



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

August 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 indicates 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 revised as of January 1, 2010:

http://www.aphis.usda.gov/plant_health/plant_pest_info/potato/downloads/pcndocs/7cfr-10.txt

Survey Information

Type of survey	Idaho soil samples collected	
	August 2010	Since program inception
Detection	0	96,804
Delimiting	0	128,058
Eradication	236	52,586
Total	236	277,448

Identification and Diagnostics

Type of survey	Samples processed by the Idaho PCN Laboratory			Results		
	August 2010	2010 Year to date	Since program inception	August 2010 results	2010 Year to date	Results since program inception
Detection	198	39,302	70,132	Negative	Negative	Negative
Delimiting	2	2,513	117,615	Negative	Negative	Negative ¹
Eradication	1,142	4,018	50,332	N/A	N/A	N/A
Total	1,342	45,833	238,079			

¹Except for samples confirmed for the eighth and ninth infested fields

Type of survey	Samples processed by the Idaho Food Quality Assurance Laboratory	
	Since program inception	Results
Detection	49,984	Negative
Delimiting	10,224	Negative ¹
Total	60,208	

¹Except for samples confirmed for the first seven infested fields

²A recent review of IFQAL lab processing data has decreased the “since program inception” counts in the detection and delimiting categories, as well as the overall total quantity of samples processed.

Program Research

Farm Bill and PCN program funding have been combined to set up interagency agreements with USDA ARS in Prosser and in New York. Three separate agreements will examine the potential for different wild solanaceous plants to harbor resistance to *Globodera pallida*, to examine the effects of interfering RNA on the development of PCN feeding sites and to ascertain the identity of hatching factors in potato root exudates. Experiments on the host status of *Solanum sisymbriifolium*.

Eradication Activities

Telone II fumigation was completed in August. During fumigation, the PCN Program conducted environmental monitoring for Telone II near residences that are near the treated fields. No environmentally significant detections were observed. The infested field operator/owner group, in collaboration with the local soil conservation board, confirmed that a winter biosecurity cover planting in the infested fields will not be necessary this year. They report that there is sufficient organic material remaining from the summer biosecurity cover to provide adequate erosion control until spring. This will save the PCN Program some money, of course, and will also relieve the regulatory burden attendant the movement of equipment from field to field.

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 August.

Regulatory Treatments

Treatment type	Regulatory Treatments (# of pieces of equipment)		
	August 2010	2010 Year to date	Since program inception ¹
Pressure Washed	52	319	>6,500
Steam Sanitized	52	152	>800
Total	104	471	>7,300

¹A review of regulatory data is underway while new data collection and management tools are developed.

Regulatory Documentation

Documentation type	Regulatory Documentation		
	August 2010	2010 Year to date	Since program inception ¹
Certificate (PPQ 540)	24	173	5,463
Limited Permit (PPQ 530)	31	203	1,179
New compliance agreements	0	6	136

¹A review of regulatory data is underway while new data collection and management tools are developed.

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 market was reopened in June, 2010 with the exception of potatoes originating from Bingham and Bonneville Counties, ID. The Japanese market remains closed to Idaho potatoes but negotiations are actively underway to regain 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

The regional sewer project to lay a main collection pipe along Country Club Road in Shelley is progressing smoothly. Project work brought contractors and heavy equipment into the northernmost edge of two infested fields. The contractor has cooperated fully with program regulations and sanitation requirements for the infested fields. The project will possibly pass through the northernmost edge of one additional infested field later this fall.

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