

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

2013 4th Quarter Report (October – December)

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 fourteen PCN-infested fields have been found in Bingham and Bonneville Counties, Idaho. All 21 known infested fields lay within a 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 51,100 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, 40,300 acres have been released from federal regulation; however, some of that acreage was re-regulated due to a new association(s) with an infested field(s). As of December 6, 2013, 10,774 acres of farmland are regulated, 2,300 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 planting of biofumigants. 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. To date, nine infested fields triggered the bioassay stage of evaluating eradication progress when viable eggs were no longer detected in cysts collected from those fields. One of these fields has also successfully completed the bioassay process, enabling it to return to potato production with certain regulatory and survey requirements remaining in place. Bioassays for other fields are ongoing 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 2013	2013 Year to date	Since program inception
Detection	941	10,949	206,913
Delimiting	13,969	23,430	236,020
Eradication	633	3,381	69,917
Total	15,543	37,760	512,850

Identification and Diagnostics

Type of survey	Samples processed by the Idaho PCN Laboratory		
	4 th Quarter of 2013	2013 Year to date	Since program inception
Detection	2,871	26,266	204,149*
Delimiting	19,461	38,589	227,035 [†]
Eradication	0	2,012	67,451
Total	22,332	66,867	498,635

*23 duplicate samples removed due to reconciliation of 2006-2009 data.

[†]1,447 additional samples added due to reconciliation of 2006-2009 data.

Type of survey	Samples processed at other Idaho laboratories	
	Idaho Food Quality Assurance Laboratory (2006-2009, now closed)	Idaho State Parma Research and Extension Center (2006-2009)
Detection	52,670	69
Delimiting	10,227	896
Total	62,897	965[‡]

[‡]942 additional samples added due to reconciliation of 2006-2009 data.

Program Research

Research is ongoing at the University of Idaho (Moscow, Parma, and Aberdeen campuses) to develop biological control agents and biofumigants against PCN, to elucidate genetic PCN immunity pathways, evaluate the effectiveness of Litchi Tomato (LT) as a trap crop for PCN, and determine agronomics for growing LT in southeast Idaho. Work continues at ARS-Prosser to develop favorable traits in LT for use as a trap crop, and to identify and characterize PCN hatching factors in potatoes, LT, and other non-solanaceous plants.

Eradication Activities

Since 2007, methyl bromide has been applied to the infested fields annually in the spring and was applied to one field in fall 2011. May 3-11, 2013, PPQ and the Idaho State Department of Agriculture (ISDA) collaborated to fumigate eight PCN-infested fields with methyl bromide (601 acres, total). This was the first methyl bromide treatment for two of the fields and the second treatment for the other six fields. Telone II was applied in the late summer of 2007- 2008 and 2010-2011. Telone II was not used in 2009 due to a world-wide shortage of the chemical. Biofumigants with nematicidal activity were planted in the infested fields in the summers of 2007 (oil radish) and 2009 (arugula).

Regulatory Actions

On December 6, 2013, the program deregulated 2,279 acres of associated fields after they completed the requisite soil survey protocol. These changes bring the total regulated area to 10,774 acres, 2,300 acres of which are infested fields. Additional acreage is scheduled to be deregulated in January 2014.

Regulatory Treatments

Treatment type	Regulatory Treatments (# of pieces of equipment)		
	4 th Quarter of 2013	2013 Year to date	Since program inception
Pressure Washed	384	2,538	14,729
Steam Sanitized	58	259	2,081
Total	442	2,797	16,810

Self-Certification Program

Treatment type	Regulatory Treatments (# of pieces of equipment treated by qualified self-certifying program stakeholders)		
	3rd Quarter of 2013*	2013 Year to date*	Since program inception*
Pressure Washed	339	745	1,999

*Self-certification data will lag one quarter behind all other Program data in order to accommodate stakeholder data reporting deadlines.

Regulatory Documentation

Documentation type	Regulatory Documentation		
	4 th Quarter of 2013	2013 Year to date	Since program inception
Certificate (PPQ 540)	149	893	8,050
Limited Permit (PPQ 530)	42	311	2,084
New compliance agreements	0	4	159

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 re-gain market access. Because of extensive field surveys conducted throughout production areas in Idaho, all of which have been negative beyond the nineteen 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 PCN Program collaborated with the Idaho Potato Commission (IPC) to build seven pressure-washing trailers that are available to stakeholders, free of charge, for performing their own sanitation treatments on equipment moving from non-infested regulated fields. Funding for the trailers was provided by a Farm Bill grant awarded to the IPC. The PCN Program designed and built the trailers and will provide upkeep and maintenance to them into future years. The trailers, put into use at the end of September, were an enormous benefit to stakeholders who were without PCN Program support during the 16-day government shutdown in October.
- The PCN Program collaborated with the Idaho Potato Commission (IPC) and the General Potato and Onion Distributors (GPOD) of Idaho to establish a permanent sanitation area for pressure-washed equipment moving out of infested fields. The sanitation area, to be used by APHIS for conducting steam sanitation treatments, consists of a large asphalt pad surrounded by a wide perimeter of gravel and a drainage basin. Funding for the wash area was provided by a Farm Bill grant awarded to the IPC. The pad is located on GPOD property which is in the vicinity of the infested fields. The wash pad will provide a convenient and safe location for program stakeholders to have their equipment steamed.

The next stakeholder update is due out in April 2014. Stakeholder updates are available at:

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