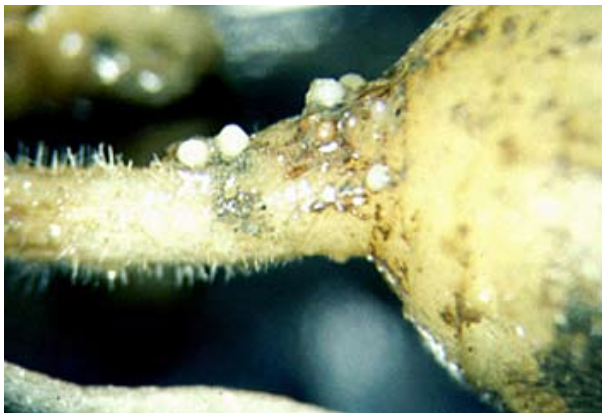
Pest Alert

Plant Protection and Quarantine
November 2009

Potato Cyst Nematodes

Features of the potato cyst nematode. ***(Photo by Jonathan D. Eisenback, Virginia Polytechnic Institute and State University.)***



White female potato cyst nematode on the stolon of a potato. ***(Photo by Christopher Hogger, Swiss Federal Research Station for Agroecology and Agriculture.)***

Background

Potato cyst nematodes (PCN), *Globodera pallida* (pale cyst nematode) and *G. rostochiensis* (golden nematode), have been detected in the United States. *G. pallida* was found in Idaho in 2006, and *G. rostochiensis* was found in New York in 1941. Although these species are related, they are very different from a regulatory perspective.

Among the economically significant crops, PCN primarily affects plants within the potato family, including potatoes, tomatoes, eggplants, and some weeds. This microscopic worm is a quarantine pest and presents a serious threat to domestic and international commerce in potatoes and nursery stock.

Description

PCN are soil-borne organisms that do not infest potato tubers. The pests infest feeder roots, where the females attach, feed, and become sedentary. Nematodes reproduce sexually. Males are attracted to females by a pheromone (sex attractant) and may mate several times. Females form cysts containing 200 to 600 eggs, which can stay dormant for up to 30 years while the eggs inside remain viable.

Large numbers of the nematodes cause wilting, stunted growth, poor root development, and early plant death. If left uncontrolled, PCN can reduce yields up to 80 percent in potato fields. Even with only minor symptoms showing on the foliage, PCN can significantly reduce tuber size.

PCN spread primarily by the transport of cysts in soil. This may occur with the movement of soil on farming, construction, and other equipment; infested soil adhering to seed potatoes and other regulated crops; and any other items or means of transport (i.e., water) deemed to present a hazard for spreading PCN.

Detection

It is essential that public and private entities work together to determine the extent of the current infestation and prevent the further spread of PCN. The U.S. Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS) is working cooperatively with the States to conduct a national survey for PCN every year. The purpose is to determine

A healthy potato plant (left), compared to one infested with the potato cyst nematode. ***(Photo by Christopher Hogger.)***

Female nematodes on potato root. ***(Photo by Bonsak Hammeraas, Norwegian Institute for Agricultural and Environmental Research.)***

the distribution and extent of infestation of this pest in the United States. Since the initial finds of pale cyst nematode in Idaho in 2006 and golden nematode in New York in 1941, APHIS and State officials have examined hundreds of thousands of soil samples from surrounding production fields, seed potato fields, nursery stock, and storage and packaging facilities. To date, the nematodes have been isolated to nine fields within a 1-mile radius in southeastern Idaho and to nine counties in New York. All other soil samples collected through the survey have been determined *not* to contain either species of PCN.

Control Measures

USDA–APHIS has implemented PCN regulatory programs in both Idaho and New York that are designed to prevent the pest's spread to uninfested fields. Each program defines separate restrictions for pale cyst nematode *(G. pallida)* and golden nematode (*G. rostochiensis)* regarding the movement of plants and soil, required sanitation procedures for equipment, and crop rotation requirements. Commercial potato, seed potato, and nursery stock producers in Idaho and New York's regulated areas who ship their products intrastate, interstate, or internationally are subject to these regulatory restrictions.

For more information

To learn more about PCN and the regulatory programs currently in place, please visit the APHIS Web site at www.aphis.usda.gov/plant_health/plant_pest_info/index.shtml.

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