

Foliar Nematodes as Pests of Ornamental Plants ¹

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Foliar nematodes include several species of the genus *Aphelenchoides* that commonly feed inside tender leaves of higher plants. Those found in Florida include *A. besseyi*, *A. fragariae* and *A. ritzemabosi*. They are very slender, small (about 0.5 mm to 1.0 mm long) and colorless, so they are hard to see.

The most distinctive field symptom of foliar nematodes is lesions that are bounded by the major veins in leaves. Leaves with parallel veins display stripes of affected tissue. Those with a net-like pattern of veins have small blocks of affected tissue.

Cells on which foliar nematodes feed gradually lose color, turn brown and die. Those areas become visible in the leaf blades, turning chlorotic, then darker brown, then almost black. The darkest lesions usually are dry.

Symptoms develop locally because these nematodes are so delicate they cannot move easily through tough leaf tissues, such as major veins. After exploiting most of the cells between major veins, they return to the outside of the leaf to enter new areas of the leaf in which to feed. They enter and leave by natural openings, and must have free

moisture on the leaf surfaces to move about. They are most easily spread from plant to plant when foliage of two plants comes into direct contact.

Foliar nematodes infect hundreds of plants. *A. ritzemabosi*, chrysanthemum foliar nematode, parasitizes more than 200 species, a third of which are in the family Compositae. *A. fragariae*, strawberry nematode, is reported from more than 250 species including ferns and members of Liliaceae, Primulaceae and Ranunculaceae. *A. besseyi*, the rice white tip nematode, infects many grasses, vegetable and agronomic crops, and ornamentals. It has been found in several ferns in Florida. Foliar nematodes often damage some varieties of a plant species while not affecting other varieties in direct contact with the affected plants.

Not all distinctly vein-bounded foliar lesions are caused by nematodes. Several bacterial diseases are similarly confined by vein patterns, so simple laboratory tests should be done to confirm visual diagnoses. If small pieces of suspect leaf tissues are floated on clean tap water, live foliar nematodes will emerge within a few minutes to 24 hours. A

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low-power microscope makes it easy to see them moving in the water near the leaf pieces.

This sheet illustrates symptoms on several plants.

- **Chrysanthemum** leaves show the development of symptoms in sectors bounded by their vein pattern, and the succession of colors of lesion development from faded green to bleached-out yellow to dark brown (Plate 1). The leaf in the center is healthy.
- Dark lesions near the bases of several leaves of this **bird's nest fern** were caused by foliar nematodes (Plate 2).
- ***Diaplasium proliferium* fern** (Plate 5) with foliar nematode lesions.
- **Philippine violet, *Barleria cristata***, (Plate 4) with yellowed foliage where foliar nematodes have infected some leaves.
- Close-up of **Philippine violet** leaf with distinct vein-bounded lesions caused by foliar nematodes. Similar lesions may be caused by the nematodes, several kinds of bacteria, or nematodes and bacteria together (Plate 3).
- **Anthurium** with foliar nematode damage (Plate 6).
- **Azalea** leaf with a tiny lesion marking early infection by a foliar nematode (Plate 7).
- **Florists' azaleas** (Plate 8) with bronzing of foliage in an area where foliar nematodes have initiated an infection.
- Advanced necrosis, drying and dropping of foliage of **florists' azalea** caused by foliar nematodes (Plate 9).
- Greenhouse floor littered with dried foliage of **florists' azalea**, the result of foliar nematode infection (Plate 10). Nematodes may survive in dry foliage and could cause new infections if these dried leaves come into contact with fresh foliage under wet conditions.



Plate 1 .



Plate 2 .



Plate 5 .



Plate 4 .



Plate 3 .



Plate 6 .



Plate 7 .



Plate 8 .



Plate 9 .



Plate 10 .