

# Oregon Department of Agriculture Plant Health Program - 2006

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The Oregon Department (ODA) Plant Health Program provides official field inspections and laboratory testing for Oregon's agricultural commodities. We also conduct special surveys to establish pest-free status for specific counties. These inspections, surveys, and testing are required for shipment to interstate and international markets. The Program's pathologists also provide commodity groups and trade negotiation officials with official statements to facilitate the opening of new markets for Oregon's agricultural commodities. The Program has responsibility for several state quarantines, control area orders, and other regulations for plant pathogens. These administrative rules are designed to prevent exotic pathogens from being introduced or becoming established in the State and to provide quarantine pest-free production areas for Oregon growers. We are also active in helping to shape national policy and provide crucial input to national plant disease control efforts for important pathogens such as *Phytophthora ramorum* and potato cyst nematode. The results of our survey, certification, and testing programs for 2006 are summarized below.

## Sudden oak death certification and eradication

The ODA in cooperation with the Oregon Department of Forestry (ODF), USDA Forest Service, Oregon State University, and the affected landowners have been trying to eradicate *Phytophthora ramorum*, the cause of sudden oak death and related diseases, from infected forest areas in Curry County, Oregon since 2001. Since 2001, a total of 128 acres (including 40 infected acres identified in 2006) have been treated for the disease. Treatment consists of cutting, piling, and burning host plants within each infection center and asymptomatic hosts within 100- to 300-feet of each infection center. Tan oak stumps are treated to prevent re-sprouting. The sites are monitored periodically after treatment. Surveys in and around the sites showed that the treatments effectively limited the spread of the pathogen on most sites despite highly favorable environmental conditions for disease development and spread. Of the 691 samples collected within the sites in 2006, three soil samples and nine plant samples were positive for the pathogen post-treatment. The eradication and monitoring efforts will continue in 2007.

On December 21, 2004, the USDA-APHIS adopted a Federal Order requiring that all nursery stock shipped from the states of California, Oregon, and Washington be inspected and, if needed, tested for *P. ramorum*. In 2006, 79,930 samples from 1,362 host and 32 non-host nursery growing areas were tested using the USDA-approved ELISA, nested PCR, and qPCR protocols to meet the requirements of the Federal Order. *P. ramorum* was detected at 13 (<1%) of the sites surveyed. The USDA Confirmed Nursery Protocol (CNP) was enacted and completed at all 13 sites. A total of 37,363 samples were tested to meet the requirements of the USDA CNP. In addition to these samples, we also tested samples from notification inspections (720), enhanced perimeter surveys around infected nurseries (54), retail garden centers (5,170 from 126 nurseries), Christmas tree plantations (4,630 from 117 plantations), and trace-out investigations (3,323 from 126 sites). *P. ramorum* was found at one retail outlet associated with an infected grower nursery. In all, the ODA tested more than 89,000 samples for initial detection of *P. ramorum* (Fig. 1).

## Nematode surveys

In 2006, 122 soil and root samples from Oregon production nurseries were tested for Columbia root-knot nematode (*Meloidogyne chitwoodii*) to meet Canadian phytosanitary requirements. No Columbia root-knot nematodes were detected based on morphometric analysis of juveniles. *Pratylenchus* spp. were the dominant (62%) plant-parasitic nematodes from these samples.

Following the USDA National Potato Cyst Nematode Survey Plan, we will collect 1,795 soil samples from seed and commercial potato fields in 10 Oregon counties to test for *Globodera pallida* (potato cyst nematode) and *G. rostochiensis* (golden nematode) (Fig. 2). To date, a total of 92 soil samples have been collected and processed using the USDA protocol. Neither nematode was detected in these soil samples.

## Field certification surveys

In 2005, the ODA adopted rules for White Rot Certification of Vegetative *Allium* Seed for Central Oregon. This year, a total of 35 garlic fields (1,493 acres) were inspected (100% visual inspection) for the presence of white rot (*Sclerotium cepivorum*). Three fields in central Oregon were found with white rot.

The Plant Health Program offers a mint rootstock field inspection service to detect *Verticillium* species in counties that have established control areas. Under the provisions of the control area order, any fields confirmed as *V. dahliae*-positive cannot be used as a rootstock source. Of the 18 fields (352 acres) inspected, *Verticillium* was detected in four fields.

In 2006, 104 potato fields (7,658 acres, 10 varieties) were inspected for potato late blight (*Phytophthora infestans*). No potato late blight was found. This survey is done to meet the phytosanitary requirements of Taiwan for Oregon's potato growers.

Five hundred eighteen seed fields (10,632 acres) were inspected for the presence of seed-borne or seed associated pathogens of regulatory concern (Fig. 3). Inspectors looked for the presence of 100 different pathogens on 29 different seed crops. At least one disease of regulatory concern was found in 129 of the seed fields. The majority of fields (75%) were free from diseases of concern. The most commonly observed diseases in seed crop fields were carrot bacterial leaf blight (*Xanthomonas campestris* pv. *carotae*), carrot soft rot (*Erwinia carotovora* subsp. *carotovora*), neck rot of onion and garlic (*Botrytis porri*), cabbage stem rot (*Sclerotinia sclerotiorum*), and corn common smut (*Ustilago maydis*).

## Industry requested field surveys

ODA conducted a cherry leaf spot (*Blumeriella jaapii*) survey for Oregon's fresh cherry growers to meet Australian import requirements. Orchards were inspected in May after the trees were in full leaf. The Australian protocol required 10% of all orchards within a county be inspected and 20-25% of all trees within each orchard. In all, 36 orchards and 732 of 3,300 acres (22%) in Hood River and Wasco counties (Fig. 4) were visually surveyed. No cherry leaf spot was found. Based on this official survey, the cherry orchards in Hood River and Wasco counties are free of this disease.

In July 2006, 12 onion fields in Morrow and Umatilla counties (Fig. 4) (734 acres representing 14% of the planted acreage) were visually surveyed for onion smut caused by *Urocystis cepulae*. No onion smut was identified in these fields. This is the third and final annual survey (2004-2006) to meet the quarantine requirements for fresh onion export to Australia.

## Federal surveys

Since 1996, Oregon has been participating in a national survey program for Karnal bunt (*Tilletia indica*). This survey verifies that Oregon's wheat growing regions remain free from Karnal bunt. In 2006, 36 samples obtained from 12 counties that produced commercial quantities of wheat were sent to the Federal testing laboratory in Texas for processing. Karnal bunt spores were not found in any of the wheat samples examined.

The USDA-APHIS and the Canadian Food Inspection Agency reached an agreement to survey all potato-growing states for Potato Virus Y (PVY) and its variant PVY<sup>N</sup> (necrotic strain). The USDA is requiring random testing of field-grown potatoes from lots fourth generation or higher. In 2006, with the help of the Oregon State University Seed Certification Program, ODA tested 1,122 tubers collected from Oregon, and 604 tubers collected from Washington. PVY complex was detected in 4% of all tubers tested. This survey will conclude in 2007.

The aphid-transmitted plum pox virus (PPV) is a quarantine pathogen in the US. It was reported in Pennsylvania and Canada in 2000, and in Michigan and New York in 2006. A total of 1,813 field samples were collected from Oregon nurseries and cherry orchards and were tested using USDA APHIS-approved ELISA protocols. All samples tested in 2006 were free of PPV infection.

## Virus testing

Twenty-three nurseries participated in Oregon's virus certification program in 2006, with 11,767 trees tested for tomato ring spot virus, prune dwarf virus (PDV), and Prunus necrotic ring spot virus (PNRSV) using ELISA. PDV was detected in 101 trees and PNRSV in 51 trees. Another 1,755 field samples of *Malus* and *Pyrus* rootstock and stool bed materials were ELISA-tested for apple chlorotic leaf spot virus (ACLSV); 86 were infected. To determine the presence of ACLSV in other fruit and ornamental tree scion wood, more than 200 field samples were collected and tested from nurseries participating in the virus certification program. Two samples of one *Pyrus* cultivar were infected.

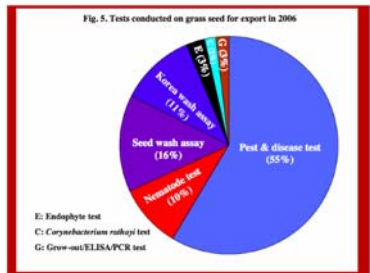
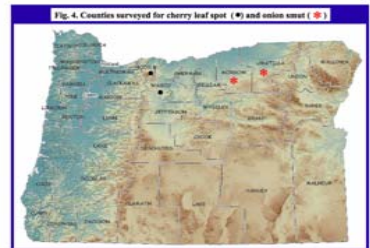
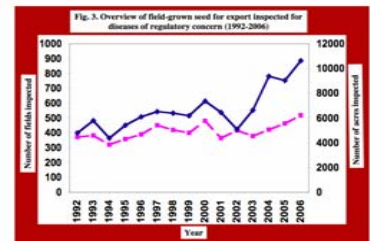
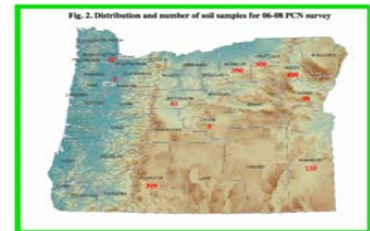
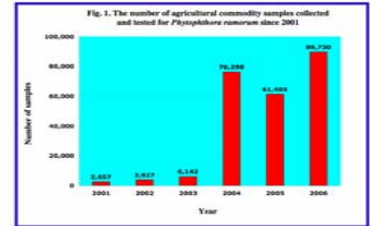
In 2006, a total of 10, 545 samples from seven nurseries were tested for blueberry scorch Carlavirus (BIScV) and blueberry shock Ilarivirus (BIShV) using ELISA. BIShV was detected in 475 samples from one nursery. No BIScV was detected.

## Laboratory testing

A total of 4,169 grass seed lots were tested for plant pests and pathogens of regulatory concern in 2006. In all, about 7,000 tests were conducted on the seed lots (Fig. 5). Three hundred ninety-three seed lots were positive for at least one pathogen of regulatory concern. In addition, 26 of 197 seed lots of forage grass seed varieties tested positive for the endophyte fungus, *Epichloa* sp., with more than 5% of seeds infected. These tests were requested by Oregon seed producers to meet the phytosanitary requirements of their customers.

Dutch elm disease was detected from 20 of 27 samples submitted to the lab. For the first time, Dutch elm disease was detected in Medford, Oregon, in the southern part of the state.

The Plant Health Laboratory provides a general diagnostic service to nursery and other grower industries. In 2006, 226 samples were tested for pests, pathogens, or abiotic problems. Diagnostic results were as follows: nematodes (35%), fungi (21%), bacteria (3%), viruses (less than 1%), insects (1%), abiotic (6%), and no identifiable cause for disease (11%).



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