

# New approval for FLN

“ It looks like we have a product that should do as well as Vydate for managing Docking disorder.”

Untreated Control strip

Nemguard DE 10kg/ha

## Nematodes

Feeding by free-living nematodes can have a big impact on sugar beet roots. The sudden withdrawal of Vydate last season left growers without anything to stop it. CPM looks at a new alternative granted approval after positive results in BBRO trials.

By Rob Jones  
and Lucy de la Pasture

The recent approval for nematicide Nemguard DE (garlic extract) is good news for any sugar beet growers impacted by Docking disorder. Independent trials show it's equally as effective as Vydate (oxamyl) at reducing symptoms in affected soils.

The writing had been on the wall for carbamate granular nematicide Vydate for several years and many anticipated its

eventual demise much sooner than its official withdrawal on 01 January 2021.

The dismay within the potato sector was well documented, where the product was a key tool in managing potato cyst nematode (PCN), particularly in short season crops, and spraying — which is transmitted by free-living nematodes (FLN).

However, Vydate was also key in protecting other specialist crops against nematode pests, including carrots and parsnips, bulb onions, garlic and shallots, and sugar beet.

### Docking disorder

In sugar beet, Vydate was applied down the spout at drilling to protect plants from root grazing by FLN species *Trichodorus* (stubby root), *Longidorus* (needle) and *Pratylenchus* (lesion), the symptoms of which are referred to as Docking disorder after the Norfolk village where it was first observed.

BBRO successfully applied for an emergency authorisation for Vydate for the 2021 campaign following the wet winter and early spring, which heightened the risk of FLN damage.

This is because the water table rises during wet months, bringing the nematodes closer to developing roots. Symptoms — which include stunted

plants, root fangling and a reduction in root size — are most acute on light sandy and high organic matter soils, explains BBRO crop protection scientist Dr Alistair Wright.

Alistair says the EA for Vydate was only ever going to be a one-off, so the research group and manufacturer Ecospray quickly arranged work to look at garlic-based nematicide Nemguard



Alistair Sykes says the beet crop was larger and much greener where Nemguard was applied in the BBRO trials.



## Get nematicide applicators ready for Nemguard

Sugar beet growers will have to re-set their nematicide applicators from the old Vydate 6 kg/ha rate to the new NemGuard rate of 10 kg/ha in advance of 2022 drillings, says RWL Services application expert Richard Lapage.

Most growers and contractors working on land with a history of Docking disorder will have an applicator previously used for Vydate mounted on their drills. These applicators, such as the Horstine MicroBand, are suitable for Nemguard use but the cassettes and metering rotors will need to be changed as it's applied at a much higher rate, he explains.

"Rotors suitable for Nemguard are slightly larger, so it's just a case of taking the old ones out of the cassette and sliding the new ones in, then using a feeler gauge to ensure they're the right distance apart," explains Richard.

Once cassettes and rotors are updated, any applicator should then be calibrated to deliver to correct rate Nemguard of 10 kg/ha — the pulley or sprocket ratio on mechanically driven

machines is likely to require adjustment.

On applicators with electronic drive, the process is much simpler, with the operator making sure the correct calibration factor is saved in the system's control box, he adds.

Richard points out that as part of the Red Tractor protocol for sugar beet, nematicide applicators should be NSTS tested every year by a qualified technician, and this will include a service and calibration.

"As growers will be switching nematicides they'll require recalibration anyway, it makes sense to have it done before the 2022 campaign gets underway."

Operators should keep on top of maintenance through the drilling campaign and a key thing to remember is Nemguard absorbs moisture rapidly, so Richard stresses the importance of not leaving product in hoppers overnight.

"On the last fill of the day, only put enough in to finish the field, or shift you're on, to help make sure hoppers are empty. Also make sure



*Richard Lapage says the cassettes and metering rotors will need to be changed in nematicide applicators as Nemguard is applied at a much higher rate.*

any part bags are resealed properly and kept in the dry to avoid lumps that might cause problems the next day."

to see if it could be a viable alternative.

Strip trials were established in three commercial sugar beet crops, one in North Yorkshire on NFU Sugar north-eastern representative Graham Liddle's farm, between Selby and York. The remaining two were located near Thetford in Norfolk.

The sites were selected because of a history of FLN activity, with sampling by Harper Adams University students confirming a significant presence of damaging species. Each trial featured an untreated control, Vydate applied at 6 kg/ha, and Nemguard applied at 10 kg/ha and 20 kg/ha.

Crop development was monitored throughout the season and root quality

assessed by hand digs taken at harvest.

Alistair says the differences between treatments became evident early in the summer, with the untreated plots suffering stunted growth as nematodes attacked the roots of seedlings.

### Stark difference

"You could see a stark difference, with the crop larger and much greener where Nemguard was applied. It clearly enabled the plants to get their roots down early and access water and nutrients," he comments.

In data collected on plant vigour across the three sites, plant size distribution was put into bands Category 1 to Category 5, with the lower number being poor and the

higher number for maximum vigour. The Nemguard treatments resulted in the highest percent populations in Category 5.

Roots were also inspected for fanging and scored from zero to four, with four being the most severe. Nemguard significantly reduced fanging symptoms by about 45% where it was applied at the 20 kg/ha rate, and by 39% where 10 kg/ha was applied, compared with the untreated.

"In terms of root quality maintenance, we're really encouraged by the dataset, and it looks like we have a product that should do as well as Vydate for managing Docking disorder," notes Alistair.

BBRO initially advises the 10 kg/ha rate in 2022 and Alistair says the recommendation was a balancing act of efficacy and ▶

## PLACEMENT PRO GR - Feed where it works



- ✔ 1.2T hopper
- ✔ Stainless steel metering units
- ✔ Land wheel drive or GPS rate control
- ✔ 2 or 3 row models
- ✔ Depth wheels control exact depth
- ✔ Anti blockage system
- ✔ Side skirts hold soil in bed

☎ 01353 862 044   ✉ info@techneat.co.uk   🌐 www.techneatengineering.co.uk   **Techneat** engineering ltd





*Alistair Sykes says the beet crop was larger and much greener where Nemguard was applied in the BBRO trials. Nemguard treatment (RHS) showed reduced fanging compared with plots where no treatment was applied.*

► economics. “The higher rate gave the best results but it’s prohibitively expensive when considering margin over input cost, based on current crop economics.

“Applying 10 kg/ha should still do the job and also saves the grower some money,” says Alistair.

Although very positive, Alistair does urge a degree of caution about one year’s worth of data and BBRO will be gathering

## An integrated approach for PCN



*Daniel (left) and Stephen Sizer have formulated an integrated strategy to keep on top of PCN.*

Bringing potato cyst nematode to heel is an aspiration shared by many growers but achieving it in practice isn’t always easy to deliver. The limited number of ware varieties with broad market acceptability and the need to maximise profitability across the rotation often hamper adoption of those means of control that would otherwise be most effective.

Despite the spread of PCN to new areas, there are some for whom it simply is not an urgent problem. A survey of growers in Scotland, where maintaining the area of PCN-free land is considered essential to protecting its status as a leading producer of clean seed, found blackleg was a greater concern because it is responsible for most down-gradings. PCN came third on the list of concerns with late blight control second.

But there’s only so long that the PCN problem can be ignored before radical action is needed. For Stephen Sizer that moment came when the agronomist called with his soil sampling results and asked: “Is there not another field you can use?”

It may have only been one field, but at 120 eggs/g of soil, the result was enough to make him take notice. “In those situations, the responsible course of action is to leave the field out of potatoes for 10 or more years but going to a one-in-ten rotation as standard practice simply isn’t feasible. There has to be a way of managing populations that is commercially viable,” he says.

As it happened, the field in question was left out of the rotation for an extended time, but for Stephen, who farms with his wife Angie and son Daniel, it was time to develop an integrated plan.

Across the Sizer’s 222ha near Lakenheath in Suffolk, *Globodera pallida* dominate the black fen and white silt soils. Management has proven easier on the black fen soils, perhaps because they are quicker to warm with the onset of spring. The white silts with their higher alkalinity represent a different challenge.

Nonetheless, working with his agronomist Ian Cook of Hutchinsons, a plan was developed. It was truly a ‘zero tolerance approach’ that included cover crops, the full gamut of available nematicides and, where the market allowed, the use of resistant varieties.

“Resistant varieties hold a lot of promise but can be difficult to grow. We’ve tried several with varying success, though we aim for those that are both resistant and tolerant to *G. pallida* wherever possible,” explains Stephen.

Cover crops have also been a great success, especially Indian mustard (*Brassica juncea*) which is grown as a biofumigant. Sown as soon as possible after the preceding crop is harvested, it’s left for about 12 weeks before being incorporated.

“The greater the biomass means more hydrolysed glucosinolates. These release volatile isothiocyanates, a form of mustard gas, and have been shown to be effective against PCN,” explains Daniel Sizer.

Other cover crops have been tried, including



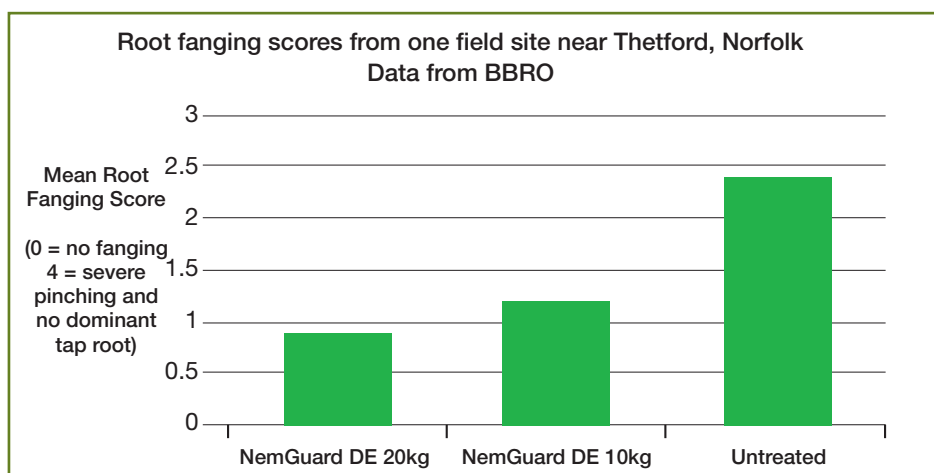
*PCN can quickly reach populations where growing potatoes becomes uneconomic in short-medium length rotations.*

black nightshade (*Solanum nigrum*), but while a near neighbour has enjoyed success, it has fared less well for the Sizer family. As a result, Indian mustard has become the preferred choice and the intention is to grow it at least once in the five-year rotation, but where there’s an opportunity to sow it twice.

“We try to grow it twice to help bolster control of beet cyst nematode as well as PCN,” says Daniel. Central to the success of any biofumigant crop is ensuring it is fully incorporated and achieving this meant having the right equipment.

“Initially we attempted to incorporate it with a heavy disc cultivator but struggled to do it to a sufficient depth and at a sensible forward speed. This led to the purchase of front-mounted flail with a 3m cultivator on the rear,” he explains.

Evidence of the contribution made by cover crops to the reduction in PCN populations varies enormously, with as many trials reporting no effect as those reporting a reduction. Where positive results have been observed, none have achieved a reduction of more than 80% and



Source: BBRO, 2021

most have been far lower and more variable.

Such variable performance is nothing new to Stephen and Daniel Sizer and it merely underlined the need to develop an integrated programme. “We’re used to seeing varying levels of success. While others were enjoying good results with metam sodium we found it didn’t work for us. It meant we needed to keep trying other forms of control — in combination, if necessary — until we found a strategy that worked for us,” says Stephen.

For this reason, nematicides are still relied on to contribute to the overall package of measures. Nemathorin (fosthiazate) is applied at full rate and in 2020, Velum Prime (flupyram) was applied in-furrow at planting.

“They’re complementary forms of control with different modes of action and vastly different profiles. They’re relatively easy to apply given their contribution to control and while we have such products, it would be naïve not to use them,” he says.

“The Velum Prime is a compelling proposition. Once egg counts fall to less than 10 eggs/g of soil, I can see it becoming the only nematicide we will have to apply,” he adds.

In the five years since Indian mustard was first grown and resistant varieties became normal practice at Russell Farm, PCN populations have gradually fallen which has served to endorse the strategy and persuade the Sizer family to continue with it.

“In 2015, soil sampling revealed a range of 11-66 eggs/g of soil. In 2020, the range was 11-28 eggs/g, so the trend is positive and highly encouraging. We know we’re not where we need to be yet, but we are seeing better crops and the results are rewarding,” says Stephen.

Outside of a trial protocol, it can be hard to establish what affect any intervention has on populations, but for Stephen and Daniel the



*Biofumigant crops should be finely chopped and then incorporated immediately to ensure optimum results.*

downward trend in egg counts coupled with the improving crop performance is confirmation that it’s possible to achieve control within the restraints of a commercial rotation.

“It has required significant investment in time and cash, but the results demonstrate that it’s achievable,” concludes Stephen.



*When it comes to planting time, nematicides are still an important part of the Sizer’s strategy to reduce PCN egg counts.*

more information over the coming seasons across more sites. One focus will be dose response, and this will inevitably throw up more observations to feed into grower guidance, such as optimal conditions at drilling, he suggests.

Alistair says in a dry season there may be scope to cut rates or not use a nematicide at all, or there could be a justification to increase rate where pressure is much higher, so he sees future use being more prescriptive.

“The other thing I like about Nemguard is the way it works. It needs moisture, so in drier conditions it should sit there and slowly release and potentially give protection over a longer period.”

Norfolk AICC agronomist Penny Oakes advises on sugar beet crops around Docking village, where the disorder was first observed, and says she’s very grateful and relieved that BBRO acted quickly to gain approval for Nemguard for the 2022 season.

## Application rates

In the past, some 75% of her sugar beet area has been treated with Vydate, with her clients’ soils having relatively high sand content and seeing considerable damage from FLN feeding in wetter years.

Nemguard will be used where Docking disorder is a risk, but the price premium over Vydate means she plans to experiment with different rates this season. “We know from last year’s trials that 20 kg/ha gave the best results, but that is prohibitively expensive with the economics of sugar beet at present.

“The 10 kg/ha rate is equivalent to about 3t/ha of beet, which is still quite significant, but if you get bad Docking disorder symptoms that is much more significant again. We’ll look to adjust rates based on historical risk, using the higher rate where we know crops are more vulnerable.”

As well as protecting crops with Nemguard this season, Penny will also be helping conduct trials on one of her client’s farms to investigate the potential of different biofumigation crops for reducing FLN damage in beet.

“Cover crops can be expensive, and I think it would be much simpler and more reliable if we could do it [with a nematicide] on the drill. However, it’ll be interesting to see the results from the trials and how the practicalities around establishing and incorporating cover crops for best results might work.” ■