



USDA–APHIS – PPQ
Pale Cyst Nematode (*Globodera pallida*) Eradication Program- Idaho Falls, Idaho

2013 2nd 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 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, 38,100 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). Currently, 13,053 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 have 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		
	2 nd Quarter of 2013	2013 Year to date	Since program inception
Detection	4,101	4,101	200,065
Delimiting	3,663	3,663	216,253
Eradication	2,012	2,012	68,548
Total	9,776	9,776	484,866

Identification and Diagnostics

Type of survey	Samples processed by the Idaho PCN Laboratory		
	2 nd Quarter of 2013	2013 Year to date	Since program inception
Detection	4,260	18,387	197,096
Delimiting	3,663	18,826	205,823
Eradication	2,012	2,012	67,451
Total	9,935	39,225	470,370

Type of survey	Samples processed by the Idaho Food Quality Assurance Laboratory	
	2006-2009, now closed	
Detection	49,984	
Delimiting	10,224	
Total	60,208	

Program Research

Research continues with the ARS in Oregon on Litchi tomato to determine nutritional value of the fruit. Work is also continuing with the ARS in Oregon on alternative non-solanaceae crops that may induce a suicide hatch of *Globodera* species. Research also continues in New York to set up greenhouse areas for bioassay of GN-infested fields. Research at the University of Idaho in Moscow continues on biocontrol organisms to supplement eradication and on hatching and bioassay.



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 (601 acres, total) with methyl bromide. 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

In the second quarter of 2013, 375 acres were released from regulation under the Federal PCN Final Rule (effective April 29, 2009) after completing a deregulation protocol comprised of a sequence of surveys with negative laboratory results for PCN. 641 acres were added to the regulated area due to the detection of additional infested fields in May 2013. Another 44 acres were added when the boundaries of associated fields were amended.

Regulatory Treatments

Treatment type	Regulatory Treatments (# of pieces of equipment)		
	2 nd Quarter of 2013	2013 Year to date	Since program inception
Pressure Washed	864	935	13,185
Steam Sanitized	114	133	1,956
Total	978	1,068	15,141

Self-Certification Program

Treatment type	Regulatory Treatments (# of pieces of equipment treated by qualified self-certifying program stakeholders)		
	2 nd Quarter of 2013	2013 Year to date	Since program inception
Pressure Washed	316	340	1,740

Regulatory Documentation

Documentation type	Regulatory Documentation		
	2 nd Quarter of 2013	2013 Year to date	Since program inception
Certificate (PPQ 540)	340	387	7,548
Limited Permit (PPQ 530)	125	145	1,916
New compliance agreements	3	3	158



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

- There were no communication and outreach activities during this period.

The next stakeholder update is due out in September 2013. Stakeholder updates are available at:
http://www.aphis.usda.gov/plant_health/plant_pest_info/potato/pcn_stakeholder.shtml