



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

### March 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, 29,118 acres have been released from federal regulation. Currently, 1,635 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 top 3 inches of soil in infested fields indicate the average viability of eggs within the PCN cysts have declined by more than 90% 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](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	
	Mar 2010	Since program inception
Detection	859	82,965
Delimiting	0	127,380
Eradication	0	48,264
Total	0	258,609

There were no soil survey activities in Idaho during February, 2010. Survey activities are set to resume when weather permits, likely around the middle of March.

## Identification and Diagnostics

Type of survey	Samples processed by the Idaho PCN Laboratory			
	Mar 2010	Since program inception	Mar 2010 Results	Results since program inception
Detection	9,135	26,226	Negative	Negative
Delimiting	0	115,713	Negative	Negative <sup>1</sup>
Eradication	584	46,898	N/A	N/A
National	0	24,687	Negative	Negative
Total	9,719	213,524		

<sup>1</sup>Except 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 <sup>2</sup>
Total	66,621	

<sup>2</sup>Except for samples confirmed for the nine infested fields

## Program Research

University of Idaho personnel are looking at bacterial and fungal species as potential PCN biocontrol agents. These bacteria and fungi were isolated from PCN cysts that were collected from the Idaho infested fields. Green manure and *Brassica* seed meal research for use in controlling PCN is also ongoing study of weed species to determine whether or not they are PCN hosts is ongoing.

The USDA ARS in Prosser is evaluating 2 different genotypes of sticky nightshade. These will be planted in the greenhouse at Moscow (U of I) and used in pot infection assays to test whether or not

these plants allow PCN reproduction. Work to improve growing *S. sisymbriifolium* in tissue culture is ongoing.

### **Eradication Activities**

There were no eradication activities in Idaho during March. Methyl bromide application to the PCN-infested fields is scheduled to occur in spring, 2010. Methyl bromide was applied to the PCN-infested fields 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 March.

### **Regulatory Treatments**

In March, 12 pieces (total) of farming and heavy equipment were pressure washed and one piece of heavy equipment was steam sanitized because they came in contact with PCN-regulated soil. Since program inception, more than 7,600 pieces of equipment have been sanitized.

### **Regulatory Documentation**

In March, 12 certificates (PPQ form 540) and one limited permit (PPQ form 530) were issued to document the movement and treatment of farming and heavy equipment that came into contact with PCN-regulated soil. Since program inception, more than 6,100 certificates and 1,100 limited permits have been issued for the sanitation and movement of regulated articles.

Two compliance agreements were issued to external stakeholders in March. Through the end of March, a total of 131 compliance agreements have been issued.

### **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**

One eradication planning meeting was held with landowners and operators on March 18th at the main program office. PCN Program staff attended a career fair at Brigham Young University in Rexburg, ID on March 4th. PCN Program representatives also presented program information and an eradication progress update at an Idaho Potato Commission meeting in Eagle, ID on March 16th, and at the North Bingham Soil Conservation District meeting in Pocatello, ID on March 17th. Thousands of additional acres were signed up for survey as a result of this outreach.

The next stakeholder update is due out in April, 2010. Stakeholder updates are available at:  
*[http://www.aphis.usda.gov/plant\\_health/plant\\_pest\\_info/potato/pcn\\_stakeholder.shtml](http://www.aphis.usda.gov/plant_health/plant_pest_info/potato/pcn_stakeholder.shtml)*