

NEMguard DE authorised for use in sugar beet against free-living nematodes and reduction of Docking disorder

Following work by BBRO, manufacturer Ecospray and distributor Certis Europe, authorisation for NEMguard DE in sugar beet has been issued by the Health and Safety Executive. NEMguard DE is a granule formulation containing 450 g/kg garlic extract which is applied at drilling via a granule applicator.

Docking disorder is the name given to the symptoms of free-living nematode (FLN) damage characterised by stunted plants, root fangings and reduction in root size. It is named after a village in the north-west of Norfolk where the condition was first recorded and caused by FLN *Trichodorus* spp. & *Paratrichodorus* spp. (stubby root nematodes) and/or *Longidorus* spp. (needle nematodes). FLN damage is usually more common on light sandy soils and is more severe in years with heavy rainfall in the spring.

In fields with a history of Docking disorder yield losses were minimised by the use of nematicides, such as Vydate (oxamyl) which is no longer available. BBRO has sought alternative options for protection. In conjunction with manufacturer Ecospray, we established three in-field strip trials in 2021 to test NEMguard DE against Vydate, and untreated controls, on FLN vulnerable sites. Following these trials in 2021, a year with perfect conditions for FLN, BBRO are confident that NEMguard DE worked as well as Vydate for FLN management.

Roots were carefully hand lifted from 2m² sampling areas and scored between 0 (no fangs) and 4 (severely fanged and damaged). The photo below shows root fangings from one field site near Thetford, Norfolk. As it was a small strip trial, we cannot statistically compare these data, but the trend shows that NEMguard DE resulted in much better root quality than the untreated controls. This should result in significantly greater recovered yields when mechanically harvested.



Fig 1: Five untreated roots suffering from FLN damage (left) – mean fanging score 3 – and five roots grown with NEMguard DE 10kg/ha from an adjacent strip (right) – mean fanging score 0.6.

- The recommended application rate for NEMguard DE is higher than that of Vydate. BBRO suggest you use 10kg of NEMguard DE/ha in 2022 which we believe will provide adequate protection of your crops. This rate may be refined over time and could reach up to 20kg/ha (the maximum on-label dose) when we continue our research in the coming years.
- It is difficult to establish accurate damage thresholds as weather conditions have a significant influence. Soils can be sampled for FLN, with *Trichodorus* populations more than 1000/litre of soil or with *Longidorus* populations in excess of 100/litre of soil, indicating risk of damage. On land with a history of FLN damage, the use of a nematicide is usually worthwhile.
- Granule applicators will need to be serviced, modified, and calibrated ready to distribute NEMguard DE for drilling 2022.

Fig 2: Granule applicators such as those pictured on this drill will soon be dispensing garlic-based NEMguard DE instead of synthetic nematicides, after nearly 50 years of use protecting sugar beet from FLN.



- No tolerant varieties against FLN damage currently exist so it is strongly recommended you use a nematicide.
- NEMguard DE will not control beet cyst nematode (BCN) so if you are concerned about it, use a BCN tolerant variety (Daphna, Katjana or Lacewing).
- BBRO are sponsoring a PhD at Harper Adams University looking at alternative and complementary approaches to reducing FLN numbers in the soil, such as the use of cover crop. An article on this can be found in the September 2021 edition of Beet Review.
- An article 'Fighting free living nematodes using NEMguard DE' will be published in the January 2022 edition of Beet Review