



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

June 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 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	
	June 2010	Since program inception
Detection	410	96,804
Delimiting	0	128,058
Eradication	62	52,351
Total	472	277,213

Identification and Diagnostics

Type of survey	Samples processed by the Idaho PCN Laboratory			Results		
	June 10	2010 Year to date	Since program inception ¹	June 2010 Results	2010 Year to date	Results since program inception
Detection	6,463	39,104	69,934	Negative	Negative	Negative
Delimiting	0	2,511	117,613	Negative	Negative	Negative ²
Eradication	96	2,120	48,434	N/A	N/A	N/A
Total	6,559	43,735	235,981			

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

University of Idaho research with green manure is ongoing. PCN rearing is going well with enough cysts reared to supply research projects that request them. A poster on biocontrol of PCN was presented at the SON meeting in June. Greenhouse-based bioassays could begin in the biocontainment greenhouses soon in Moscow. The natural diapauses of the Idaho PCN populations is also underway.

Research at Cornell continues to identify potato genes that code for cyst nematode receptors. These genes will be targeted for “silencing” once located. The ARS in Prosser continues to work with *Solanum sisymbriifolium* (a potential suicide hatch/trap crop) to determine if the plants can support PCN reproduction. The purification of hatching factors also is continuing.

Eradication Activities

There were no eradication treatments in the infested fields in June.

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 June.

Regulatory Treatments

Type of Treatment	Regulatory Treatments (# of pieces of equipment)		
	June 2010	2010 Year to Date	Since Program Inception
Pressure Washed	22	190	>6,500*
Steam Sanitized	8	82	>800*
Total	30	272	>7,300*

*A review of treatment documentation is underway to determine the exact number of pieces equipment that have been washed and steamed since the program’s inception.

Regulatory Documentation

Type of documentation	Regulatory Documentation		
	June 2010	2010 Year to Date	Since Program Inception
Certificate (PPQ 540)	15	132	>5,300**
Limited Permit (PPQ 530)	29	141	>1,100**
Compliance Agreement	1	6	136

**A review of regulatory documentation is underway to determine the exact number of Certificates and Limited Permits written since the program’s 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

PPQ Deputy Administrator Rebecca Bech visited Idaho Falls and the PCN facility June 24. Her visit included a meet and greet session with Program staff, and a tour of the PCN infested fields. 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 attended a planning meeting with local municipalities, the general engineering firm, the primary contractor, and various sub-contractors and state agencies in June. At that meeting, it was expected that construction would begin in early August.

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