

What we spend on protecting potatoes

By Dirk Uys, Potatoes SA, and Marco Marchi, Ocrum Pest and Crop Analysis

Crop protection is a significant contributor to a potato producer's production costs. Following the cost of marketing and potato seed, crop protection cost is the potato producer's largest input. The increase in the cost of individual pesticides increased significantly during 2021 and 2023 but appears to have stabilised.

In a Potatoes SA budget estimate based on a yield assumption of 60 t/ha in a typical irrigation area, crop protection costs amount to 16% of a grower's input costs (Figure 1).

Crop protection

In the context of crop protection expenses, it is important to note that nematicides account for 45% of a typical potato producer's crop protection input costs (as highlighted in Figure 2a). In the 2022/23 season, this amounted to more than R1 billion spent by potato producers to protect their crops annually. It is worth noting a few trends.

Firstly, crop protection spending per hectare has not increased over the last three years (Figure 2b), despite

the increase in the cost of various products. One can probably conclude that crop protection programmes are being based on better prediction and monitoring systems, and growers think twice before spraying.

It is also important to note that a significant portion of existing crop protection products are being phased out due to pressure from influences such as the European Green Deal and the Globally Harmonized System (GHS) of classification and labelling of crop protection products.

As a result, one can expect that biological crop protection products will start to play a more prominent role in years to come. The use of biological-based products has increased by an average of 10% per year and the total segment already

amounts to more than 10% of the total crop protection sector. This is also evident in the recent acquisitions of biological companies by multinational crop protection companies.

The role of products

Although these products are probably not a silver bullet, they certainly need to be understood better regarding the way they are used in spray programmes. These products offer

Figure 1: Proportion (%) of various potato crop production input costs.

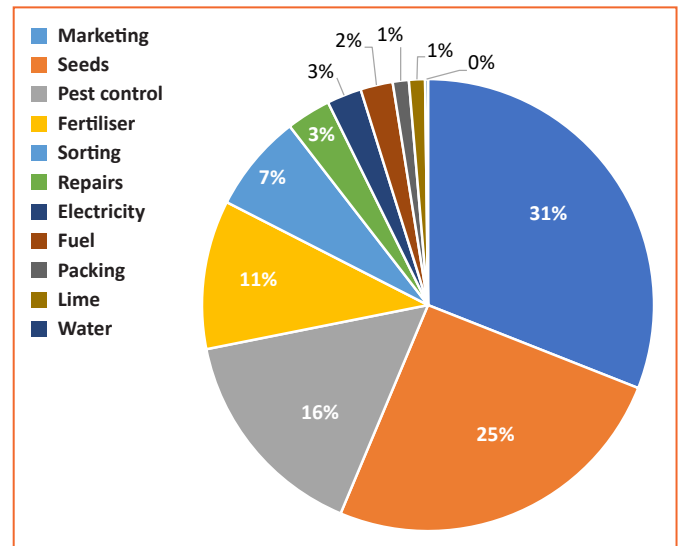


Figure 2a: Proportional (%) spending on nematicides, fungicides, insecticides and herbicides in potatoes.

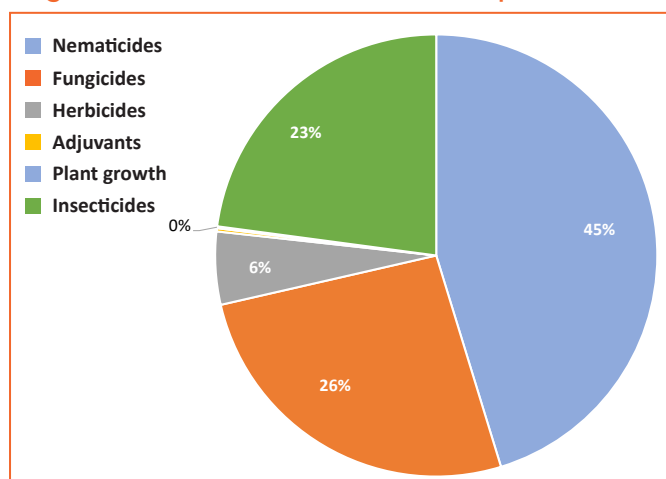


Figure 2b: Crop protection trends between 2019 and 2022 in R millions.

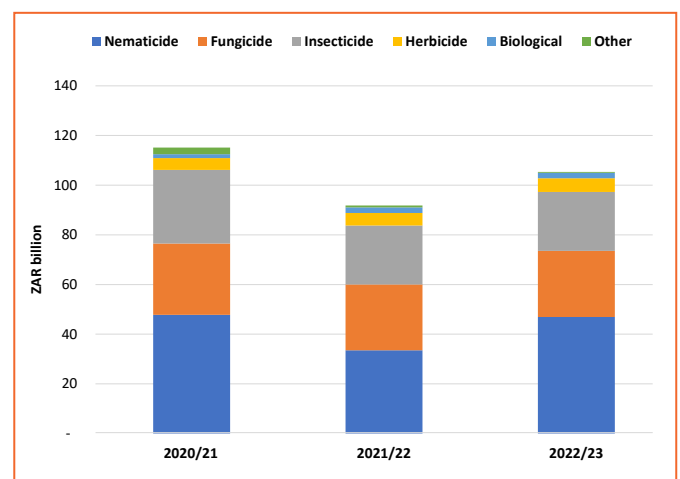
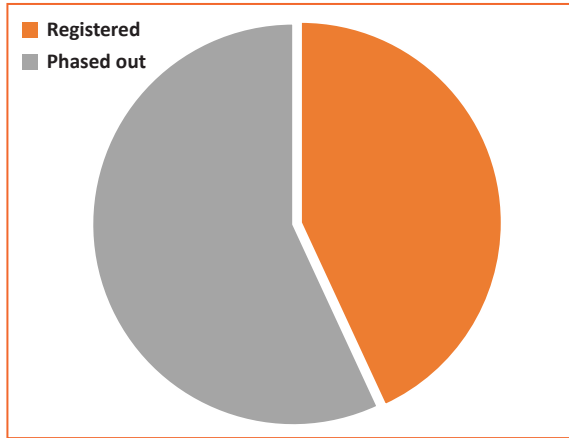


Figure 3: Nematicide ratio between phased out and registered.



Potatoes SA strategy: Three research projects by the Agricultural Research Council (ARC) are underway to evaluate the impact of crop rotation systems on reducing nematode damage by improving soil health. This research is showing positive results with an increase in the occurrence of beneficial nematodes.

- Improved residue profiles.
- An alternative mode of action to minimise and counter resistance.
- Supporting the natural progression of indigenous beneficials.

We also need to keep in mind that global trends are progressing with new breeding technologies that will provide future strategies for the management of pests and diseases, and to improve the quality of potatoes. The challenge, however, is how these will be regulated by authorities.

2022 due to their very strict pest and disease regimes.

Nematicides

Nematode management is an important element in potato health as it alters the yield and appearance of potatoes. Nematodes are complicated organisms to control, and consequently nematicides contribute significantly to potato production costs. The older nematicides are facing challenges to remain registered. Approximately 57% of nematicides are under threat of being phased out (Figure 3).

Fortunately, newer nematicides have been registered such as fluopyram and fluensulfone and innovations in the pipeline look promising.

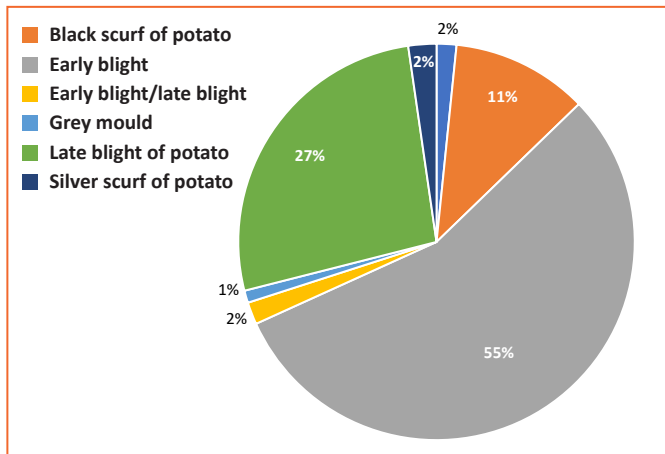
Disease control

Early blight remains the most significant potato disease. Almost a third of products are in danger of being phased out and there are specific concerns regarding the future of mancozeb-based fungicides. A further challenge is the potential development of a sensitivity shift as multicides such as mancozeb offer an

the opportunity to support growers in developing spray programmes and offer the following benefits:

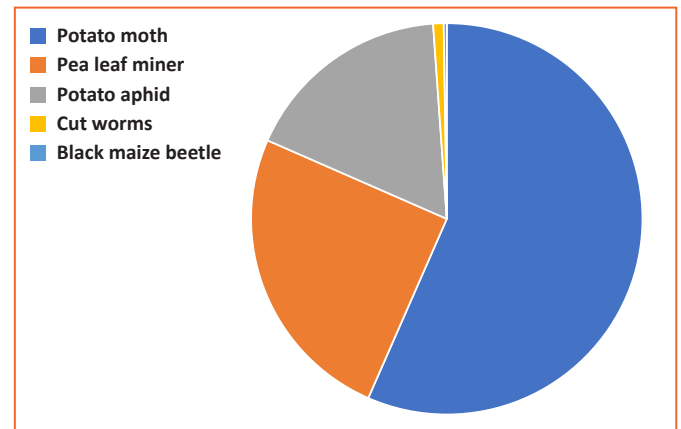
potatoes have similar spray programmes and producers have spent between R16 000 and R18 000/ha, while seed potato producers spent more than R30 000/ha in

Figure 4: Size of the different fungicide segments (%) with early blight being the most significant disease to control in 2022.



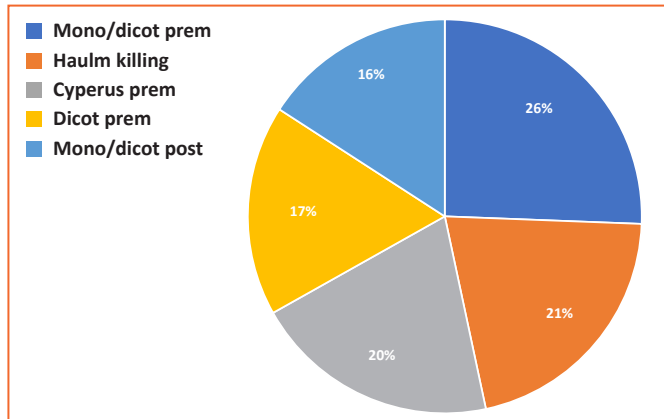
Potatoes SA strategy: Collaboration with the crop protection industry through the CropLife SA Fungicide Resistance Action Committee is essential. Potatoes SA funded two research projects by the ARC to monitor the status of *Alternaria* diseases' resistance against fungicide sensitivity as well as the occurrence of possible new mating types of the late blight pathogen *Phytophthora infestans*. Growers can contact their regional coordinator to test their status should they have a concern.

Figure 5: Size of the different insecticide segments with potato tuber moth being the most significant pest to control in 2022.



Potatoes SA strategy: An insightful piece of work by North-West University has highlighted the sensitivity shift of three of the key modes of action. Aphid trends are monitored in the key seed production regions to ensure optimal control strategies. This is supported by studies by the ARC to understand the environmental dynamics of the tuber moth and leaf miner biology.

Figure 6: Size of the different herbicide segments with mono/dicot prem being the most significant weed to control in 2022.



stalwarts in any insect control strategy.

Herbicides

Herbicides are the smallest segment but are also facing pressure. Of concern is the loss of active ingredients with different modes of action as a result of the GHS.

Potatoes SA, through its research efforts, is focussing on integrating control strategies including:

- Crop rotation studies and green manure systems adapted to prevailing soilborne challenges.
- Weather modelling.
- Pest modelling.

Potatoes SA is also focussing on supporting growers in predicting diseases. To achieve this, growers and advisors will benefit from sharing pest and disease data to develop population trends.

ideal tool to reduce resistance against both early and late blight.

Pest control

Controlling potato tuber moth complex remains the greatest expense, followed by pea leaf miner and aphid control. In the insecticide segment, we have noted the phasing out of chlorpyrifos and cartab hydrochloride which have been

Concerns

It is important to emphasise that using unregistered products should be avoided. This includes growth regulators such as paclobutrazol which are used to inhibit gibberellic acid production, triggering the potato to produce more tubers. This is a trend that seems to be unique to South Africa. Many other potato production countries refrain from this

practice as the possible impact on the next generation of tubers must be understood. Furthermore, the cost of developing new crop protection innovations is expensive. 🌐

For more information, contact Dirk Uys at dirk@potatoes.co.za or Marco Marchi at marcomarchimm@outlook.com.

Mondstuk van die Suid-Afrikaanse aartappelbedryf • Mouthpiece of the South African potato industry

CHIPS

VOL 38 NO 2 • MARCH / APRIL 2024



**WES-VRYSTAATSE KULTIVARPROEWE
BY BULTFONTEIN EN KROONSTAD
IN 2023**

**FEEDBACK REPORT ON
POTATOES SA'S 2024
TRANSFORMATION SYMPOSIUM**

Moerkwekers inspireer:
Top tien aangewys

Control strategies
for potato early dying

What we spend
on protecting potatoes