



Pale Cyst Nematode (*Globodera pallida*) Eradication Program- Idaho Falls, Idaho

May 2010 Report

Background

Pale cyst nematodes (PCN), *Globodera pallida*, 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. Females form cysts containing 200 to 600 eggs, which can stay dormant for up to 30 years while the eggs inside remain viable. On host plants, large numbers of PCN can 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 such as water.

On April 19, 2006, officials of USDA's Animal and Plant Health Inspection Service (APHIS) and the Idaho State Department of Agriculture (ISDA) announced the detection of PCN, a major pest of potato crops. This was the first detection of the pest in the United States. The nematode cysts were detected during a routine survey of tare soil at an ISDA grading facility in eastern Idaho. Subsequent 2006 surveying to determine the possible origin and distribution of the pest in Idaho confirmed seven PCN-infested fields totaling 911 acres, all within a one mile radius in Bingham and Bonneville Counties, Idaho. The PCN-infested fields and an area surrounding the fields were placed under a Federal Domestic Quarantine Order and parallel State Rule in August 2006, establishing restrictions on movement of certain regulated articles from Idaho in order to prevent the spread of PCN.

As a result of continued intensive soil sampling in 2007 and 2008, an additional two PCN-infested fields were found in Bingham County, Idaho. The nine PCN-infested fields all continue to be within a one mile radius and the fields associated with them through shared tenancy, farming practices, equipment, and/or shared borders have been extensively surveyed and regulated. Since program inception, a total of 30,753 acres have been regulated due to their infestation or association with an infested field. Non-infested, associated fields have been eligible for federal deregulation following a sequence of soil surveys with no PCN detections. To date, 29,327 acres have been released from federal regulation. Currently, 1,426 acres remain regulated, of which 1,100 are PCN-infested.

Eradication treatments of PCN-infested fields have been ongoing since the spring of 2007. Eradication treatments have included methyl bromide fumigation, Telone II fumigation, and biofumigant plantings. Testing of the soil in infested fields as per the Guidelines indicate the average viability of eggs within the PCN cysts have declined by more than 95% since eradication treatments began.

A description of the current PCN regulated area can be found at:

http://www.aphis.usda.gov/plant_health/plant_pest_info/potato/pcn-maps.shtml.

The current Federal PCN rule, within docket # APHIS-2006-0143, is available at:

<http://regulations.gov>.

Survey Information

Type of survey	Idaho soil samples collected	
	May 2010	Since program inception
Detection	6,336	96,394
Delimiting	0	128,058
Eradication	2,012	52,288
Total	8,348	276,740

Identification and Diagnostics

Type of survey	Samples processed by the Idaho PCN Laboratory			
	May 2010	Since program inception ¹	May 2010 Results	Results since program inception
Detection	6,322	63,471	Negative	Negative
Delimiting	0	117,613	Negative	Negative ²
Eradication	0	48,338	N/A	N/A
Total	6,322	229,422		

¹ A recent review of 2007 and 2008 lab processing data has increased the “since program inception” counts in the detection, delimiting, and eradication categories.

²Except for samples confirmed for the nine infested fields

Type of survey	Samples processed by the Idaho Food Quality Assurance Laboratory	
	Since program inception	Results
Detection	35,524	Negative
Delimiting	31,097	Negative ²
Total	66,621	

²Except for samples confirmed for the nine infested fields

Program Research

Research with green manure and sticky nightshade (for use as a trap crop) is ongoing at the University of Idaho. Work at Washington State University and USDA Agricultural Research Service is focused on examining the host status of sticky nightshade and PCN hatching factors. At Cornell University, researchers are working on attempts to molecularly differentiate Golden Nematode races and on genetically modifying potatoes to be resistant to both GN and PCN as well as genetic diversity of the Idaho PCN populations.

Eradication Activities

Methyl bromide application to the PCN-infested fields was completed on May 14, 2010. Methyl bromide was applied to the PCN-infested fields previously in the spring of 2007, 2008, and 2009.

Telone II application to the PCN-infested fields is scheduled for late summer, 2010. Telone II was applied in the late summer of 2007 and 2008. There was no Telone II application in 2009 due to a world-wide shortage of this chemical.

Biofumigants with nematicidal activity were planted in the infested fields in the summers of 2007 (oil radish) and 2009 (arugula).

Regulatory Actions

The PCN-regulated area was not amended in May.

Regulatory Treatments

In May, 98 pieces of farming and/or heavy equipment were pressure washed, and 57 pieces of farming and/or heavy equipment were steam sanitized because they came in contact with PCN-regulated or infested soil. Since program inception, more than 7,800 pieces of equipment have been sanitized to support the program goal of preventing the spread of PCN.

Regulatory Documentation

In May, 60 certificates (PPQ form 540) and 71 limited permits (PPQ form 530) were issued to document the movement and treatment of farming and heavy equipment that came into contact with PCN regulated or infested soil. Since program inception, more than 6,250 certificates and 1,200 limited permits have been issued for the sanitation and movement of regulated articles.

One new compliance agreement was issued to an external stakeholder in May. Through the end of May, a total of 135 compliance agreements have been issued by the PCN Program since its inception.

Impacts on Commerce

In response to the initial PCN detection in 2006, Canada, Mexico and Korea shut off importation of potatoes from Idaho, while Japan cut off importation of potatoes from the entire U.S. The Mexican and Canadian export markets have both been re-opened with the exception of potatoes from PCN-regulated areas. Both require PCN soil surveys from origin fields. The Korean and Japanese markets remain closed to Idaho potatoes but negotiations are actively underway to re-gain market access. Because of extensive field surveys conducted throughout production areas in Idaho, all of which have been negative beyond the nine infested fields, the general opinion by our trading partners is that potatoes produced outside regulated areas do not pose the biological risk for introduction of PCN.

Communication and Outreach

A Korean nematologist visited the PCN Program in May. His visit should facilitate the re-opening of that market. There is a regional sewer project being built in Shelley which will encompass many surrounding communities. The project plans to lay a main collection pipe along Country Club Road, which has infested fields on each side of the road. Regulatory and sanitation issues have been brought to the attention of project principals. Program officials visited with the contractor responsible for this phase of the project multiple times in May to ensure awareness and compliance with the regulations.

The next stakeholder update is due out in July, 2010. Stakeholder updates are available at:
http://www.aphis.usda.gov/plant_health/plant_pest_info/potato/pcn_stakeholder.shtml