



**IDAHO CAPS EXOTIC NEMATODE
SURVEY SUMMARY REPORT
(Grant # 05-8568-0907-CA)**

BACKGROUND

Idaho ranks number one in the production of potatoes in the U.S. In 2005, USDA, NASS data reports that 116,975,000 cwt were produced from 323,000 acres with a farm gate value of \$619,968,000. According to the Idaho Potato Commission (IPC), potato production and processing contributes \$2.5 billion annually to the gross state product. IPC also estimates 60% of the state production goes for processing. The export of Idaho potatoes to foreign countries, particularly Mexico, has been an increasing segment of the sales for this commodity. Preliminary negotiations have started to sell commodity for chipping into Japan.

Idaho is also an important potato seed producing state and provides high quality certified seed for commercial planting within Idaho and for other potato producing states. In 2005 there were 49 approved varieties, 30,969 approved acres, 631 fields resulting in 566 certified lots. Certified seed potato production occurs in 19 counties in southern Idaho. The highest concentration of acres is in the southeastern part of the state including; Bannock, Bear Lake, Bingham, Bonneville, Butte, Caribou, Custer, Jefferson, Franklin, Lemhi, Oneida, Power, Clark, Fremont, Madison, Teton Counties. Approximately 100 grower operations participate in the ICIA program annually. A grower directory and other potato seed industry statistics are published at the Idaho Crop Improvement Association (ICIA) website: <http://www.idahocrop.com>

Exotic plant parasitic nematodes pose a significant risk to potato production systems and the opportunities to expand export markets. Golden nematode, *Globodera rostochiensis*, Potato cyst nematode, *Globodera pallida* and other exotic species are identified by USDA, APHIS, PPQ as significant economic threats to food production and are federally regulated pest species. Establishing negative records of occurrence of these species would help rebuild lost export markets and reduce barriers to interstate movement of product. The earliest possible detection of any new infestations would allow an emergency response program to regulate and/or eradicate an infestation and to minimize additional negative impacts on Idaho and American potato exports. Scientifically documenting the absence of federally regulated exotic nematodes would be very beneficial to the industry in protecting domestic markets and reinitiating foreign trade.

SURVEY METHOD

ISDA developed and used a protocol similar to the ("Optional Method for Obtaining Soil", NAPIS survey method #00560) collecting soil samples at processing plants, fresh pack facilities and seed potato storage sheds.

The survey followed the general principals laid out by the USDA/APHIS preliminary survey design. Some aspects of the APHIS protocol were modified in order to produce a more practical survey under Idaho production systems and to stay within the budget limits of the

PPQ cooperative agreement. The three sources of samples collected in the survey were 1) piler or tare dirt at 46 fresh pack facilities 2) grade sample tare dirt from 4 processing companies and 3) tare dirt from grade samples of potato seed lot inspections. A total of 1,637 samples were from fresh pack, 1,399 samples were from processing plants and 515 samples were from seed lot grade inspection. The Idaho survey covered facilities and seed lot storages in all the major potato production counties. The fresh pack facilities survey resulted in sample distribution by Idaho Fresh Fruit and Vegetable Inspection (FF&V) district as follows: Blackfoot-55.1%, Idaho Falls-25.8%, Burley-18.0% and Caldwell-1.1%. Samples were obtain from 91% of the ICIA seed lots certified in 2005

ISDA, FF&V staff collected samples of piler or tare dirt daily at the packing or processing facilities. At the end of the week, the aggregated soil samples were label and prepared for transfer to the diagnostic lab. Weekly aggregated sampling covered a large part of the grading and packing season starting September 13, 2005 until May 31, 2006. The weekly samples were traceable to clusters of grower lots processed or packed during the week and to county origin. The seed potato lot samples used ICIA lot numbers for identification and were traceable to individual growers and fields. The aggregated commercial facilities samples and the seed lot samples were sub sampled and 500 cc of soil was prepared for nematode extraction and diagnostics. Preliminary diagnostics used standard extraction methods and light microscopy, conducted by the University of Idaho Nematology Lab Parma Idaho, under the supervision of Dr. Saad Hafez. Final confirmation of suspect nematodes of regulatory significance was conducted by ARS Nematology Lab in Beltsville, MD using both morphological characteristics and DNA marker using polymerase chain reaction (PCR) technology. A grand total of 3,551 samples were collected and analyzed in this detection survey. The described survey method has been successfully used in several other CAPS/PPQ funded state exotic nematode surveys.

PRIMARY TARGET SPECIES (EXOTIC TO IDAHO WITH NO PRIOR RECORDS OF OCCURANCE)

Common Name	Scientific Name
Golden Nematode	<i>Globodera rostochiensis</i>
Potato Cyst Nematode	<i>Globodera pallida</i>
Soybean Cyst Nematode	<i>Heterodera glycines</i>
Pea Cyst Nematode	<i>Heterodera goettingiana</i>
Corn Cyst Nematode	<i>Heterodera zeae</i>
Burrowing Nematode	<i>Radopholus similis</i>

RESULTS

On April 13, 2006 a sample comprised of tare soil from a grading station at a processing plant in southeast Idaho was determined to contain *Globodera pallida*, the potato cyst nematode (PCN). USDA PPQ cooperating with ISDA organized a Unified Incident Command Structure, began a trace back investigation and took appropriate regulatory action. As of July 14, the trace back investigation identified two fields in Bingham County

positive for PCN cysts. A proposed PPQ Regulatory Work Plan and a defined Quarantine Area are under discussion.

All other samples in the original CAPS detection survey; 3,035 commercial facility samples and 515 seed lot samples were found negative for all targeted exotic nematode species.

County Distribution of Commercial Facilities Soil Samples

County	Number of Samples
Ada	1
Bannock	2
Boise	3
Bingham	1724*
Bonneville	202
Canyon	27
Cassia	106
Clark	3
Elmore	5
Fremont	24
Gooding	7
Jefferson	208
Jerome	10
Madison	210
Minidoka	106
Power	238
Twin Falls	157
Valley	3
Total	3,036

*Trace back investigation confirmed 2 fields positive for PCN cysts.

County Distribution of Seed Lot Soil Samples

County	Number of Samples
Bingham	22
Blaine	12
Bonneville	18
Butte	8
Caribou	165
Cassia	3
Custer	5
Franklin	9

Fremont	138
Idaho	1
Madison	28
Minidoka	2
Oneida	9
Power	18
Teton	77
Total	515

OUTREACH

At an industry wide meeting (Idaho Potato Expo January 19, 2006 Pocatello, ID) ISDA staff gave a progress report on the survey. On June 28, 2006 PPQ gave a report on the results of the CAPS detection survey and PCN trace back investigation at the PGI Summer Conference, Pocatello, ID.

Survey Contacts:

Dave McNeal, State Plant Health Director, USDA PPQ Boise, ID (208) 378-5797

dave.mcneal@aphis.usda.gov

Mike Cooper, State Plant Regulatory Official, ISDA Boise, ID (208) 332-8620 mcooper@idahoag.us

Ben Simko, State Survey Coordinator, ISDA, Boise, ID (208) 332-8620 bsimko@idahoag.us

Darcy Heckathorne, Pest Survey Analyst, ISDA, Boise ID (208) 332-8620 dheckath@idahoag.us

Dr. Saad Hafez, University of Idaho, Nematologist, Parma, ID (208) 722-6701 shafez@uidaho.edu