Syngenta
POTATO
SCIENCE

POTATO AGRONOMY ADVICE 2022

syngenta®

DELIVERING MORE FOR YOUR POTATOES

Syngenta offers UK potato growers and agronomists a unique combination of crop protection products, support tools and services to achieve the optimum results in the field and beyond.

SOIL PEST MANAGEMENT

PCN continues to be the most challenging soil-borne pest for potato production.

Populations of the more difficult to control species, *G. pallida*, have continued to spread across England and Scotland. With favourable weather conditions for longer hatching and growing more susceptible commercial varieties, tighter rotations can lead to higher levels.

Given the threat of PCN for potato production, incorporating NEMATHORIN® in conjunction with ICM programmes can help to manage populations to sustainable levels.

NEMATHORIN is the tried and tested effective control for PCN, providing outstanding results on both *G. pallida* and *G. rostochiensis* species in all soil types.

NEMATHORIN recommendations for PCN control	
Application rate	30 kg/ha
Application advice	Apply at planting and incorporate immediately to a consistent depth of 10-15 cm

CLICK TO SEE label info

Nemathorin®

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NEMATICIDE STEWARDSHIP

NEMATHORIN stewardship best practice follows a series of steps to assure accurate application and incorporation.

The aim is to get the product into the protection zone around the tubers to prevent damage.

Furthermore, the industry approved practices seek to minimise any risk to the environment and non-target organisms.

Whilst there have been no recorded incidences of adverse effects on wildlife over all the years with NEMATHORIN use, it is important growers and agronomists record and store the evidence of no effects, should its future be challenged.

CLICK TO WATCH the NEMATHORIN best practice application animation

GRANULAR NEMATICIDE BEST PRACTICE STEPS

1. QUALIFY
Operators must have a PA4 and 4G qualification

2. CALIBRATE
Machinery must be professionally calibrated every two years

3. SINGLE PASS
Apply and fully incorporate nematicides within a single pass

4. SHUT OFF
Shut off granule flow 3m before the end of the row

5. SPILLAGES
Bury small spillages immediately

6. CHECK
Check treated fields 24 hours after application for adverse effects to wildlife

Always follow the Nematicide Stewardship Programme, available on the NSP website

CLICK HERE TO VIEW

WIREWORM MOVEMENT

Wireworm damage to tubers has become a greater issue for many potato growers over recent years, with an increasing interest in NEMATHORIN to reduce its effects.

Wireworm populations have benefited from favourable climatic conditions for pests, along the withdrawal of ethoprophos and neonicotinoid seed treatments that also had an effect through the rotation.

New Syngenta Potato Science research has been evaluating the potential for a soil-incorporated granular formulation of lambda-cyhalothrin, which trials have shown could offer better results.

The product is currently in development across a number of European countries and in submission for a UK registration. The product is specifically targeted at wireworm in potatoes and maize.


Wireworm damage

CLICK TO FIND OUT MORE for the 2022 season

CLICK TO WATCH the Potato Science Live soil pest webinar

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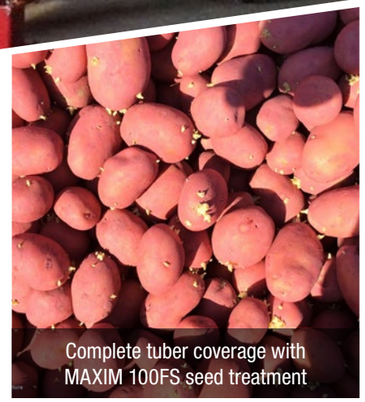

Complete tuber coverage with MAXIM 100FS seed treatment

SEED & SOIL PATHOGENS

COVERAGE FOR SEED- AND SOIL-BORNE PATHOGENS

Growers and agronomists should now be considering a combination of MAXIM® 100FS seed treatment and in-furrow AMISTAR® treatments, to reduce the combined threats of seed- and soil-borne pathogens.

Protection against potato diseases at planting can assure more even emergence and consistent growth, along with cleaner, brighter tubers for sale and storage at harvest. Key seed and soil pathogens to target include *Rhizoctonia* stem canker (black scurf), silver scurf, black dot and common scab.

Precision application of MAXIM 100FS liquid seed treatment pre-planting can better help to ensure complete coverage and protection of the tuber, along with controlled and convenient treatment. Whilst seed treated at source or contractor-applied mobile treatment has been standard, new investment in setting up an on-farm treatment line can give extra convenience and flexibility to treat individual seed lots to specific field risks.

MAXIM 100FS recommendations for the control of a range of seed-borne diseases	
Application rate	0.25 l/tonne
Max no. treatments	1 before planting
Application advice	Only apply to dormant tubers before planting. **Do not apply to crops intended for seed production**

CLICK TO SEE label info

Maxim® 100FS

CLICK TO FIND OUT MORE about challenges of seed- and soil-borne pathogen control for the 2022 season

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CLEAN FINISH FOR TUBERS

Where seed tubers are to be planted into fields with a known history of soil-borne *Rhizoctonia*, or black dot, the use of in-furrow AMISTAR application is also advised.

Effects of *Rhizoctonia* stem and stolon pruning reduces plant vigour and can trigger secondary tuber initiation.

AMISTAR has been seen to be beneficial for the consistency of harvested tuber numbers, size and maturity - including dry matter and sugar levels. It delivers benefits for pre-pack and processing production:

- Improved grade out
- Brighter, cleaner skin finish
- Reduced losses in processing
- Consistent fry colour

Control of soil-borne pathogens reduces the incidence of black dot at harvest for improved skin finish and storability of tubers.

Trials have shown AMISTAR use can give more consistent crop emergence and even early plant growth.

AMISTAR recommendations for control of soil-borne pathogens	
Application rate	3.0 l/ha
Application advice	Apply on the planter to incorporate treated soil around the seed tuber. Avoid direct spray onto the tuber

CLICK TO SEE label info

Amistar®

CLICK TO WATCH the Potato Science Live seed- and soil-borne pathogen webinar

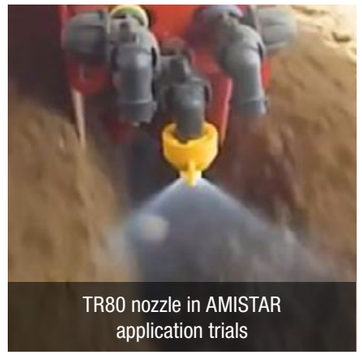
FASTER IN-FURROW APPLICATION

Syngenta application research into AMISTAR in-furrow application techniques has shown the efficacy of hollow cone nozzles and treatment at 100 l/ha to cover soil surrounding the seed tuber.

In-field trials giving excellent control of black dot indicated using two Lechler TR80 nozzles, orientated front and rear, gave consistent results.

For modern belt planters, operating at faster speed, fitting a Lechler FT90 01 in the front and 02 in the rear also achieved good results and reduced risk of drift.

With the availability of clean land increasingly scarce and expensive, growers now have the opportunity to mitigate against both seed- and soil-borne pathogens.



TR80 nozzle in AMISTAR application trials

CLICK TO FIND OUT MORE on AMISTAR application advice updated for 2022

MAINTAINING BLIGHT PROTECTION

The evolution of more aggressive genotypes of potato late blight has highlighted the need for robust anti-resistance strategies with all applications.

TRACKING EVOLVING BLIGHT GENOTYPES

The dynamic adaptation of new genotypes of potato blight continues to put pressure on management strategies.

The work of AHDB and the James Hutton Institute in tracking genotype populations has been instrumental in telegraphing potential problem issues as early as possible. It has clearly highlighted the continuing rise of the more aggressive EU36-A2 clone, along with a resurgence in EU37-A2 with reduced sensitivity to fluazinam.

Early identification of evolving blight genotype trends is essential for tailoring effective season-long control strategies.

FRAC GUIDELINES FOR BLIGHT

REVUS® is from the CAA fungicide group (FRAC code 40).

FRAC advocates using tank mixtures or co-formulated products and alternating treatments using fungicides with different modes of action. **Where possible use tank mixes utilising actives with different modes of action.**

Where CAA fungicides are applied in tank mix, or co-form, with another fungicide from a different group, they should make up a maximum of 50% of the season's fungicide programme.

WATCH EUROFINS BLIGHT TRIAL VIDEO HIGHLIGHTS

Watch the report from the 2021 Eurofins trials for the latest on blight fungicide activity and new application advice for the Syngenta 3D ninety nozzle delivering outstanding efficacy, along with 90% drift reduction.

BlightCast

FORECASTING BLIGHT

Recognising the risk posed by more aggressive blight genotypes, Syngenta BlightCast now features the Hutton Criteria as the key factors determining the five-day local forecasts.

Using new technologies to manage and apply fungicides at the right time and in the right place will all help stay ahead of blight infections in the future.

CLICK HERE to register for BlightCast

CLICK TO WATCH the Potato Science Live blight webinar

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CONTROL OF ALL BLIGHT ISOLATES

Innoculated and irrigated blight trials known to be infected with the aggressive EU36_A2 genotype showed REVUS with a drift retardant to be the most effective fungicide against all the blight isolates in the trial.

Eurofins' results highlighted that REVUS is inherently active on all blight genotypes present, including EU36_A2. With the evolution of more aggressive new isolates, robust treatments can help protect the efficacy of every application in the programme for season-long control.

In field applications and independent blight trials, REVUS continued to maintain the same consistently reliable levels of efficacy in the presence of more aggressive strains of blight.

REVUS recommendations for blight protection	
Application rate	0.6 l/ha
Number of applications	Four per crop

CLICK TO SEE label info

Revus®

CUT DRIFT TO KEEPS SPRAYS ON TARGET

For the second consecutive year blight field trials have shown the performance of REVUS has been optimised with the addition of drift retardant technology.

The addition of Crusade drift retardant in the tank mix with REVUS has shown to reduce the risk of drift and improve spray deposition throughout the crop canopy.

Nozzle research at Syngenta's Jealott's Hill application facility has shown the inclusion of Crusade can concentrate the proportion of the optimum sized droplets in the spray pattern.

CLICK TO SEE new potato crop application advice

The addition of a drift retardant with REVUS is now a standard recommendation for the 2022 season.

ALTERNARIA ISSUES INCREASE

A. solani

Stress risk factors that can trigger *Alternaria* (early blight) infection are an increasing issue for growers.

Climatic changes, with more severe weather events – from prolonged drought, extreme heat or sudden storms – impose stresses that predispose potato plants to the effects of infection.

CLICK TO SEE potato crop biostimulant stress management

The future loss of any blight fungicide active with effects on *Alternaria* could further weaken growers' options.

AMPHORE® Plus combines the outstanding late blight protection of REVUS (mandipropamid), with difenoconazole to tackle *Alternaria* – including the two main pathogens, *A. solani* and *A. alternata*.

AMPHORE Plus recommendations for blight and *Alternaria* protection	
Application rate	0.6 l/ha
Number of applications	Three per crop

CLICK TO SEE label info

Amphore® Plus

syngenta®

BIOSTIMULANT BENEFIT FROM SYNGENTA SCIENCE RESEARCH

QUANTIS™ is the exciting new biostimulant from Syngenta for potatoes.

Results of the UK's most extensive ever trials of a biostimulant in potatoes have shown that QUANTIS can effectively help plants cope with the impacts of heat stress.

Of the 32 sites experiencing conditions of greater than 25°C for more than four hours in UK field trials, yields from the QUANTIS treatment programme were on average 2.3 t/ha greater. The 14 sites that experienced a heat event in excess of 30°C, recorded an average 1.9 t/ha yield increase.

CONDITIONS HOT UP

Climatic conditions are undoubtedly becoming more extreme. The ten hottest years on record in the UK have all occurred since 2000. As climatic conditions have changed over recent years, extreme and prolonged heat periods are becoming more frequent.

Research has shown the optimum root growth in potatoes occurs at soil temperatures of 15 to 20°C, with a fall off when temperatures exceed 20°C. The relatively shallow rooting of potatoes, compared to cereals, makes the crop more susceptible to temperature changes.

Warmer soils have also been shown to limit tuber initiation and the numbers of tubers formed. The UK's highest temperature of 38.7°C, recorded in the eastern counties in 2019, exemplifies future challenges for potato production.

COPING WITH PLANT STRESS

Plant physiological studies indicate that where potatoes are under the effects of oxidative stresses, they are unable to assimilate proteins to transport down into tubers. In fact, they may even be drawing on plant reserves to counter the stress factors.

Acting directly as an anti-oxidant, QUANTIS can help to counter reactive oxygen species (free radicals) that can cause significant damage, particularly within the foliage if leaves get too hot. It is believed to activate and enhance the plant's natural capability to adapt to heat stress, to prevent damage.

Furthermore, the osmoprotectant function of QUANTIS works to alleviate osmotic stress and leaf damage, typically associated with heat, drought and ice formation. It works to strengthen the plasma membrane around the cell to better maintain turgor pressure that holds water in the cell, which enables it to continue to function effectively.

A derivative of sugar cane processing, it delivers a readily available blend of organic carbon, amino acids, potassium and calcium that supplement the plant's own molecular cell function.

Application research has shown QUANTIS is compatible with all blight products trialled. It can be integrated into the spray programme from tuber initiation, through tuber filling period, ideally in advance of abiotic heat stress events occurring.

CLICK TO FIND OUT MORE about QUANTIS

THE FUTURE FOR BIOSTIMULANTS

Biostimulants offer huge potential for enhancing plant growth that will make more efficient use of available input resources.

Biostimulants can help to develop root structures and plant physiological effects to get nutrients into the plant more efficiently and better utilised. That can improve yields from reduced inputs and reduce the carbon footprint of production, as well as cut risk of environmental loss.

Furthermore, with legislative pressure restricting the crop protection arsenal for agronomists, along with societal desire for reduced pesticide use, biostimulants offer the potential to achieve the best possible results of what is available, as well as opening opportunities for new product development.

Biostimulants and crop protection products are entirely complementary. Alleviating the barriers that stress effects place on plants' natural health, increases the opportunity for crop protection to work most effectively.

CLICK TO WATCH the Potato Science Live biostimulants webinar

CLICK TO WATCH the Science behind QUANTIS video

CLICK TO WATCH the QUANTIS potato split field trials video

QUANTIS recommendations for crop stress management	
Application rate	2.0 l/ha
Number of applications	Three per crop

CLICK TO SEE label info

Quantis™

POTATO APPLICATIONS ON TARGET

The new Syngenta 3D ninety looks set to become the nozzle of choice for potato applications.

Results have shown it offers significant benefits for pre-emergence DEFY® herbicide application, as well as giving a better performance than existing nozzles trialled for blight applications.

PRE EMERGENCE COVER

Potato seedbeds present unique challenges for herbicide application. Sides of the ridge or bed can be shaded from spray droplets, particularly if there are any cross winds moving the pattern. Furthermore, the depth of a bed can affect coverage.

Drift reduction from the 3D ninety minimises any impact of sideways spray movement, whilst the design gives a spray pattern less affected by boom height.

The angled spray also achieves good all-round coverage of any soil clods on the surface.

BLIGHT APPLICATIONS

The 3D ninety nozzle's 55° angle has shown to get more even blight spray distribution throughout the crop canopy.

Used for REVUS application in conjunction with a drift retardant, it proved to give the best and most reliable results in nozzle trials at Eurofins last season.

The 3D ninety, fitted to alternate the spray pattern forwards and backwards, along the spray boom, improves efficacy, increases work rate and reduces drift – which is good for the environment and getting the best value from an application.

With the Syngenta Potato Nozzle being withdrawn from manufacture, the 3D ninety will be the nozzle of choice for potato applications when it is launched later this year.

The recommended water volume of 200 l/ha for both pre-emergence applications and blight sprays remains best practice in most situations.

CLICK TO WATCH the Potato Science Live blight webinar

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ENVIRONMENTAL INITIATIVES

From soil health to pest control, new environmental initiatives are helping to deliver more integrated agronomy decisions and sustainable potato production.

The principle of planting a green cover on uncropped land surrounding potato crops, to protect soils and capture nutrients in the field, was pioneered by the Syngenta Green Headland Mix.

As part of the company's Operation Pollinator initiative and Good Growth Plan, over 330 hectares of the Syngenta subsidised seed mix was supplied to UK growers in 2020 – an equivalent of over 550 km of six-meter margin.

The Green Headland mix has proven to capture nutrients worth up to £200/ha – available to the following crops and avoiding environmental losses. Deep rooting plants in the mix have shown to protect the soil from damage by operating machinery and return soil structure to better condition.

CLICK HERE TO TAKE ADVANTAGE OF SUBSIDISED SEED MIXES

CLICK TO WATCH the Potato Science Live sustainability webinar

IPM INTEGRATION

Now, new research is investigating the role of Green Headlands to reduce the risk of virus transmission into crops. Extensive field studies have shown the huge numbers of pest predator species present in the habitat, as well as acting as a physical barrier to hold up migrating aphids that could transmit virus.

New Syngenta studies will identify how cover strips may be practically introduced through the growing potato crop, to bring the benefits of beneficials into the field.

See how IPM strategies can work in potatoes

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BEFORE PLANTING	PLANTING	PRE-EMERGENCE	EARLY ROSETTE	RAPID CANOPY	FLOWERING	CANOPY COMPLETE

Maxim® 100 FS | Amistar® | Defy® | Revus®

Nemathorin® | FubolGold WG® | Amphore® Plus | Amistar® | Hallmark Zeon® | Quantis™

Maxim® 100 FS
Seed treatment for a range of diseases

Nemathorin®
The only synthetic granular nematicide for PCN control

Additional activity against wireworm

Amistar®
Effective activity against *Rhizoctonia* and Black dot

Even emergence and rapid ground cover

Helps deliver cleaner tubers with less disease

Defy®
Reliable and flexible pre-em herbicide

Partner with other herbicides to extend the weed spectrum when needed

FubolGold WG®
Trials have shown that pink rot can be managed alongside blight control

Quantis™
R&D led biostimulant for targeted relief of heat and drought stress

Hallmark Zeon®
Fast acting contact insecticide for controlling aphids plus incidental control of other pests

Revus®
Providing strong performance in your blight programme

Excellent rainfastness

Consistent high performance

Amphore® Plus
Combines mandipropamid for late blight and difenoconazole for *Alternaria* control

Two key diseases with one product

Amistar®
Foliar application for moderate control of early blight (*Alternaria solani*)

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Syngenta UK Ltd. Registered in England No. 849037. CPC4, Capital Park, Fulbourn, Cambridge CB21 5XE.
Tel: 01223 883400 **Fax:** 01223 882195 **Email:** customer.services@syngenta.com **Web:** syngenta.co.uk.