

Pale Cyst Nematode (PCN) Stakeholder Update  
6/18/2012

UPDATES AND RELATED INFORMATION:

- In June 2012, PPQ determined that soil samples from two additional fields in eastern Idaho were positive for pale cyst nematodes (PCN). The two fields, located in Bingham County, total 151 acres and are in close proximity to previously identified infested fields. All 17 confirmed infested fields, 1,916 acres total, are within a 5-mile radius spanning part of southern Bonneville and northern Bingham Counties. PPQ will publish the addition of these two fields and a list of exposed fields to the regulated area in the upcoming weeks.
- PPQ treated the six infested fields detected in 2011-2012 with methyl bromide in May 2012. The five fields currently in bioassay and the four fields with an average viability of less than 1% were not fumigated this year. Operators of the infested fields planted non-host crops in 2012.
- Equipment moving from non-infested APHIS-regulated fields may require cleaning prior to their movement out of the field. Cleaning can be performed by either APHIS personnel or by private parties. New in 2012, stakeholders have the option to conduct their own inspections and self-certify their cleaned equipment by entering into a compliance agreement with APHIS. The compliance agreement requires stakeholders to attend a sanitation training course offered by the PCN Program and to document and retain for review information about equipment sanitation and movement. For more information about self-certification or to sign up for sanitation training, please contact the program office at (208) 522-2431.
- Research and plans for field trials are currently underway to provide additional non-fumigant treatment options for infested fields. These include fungal biocontrol agents that attack PCN cysts, and trap crops and hatching factors that stimulate PCN eggs to hatch but do not provide a food source, which is essential for completing the nematode's reproductive cycle. Rapeseed meal, a byproduct of canola oil production, is being evaluated for use as a biofumigant against PCN. The meal is amended into the soil and releases glucosinolates that can kill PCN larvae. Since the rapeseed meal is processed, there is little odor released into the atmosphere unlike the arugula green manures utilized previously by the program.
- In February 2012, PPQ found that two additional infested fields in the eradication program had no viable nematodes according to a non-vital staining analysis conducted at the PCN laboratory in Idaho Falls. Three fields already reached zero viability in 2010. Cysts collected from these five fields advanced to bioassay, which is the next step toward determining eradication success. Bioassay assesses nematodes' ability to hatch from a cyst, infect a host plant, and reproduce. Bioassays are currently underway in a greenhouse at the University of Idaho in Moscow, Idaho. The entire bioassay process takes 1.5 to 2 years to complete. The bioassays that started in 2011 are ongoing; preliminary results obtained in early 2012 have been favorable.

SAMPLING INFORMATION:

- To date, the PCN Program has collected more than 370,400 soil samples in Idaho to ensure Idaho's freedom from PCN outside of the 17 known infested fields.
- More than 64,200 samples have been collected from the eradication fields in order to monitor eradication progress and to provide cysts to several institutions for PCN research.
- To date, the PCN laboratory in Idaho Falls has screened more than 341,400 soil samples collected in Idaho and approximately 42,500 samples from other potato-producing states. There have been no pale cyst nematode detections in the U.S. outside of Idaho.

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6/18/2012

- Since program inception, the viability of 696 cyst samples collected from infested fields has been analyzed before and after fumigation treatments. The average viability of PCN in the treated fields has declined by more than 99% since eradication treatments began.
- Since 2009, approximately 56,600 soil samples have been collected in support of the ISDA's post-regulation survey of fields deregulated by the USDA.
- At growers' and shippers' request, ISDA will sample fields in the summer and fall of 2012 that will grow potatoes in 2013 for export to Mexico. Fields must be sampled at least one week prior to planting and have negative PCN lab results to be eligible for export. Ideally, fields should be signed up and sampled the year before a potato crop is planted to ensure ample time for survey planning and lab processing. Contact the PCN Program office (208-522-2431) to make an export survey request.

### PROGRAM CHRONOLOGY:

#### Infested field detections and regulatory response:

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 pale cyst nematode (PCN), *Globodera pallida*, 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 grader facility in eastern Idaho. Subsequent 2006 surveying to determine the possible origin and distribution of the pest in Idaho confirmed seven PCN-positive fields, all located in close proximity, within Bingham and Bonneville Counties, Idaho. In response to the detection, Canada, Mexico and Korea shut off importation of potatoes from Idaho, while Japan cut off importation of potatoes from the entire U.S.

On August 28, 2006, the positive fields and an area surrounding the fields were placed under a Federal Domestic Quarantine Order and parallel State Rule establishing restrictions on planting and interstate/intrastate movement of certain regulated articles from/within Idaho in order to prevent the spread of PCN.

A trace of seed sources for the positive fields did not yield any evidence that seed was the source of infestation. Over 90% of the 2006 Idaho certified seed potato crop was surveyed and found negative for PCN. Other sources of introduction such as imported farm equipment, nursery stock, foreign flower bulbs, and other soil bearing items were investigated without providing any leads as to the origin of the infestation. As a result of the extensive surveying, negative test results and the regulatory actions of USDA and ISDA, Canada, Mexico, and Korea reopened their markets to Idaho potatoes with some restrictions. Japan allows potatoes from the U.S. except for Idaho, provided the product is not from Idaho seed.

On November 1, 2007 a Federal Interim Rule and Idaho State Rule went into effect, providing a framework for continued protection of Idaho and U.S. potato interests. In an effort to provide the best protection possible to the potato production and marketing system, the federal interim rule defined a regulated area in Bingham, Bonneville, and Jefferson Counties based on their associations with infested fields and production of a host crop within the past 10 years. Approximately 15,300 acres were added to the regulated area in response to the publication of the Interim Rule. Approximately 5,700 acres regulated by the Federal Order in August of 2006 were released from regulated status because they had no known association with the infested fields. Additionally, corn and small grain were removed from the list of regulated articles; peas and beans were added to the list of regulated articles.

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6/18/2012

On November 28, 2007, APHIS confirmed PCN in an additional field in Bingham County, Idaho as a result of continued intensive delimitation sampling. This find represented the 8<sup>th</sup> PCN-infested field found in Idaho. The field had been regulated since August 28, 2006 under the Federal Order, Interim Rule, and Idaho State Rules covering PCN in Idaho. The field is adjacent to two other infested fields. In response to discovering the 8<sup>th</sup> infested field, approximately 267 acres of farmland in parts of Bingham and Bonneville Counties were added to the regulated area. These fields became regulated due to having been farmed by a common operator in the same year as the 8<sup>th</sup> infested field and because they had at least one potato crop in the last ten years.

On December 11, 2008, APHIS confirmed PCN in another field located in Bingham County, Idaho as a result of continued intensive delimitation sampling. This find represented the 9<sup>th</sup> PCN-infested field in the regulated area in Idaho and is in close proximity to the other infested fields. The field has been regulated since August 28, 2006 under the Federal Order, Interim Rule, and Idaho State Rules covering PCN in Idaho. In response to discovering the 9<sup>th</sup> infested field, approximately 4,800 acres of farmland in parts of Bingham and Bonneville Counties were added to the regulated area. These fields became regulated due to having been farmed by a common operator in the same year as the 9<sup>th</sup> infested field and because they had at least one potato crop in the last ten years.

On April 29, 2009 APHIS published a Final Rule for PCN with three changes; 1) referring to the nematode of concern, *Globodera pallida*, by the common name “pale cyst nematode” rather than by the name “potato cyst nematode;” 2) allows the movement of *Phaseolus* species (beans) and *Pisum* species (peas) under the same conditions that apply to the movement of other crops to which soil is often attached; 3) requires that a protocol approved by the Administrator as sufficient to support removal of infested fields from quarantine, rather than a 3-year biosecurity protocol, be completed in order to remove an infested field from quarantine. The change specifying a protocol approved by the Administrator provides an opportunity to amend the requirements for removal of infested fields from quarantine in a more streamlined manner. PCN officials do not anticipate this change will have any negative effect on the quarantine removal program.

On March 18, 2011, APHIS confirmed PCN in an additional field located in Bonneville County. This find represented the 10<sup>th</sup> PCN-infested field in Idaho. The 175-acre field is located about 1.5 miles from the nearest infested field. The detection was made in samples collected in 2010 as part of ongoing cooperative monitoring efforts by APHIS and the Idaho State Department of Agriculture (ISDA). In response to the 10<sup>th</sup> field detection, approximately 6,500 acres in Bingham and Bonneville County became regulated due to having been farmed by a common operator in the same year as the 10<sup>th</sup> infested field and because they had at least one potato crop in the last ten years.

PPQ confirmed an 11<sup>th</sup> and 12<sup>th</sup> PCN-infested field in Bonneville County, Idaho on August 17<sup>th</sup>, and September 16<sup>th</sup>, 2011, respectively. Prior to their detection, these two fields (150 and 42 acres each) were regulated due to their association with one or more infested fields in the past.

PPQ confirmed three new PCN-infested fields in February 2012; two located in Bingham County (54 and 120 acres each) and one in Bonneville County (114 acres). These fields were previously regulated due to their association with one or more infested fields in the past. Approximately 2,829 acres were added to the regulated area in response to these detections.

Successful survey, regulatory, and eradication activities since the initial detection in 2006 have facilitated some regulatory relief in Idaho while forwarding the program objectives of: preventing the spread of PCN, delimiting the current infestation of PCN, eradicating PCN, restoring lost potato markets, and maintaining existing potato markets.

Eradication treatments:

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6/18/2012

In 2007, USDA and ISDA initiated a program to treat fields which have tested positive for PCN. The program has included pre-treatment sampling, fumigation, and post treatment sampling for up to two treatments per year. In 2007-2011, the fields were treated with methyl bromide in the spring and with Telone II in the fall (with the exception of 2009, when there was a worldwide shortage of Telone II). The ISDA contracts with land owners for activities related to eradication of PCN from infested fields including access, tillage, irrigation, and maintaining a biosecurity planting at a fixed cost per acre. Bio-fumigants (oil radish, clover, and arugula) were planted on the infested fields in 2007-2009, and small grains in 2010-2011 to add an additional measure of control and prevent soil erosion over the summer months. The plants were tilled into the fields to replenish organic matter and rejuvenate the soil. In 2011, a small grain crop was grown for harvest in the three infested fields that triggered bioassay in 2010. No crops were grown for harvest in the infested fields in 2007-2010.

For a full listing of PCN regulated articles, regulations, regulated areas, and past stakeholder updates, visit [http://www.aphis.usda.gov/plant\\_health/plant\\_pest\\_info/potato/pcn.shtml](http://www.aphis.usda.gov/plant_health/plant_pest_info/potato/pcn.shtml).