	4.09
Estonia	1.61	4.18	2.70	4.47	3.74
Romania	1.25	1.54	2.06	2.99	3.41
Others	5.79	8.42	8.49	13.30	11.42
Eastern Europe Totals	24.42	33.48	40.19	59.10	51.81

Source: Agronometrics Global Trade Data



The fundamentals of the Ukrainian industry are highly professionalized and often backed by groups of private, local investors, and around 60% of cultivation is in the country's north, close to Kyiv, with an estimated 90% of farms being west of the nation's capital – an important consideration given the war.

Harvests fell short of forecasts by 20% last year, and sources said the industry is probably too young to be able to fully explain the causes of such changes, especially given the lack of reliable statistics. What is clearly evident though is that farms are still very young, as evidenced by their low yields at present, and the industry overall is on the upward line of an exponential growth curve. As one grower stated, if Ukraine achieves the same yields as Poland its exports have the potential to rise four- or five-fold over the next five years.

Other challenges faced by the Ukrainian industry include the logistical challenge of trucking based on restrictions on the movement of its male population due to the war. Trucks must have two drivers, only one of whom can be male and of fighting age, so the second driver must always be a woman or a man who is older than 60; demographic profiles that are not so easy to achieve. The Ukrainian government also has concerns around capital outflows due to the war, and therefore has strict rules around reporting foreign currency exchange – as blueberries are often sold on consignment, and claims mean returns are not always exactly the same as stated on the contract, exporters must fill out paperwork to explain to the authorities why figures don't add up and prove that the difference is not a case of capital flight.

Serbia fills a longstanding market gap

Targeting the lucrative market window of June, but also with sales in July when volume tends to clash with more competing origins and prices decline, the Serbian blueberry industry has grown its exports more than six-fold since 2018. In that time the industry has overtaken Portugal as a major supplier during the June window, and this was achieved in 2023 despite a very rainy month of May in the lead up to harvests which in cases led to fruit softness and other quality defects. The average prices achieved for Serbian exports were 11% higher year-on-year in June and slightly lower versus the prior year in July, as export value growth exceeded the acceleration in volume.

Serbia's mountainous terrain allows for the manipulation of harvest windows with different varieties, although the predominant cultivar is Duke, leading to more concentrated harvests than in other industries. Most exports are from large farms which also source volume from third parties in their local areas. Some of the more advanced blueberry establishments in Serbia involve investment, resources and expertise from the Netherlands, the United States, the United Arab Emirates and Germany.

Production is widely dispersed geographically, but the highest yields tend to be achieved in the west and southwest due to the quality of soil. However, many farm owners actually live in Belgrade and prefer to cultivate land that is closer to the capital, located in north-central Serbia. In general, water is less regulated than in Western Europe and farmers are able to drill deep wells to access water for irrigation.

As Serbia's agricultural census takes place every 10 years, the true extent of plantings is unknown. The hilly terrain makes it difficult to secure contiguous plots of land, and the cost of producing blueberries is expensive by Serbian farming standards; a high proportion of farms have anti-hail nets, modern irrigation and fertigation systems are common, and more and more farms have been planted in pots with substrate over more recent years. However, there is still a great degree of variance when it comes to farm size, infrastructure, knowhow, logistical capability and certifications.

There is a general reluctance to adopt new varieties and only a few players are undertaking trials or the commercial development of the latest genetics. Almost half its exports were sent to the Netherlands in 2023, while exports to Poland doubled to represent around a sixth of the total, and shipments to Russia fell in half; most of the drop in supply to Russia was also in the more lucrative June window, in which Russia accounted for almost a third of sales in 2022 but just 10% in 2023.

At the time of writing there is no national grower association in existence, but industry players do organize events to help improve knowledge (the level of expertise is still low relative to the industry's size, which has impeded yields) and there is a general will to formalise a representative body for the blueberry industry.

Around 10-15% of Serbia's production is estimated to go to processing, with the remainder (a similar percentage) sold as fresh in the local market.

Romania

Serbia and Romania are often mentioned in the same breath by industry representatives describing the significant changes taking place in Eastern Europe, but the two sectors are quite different. Yes, Romania can and does supply fresh blueberries to the European market during the historically scarce (although now less so) month of June, but its season lasts longer (In 2022 from 17 June to 28 September) and tends to have a peak in July, and sometimes in August depending on conditions. The industry experienced marginal export growth in 2023.

Most investors in the Romanian blueberry sector are local, but the country has attracted international investment including from one of Germany's leading growers, who has helped open doors to German retailers. Some operations include more technologically advanced infrastructure such as warehouses, cold stores and sorting lines, but there is also a large proportion of small growers who depend on traders or cooperatives that have made these kinds of investments. With Serbia following its lead, trials are now under way in Romania for proprietary genetics in a bid to supply the European market with higher quality fruit during winter, but it will be a few years before this fruit is in commercial volumes of note.

Almost all production in Romania is in open fields rather than being in pots; to the north of the Carpathian mountains the soil is rather acidic and thus lends itself to this type of cultivation, although with the right soil preparation there are also significant plantings to the south of the range. In higher altitude areas there is a greater risk of frosts in April, which is when Duke (the most common cultivar) and Legacy blueberry bushes are in blossom; hence many growers have turned to the Elliott variety to avoid frost damage with later production.

There are more than 300 independent growers in Romania (with typical farm sizes between 3-25ha), most of whom are smallholder farmers. Some are also experimenting with next-gen varieties from the United States, Spain and elsewhere.

Romania has the added benefit that it can draw on a workforce who already have years of experience working on blueberry fields in Spain, and can return to Romania to continue working once the Spanish season is finished each year.

Republic of Georgia

Ideally located for exports to Europe, Russia, Asia and the Middle East, the Republic of Georgia is primed for growth and last year saw its exports surge by 148.5% to reach 3,462MT – a level that is approximately equivalent to Serbia's shipments in 2020, and Serbia's annual volume has doubled since then.

It is unlikely that all of this rise only comprised of Georgian fruit, as the nation witnessed an abnormally large seven-fold increase in imports in 2023, and the probability that local consumption would have risen to that degree is low. Its main market is Russia, and it is safe to say that much of that supply would be re-exports from jurisdictions that are not allowed into Russia. However, even if all of Georgia's imports in 2023 were in fact re-exported, growth would have still stood at an impressive 66% year-on-year.

Growers would like to ship more to Europe but have struggled to meet the standards and certifications required for the market, while cold storage also presents a problem with shelf life, thus incentivizing ease of sales to Russia which accounts for around 95% of sales. There are concerns about the vulnerabilities of this dependence, if for example Russia were to impose a ban on Georgian fruit as has happened with other countries.

In 2023 the industry took a major step in forming a growers' association, and the first 50MT of blueberries were sold in Europe with plans at the time of writing to sell 800MT via this association in 2024.

The Republic of Georgia has planted many southern and mid chill highbush blueberry varieties although the mountainous topography allows for northern highbush growing in certain areas. With tunnel production the industry is capable of growing the fruit in May, but the season is concentrated in June and July with some volume in August. The bulk of plantings are in western Georgia in the regions of Guria, Samegrelo-Zemo Svaneti and Imereti; areas where the soil tends to be acidic, which allows blueberries to thrive.

The typical farm in the Republic of Georgia is one hectare or less – a tendency that has been encouraged by government grants to smallholder farmers to plant blueberries, mostly with older varieties as well. As such a new industry, there is a wide gap in knowledge which is not helped by the fact most educational materials are not in languages that are very accessible to the average Georgian farmer.

In parallel to the trends across Eastern Europe, the proliferation of small growers detracts from the fact that most of the blueberry volume comes from larger entities, which in Georgia is about 90%. There are an estimated 40 farmers in Georgia who have blueberry farms that are larger than 20ha. As has been the case in Serbia there has been investment into a large farm from a UAE-affiliated entity, as well as investors from India. In 2020 one of the world’s largest blueberry breeders and nurseries from the U.S. set up shop in the country, with around 11 next-gen varieties under trial. Growers also are known to source plant material from Polish nurseries.

Central Europe and the Baltic States

There are currently small, mostly locally focused plantings of blueberries in the Central European countries of Czechia, Slovakia and Hungary, where like elsewhere in Europe there is a strong demand for local fresh produce when it is in season.

Import and export numbers are extremely high for the Baltic states of Lithuania and Latvia in light of their plantings and population sizes. Whilst blueberry planting has taken place in these countries and investors do see opportunities in the Baltic states, the numbers suggest there is a re-export element involved given these countries’ proximity to Belarus and Russia.

Kosovo

The Kosovan blueberry industry is by no means a significant player in Eastern Europe, but its slow and steady progress is representative of a broader trend of adoption throughout the region. As one of the smallest nations in Europe, Kosovo’s predominantly open-field production also targets the attractive June supply window in Europe but more shipments tend to take place in July.

Despite increased rainfall in spring, extremely high temperatures in summer and hailstorms towards the end of the season, Kosovo managed to achieve a 15% increase in production in 2023 and exports were up by almost a quarter. Hail is a common problem for Kosovo, with more and more

growers adopting hail protection systems to mitigate against this challenge.

Blueberries entered production at the beginning of June last year, with one stakeholder reporting two very successful weeks of high prices before the market became more competitive from the third week of July, putting returns under pressure. Earlier cultivars are more likely to be found in Peja in the country’s west, while the later supply comes from Kosovo’s other main blueberry cultivation region – Podujeva.

The sector itself was developed with support from USAID over the course of a decade from 2012, and after that programme recently ended the Swiss Government-affiliated Caritas took up the baton and has been helping small farmers with a programme that will last until 2025. As a sign of the crop’s progression in the country, last year the inaugural Kosovo Blueberry Business Forum was held, attracting hundreds of domestic and international participants.

Russia

The nascent Russian blueberry industry has been hampered by a lack of expertise and access to the wide variety of technologies and innovations that underpins modern blueberry cultivation, but it has continued to grow at a rapid pace with varying degrees of success within a market that has been hungry for the superfruit.

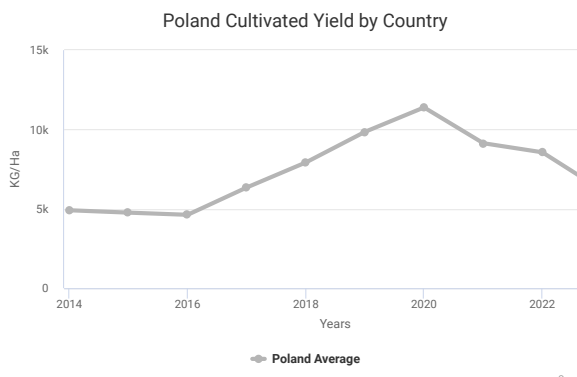
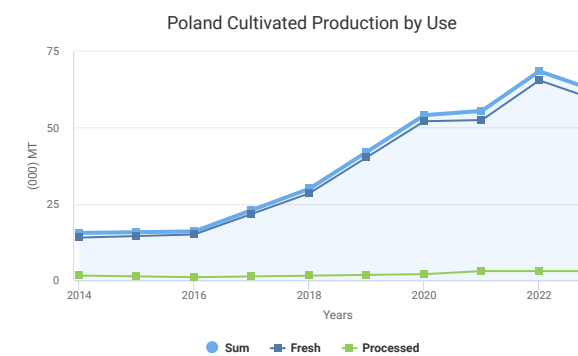
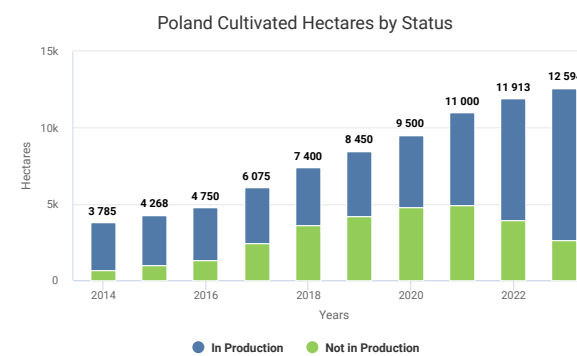
It is not easy to find reliable numbers from Russia, but until 2022 it was estimated that between 200-300ha were being planted every year and the average production per hectare was low. We were unable to confirm whether such momentum has continued over the past 18 months.

What is noteworthy is that in a year marked by supply shortages internationally, the decline for blueberry imports in Russia of just 3.9% was far lower than that of their other European counterparts, and the average price for the year was up 20% at \$7.80/kg; this is higher than the Western and Central European average price of \$5.86/kg. In October when the Peruvian shortfall was most keenly felt, Russia as paying \$11.78/kg on average while in the Netherlands the price was at \$8.12, keeping in mind that Dutch importers received 18 times as much volume in that month compared to Russia.

POLAND



Planting and Production Data, Figures & Commentary (Denominated in Hectares and Thousands of Metric Tons)



Poland 2023 Production Metrics

Hectares Planted:	12,594 Ha
Organic:	3.00%
Under Structure:	3.00%
Hydroponics:	Not Reported
New Genetics:	10.00%
Hectares in Production:	10,000 Ha
Production:	62.00 (000) MT
Growth in Production ¹ :	▼6.50 (000) MT (-9.49%)
Growth from Hectares ² :	▲17.12 (000) MT (263.46%)
Growth from Yield ³ :	▼23.62 (000) MT (-363.46%)
Yield:	6,200.00 (Kg/Ha)
Exports:	21.89 (000) MT
Imports:	18.20 (000) MT

Source: IBO and Agronometrics

¹ Volume change compared to previous season

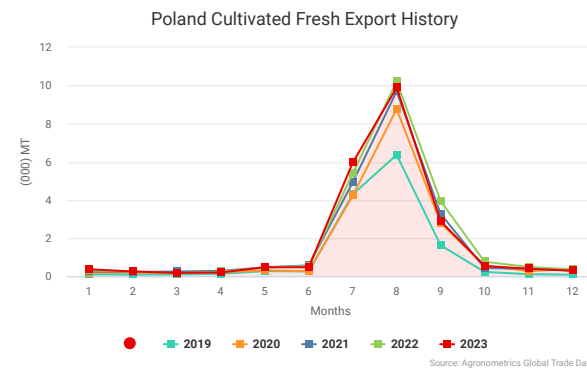
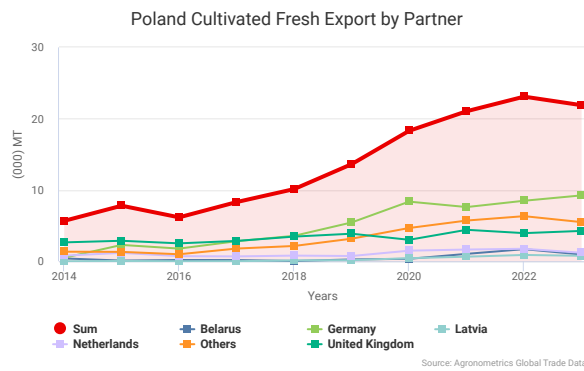
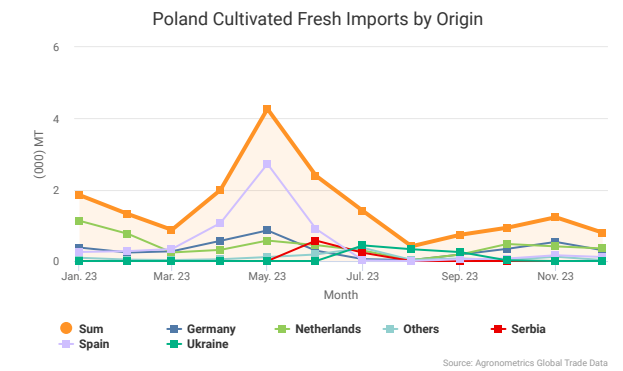
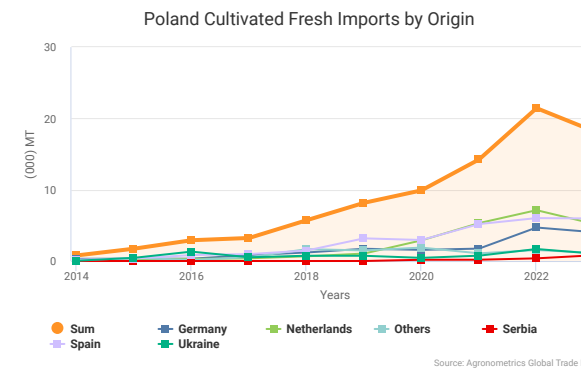
² Change in volume due to hectares entering or leaving production

³ Change in volume due to field productivity (yields)

Poland Cultivated Fresh Exports by Partner (000) MT

Reporter	2019	2020	2021	2022	2023
Germany	5.44	8.36	7.60	8.49	9.24
United Kingdom	3.86	3.01	4.41	3.94	4.26
Netherlands	0.74	1.48	1.64	1.75	1.19
Belarus	0.26	0.34	1.04	1.70	0.95
Latvia	0.16	0.43	0.64	0.89	0.76
Others	3.17	4.66	5.71	6.33	5.49
Poland Totals	13.62	18.30	21.05	23.09	21.89

Source: Agronomics Global Trade Data



Poland Cultivated Fresh Imports by Origin (000) MT

Reporter	2019	2020	2021	2022	2023
Spain	3.18	2.95	5.18	6.02	5.97
Netherlands	1.05	2.90	5.32	7.13	5.20
Germany	1.72	1.56	1.74	4.70	4.04
Ukraine	0.73	0.44	0.75	1.68	1.04
Serbia	-	0.17	0.18	0.37	0.80
Others	1.49	1.88	1.08	1.54	1.15
Poland Totals	8.16	9.91	14.25	21.44	18.20

Source: Agronomics Global Trade Data



Poland Country Member Summary

Adapted from a Report by the Polish Blueberry Promotion Foundation

Planted area and yields in 2024

According to data published by the Agency for the Restructuring and Modernisation of Agriculture, the total acreage of blueberry plantings in 2023 amounted to **12,594ha**. The total fruit production is estimated by Statistics Poland at **62,000 metric tons (MT)**, which is slightly lower than in 2022.

According to our estimates, conventional fresh fruit production constitutes **56,000MT**, organic production **3,000MT** and fruit for processing and IQF freezing **3,000MT**.

Country narrative

Highbush blueberry (Northern type) has been grown commercially in Poland for over 45 years; the last 7 years saw an unprecedented increase in acreage and fruit production, for example between 2020 and 2021 growth was at nearly 25%. However, between 2022 and 2023 the pace of growth decreased to 5.7% which means that the sentiment among growers is now much less optimistic. There is still significant potential for volume increases as new plantings enter into full production.

All in all, within the last 5 years the acreage of blueberry farms increased 2-fold, but at the same time the average size of blueberry planting per farm decreased nearly by half (from 2.67 ha in 2018 to 1.42 ha in 2022). This is due to new plantings being made on farms growing other horticultural plants, including apples, as growers turn to more profitable crops. Also, it seems to indicate that large farms, rather than planting blueberries in new fields, are replacing varieties, thus maintaining a similar planted area. Average yield per hectare (from mature plants) is around 6MT/ha, significantly below the world average of 8.9MT/ha, which leaves a lot of space for improvement.

The 2023 season was marked, above all, by high demand for fruit in late August and September, which was due to decreased volumes flowing into Europe from Peru. Growers with significant plantings of late varieties profited from this situation. This could lead to increased plantings of late-season blueberries in Poland in the coming years.

Varietal replacement is gaining momentum, with cultivars such as ‘Last Call’, ‘Megas Blue’, ‘Valor’, ‘Cargo’ and ‘Calypso’ still dominating the scene. Some growers have also started varying scale trials of Fall Creek Collection varieties.

Polish commercial blueberry farms are drip irrigated, and most of them are equipped with fertigation systems with different levels of technical sophistication. In general, blueberry fruit for the fresh market is hand-picked. Machine harvest takes place on bigger farms, usually only at the end of the season and the fruit is destined for processing. Many Polish growers and producer organizations possess state-of-the-art cold storage and packing facilities.

Blueberries are the second most popular berry in Poland, after strawberries, with penetration at 83%. Domestic demand for blueberry fruit increased sharply within the last 7 years. This allowed not only to prevent a decline in prices for locally produced fruit, but also boosted imports. Poland’s trade balance in blueberries is now negative – the value of imported fruit is higher than the value of exports. Average annual consumption per capita is now at an impressive level of 1.83 kg. This was made possible due to year-round promotional activities initiated in 2016.

Polish soft fruit growers are now working on a development strategy for the industry until the year 2030. The proposed short-term actions for the next 1-2 years include:

- reducing labour shortages by attracting workers from new destinations, especially Asia;
- intensified and systemic trials of new varieties under Polish climatic conditions;
- precise targeting of promotion in the country, thanks to already executed consumer research, including stronger communication of health values, in particular at the point of sale;
- use of new sales channels (e-commerce, pick-your-own, etc.);
- further development of sustainable / certified production.

The key long-term actions within the blueberry industry strategy until 2030 include:

- improving competitiveness in terms of fruit quality and harvesting efficiency, through varietal changeover;
- reducing labour requirements, through varietal changeover and dissemination of innovative cultivation technologies to facilitate harvesting, with mechanisation / automation in the longer term;
- improving the position vis-à-vis global distributors by consolidating production and sales (producers' organisations, cooperatives, trading companies);
- promotion of consumption in EU and non-EU markets, resulting in increased exports and improved profits.

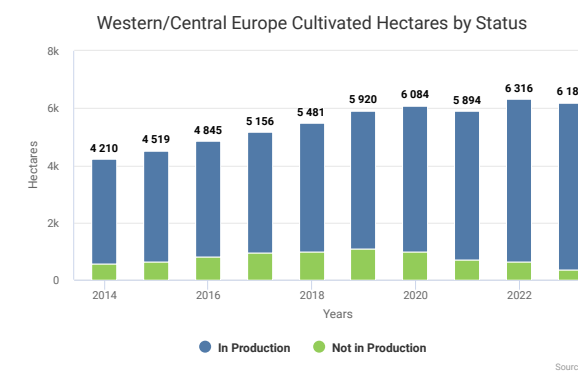
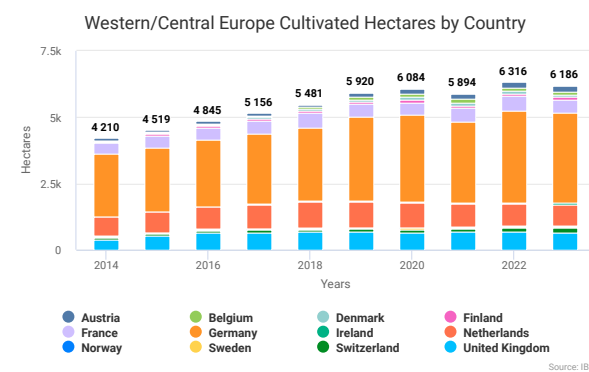
WESTERN / CENTRAL EUROPE

Planting and Production Data, Figures & Commentary (Denominated in Hectares and Thousands of Metric Tons)

Western/Central Europe Cultivated Hectares by Country

Western/Central Europe	Hectares Planted					2023 Production (000) MT		
	2019	2020	2021	2022	2023	Fresh	Process	Total
Growth Totals								
Germany	3,162	3,289	3,050	3,475	3,389	10.10	5.70	15.80
Netherlands	950	920	873	827	810	8.20	1.30	9.50
United Kingdom	673	653	660	665	655	4.90	0.10	5.00
France	515	450	528	553	514	3.00	0.15	3.15
Austria	156	202	220	220	230	1.93	0.20	2.13
Belgium	95	130	128	107	112	0.90	0.70	1.60
Switzerland	104	108	135	163	177	0.80	-	0.80
Ireland	35	40	40	45	48	0.37	-	0.37
Finland	80	120	90	90	110	0.20	-	0.20
Denmark	80	100	100	100	70	0.10	-	0.10
Sweden	51	52	50	50	50	0.10	-	0.10
Norway	19	20	20	21	21	0.04	-	0.04
Western / Central Europe Totals	5,920	6,084	5,894	6,316	6,186	30.64	8.15	38.79

Source: IBO



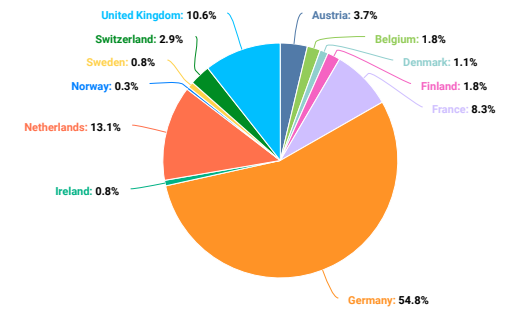
Source: IBO

Western/Central Europe Cultivated Production by Country(000) MT

Western/Central Europe	2021			2022			2023		
	Fresh	Process	Total	Fresh	Process	Total	Fresh	Process	Total
Germany	11.30	4.20	15.50	10.10	5.70	15.80	10.10	5.70	15.80
Netherlands	6.00	2.10	8.10	9.90	1.14	11.04	8.20	1.30	9.50
United Kingdom	5.25	0.15	5.40	6.10	0.15	6.25	4.90	0.10	5.00
France	3.00	0.15	3.15	3.00	0.15	3.15	3.00	0.15	3.15
Austria	1.74	0.16	1.90	2.06	0.18	2.24	1.93	0.20	2.13
Belgium	0.40	0.20	0.60	0.90	0.70	1.60	0.90	0.70	1.60
Switzerland	0.51	-	0.51	0.80	-	0.80	0.80	-	0.80
Ireland	0.28	-	0.28	0.33	-	0.33	0.37	-	0.37
Finland	0.19	-	0.19	0.18	-	0.18	0.20	-	0.20
Denmark	0.12	-	0.12	0.11	-	0.11	0.10	-	0.10
Sweden	0.10	-	0.10	0.10	-	0.10	0.10	-	0.10
Norway	0.04	-	0.04	0.04	-	0.04	0.04	-	0.04
Western/Central Europe Totals	28.93	6.96	35.89	33.62	8.02	41.64	30.64	8.15	38.79

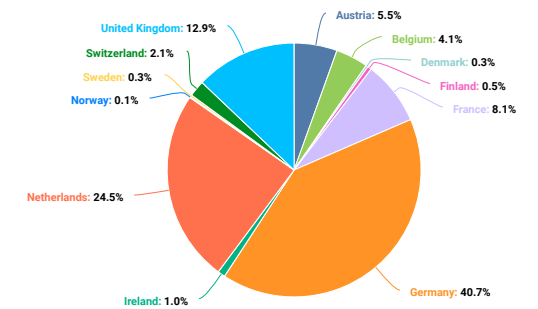
Source: IBO

2023 Western/Central Europe Cultivated Hectares by Country



Source: IBO

2023 Western/Central Europe Cultivated Production by Country



Source: IBO

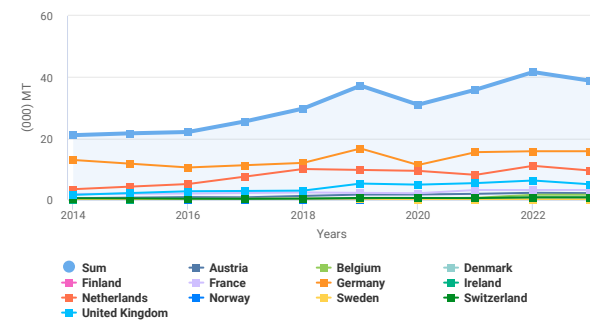
Western/Central Europe 2023 Production Metrics

Hectares Planted:	6,186 Ha
Hectares in Production:	5,830 Ha
Production:	38.79 (000) MT
Growth in Production ¹ :	▼2.85 (000) MT (-6.84%)
Growth from Hectares ² :	▲0.73 (000) MT (25.53%)
Growth from Yield ³ :	▼3.58 (000) MT (-125.47%)
Yield:	6,653.87 (Kg/Ha)
Exports:	120.30 (000) MT
Imports:	279.87 (000) MT

Source: IBO and Agronomics

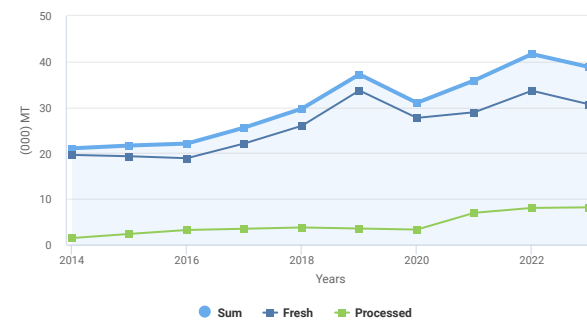
¹ Volume change compared to previous season
² Change in volume due to hectares entering or leaving production
³ Change in volume due to field productivity (yields)

Western/Central Europe Cultivated Production by Country



Source: IBO

Western/Central Europe Cultivated Production by Use

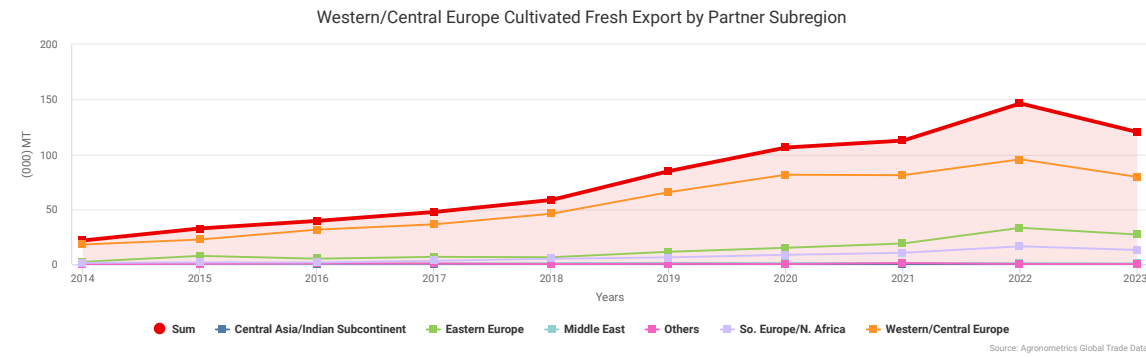


Source: IBO

Western/Central Europe Exports by Partner Subregion (000) MT

Subregion	2019	2020	2021	2022	2023
Western/Central Europe	65.56	81.45	81.05	95.51	79.46
Eastern Europe	11.32	14.95	18.88	33.17	27.01
So. Europe/N. Africa	6.25	8.57	10.40	16.32	12.95
Middle East	1.15	1.04	1.10	0.93	0.68
Central Asia/Indian Subcontinent	0.09	0.05	0.07	0.19	0.07
Others	0.36	0.15	1.07	0.25	0.13
Western / Central Europe Totals	84.72	106.21	112.57	146.37	120.30

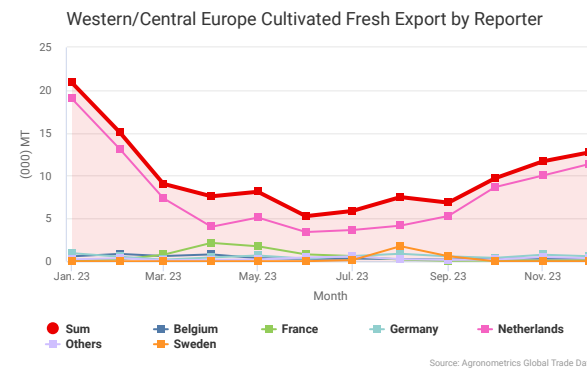
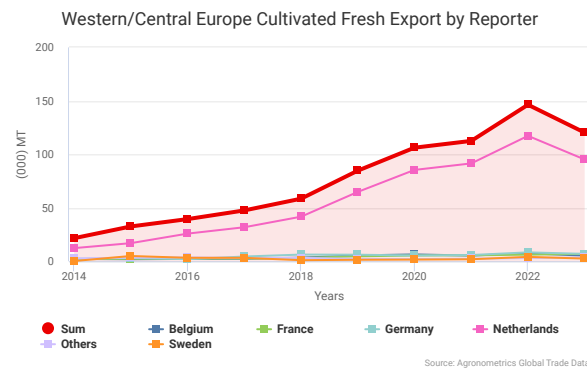
Source: Agronomics Global Trade Data



Western/Central Europe Exports by Reporter (000) MT

Subregion	2019	2020	2021	2022	2023
Netherlands	64.84	85.41	91.52	117.28	95.18
France	4.64	5.38	5.58	6.20	6.90
Germany	6.14	5.40	5.85	8.32	6.91
Belgium	5.46	6.41	5.33	7.45	5.25
Sweden	1.40	1.61	1.89	4.09	2.51
Others	2.25	2.00	2.40	3.03	3.56
Western / Central Europe Totals	84.72	106.21	112.57	146.37	120.30

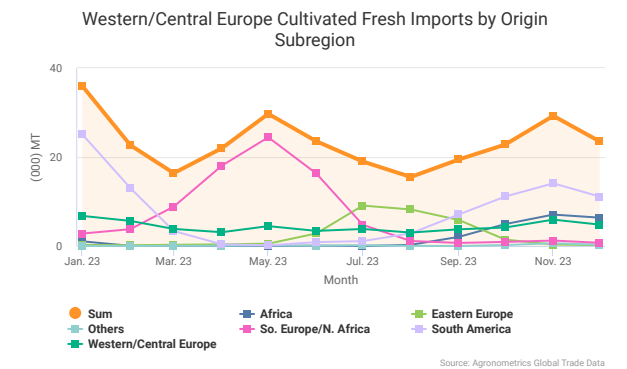
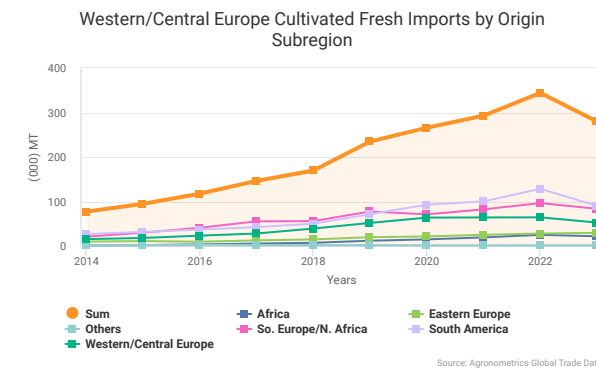
Source: Agronometrics Global Trade Data



Western/Central Europe Imports by Origin Subregion (000) MT

Origin	2019	2020	2021	2022	2023
South America	71.60	92.92	100.31	128.64	90.28
So. Europe/N. Africa	77.66	71.17	82.41	96.41	83.72
Western/Central Europe	51.95	63.86	64.23	64.44	52.75
Eastern Europe	19.86	21.47	25.26	28.09	29.57
Africa	11.88	14.88	19.42	25.10	21.89
Others	2.07	1.62	1.58	1.73	1.66
Western/Central Europe Totals	235.02	265.92	293.21	344.40	279.87

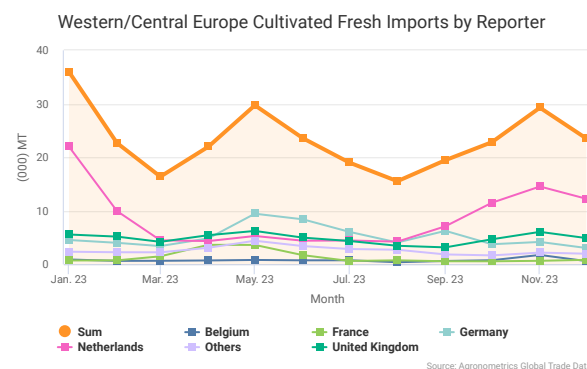
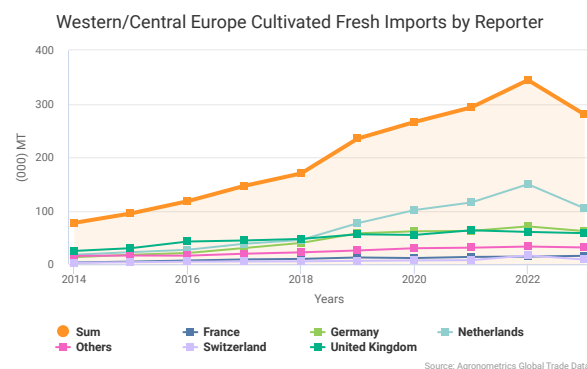
Source: Agronometrics Global Trade Data



Western/Central Europe Imports by Reporter (000) MT

Reporter	2019	2020	2021	2022	2023
Netherlands	76.73	101.23	115.47	149.58	104.39
Germany	57.82	61.49	62.29	70.72	61.86
United Kingdom	55.95	54.73	63.39	60.37	58.04
France	12.57	11.51	13.63	14.27	15.67
Switzerland	6.29	7.09	7.51	16.46	8.62
Others	25.66	29.87	30.92	33.00	31.29
Western / Central Europe Totals	235.02	265.92	293.21	344.40	279.87

Source: Agronometrics Global Trade Data



Western and Central Europe Report Team Narrative

For an in-depth complement to what is happening in Western and Central Europe please visit the following country report:

► **United Kingdom**

Central and Western Europe, the world's second-largest import market for fresh blueberries, had narrowed the gap with leader North America to just shy of 3% in the 2022 calendar year by volume, but the undersupply challenges of 2023 widened the gap to around 10% as exporters appeared to show a preference for other markets where alternative opportunities were available. Persistent supply shortages from a variety of sources due to weather, with total imports down 18%, led to a noticeable decline in packaging sizes of 500g or 750g on supermarket shelves. Many markets reverted to the 125g and 300g packs that many in the industry would rather banish to the past.

The consensus view is that in comparison to North America, the European market was not as responsive on price to the Peruvian shortage, and this is corroborated by an 11-percentage point differential (48% vs 37%) in the average lift in price for this origin. Interestingly, this trend did not hold across all origins as imported blueberry prices in the richest nations of

Europe rose by more on average than they did on the other side of the Atlantic Ocean – a statistic likely influenced by the buoyant demand at different times of the year for southern and northern African fruit.

Production in this region was heavily impacted by a wet summer, particularly in Germany, the Netherlands and Belgium, although to a lesser extent in the UK where there is more utilization of tunnels, and France – an industry that produces earlier and is ordinarily more subject to the incidence of spring frosts, which it was largely spared in 2023.

Higher costs and regulatory challenges persist for European blueberry growers, which in this region are highly skewed towards smaller operations that are predominantly comprised of older varieties. The commercial reality is that for many the fixed cost of investment in blueberry orchards has already been made and there is little surplus left over to reinvest in the kinds of upgrades the market is asking for, such as genetic

replacement or operational improvements that could boost efficiency and quality. Traditional growers in this part of the world are highly cautious in their use of financing capital and rely heavily on cash flow to fund both capex and operations.

The investment proposition is much more attractive in other jurisdictions where lower-chill genetics can be planted and harvested years earlier than in northern Europe, where higher chill genetics are required that take longer to mature. If an investor is specifically looking to plant higher chill varieties in order to be closer to market and target the European summer, Romania is generally regarded as a better option due to its lower cost and greater availability of larger tracts of land.

The cost-benefit analysis, and the delays it represents for varietal transition in northern Europe, is compounded by a greater cultural reluctance to change. As one stakeholder put it: “Some growers in Germany asked me for 150 plants for a trial, while growers in Romania asked for 25,000 plants, also for a trial,” they said. “You then have to wait three years for the first experience with a very small amount, and then maybe in 2027 they decide to plant and reach full production in 2032.”

Farming inflation has led to a greater adoption of machine harvesting for fresh in industries such as Germany and the Netherlands; the latter having been relatively more at the forefront of technological and yield-driven trends by the standards of the region. It is estimated that at least one sixth of Dutch blueberry farms are harvesting their blueberries this way. Unlike their American counterparts who contend with similar economic challenges, Europeans are more cagey about revealing their usage of machine harvesters, due to concerns around perceptions of quality and the more cynical belief that European supermarkets would gobble up any corresponding margin improvement.

“We’re now in an in-between phase,” says another source. “I think in a few years there will be good mechanical harvesters, but you also need firmer varieties for that if you want to be in the fresh market.”

Nonetheless, the trend in the region is towards rising consumption per capita and European market development is a high priority for the majority of globally-oriented blueberry companies.

Germany

The biggest blueberry sector in the region by far is Germany, which was the first nation in Europe to plant blueberries and was the dominant summer supplier until lower-cost production from Poland came on the scene in the 1990’s. Around 70% of the country’s blueberries are grown in the region of Lüneburg Heath between Hanover and Hamburg, with the remainder spread across Germany. Whilst throughout much of Western Europe there has been a “local for local” trend, in Germany it has become the case that “regional is the new premium”, according to one grower. Retailers like Aldi Süd have a strong focus on this and pay better prices for regional fruit (such as from Bavaria, but not the concentrated German production in the north), although they will also sell price-oriented fruit from other origins.

The regional trend seen in Germany is also observed in Austria, and as a consequence planting in that country continues. Unlike most of its neighbors (the exception being Italy), Austria saw a slight rise in exports in 2023, representing an increase for the fifth consecutive year, having almost tripled over that timeframe.

With the exception of 2023 when almost all markets saw declines in imports, Germany has been an engine room of consumption growth for blueberries with per capita consumption jumping from 400g eight years ago to around 1kg in 2020 (with reports of double-digit growth through to 2022), and there is plenty of room for growth. Annual blueberry imports doubled between 2017 and 2022, but local production has been relatively flat in comparison. The average farm in Germany is around 3.5ha and most are soil plantings, but there are some very limited trials in pots with substrate. Only a few growers in the country have farms around the 50ha mark.

The production window for Germany runs from the end of June until mid-September with a large peak in July. Duke is the leading variety, followed by some other open and licensed varieties, although some of the larger genetics programs that are aggressively expanding throughout the European market sphere have not been particularly embraced by the German industry.

That said, one leading European fruit company with a strong presence in the country now has a handful of German grower partners producing a next-gen high chill varieties as part of a global club, with the first crop in 2023 yielding high quality and supported by a prominent merchandising campaign at retail with German flags on the punnet. It has also been reported that, in certain cases, fruit companies wanting to galvanise varietal replacement are taking on the role of lenders to such growers, who at times lack access to sufficient capital.

Germany experienced a lot of rainfall from July to August in 2023, which hampered production and meant the industry struggled with fruit quality, with the wet conditions leading to instances of mold and soft fruit, and thus lower packouts and volume. Harvesting the fruit was also challenging, as the leading northern German cultivation region is characterised by clay-like soils that make it difficult to walk on the farm in such wet weather.

Some German retailers such as Rewe and Aldi are now insisting on the use of sealed packages rather than traditional clamshells in order to save plastic and improve hygiene (incidentally, hygiene is also an additional argument made by proponents of machine harvesting). To cater to these packaging demands, one larger grower by German standards has built a packhouse in Lüneburg Heath with sealed packaging technology. Refer to the ESG section earlier in the State of Industry Report for further information on packaging trends, but it is worth noting that in Germany there is quite a challenge for the sector given the market is a) extremely price conscious and b) very environmentally conscious, even though more sustainable packaging at present is much more expensive to produce and procure.

Netherlands

In the Netherlands there has historically been a higher tonnage per hectare than the German blueberry industry with a greater proportion of next-generation varieties. Dominated by five organisations that market most of the crop, around 90% of Dutch blueberry production is open field, sometimes with hail or rain covers.

Going into the season the Dutch growers experienced good spring conditions, with ideal levels of flowering and pollination

until mid-July, when fortunes turned and there was persistent rain through to the end of August, prompting a volume decline of approximately 35% year-on-year.

Also of note in the Netherlands, which is widely known for its technological contribution to the fresh produce industry, Fall Creek, a major US-based blueberry nursery and genetics company that is making waves in the global sector via its Sekoya Program, acquired an equity stake in Dutch machine harvesting group FineField in early 2024.

France

In the context of a European market where both consumption and production have grown substantially over the last decade, the French market is a perplexing one for pundits with relatively slower growth on both fronts. This however is also naturally seen as an opportunity with France and its large population fairly untapped by western European standards.

To illustrate this point, Germany's population is roughly 22% larger than France's, yet it imports around four times more blueberries each year and produces multiples more as well. French production is still nowhere near high enough to satisfy demand, but it stood out amongst its peers in the region for increases of 11% and 10% in exports and imports respectively last year.

Year-on-year production in the country doesn't change much either, although newer plantings could mean there is latent growth potential. Existing volume and new plantings are concentrated in the southwest, and the industry is often plagued by frost damages.

Growers in the concentrated French production region near Bordeaux, called Nouvelle-Aquitaine, have prioritised early production in their varietal selections, implying a greater share of bushes in bloom when spring frosts occur. In 2023 the industry was lucky – unlike in previous years there weren't any spring frosts, leading to normal climatic conditions without excessive heat or dryness. Like their counterparts in other parts of western Europe, some French growers also suffered from heavy rain towards the end of the season, leading to heavy fruit losses. But mid-July, the time when rains began more or less, is also when French supply usually diminishes.

Aside from the southwest of France, which is home to both large-scale coastal plantations and smaller mountainous ones, the area of Val d'Isere in central France is home to prominent blueberry farms, including a major berry company. In the eastern part of the country, blueberry production is smaller in scale and primarily consists of smaller producers. However, these areas contribute to the later harvest period, albeit with limited production capacity compared to larger farms.

Local/regional sourcing and the widening differences between domestic and imported fruit

Regarding local or regional sourcing trends, such fruit is utilized by certain supermarkets as a differentiator during the local season, while other supermarkets focus more on price. Even in those that promote local fruit, there are usually still other origins available on the shelf and the willingness from retailers to place a premium varies by company and geography.

It must also be noted that some supermarket buyers have developed a preference for particular characteristics (such as size and firmness) that are currently more prevalent in the newer southern highbush varieties sourced in the counter-season. The ability of growers outside of Europe to overlap with the summer season has increased thanks to the adoption of new cultivars and different pruning methods in certain countries, for example South Africa, Zimbabwe and most importantly, Peru – a country that is technically able to ship year-round but tends to have its peak volumes arriving in Europe in October and November.

One common observation from stakeholders is that the differences in certain characteristics – especially size but also flavor, firmness and consistency – are becoming more pronounced between the older and regionally-grown traditional high chill varieties and the imported lower chill varieties, to the extent that the eating experiences have become completely incomparable; they are almost different products entirely, even though they are sold within the same category. Some supermarkets, not only in Europe but also in North America, are

urging producers to adopt next-gen varieties, although they have a much more limited pool to select from (most blueberry breeding programs focus exclusively on lower chill varieties) in this regard versus low-chill growing countries, and have a lengthier runtime to orchard maturity.

Stratification of varieties

The stratification of varieties also continues with some retailers willing to pay for, and sell at, a premium for particular characteristics often exhibited by proprietary genetics or for blueberries from supply partners with a reputation for consistency regardless of fruit origin. Sometimes, the benefit for the grower is not necessarily a premium but the greater certainty of securing a sales channel in times of market volatility or when there is an influx of less desired cultivars.

There is some discontent within the industry that size is become a leading indicator of quality in the eyes of some buyers, when many growers – and indeed marketers – would prefer to see a greater emphasis on flavor as this has more influence in driving repeat purchases (although size is said to play an influential role in first purchases).

Private labeling

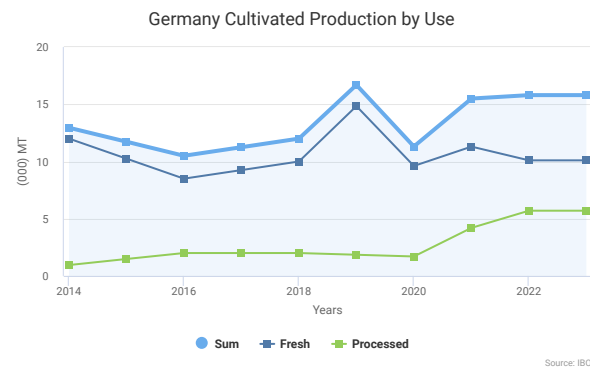
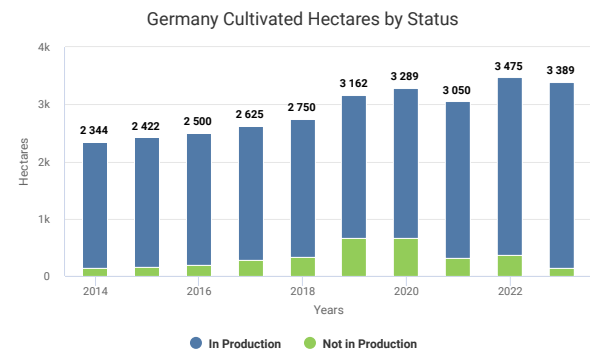
The dominance of private labelling in continental Europe and the UK is also a challenge, although not an intractable one, for encouraging marketers or growers to adopt premium genetics. Under this system their brand will not be consumer-facing and their product can be lumped in with other suppliers and the fruit characteristics may not be consistent. That said, some marketers have been able to successfully demonstrate the value of their brands and be given the privilege of their own consumer-facing marketing amidst the sea of private labels.

The supply chain also includes service providers who add further cost layers such as repackaging due to preferences around bulk supply. It is believed that such costs make the European market inherently more expensive than selling fruit into North America.

GERMANY



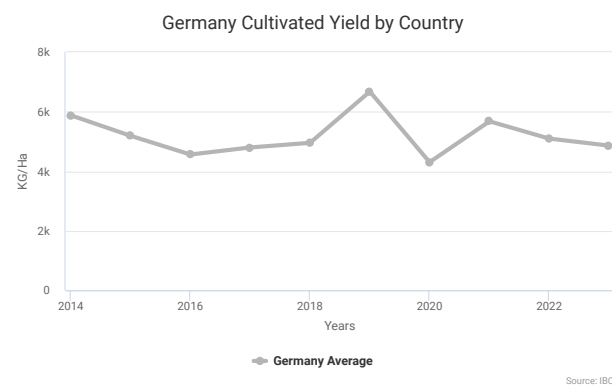
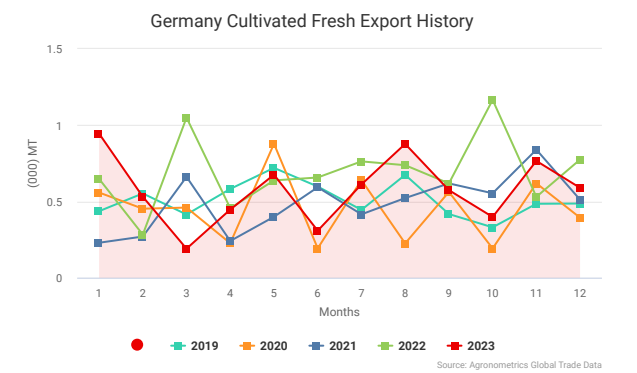
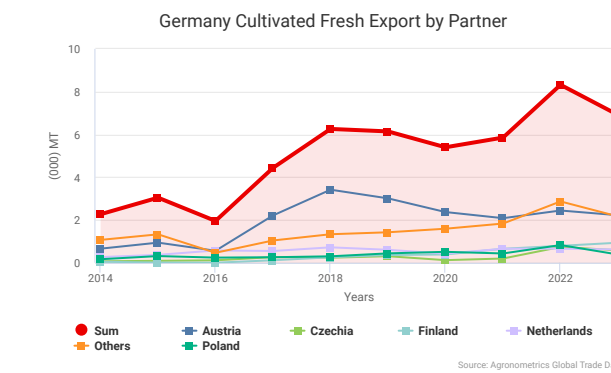
Planting and Production Data, Figures & Commentary (Denominated in Hectares and Thousands of Metric Tons)



Germany Cultivated Fresh Exports by Partner (000) MT

Reporter	2019	2020	2021	2022	2023
Austria	3.01	2.37	2.08	2.44	2.22
Finland	0.36	0.39	0.65	0.79	0.94
Netherlands	0.60	0.42	0.65	0.66	0.62
Czechia	0.31	0.12	0.20	0.74	0.58
Switzerland	0.06	0.11	0.06	0.36	0.49
Others	1.80	1.99	2.20	3.34	2.06
Germany Totals	6.14	5.40	5.85	8.32	6.91

Source: Agronomics Global Trade Data



Germany 2023 Production Metrics

Hectares Planted:	3,389 Ha
Organic:	Not Reported
Under Structure:	Not Reported
Hydroponics:	Not Reported
New Genetics:	Not Reported
Hectares in Production:	3,250 Ha
Production:	15.80 (000) MT
Growth in Production ¹ :	(000) MT (0%)
Growth from Hectares ² :	▲0.76 (000) MT (0.00%)
Growth from Yield ³ :	▼-0.76 (000) MT (0.00%)
Yield:	4,861.54 (Kg/Ha)
Exports:	6.91 (000) MT
Imports:	61.86 (000) MT

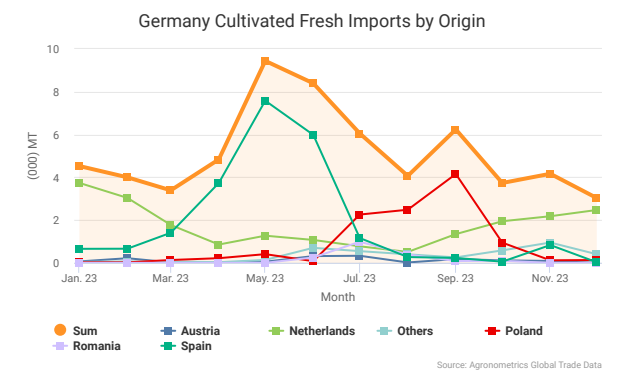
Source: IBO and Agronomics

¹ Volume change compared to previous season
² Change in volume due to hectares entering or leaving production
³ Change in volume due to field productivity (yields)

Germany Cultivated Fresh Imports by Origin (000) MT

Reporter	2019	2020	2021	2022	2023
Spain	23.02	21.47	22.50	26.16	22.58
Netherlands	22.12	27.23	25.67	29.94	20.95
Poland	6.89	7.37	7.97	9.75	10.96
Romania	0.38	0.97	1.36	1.89	1.80
Austria	0.47	0.60	0.93	1.06	1.39
Others	4.94	3.86	3.85	1.93	4.17
Germany Totals	57.82	61.49	62.29	70.72	61.86

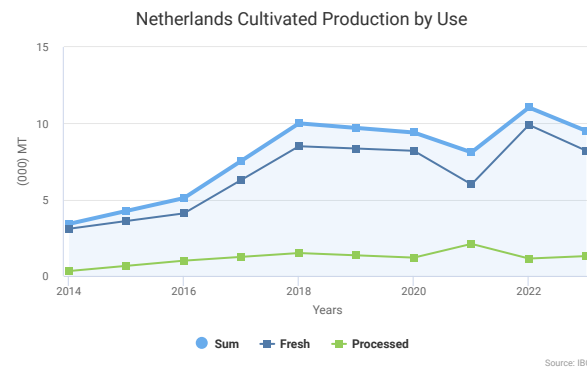
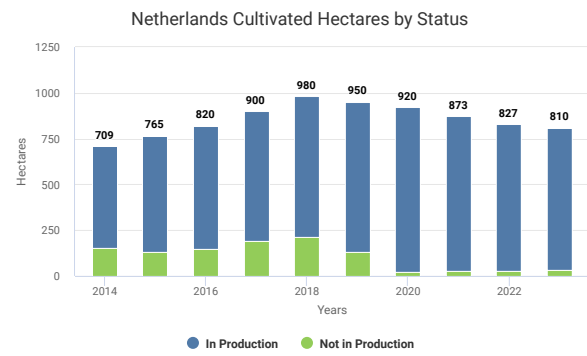
Source: Agronomics Global Trade Data



NETHERLANDS



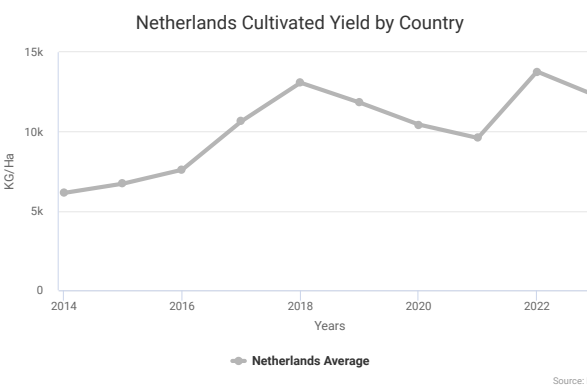
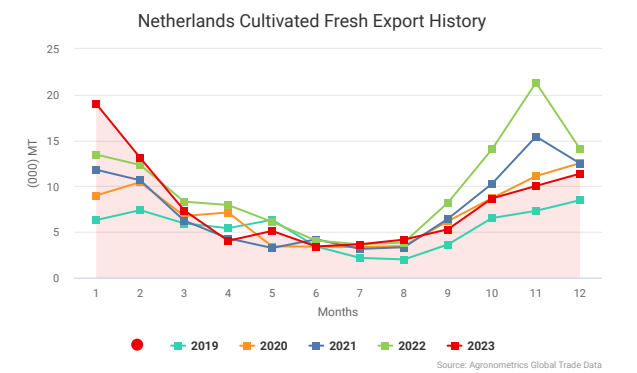
Planting and Production Data, Figures & Commentary (Denominated in Hectares and Thousands of Metric Tons)



Netherlands Cultivated Fresh Exports by Partner (000) MT

Reporter	2019	2020	2021	2022	2023
Germany	31.12	39.74	41.02	46.53	33.67
Belgium	4.86	5.58	7.34	10.61	9.71
Poland	2.80	5.03	5.62	9.98	8.81
Spain	2.42	3.84	5.19	9.38	6.96
Ireland	1.78	2.46	2.84	4.12	3.62
Others	21.87	28.77	29.49	36.67	32.42
Netherlands Totals	64.84	85.41	91.52	117.28	95.18

Source: Agronometrics Global Trade Data



Netherlands 2023 Production Metrics

Hectares Planted:	810 Ha
Organic:	6.00%
Under Structure:	1.00%
Hydroponics:	Not Reported
New Genetics:	65.00%
Hectares in Production:	775 Ha
Production:	9.50 (000) MT
Growth in Production ¹ :	▼-1.54 (000) MT (-13.95%)
Growth from Hectares ² :	▼-0.36 (000) MT (-23.27%)
Growth from Yield ³ :	▼-1.18 (000) MT (-76.73%)
Yield:	12,258.06 (Kg/Ha)
Exports:	95.18 (000) MT
Imports:	104.39 (000) MT

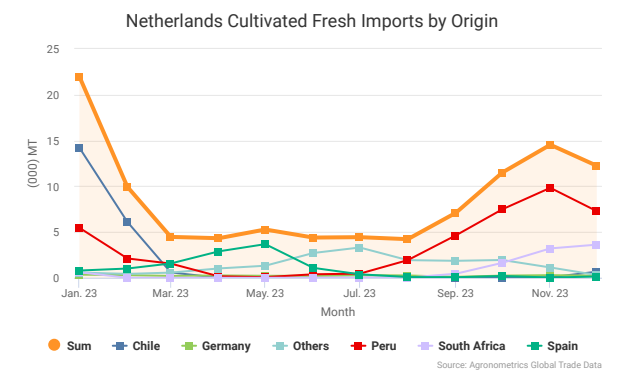
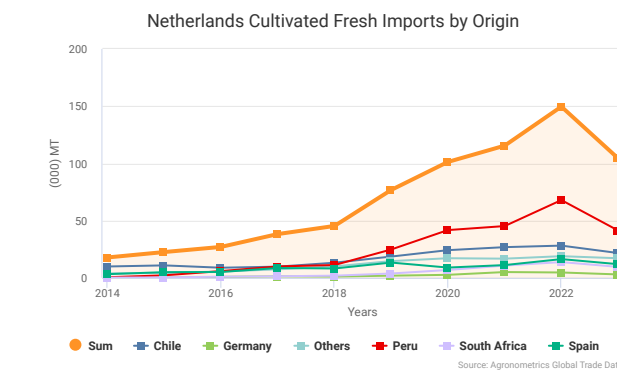
Source: IBO and Agronometrics

- ¹ Volume change compared to previous season
- ² Change in volume due to hectares entering or leaving production
- ³ Change in volume due to field productivity (yields)

Netherlands Cultivated Fresh Imports by Origin (000) MT

Reporter	2019	2020	2021	2022	2023
Peru	24.72	41.68	45.19	67.90	41.33
Chile	18.55	24.13	26.77	28.12	21.63
Spain	13.30	8.93	11.10	16.32	11.90
South Africa	3.74	6.81	10.68	13.72	9.53
Germany	1.86	2.58	5.01	4.64	2.93
Others	14.57	17.09	16.71	18.88	17.07
Netherlands Totals	76.73	101.23	115.47	149.58	104.39

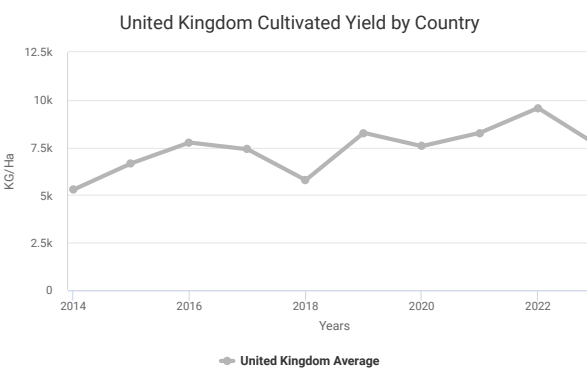
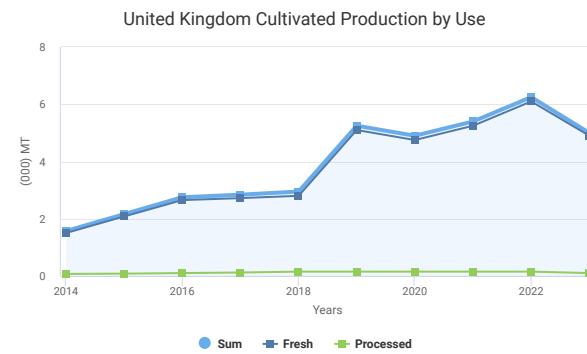
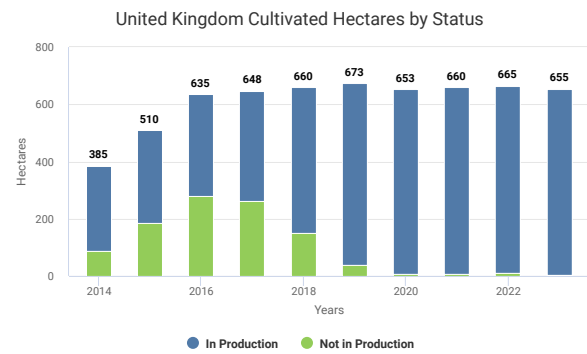
Source: Agronometrics Global Trade Data



UNITED KINGDOM



Planting and Production Data, Figures & Commentary (Denominated in Hectares and Thousands of Metric Tons)



United Kingdom 2023 Production Metrics

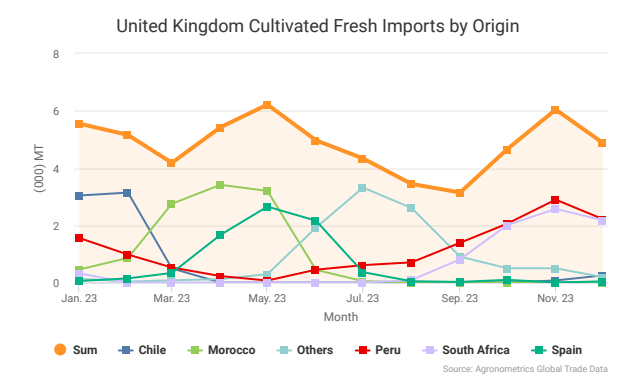
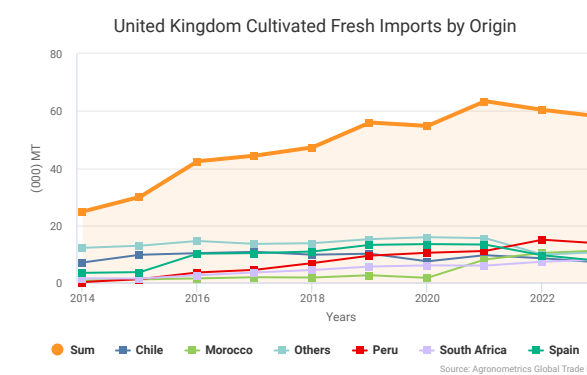
Hectares Planted:	655 Ha
Organic:	5.00%
Under Structure:	34.00%
Hydroponics:	Not Reported
New Genetics:	8.00%
Hectares in Production:	653 Ha
Production:	5.00 (000) MT
Growth in Production ¹ :	▼-1.25 (000) MT (-20.00%)
Growth from Hectares ² :	0 (000) MT (0.00%)
Growth from Yield ³ :	▼-1.25 (000) MT (-100.00%)
Yield:	7,656.97 (Kg/Ha)
Exports:	1.20 (000) MT
Imports:	58.04 (000) MT

¹ Volume change compared to previous season
² Change in volume due to hectares entering or leaving production
³ Change in volume due to field productivity (yields)

United Kingdom Cultivated Fresh Imports by Origin (000) MT

Reporter	2019	2020	2021	2022	2023
Peru	9.40	10.40	11.03	14.97	13.68
Morocco	2.55	1.64	8.08	10.35	11.19
South Africa	5.58	6.00	5.92	7.28	7.98
Spain	13.16	13.44	13.28	9.52	7.58
Chile	10.08	7.41	9.57	8.47	7.02
Others	15.17	15.85	15.52	9.78	10.59
United Kingdom Totals	55.95	54.73	63.39	60.37	58.04

Source: Agronometrics Global Trade Data



Source: Agronometrics Global Trade Data

Source: Agronometrics Global Trade Data

Source: IBO and Agronometrics

United Kingdom Report Team Narrative

Adapted from the report by Steve Taylor on behalf of the United Kingdom Berry Industry

The 2023 blueberry season for the UK grower was slightly up on expected yields. Traditionally the UK's main production is mid-June until the end of August, with growers seeing the main opportunities in the early market up to early July when the main Central and Eastern European crops get into volume production, and also from the end of August onwards for later sites.

In 2023, the Polish season started a bit late as well, and so early production had an extra couple of weeks of reasonable prices. The Peruvian situation with less volume and a later start also benefited UK growers later in their season in late August to late September. Logic says that the late opportunity is decreasing year on year due to Peru, and so this is one more opportunity that is fading away. The early opportunity looks however to expand as production within that window increases to develop the market. The problem faced however is the lack of good Duke replacements, combined with the frost risk in that season during the April and early May flowering period.

A trend over recent years, when the volume of UK fruit has increased, has also been the reduction in the average price premium for UK fruit over imports. The past 12 months have typically also seen consumers feeling the effects of inflation and have been less willing to pay premiums. This has again narrowed the average price gap between imports and locally produced fruit. When this is combined with another year of double-digit labor cost inflation (the 3rd year in a row) and retail price inflation not being at the same level, then the sustainability of current volumes and prices is under question. It certainly appears that the rapid growth seen in the 2015-2020 period has now levelled off, and some growers have come out of growing blueberries altogether. The average size

of a blueberry grower is going up, while the total UK tonnes produced is fairly static and is probably likely to stay static at best over the next five years.

In terms of grower choices of crop, the UK has a different grower demographic than found in many other blueberry producing countries. In the UK, there are almost no soft fruit growers that have blueberries as their only (or even main) soft fruit crop. Nearly all are growers of other soft fruits such as strawberries, raspberries and blackberries. As the availability of labour decreases and wages increase by more than the selling price of the fruit, then growers need to decide what they grow. Clearly someone can pick a lot more kilograms of strawberries in an hour than other fruits, and blueberries are the slowest of all. In terms of profitability, then strawberries are also doing well and so when all things are combined, growers typically reduce raspberries for example before strawberries, and certainly at best do not plant more blueberries.

The UK Government is continually giving messages to growers that they are not going to get any help with labor, and to go out and buy robots instead to do the picking. Most do not view this as a current option, and so there is an expectation that more blueberry growers will come out of the fruit, and there is certainly very little appetite for overall expansion. With blueberries being a crop that involves considerable investment to establish, then growers are also reluctant to remove them after one bad year, and 2023 has given some a bit more confidence, but the longer-term trend of Peru getting back into gear and labor costs going up means there are difficult years ahead. One can imagine that volume will not settle below current levels.

Further reflection (report team contribution)

Further to Steve Taylor's summary, it is worth noting that part of the reason why yields were up year-on-year was due to a heat wave in the summer of 2022 which had impacts on the fruit, whereas 2023 was more temperate. Whilst Steve indicates some later season UK growers benefited from the Peruvian shortfall, not all were able to capitalize on the opportunity due to storms which wiped out later cultivars for a portion of the industry.

As referenced in the Western and Central European section, the UK industry was not as affected by the wet summer as much as its continental European counterparts; reasons given for this have included the fact more growers produce under tunnels (there is a mix of both tunnels and open field production there), the 'just-in-time' picking model close to market and its positive effects on shelf life, and the fact that farms are smaller so it is easier to go out and pick between rain showers.

There has been a resurgence amongst some retailers wanting to make sure they have British product on the shelf, but from a consumer standpoint there are still many who don't realise that local UK blueberry production exists, unlike strawberries where 'buy local' has much more resonance with the population. For the most part there doesn't appear to be much expansion, however there are reports of one leading UK retailer

homing in on the 'buy local' trend by requesting one of their grower supplies to switch hundreds of hectares to a proprietary genetics club – a trend that is also being seen in continental Europe, but will take time to materialise in any volume of note due to the long lead times of bringing higher chill blueberry orchards to maturity.

The UK was the first country in Europe to significantly drive a blueberry import market, and its continued strength is underscored by the fact its imports only declined by 5.5% in 2023, versus Western and Central Europe overall which was down by 18%. Not only that, but blueberry import value (in USD terms) was up 5.8%, versus the region overall which was down close to 5%. This result can be credited to the UK import industry's ability to diversify supply sources and fill gaps – for example, South Africa and Morocco (both jurisdictions known for a high proportion of premium-level fruit) reported export volume declines in 2023, but the UK bought more blueberries from both sources, rising 9.5% and 7.7% respectively.

Overall, the UK consumer's perception of blueberries has changed massively over the past 10 years as more proprietary genetics have hit the shelves from all over the world.

"Consumers have become accustomed to a large size, crunch, and nice poppy fruit with a really nice flavor," says one stakeholder. "In the UK circa 10% of sales are going through premium lines. It's about quality, but broadly flavor – size is important, but the main metric you see consumers come back for is eating experience."

AFRICA

Planting and Production Data, Figures & Commentary (Denominated in Hectares and Thousands of Metric Tons)

Africa Cultivated Hectares by Country

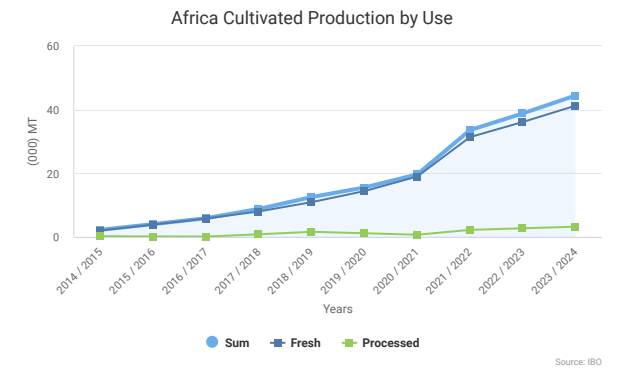
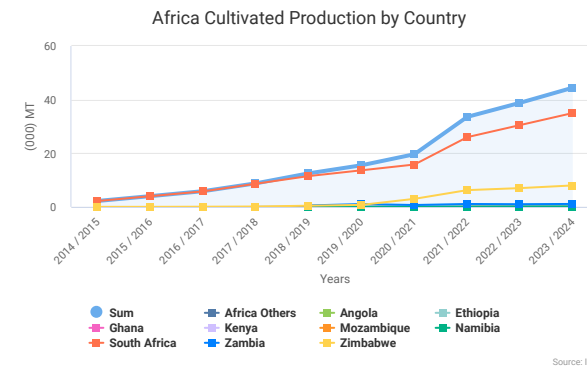
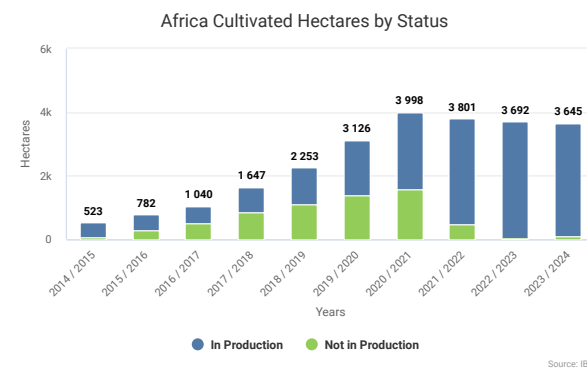
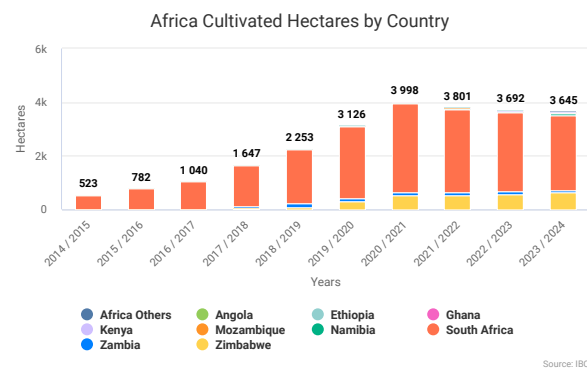
Africa	Hectares Planted					2023/2024 Production (000) MT		
	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	Fresh	Process	Total
South Africa	2,661	3,322	3,100	2,934	2,803	32.00	3.00	35.00
Zimbabwe	296	518	527	575	615	8.00	-	8.00
Zambia	125	100	100	100	100	0.90	0.20	1.10
Namibia	8	13	17	17	50	0.18	-	0.18
Kenya	16	26	32	38	44	0.07	-	0.07
Ethiopia	2	2	2	3	3	0.03	-	0.03
Ghana	1	1	2	2	2	0.02	-	0.02
Mozambique	3	3	4	4	8	0.02	-	0.02
Africa Others	12	12	15	18	19	0.01	-	0.01
Angola	1	1	1	1	1	0.01	-	0.01
Africa Totals	3,126	3,998	3,801	3,692	3,645	41.24	3.20	44.44

Source: IBO

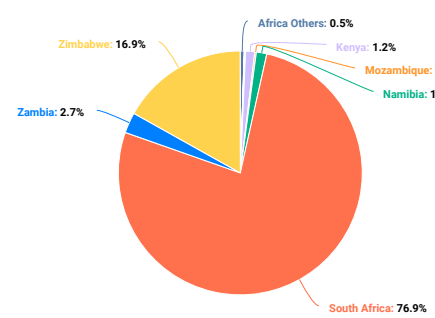
Africa Cultivated Production by Country(000) MT

Africa	2021/2022			2022/2023			2023/2024		
	Fresh	Process	Total	Fresh	Process	Total	Fresh	Process	Total
South Africa	24.00	2.00	26.00	28.00	2.50	30.50	32.00	3.00	35.00
Zimbabwe	6.25	-	6.25	7.00	-	7.00	8.00	-	8.00
Zambia	0.88	0.20	1.08	0.80	0.20	1.00	0.90	0.20	1.10
Namibia	0.12	-	0.12	0.16	-	0.16	0.18	-	0.18
Kenya	0.05	-	0.05	0.06	-	0.06	0.07	-	0.07
Ethiopia	0.02	-	0.02	0.02	-	0.02	0.03	-	0.03
Ghana	0.01	-	0.01	0.02	-	0.02	0.02	-	0.02
Mozambique	0.02	-	0.02	0.03	-	0.03	0.02	-	0.02
Africa Others	0.01	-	0.01	0.01	-	0.01	0.01	-	0.01
Angola	0.01	-	0.01	0.01	-	0.01	0.01	-	0.01
Africa Totals	31.37	2.20	33.57	36.11	2.70	38.81	41.24	3.20	44.44

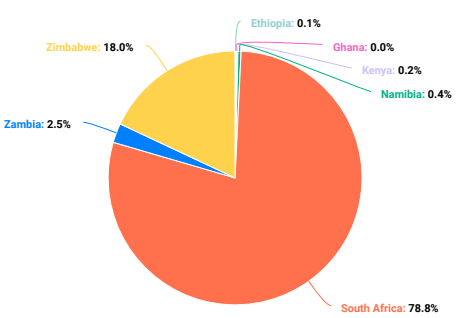
Source: IBO

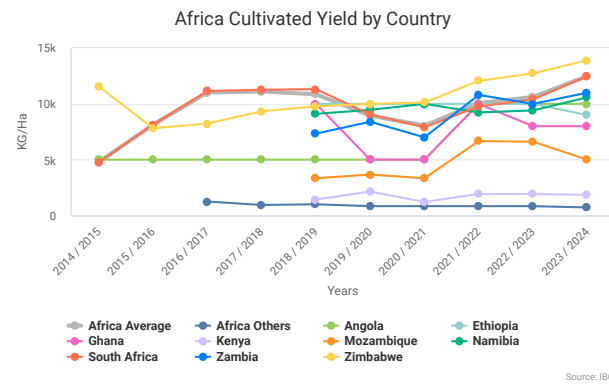


2023/2024 Africa Cultivated Hectares by Country



2023/2024 Africa Cultivated Production by Country





Africa 2023/2024 Production Metrics

Hectares Planted:	3,645 Ha
Hectares in Production:	3,561 Ha
Production:	44.44 (000) MT
Growth in Production ¹ :	▲5.63 (000) MT (14.51%)
Growth from Hectares ² :	▼-1.02 (000) MT (-18.20%)
Growth from Yield ³ :	▲6.65 (000) MT (118.10%)
Yield:	12,478.03 (Kg/Ha)
Exports:	30.36 (000) MT
Imports:	1.04 (000) MT

¹ Volume change compared to previous season
² Change in volume due to hectares entering or leaving production
³ Change in volume due to field productivity (yields)

Source: IBO and Agronometrics

Africa Exports by Reporter (000) MT

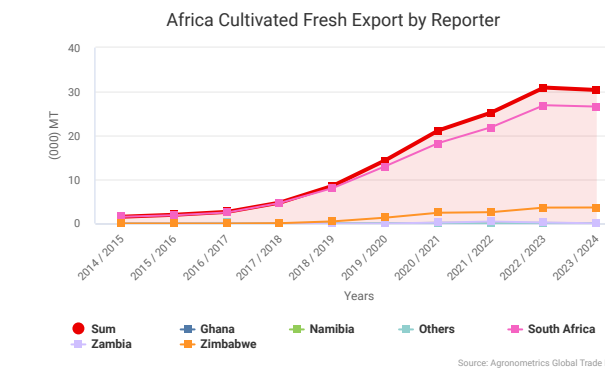
Subregion	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024
South Africa	13.06	18.29	21.90	26.90	26.59
Zimbabwe	1.33	2.45	2.57	3.62	3.64
Zambia	0.00	0.21	0.44	0.23	0.04
Namibia	-	0.16	0.16	0.14	0.07
Ghana	-	-	0.14	0.02	-
Others	0.02	0.05	0.01	0.01	0.02
Africa Totals	14.42	21.17	25.22	30.92	30.36

Source: Agronometrics Global Trade Data

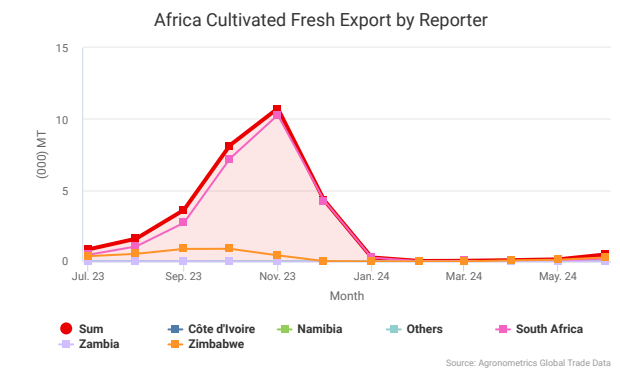
Africa Exports by Partner Subregion (000) MT

Subregion	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024
Western/Central Europe	12.32	17.19	20.61	24.57	22.19
Asia	0.60	1.31	1.80	2.75	3.22
Middle East	0.37	0.89	1.14	1.68	2.51
So. Europe/N. Africa	0.48	0.43	0.72	0.81	1.27
Africa	0.64	1.33	0.77	1.08	1.09
Others	0.01	0.01	0.17	0.02	0.09
Africa Totals	14.42	21.17	25.22	30.92	30.36

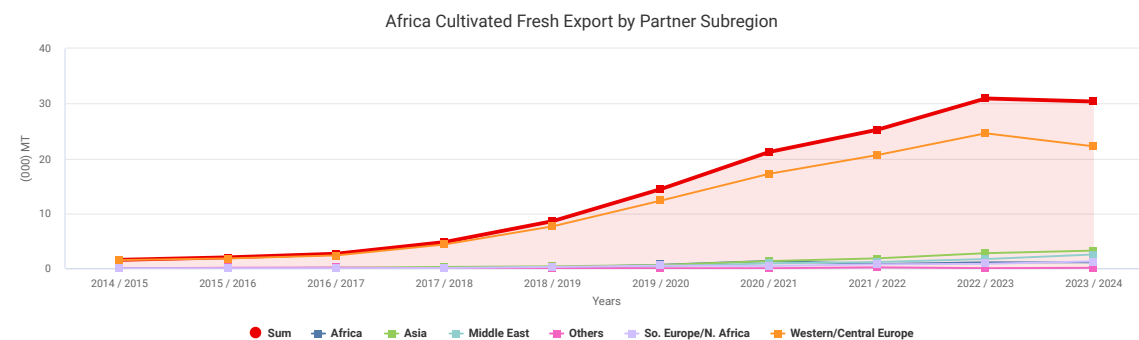
Source: Agronometrics Global Trade Data



Source: Agronometrics Global Trade Data



Source: Agronometrics Global Trade Data



Source: Agronometrics Global Trade Data

Africa Report Team Narrative

Earliness and high yields are the name of the game for the fast-rising blueberry industries to the countries north of Republic of South Africa, the largest of which being Zimbabwe where over the past eight years a sufficient node of talent and infrastructure has been established to foster an industry that has been making its presence increasingly felt, especially in European markets. Namibia and Zambia are still in the very early stages of their respective growth trajectories, but each has its own advantages.

In all these jurisdictions there have been investments made by South African growers or companies with a strong presence there, branching northwards towards the equator in pursuit of supply diversification and production windows, in moves that

mimic what Chilean expertise brought to Peru and elsewhere in Latin America in recent decades.

Zimbabwe

Zimbabwe is a country that garners some of the most enthusiastic appraisals from blueberry industry stakeholders looking at emerging industries with established production, with one major international player operating there claiming it yields some of the most consistent fruit quality out of its entire global network. The healthy appetite to increase plantings is only diminished by constraints around access to capital, as

Zimbabwe carries a high sovereign risk, interest rates are also high, and its banks are reluctant to provide farmers with loan terms longer than three years.

“The berries we produce are of high quality, the market wants them, the window is ideal, the cost of production is one of the cheapest in the world, and our climate is really good, but the expansion will not happen unless we find some longer-term money and some foreign direct investment that’s willing to look through the perceived country risk,” says one grower.

With most plantings within a 100km radius of the capital Harare and a prevalence of open field planting – in contrast to South Africa where pot-based substrate production dominates, representing around 60% of the total – there are fewer than a handful of projects in Zimbabwe that are more than five years old, meaning most fields are still very young and will deliver large volume growth as they mature. Because of the aforementioned financing challenges, growth will be coming more from existing fields than new ones in the short-to-medium term.

Historically the Zimbabwean season has tended to begin in mid-to-late May although early volumes can commence as early as late March, peaking in August and finishing up in mid-October, although this is a finishing date that the industry far outstretched in 2023 as both an opportunistic response to supply shortages from Peru, and the consequence of a delayed crop.

As a rule of thumb, the industry aims to have 90% of the crop done by the end of September, as even the slightest blemish on fruit will impact returns in October when there is a heavy supply from Peru and South Africa. Zimbabwe tends to have wet weather and occasionally hail starting in October as well, which also incentivizes getting the crop harvested before then.

But in 2023 the industry harvested blueberries for five weeks more than normal, picking until the end of November.

“We even got hail in week 43 which normally would have cut our season, but we made the choice to keep going and be careful on picking and harvesting, which showed just how short the market was supplied,” says one grower.

In a similar vein to that point, as a precursor of what also transpired last year for the South African industry, Zimbabwe significantly increased its share of exports that were shipped via airfreight, going from the usual percentage of 15-18% exported via this method to 46% in 2023. There are also reports that in many cases overseas buyers were willing to absorb the extra cost themselves in order to secure supply. The general consensus is that Zimbabwe had a very good season in 2023, even though yields were down for similar weather-related reasons that affected northern South Africa.

Regarding the earliest Zimbabwean fruit, where it is destined often depends on the level of supply in global markets from Spain and Morocco, with Zimbabwe developing a presence in South Africa as a buffer during that April-May period where it is able to find a consumer base for the limited early volumes, including those of export quality in retailers catering to more affluent South Africans. In this earlier time frame the industry has also been successfully exporting to the Middle East, and Far East markets such as Malaysia, Hong Kong, Singapore, Vietnam and Indonesia.

Like their southern neighbors, Zimbabwean growers have also leaned into the benefits of next-gen blueberry varieties with the largest share of volume connected to a large Australian group that was acquired this year by a consortium including the world’s largest berry marketer from the U.S., and the second-largest share also with Australian genetics and marketed by a UK-headquartered marketer, followed by a smaller share of other proprietary and open varieties. Varieties from well-known Spain and U.S.-based companies are also being grown. Most, if not all, projects in Zimbabwe have local shareholders and are run as local businesses who sell their fruit via arrangements with the aforementioned international partners.

Zimbabwe has excellent climatic conditions to grow the crop, as well as knowhow from local growers, many of whom already have experience in other intensive horticultural crops like snow peas and sugar snaps. The expectation is that young fields will be yielding at least 20MT/ha by their third year, whilst there have been some early-stage forays into substrate planting to the east of Harare with higher density of plants in pots, which have the potential to achieve higher yields still. In contrast, the difficulty in securing financing is leading some to opt instead for the economics of planting in the soil, including from pots where the plants have matured and outgrown the space.

Decent infrastructure exists in Zimbabwe with cold storage facilities at Harare’s international airport, although last season fruit was also re-exported from South African airports such as Johannesburg and Durban. Industry stakeholders would like to achieve a volume threshold that justifies dedicated freighters, as they currently rely on two main airlines, while another international airline was reportedly canceling a high proportion of flights to and from Harare, leading to export scheduling headaches. For now, and in the absence of viable cold chain alternatives in the ports of Mozambique which are closer to Zimbabwe’s growing regions, sea freight blueberries are shipped via South Africa where port problems persist. These matters have implications for shelf life, and growers have been actively seeking varieties that are able to hold their quality for more than 35-40 days.

Another challenge that Zimbabwean producers need to overcome is the unpredictable energy supply and significant increases in electricity pricing this year. This turn of events has

accelerated a push whereby growers are either considering or are already investing in solar panels in the pursuit of self-sufficiency “off the grid”, offsetting the costs of energy price hikes while also serendipitously aligning with the fact many retailers are encouraging supply partners to engage in more sustainable practices.

Namibia

The budding blueberry industry of Namibia, where the majority of production is centered around the north close to the border with Angola, had a dreadful season due to weather problems in 2023/24.

The country’s coastal areas are renowned for their frosts, which is why leading projects in the north – the most established project being near Rundu and others in Divundu and the Caprivi Strip – are all inland in places that have historically had less prevalence of frosts, with growers favoring those conditions combined with better access to water and abundant labor over what would be better logistics if their farms were located near the coast.

However, after 30 years without a “true frost” in the northern inland of Namibia, they experienced a severe frost incident that “basically wiped out the majority of their crop”, according to one grower. Namibia had been expected to increase its volume in 2023, but instead saw volume decline.

Regardless of this event, there are sizable projects underway in both northern and southern Namibia that should lead to significant increases in exports over the coming years.

Northern Namibia’s production window is very similar to Zimbabwe’s, with the first fruit at the end of May or the first week of June, and peaking in August through to the second week of September. Harvesting is usually finished in early October when tropical thunderstorms have the potential to affect quality. This earliness has attracted international investment from South Africa, the U.S., Germany, and likely elsewhere.

In the desert region of Aussenkehr in southern Namibia, known for its table grapes, there are comprehensive substrate trials taking place involving varieties from a handful of global genetics programs, some of which serve to showcase new cultivars to visiting producers from South Africa if they haven’t yet passed through quarantine there. The latitude of southern Namibia is close to that of Bloemfontein in South Africa, so harvests are around one week earlier than in the Western Cape.

Zambia

Some growers and investors are trying their luck in Zambia as well where production can also begin in April. The country is very fertile but is also landlocked, leading to logistical difficulties. It is a nation with a strong agricultural tradition but is at the beginning of the curve when it comes to horticultural knowledge around blueberries and how they perform in its particular microclimate.

Even though the industry has had its setbacks, some in the industry are still of the opinion that Zambia will be home to another boom in blueberries, given it would have a similar season to that of Zimbabwe and would be growing off a much lower base than its southern neighbor. Its earliness and potential have attracted some of the biggest companies in the global blueberry industry to invest in the country.

The highest concentration of production is currently around the capital Lusaka, which is less than 500km northwest of Zimbabwe’s capital Harare, while there are other pockets of production in Mkushi and Livingstone.

In July 2020 Zambia became the first African nation to gain direct access to the Chinese market with the first shipments sent in November of that year. That trade route stagnated however as at the time Zambia didn’t have market access to South Africa, through which blueberries would need to travel if they were to be sent via seafreight. This implies shipping through a bonded warehouse, which is manageable but adds more cost and complexity. Additionally, one of the country’s leading blueberry players has taken due caution with China, holding back to ensure once shipments begin they are of the utmost quality and in sufficient volumes.

The ability for Zambia to capitalize on its Chinese market access got a whole lot easier after finally gaining access to South Africa, although at the time of writing this is not yet known to have led to Zambia’s China export ambitions coming to fruition.

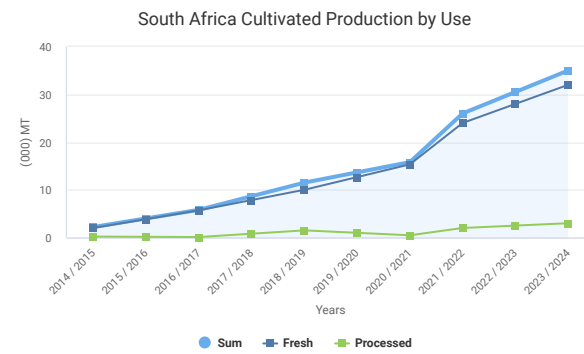
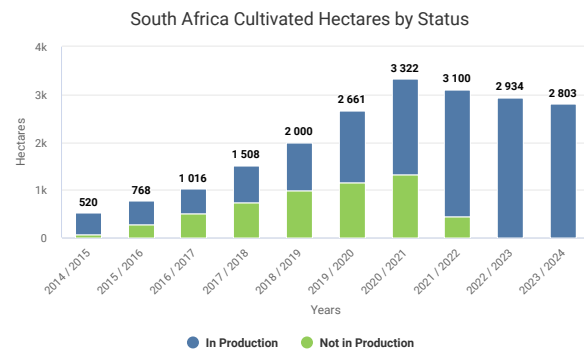
Other origins

Further north, trials are taking place in the equatorial states of Uganda and Kenya where there is potential for production from March to May, with the potential to double crop on evergreen low chill varieties if desired.

SOUTH AFRICA



Planting and Production Data, Figures & Commentary (Denominated in Hectares and Thousands of Metric Tons)



Source: IBO

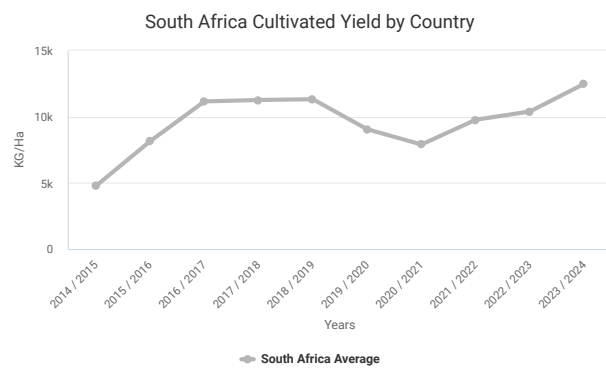
Source: IBO

South Africa 2023/2024 Production Metrics

Hectares Planted:	2,803 Ha
Organic:	Not Reported
Under Structure:	Not Reported
Hydroponics:	Not Reported
New Genetics:	Not Reported
Hectares in Production:	2,803 Ha
Production:	35.00 (000) MT
Growth in Production ¹ :	▲4.50 (000) MT (14.75%)
Growth from Hectares ² :	▼-1.36 (000) MT (-30.26%)
Growth from Yield ³ :	▲5.86 (000) MT (130.26%)
Yield:	12,486.62 (Kg/Ha)
Exports:	26.59 (000) MT
Imports:	0.76 (000) MT

Source: IBO and Agronomics

- ¹ Volume change compared to previous season
- ² Change in volume due to hectares entering or leaving production
- ³ Change in volume due to field productivity (yields)

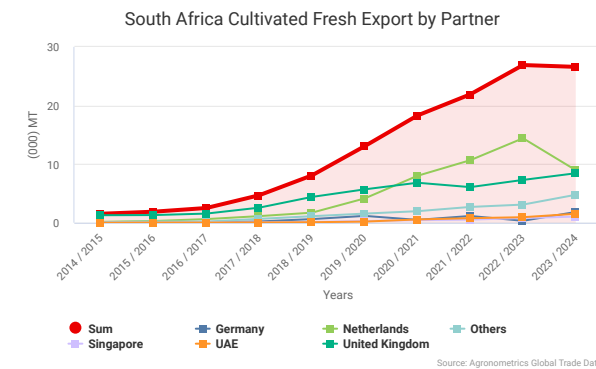


Source: IBO

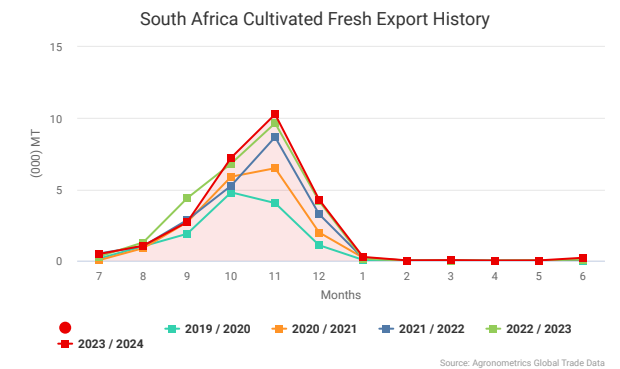
South Africa Cultivated Fresh Exports by Partner (000) MT

Reporter	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024
Netherlands	4.15	8.01	10.66	14.41	8.96
United Kingdom	5.69	6.82	6.08	7.30	8.44
Germany	1.17	0.49	1.15	0.33	1.84
UAE	0.20	0.56	0.78	0.95	1.53
Spain	0.40	0.41	0.65	0.61	1.19
Others	1.46	2.00	2.58	3.29	4.62
South Africa Totals	13.06	18.29	21.90	26.90	26.59

Source: Agronomics Global Trade Data



Source: Agronomics Global Trade Data



Source: Agronomics Global Trade Data

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South Africa Country Member Summary

Adapted from the report by Berries South Africa

South African Blueberry Season Review 2023–2024

Off the back of a challenging 2022-2023 export logistics season, the blueberry industry in South Africa was determined to position itself to fulfill its potential for this past year. With production volumes set to increase due to ongoing improvements to farming methodologies and practices tied with maturing orchards providing better yields per hectare and new genetics coming online, the sentiment was that South Africa should be able to continue positioning itself as a local and international supplier of top-quality blueberries.

Through the Southern Hemisphere Winter, various blueberry producing countries experienced anomalies in climatic conditions that directly impacted production volumes. Increased mean temperatures in South American production areas, and a cooler, longer winter in South Africa both resulted in delayed seasons for the respective countries from which volumes were never going to catch up to forecasted expectations.

Due to the significant shortage of blueberries (primarily as a result of the Peruvian supply shortfall overlapping the peak South African export weeks) in markets where South Africa exports its blueberries, the consequent high demand expectantly buoyed the pricing range of the South African produce.

Year on year South African blueberry exports fell by 3,022MT to 21,212MT, however due to the high quality of produce being supplied out of South Africa, high demand, and favourable pricing, the blueberry production and value chain can reflect on a successful season alleviating some of the pressure of the previous season's exceptionally high input costs, pressure on pricing, and the direct financial impact of the Transnet (container terminal management company) labour strike of 2022.

Another benefit of the high demand-high pricing scenario this season was the ability of exporters to alleviate some of the pressure on sea freight and logistics with the option to allocate produce to air freight. While air freight capacity and routing held its own challenges, there was significant benefit in getting quality fruit to market efficiently, cementing the position of South Africa as a supplier of high quality, best tasting fruit.

South Africa Report Team Narrative

Following a couple of frustrating seasons beset by logistical challenges caused by problems at its ports, South Africa's blueberry industry was given a reprieve in 2023 thanks to shorter supplies from Peru – a competitor whose monumental volume rise over time was likely not anticipated to its current extent when South Africa's own boom in planting of the crop began more than a decade ago, with the highest concentration of hectares located in the Western Cape where harvests peak in the October-November period when Peru too is most active.

The level of strong market demand is evident in a drastic shift to airfreight in the 2023 season for South Africa as high prices made this more expensive channel more economically viable. Normally around 20% of South Africa's blueberries are shipped via airfreight with the rest sent by ship, but this percentage lifted to 45% by air last year. Exporters were able to negotiate more airfreight space in November and towards the end of the season the majority of exports were sent by this method.

It is yet to be seen whether this air-sea shipment ratio will revert to more recent trends in future (Many years ago it used to be 80% airfreight when South Africa filled a very significant supply gap), as it must also be noted that the shift was not just demand-driven but also reactive to the previous year's port delays due to strikes, against a backdrop of broader inefficiencies from state-owned logistics firm Transnet which runs the nation's ports. Since then there has been an overhaul of management at Transnet and the industry is hopeful this will lead to positive change and upgrades, although there is still much uncertainty as to whether the new leadership will be able to turn the tide of deteriorating performance. Having experienced immense backlogs that negatively impacted fruit quality and led to more claims in 2022, South African blueberry exporters' decision to ship more via air was also likely a hedge against the risk of further seafreight-related problems.

It is encouraging that sea journey times did improve in 2023, with one grower group reporting the total time in chain from blueberries leaving the packhouse to the first inspection by the customer in Europe going down from an average of 38 days to 32 days.

The South African industry was not able to capitalize on the supply shortfall as much as it would have wished in 2023 as weather issues of its own led to harvest delays and an ultimate decrease in export volume of around 12.5%, notwithstanding a far superior season overall financially.

A prolonged and very cold winter by South African standards meant that fruit took longer to get the heat units necessary to ripen, while in the Western Cape conditions were much wetter than usual – a fact that didn't have a great impact on fruit as it hadn't set yet at the time of intense rainfall but did affect pollination in the early varieties. There was also flooding which in isolated cases destroyed infrastructure and carried away blueberry pots in the current, but this was not a large contributing factor to the decline in volumes.

The weather conditions were less impactful in the country's north, but still meant that plants were very dormant and were delayed in coming out of the blocks. For South Africa overall, harvests were 3-4 weeks late, although some farms were as late as six weeks while others were just a week late, depending on the variety and microclimate. "We didn't have enough opportunity to catch up on volumes, but the later ones actually arrived quite on time," as one source said.

The largest drop in volume was felt in the EU with a decline of 33%, unlike the UK where shipments rose 18%, on top of a 13% rise in the same market the year prior. The industry has also taken long strides in developing new markets, with exports to the Middle East up by more than half and shipments to the Far East up by a quarter. "Volumes aren't massive, but

if we continue that trend over the next three to five years, we will start to have a significant market in those places,” as one South African source said.

In late 2023 the country’s blueberries were approved for access to the Canadian market, and at the time of writing trial shipments are anticipated in 2024. Industry and government have also been active in market access negotiations in India and China, the latter aided by the decision after a BRICS Summit to consolidate all of South Africa’s stonefruit into one China market access application, thus expediting the process for blueberries which are next in line for the market which will only handle one commodity application per country at a time.

South Africa’s industry is more structured around premium varieties and retail buyers with quality sensitivity compared to other growing regions - “If you put Zimbabwe and South Africa together, we’ve probably got the same number of hectares of proprietary genetics as Peru,” as one grower noted for the previous edition of this report. In the space of a year that estimate is unlikely to have changed.

The industry is technically astute and dominated by large vertically integrated international programs, with a high proportion of fruit grown in substrate and around 12% produced under tunnels. Two large export agencies account for the majority of volume, but in recent years many more genetics providers and investors have entered the market from around the world, and there are currently more than 100 varieties registered for use. Three leading Australian breeding programs account for the lion’s share of current plantings in the proprietary genetics space in southern Africa, but other programs are present from the U.S., both private and university-based, Spain and elsewhere, including a fourth, newer Australian program on trial. Extensive plantings still yet to reach maturity mean that more yield, and therefore volume growth is in the pipeline, which should see South Africa continue to rise in stature in the years

to come, although exits are still a possibility given the economic strain of high costs and a trend towards higher market competition despite what occurred in 2023. On the other hand, those who have found the ideal varietal-microclimate combinations are developing new plantings with confidence, both in pots and in soil.

In terms of timing, many growers are attempting to expand the ‘shoulders’ of production to avoid having such pronounced peaks in October-November. That is the natural window for the Western Cape, which accounts for around 60% of South Africa’s blueberry plantings, with the remainder split mainly between the northern region of Limpopo and South Africa’s northwest, both with earlier seasons that peak in September and October. KwaZuluNatal is also a growing area of note, with its colder Midlands area home to a ‘true winter’ where a grower must wait a few years for plants to reach maturity. Whereas many farms in the Western Cape are hitting the six-year mark and are witnessing slight drops in yield, Limpopo’s established farms, which are relatively younger, are getting into their peaks.

South Africa’s domestic market development is hindered by the unaffordability of blueberries for a large proportion of the population in a country where income inequality is significant, but it has “grown brilliantly” according to one source. A leading grower group supplies export-quality fruit to one of South Africa’s top-tier supermarkets, particularly during the early season both from the north of South Africa and even earlier in Zimbabwe starting in April, and that particular retailer has shown a willingness to provide the shelf space with consumers willing to pay attractive prices from a grower perspective. Their focus has also been more on flavor than size, unlike some overseas markets. There is also an increased mix of pack sizes, and other retailers are selling blueberries as well, often making the shelf space available when there is an over-supply with less premium specs.

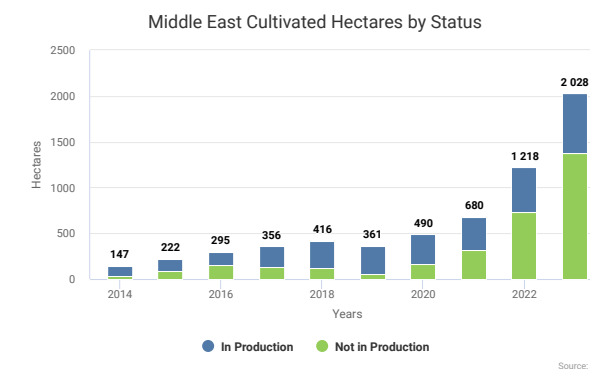
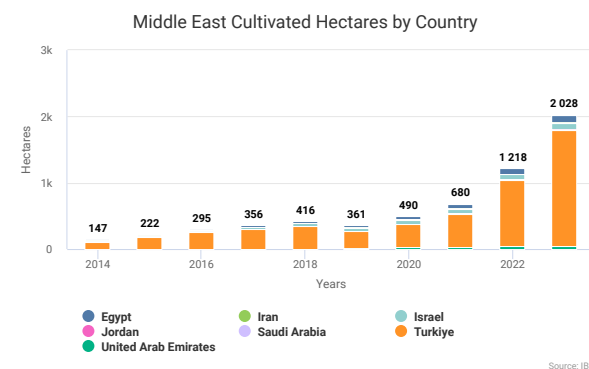
MIDDLE EAST

Planting and Production Data, Figures & Commentary (Denominated in Hectares and Thousands of Metric Tons)

Middle East Cultivated Hectares by Country

Middle East	Hectares Planted					2023 Production (000) MT		
	2019	2020	2021	2022	2023	Fresh	Process	Total
Turkiye	250	350	500	1,000	1,750	5.26	0.39	5.65
Israel	52	60	68	76	83	0.33	-	0.33
United Arab Emirates	15	25	32	40	50	0.25	-	0.25
Egypt	30	40	60	80	120	0.14	-	0.14
Iran	10	10	13	14	14	0.08	-	0.08
Jordan	2	4	6	8	10	0.02	-	0.02
Saudi Arabia	1	1	1	0	0	-	-	-
Middle East Totals	360	490	680	1,218	2,028	6.08	0.39	6.47

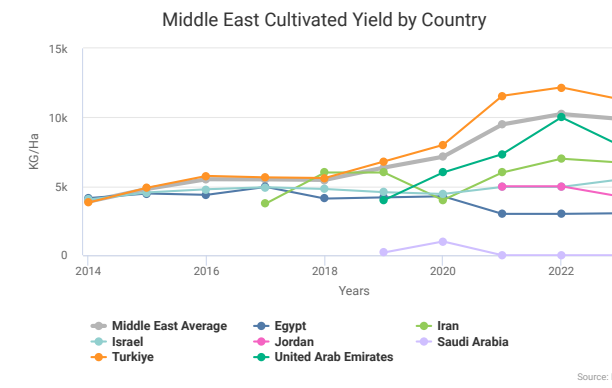
Source: IBO



Middle East Cultivated Production by Country(000) MT

Middle East	2021			2022			2023		
	Fresh	Process	Total	Fresh	Process	Total	Fresh	Process	Total
Turkiye	2.72	0.17	2.89	4.00	0.26	4.26	5.26	0.39	5.65
Israel	0.26	-	0.26	0.30	-	0.30	0.33	-	0.33
United Arab Emirates	0.11	-	0.11	0.25	-	0.25	0.25	-	0.25
Egypt	0.09	-	0.09	0.12	-	0.12	0.14	-	0.14
Iran	0.06	-	0.06	0.07	-	0.07	0.08	-	0.08
Jordan	0.01	-	0.01	0.02	-	0.02	0.02	-	0.02
Saudi Arabia	-	-	-	-	-	-	-	-	-
Middle East Totals	3.25	0.17	3.42	4.76	0.26	5.02	6.08	0.39	6.47

Source: IBO



Source: IBO

Middle East 2023 Production Metrics

Hectares Planted:	2,028 Ha
Hectares in Production:	655 Ha
Production:	6.47 (000) MT
Growth in Production ¹ :	▲ 1.45 (000) MT (28.88%)
Growth from Hectares ² :	▲ 1.93 (000) MT (132.79%)
Growth from Yield ³ :	▼ -0.47 (000) MT (-32.59%)
Yield:	9,883.90 (Kg/Ha)
Exports:	0.46 (000) MT
Imports:	6.10 (000) MT

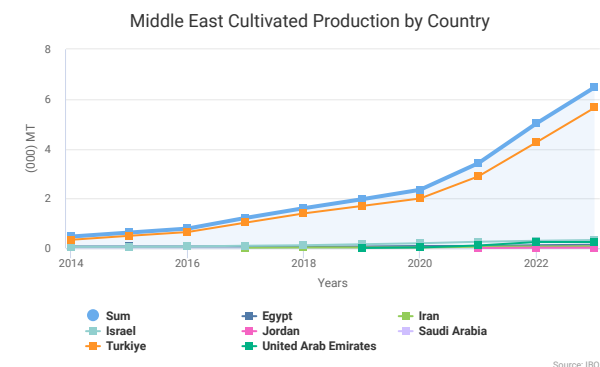
Source: IBO and Agronomics

- ¹ Volume change compared to previous season
- ² Change in volume due to hectares entering or leaving production
- ³ Change in volume due to field productivity (yields)

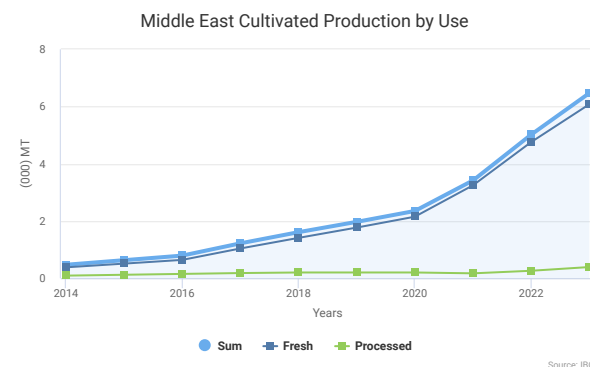
Middle East Imports by Origin Subregion (000) MT (Inferred from Partners)

Origin	2019	2020	2021	2022	2023
South America	0.44	1.06	1.92	1.34	1.89
Africa	0.34	0.85	1.19	1.67	2.50
Western/Central Europe	0.95	0.81	0.85	0.82	0.58
So. Europe/N. Africa	0.13	0.11	0.09	0.13	0.66
Eastern Europe	0.07	0.05	0.06	0.20	0.33
Others	0.27	0.12	0.16	0.11	0.14
Middle East Totals	2.20	3.00	4.26	4.27	6.10

Source: Agronomics Global Trade Data

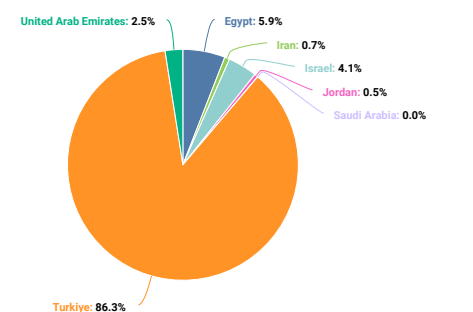


Source: IBO



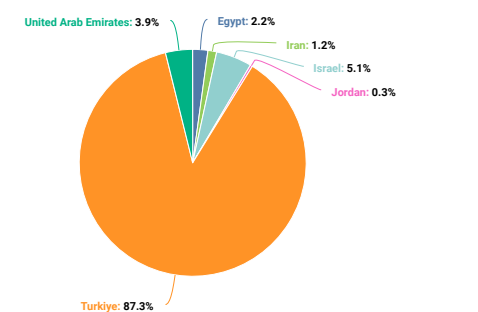
Source: IBO

2023 Middle East Cultivated Hectares by Country



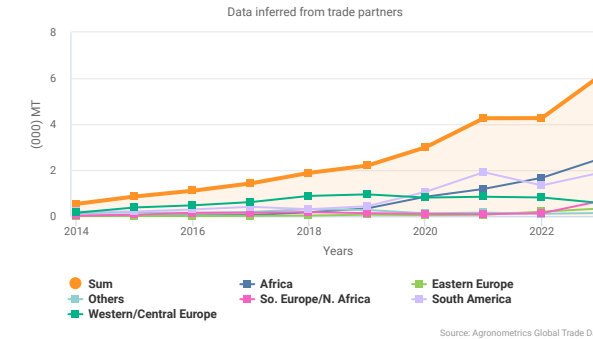
Source: IBO

2023 Middle East Cultivated Production by Country



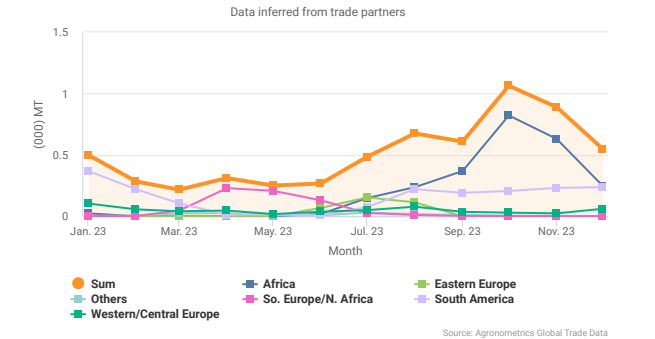
Source: IBO

Middle East Cultivated Fresh Imports by Origin Subregion



Source: Agronomics Global Trade Data

Middle East Cultivated Fresh Imports by Origin Subregion

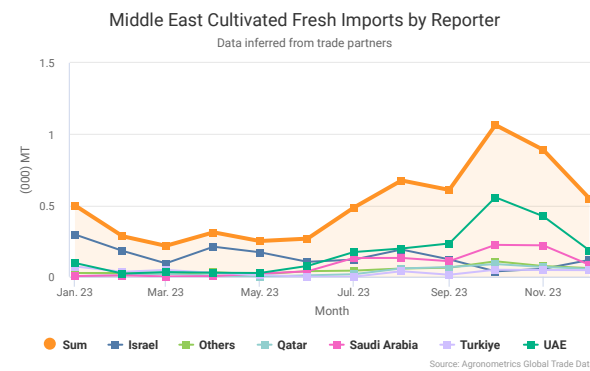
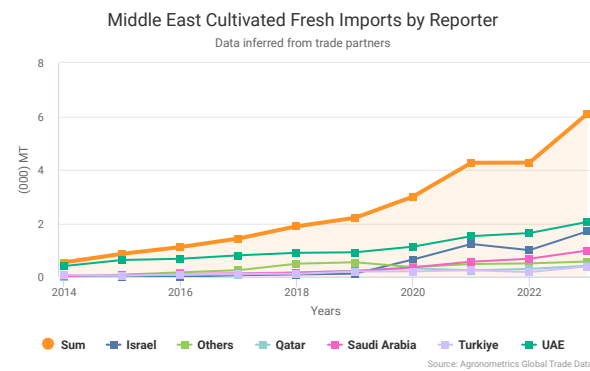


Source: Agronomics Global Trade Data

Middle East Imports by Reporter (000) MT (Inferred from Partners)

Reporter	2019	2020	2021	2022	2023
UAE	0.91	1.13	1.52	1.63	2.05
Israel	0.11	0.65	1.22	0.99	1.70
Saudi Arabia	0.21	0.35	0.56	0.67	0.98
Turkiye	0.20	0.20	0.24	0.17	0.39
Qatar	0.23	0.32	0.24	0.29	0.41
Others	0.54	0.36	0.48	0.50	0.57
Middle East Totals	2.20	3.00	4.26	4.27	6.10

Source: Agronomics Global Trade Data



Middle East Report Team Narrative

The Middle East has attracted heightened interest from the blueberry industry over the past year for two key reasons. Firstly, as a market it bucked global trends in a shortfall year by recording a huge increase in fresh blueberry imports in 2023. Secondly, more international stakeholders are investing in emerging production sectors with ongoing new plantings in Egypt and Turkiye, with the latter being more advanced as its

shipments more than doubled in 2023 with Germany as its leading market. To get a sense of where Turkiye sits on a potential growth curve, its export volume is almost what another burgeoning industry – Zimbabwe – achieved in 2018.

Both Egypt and Turkiye have long standing – ancient, in fact - agricultural traditions with healthy access to water, and are prominent within the fresh produce industry in other

commodities. Now domestic growers, international breeders and marketers have both countries in their sights as more and more sign agreements with local partners to plant blueberries. Each has a different harvest peak, but both share the logistical benefits of proximity to both Europe and the Middle Eastern market more broadly, including the untapped potential to develop their own domestic markets with populations of 111 million in Egypt and 85 million in Turkiye.

Booming Middle East demand

The Middle East was one of just three sub-regions globally to record an uptick in fresh blueberry imports last year, with the other two being in Latin America (South America and Central America/Mexico). While Peruvian exports to most destinations were down, its shipments to the Middle East were up 194% in volume and 247% in value.

South Africa was by far the leading supplier to the region however, accounting for around \$20 million worth of the \$47 million worth of blueberries imported. This represented growth for South Africa of 61% in value terms and 47% in volume. The largest share of South Africa’s Middle East-bound exports went to the UAE, followed by Saudi Arabia and Qatar.

The second-largest market overall was Israel, where South Africa doesn’t yet have access and has temporarily suspended negotiations for a market opening due to the war. Israel’s fresh blueberry imports were up 71% in 2023 with the largest supply increase coming from Spain, and other key market participants including Chile, Argentina and Peru.

Imports in the region in both October and November were unprecedented for any month prior in the history of the market, and sales from December 2023 to February 2024 continued at record highs for that period.

Turkiye

With the possibility of starting harvests in limited volumes as early as late February under heated tunnels in the Antalya region, Turkiye’s diverse range of microclimates allow for production easily through to August, extending into October with the utilization of different geographies and altitudes. In 2023 the bulk of volumes were exported between May and July, with more than half the total export volume shipped in July with Germany and the UK as the top markets.

This is all driven by significant planting growth in recent years, and the trends of new plantings continue with several international blueberry companies putting in new plants or trialling different advanced genetics.

Blueberries were introduced to the country in the 2000 by a university professor who brought back varieties from the US, leading to research and trials to test how the fruit would perform in Turkiye, starting with cultivation in the Black Sea region. Unfortunately, a challenging breeders’ rights situation has historically impeded development for blueberries, but Turkiye is nonetheless a member of plant variety protection accord UPOV and the country is witnessing a swell of interest from investors.

This has been instigated to an extent by a local nursery with family ties to one of the country’s largest cherry and fig exporters, which is collaborating with a leading US nursery to give impetus to an emerging industry. Other local groups are progressing plans as well with a multitude of European, North American and South American entities.

Harvests tend to start in March around Antalya and Adana on the southern coast, where the warm climate is comparable to Huelva in Spain. It is anticipated that with the right varietal

selections and farm management, this region will be able to have limited blueberry volumes available in late January in the future.

There are also blueberry industry operations around Bursa close to the Marmara Sea and the nation's capital Istanbul, as well as in Salihli, which sits inland from Izmir on the western, Aegean coast. In Salihli there are trials taking place for 15-20 different blueberry varieties. For cooler areas, mid-chill and high-chill varieties – Legacy and Duke respectively – have been planted with the European market in mind.

In terms of overall production, Bursa in the north and Antalya in the south are far ahead of all other growing regions and have seen substantial growth (and continue to see the largest growth in new plantings), while other cultivation regions of note are currently in the north - Kırklareli on the European side of Türkiye close to Bulgaria, and the Black Sea areas of Rize and Trabzon. Yalova, close to Bursa, saw significant new plantings in 2022 and is estimated to now have more surface area dedicated to blueberries than the fourth-largest growing region, Trabzon. The same could be said of Çanakkale, on the Dardanelles Strait, which saw significant new plantings in 2023 after having nothing planted previously.

Growers/stakeholders are still in the early stages of the learning curve to gain know-how and establish the necessary supply chain capacity and expertise necessary to meet the standards of the international market.

Export volumes rose 146% last year and imports rose 124%, with both inflows and outflows at similar levels of around the 400MT mark, with Peru the leading supplier by far, and along with Chile accounting for more than three-quarters of volume. Exports rose despite a season that was regarded as difficult for growers given Türkiye's third-warmest summer on record that put plants under stress. Rainfall was above average but

distributed unevenly around the country, with major growing regions like Antalya and Rize receiving very high rainfall levels but parts of southeastern Anatolia and the Mediterranean have been suffering from drought.

Egypt

In the past 12 months Egypt has gone from being on the blueberry industry's figurative radar to featuring firmly in the plans of numerous companies from Europe and the Americas, adding to the two Spanish and Dutch companies referenced in last year's edition of this report that are rolling out projects with proprietary genetics.

To exemplify the progress made, another global company with its headquarters in the Americas is planting a 50ha trial this year near Alexandria in close proximity to the Nile River, and if that is successful the view would be to plant much more substantial farms of blueberries over the coming years. Another international group that harnesses Australian-bred genetics also planted new trials in 2023 in the country.

To put these advancements into perspective, this report noted just 80ha of surface area dedicated to blueberries in Egypt in 2022, and even this figure is disputed by some as overstating the true extent of plantings. It has been observed that prior to recently, most projects were no larger than 5-8ha, predominantly between Cairo and Alexandria.

It is believed the country's season, once more fully developed, would largely mimic that of Morocco regarding timing; the goal for one investor in Egypt (which has a similar latitude to Agadir in Morocco) is to achieve peak production in February. Despite its similar latitude to Morocco, the industry would have the potential to cater to different markets given that along the coast the distance from Alexandria to Agadir is roughly 5,000km.

That said, interest in Egypt from Europe is high and the very limited volume exported to date has been spread across the UK, Netherlands, France and Malaysia, among others.

It has been asserted that Egypt has preferable water availability to Morocco, where drought conditions are described more fully in the country's editorial section. The land is flat and labor is reportedly abundant, and these three factors around the ease of irrigation, topography and an available workforce were described by one source as the "secret sauce" for a successful industry, much like Peru in some respects. The other benefit is that Egypt has more than 100 million people; even though the income per capita is very low, it is almost at the same level as South Africa, where the local industry has built a decent and growing domestic market. One grower that has conducted consumer surveys in Egypt found that one in five people would be interested in buying blueberries.

Israel

Aside from its relevance as an import market for fresh blueberries, Israel is also a grower of blueberries with its small country hosting a massive diversity of growing conditions from dry and hot desert conditions to wet mountainous terrain. One source notes it is possible to pick from November to August by moving between different parts of the country, but peak production occurs in June.

Blueberries have been grown in Israel since the 1960s but it wasn't until 2013 that the industry kicked off in earnest with an R&D department of the Ministry of Agriculture introducing University of Georgia varieties for testing, and now cultivation is spread throughout Israel. The varietal mix is largely open and the predominant cultivar is Biloxi, as has been the case in so many low-chill jurisdictions. There is also a local grower-exporter situated in northern Israel producing proprietary

varieties under licence in partnership with an Australian genetics company, and this is one of the country's largest operations.

Most blueberries in Israel are grown in pots, both for agronomic reasons and also religious reasons. An exhaustive explanation may be too time-consuming, so for simplicity's sake it could be summarized that the consequences of Jewish rules around Kosher food production are that the fruit from blueberry trees (because the notion of a 'bush' is not permissible) can only be eaten by Jews after the third year. Berries grown prior to that three-year mark can only be sold to non-Jews. Tree structures must also be pruned so that there is just one main stem, and there are further limitations around tissue culture. One nursery has shown ingenuity in adapting to these rules in order to propagate plants for growers so they do not have to wait as long as under more traditional methods.

Some farmers in Israel have reduced their plantings in recent years due to the market pressure brought by increased competition from a more open import market, and increased input costs. Amidst challenges with labor, it was planned that machine harvesters would be used for the first time this year on certain farms.

Regarding Israel's contribution to the blueberry industry, it is worth highlighting that an Israeli was among the pioneers of the Moroccan blueberry industry, and the company they helped forged is now part of Morocco's largest export group.

GLOBAL WILD AND COMBINED PRODUCTION

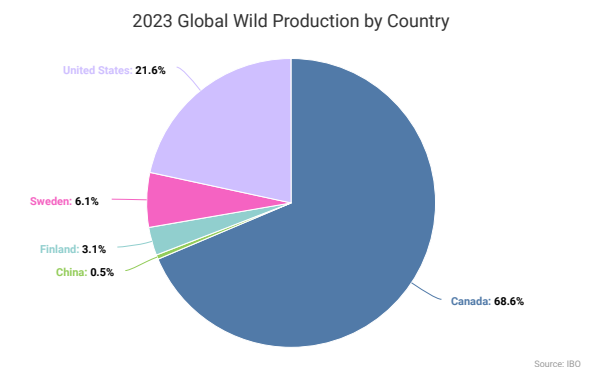
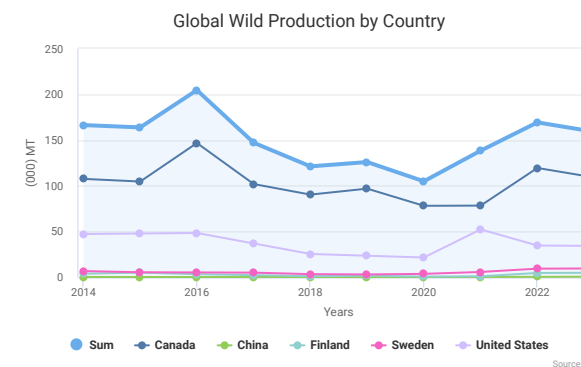
GLOBAL WILD PRODUCTION

Planting and Production Data, Figures & Commentary (Denominated in Hectares and Thousands of Metric Tons)

Global Wild Production by Country(000) MT

Global Wild Blueberry	2021			2022			2023		
	Fresh	Process	Total	Fresh	Process	Total	Fresh	Process	Total
Canada	-	78.41	78.41	-	119.52	119.52	-	109.20	109.20
United States	0.52	51.90	52.42	0.34	34.47	34.81	0.34	34.02	34.36
Sweden	-	5.92	5.92	-	9.54	9.54	-	9.74	9.74
Finland	-	1.19	1.19	-	4.83	4.83	-	5.00	5.00
China	-	0.50	0.50	-	0.60	0.60	-	0.80	0.80
Global Wild Totals	0.52	137.92	138.44	0.34	168.96	169.30	0.34	158.76	159.10

Source: IBO



Source: IBO

Global Wild Production Report Team Narrative

Encompassing a variety of species throughout the colder regions of the Northern Hemisphere with much smaller berry sizes (1g or less) than cultivated highbush varieties, extreme fluctuations in volume from year to year, and a predominantly frozen market-focused industry due to the challenges of shipping the fresh fruit in marketable condition, wild lowbush

blueberries are prized by certain demographics of consumers for reasons ranging from taste to nostalgia to connecting with what is perceived as a more natural world and fruit genetics that have been unchanged for thousands of years. It is also a class of blueberry that tends to trade at a premium to the

cultivated blueberries within the processed category, particularly in markets close to the geographies where they are grown.

The U.S. state of Maine and eastern Canada account for the largest share of global wild blueberry production with the native *Vaccinium angustifolium* as the main species representing 95% of North America's crop while the remaining 5% is *Vaccinium myrtilloides*, also known as the velvet leaf blueberry.

A variable climate with a combination of frosts, freezes, drought and higher temperatures has negatively impacted the productivity of wild blueberry fields, which in the lead-up to the 2016 peak season were in a state of expansion in Canada and overall decline in Maine. In 1995 both Maine and Canada had equivalent levels of wild blueberry production, but the Canadian Government released tracts of Crown land to private growers and encouraged growth in the Canadian sector which now produces a much larger volume than the U.S. North America's 2021 wild crop would have been significantly larger if it weren't for weather- and drought-related conditions experienced in Quebec.

But Quebec bounced back in 2022 with a bumper crop that was more than triple the size of the previous year, while other Canadian provinces saw upticks as well with volume up 40% for New Brunswick and an almost doubling of production from Prince Edward Island. Unlike the highbush sector where irrigation is commonplace on farms, this is mostly not the case for wild blueberry barrens although around one third of Maine's hectares are irrigated. In 2022 Canada's crop was boosted by better precipitation which offset problems in the availability of bees for pollination from Ontario. In contrast, Maine did have good pollination but was hindered by a lack of moisture, resulting in a volume drop of 26%.

After this major uptick in 2022, the North American wild blueberry crop in 2023 was down by around 9% year-on-year, primarily due to the effects of excessive precipitation in the Canadian provinces of Nova Scotia, Prince Edward Island, Northern New Brunswick and Quebec. This prevented harvest of some of the crop and resulted in larger fruit, but also produced poor quality berries. In contrast, Maine's production was marginally higher after experiencing more than adequate rainfall conditions, and benefiting from the import of 43,000 honeybee hives and therefore having good pollination. The Canadian industry, however, had issues in procuring adequate pollinators. There is currently an effort underway to improve

pollination there by supplementing with bumblebees and leaf cutter bees.

Agronomically, wild blueberries are distinctive from the highbush varieties that define the bulk of the global industry. The first distinction is that the bushes are generally not planted (although there are exceptions) but 'activated' by forest clearing and fires on the wild stands that evolved after glacial retreat 10,000 years ago, and based on observations of the average plant cover, experts estimate an average of 270 different genotypes can be found per hectare. Secondly, it is a two-year crop so when looking at the number of hectares/acres for any given industry, only half of those hectares/acres are being harvested in a particular year; one year provides the formation of the buds, and the next year the blossoms on the fruit. This is unlike highbush blueberry plants that have both vegetative and reproductive buds.

A third, and important point from the global blueberry industry's perspective, is differentiation as a survival imperative to the wild blueberry sector's existence. The associations of the term 'wild' for this highly cultivated crop conjure up a marketer's dream that resonates with consumers and the manufactured food companies that want to attract them. Proponents claim they have more antioxidants (which on a per weight basis is often true due to higher skin to flesh ratios), and the wild blueberry industry continues to invest heavily in lowbush blueberry-specific health research and promotions. In addition, a comparative 2021 study from Forney et al in four Canadian provinces found a higher and more consistent sugar-to-acid ratio for lowbush versus the highbush cultivars involved in the study (Duke, Brigitta, Jersey, Liberty and Aurora). The Canadian and Maine industries – with support from government programs - jointly fund health research into wild blueberries, as well as more efforts to coordinate promotional activities. Both the Maine and Canadian associations have active offshore programs working with local marketing organizations to promote the unique qualities of wild blueberries in order to increase demand.

In an environment where demand is currently exceeding supply, the Maine industry has a large domestic focus in addition to Canada-oriented exports, but the state also exports to Japan, South Korea and the EU with overseas shipments aimed at preserving customer bases. Canada exports about half its wild crop to the U.S., in addition to others such as Germany, Japan and China.

Amidst variable weather conditions, low pricing and an increase in production costs, there are reports of some smaller wild blueberry growers transitioning into the fresh market or organic production in an attempt to improve profitability. From an operational perspective, research efforts are underway for using drone technology to monitor for pests and spray for crop protection, improving mechanical harvesting, as well as the improved use of fertilizer and irrigation techniques to optimize productivity.

European Wild Blueberries

Wild production outside of North America is difficult to track in general and is based on best estimates from industry sources.

In terms of European wild blueberry production, *Vaccinium myrtilloides* or the European bilberry is native to the continent as well as the Caucasus and much of Asia. Scandinavia is a major source of production with bilberry bushes to be found throughout the forests of Norway, Finland and Sweden, where the cultural and historical connection to wild, foraged fruit is strong. Crops are also extremely variable as is access to labor with pickers needing to be flown into the harvest regions in many cases.

In Finland there is a deep cultural tradition with the 'everyman's law' whereby anyone can roam the land, even if it is privately owned, and pick wild European bilberries without needing permission from the landholder. Finns have a great attachment to this tradition and have a great appreciation of European bilberries, which also have a deep blue or almost black color inside unlike highbush blueberries which tend to have more of a relatively whiter color. Finnish people tend to buy them frozen, while there are also manufacturers that dry the berries at a very low temperature (so as to not affect their nutrient content) and then ground them into a powder which is sold to food manufacturers in the baking and dairy product sectors. One company based in the UK run by Finnish expats has successfully developed a consumer-facing blueberry powder product that is sold to some of the country's leading supermarkets and health store chains. Meanwhile on the other side of the Atlantic Ocean, the North American industry is exploring the potential of developing higher value-added products such as fermented products with wild blueberries,

which could enhance the health benefits and help develop new markets for the fruit.

Chinese Wild blueberries

'Chinese Wild': *Vaccinium Uliginosum* L. and *Vaccinium Vitis Idaea* are native to China, particularly the forested northern provinces of the country. The native *Vaccinium Uliginosum* is often dark reddish-blue, red or dark blue and often referred to as “蓝莓”(pronounced “Lan Mei”). “Lan Mei” is the most common word used for blueberries in China and now applies to highbush as well. Meanwhile the *Vaccinium Vitis Idaea*, or Lingonberries, are a deep red and also native to the northern reaches of Europe, especially Scandinavia. These berries are harvested most often by villagers who live near the forested areas where these species grow. The fruit is then sold on to brokers who process the fruit or resell it to processors who sell the finished product. Most of the fruit is now sold domestically, often as a health product in teas, powders, dried fruit, extracts and even cosmetics. Annual production is largely contingent on the amount harvested from the wild and the impact of winter weather on the crop.

'Chinese Cultivated Lowbush': Another interesting segment of Chinese domestic blueberry production is the 'Cultivated Lowbush' industry. In the far northern provinces of Jilin, Heilongjiang and the continental north of Liaoning, the extreme winters have proven a challenge for traditional highbush production. Early trials conducted in the late 1990s and early 2000's led by Jilin Agricultural University, showed that the cold hardy Lowbush and 'Half High' cultivars were more likely to crop and survive in the harsh conditions. Most of these varieties are considered ornamentals in the rest of the world while a few others represent exemplary selections from Wild patches in North America sourced from the USDA germplasm repository in the 1990's. Cold hardiness, increased likelihood of protection from snow cover (due to plant height) and apparent tolerance of difficult soil and moisture conditions have led to the large-scale planting of Cultivated Lowbush (in rows) and 'Half High' blueberries. Due to mixed information available from China, it is likely that most of the 'cultivated lowbush' production from China is represented in the Highbush production and acreage figures for China.

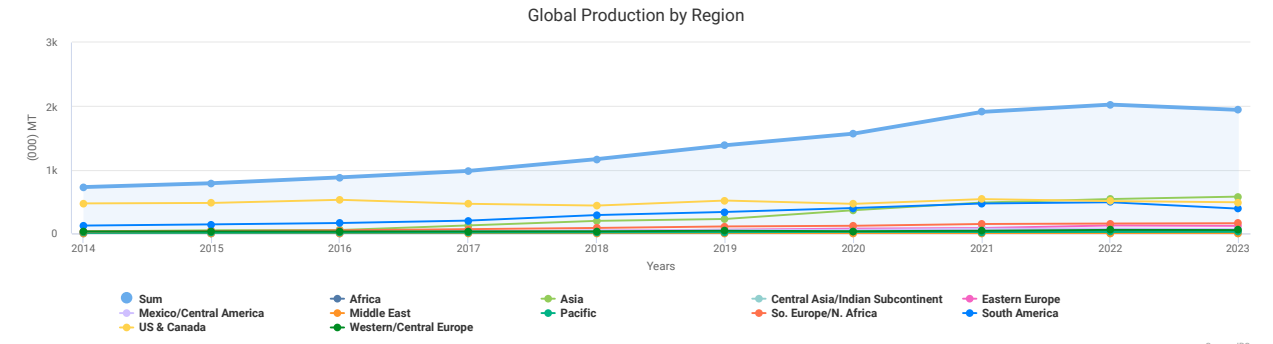
GLOBAL WILD AND CULTIVATED COMBINED

Planting and Production Data, Figures & Commentary (Denominated in Hectares and Thousands of Metric Tons)

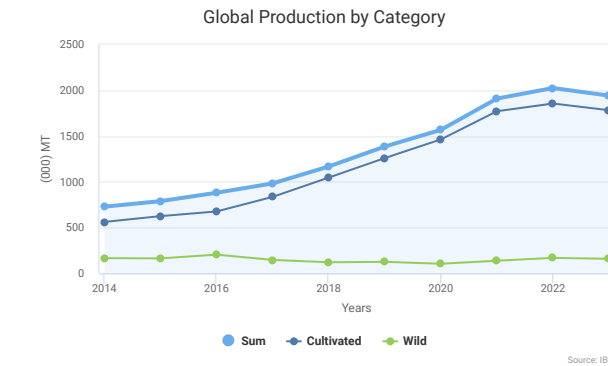
Global Production by Region (000) MT

Global Cultivated and Wild Blueberry Combined	2020			2021			2022		
	Fresh	Process	Total	Fresh	Process	Total	Fresh	Process	Total
Americas	666.75	417.76	1,084.51	672.23	402.75	1,074.98	601.83	344.66	946.49
US & Canada	210.87	328.46	539.33	192.68	316.00	508.68	208.41	281.21	489.62
South America	382.78	87.80	470.58	404.30	85.81	490.11	329.03	60.17	389.20
Mexico/Central America	73.10	1.50	74.60	75.25	0.94	76.19	64.39	3.28	67.67
Asia/Pacific	264.14	248.10	512.24	297.53	271.08	568.61	325.84	284.61	610.45
Asia	238.68	247.10	485.78	270.46	270.08	540.54	295.26	283.61	578.87
Pacific	21.40	0.70	22.10	22.13	0.70	22.83	24.23	0.70	24.93
Central Asia/ Indian Subcontinent	4.06	0.30	4.36	4.94	0.30	5.24	6.35	0.30	6.65
EMEA	277.76	35.55	313.31	335.98	45.04	381.02	338.06	46.36	384.42
So. Europe/N. Africa	134.86	13.50	148.36	142.07	13.61	155.68	146.54	14.13	160.67
Eastern Europe	79.35	5.61	84.96	119.42	6.08	125.50	113.56	5.75	119.31
Western/Central Europe	28.93	14.07	43.00	33.62	22.39	56.01	30.64	22.89	53.53
Africa	31.37	2.20	33.57	36.11	2.70	38.81	41.24	3.20	44.44
Middle East	3.25	0.17	3.42	4.76	0.26	5.02	6.08	0.39	6.47
Global Totals	1,208.65	701.41	1,910.06	1,305.74	718.87	2,024.61	1,265.73	675.63	1,941.36

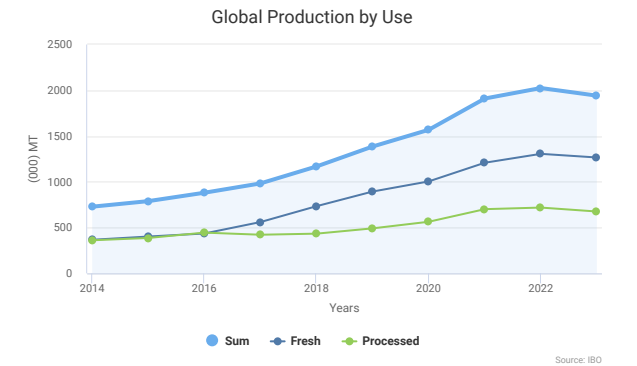
Source: IBO



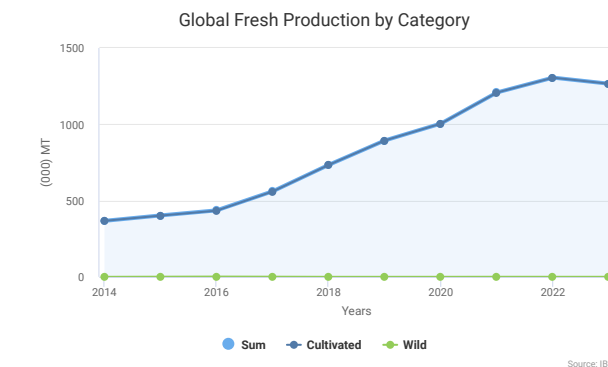
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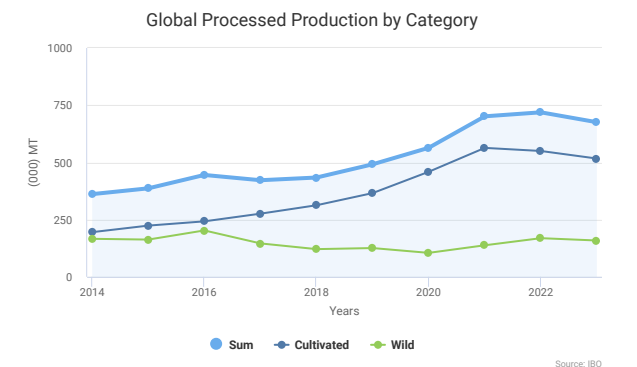
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Source: IBO



Source: IBO



Source: IBO

CLOSING COMMENTS FROM THE EDITOR

CLOSING COMMENTS FROM THE EDITOR

Dear Friends,

It's been an honor to serve the industry via this report for nearly 2 decades and I am thrilled to see the progress and value created by a formal and professional team taking the reins to drive an ever better product in service of the industry. This report is made possible by the generous support of the IBO and its dedicated board of directors composed of the country members from around the industry. It is my and our hope that this report serves your informational needs, empowering more informed decision making. Additionally, I hope it sparks new interest and critical thinking.

Having spent time awash in the information and intelligence shared in this report, I would like to offer a summary of the conclusions I will carry for the next year. I hope you find this summary useful. Please note, these are the conclusions of but one individual and not intended to capture the breadth of the full report. The following summary outlines the dominant themes which I believe should inform decision making in the coming years for industry participants.

Forces Driving the Industry:

Global Average Pricing Reflects Stable and Growing Demand: The 2023 season presented strong evidence that blueberries are becoming ever more a critical staple in the shopping cart of consumers around the world, indicating increasingly inelastic demand dynamics. While rising CAPEX and operating costs are causing margin compression, blueberries benefit from sustained and growing market demand.

Supply Amidst Climate Volatility: In 2023 the increase in volumes from new plantings (mainly Low/Zero Chill) was offset disproportionately by yield reductions in key growing regions tied to climatic issues (Peru and others). Climatic variability is of increasing concern throughout the agriculture and horticulture industries, affecting yields & price dynamics. The call for solutions to protect yield and quality are ascendant.

The "Other Side of the Unpredictable Yield Coin":

Meanwhile, the industry must also prepare itself for the other end of the pendulum. If, and more realistically, when "the big crop year" arrives, the industry is likely to experience a short term shock from the sudden volume increase. 2023 was 'short' 200,000 MT from established fields. Imagine a year when there are no significant yield disruptions and volumes from new hectares also flow into the global markets.

The Counter Season is the "New Peak":

Fast growing counter seasonal supply has driven a drastic change in the industry, creating more consistent 52 week availability, shifting the opportunity in the business from one of timing to quality. While this development of the past 8 years has helped increase household penetration and category value around the world, a new imbalance is also forecast on the horizon. The northern hemisphere summer, once the 'peak season', is now projected to be the new supply gap both in volume and quality as a percentage of volume. The southern hemisphere summer is projected to have a smaller but similar gap.

Institutional Capital Influencing Industry Growth:

As explored in the trends section of this report, the expansive impact of institutional investors is empowering accelerated growth in selective sources of supply offering the shortest ROI and the highest internal rate of return. While this "skimming of the froth" by investors is a natural trend in any market, there is growing concern about the imbalances it will create, exemplified by the paragraph above regarding the shift in peak season. Astute leaders predict that the next phase of successful investments in the blueberry space will pursue a more balanced and risk adjusted portfolio in the blueberry industry.

Industry Sentiment Trends Positive:

With all the challenges faced by producers, handlers, marketers, retailers, vendors, investors, and innovators throughout the blueberry business, our polling indicates that the general sentiment remains positive. While concerns remain regarding water access, general margin compression, and early signs of 'genetics

fatigue' (IE confusion due to abundance of choice) most see more upside than down in the blueberry space. Even in a year where upticks in pricing did not necessarily compensate for lower yields, the sentiment remains predominantly bullish.

Market Segmentation Continues: As availability of fresh blueberries has shifted from variable to consistent and the market turns its attention to improved quality, the varieties and branded concepts and platforms backed by genetics are attracting price premiums in the market. How this plays out varies by market and retailer, but the category often referred to as 'the premium category' (a term with different meanings for different people) has indeed secured separate treatment in transactions with retailers and in some cases, separate SKU's. Meanwhile further category segmentation around occasions is in early phases of development.

Intellectual Property and Plant Breeders Rights:

There is a direct correlation between increased respect and enforcement of IP and PBR's in blueberries and industry growth in many parts of the world. While this trend remains strong in some areas, the crop is expanding in parts of the world where breeders rights are more tenuous. How this dynamic plays out in the coming years will likely impact the pace at which industries access new genetics and innovation.

Mechanization and Automation: The drive to mechanize the crop, machine fresh harvest with hand pick quality in particular, continues but the breakthrough is not yet manifest. The focus is increasing and many predict a paradigm shift in this arena, possibly by the end of the decade, driven by new genetics, new harvest technology, field design, and post harvest technology.

In summary, the blueberry industry continues to globalize and mature. Consumption and production is more dispersed

around the world than ever before, with both existing consumers increasing their intake and new consumers discovering the product. The fresh category is driving the growth while the processed market remains steady but fragmented and ripe for creative organizing forces. As competition increases, companies with scale and participation in multiple points of the value chain (growing, packing, shipping, marketing, etc.) are realizing the most compelling economic returns.

If I was tasked with summarizing the current state of the blueberry industry in a single sentence, I find myself thinking, for those who can relate, of the stages of life from the perspective of a parent. I would have to say "our blueberry industry is growing up, with all the excitement, pain, and worry that comes with it." Such times often hand good fortune to those who have a vision and a plan. It is the hope of this editor, the team, and the IBO board that this report can help empower and inform such thinking and decisions.

With these comments, we close this year's IBO report. **Please consider joining the next IBO summit in South Africa in September 2025** when the next report will be unveiled and the global blueberry industry will, once again, come together to empower a bright blue future for all.

Special thanks to Colin, Matt, Claudio, Violeta, and Sarah for their tenacious and tireless work to both collect and synthesize the data, capture the trends and tell the story. You have done a great service to the industry and I hope to partner with you in the next round.

Kind regards, and until next time!

-Cort Brazelton

Chief Editor, IBO Global State of the Blueberry Industry Report

SUPPORT THE IBO

If you are a participant in the industry and are not an IBO member, please join this voluntary organization. There is active global coordination and promotional work ahead and we need support. The organization's budget is remarkably small for what is done year in and year out. And, without the IBO, there is no Global State of the Blueberry Industry Report or member library!

We need your help and support, please consider joining.

<https://www.internationalblueberry.org/become-a-member/>

Until next time, best wishes and enjoy your blueberries!
Best Regards,

The IBO State of the Industry Report Team

SUPPORT

ACKNOWLEDGMENTS

The quality of the narratives in this report depends on the insights provided by interviewees. We would like to thank all the participants who volunteered their time and expertise to make this report a reality. The list below includes many of the names of those who have contributed, although it is not an all-inclusive list as many contributors have chosen not to be mentioned.

Alistair Campbell	Hans Liekens	Michael Brinkmann
Alyssa Houtby	Henk Vaandreger	Nabil Belmkaddem
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Antonella Fernandez	Ivan Leache	Raul Olivares
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Brent Walsh	Jason Smith	Roger Horak
Brian Boccock	Joe Vargas	Shako Tsintsadze
Brittany Lee	John Early	Shelly Hartmann
Bryan Ostlund	John Shelford	Simone Pierini
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Dominika Kozarzewska	Mano Babiolakis	Uriel Ben Heim
Evgeniy Kharlan	Manuel Garces Motiño	Vicente Jimenez
Fred Douven	Mario Steta	Zilfina Rubio Ames
Garland Reiter	Markus Duran	

ABOUT THE DATA

Introduction

The Global State of the Blueberry Industry Report exists for the purpose of empowering participants throughout the blueberry industry with the best information available. The IBO holds a conviction that a more informed industry and market is a healthier one.

Disclaimer

Collecting, synthesizing, and presenting data on a dynamic and diverse industry such as the global blueberry industry begs for a disclaimer, or perhaps more appropriately, a request for forgiveness.

Without a doubt there are regions with commercial plantings and production that have been neglected in this report. Over-reporting in some regions is also a possibility. The precision of planting and production figures provided varies widely, from very accurate to simplistic best guesses. The data and analysis presented in this document is therefore not intended to be presented as hard fact, but rather to capture trends - both macro and micro - to achieve a better understanding of where the blueberry industry has been, where it is today, and, ultimately, to speculate as to where it is going. Please, the authors request understanding for any omissions, errors and other weaknesses in this report.

Should you encounter a discrepancy that should be fixed please inform us at info@agronometrics.com.

Units of Measure

All production and planting data in this report are presented using the Metric system, specifically thousands of metric tons and hectares. For conversion to the English Imperial system, there are 2,204 lbs. in a metric ton and 2.47 acres in a hectare.

Structure

Organizing Geography: This report is broken down by geography which presents the world in vertical 'thirds', consisting of the Americas, Europe-Middle East-Africa (EMEA), and the Asia-Pacific. Within those regions are the respective sub-regions and countries which in some cases are further broken out into Country regions and producing areas. The content of this report is organized using the described hierarchy and ranked by the 2023 production volume.

Subregions - Subregions are disaggregations of the regions grouped geographically into areas with similar, or related characteristics for the production of Blueberries:

- Americas - South America, North America, and Mexico/Central America.
- Asia - Asia, Pacific, and Central Asia/Indian Subcontinent
- EMEA - Southern Europe/North Africa, Eastern Europe, Western/Central Europe, Africa, and the Middle East.

Counter Cyclical Production

Wherever possible the annual aggregations of this report intend to capture the complete season of production. The first year of a season is used to compare between calendar year producers and split year producers. This means that the 2021 season in the northern hemisphere is comparable to the 2021/2022 season for the southern hemisphere.

An example of this would be the totals for the Americas, where North America uses the normal calendar as its season, while South America is a split year producer. When both are presented at the same time they would both be reported using the year initiating the season.

Processed Blueberries

This is a standard industry term which captures all 'non-fresh' forms of blueberries and related vaccinium species. Examples include, but are not excluded to, IQF, block frozen, pure, juice stock, block frozen totes, and also provides reference to dried and dehydrated derivatives of blueberries (the weight and volume data for which is quite unreliable). The IBO report presents "processed volume" in terms of net volume at harvest or packing (IE post initial sorting but before extensive processing diversion to frozen, IQF, juice, etc). Thus the figure is a reference to total crop diversion to the 'macro' channels of Fresh and Processed.

IBO Hectare, Production Statistics and Narratives

Sources of Information and Methodology

Country Members of the IBO: Are the leading source for data and information on individual countries in this report when available. When country member data was not available, more emphasis was placed public sources and individual contributors.

IBO Associate & Marketer Members: Volunteer members of the IBO from throughout the private sector have been generous with data and intelligence on the regions where they are active. They have provided particularly unique insight on key trends and intelligence.

Interviews with Industry Leaders: There is no replacement for person-to-person interviews and discussion. The information shared in these conversations has been invaluable to improving the amount of intelligence available to the industry via this report. Care has been given to not disclose sensitive information that is meant to remain private. Thank you to all who took their time to be interviewed and particularly their willingness to be open and share their knowledge, experience, and insights.

Note on Individual Contributors: Many thanks to the independent parties and individuals who provided valuable input and intelligence to the report team. It has enhanced the quality of the information in the report.

Anonymity: For reasons of confidentiality and/or privacy, many contributors are anonymous. Their willingness to provide information, insight, perspective, and intelligence was invaluable.

Media: The quality of media reporting on the blueberry industry has improved in recent years. Although many trade publications still tend toward general treatment of basic market issues or advertorials, there are new sources of information, largely online, which are beginning to focus on issues and stories which provide valuable reporting on the industry. Work by Agronometrics, Fresh Fruit Portal/Portal Fruticola, Fruitnet, Fresh Plaza, Blueberries Consulting, Italian Berry and The Business of Blueberries Podcast have proven particularly useful in cases.

Interviews with Retailers, Buyers, and End Users: Without the input of the final purchasers this report would be incomplete. They are the ones who deliver the product to the consumer and, as such, have a significant impact on decisions regarding products, promotion, and pricing, to name a few. As a result, buyers for supermarkets, consultants in marketing, food companies, and other purchasers were interviewed to ensure their perspective and input was included. Special thank you to those who help get our product to consumers and for your willingness to take the time to share insights.

Missing or Anomalous Production Data

Below is a list of issues that have been identified by the report team to have an effect over the statistics being reported and where practical to do so the steps taken to mitigate the adverse effects on the content being presented in this report.

China – The data used by this report for Chinese hectares planted and production are the best efforts of the report team to consolidate variable reports made available from within China against qualitative assessments made through the interview process and technical analysis of historic volumes to publish the data that we feel is most representative of the growth and development of the internal Chinese market. While we have concerns about the accuracy of this data, it is also, put simply, the best data we have today.

Trade Data

Agronomics Trade Data

The IBO report gets to benefit from the work the Agronomics team has done compiling blueberry trade statistics through their Global Trade Data service. To learn more about the trade data used in this report visit <https://www.agronometrics.com/global-trade-data/>

To offer context and match the trade statistics with the IBO data, the groupings and associations within the trade dataset have been modified to match the organization and structure of the IBO report.

Below is some helpful terminology to help understand the titles of the charts produced for this report and other nomenclature:

Reporter - Reporter, or country being written about

Partner - Partner, or country outside of the region being written about, when talking about Exports.

Origin - Partner, or country outside of the region being written about, when talking about Imports.

Missing or Anomalous Trade Data

Accuracy - Much of the Trade Data used by the report is sourced under the HS code 081040 which includes the imports and exports of Fresh Cranberries, Blueberries and Other Fruits of The Genus Vaccinium. For many countries, six digits of resolution is a limitation of the data available, meaning that there is no way of differentiating between a cranberry and a blueberry. Fortunately, for most of the world this aggregation is not an issue as all major production of cranberries and other fruits of the Genus Vaccinium family is concentrated in North America where detailed trade statistics specific to blueberries are available. With this in mind, it is entirely possible that some of the records reported as Blueberries in this report, may indeed be cranberries.

Data Availability - To report on global imports and exports of blueberries from around the world, the dataset works with governments from around the world to collect and make global trade data available to the general public. This said, the availability is dependent on the collection and dissemination efforts of local authorities/associations, data discrimination policies and politics for more than 150 contributing countries. As such, not all origins provide perfectly accurate or timely information for us to work with.

Morocco - Unfortunately, the trade statistics out of Morocco are rather limited. This has a large impact on the numbers for Southern Europe/Northern Africa as Morocco is the second-largest producing origin in the region and accounts for a large percentage of the production volume. To account for this and present as complete a picture as possible. The statistics for the sub-region and the country are being implied from the imports of trade partners like Germany and the UK which do report on imports from Morocco.

Fruit from Morocco may also be partially double counted in the Spanish export statistics.

Mexico - Mexico is in a similar situation to Morocco. With no public trade data available the values for the origin and the aggregations it is a part of are being inferred from its trade partners.

Netherlands - The Netherlands is an important transit point for imports into the EU. As such the volumes being re-exported may be double-counted in our statistics.

Other Origins/Destinations - Similar calculations inferring imports or exports from trade partners were made for the subregions Middle East, Asia in most cases due to lack of available data from the countries being reported on.

Yield Calculation Methodology

The yield figures of this report are calculated by dividing the production total in kilos by the hectares hypothetically of an age to be in production for each producing region as volunteered by IBO members and individual contributors.

Calculation of Growth from Hectares and Yield

The metrics of growth from hectares and growth from yields are a useful tool to help understand the driving forces behind the increase, or decrease in production observed within the different producing areas and regions. Where growth from yield exceeds growth from hectares this points to most of the growth coming from increased efficiencies in production, through new cultivars or farming methodologies. Whereas, when growth comes mostly from hectares, this indicates that increases in volume are primarily being driven by expansion of land dedicated to the commercial production of blueberries.

Below are the equations used to calculate the different types of growth being measured. For regions composed of several producing areas, the results of these equations are added up to form a total.

Licencing and Redistribution of Content from the Report

All content within this report, inclusive but not limited to charts, tables, texts, graphics, and any other data or materials ("Content"), is made available by the International Blueberry Organization (IBO) for the benefit of the broader blueberry community and beyond.

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"Source: International Blueberry Organization (IBO)"

"Source: IBO" for industry specific applications where readers know of the organization.

"Source: Agronomics and IBO"

"Source: Agronomics Global Trade Data"

As a general guide, use the same source that is used within the publication itself to reference data, or as otherwise reasonably designated by the IBO.

While the IBO makes no warranties or representations of any kind concerning the accuracy, suitability, or safety of the information contained in this report, it encourages the free dissemination of its Content for the betterment of knowledge and innovation within the blueberry industry and beyond.

2024 COVER DESIGN

Each year, significant effort goes into designing the cover of the IBO report, aiming not only to capture attention but also to convey deeper insights about the global blueberry industry. This year, we have introduced a dedicated section to explain the concept behind the cover design.

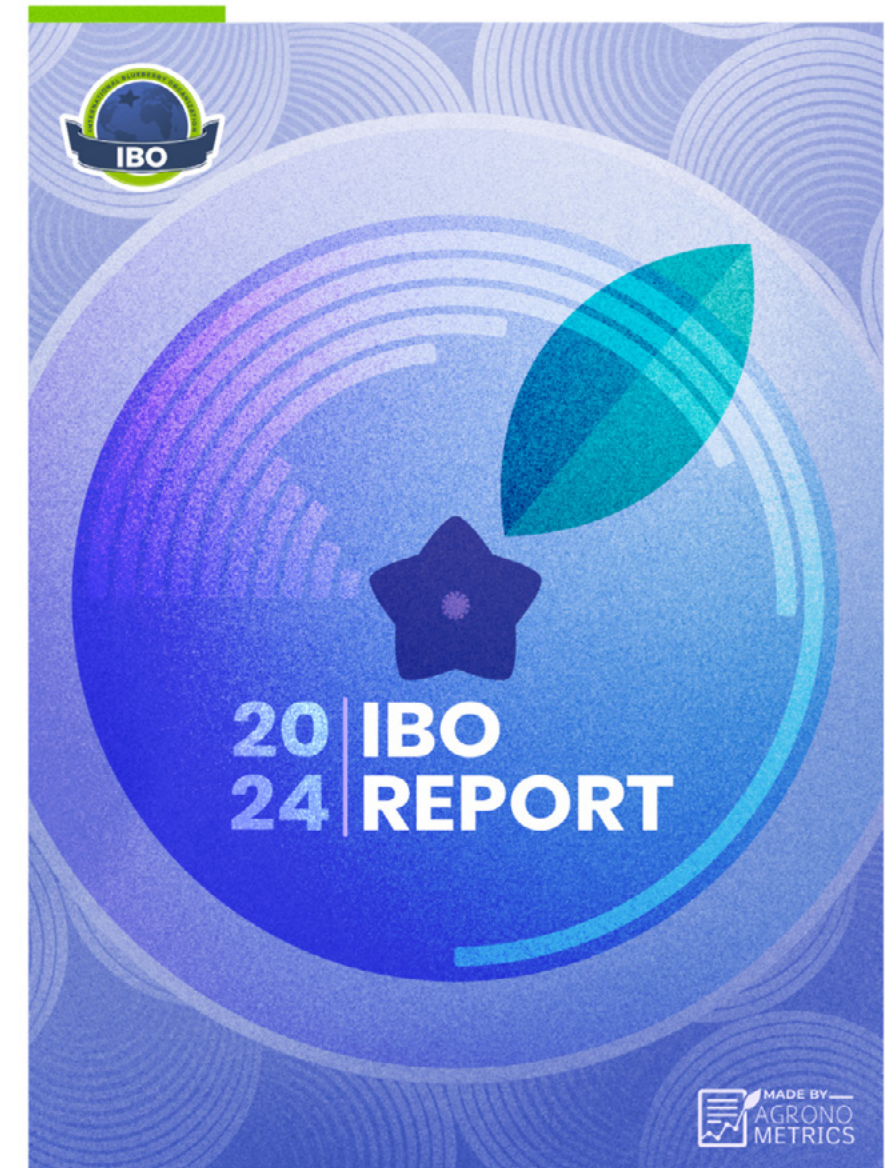
The 2024 cover features a meticulously crafted composition where the focal point is a blueberry. However, upon closer examination, the blueberry reveals a hidden figure—a radial bar chart. This chart represents the Top 10 countries by blueberry production for the past season, highlighting the global leaders in the industry.

The radial bar chart embedded within the blueberry serves as both an artistic and informative element. It symbolizes the intersection of nature and data, blending the organic beauty of the fruit with the precision

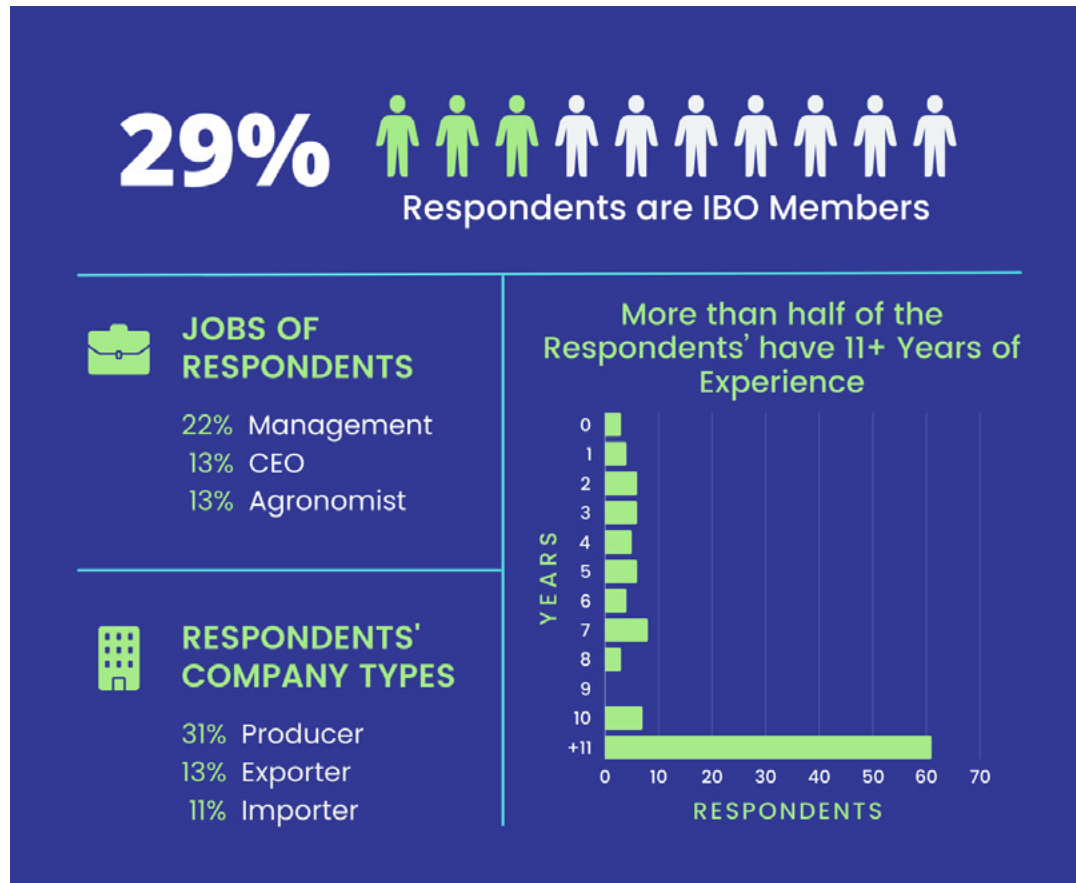
of statistical representation. This visual choice underscores the importance of data in understanding and driving the global blueberry market.

Top 10 Blueberry-Producing Countries for the Last Season (000 MT)

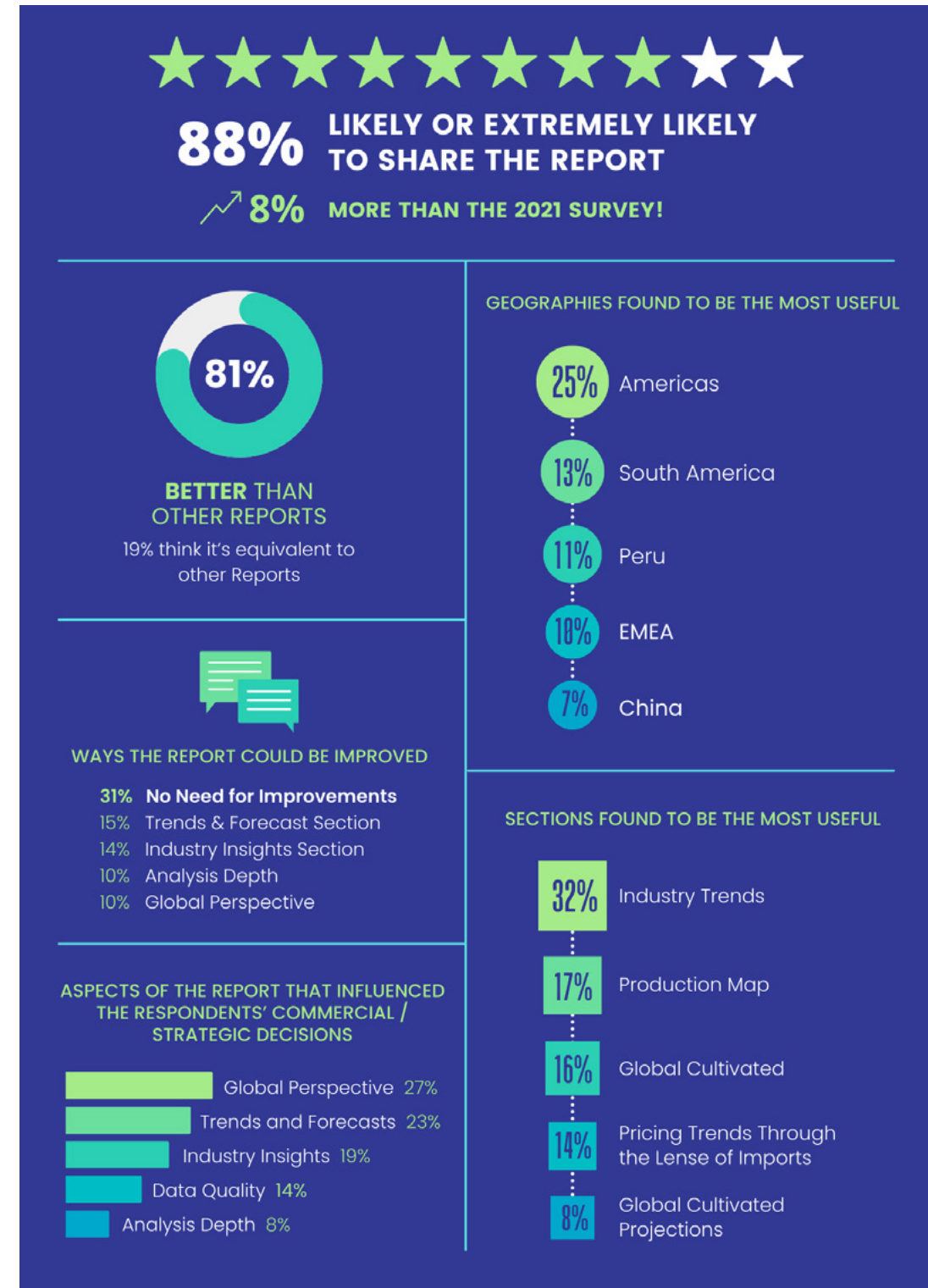
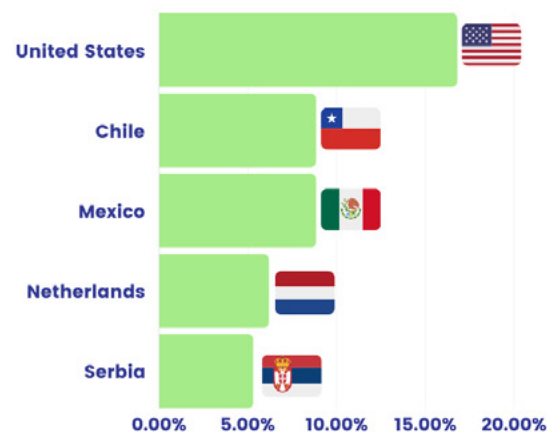
China:	526.31
United States:	356.69
Peru:	299.67
Canada:	196.15
Chile:	166.35
Mexico:	75.87
Spain:	69.19
Poland:	68.50
Morocco:	47.07
South Africa:	30.50



2023 READER SURVEY



TOP 5 RESPONDENTS' LOCATIONS





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