

Managing leaf and bud nematodes



Infested *Dryopteris* plant treated with water (control) after eight weeks



Infested *Dryopteris* plant treated with Movento + HDC 071 after eight weeks

Background

Leaf and bud nematodes (LBN), also called eelworms / foliar nematodes (*Aphelenchoides* species), are an economically damaging and frequently encountered pest on ornamental plants all over the world. They feed within the leaf causing the leaf to turn chlorotic, and later produce necrotic lesions. In severe cases, the entire leaf can dry and fall off the plant. This reduces plant value and can make plants unmarketable. The two major species found in the UK are *A. fragariae* and *A. ritzemabosi*.

Management is difficult due to over 700 associated host plants. An average HNS business can lose up to £15,000 per annum depending upon the size of the nursery and the plant species grown. Chemical control via the EAMU 1636/14 for Vydate 10G (oxamyl) is possible, but only on outdoor crops.

Having identified a few potential products in a laboratory bioassay as alternatives to oxamyl, a field study to test their curative efficacy either as individual treatments or in combination with other treatments on LBN infested plants at nurseries was undertaken during 2015.

Treatments	Nematodes per 5g leaf sample		ROC (%)
	Pre-treatment	Post-treatment	
Water (control)	1841	5065	
Dynamec	2902	499	94.1
HDC 071	2476	446	93.8
Movento	2092	356	94.1
Dynamec + HDC 071	1765	283	94.1
Movento + HDC 071	2701	178	97.7

Method

Products used in this study included: Dynamec (abamectin), Movento (spirotetramat), HDC 071 (an elicitor product), Dynamec + HDC 071, Movento + HDC 071 and water (control) applied to already infested plants. Treatments were completely randomised.

Dynamec and Movento were applied as a foliar spray, in a two spray programme, while the elicitor, HDC 071, was applied three times (alone and in combination with Movento and Dynamec), as recommended by the manufacturers. An adjuvant 'Tween' was added to all treatments, including the control treatment, to optimise leaf coverage.

Data was collected on leaf symptoms pre-treatment and eight weeks after the initial treatments. Leaf sampling and nematode extraction were also undertaken at the beginning of the study, to determine initial populations, and again eight weeks after the initial treatment, to assess the final nematode populations in the leaves.

Results

Results of the trial demonstrated that all the products reduced the nematode populations in leaves by over 90% compared to the untreated 'control'. The most effective treatment with the highest nematode reduction over the control (**ROC**) was obtained with the Movento + HDC 071 treatment programme (97.7%).

In general, leaves from most treated plants had less visual symptoms and improved market value relative to the control. The control treatment had a significantly higher value for nematode multiplication ($P < 0.05$) when compared with other treatments.

The elicitor, HDC 071, is likely to have induced nematode resistance within the plant, which combined with the specific nematicidal effect of the plant protection product, reduced nematode multiplication in the leaves, providing improved nematode management.

Action points for growers

- Bought in plants should be kept separate from susceptible crops and assessed for nematode symptoms for a few weeks upon arrival at the nursery.
- Remove and destroy infested plants and debris as LBN survives for years in such material.
- Pots and other containers must be sterilised before re-use.
- If possible, avoid the use of overhead irrigation and mist application systems as nematodes can be transferred from leaf to leaf and plant to plant via moisture films on the leaf surface.
- A small number of plant protection products can be used to suppress LBN populations within plant material.
- The use of oxamyl (Vydate 10G) is recommended where appropriate, at sowing, drilling or planting outdoors.