

# TECH BULLETIN

Crop Protection Development, Syngenta South Africa  
EDITION 3 - August 2018

syngenta®

## Bigger and Better A new development team

**On 1 July 2018 the South African Technical Services department merged with the South African R&D department to form one totally new Crop Protection Development (CPD) team.**

The main advantages that this CPD organisation brings to the business is the following:

- A much bigger team is now more available to our customers. More than 20 technically qualified colleagues spread across the country is now part of this new CPD organisation, and they bring with them a wealth of knowledge! Apart from core and other duties they will make time available to provide support and technical advice to our customers.
- Our exciting pipeline products can now be introduced more efficiently and effectively into the market to provide new solutions to our farmers. This brings end-to-end delivery of our portfolio.

The principle behind merging these two departments makes complete sense. This new CPD team gives Syngenta South Africa a powerful benefit that is difficult to match in a very competitive market. **Andreas Boon, CPD South Africa**



### In this 'POTATO' issue

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# 1 Potato Tuber Moth

## No couch potato

By Tia Ferreira

This past season there have been quite a few cases of potato producers struggling with the control of potato tuber moth (PTM). As a result of the late rain this season the PTM pressure was significantly higher and occurred later in the season. Conditions were thus very favourable for the pest to reach high population levels.

Our findings started with a visit to a farm in the Bothaville area. The producer planted two cultivars, namely Mondial and Sifra. More PTM were noted when walking through the Sifra field compared to the Mondial one, but in the end there were much more damage in the Mondial field. This could be explained by the way the two cultivars grow. The tubers of Sifra grow more downward into the soil, compared to Mondial where the tubers grow more upwards and outwards. When the ridging was done more of the Mondial tubers were exposed and not covered by soil. This was a source of infestation for the PTM flying around and laying eggs.

Although above-ground infestation does not necessarily lead to losses, it plays an extremely important role in the build-up of populations, which can lead to serious crop losses later in the season. Without adequate pest control, the moth population will increase towards the end of the potato growing cycle and extremely high numbers might occur at

the end of the season. Thousands of moths will be flying around and continue to lay eggs, while the amount of foliage and green plant matter declines. Even after foliage die-back, most moths will continue to lay eggs on dead plant matter and on the ground. This means that hundreds of thousands of first instar larvae can occur in a field and penetrate cracks in the soil while looking for food. Enlargement of tubers prior to foliage die-back results in numerous microscopic cracks in the soil, which serve as ideal access points to the tubers. The infestation of tubers during foliage die-back can lead to serious crop losses – up to as much as 80%.

Ridging is very important. The height of the ridges must be sufficient in order for all the tubers to be covered by soil. Thus, depending on the cultivar, you will need to ridge higher.



Figure 1: Damage symptoms on the inside



Figure 2: Damage symptoms on the outside

### Life cycle

#### Moth and eggs

The adult PTM is 8 to 10 mm in length. The moth is nocturnal and mostly active just after sunset. The male moth locates the female through pheromones excreted by the female. Mating occurs immediately, and the female lays all her eggs within two to three days. A single female lays approximately 200 eggs on plants or on the ground beneath plants. In warm weather, the eggs will hatch within three to five days.

#### Larvae

The first instar larvae that hatch are approximately one millimetre in length. They will actively move around in search of a place where they can penetrate the plant. They mine into the leaves between the upper and lower layers of the leaf. In the process, window-like tunnels are formed.

#### Damage on the tubers below ground

When the first instar larvae reach a tuber below ground, the tuber is immediately penetrated, after which the larvae eat small tunnels under the skin. Older larvae will then go on to create larger and deeper tunnels. The first instar larvae are extremely small and usually there will be no sign of where the larvae have penetrated the tuber. The tunnels created under the skin will collapse, decay and darken in colour, which gives the tuber the characteristic symptoms of PTM damage.

## Pupae

The final instar larvae (approximately 12 mm in length) leave the plant and move towards the ground surface (downwards from the above-ground parts of plants, and upwards if the tubers were infested), where they spin a cocoon in which they pupate. The larva will transform into a pupa in the cocoon within two days, and after seven days the moth will emerge from the cocoon.

## Recommendations

Ridging is a very important farming practice. It seals the cracks that are formed during the growing season and will also protect exposed tubers against PTM that are flying around and searching for a place to lay their eggs. Ridging is often scaled down towards the end of the season, and it is precisely then that the moth larvae burrow down to the tubers under the ground.

Pheromone traps are a great way of monitoring the population. This can prevent the grower from spraying too late. Application of insecticides in general need to be moved earlier to ensure that the population does not build up.

In this case Mondial was the preferred cultivar compared to Sifras for the PTM.

When insecticides are sprayed coverage is key, and can be achieved by increasing the spray volume.

In this case the POTATO-PACK™ Maxx would be recommended as it is ideal for high pest pressure situations. The programme integrates specific combinations of applications according to the plant's physiological attributes, thus ensuring that the different systemic and contact products complement each other effectively in order to enhance the plant's health.

A preventative SORBA® application could have averted the PTM population explosion. It is always important to remember prevention is better than cure.



Figure 3: Potato tuber moth larval damage



Figure 4: Potato tuber moth larvae on infected potato



Figure 5: Potato tuber moth larva on infected potato



Figure 6: Damaged and infected potatoes

### READ THE LABEL FOR FULL DETAILS

SORBA® contains lufenuron 50g/l (Reg. no. L5343, Act 36 of 1947) Caution  
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# 2The Blights

By Adri Anthonissen

Early as well as late blight can severely reduce yields and a good preventative fungicide program is one of the best ways of protecting a potato crop.

Two of the most destructive diseases of potato is early and late blight. The two diseases have very different causal agents and very different symptoms (see figure 1), but one thing they have in common is the damage they can inflict on a potato field.

Early blight is caused by *Alternaria solani* and it is almost certain that it will infect your potatoes if preventative control measures are not taken. The disease symptoms are angular dark brown to black lesions with concentric rings (see figure 2). Older lesions are surrounded by a yellow halo as the fungus produces toxins that move into the healthy cells that surround the infection and start killing off the tissue. The concentric rings are caused by the fluctuation in day night temperatures and is often absent in tomatoes grown in green houses where the temperature is more constant. Early blight is a polycyclic disease which means it has many disease cycles



Figure 1: Late and early blight symptoms.

during one season. A disease cycle is the period from infection, till new spores are formed and spread to infect again.

Moisture and temperature is the main factors controlling infection as well as disease development. The minimum temperature for infection can be 10°C and the maximum higher than 35°C, however the optimum temperature for infection is from 20°C to 30°C. No infection can take place in the absence of free moisture or high humidity.

The time it takes from infection to the development of symptoms can vary as it is influenced by many factor such as the age and susceptibility of the plants. The severity of disease development is mostly dependant on moisture the longer the period of leaf wetness the more severe the disease development. Any stress on the plants, such as overcrowding and insufficient nutrition will lead to an increase of disease severity.



Figure 2: Early blight lesion on potato leaf. : Adri Anthonissen

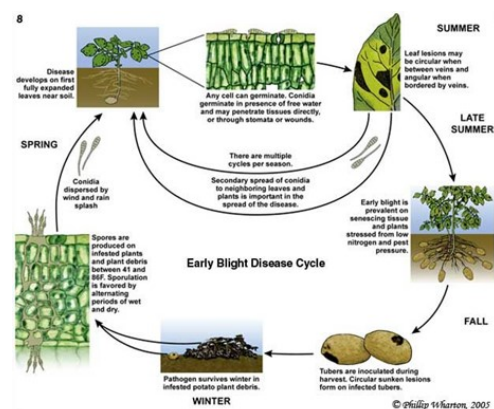


Figure 3: Life cycle of early blight on potatoes. Photo: Phillip Wharton



Figure 4: Late blight growth on the underside of a leaf.

Photo: Gerald Holmes, California Polytechnic State University at San Luis Obispo.

Late blight is caused by *Phytophthora infestans*, an oomycete or water mould which means the fungus relies heavily on water for infection, disease development and spread. Early as well as late blight can severely reduce yields and a good preventative fungicide program is one of the best ways of protecting a potato crop.

Figure 5 shows a potato field with two rows on the right where the control program was not applied and then a buffer row and the rest of the field was treated with a Syngenta POTATOPACK™.



**Figure 5: Left side of the field PotatoPack® vs. No PotatoPack® on the right.**  
Photo: Adri Anthonissen

# 3REGLONE

## Take control of your potatoes

By Jaco Liebenberg (Senior  
Technical Field Scientist)

**Fresh, Fried or Frozen: Potatoes form an important part of our staple food around the world every day. To ensure a reliable supply, crops need to be protected throughout their production cycle.**

Crop protection should, however, not end at harvest as up to 40% of tubers can be lost post-harvest. REGLONE® is a powerful, fast acting and reliable chemical desiccant with a proven track record of over 50 years that helps farmers optimize both potato yield and quality.

REGLONE® contains the active ingredient diquat, formulated as the dibromide salt, which is a non-systemic contact herbicide acting on green vegetation. The diquat ion reacts with electrons from photosystem I in the chloroplast membrane to release a free radicle form. The free radicle is rapidly reconverted when it reacts with oxygen. During this process, highly reactive super oxides are produced, which disintegrate the plant cells.

#### READ THE LABEL FOR FULL DETAILS

REGLONE® contains diquat ion 200g/L as dibromide salt 373.5g/L (Reg. no. L1115, Act 36 of 1947) Harmful  
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## Potato tuber quality

REGLONE® allows farmers to control tuber size, manage harvest times, reduces the transmission of late season diseases and aids in the skinset which contributes to the maintenance of crop quality during storage. Potatoes treated with REGLONE® have a better skinset than those that are untreated. Once potatoes are treated with REGLONE® the process of skinsetting starts within one day. Generally, applying REGLONE® stimulates the formation of an abscission layer in cells between the tuber and stolon. This terminates the juice flow to tubers and improves separation from the vines which leads to quicker harvesting. This process, allowing potatoes to develop a mature firm skin, takes between 14 and 21 days from application but, can be as short as 8 to 10 days in early cultivars (Fig. 1 - 3).

### Factors influencing efficacy

REGLONE® is a contact product where the necrotic lesions are about twice the size of the spray droplet, as such, good spray deposition is needed. When spraying at an angle, better coverage is achieved as more drops find their way underneath the canopy and haulms are covered front and back.

Twin outlet spray tips or conventional flat fan spray tips in a Twin-cap configuration can produce this result. Other factors which influence the efficacy of REGLONE® include spray water quality, water volume, dust on leaves and sun light.

REGLONE® is not influenced by the pH, water hardness (calcium and magnesium ions) or the carbonate concentration in the water. It is, however, strongly influenced by suspended organic matter and clay particles. Any active ingredient that

comes in contact with suspended organic material or clay particles will be deactivated due to their high tendency to bind with soil.

Light plays an important role in the rate of desiccation. As light intensity increases, so does the rate of desiccation. Visible symptoms develop slower under low light intensities and / or low temperatures due to reduced photosynthetic activity but, this will not have an effect on the overall efficacy. Likewise, rain within an hour after application should not hamper the efficacy as REGLONE® is rainfast within minutes after application (15 – 30 min). Diquat is intrinsically biodegradable and is completely mineralized by soil microorganism leaving no residue that can negatively impact follow up crops.

### Application

In South Africa, the dosage for potatoes ranges between 2.5- to 5.0 L/ha. A single application is usually better suited to potatoes that are starting to senesce. It would be recommended that a high dose is used in combination with a high water volume as this has shown to give a better efficacy. A suitable non-ionic spreader, such as COMPLEMENT® SUPER, should be added.

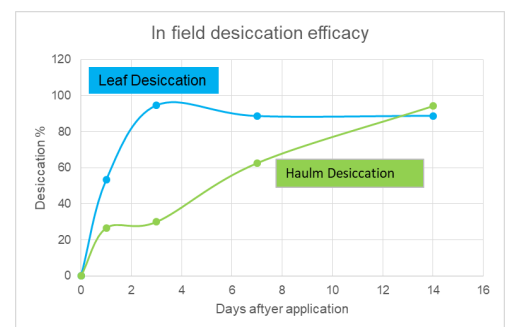
When potatoes are still vigorously growing and have a lush canopy, such as in seed production, a split application might be better. A lower dose can be used for the first application to defoliate the canopy and expose the haulms underneath. The second application can then be done 5 to 7 days later at a higher dose to target the potato haulms.



**Figure 1. Four days after REGLONE® application (4L/ha).**  
Syngenta South Africa trials 2017/2018



**Figure 2. Twelve days after REGLONE® application (4L/ha).**  
Syngenta South Africa trials 2017/2018



**Figure 3. Average leaf and haulm desiccation percentage over a 14 day period after REGLONE® application.**  
Syngenta South Africa trials 2017/2018

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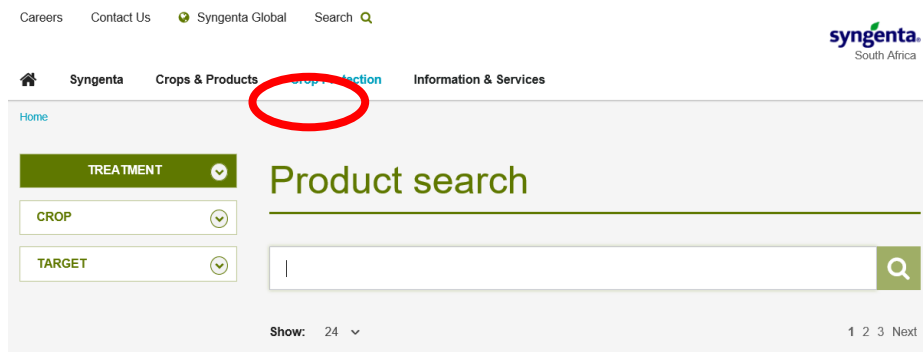


# 4 Syngenta online: One-Stop product search

By Millicent Motileng  
(Technical Services Co-ordinator)

Want to know which products SYNGENTA® has registered for early blight on potatoes, or any other registrations for that matter? No problem, go to the Syngenta South Africa website ([www.syngenta.co.za](http://www.syngenta.co.za)), click on Crop Protection and do your search! See below.

You can either filter by treatment type (fungicides, herbicides, insecticides, etc.), by crop or target.



# 5 CPD Training together

By Andreas Boon

Recently the new CPD team received technical training, equipping themselves better for their daily jobs. Some training sessions were facilitated by our global expert colleagues from Switzerland.



Ron Wohlhauser (middle front) in action at a practical training in the field.

Topics covered during the training included:

- Application Technology was presented by Ron Wohlhauser, Global Lead Application Technology.
- Trialling Excellence was presented by Desiree van Heerden, Technical Product Lead Seedcare and Insect Control.
- Safe Use Training was presented by Bruce McKenzie, Sustainability & Stewardship Manager for Africa Middle East.



Early morning on the farm and ready for action!

# POTATOPACK™

puts more profit in your pocket



why POTATOPACK™ is the smart choice:

**10**  
years  
experience



Building on more than 10 years experience, we offer the right solutions for professional potato production.

**50**  
trials



More than 50 local trials vouch for the success of POTATOPACK™.

**600**  
pockets  
more



POTATOPACK™ yields an average of 600 pockets per hectare more than comparable programmes. A bigger harvest equals more money in your pocket.



Syngenta offers a variety of POTATOPACK™ solutions to address differences in climate and disease and pest complexes in the different regions of our country.



<b>PotatoPack™ Opti</b>	for relatively short growing potatoes (< 90 days)
<b>PotatoPack™ Maxx</b>	for additional late blight protection for medium to long growing potatoes (90-120 days)
<b>PotatoPack™ Plus</b>	for melonoxam-resistant areas and relatively long growing potatoes (110-120 days)
<b>PotatoPack™ Edge</b>	for dryland conditions with lower disease pressure and relatively long growing potatoes (110-120 days)



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