

Questions and Answers: USDA's Potato Cyst Nematode Guidelines and Surveys

Q. Why are potato cyst nematodes a problem?

A. Potato cyst nematodes—*Globodera pallida* (pale cyst nematode) and *G. rostochiensis* (golden nematode)—have been detected in the United States. These microscopic worms are considered invasive pests and present a serious threat to domestic and international commerce in potatoes and nursery stock. *G. pallida* was found in Idaho in 2006, and *G. rostochiensis* was discovered in New York in 1941 and also in the Canadian Provinces of Quebec and Alberta. Collectively, the two related nematodes are known as potato cyst nematodes or PCN.

PCN primarily affects plants within the potato family, including potatoes, tomatoes, eggplants, and some weeds. PCN are soil-borne organisms that, instead of infesting potato tubers, infest the plant's feeder roots. At the feeder roots, female PCN attach, feed, and become sedentary, eventually creating cysts containing 200 to 600 eggs that can remain dormant for up to 30 years while the eggs inside remain viable.

Large numbers of nematodes 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.

Q. What is the U.S. Department of Agriculture (USDA) doing to control these pests?

A. USDA officials are conducting soil surveys in U.S. seed potato and commercial potato production fields to monitor for and respond to detections of PCN. Two separate surveys are underway in the United States: the PCN National Survey and the Certified Export Survey for Canada. Each survey has its own distinct purpose and protocol.

The surveys are based on revised guidelines developed with input from the potato industry and established jointly by the USDA's Animal and Plant Health Inspection Service (APHIS) and the Canadian Food Inspection Agency (CFIA). The guidelines are detailed in a document entitled, "Guidelines on Surveillance and Phytosanitary Actions for the Potato

Cyst Nematodes: *Globodera rostochiensis* and *Globodera pallida*," which was signed by APHIS and CFIA on June 3, 2009. The document lists specific phytosanitary requirements—including survey activities—for seed potatoes traded between Canada and the United States. To read the guideline document in its entirety, please visit http://www.aphis.usda.gov/plant_health/plant_pest_info/nematode/downloads/potato_guidelines.pdf.

Q. What is the PCN National Survey?

A. The PCN national survey is designed to determine the presence or absence of PCN in soil samples collected from all potato-producing States. Beginning in 2009, the national survey plan is designed to sample 25 percent of the annual seed potato acreage and 1 percent of the commercial potato production acreage. In addition, all other land used for seed potato research, including land owned by universities, government, or other research organizations, will be surveyed in the same manner as the land used for commercial and seed potato production. This will help ensure that the entire seed potato supply, including seed from research trials, variety evaluations, post-harvest evaluations, and farm-saved seed are free from PCN.

Q. What is the Certified Export Survey for Canada?

A. This survey is designed to allow certification of potato seed for trade between Canada and the United States. These requirements may change as USDA's Plant Protection and Quarantine (PPQ) program and other partners continue to evaluate appropriate sampling rates. For more information, visit http://www.aphis.usda.gov/plant_health/plant_pest_info/nematode/downloads/potato_guidelines.pdf to read the guidelines document in its entirety.

Q. Why were the previous PCN guidelines changed?

A. Changes were made to accommodate more recent detections and the improved science and technology for monitoring and controlling PCN. Because PCN had not been detected in seed fields in North America before November 2007, the previous 2006 guidelines document did not include specific restrictions for seed potato fields. APHIS and CFIA initiated changes to better safeguard the North American potato industry.

Q. What protocols in the guidelines document changed?

A. The main changes include:

- The revised guidelines require full field surveys with different sample sizes for seed potato acreage and samples taken from land used for seed potato production.
- Beginning with the 2009 potato season, all seed potato fields within U.S. States and Canadian Provinces must be surveyed and tested 1 year prior to or after planting of the crop.
- A full field survey and testing at the field of origin are required prior to the movement of seed potatoes between the United States and Canada.
- At this time, regulated areas and areas with a history of PCN infestation include the Canadian Provinces of Alberta, British Columbia, and Quebec and the U.S. States of Idaho and New York.

Q. What happens if PCN is detected during a survey?

A. If PCN is detected in a field, APHIS plant health officials will take immediate phytosanitary measures to control and prevent the spread of the nematodes to noninfested areas. Officials will establish a regulated area that is subject to Federal quarantine regulations. Investigations of the newly regulated area will help determine where the infestation came from, where it could possibly spread to, and the extent and range of the infested area. No further immediate regulatory action will be taken as long as all seed fields within the State have been identified and surveyed. Any further actions will be determined by the results of the local investigative surveys.

Q. Section 4.1 of the PCN guidelines call for immediate regulatory measures to be implemented for new PCN detections. How are newly detected infested fields regulated?

A. In response to a new discovery of PCN on a site, all sample specimens must undergo confirmation for PCN. While awaiting confirmation, APHIS will initiate immediate phytosanitary measures to prevent PCN spread to noninfested areas. These actions will include:

- Restricting the movement of all regulated articles from the field where the sample was collected;
- Initiating investigations of any historical movement of regulated articles that may have been associated with the field in order to identify other potentially exposed fields.

If the suspect field is confirmed positive for PCN infestation, that field as well as adjacent and exposed fields will represent the interim regulated area(s) and adjacent and exposed fields will be targeted for sampling to determine the range and degree of infestation (delimiting survey). In cases where the

PCN infested field was used for seed potato production, information will be collected from the seed lots produced on the infested field to find out what fields the seed potatoes were transported to (trace forward investigation). At a minimum, the fields planted with seed potatoes originating from the last potato crop grown on the infested field will need to be part of the delimiting survey and are considered exposed to possible PCN infestation. Any further actions will be determined by the results of the delimiting surveys and trace forward information. If the field cannot be confirmed as infested with PCN, no further phytosanitary measures are required.

Q. What are considered regulated articles?

A. Regulated articles include: nursery stock, bulbs, corms, rhizomes, tubers of ornamental plants, grass sod (all field grown), potatoes (not for planting), potatoes (for planting and certification), soybeans, peas, beans, hay, straw, plant litter, root crops (other than potatoes), soil, farm equipment, construction equipment, farm tools, and used containers. Additional information about the restrictions for each regulated article can be found in Section 5 of the guidelines document.

Q. If a State is quarantined for PCN, does this restrict the international trade of all regulated articles?

A. Yes. Additional trade restrictions and/or suspension of trade activities may occur, depending on the nature and scope of the quarantine. The movement of regulated articles is restricted in these cases because PCN can be easily spread by these movements.

Q. Is international trade restricted, if not all of the fields in a State have been sampled?

A. If PCN is detected within a State that has not sampled all of its fields, the entire State is placed under quarantine and exports of seed potatoes to Canada are restricted until the requirements in Section 4.1 of the guidelines documents are met.

Q. Will seed potato farms outside of regulated areas have to be surveyed before they can ship to Canada?

A. Yes. States containing a PCN-regulated area are required to survey all seed potato areas. Any potato fields that produce seed potatoes that are traded between Canada and the United States must undergo a soil sampling and testing protocol using at least the Method B sampling method, as described in Section 8 of the guidelines document. The movement of seed potatoes and other articles with soil presents the highest risk for the movement of this pest.

Q. What are the restrictions for shipping seed potatoes to other States?

A. The guidelines document is specifically for international trade of seed potatoes between Canada and the United States. The regulation of interstate shipments is not covered under these guidelines. Contact your specific State plant regulatory officials for interstate requirements. Contact information for all State plant regulatory officials is available at <http://www.nationalplantboard.org/member/index.html>

Q. Currently, commercial growers perform surveys on a voluntary basis. Is this still the case?

A. Yes. APHIS is committed to working cooperatively with potato producers, State plant regulatory officials, and others to safeguard the national potato industry.

Q. How are the surveys paid for?

A. APHIS funds the PCN National Survey and the Certified Export Survey for Canada through cooperative agreements with States. APHIS remains committed to providing all available survey funding in future years. For information about PCN funding and survey initiatives, please contact your APHIS State plant health director (SPHD) or the State plant regulatory official (SPRO) for your State.

Q. Is diagnostic support available for this survey?

A. Yes. For information about diagnostic protocols and about where to ship suspect samples, please visit the APHIS PCN Web site. The address is: http://www.aphis.usda.gov/plant_health/plant_pest_info/index.shtml

Q. Are the results from the 2006 and 2007 surveys still valid under the new PCN guidelines?

A. No. Because PCN was detected in both the United States and Canada, both APHIS and CFIA have adopted more stringent movement restrictions and strengthened survey requirements in order to prevent the spread of PCN infestations.

Q. Why have APHIS and CFIA adopted a full field approach for surveys in place of partial or perimeter surveys?

A. Information provided by partial or perimeter sampling is useful but limited. Results from fields that are fully sampled provide the best and most definitive survey assessment.

Q. Why is APHIS using a larger sampling size of 5 pounds (2000cc) per acre for some of its survey methods?

A. APHIS and its partners are continuing to evaluate and revise sampling sizes used for detection surveys. To date, the best approach to soil sampling is to remove and test as much field soil as is economically

practical. A larger soil sample size, covering as much of a field as possible, helps detect small infestations that may be present.

Q. Will this current sampling size change or will that be the standard?

A. A science panel comprised of internationally recognized nematologists provided the current recommendations that were accepted by both APHIS and CFIA as the standard sampling rate. Based on the panel's recommendations, a 2000cc per acre sampling rate was deemed to be the most efficient, effective, and practical sampling rate for PCN. Future sampling sizes may change depending on the situation. However, they will not fall below 5 pounds (2000cc) per acre.

Q. How were States and the potato industry involved in the development of the guidelines document?

A. The revised guideline document was developed based upon input from APHIS' State plant health directors, State plant regulatory officials and the potato industry. The revised guidelines were the result of bilateral trade negotiations between the United States and Canada. Both countries are committed to keeping their respective industries informed about science-based risk mitigation approaches to prevent the spread of PCN.

Q. What is the National Potato Council's (NPC) position on the bilateral trade agreement and the implementation of the revised survey guidelines?

A. The NPC is supportive of the bilateral trade agreement and the revised survey guidelines because they will both safeguard the U.S. potato industry.

Q. Where can I find more information about PCN?

A. For the latest information about PCN, please visit the APHIS Web site at http://www.aphis.usda.gov/plant_health/plant_pest_info/index.shtml

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