



EUROPEAN GREEN DEAL & SOUTH AFRICAN AGRICULTURE:

The potential impact of reduced pest control options

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This brief is a summary of a comprehensive research report by the Bureau for Food and Agricultural Policy (BFAP) that was supported by CropLife Africa and Middle East.

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This brief summarised the main findings of the comprehensive research report with respect to the potential impact of reduced pest control options in South African agriculture under the Farm to Fork strategy of the European Green Deal.

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Background

The European Green Deal (EGD) is a strategic roadmap set by the European Union (EU) to achieve climate neutrality by 2050 (European Commission, 2024). Central to this initiative is the Farm to Fork (F2F) strategy, which aims to make food production more sustainable by reducing greenhouse gas emissions and combating climate change. A significant aspect of this strategy is the potential implementation of a mirror clause, which would require countries exporting to the EU to adhere to the same production and input use constraints as EU farmers.

Key Objectives of the F2F strategy by 2030:

- Reduce the overall use and risk of pesticides by 50%
- Reduce the use of more hazardous pesticides by 50%
- Reduce maximum residue levels for certain chemicals
- Increase organic production to at least 25% of agricultural area
- Reduce nutrient losses by 50% and the use of fertilizers by 20%

The EGD and FSF Strategy has been subject to much public interest and controversies, focussed especially on the F2F measures touching on production impacts. Recently, new political challenges and farmer protests have resulted in the withdrawal of the Sustainable Use of Pesticides regulation (pesticide use reduction by 50% by 2030) due to its rejection by the EU Parliament.

Despite this delay, it is likely that the production practices of exporters of food commodities and products to the EU will come under increased scrutiny over the next number of years and anyone who wishes to export crops to the EU will have to follow the same or adhere to similar input use directives and production system requirements.

What these restrictions would mean for South Africa, or to what extent implementation of these requirements would be practically possible or economically feasible is not clear. This brief presents a summary of a comprehensive study conducted by BFAP, aiming to shed light on this topic.

Banned or severely restricted chemicals

The Chemicals Strategy for Sustainability, adopted in October 2020, is a crucial component of the EGD, aiming for a toxic-free environment. In 2023, the European Commission began an evaluation and impact assessment to understand the potential effects of various options on human health, the environment, and economic costs in both EU and non-EU countries. During this process, an indicative list of chemicals banned or severely restricted in the EU was provided for consideration. However, this list is not definitive and does not limit future actions by the European Commission.

The specifics of how pesticide use will be reduced, and which pesticides will be banned or restricted, are still unclear. For this study, the indicative list served as a preliminary guide¹ for pesticides that may no longer be available to EU producers and exporters to the EU. Additionally, chemical actives currently approved in the EU but up for re-approval in the coming years were also considered.

Impact on South African Agriculture

South Africa's agricultural sector is a major contributor to national food security, foreign currency earnings, and employment. The EU is a significant market for South African agricultural exports, particularly for citrus, table grapes, pome fruit, and, to a lesser extent, maize. The proposed restrictions under the EGD could have substantial implications for South African farmers, particularly in terms of pesticide use and production practices.

¹ South Africa is currently phasing out chemicals that meet the criteria of carcinogenicity, mutagenicity, or reproductive toxicity (CMR) 1A or 1B of the Globally Harmonized System. While there is likely some overlap between the CMR chemicals being phased out and the list of chemicals banned or severely restricted in the EU, this study focuses on the latter.

Crop-specific impacts: Maize

- Maize is a staple food and a major export crop for South Africa, annually covering about 60% of the field crop area in the summer rainfall region.
- The EU is not a major market for South African maize, but notable volumes are exported to Italy, Portugal, and Spain when there are surpluses in Southern Africa.
- Exports are mainly genetically modified white and yellow, with price the main consideration.
- Durban is the main export harbour and export maize is sourced from eastern production areas - KwaZulu-Natal, Mpumalanga and the Eastern Free State.
- Maize farmers in the eastern provinces use less herbicides (higher rainfall and seeding rates lead to early foliage canopy closure) but more insecticides and fungicides than their counterparts in the generally drier western and central maize production regions.

A number of plant protection products (PPP's) – which refers to active ingredients and combinations of active ingredients – are no longer approved for use in the EU, as highlighted in the figure below. For these PPP's, the MRL review and possible adjustment already started or was finalised. A similar process is followed for PPP's to be reviewed between 2024 and 2038.

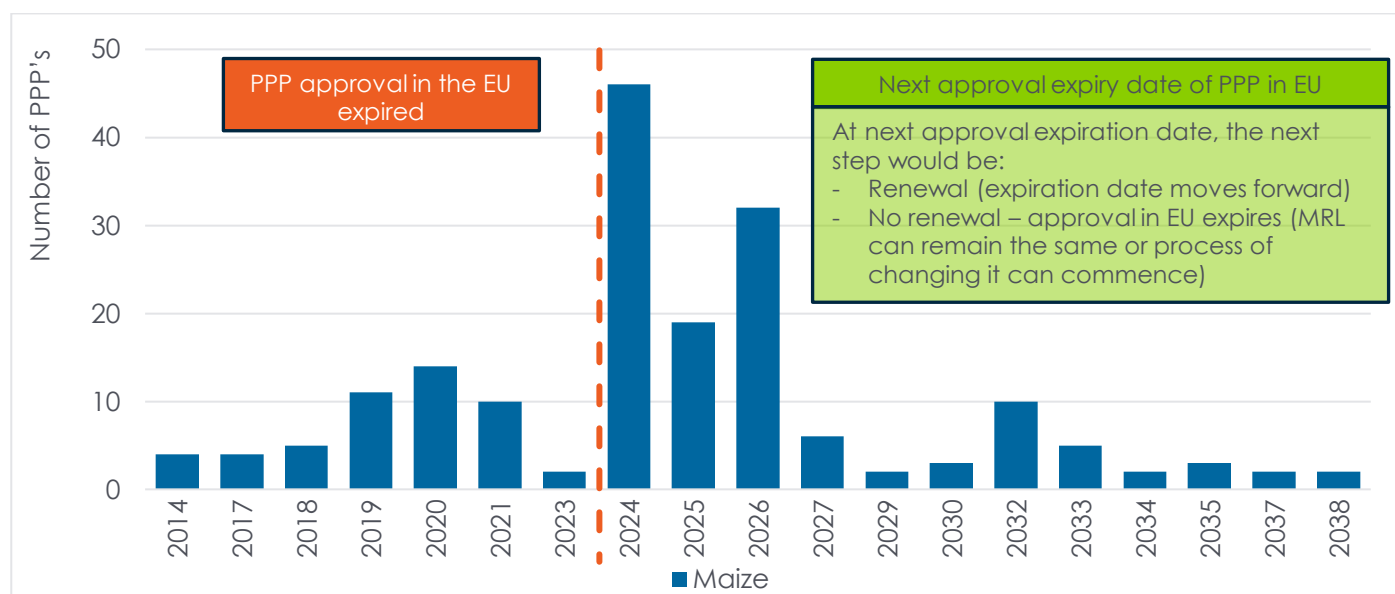


FIGURE 1: APPROVAL STATUS OF PPP'S FOR USE ON SPECIFIC COMMODITIES IN THE EU (WITH IMPLICATIONS FOR SUPPLY TO EU)
Source: AGRI-INTEL, 2024

TABLE 1: PEST CONTROL CHEMICALS USED BY SA MAIZE FARMERS AND THAT ARE ON THE INDICATIVE LIST OF CHEMICALS BANNED OR SEVERELY RESTRICTED IN THE EU:

Herbicides	Insecticides	Fungicides
2,4-D	Benfuracarb	Carbendazim
Acetochlor	Chlorpyrifos (<i>prohibited in SA on 01/11/24</i>)	Epoxiconazole
Atrazine	Indoxacarb	Picoxystrobin
Bromoxynil	Permethrin	
	Thiamethoxam	

- If the EU is the only region implementing these restrictions, two markets could emerge, where the EU market demands maize adhering to their standards and is willing to pay a premium for the product, and the rest of the world's markets remain open for maize produced under currently accepted input use regimes.
- If the EU is the only region to implement, it is unlikely that the South African maize industry, as a whole, will prioritise the EU market for exports.

- If a price premium could be earned in the EU, South African maize farmers will need to decide if and how they need to adjust their pesticide use and production systems.
- All the indicated pesticides have available alternatives that are currently used, but most are more expensive.
- There are also a number of alternatives that are currently used in South Africa but no longer approved for use in the EU. The maximum residue levels (MRL's) for these pesticides in the EU have been set at the detectable observed level of 0.01 mg/kg grain. South Africa is currently exporting maize to the EU, and it is crucial for growers, grower associations, and exporters to understand the MRL values of their target export countries and stay informed about any new or upcoming changes to these MRL's (SAGrain, 2024).
- Farmers not using the indicated pesticides could spend between R30 and R250 per hectare more on pest control, but yields are not expected to be affected substantially in 'normal' seasons. Increased pest pressure might result in substantially higher pest control expenditure and yield impacts. The price premium will have to cover additional pest control costs, prioritised storage costs as well as administrative costs associated with traceability and identity preservation certification.

Crop-specific impacts: Pome Fruit

- South Africa produced 1.34 million tonnes of apples on 25 114 hectares and 508 thousand tonnes of pears on 12 892 hectares in 2023, generating turnover of R15.85 bn, and sustaining 47 868 full-time equivalent jobs on farms, with many more in packhouses and at other nodes in the value chain (Hortgro, 2024).
- In 2023, 40.7% of apples and 45.5% of pears were exported. Of the 39.6 million 12.5kg equivalent cartons of apples exported in 2023, 8% was destined for the EU, while 28% of the 17.9 million 12.5kg equivalent cartons of pears exported was destined for the EU, making it the single biggest market for exported SA pears (Hortgro, 2024).

As highlighted in the figure below, the approval for use of certain PPP's on pome fruit produced in the EU has already expired, with a significant amount of PPP's to be reviewed from 2024 onwards. The expiration of approval for use and consequent MRL adjustments could affect production in the EU, but also production for supply to the EU.

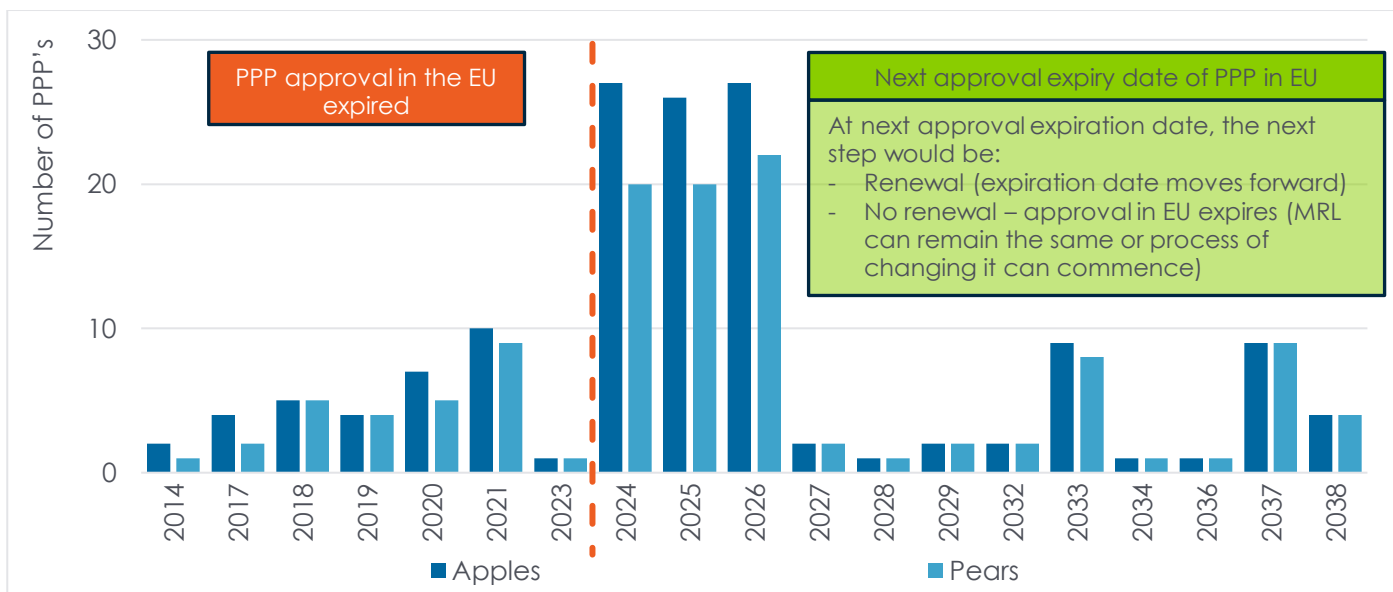


FIGURE 2: APPROVAL STATUS OF PPP'S FOR USE ON SPECIFIC COMMODITIES IN THE EU (WITH IMPLICATIONS FOR SUPPLY TO EU)

Source: AGRI-INTEL, 2024

- Typically, once an active ingredient's approval has expired, the process to adjust the MRL is started. If the product is still approved in South Africa, producers can continue to use the product but need to be mindful of the MRL and the potential change date of the MRL. It should be noted that some active ingredients may not be approved for the EU, but will also not have a traceable MRL at the time of testing (usually at packing, shipment or arrival). As long as such a product is registered for use on the commodity in question in SA, a producer can continue to use the active and supply the EU market.
- The most notable active ingredient that will not be available to pome fruit producers hoping to export to the EU once the MRL change is implemented, is mancozeb.
- Mancozeb is a fungicide, crucial for controlling scab (fungal disease) in pome fruit.
- Alternatives like captan and dithianon are available but are more expensive and may require more frequent applications.
- Beyond the switching from mancozeb to alternatives, the expiration of approval for use of other active ingredients in the EU and the consequent process to change the MRL would have a cost, but also a quality impact. To account for that, an additional 5% increase in production cost and a 5% decrease in export share was modelled.
- It is projected that producers would first try to absorb the additional cost, and centre decisions around new orchard establishment. Based on BFAP's farm-level and sector modelling, the first impacts will be observed from 2028, and by 2033 3.5% of apple and just over 3% of pear hectares will be lost due to the higher base cost, combined with the marginal shift in marketing channel – increased processing and less exports – as a consequence of the quality impact.
- While not devastating for the industry at a national level, the impact at an individual farm level will be substantial. Fewer producers result in fewer jobs on farms and in packhouses, along with weaker demand for packing space, infrastructure, critical inputs, and more.

Figure 3 illustrates the profitability implication at producer level, analysed in nominal terms using BFAP's farm-level and sector modelling. The divergence of apple and pear profitability under the scenario conditions can be attributed to the fact that the share of production that still qualifies for export drops below critical levels required to sufficiently cover cost. As profitability drops below the minimum level required to replace orchards at the end of the productive lifetime, total area will start to decline. With the impact on apples greater than pears, and with only 8% of apples exported to the EU, it is likely that some apple producers would opt to not supply the EU market in favour of maintaining more sustainable profit margins.

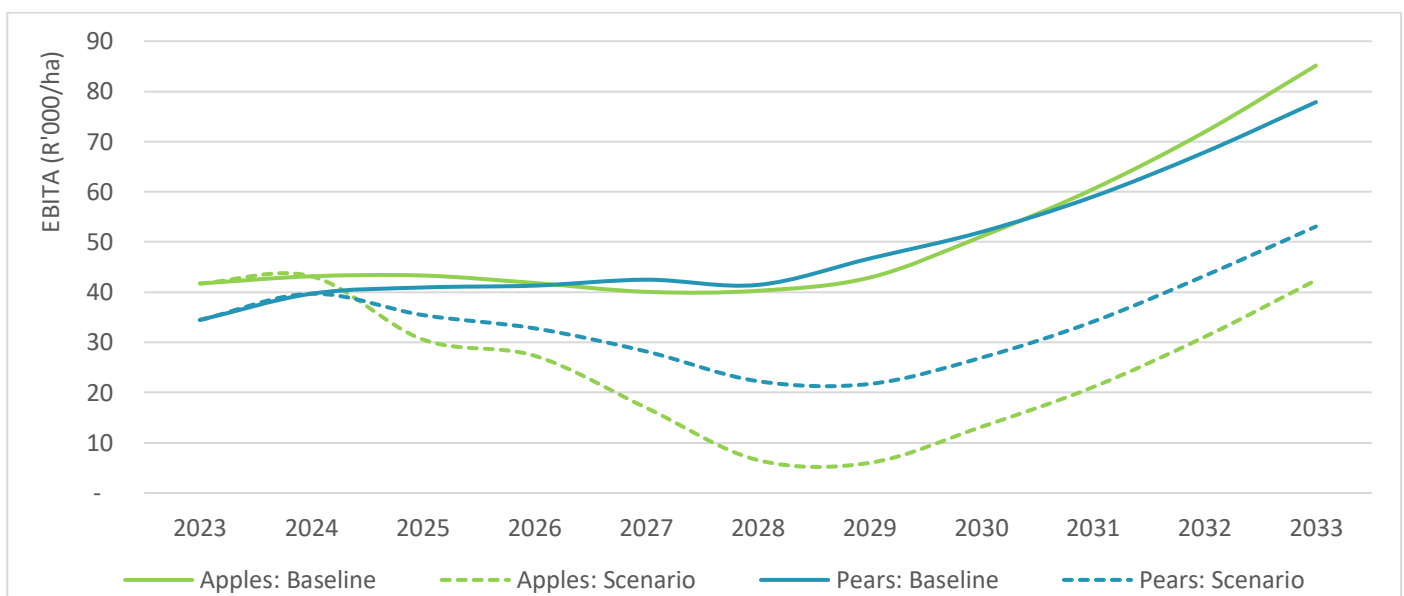


FIGURE 3: POME FRUIT PROFITABILITY IMPACT: SCENARIO VS BASELINE: EBITA (RAND/HA)

Crop-specific impacts: Table Grapes

- South Africa's table grape industry is predominantly export-orientated, with 74.15 million 4.5kg equivalent cartons exported during the 2023/24 season, from a production base of 19 788 hectares, generating turnover of R14.6 bn from exports alone, and an estimated R0.4 bn from fresh local supply and processing (DALRRD, 2024; SARS, 2024). In the process, the highly seasonal industry is sustaining 14 511 permanent workers and 84 008 seasonal labourers – an equivalent of roughly 3 full-time equivalent jobs for each planted hectare (SATI, 2024).
- The bulk of South African table grape exports are shipped to Europe. Of the 74.15 million cartons exported in 2023/24, 57% were sent to the EU, followed by 20% to the UK.

As highlighted in the figure below, the approval for use of certain PPP's on table grapes produced in the EU has already expired, with a significant amount of PPP's to be reviewed from 2024 onwards. PPP's no longer approved for use in the EU and consequent MRL adjustments could affect production in the EU, but also production for supply to the EU.

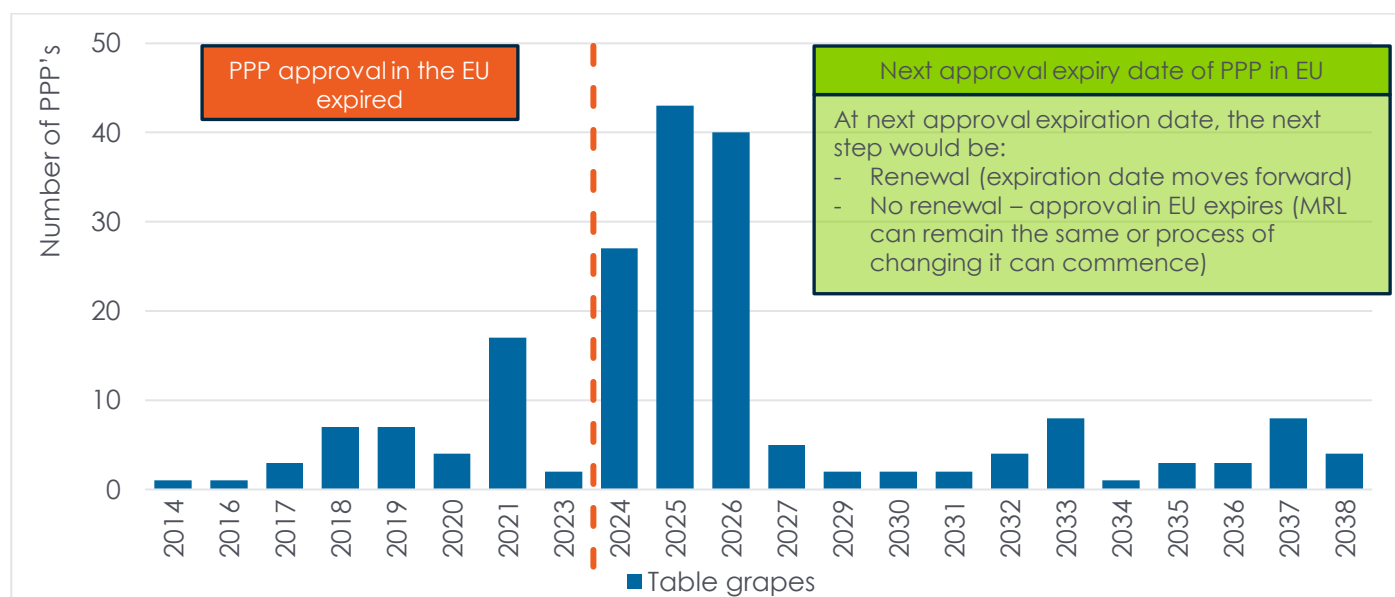


FIGURE 4: APPROVAL STATUS OF PPP'S FOR USE ON SPECIFIC COMMODITIES IN THE EU (WITH IMPLICATIONS FOR SUPPLY TO EU)
Source: AGRI-INTEL, 2024

- Though there are a number of actives that are under threat in the EU, e.g., imidacloprid, paraquat and chlorpyrifos, the latter of which is also prohibited to be recommended, sold or supplied as an agricultural remedy in South Africa since 01/11/24. However, the most important active ingredient is dimethomorph, whose approval recently expired.
- Dimethomorph is a very effective control for downy mildew. There are alternatives, each of which has its risks and challenges. Famoxadone was an option, but the approval in the EU has already expired. Feedback from industry is that although cymoxanil is a cheaper alternative, it is not as effective and therefore it is likely that the quality of the grapes will be negatively affected.
- To cover the high input cost in the industry, producers are heavily reliant on generating a high number of export cartons per hectare. The high exposure to the EU market, combined with the risk of a decrease in quality as a result of downy mildew, is of major concern. Lower in-vineyard grape quality will result in reduced exports and severely diminish economic sustainability, especially for more marginal vineyards in regions with high humidity.
- A scenario was run in BFAP's sector model, assuming producers switch to the less expensive but also less effective cymoxanil. In this scenario, the cost of control reduces by R1 500/ha, but there is a likely 10% reduction in export pack-outs in 70% of the industry. Vineyard and/or packhouse labour expenditure will increase as pace slows due to more cutting work that is required to make

the best of a lower-quality harvest. To account for other PPP's for which the EU approval expired, a 5% increase in production cost and a 5% decrease in export share was modelled.

Figure 5 illustrates the impact on the Orange River production region and the rest of the industry. The Orange River with its near desert-like climate is less susceptible to mildew problems. The impact on profitability is measured at two points: EBITA and after accounting for external factor cost, i.e. farm profit. Due to the decrease in quality (exportable grapes), profitability for the industry-representative farm is expected to decrease by around 60%. While EBITA remains positive throughout the outlook period, farm profits remain below zero. Even in the Orange River region, profits are expected to only turn marginally positive in the latter half of the outlook period.

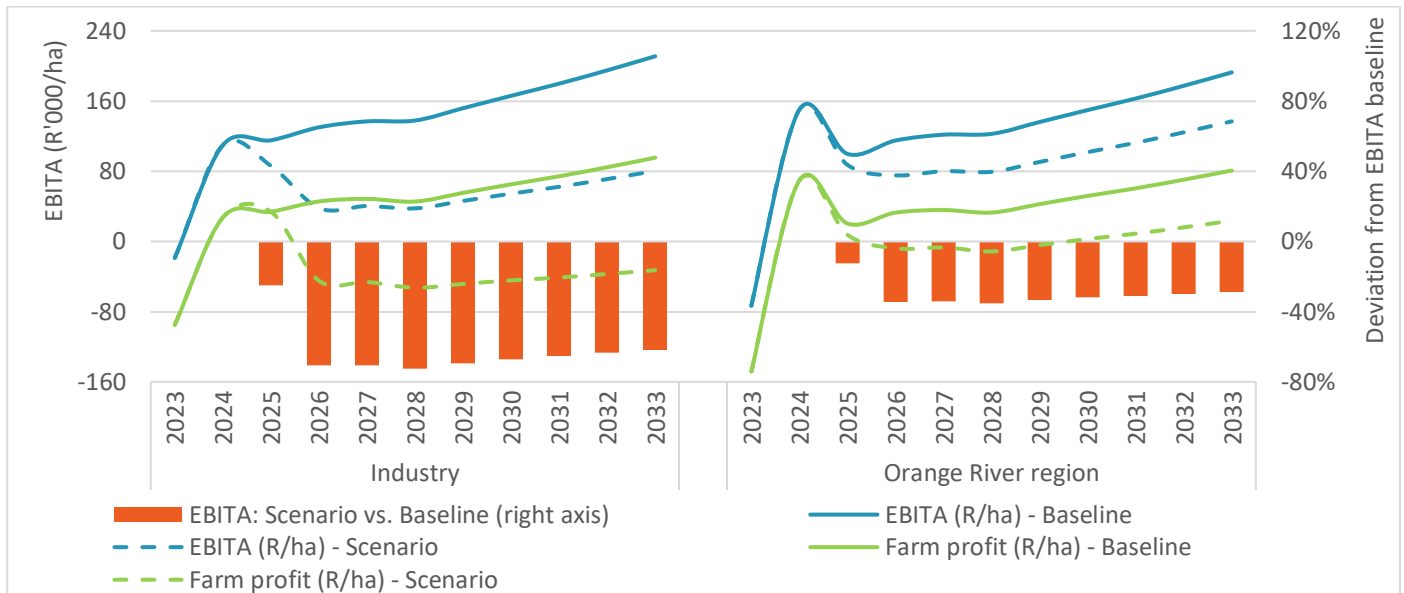


FIGURE 5: COMPARISON OF INDUSTRY AND ORANGE RIVER IMPACT ON PROFITABILITY

- Some producers might want to opt out of supplying the EU in order to avoid the potential profitability issues but because SA is such a big player in the EU market, even just redirecting 4% of EU export volumes to other markets results in a 9% increase in the EU price and a 38% decrease in non-EU markets. The negative impact of profitability is slightly less when adhering to EU regulations than avoiding the EU market.
- Due to the average export price drop, combined with the reduced marketable volumes, the total value generated from exports reduces by up to R3 bn per annum over the outlook period, causing uprooting of unprofitable vineyards.
- The loss of dimethomorph as a fungicide in the South African table grape sector in 2025, is projected to result in the loss of 2 440 hectares of vineyard (12.3%) and an estimated 7 320 full-time equivalent jobs at farm-level by 2033, with losses likely to continue until a new equilibrium point is reached.

Crop-specific impacts: Citrus

- Citrus fruit is the single biggest agricultural export from South Africa, averaging R27.5 bn (\$1.7 bn) per annum over the last 5 years, generating 13% of the total agricultural export value (ITC, 2024).
- The South African citrus industry spans about 96 000 hectares. Of the 3.4 million tonnes of citrus produced and marketed in South Africa in 2023, 71% was exported, generating 95% of the industry's R33 bn, followed by 24% to the juice market, generating 2% of total value. About 5% is sold domestically, which contributed to the final 3% of value. In the process, the industry employs a total of 169 200 permanent and seasonal workers on farms and in packhouses (CGA, 2024).

- South Africa is the second largest citrus exporter in the world after Spain, supplying the Northern Hemisphere in their off-season. The EU is the single biggest importer of South African citrus, importing 36% of South Africa's total citrus exports in 2023. By size, this was followed by the Middle East (19%), South East Asia (13%), North America (9%), Russia and the UK (8% each) (CGA, 2024).

As highlighted in the figure below, the approval for use of certain PPP's on citrus produced in EU has already expired, with a significant amount of PPP's to be reviewed from 2024 onwards. The expiration of approval and consequent MRL adjustments could affect production in the EU, but also production for supply to the EU.

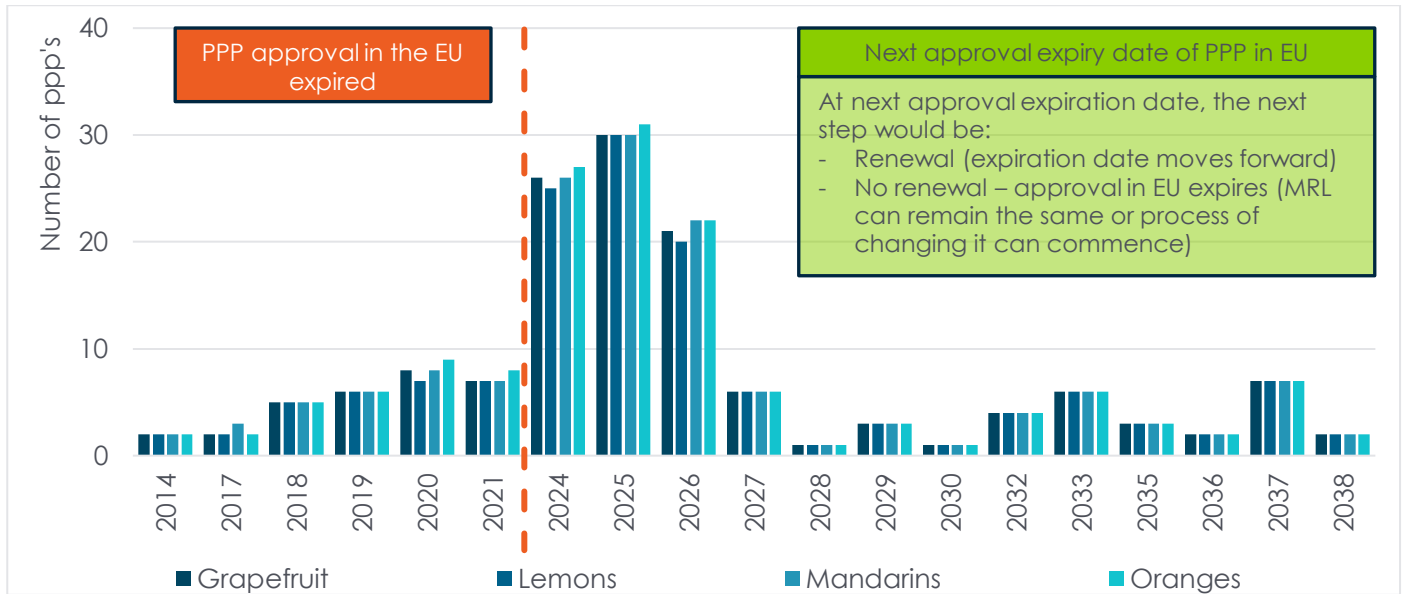


FIGURE 6: APPROVAL STATUS OF PPP'S FOR USE ON SPECIFIC COMMODITIES IN THE EU (WITH IMPLICATIONS FOR SUPPLY TO EU)
Source: AGRI-INTEL, 2024

- The most notable active ingredients that will not be available to producers of citrus hoping to export to the EU are imidacloprid and mancozeb. Imidacloprid is very effective in controlling *Candidatus Liberibacter africanus* (African citrus greening) and so is mancozeb for *Phyllosticta citricarpa* (citrus black spot or CBS).
- The expiration of approval for use of the fungicides imidacloprid and mancozeb, and the consequent change in the MRL in the EU would affect all competitors in that market who had been using the fungicide as part of their chemical control programme. The impact would be disproportionately distributed, as EU producers, for example, do not have to control either African citrus greening or CBS.
- Producers in Limpopo and the Eastern Cape have to control CBS, but production in the Western Cape is not susceptible. In the case of African citrus greening, the Limpopo area is infected, but the Eastern Cape is considered a free area, with pockets of infected areas in the Western Cape, but the main production region – Citrusdal (and surrounding areas) – remains free of African citrus greening (DALRRD, 2024). Thus, the loss of these active ingredients will affect producers in different regions differently, and this would affect their competition with each other and with producers from other Southern Hemisphere countries.
- Considering South Africa's dominant position in Southern Hemisphere fresh citrus exports and also its dominance in the EU market during the Southern Hemisphere marketing window, modelling decreasing citrus supply to the EU (trying to avoid the EU market) and increasing supply to other markets causes the EU price to increase and the average non-EU price to decrease. As a result of the new price points, the logical decision would be to divert produce back into the EU market to capitalise on the higher prices, which brings the model back into equilibrium very similar to the baseline scenario.

- Losing imidacloprid and mancozeb as pesticides would yield vastly different results in the three main production regions. Whereas a producer in Letsitele (Limpopo Province) would experience a double 'hit' on African citrus greening and CBS (30% drop in export share modelled), a producer in the Sundays River Valley (Eastern Cape) would only be concerned about the impact of losing mancozeb as a control for CBS (20% drop in export share modelled). The Citrusdal (Western Cape) producer is likely to have no production system impact, as the area is free of both African citrus greening and CBS, but would benefit from a higher export price as the reduced supply from other production regions causes the equilibrium price to trend upwards.
- To account for other PPP's for which the EU approval expired, a 5% increase in production cost and a 5% decrease in export share was modelled.

Figure 7 illustrates the impact of removing imidacloprid and mancozeb and other active ingredients. The profitability of citrus farming in the Limpopo region will reduce by up to 61% (2029), with the loss becoming smaller as international prices increase due to decreased SA exports. Eastern Cape farmers' profitability will decrease somewhat initially before increasing slightly from 2031 due to the higher prices, returning in the scenario to levels similar to the baseline. Farmers in the Citrusdal and surrounding areas will benefit substantially from higher international prices, as they do not currently face the pests the banned pesticides control.

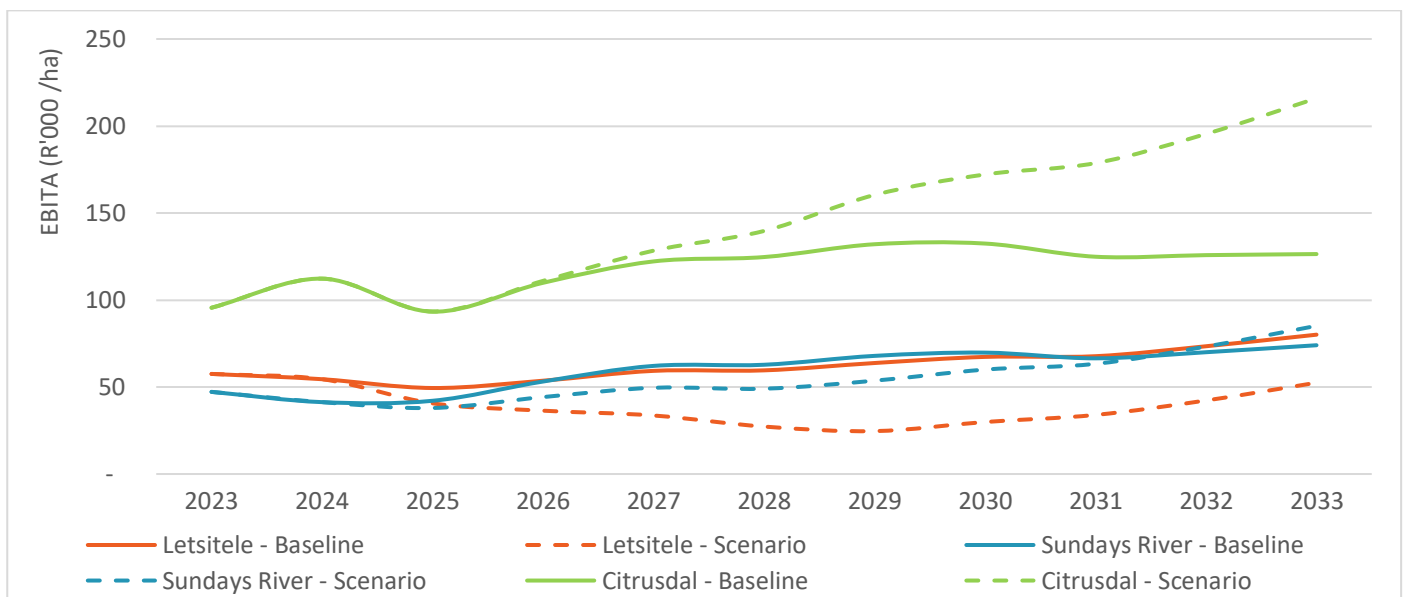


FIGURE 7: REGIONAL COMPARISON OF IMPACT ON PROFITABILITY

- As a result of the incremental increase in average export prices as supply decreases, and the reduction in associated cost (i.e., packaging, transport and cooling), a comparison between the total cultivated area projected under the baseline and scenario assumption differ very little. It is expected that most producers would be able to adapt to the changing conditions, although it should be noted that the destruction of biological assets (orchards) were not introduced with the scenario. Consequently, job losses should be minimal, and perhaps more visible in packhouses than at primary production level.
- It should be noted that the average farm size differ vastly by region, and therefore a per hectare comparison does not reflect total farm profitability. Average production unit size in Letsitele is 59 ha, compared to the 29 ha of the Citrusdal (and surrounding areas) and 24 ha of the Sundays River.
- Furthermore, the commodity split is also different in the different regions, e.g., the Citrusdal has relatively more soft citrus, Letsitele more oranges, and the Sundays River Valley more lemons. Actives that fall away that control pests on specific commodities could therefore also affect profitability in different regions differently. Lemons, as an example, is not a host for false codling

moth (FCM), and therefore if the active ingredients effective in controlling FCM are no longer approved for use in the EU, a farm in the Sundays River will be affected less than, for example, in Citrusdal.

- The long-term impact of the removal of said active ingredients on orchards and pests is however unknown. It is possible that vector control could become a major issue, aggravated by the acceleration of pest prevalence in the regions due to a lapse in suppression and/or resistance build-up on the available control methods.

Conclusion

The EU Green Deal is a strategic roadmap to achieve climate neutrality by 2050 in the European context. To align with the overarching theme of climate neutrality, the F2F strategy guides the initiatives within the agricultural sector. More sustainable food production by reducing greenhouse gas emissions and combating climate change is central to this strategy.

Through the mirror clause, which would require countries exporting to the EU to adhere to the same production and input use constraints as EU farmers, the strategic direction set out in the F2F, by implication, affects production outside of the EU where countries export produce to the EU. The implementation of such a clause could interfere with in-country strategic objectives and implementation strategies to reduce GHG emissions, as set out in the National Determined Contributions.

On average over the last ten years, total GHG emissions in the EU amounted to 3 791 million tonnes per annum (CO₂ equivalent), of which 401 million tonnes per annum is estimated for agriculture. In comparison, South Africa's total GHG emissions amounted to 585 million tonnes per annum (CO₂ equivalent), of which 40 million tonnes per annum is estimated for agriculture. Agriculture was therefore responsible for 10.6% of GHG in the EU, and 0.6% of that was from pesticide use. Conversely, in South Africa, agriculture contributed 6.9% to GHG emissions, of which 0.87% was from pesticide use (EDGAR, 2024; FAO, 2024). Although pesticide use in the EU and South Africa represents a similar share of total GHG emissions, the EU's GHG emissions is 6.5 times that of South Africa.

Aligned with coal electricity generation that is the main culprit, most of South Africa's pledges as Nationally Determined Contributions surround the energy sector that contributes close to 80% of GHG emissions. Furthermore, FAO data shows that 62% of all emissions billed as agricultural emissions occur beyond the farm gate in South Africa. Consequently, while the mirror clause would protect EU producers from competing against produce marketed in the EU that was produced under a different set of rules, it can stand in stark contradiction to the strategic direction of efforts to reduce GHG emissions outside of the EU, as would be the case for South Africa.

While only looking at four industries in South Africa – citrus, pome fruit, table grapes and maize – it is clear that the restrictions and the extent of the implementation can have vastly different impacts on an industry and its producers. The European Green Deal and the F2F strategy in its current form present challenges, and some regionally-specific pockets of opportunity for South African agriculture. While the move towards more sustainable farming practices is commendable, the economic feasibility and practical implementation of these changes need careful consideration. South African farmers, policymakers, and industry stakeholders must work together to navigate these changes and ensure the continued viability of the agricultural sector.

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