

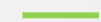


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2 March 2022

South African Blueberries:

Outlook 2022-2031



BerriesZA Industry Feedback





Structure

1. Quick overview of services to BerriesZA
2. Blueberry Sector Model Development & Outlook
3. Farm Model Development & Farm profitability
4. Risks & Opportunities in the Outlook

Overview

BerriesZA has commissioned BFAP to develop economic models for South Africa's blueberry industry

- Annual Baseline Outlook Projection 2022-2031
- Farm Simulation Model for typical blueberry enterprises
- Feedback to Growers on the performance of the industry
- Develop/assist with running scenarios for planning and policy discussions
- Independent research and analysis on topics such as employment, environmental impact or other value chain dynamics to support decision making



COMMODITY &
MARKET INSIGHTS



CONSUMER & FOOD
ECONOMICS



ENTERPRISE
BUDGETS



FARM LEVEL



BIO-PHYSICAL
RESOURCES



INTEGRATED
SYSTEM



AGRI SOCIO
ECONOMICS



AFRICA
FOOTPRINT

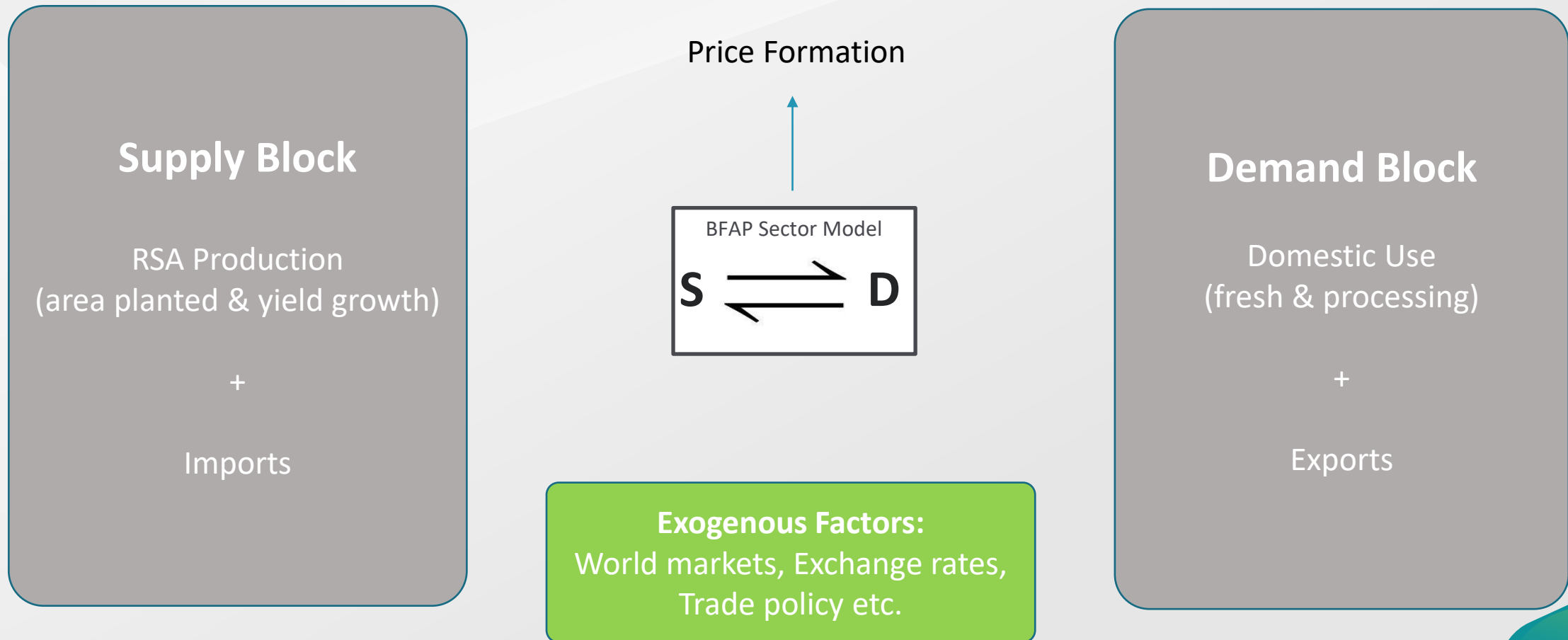


Sector Model & Outlook



Partial Equilibrium Models

The basic setup of Sector models is based on the fundamental principle that supply = demand





Important considerations

RSA is a small player in the world blueberry production (2% of total tons produced), thus we have basically zero impact on world prices

Model needs to capture the Northern vs Southern Hemisphere dynamics and large differences in demand patterns (Major markets are USA, UK + EU & China)

There is no formal database that captures blueberry production, although the IBO has done good work recently

Blueberries are considered a normal good in the US, whilst in South Africa it's still a luxury good

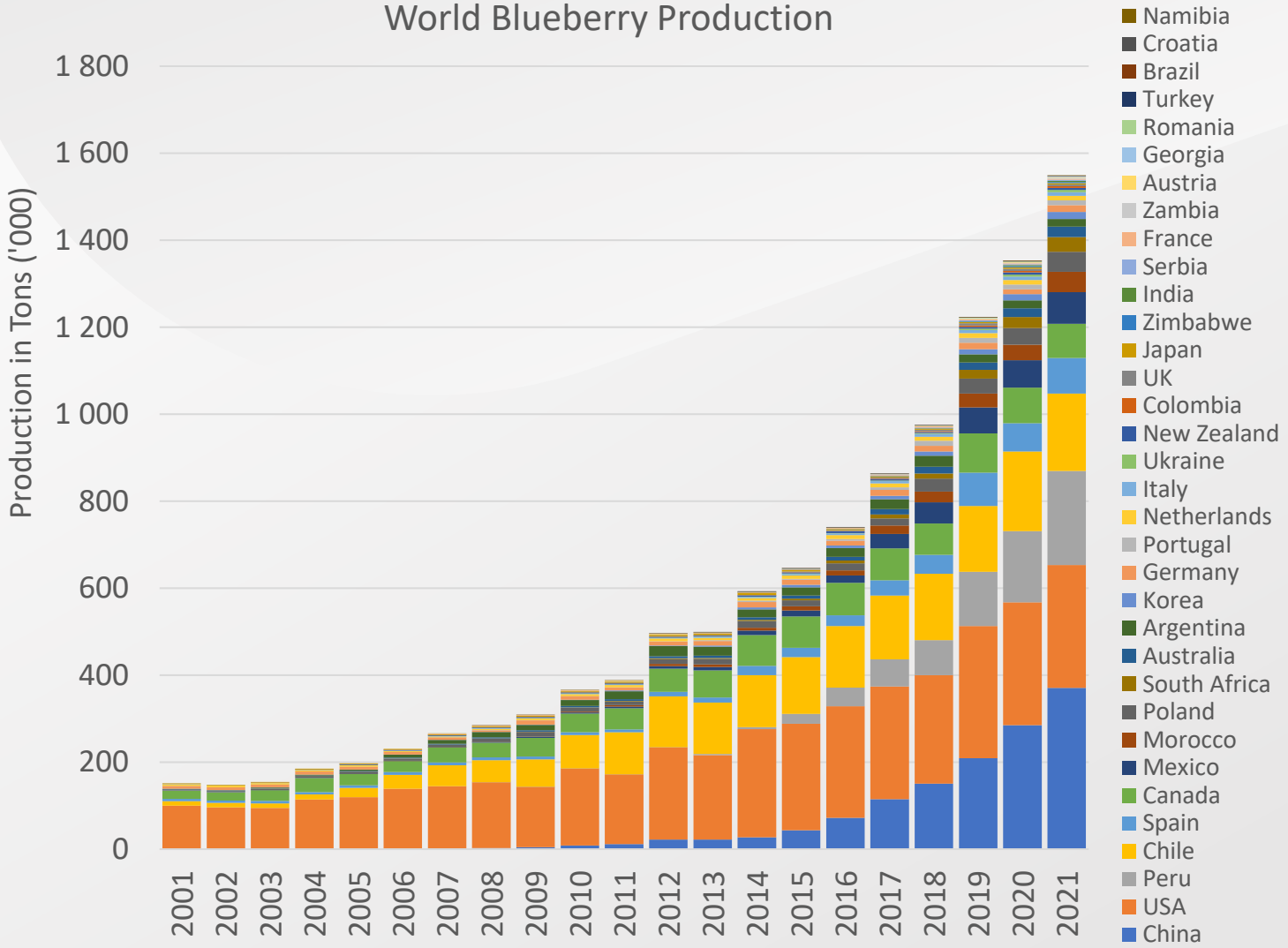
Since there are no market projections for world blueberry prices, we develop an equation to estimate world supply & demand and price setting

Note, there are a few non-market or unobserved factors that influence the market that is impossible to model and some 2021 statistics still needs to be published



Global Blueberry Supply

World Blueberry Production



World supply has grown significantly

Average Annual Growth Rates (%)			
20-Years	10-Years	5-Years	1-Year
12.3	14.9	20.3	14.5

2021 highlights:

World Output = 1.5 million Tons
 Area Planted = 218 000 hectares
 Global yield = 7.1 T/ha

Main drivers of growth past decade:
 82% Area expansion
 16% yield improvement

China & Peru largest contribution on growth recently

Season Updates Top 10 for 2021

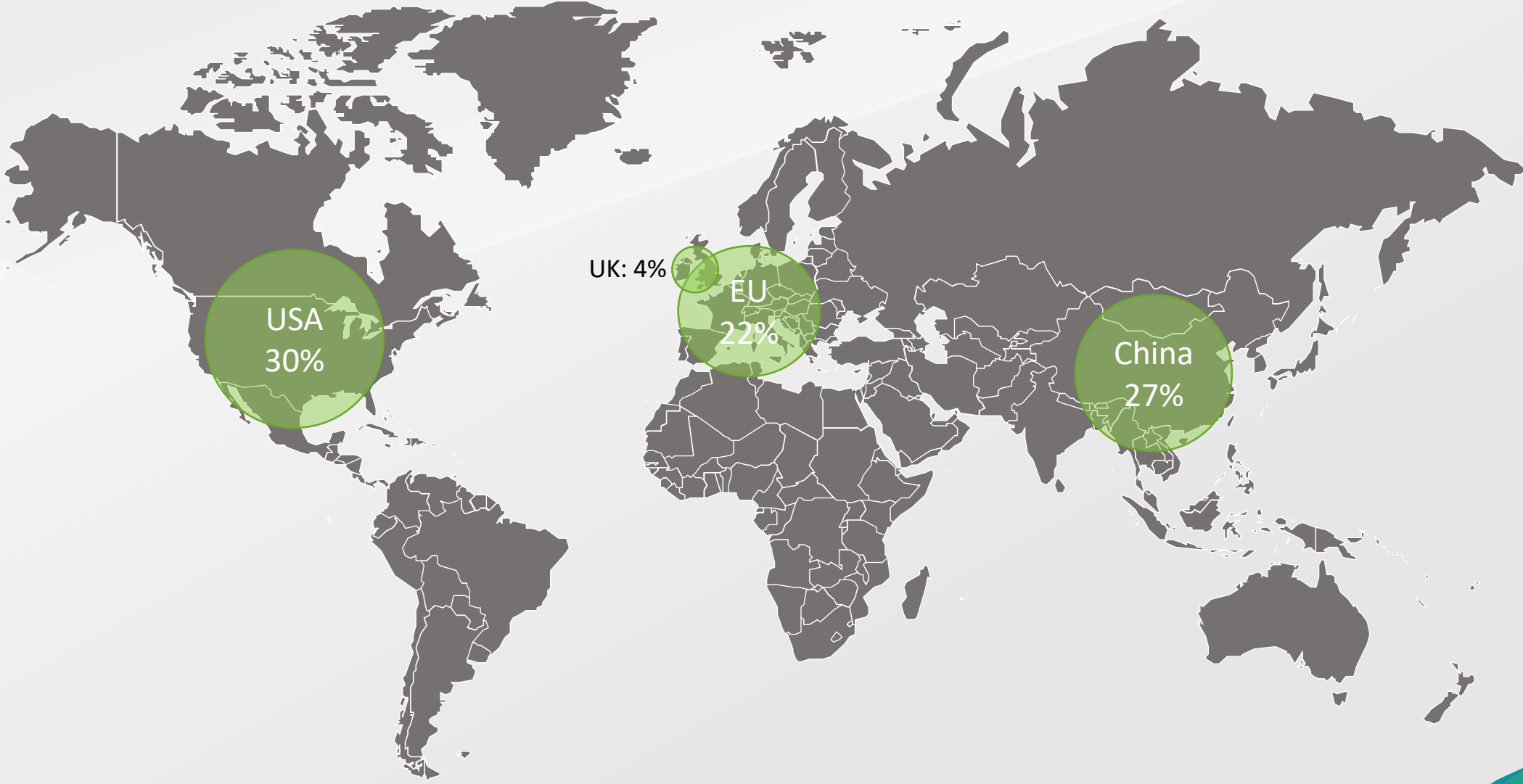


Producer	Production in Tons			Past Year Growth	Comment
	2015	2020	2021		
China	43 244	285 050	370 565	+30%	China sees continued growth, but limited data available
USA	245 363	282 690	293 432	+4%	Exports have improved, but data suggest local production same as last year
Peru	22 541	179 305	227 971	+27%	Strong growth from a high base
Chile	130 480	183 460	178 000	-3%	Value chain challenges affecting harvest & export
Spain	21 060	64 410	81 801	+27%	Good season with strong export growth
Canada	72 547	81 780	78 509	-4%	Challenging season with flooding in BC and pollination challenges
Mexico	13 813	63 050	72 508	+15%	Decent growth and export performance
Morocco	9 160	36 000	46 800	+30%	Strong growth
Poland	14 100	38 130	46 519	+22%	Good season based on export volumes
South Africa	3 481	25 234	33 182	+31%	Good season, but many challenges in terms of price and pack-outs



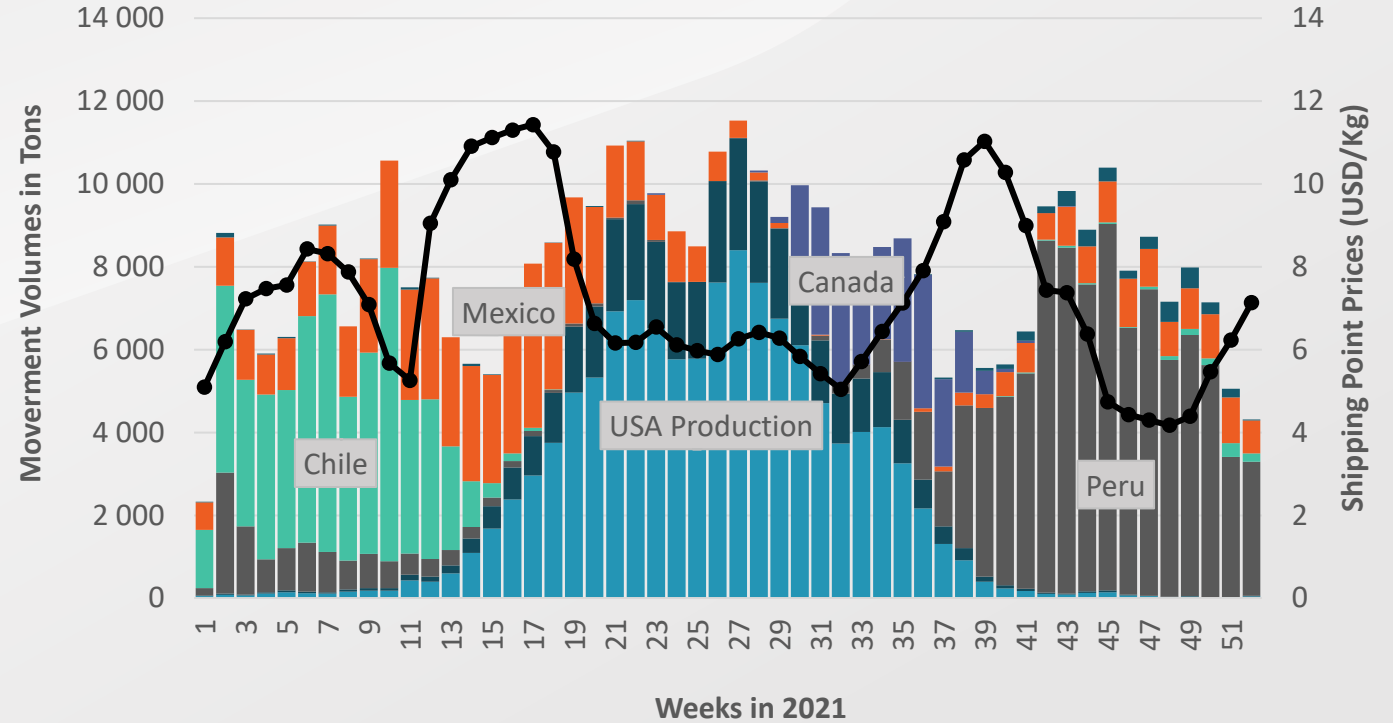
Blueberry Trade Dynamics

Consumption

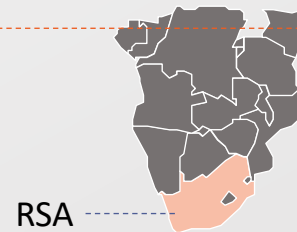


Blueberry Trade Dynamics

Consumption & SH Supply to the US



Between week 14-36, the USA is supplied by own production and NH countries



Peru dominates US Imports after week 36 and Chile enters this market from Week 1-13.

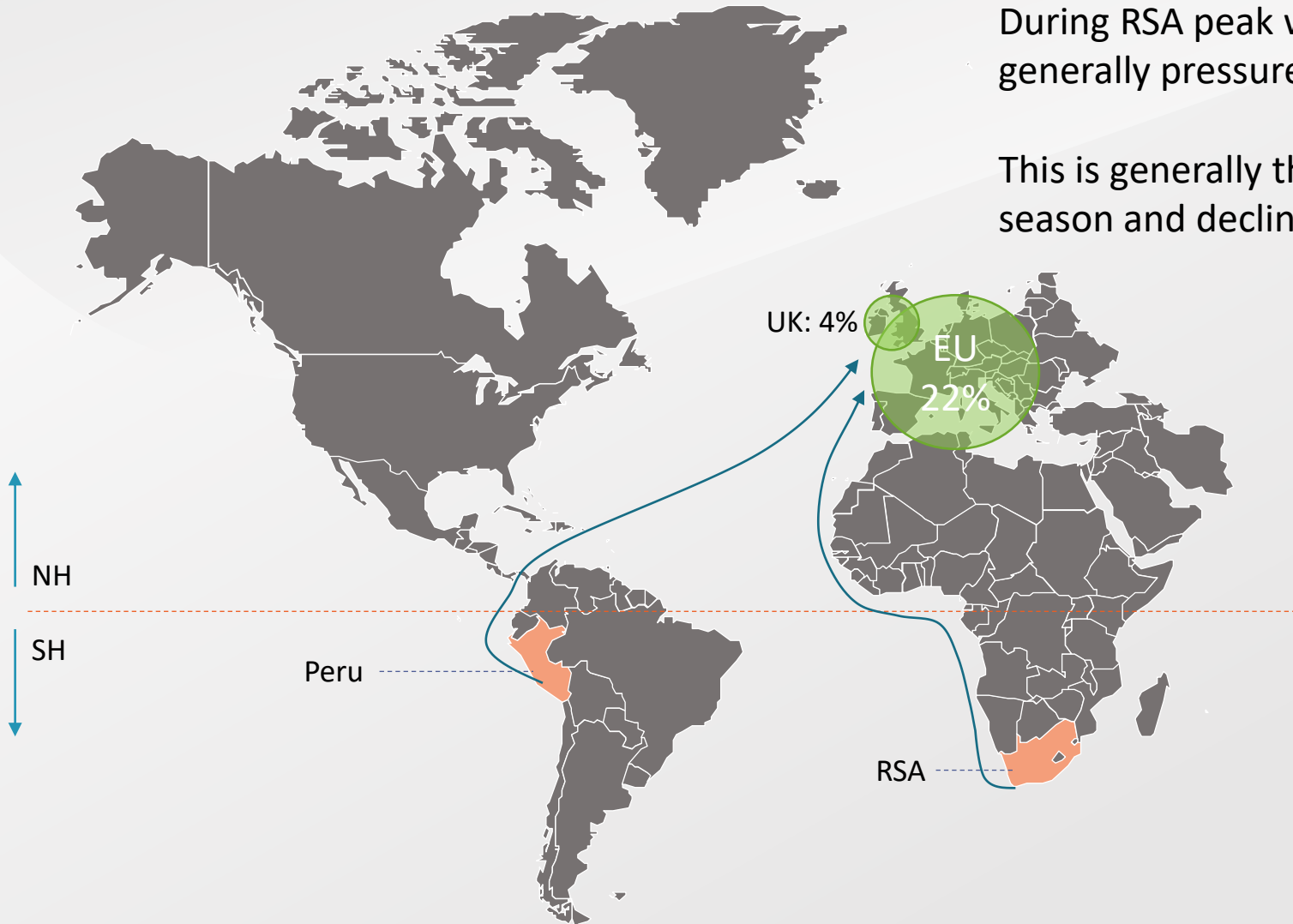
Blueberry Trade Dynamics

Consumption

During RSA peak with Peru's volumes shifting to Europe there generally pressure on prices

This is generally the major driver of why prices start of the season and declining substantially towards end of December

BUT, Peru and Chile have free market access to China which make up 27% of world imports



Peru

How much will Peru continue to grow?

- Peru's 128 million hectares are made up of 60% forests and 30% shrubs or natural veld and only 3% is agricultural land.
- Horticulture export crops have replace annual crops, due to abundance of water availability (2015-2020)

Citrus: **+12 800** ha

Avos: **+17 000** ha

Grapes: **+8 500** ha

Other fruit: **+4 577** ha

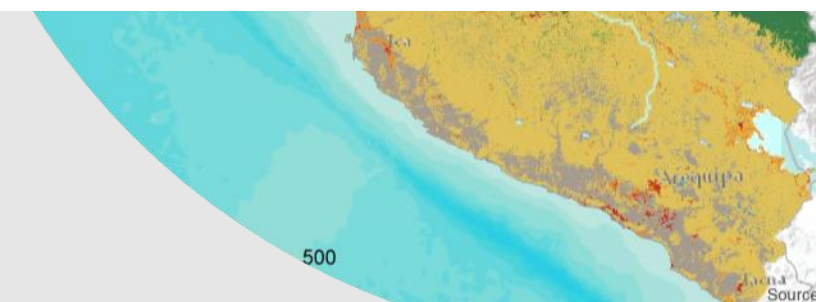
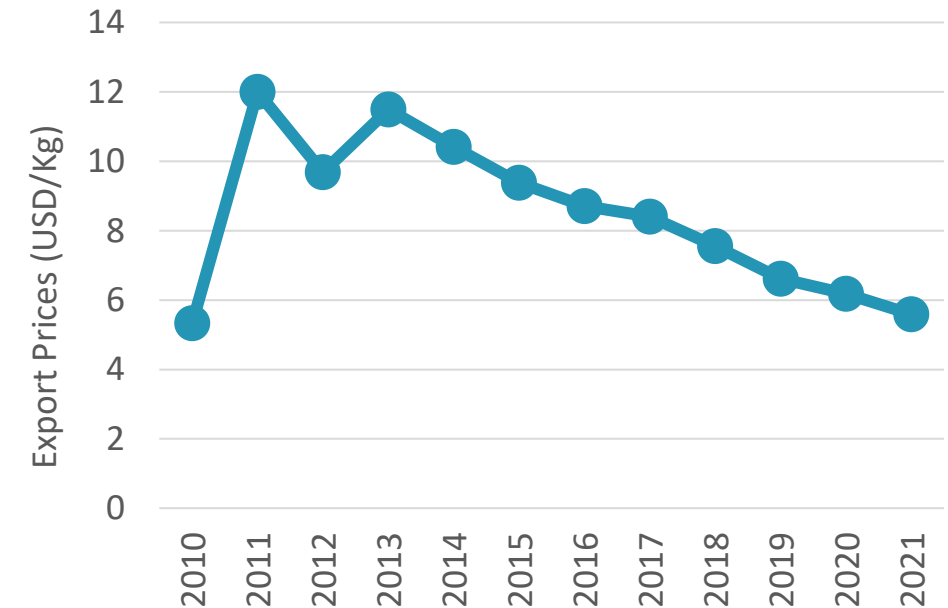
Blueberries: **+12 000** ha

Prices for blueberries have declined consistently since 2011

Politics: New view is that large co-ops funded by FDI is seen to not contribute enough to economic growth (Lima-Consensus questioner).
New drive on land reform and increases in minimum wages



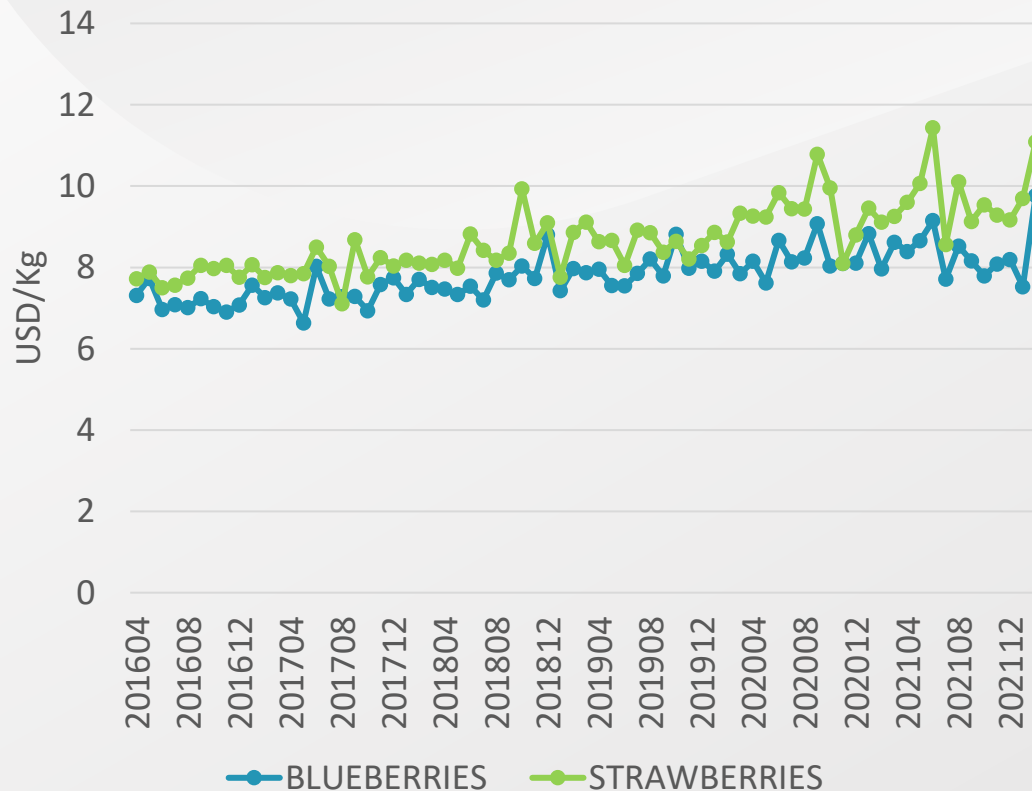
Peru Blueberry Exports Prices



Price levels in Target Markets

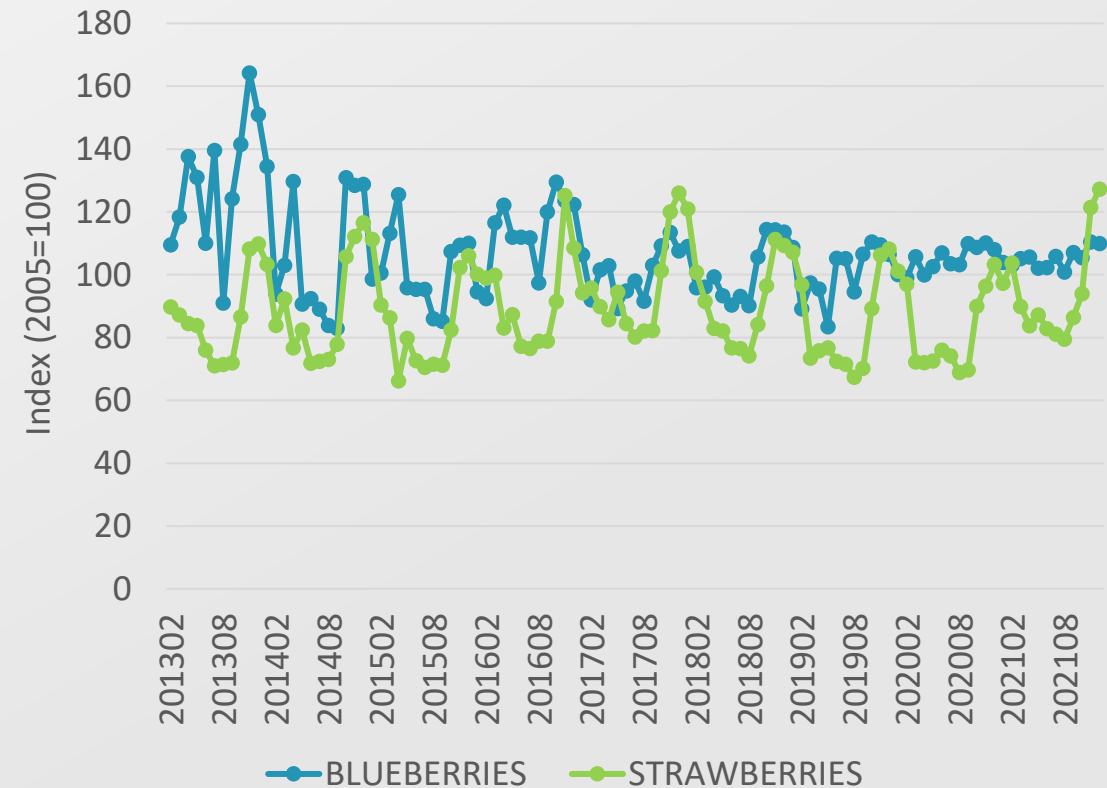
Price levels for blueberries in the major markets have been flat for some time

US Retail Prices



Source: USDA, 2022

UK Retail Prices

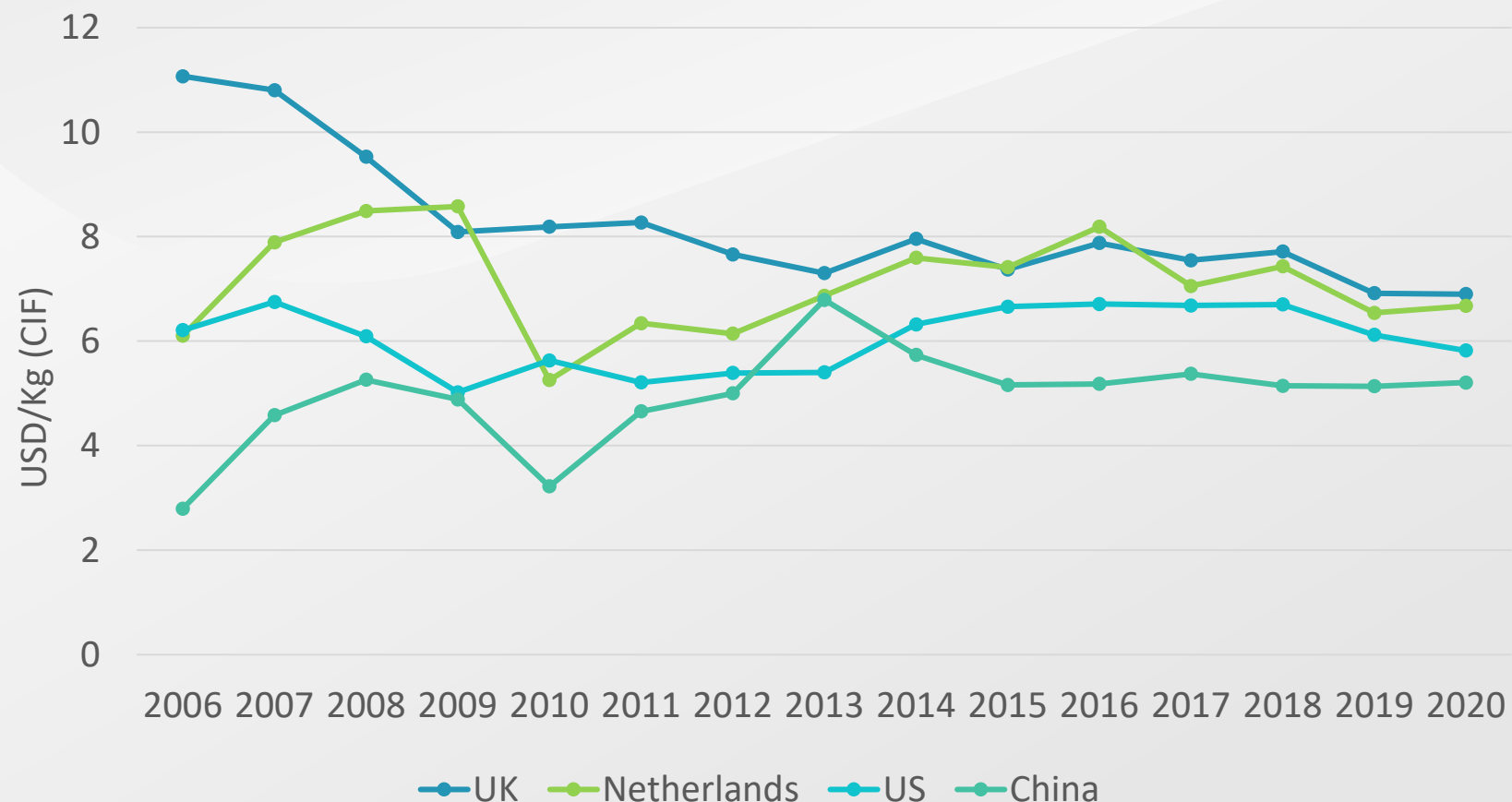


Source: ONS, 2022



Price levels in Target Markets

The same trend can be observed for Blueberry Unit Prices for major importers





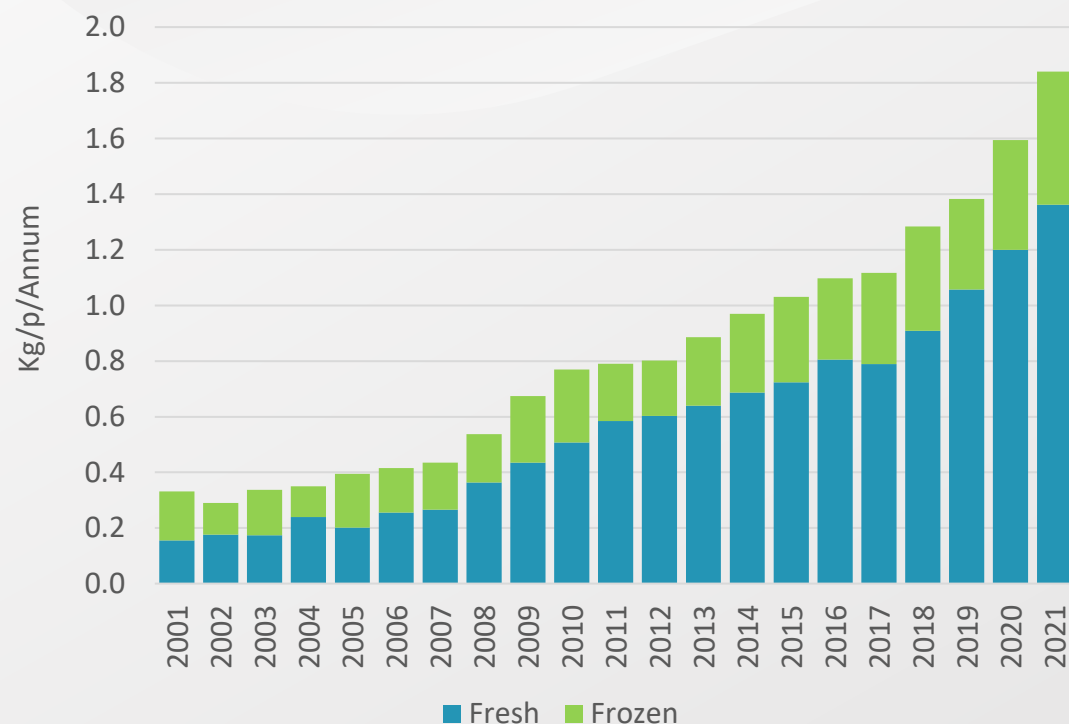
Global Blueberry Demand

There is large difference in the maturity of different markets

Blueberries in the USA is still growing strongly and you can find it almost anywhere and any time during the year.

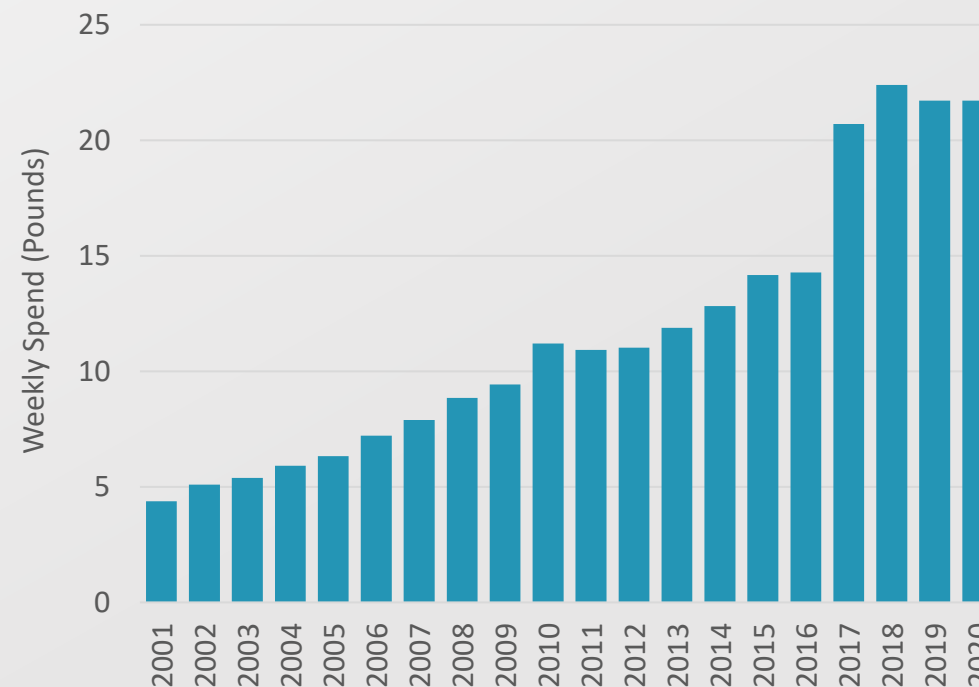
The US Highbush Blueberry Council released a study on consumption in the US, and there has been strong growth in various segments

US per Capita Blueberry Consumption



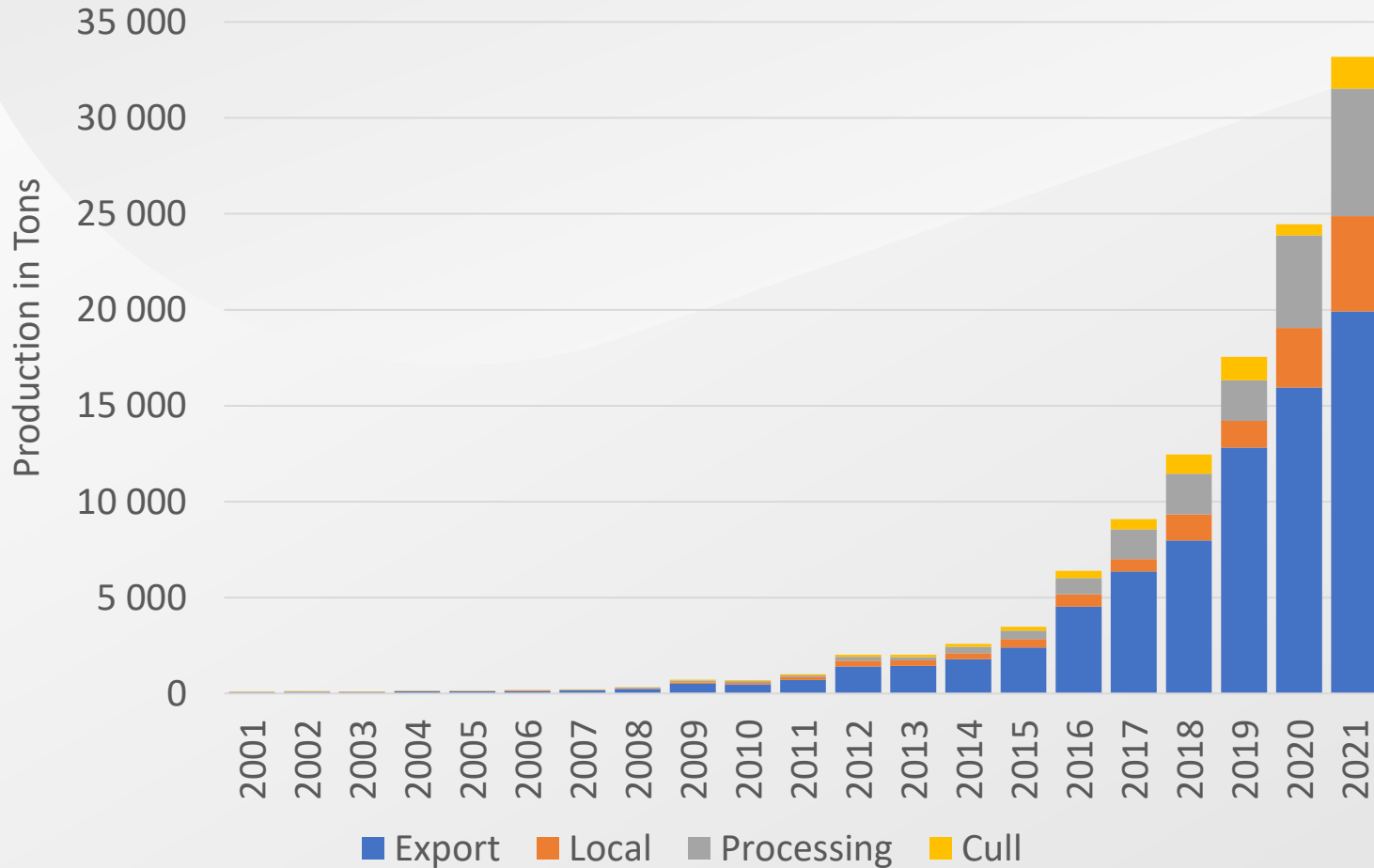
Source: USDA, 2022

UK per Capita Spend on Berries



Source: ONS, 2022

South African Harvest Update



Industry continues it's strong growth, but 2021 season has been a challenging one

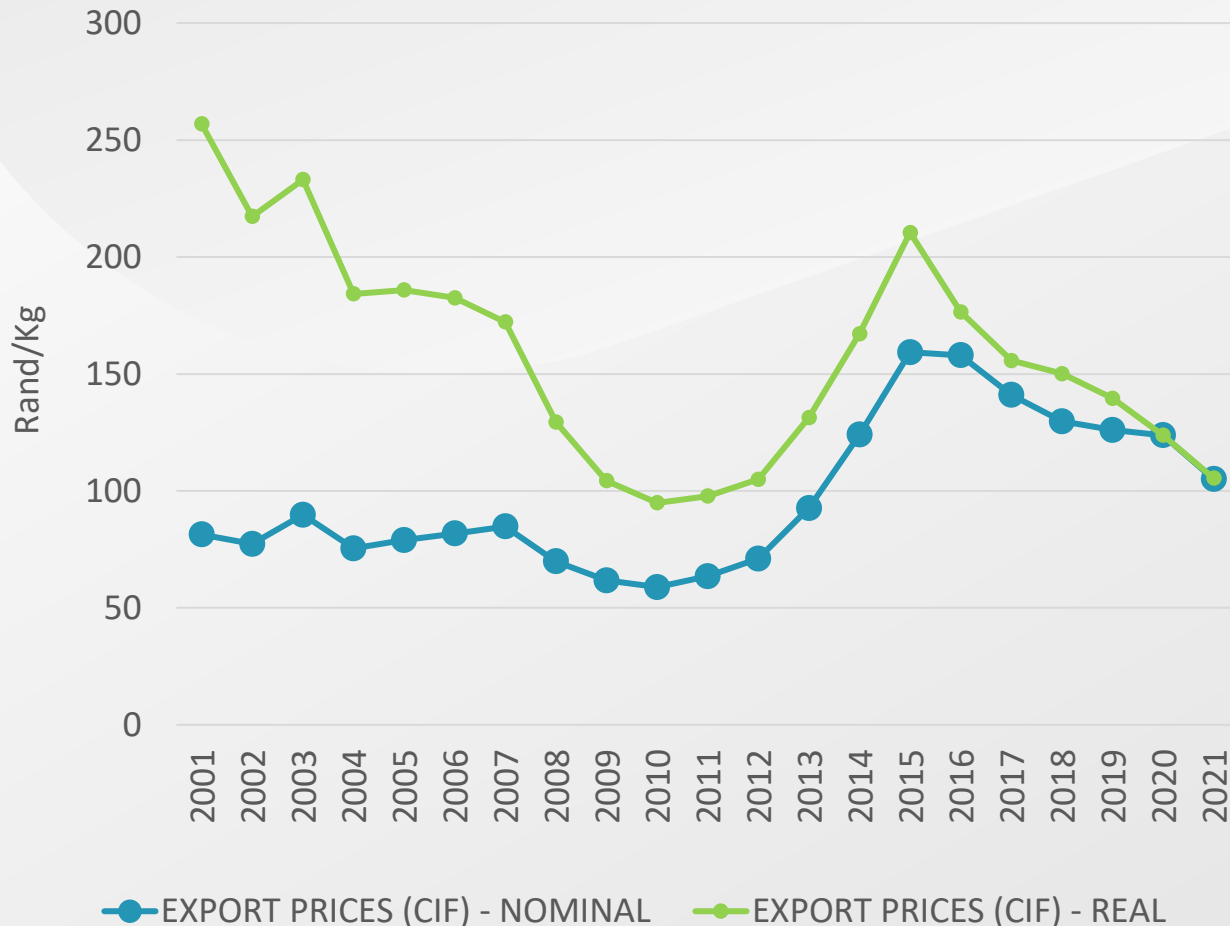
Early estimates:

- Lower than expected exports (60%)
 - Price pressure
 - Quality issues with weather
 - Ports issues and long travel times
- Local market held up nicely even though there were larger volumes (60% higher than in 2020)
- Frozen berries were 20% of production, with cull slightly higher at 5%
- Average yields dropped slightly in 2021

Total Marketable prod est = 31 523 tons

South African Harvest Update

CIF Derived Price



Early indication is that export prices were down 14% lower than 2020

Largely driven by lower prices in the EU market

There are many challenges to get accurate price information and SARS data is problematic

We derive CIF-specific price based on RSA export to UK and the Netherlands

We'll update prices for 2021 as we receive more information and feedback from industry



Outlook Assumptions

RSA Macro Assumptions. There is obviously a lot of questions on the impact of Russia invasion

Indicator	2018	2019	2020	2021	2022	2023
Real GDP Growth (%)	0.8	0.2	-6.4	4.7	2	1.8
CPI (%)	4.7	4.9	3.3	4.6	4.7	4.5
Prime Interest Rate (%)	10.09	10.14	7.86	7	7.56	8.17
Exchange Rate (ZAR / USD)-Jan	13.23	14.55	16.46	14.35	15.35	15.80
Brent Crude Oil (USD / Barrel)	72	65	43	70	74	65

Russia impact on blueberry market

Relative small importer of blueberries (8 000 t) mainly from Peru. But bigger impact on strawberries with 44 000 t imported in 2020

26 Feb: \$97

1 March: R15.37



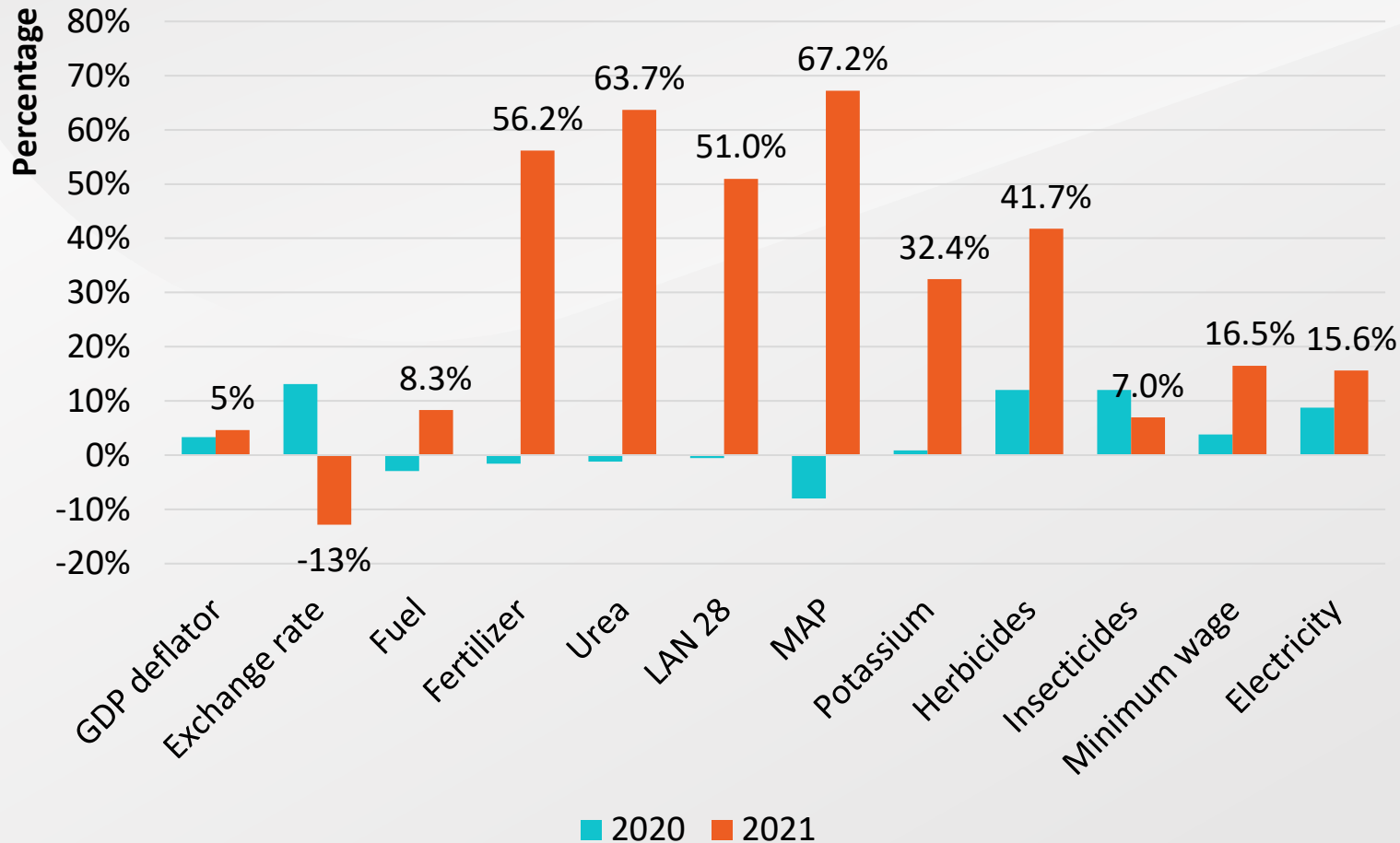
Geopolitical tensions in Black Sea Region a major uncertainty

Escalation of conflict in Black Sea region could impact agricultural markets in multiple ways

- Both countries are major exporters of key agricultural commodities
 - Russia is the leading exporter of wheat, Ukraine 5th largest
 - Ukraine is 4th largest maize exporter, Russia 10th largest
 - Russia is second and Ukraine 10th biggest exporter of sunflower seed
 - Combined share in global trade:
 - Wheat: 30%
 - Maize: 17%
 - Sunflower: 16%
 - Sunflower oil: 32%
 - Russia is the leading exporter of chemical fertilizer: 14%
 - Russia a major supplier of gas to the EU
 - Russia is a major exporter of petroleum oils
 - General uncertainty likely to weaken the Rand

Input costs have already increased sharply

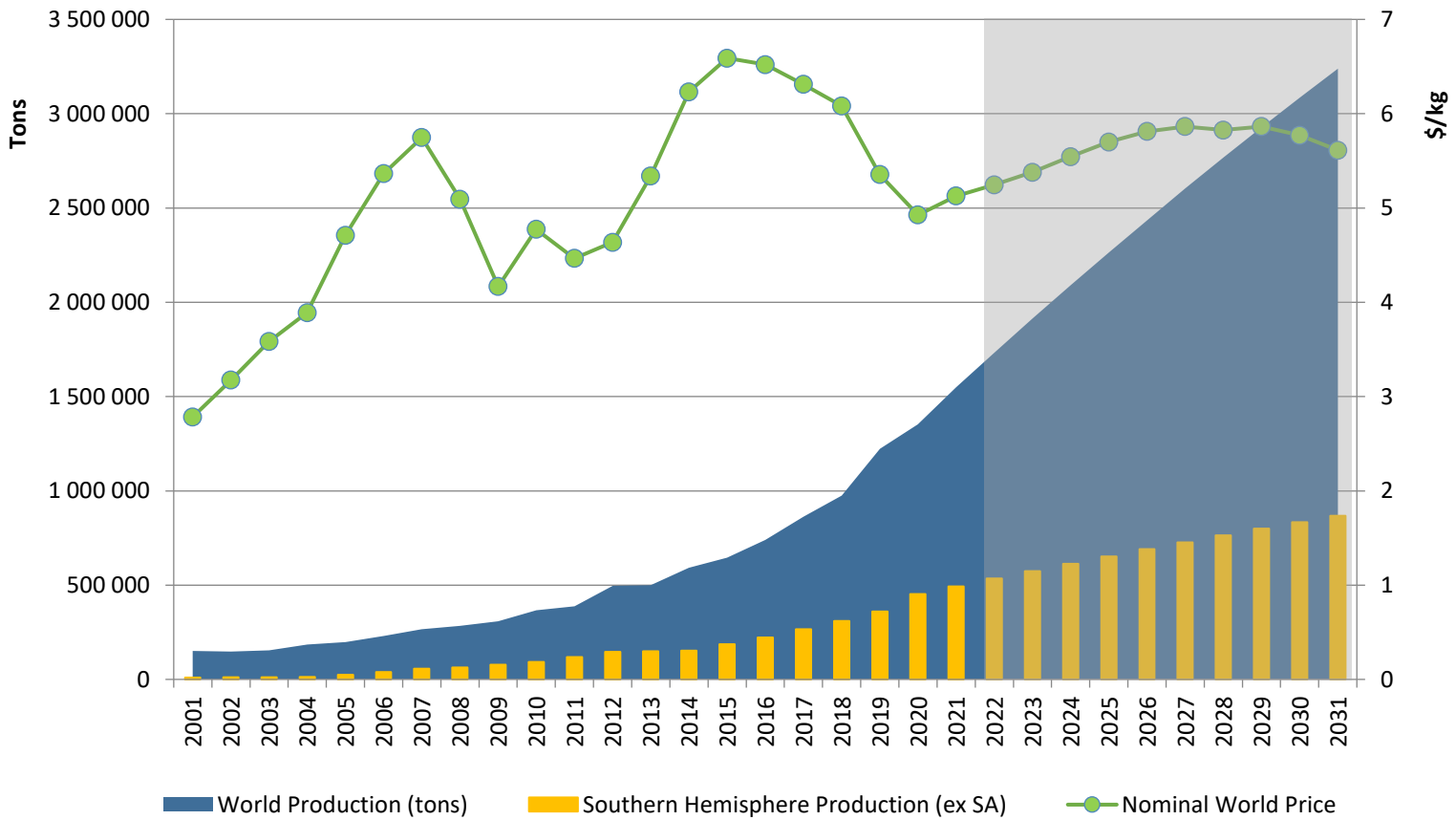
Agricultural Input Cost Inflation
Year-on-year Percentage Change



- Key factors driving fertiliser costs
 - Perfect storm of tight supplies (Saudi, EU, US), rising raw material costs (oil & gas), increasing demand (high crop prices), logistics constraints & high freight rates
 - Weather conditions – e.g. Hurricane Ida
 - Policy environment – Nutrient export restrictions in Russia & China
- Chemicals also driven by raw material shortages & COVID-19 related production constraints
- Risk from escalation of Russia-Ukraine conflict

Global Outlook

Blueberry Global Outlook (2031)



World Outlook = 3.2 million tons 2031, but growth slows to 7.7% per annum.

World Prices have increased between 2021 and 2020 and we project that prices will increase slightly in the medium term

In 2022 we expect that US farmers will have to give cost inflation on to consumers

Continued demand growth, whilst supply is slowing down

The Outlook is highly dependent on area planted in China and Peru

IBO Projection for 2024/25 = 2.2 mill ton
BFAP Projection = 2.17 mill ton

RSA Outlook toward 2031

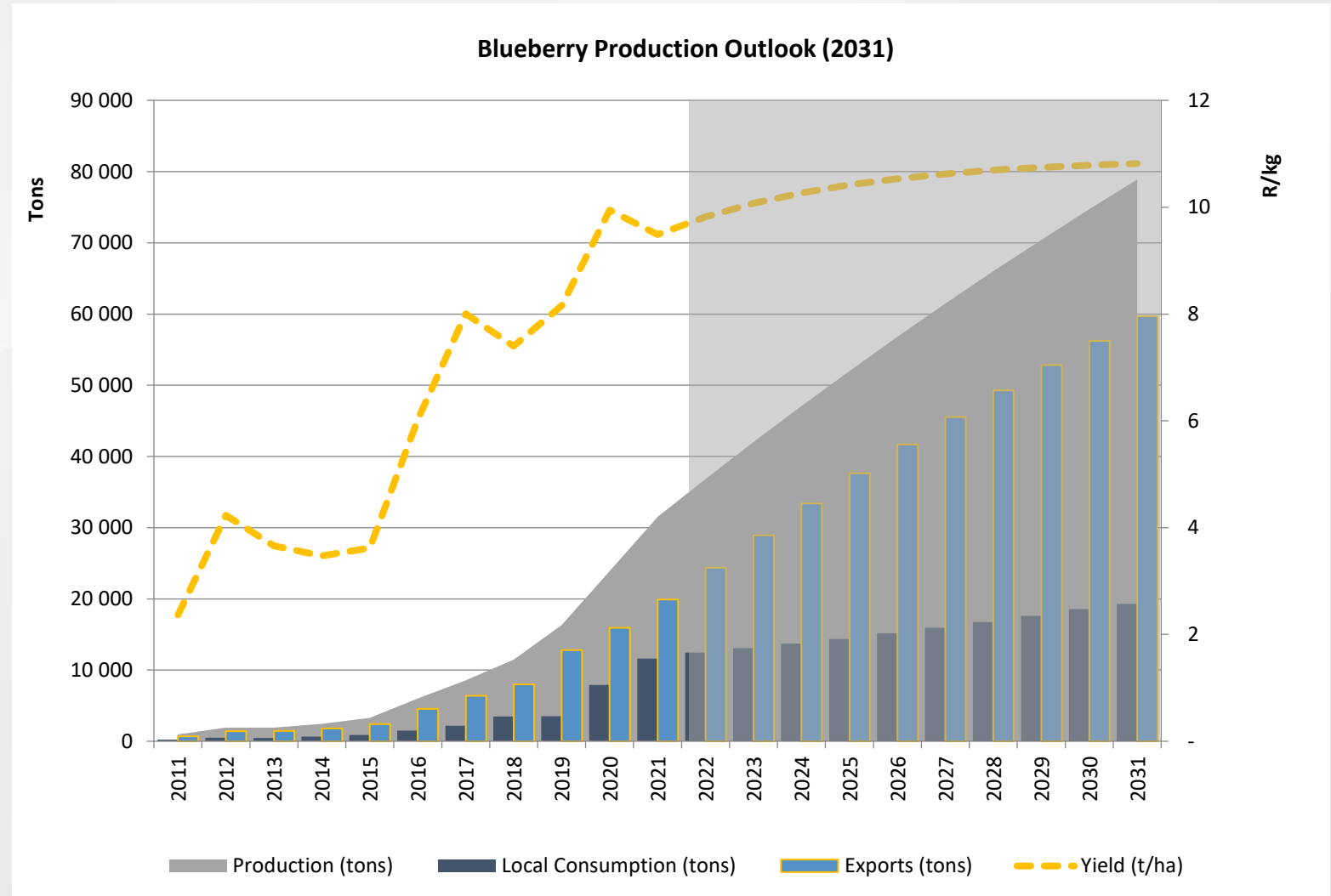
South African production in 2031:

Tons = 80 106 tons (+9.7%)

Ha = 7 404 ha (+8%)

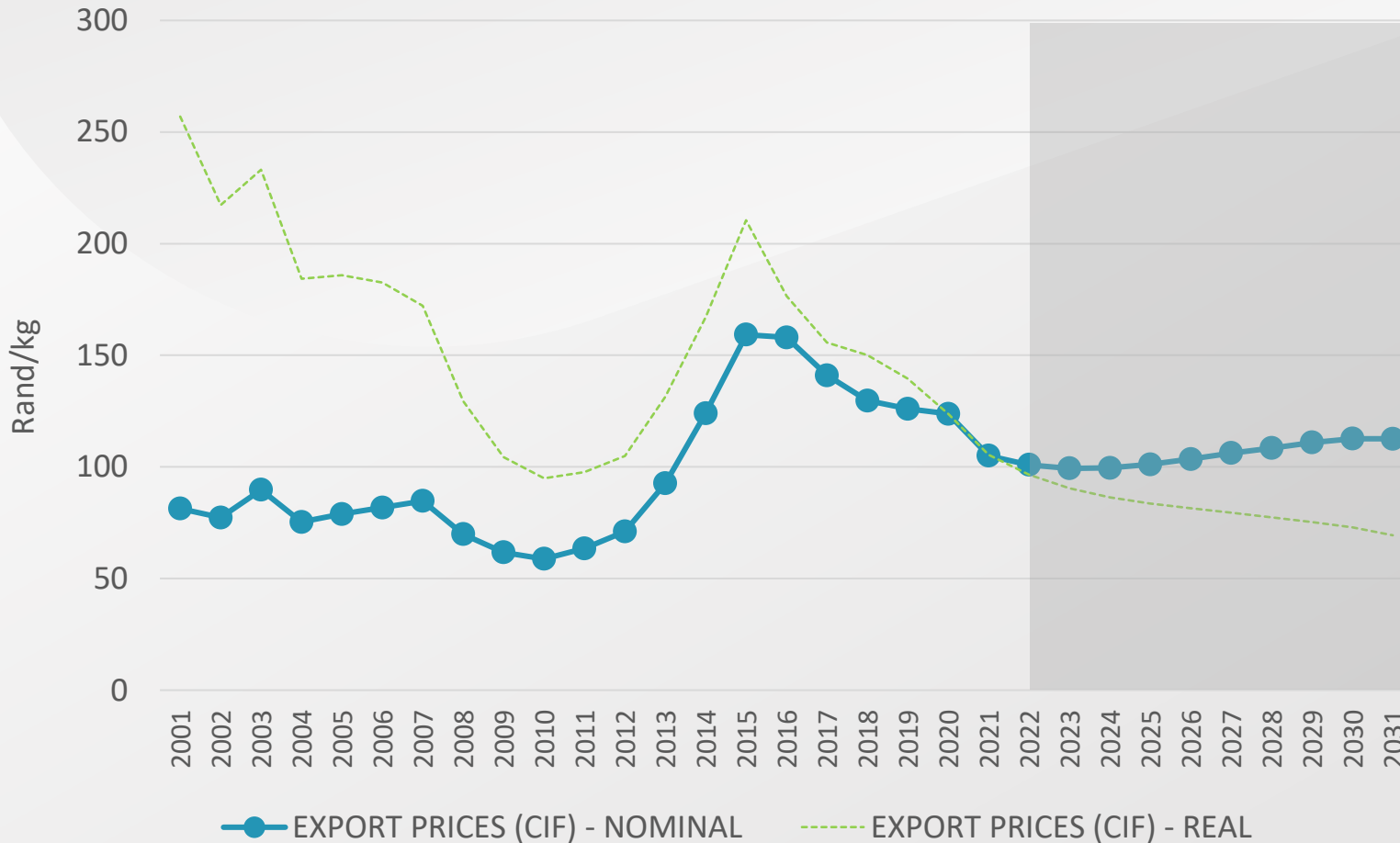
Yields are expected to growth but at a slower rate.

- Exports to reach 60 600 tons (76%)
- Local Fresh = 11 200 tons (14%)
- Processing = 8 289 (10%)



RSA Price Projection

CIF-Derived RSA Export Price



This is our first projection on export price trends

Under Baseline assumptions we do not anticipate an indefinite decline in export prices

- Strong demand growth globally
- Support from the currency
- Price increases at Retail level

However, in Real terms the decline is still relevant given the expected cost inflation

2022-Prices decline by 3.8%

RSA Price Projection

The local market has some positives

Our Outlook suggest that there will be continued demand growth in the top-income households in South Africa

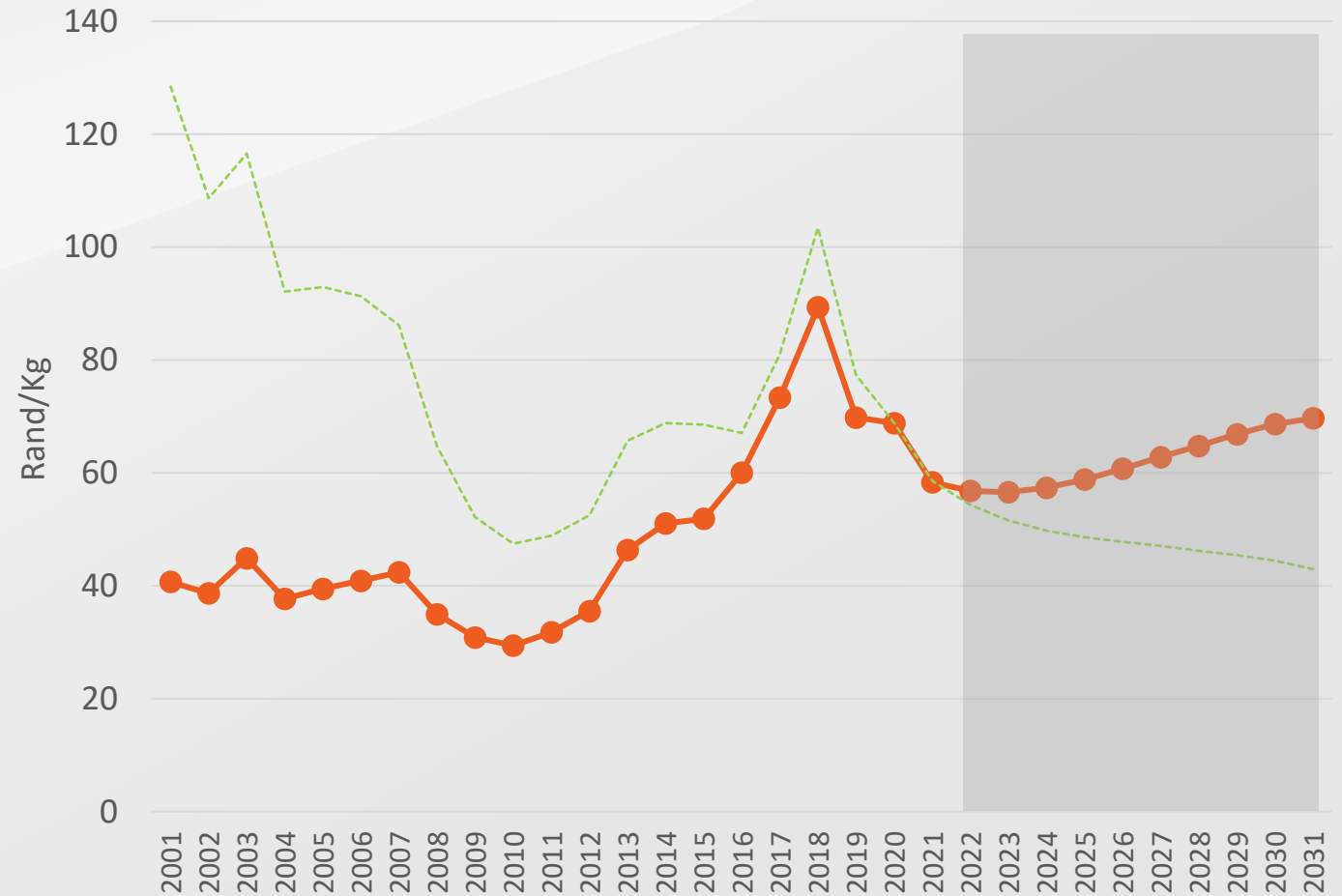
Nominal Prices are expected to gradually increase, but flat in the next 2-3 years

RSA blueberry consumption can grow from a small base and consumers and the same international health trends are driving SA consumption in LSM-10

But this is based on continued improvement in pack-outs dedicated to exports. The local market will remain vulnerable to price shocks

Processing Prices will however decline as more volumes enter the market and imports are competitive (R7.8 – 2031)

Local Fresh Prices





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Farm-Model & Profitability Outlook





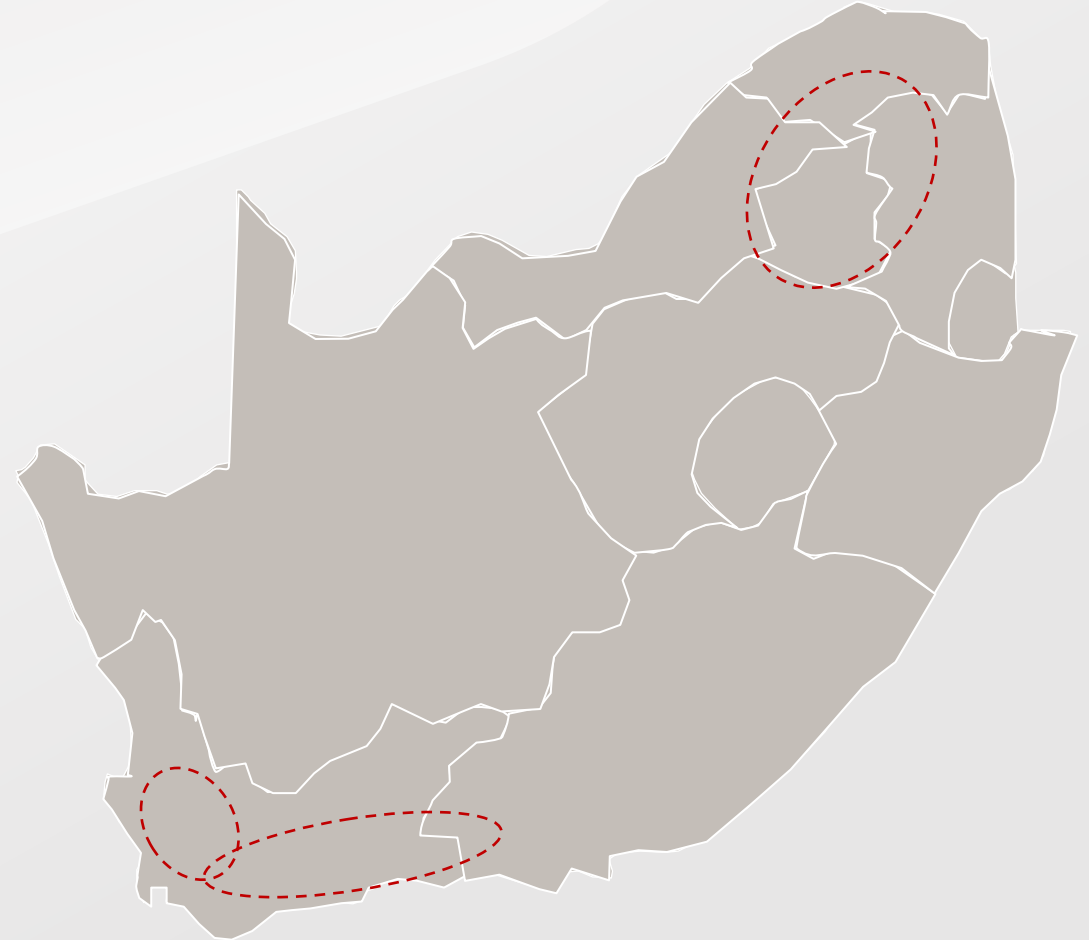
Coverage

Farm-Model = 401 hectares

Farming Units = 15 units

We developed three typical farm models

- WC Farm: Intensive
- WC Farm: Extensive
- Northern Provinces: Early season





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Western Cape: Intensive





Baseline farm-level model: Intensive

Assumptions and input

Production unit	Value
Area (ha)	20
Land value (R/ha)	200 000
Water right value (R/ha)	200 000
Labour	2020
Permanent labour per ha.	1,13
Seasonal labour per ha.	4,73
Seasonal labour: months of the year	7
Equivalent seasonal labourers per ha.	2,78
Total labourers per ha.	3,92
Cost per permanent labourer per hour (R/hour)	24,36
Cost per seasonal labourer per hour (R/hour)	23,82

Yield curve	Production cost curve
Year 1 (establishment): 14%	Year 1: Est. and prod. cost
Year 2: 65%	Year 2: 75%
Year 3: 100%	Year 3: 100%
Year 4: 100%	Year 4: 100%
Year 8: 100%	Year 8: 100%
Year 9: 100%	Year 9: 100%
Year 10: 100%	Year 10: 100%
Year 11 (replacement): 14%	Year 11: Re-est. & prod. Cost

Months	Ha	%
Aug_Sept	3,00	15%
October	6,00	30%
November	8,00	40%
Dec_Jan	3,00	15%
Total	20,00	100%

Open-air	0%
Shade-netting	20%
Plastic tunnel	80%
Substrate in pots	70%
Soil	30%
Avg. yield (ton/ha)	22

Baseline farm-level model: Intensive

Assumptions and input

Establishment cost (R/ha)	2020
Fuel Oil Repairs Parts & Maintenance	7 933
Irrigation (surface)	164 572
Pesticide & Herbicide Control	7 303
Soil preparation	19 931
Fertiliser	72 209
Labour & Supervision	10 221
Plant material	370 244
Trellising, Nets & Tunnels	1 333 760
Substrate	304 143
Weed-mat	73 602
Other allocatable costs	28 918
Total Cash Expenditure	2 392 837

Production cost per hectare	2020
Fertiliser & Organic Material	40 673
Pesticide & Herbicide Control	79 864
Labour & Supervision	219 697
Fuel Oil Repairs Parts & Maintenance	35 592
Electricity	14 771
Water	5 672
Packaging* & Marketing	527 983
Other allocatable costs	84 182
Direct Production Cost	1 008 434
Overheads	146 135
Total Production Cost	1 154 569
Depreciation	217 635
Total Production Cost & Depreciation	1 372 203

*Packaging: packing material and packing costs

Packaging cost/kg (export)	R13,00
Packaging cost/kg (local)	R13,00
Marketing cost/kg (export)	R14,00
Marketing cost/kg (local)	R7,66

Avg. Export price/kg (FOB)	R99,94
Avg. Local price/kg	R67,97
Market-outlet distribution (avg.)	
Export	80%
Local	11%
Processing	5%
Cull	4%



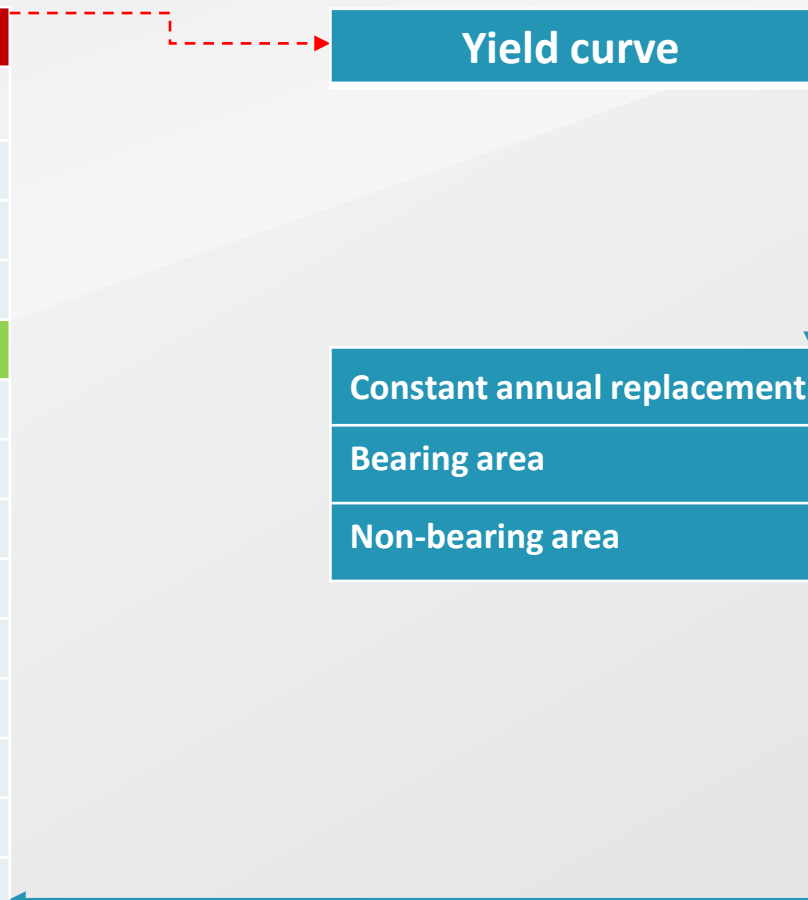
Baseline farm-level model: Intensive

Output

EBITA/ha without replacement	R 455 964
Export income/ha	R 1 554 279
Local income/ha	R 142 402
Processing income/ha	R 11 664
Total income per ha.	R 1 708 344
Salaries and wages	R 238 257
Fertiliser	R 75 356
Fuel, Repairs & Electricity	R 46 354
Chemicals	R 70 611
Diverse/Other	R 274 100
Overheads	R 101 135
Depreciation	R 217 635
Packaging	R 229 982
Marketing	R 234 115
Total expenditure per ha.	R 1 487 545
EBITA/ha with replacement	R 220 800
Total interest per ha.	R 122 669
Farm profit (per ha.)*	R 98 131



Constant annual replacement	2,00 ha
Bearing area	17,58 ha
Non-bearing area	2,42 ha





Western Cape: Extensive





Baseline farm-level model: Extensive

Assumptions and input

Production unit	Value
Area (ha)	>50
Land value (R/ha)	200 000
Water right value (R/ha)	200 000
Labour	2020
Permanent labour per ha.	1,13
Seasonal labour per ha.	3,17
Seasonal labour: months of the year	7
Equivalent seasonal labourers per ha.	1,87
Total labourers per ha.	3,00
Cost per permanent labourer per hour (R/hour)	21,70
Cost per seasonal labourer per hour (R/hour)	18,68

Yield curve	Production cost curve
Year 1 (establishment): 14%	Year 1: Est. and prod. cost
Year 2: 65%	Year 2: 75%
Year 3: 100%	Year 3: 100%
Year 4: 100%	Year 4: 100%
Year 8: 100%	Year 8: 100%
Year 9: 100%	Year 9: 100%
Year 10: 100%	Year 10: 100%
Year 11 (replacement): 14%	Year 11: Re-est. & prod cost

Months	Distribution
Aug_Sept	15%
October	30%
November	40%
Dec_Jan	15%
Total	100%

Open-air	70%
Shade-netting	30%
Plastic tunnel	0%
Substrate in pots	0%
Soil	100%
Avg. yield (ton/ha)	12,5

Baseline farm-level model: Extensive

Assumptions and input

Establishment cost (R/ha)	2020
Fuel Oil Repairs Parts & Maintenance	7 933
Irrigation (surface)	164 572
Pesticide & Herbicide Control	7 303
Soil preparation	19 931
Fertiliser	72 209
Labour & Supervision	10 221
Plant material	370 244
Trellising and nets	166 293
Substrate	0
Weed-mat	73 602
Other allocatable costs	28 918
Total Cash Expenditure	921 227

Production cost per hectare	2020
Fertiliser & Organic Material	27 440
Pesticide & Herbicide Control	63 440
Labour & Supervision	138 998
Fuel Oil Repairs Parts & Maintenance	35 579
Electricity	16 778
Water	2 970
Packaging* & Marketing	225 987
Other allocatable costs	27 960
Direct Production Cost	539 152
Overheads	40 049
Total Production Cost	579 201
Depreciation	94 669
Total Production Cost & Depreciation	673 870

*Packaging: packing material and packing costs

Packaging cost/kg (export)	R13,00
Packaging cost/kg (local)	R13,00
Marketing cost/kg (export)	R14,00
Marketing cost/kg (local)	R7,66

Avg. Export price/kg (FOB)	R105,76
Avg. Local price/kg	R70,62
Market-outlet distribution (avg.)	
Export	64%
Local	17%
Processing	15%
Cull	4%



Baseline farm-level model: Extensive

Output

EBITA/ha without replacement	R 237 692
Export income/ha	R 764 343
Local income/ha	R 122 218
Processing income/ha	R 19 853
Total income per ha.	R 906 414
Salaries and wages	R 135 395
Fertiliser	R 33 392
Fuel, Repairs & Electricity	R 48 099
Chemicals	R 56 240
Diverse/Other	R 105 795
Overheads	R 27 299
Depreciation	R 94 669
Packaging	R 118 606
Marketing	R 174 001
Total expenditure per ha.	R 793 496
EBITA/ha with replacement	R 112 918
Total interest per ha.	R 72 340
Farm profit (per ha.)*	R 40 578



Constant annual replacement	10%
Bearing area	87,9%
Non-bearing area	12,1%





Northern Provinces: Early season



Baseline farm-level model: Early season

Assumptions and input



Production unit	Value
Area (ha)	30
Land value (R/ha)	150 000
Water right value (R/ha)	120 000
Labour	2020
Permanent labour per ha.	1,13
Seasonal labour per ha.	3,67
Seasonal labour: months of the year	7
Equivalent seasonal labourers per ha.	2,16
Total labourers per ha.	3,30
Cost per permanent labourer per hour (R/hour)	25,04
Cost per seasonal labourer per hour (R/hour)	23,82

Yield curve	Production cost curve
Year 1 (establishment): 14%	Year 1: Est. and prod. cost
Year 2: 65%	Year 2: 75%
Year 3: 100%	Year 3: 100%
Year 4: 100%	Year 4: 100%
Year 8: 100%	Year 8: 100%
Year 9: 100%	Year 9: 100%
Year 10: 100%	Year 10: 100%
Year 11 (replacement): 14%	Year 11: Re-est. & prod cost

Months	Ha	%
July_Aug	2,25	7,50%
September	9,00	30%
November	9,00	30%
December	2,25	7,5%
Total	30,00	100%

Open-air	30%
Shade-netting	50%
Plastic tunnel	20%
Substrate in pots	70%
Soil	30%
Avg. yield (ton/ha)	16

Baseline farm-level model: Early season

Assumptions and input

Establishment cost (R/ha)	2020
Fuel Oil Repairs Parts & Maintenance	7 933
Irrigation (surface)	164 572
Pesticide & Herbicide Control	7 303
Soil preparation	19 931
Fertiliser	72 209
Labour & Supervision	10 221
Plant material	370 244
Trellising, Nets and Tunnels	530 612
Substrate	304 143
Weed-mat	73 602
Other allocatable costs	28 918
Total Cash Expenditure	1 589 688

Production cost per hectare	2020
Fertiliser & Organic Material	49 362
Pesticide & Herbicide Control	48 070
Labour & Supervision	186 941
Fuel Oil Repairs Parts & Maintenance	43 589
Electricity	11 355
Water	1 643
Packaging* & Marketing	320 319
Other allocatable costs	31 412
Direct Production Cost	692 692
Overheads	146 135
Total Production Cost	838 827
Depreciation	151 922
Total Production Cost & Depreciation	990 749

*Packaging: packing material and packing costs

Packaging cost/kg (export)	R13,00
Packaging cost/kg (local)	R13,00
Marketing cost/kg (export)	R14,00
Marketing cost/kg (local)	R7,66

Avg. Export price/kg (FOB)	R115,55
Avg. Local price/kg	R71,17
Market-outlet distribution (avg.)	
Export	75%
Local	16%
Processing	4,5%
Cull	4,5%



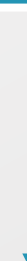
Baseline farm-level model: Early season

Output

EBITA/ha without replacement	R 453 681
Export income/ha	R 1 244 164
Local income/ha	R 163 417
Processing income/ha	R 7 752
Total income per ha.	R 1 415 333
Salaries and wages	R 209 595
Fertiliser	R 82 960
Fuel, Repairs & Electricity	R 50 363
Chemicals	R 42 792
Diverse/Other	R 144 086
Overheads	R 52 423
Depreciation	R 151 922
Packaging	R 169 836
Marketing	R 252 505
Total expenditure per ha.	R 1 156 481
EBITA/ha with replacement	R 258 851
Total interest per ha.	R 100 475
Farm profit (per ha.)*	R 158 376



Constant annual replacement	3,00 ha
Bearing area	26,37 ha
Non-bearing area	3,63 ha

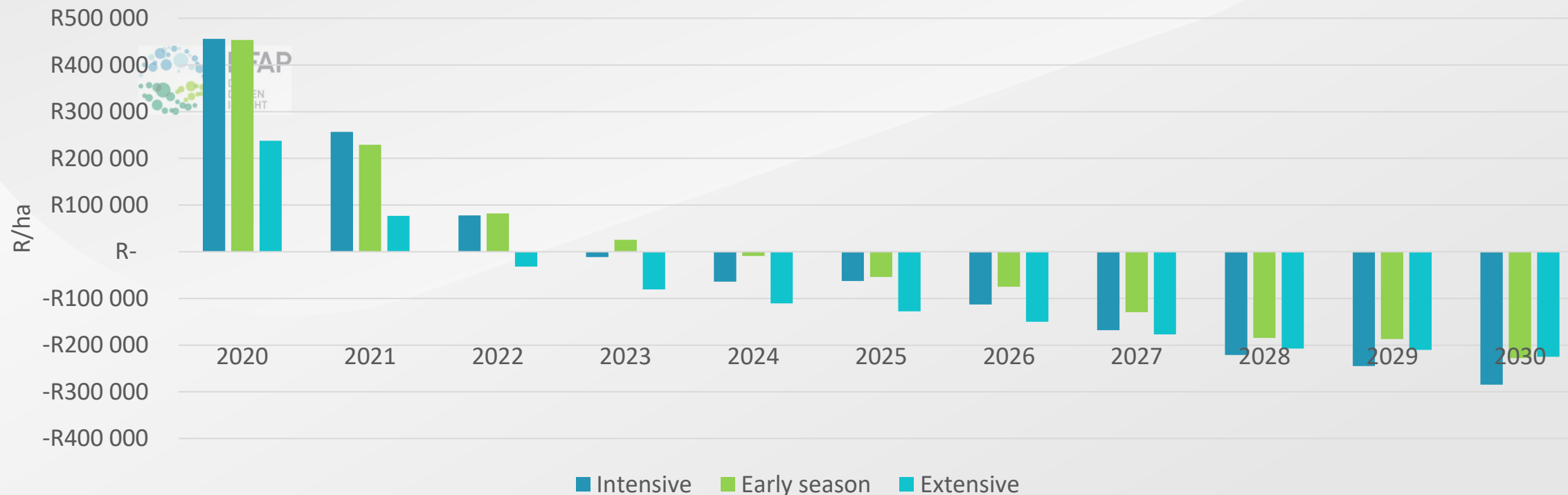


Analysis: EBITA/ha under different circumstances

Boland, Overberg - EC, Northern Provinces



EBITA/ha - full bearing



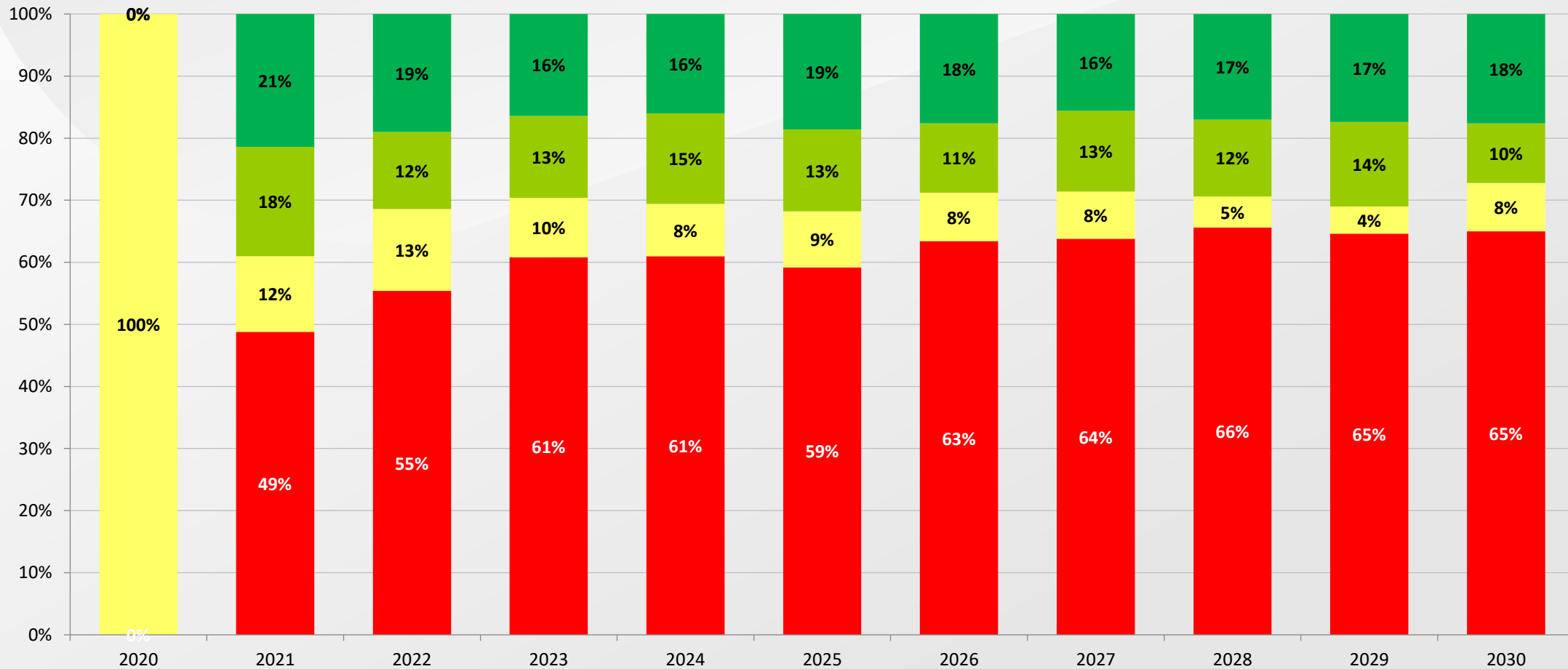
EBITA (full bearing equivalent) - R/ha	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Intensive	R 455 964	R 256 535	R 77 693	-R 11 239	-R 64 039	-R 62 887	-R 112 871	-R 168 103	-R 221 175	-R 245 042	-R 284 668
Extensive	R 237 692	R 76 986	-R 31 813	-R 80 844	-R 110 761	-R 127 486	-R 149 825	-R 176 950	-R 207 226	-R 210 182	-R 224 709
Early season	R 453 681	R 229 001	R 82 255	R 25 754	-R 8 918	-R 54 106	-R 74 905	-R 129 600	-R 184 539	-R 186 906	-R 227 735

Baseline FinSim analysis: Intensive

Based on macro-economic assumptions of January 2022



Risk-profile over time

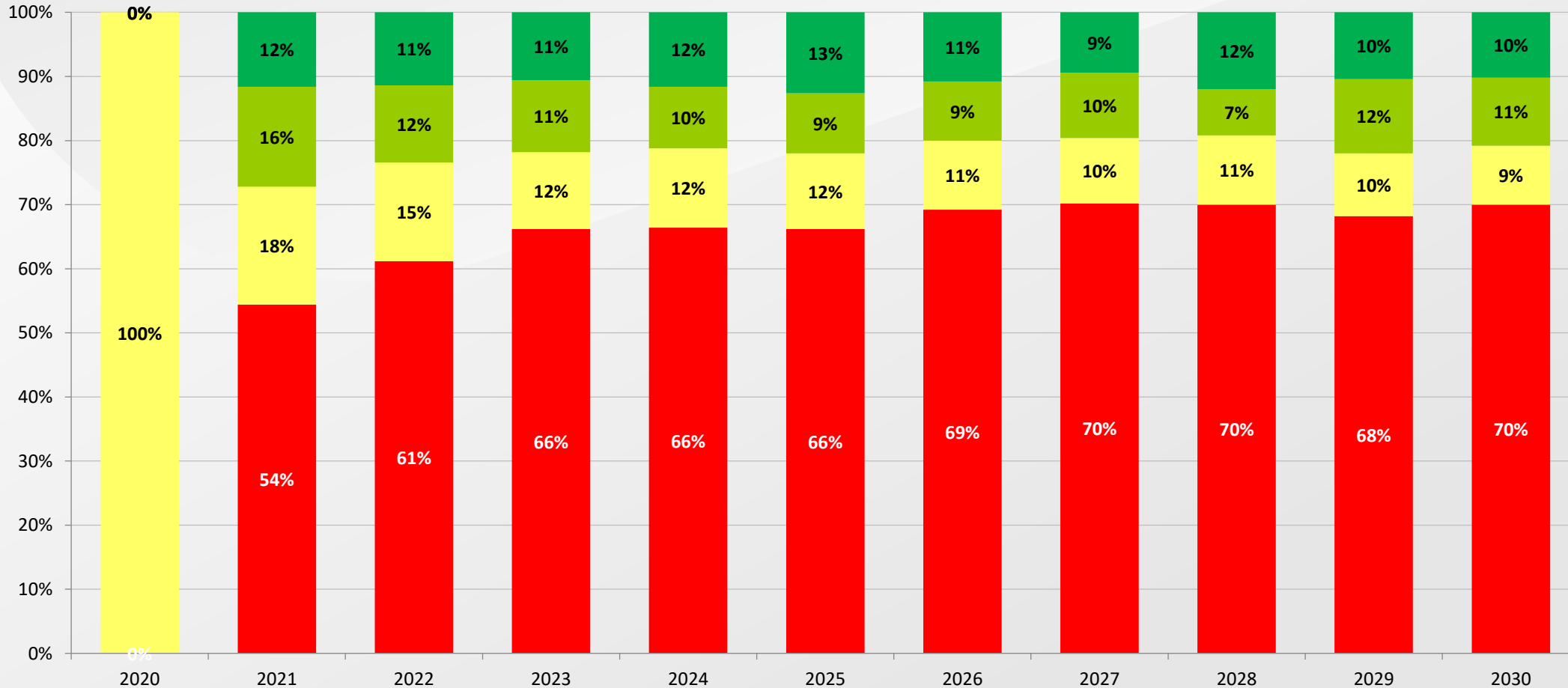


Baseline FinSim analysis: Extensive

Based on macro-economic assumptions of January 2022



Risk-profile over time

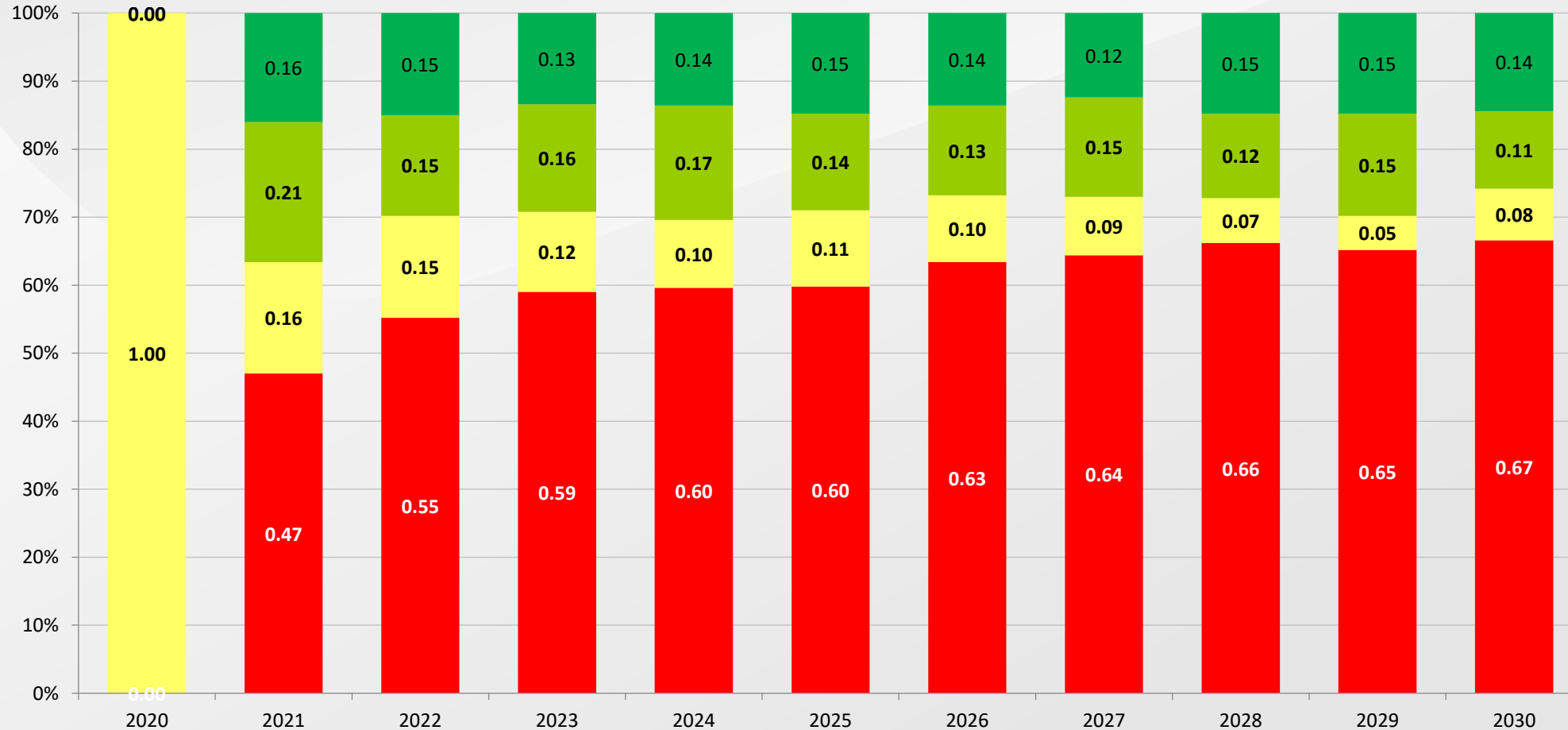


Baseline FinSim analysis: Early season

Based on macro-economic assumptions of January 2022



Risk-profile over time





Risks for the Outlook

Our analysis highlights the current market outlook, but there are many downside risks, as well as some upside ones

- Global demand is still strong and despite pressure on prices recently there might be price support soon
- Continued growth in blueberries is only possible if all value chain actors become more efficient, limiting cost ratio's, broadening market horizons and delivering higher quality products at higher pack-out %
- The world is currently very uncertain with Russia-Ukraine conflict and there might be some bumps along the way.
- Farm profitability is under pressure in SA, but our competitors are also experiencing pain at the moment. It will force greater productivity and some to rethink their investment.
- Market Access remains a critical ingredient for future success of the industry
- As soon as the final numbers come out, we will update the projections in time for the AGM and our Annual Baseline Publication



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DATA
DRIVEN
INSIGHT



Thank you

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