United States Department of Agriculture

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

2013 1st 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 twelve PCN-infested fields have been found in Bingham and Bonneville Counties, Idaho. All 19 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 50,400 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, 37,680 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, 12,744 acres of farmland are regulated, 2,015 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, eight 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

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Survey Information

Type of survey	Idaho soil samples collected		
	1st Quarter of 2013	2013 Year to date	Since program inception
Detection	0	0	195,964
Delimiting	0	0	212,590
Eradication	0	0	66,536
Total	***0***	***0***	***475,090***

Identification and Diagnostics

Type of survey	Samples processed by the Idaho PCN Laboratory		
	1st Quarter of 2013	2013 Year to date	Since program inception
Detection	14,127	14,127	192,662
Delimiting	15,163	15,163	202,160
Eradication	0	0	65,439
Total	***29,290***	***29,290***	***460,261****

*An additional 655 samples were added since the last report due to a review of 2007-2009 lab data.

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 on *Solanum sisymbriifolium* (LT, lichi tomato) and its potential use as trap crop for PCN in Idaho. University of Idaho in Aberdeen and Shelley, researchers are examining the effects of different herbicides on LT. In Parma, U of I researchers are looking at LT seed viability and germination and the best planting times to achieve maximum root growth. ARS researchers in Prosser continue to evaluate hatching factors and are in the process of establishing the host status of additional plants that cause hatching of *Globodera* species. Other researchers in Prosser continue to examine the Solanum family for potential resistance to *Globodera* species.

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. 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). Additional methyl bromide treatments are scheduled for May 2013.

Regulatory Actions

In the first quarter of 2013, 1,996 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.

Regulatory Treatments

Treatment type	Regulatory Treatments (# of pieces of equipment)		
	1st Quarter of 2013	2013 Year to date	Since program inception
Pressure Washed	71	71	12,316
Steam Sanitized	19	19	1,841
Total	***90***	***90***	***14,157***

Self-Certification Program

Treatment type	Regulatory Treatments (# of pieces of equipment treated by qualified program stakeholders)		
	1st Quarter of 2013	2013 Year to date	Since program inception
Pressure Washed	24	24	1,194

Regulatory Documentation

Documentation type	Regulatory Documentation		
	1st Quarter of 2012	2013 Year to date	Since program inception
Certificate (PPQ 540)	47	47	7,209
Limited Permit (PPQ 530)	20	20	1,788
New compliance agreements	0	0	154

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

- On January 9th, PCN program personnel presented a program update at the 2013 Far West Agribusiness Association meeting in Twin Falls, ID.
- On January 24th, PCN Program personnel presented a program update at the 2013 Southeast Idaho Potato Conference in Pocatello, ID.
- On February 21st, PCN Program personnel presented a program update at the 2013 Shoshone-Bannock Tribal Farmer's meeting in Fort Hall, ID.
- On January 28th, PPQ provided a Pale Cyst Nematode (PCN) program update to the Idaho State House Agricultural Affairs Committee in Boise, Idaho. A similar update was given on February 7th to the Idaho State Senate Agricultural Affairs Committee. The program update consisted of a program introduction, history, goals and accomplishments as well as current information on the status of PCN eradication, survey and regulatory requirements. The information was well received, and two representatives expressed appreciation for the accomplishments of the program.
- On March 5th, PCN Program personnel attended the 2012 PCN Research Review meeting in Boise, Idaho. The meeting was hosted by APHIS and was attended by representatives from PPQ Idaho, PPQ WA, Agricultural Research Service (ARS), the University of Idaho, the Idaho Potato Commission, and the ISDA.

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