

# Pest Alert

Animal and Plant Health Inspection Service  
Plant Protection and Quarantine

## Potato Cyst Nematodes



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



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

### 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. These microscopic nematodes mainly affect plants within the potato family, including high-value crops such as potatoes, tomatoes, and eggplants. They also affect some weeds.

PCN are a major threat for agricultural industries. If these pests were to spread unchecked in the United States, it could stop commerce in potatoes and nursery stock and seriously harm U.S. agricultural production, the environment, and our economy.

### Description

PCN are soil-borne organisms. The pests do not infest potato tubers; rather, they 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. Cysts can stay dormant for up to 30 years while the eggs inside remain viable.

Large numbers of 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 leaves, PCN can significantly reduce tuber size.

The main way PCN spread is when cysts are moved from one place to another in soil. This may occur with the movement of soil on farming, construction, and other equipment; infested soil adhering to seed potatoes and other host crops; and related items or means of transport that pose a risk for spreading PCN.

### Detection

Every year, the U.S. Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS) works cooperatively with States to conduct a voluntary national survey for PCN. The purpose is to determine the pests' distribution and extent of infestation in the United States.



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



Potato cyst nematodes extracted from soil (*Christopher Hogger, Swiss Federal Research Station for Agroecology and Agriculture*)

Since the first findings 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, we have isolated the nematodes to a small geographic area spanning two counties in southeastern Idaho and eight counties in New York.

No soil samples collected through the survey have contained either species of PCN.

### **Control Measures**

USDA-APHIS cooperates with Idaho and New York to carry out PCN programs in place in each of these States. The

programs aim to prevent the pests' spread to uninfested fields. Each program defines separate restrictions for pale cyst nematode (*G. pallida*) and golden nematode (*G. rostochiensis*). The restrictions cover the movement of plants and soil, with required sanitation procedures for equipment. Commercial potato, seed potato, and nursery stock producers in Idaho's and New York's regulated areas who ship their products intrastate, interstate, or internationally must follow these requirements.

### **For More Information**

To learn more about PCN and related restrictions, visit the APHIS Web site at [www.aphis.usda.gov/planthealth/pcn](http://www.aphis.usda.gov/planthealth/pcn).

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