



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

2011 4th Quarter 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 spreads 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 since 2007, an additional five PCN-infested fields have been found in Bingham and Bonneville Counties, Idaho. All 12 known infested fields lay within a 3.5-mile radius. The fields associated with them through shared tenancy, farming practices, equipment, and/or shared borders have been extensively surveyed and regulated. Since program inception, approximately 36,100 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, 29,653 acres have been released from federal regulation; however, approximately 2,500 acres have been re-regulated due to a new association with an infested field since its deregulation. Currently, 15,641 acres of farmland are regulated, 1,467 acres of which are infested fields.

Eradication treatments in 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 has declined by more than 99% since eradication treatments began. In 2010, three infested fields triggered bioassay when no viability was detected in cysts collected from those fields. Bioassays are currently underway at the University of Idaho in Moscow.

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 can be found at:

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		
	4 th Quarter of 2011	2011 Year to date	Since program inception
Detection	30,949	45,675	163,791
Delimiting	12,424	33,689	163,743
Eradication	1,903	7,655	61,140
Total	45,276	87,019	388,674

Identification and Diagnostics

Type of survey	Samples processed by the Idaho PCN Laboratory			Results		
	4 th Quarter of 2011	2011 Year to date	Since program inception	4 th Quarter of 2011	2011 Year to date	Since program inception
Detection	7,652	47,607	120,387	Negative	Negative ¹	Negative ¹
Delimiting	9,105	25,530	145,147	Negative	Negative ²	Negative ³
Eradication	2,167	3,881	56,533	N/A	N/A	N/A
Total	18,924	77,018	322,067			

¹Except for samples confirmed for 10th infested field

²Except for samples confirmed for the 11th and 12th infested fields

³Except for samples confirmed for the 8th, 9th, 11th, and 12th 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

Program Research

Several different projects are occurring at University of Idaho in Moscow. There are a number of bioassays proceeding and research into biocontrols of PCN using bacteria and fungi isolated from field cysts. At U of I in Parma, research is continuing into the use of green manures to suppress hairy nightshade (a potential weed host of PCN). Greenhouse trials in Parma are assessing the ability to kill or suppress sticky nightshade, which could be used in the field to suppress PCN.

Eradication Activities

Methyl bromide was applied to six of the twelve infested fields in May 2011. The three fields that triggered bioassay in 2010 and the two fields detected in August and September 2011 did not receive methyl bromide treatments in 2011. The 10th infested field (detected March 2011) received its first methyl bromide treatment in October 2011.

Telone II was applied to six infested fields in August 2011 and to four additional infested fields in October and November 2011.

Historically, methyl bromide was applied to the infested fields in the spring of 2007, 2008, 2009, and 2010. Telone II was applied in the late summer of 2007, 2008, and 2010. Telone II was not applied 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

In the fourth quarter of 2011, 138 acres of farmland became regulated due to their primary association with the 12th infested field.

Regulatory Treatments

Treatment type	Regulatory Treatments (# of pieces of equipment)		
	4 th Quarter of 2011	2011 Year to date	Since program inception
Pressure Washed	456	1,308	9,072
Steam Sanitized	33	248	1,433
Total	489	1,556	10,505

Regulatory Documentation

Documentation type	Regulatory Documentation		
	4 th Quarter of 2011	2011 Year to date	Since program inception
Certificate (PPQ 540)	162	281	5,827
Limited Permit (PPQ 530)	29	121	1,306
New compliance agreements	4	8	144

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

October 4th: Idaho SPHD and PCN Program personnel participated in a stakeholder meeting at the Idaho Falls Farm Bureau office. Idaho State Department of Agriculture (ISDA), Idaho Potato Commission (IPC), Farm Bureau personnel and program stakeholders were also present. The meeting's purpose was to discuss the commencement of ISDA PRM survey with PRM survey holdouts.

November 1st: PCN Program personnel provided a program update at the Idaho-Eastern Oregon Potato Committee in Pocatello, Idaho.

November 8th: PCN Program personnel provided a program update at the Idaho Association of Plant Protection meeting in Jerome, Idaho.

November 17th: PCN Program personnel attended a stakeholder meeting at the IPC office in Idaho Falls, Idaho. The meeting was a follow-up to the Farm Bureau meeting held in October.

November 18th: PCN Program personnel provided a tour of the PCN facility and laboratory to the University of Idaho researchers who work with the PCN bioassay.

December 6th: The PCN Program hosted a meeting with the infested field owner/operator group. The meeting's purpose was to discuss how the fall field season went and to discuss program plans for 2012. Representatives from IPC, ISDA, and Senator Crapo's office were also in attendance.

December 22nd: PCN Program personnel participated (via telephone) in meeting with the Idaho potato industry and PPQ HQ.

The next stakeholder update is due out in April 2012. Stakeholder updates are available at:

http://www.aphis.usda.gov/plant_health/plant_pest_info/potato/pcn_stakeholder.shtml