

Molecular and morphological characterization of nematodes associated with alfalfa, grasses, and fungal endophytes

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Plant-parasitic nematodes cause nearly \$10 billion in crop losses annually in the United States. Many species that damage alfalfa, including stem, root-knot, and lesion nematodes, also affect other bioenergy and rotation crops, causing extensive reductions in yield and quality over a broad range of hosts. We are developing new molecular diagnostic tools needed for fast and accurate detection and identification of nematodes associated with harvested forage, bioenergy cropping systems, and turfgrass. In our phylogenetic studies, molecular and morphological data are being integrated with information on host associations and pathogenicity in order to better define species boundaries. More precise nematode identifications will help guide the use of resistant varieties and maximize the effectiveness of pest management schemes. We have also begun a project to identify and describe the nematodes found with endophytes that colonize alfalfa, forages, and grasses. Our interests include fungal-feeding nematodes and species associated with toxin-producing microbes. A better understanding of these nematode-endophyte-plant interactions should reduce the risk associated with some endophytes and lead to increased crop productivity.