> *“It’s all about protecting yield, protecting size distribution and protecting tuber numbers.”*

# Forewarned is forearmed

**Potatoes**

**The landscape for managing rhizoctonia in potatoes has changed significantly over the past two years. *CPM* looks at the latest advice on protecting marketable yield from this damaging disease.**

*By Rob Jones and Lucy de la Pasture*

**It’s been a litany of bad news for potato growers over the past few years when it comes to chemistry. Some old favourites in the crop protection armoury have fallen foul of the hazard-based regulatory system adopted by the EU in 2009.**

But growers still have fungicide options for control of rhizoctonia and stem canker, even though there have been casualties in this area, and control starts long before the planter rolls into the field.

There are three windows for treating potato seed for rhizoctonia — when it’s graded at source, soon after it arrives on farm or at planting.

Some will have seed delivered ‘just-in-time’, which lends itself to powder treatment on planter. But there’s a move away from that approach, with agronomists increasingly favouring early treatment with liquids. And the signs are that growers are acting on that advice.

Rhizoctonia solani is a problem most growers will be all too familiar with, particularly where the crop has been grown intensively, and 2021 was a year when it hit crops hard.

In East Anglia, independent consultant Andy Alexander has advised over many years, and he says conditions played a large part in the severity of disease on some of his clients’ farms last year.

Cold soils in the spring are a major risk factor as it keeps the brakes on plant development after planting and allows seed- or soil-borne infection to take hold on stems and stolons, he explains.

## Cold spring

“Initially, this will hinder emergence and result in uneven crops. Later the reduced primary stolons give rise to more very small or very large tubers, reducing overall yield and dry matter, but most importantly the marketable yield.

“Because of the spring we had last year, when it was very cold throughout April, I was trying to stop growers planting because the soil temperatures were just too low.”

Andy says the black scurf seen on tubers later in the season can be a “pain in the backside” for packing producers, but his biggest concern is stem and stolon infection. This results in a mixed sized sample and that’s a problem across all potato markets.

“The issue we have today is that potato businesses are getting bigger, and the parameters are always being pushed. Where crops did go in early, we saw issues with mixed samples. I knew it would happen,” he comments.

To avoid a similar scenario this season, there are several things which can be considered before the 2022 planting campaign kicks off in earnest.

Black scurf — the seed-borne phase of the disease’s lifecycle — is the primary source of stem infection, so sourcing clean seed is one of the most crucial aspects in an integrated control strategy.

The leg work should have been done already, says Andy, with visits to growing seed crops an important way of identifying any issues early, not just with rhizoctonia but with virus too.

Spud Agronomy potato specialist John Sarup’s advice is to get seed down to the farm as early as possible, particularly as well-publicised haulage problems and chemical shortages could materialise during the peak delivery period.

Early delivery will also allow time for a thorough visual inspection of seed as part of a rhizoctonia risk assessment and this will inform decisions on potential seed ▸

*Rhizoctonia can result in uneven crop emergence and stolon pruning, all contributing to a variation in tuber size and number.*

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*Wash seed as soon as it arrives on farm to inspect for diseases, checking for rhizoctonia using an eye glass to check for fungal hyphae.*

## Impact of rhizoctonia on potatoes

| Rhizoctonia | Yield % | % Dry matter | % Tubers <35mm % | % Deformed |
|---|---|---|---|---|
| No infection | 100 | 20.9 | 8 | 0 |
| Light infection | 95 | 20.7 | 8 | 5 |
| Moderate infection | 82 | 19.7 | 10 | 17 |
| Heavy | 71 | 18.9 | 23 | 36 |

*Source: Wageningen University*

▸ treatments, he says. "Wash seed up and have a good look at it when it arrives. Often you can't see the rhizoctonia hyphae with the naked eye, so it's a case of using a magnifying glass to check."

This is important because some types of rhizoctonia — known as anastomosis groups (AGs) — don't readily produce black scurf visible to the naked eye. AG 2-1 is common in the UK and has this characteristic, so may slip through the net, he explains.

John says other important factors will include field history, with land with a history of potato production likely to be infected, along with potato cyst nematode (PCN) or free-living nematode (FLN) presence. It's known that nematodes feeding on any open wounds in roots make rhizoctonia infection more likely.

With fewer opportunities to plant potatoes on virgin land across the British growing area, and varieties all susceptible to greater or lesser degrees, he recommends using a seed treatment in most situations.

"Once we have planted a seed piece and it's underground, we have no control over the plant and its root system until it emerges. I'm of the opinion now that, with such high input costs in potatoes, a little bit of money spent early on protecting seed is money well spent.

"It's all about protecting yield, protecting size distribution and protecting tuber numbers," he emphasises.

Following the recent losses of on-planter powder seed treatments, Monceren (pencycuron) and Emesto Prime (penflufen), there's been new interest in pre-planting liquid seed treatments applied to tubers over a roller table.

John says this is reflected by the number of his seed-growing clients who have invested in lines that include a roller table applicator, like a Team CTC 2 with twin rotating nozzles under an air assisted canopy.

Andy has been encouraging clients to go to liquid treatments for rhizoctonia control, such as Rhino (flutolanil) and Maxim (fludioxonil), in recent seasons.

He says the ideal time to treat seed is at source during final grading with the type of equipment John's clients are investing in. These will deliver an accurate dose, maximise coverage and achieve the best control.

There's also the option of getting a contractor to apply a treatment once seed has arrived on farm, subject to availability. "The downsides are that it's another job to organise at a busy time and the tubers have to be handled again, which does increase the risk of spreading other problems like dry rot and gangrene," adds Andy.

If opting to treat with liquid on farm, he ▸

*Rhizoctonia infection also causes 'elephant hide' or netting on the skin surface as well as black scurf.*

## Digital control key to powder seed treatment

To ensure accurate application of remaining powder treatment, Rhino DS, growers still using an analogue applicator controller should upgrade to a digital system with up-to-date software, according Certis.

Rhino DS has a label requirement to be applied using an automated powder dispenser. Most planters now have applicators fitted — one per planter row — and the majority of these were manufactured by Team Sprayers, controlled by the firm's Digimon digital system.

Team's Danny Hubbard says its auto-calibration sequence sets the hoppers within +/- 5% of the target rate and enables pre-season calibration to be completed in 15 minutes.

NSTS guidelines recommend annual testing of applicators but currently the legal requirement is for them to be tested before reaching five years old and once every six years thereafter.

"NSTS testers usually find the applicators are spot on. Running through a short list of pre-season checks helps keep them that way," adds Danny.

He recommends checking the drive belt for wear, checking all grub screws are tight and checking that there's no build-up of powder on the screw drive at the bottom of the powder hopper, leftover from the previous season.


*Growers with an earlier version will need to send their Digimon to Team customer services to be re-chipped.*

Another crucial check this season is making sure Digimon controllers have the latest software version V4.2 installed, which is programmed for application of Rhino powder. "Growers with an earlier version will need to send their Digimon to Team customer services to be re-chipped."

Once planting is underway, he says the only adjustment required is re-setting of seed size, in number of tubers per 50kg of seed, when switching between varieties or seed lots.

A final compliance point is that planter operators must hold the NPTC PA12 qualification for application of pesticide as a continuous process via conveyor, roller table or other equipment for on-planter powder application.

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*On early chitted crops, Fiona Law-Eadie says she prefers to get residual herbicides on early, when ridges have settled.*

▸ stresses the importance of good seed storage after taking delivery, as liquid treatments should ideally be applied before any signs of dormancy break.

"Seed should be looked after and if you don't have good cold storage, think about renting some space [from a neighbour who does]. If you have a good building, there's also the possibility of renting a fridge to keep your seed dormant," he explains.

John says the main advantage of using liquids is that it takes a job off the planter, with powder application adding to a list that includes running the planter itself, plus in-furrow applications where used.

In terms of product choice, Rhino liquid has very good activity on black scurf and is the only product to have full control of stem canker on its label. It also provides a reduction in silver scurf.

Maxim provides a reduction in black scurf, silver scurf and black dot, and John says it's also been shown to increase tuber numbers, so markets and variety are considerations when making recommendations.

"On varieties, like King Edward, that produce a lot of tubers anyway, I'd use Rhino. It also seems to move with the growing point and protect well against stem canker. Where aiming for high numbers, I might go for Maxim," he adds.

Liquid treatments provide opportunity to treat at source or when seed arrives on farm, but the one surviving powder treatment — Rhino DS — offers an effective option, with the flexibility to make treatment decisions at the last minute.

This is particularly advantageous for growers having seed delivered "just-in-time" during the planting campaign. "Like with liquids, the most important factor is correct application," notes John. ■

## Planning key to early weed control

Higher fertiliser costs, price pressure from supermarkets, the potential loss of more key actives plus issues around maximum residue levels (MRLs), all point towards another very challenging year for UK potato growers, says agronomist Fiona Law-Eadie.

Dividing her time between Produce Solutions, a division of Greenvale AP, and sister company Crop4sight — a potato-based software management company – Fiona advises growers across Shropshire, Herefordshire and Oxfordshire.

"There's no doubt farmers have suffered significant product losses in recent years. Effective weed control strategies have been hit hard with the loss of both linuron and diquat. With other products now under the regulatory spotlight, it's not going to get easier in the foreseeable future," she says.

"Within my territory, challenges are linked to a large variation in soil types, including very light land unsuitable for metribuzin, a wide range of following crops and some metribuzin-sensitive varieties. So early weed control planning is essential.

"On early chitted crops, I prefer to get residual herbicides on as early as possible — once ridges have settled and there is good moisture in the soil. Praxim (metobromuron) is certainly a go-to residual for me in the tank-mix. It's flexible, extremely crop safe and, when applied at a rate of 2.5 l/ha, it shows good activity on a broad spectrum of weeds, including annual meadow grass, common groundsel and annual nettles," comments Fiona.

"In higher weed burden situations, my tank-mix preferences are either Praxim plus aclonifen or prosulfocarb, when dealing with metribuzin-sensitive varieties, or Praxim plus metribuzin if planting metribuzin-tolerant varieties," says Fiona.

"On later planted crops, I generally favour applying both the residual and contact herbicides together in a single spray approach, normally at higher rates depending on the overall weed population. As always, timing is the key with a one-spray strategy and I'm looking to apply when there's good soil moisture, around 3-4 weeks after planting just before the ridges begin to crack. "

So what about contact options? "Gozai (pyraflufen-ethyl) offers effective control in most situations, as long as weeds aren't too large or deep rooted. To achieve optimum results, I recommend applying it at 0.4 l/ha in minimum water volumes of 200 l/ha, with methylated seed oil (MSO) if applied alone, and when weeds are larger than four true leaves."

James Wrinch, an independent agronomist at East Suffolk Produce, endorses Fiona's strategy advice and agrees that 2022 is likely to present some new and significant hurdles for UK growers.

"Beyond the likelihood of more product losses, there could also be a substantial rise in inflationary costs to growers — particularly on key inputs such as chemicals and fertiliser linked to rising energy prices," he says.

"Covering South Norfolk, East Suffolk and North Essex, my main customer base are growers supplying either the wholesale or retail packing markets — although I do also have customers growing for export to the Canary Islands.

"Key weed control challenges in my area include dealing with light land and potatoes in rotation with other root crops. I also have many farmers growing very early potato crops under fleece. This can often be tricky because of the necessity to get the residual herbicides on very quickly once planting has been completed," explains James.

*Praxim forms the cornerstone of James Wrinch's early herbicide programmes, primarily due to its crop safety.*

"On product choice for residual herbicides, both aclonifen and metribuzin, and to a lesser extent pendimethalin are all sound options. However, based on its outstanding crop safety record and reliability, my corner stone is Praxim when building early programmes. It's uncomplicated so there's no need to stress about varieties, following crops or soil types.

"For later planted main crops on messier fields, my main go-to tank mix is Praxim plus aclonifen plus Gozai. It's a proven combination that will deal with weed control in 80-90% of the growing scenarios I encounter," he says.

"As a contact herbicide, Gozai performs well against most broadleaf weeds when applied at the correct rate of 0.4 l/ha. Remember to keep water volumes at a minimum of 200 l/ha and apply an MSO alongside Gozai to maximise the effectiveness of the product," he concludes.

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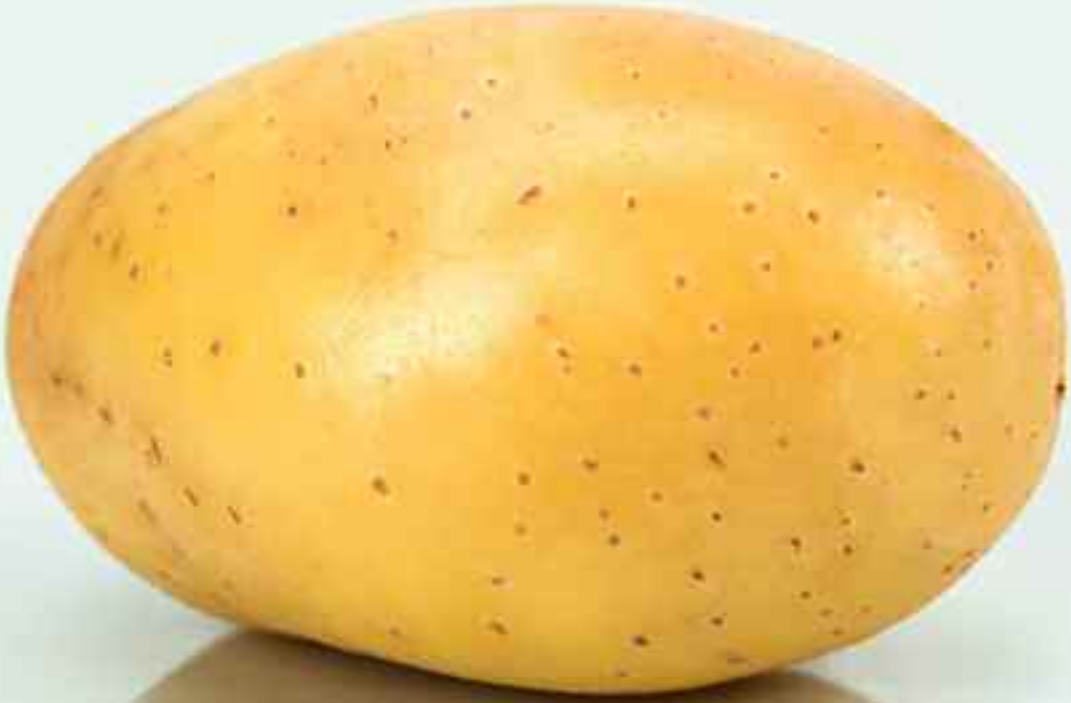

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