

GROWERTALKS

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Those Troublesome ‘Todes

Colleen Warfield

New research shows just how quickly foliar nematodes can spread

Foliar nematodes (Aphelenchoides sp.) are becoming so common that I find myself scouting for them everywhere I go. Lantana, salvia, abelia, and buddleia are frequently encountered hosts (there are 270 plant hosts in all). I've spotted and confirmed foliar nematodes on perennials and woody ornamentals in wholesale nurseries, small retail garden centers and big box stores. Evidence that reminds us, when plants are moved, pathogens and pests move along with them.

This movement is particularly problematic since infected plants may not initially show symptoms or the symptoms present may not be recognized as foliar nematode damage. As a result, infected plants may be unknowingly propagated and shipped to other locations. Perennial rootstocks and bulbs are often imported dormant. In these cases, the rootstocks may already be infected with foliar nematodes upon arrival at a production facility, but it isn't until the foliage emerges and symptoms become apparent that the problem is identified.

Foliar nematodes penetrate and feed within the plant cells. The infected cells in a leaf first turn yellow and eventually become tan or dark brown with age. The infected cells may also turn purple in some plants such as abelia. Symptoms can easily be confused with bacterial infections, so it's important to get a laboratory confirmation. Because foliar nematodes aren't capable of moving past major leaf veins once they've entered the leaf, the pattern of damage follows the pattern of the plant veins. This typically translates into either a patchwork appearance or stripes of necrotic leaf tissue, depending on the host. Often, the symptoms are much more obvious if you turn the leaf over and look at the underside. Symptoms on many ferns tend to be less distinct, with patches of brown tissue on the fronds. Infected leaf tissue may tear or fall out, leaving the leaf with a tattered appearance, or, in the case of many woody ornamentals, the entire leaf will drop.

What might happen if foliar nematodes are inadvertently introduced into your growing facility? To find out, I undertook a study in the summer of 2003 and repeated it during the summer of 2004 to assess how quickly foliar nematodes can spread from infested plants to healthy plants in an outdoor nursery setting.

Twenty nematode-free 1-gal. Lantana camara Miss Huff plants were intermixed with an equal number of foliar nematode-infected plants of the same cultivar in a completely randomized design. Overhead sprinklers irrigated plants in one experimental block, and plants in a second block were irrigated by low-volume spray stakes that directed the water away from the foliage onto the surface of the potting substrate. Foliar nematodes are known to move in thin films of water on leaf and stem surfaces, and can be moved from plant-to-plant in splashing water. So, in theory, if the leaves are kept drier and splashing water is minimized, the spread of foliar nematodes should be reduced.

Spread of foliar nematodes from the infected to the healthy plants was rapid. By day 32, foliar nematodes had spread to 45% of the originally healthy plants in the low-volume irrigated block and to 55% of the healthy plants in the overhead-irrigated block. By day 62 in each year of my trials, the foliar nematodes had spread to 100% of the originally healthy plants in both blocks, and there was no significant difference in the nematode population between the initially healthy plants and the originally infected plants. The foliar nematodes were equally capable of spreading from infected to healthy plants under a low-volume irrigation regime that promoted drier foliage. Dew formation and natural episodes of rain are apparently sufficient to allow the foliar nematodes to move and spread.

To make matters worse, there's currently no effective treatment available to eradicate foliar nematodes from plant material. While some insecticides, miticides or hot water drenches have been shown to reduce the population of foliar nematodes, they don't completely eradicate the nematodes.

For now, exclusion remains the best option for managing foliar nematodes. Familiarize yourself with the symptoms caused by this pest, and carefully inspect incoming plant materials. Separating dormant stock until the leaves have emerged and are visually inspected is also a good idea. Take a look at your own stock plants to make sure you're not responsible for propagating and shipping infected material. Keep in mind that leaf damage often isn't apparent until a high population of foliar nematodes is present; therefore, plants must be continuously scouted for symptoms. If you discover an infected plant in your facility, hopefully the results of this study will cause you to think twice about keeping that plant around.

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