



Yellow Star Thistle, *Centaurea solstitialis*
Photo courtesy of Steve Dewey, Utah State University, www.forestryimages.org

RESOURCES

Scientific resources include:

- State-of-the-art molecular genetics laboratory
- Scanning and transmission electron microscopes
- 2 million specimen arthropod collection, including databased frozen tissues
- 40,000+ specimen seed herbarium
- 50,000+ specimen plant herbarium
- 2,000 specimen plant disease herbarium
- 60,000+ volume library and reprint holdings
- Archived data on pest detections in California, and extensive historical information
- Diagnostic equipment worth over \$2 million
- Research greenhouses and growth chambers



Sudden Oak Death, *Phytophthora ramorum*, symptoms on rhododendron
Photo courtesy of Joseph O'Brien, USDA Forest Service, www.forestryimages.org

CLIENTELE

CDFA pest prevention programs, other agencies in California, county agricultural commissioners, industry, farm advisors, growers, federal agencies, agricultural agencies in other states, universities, museums, homeowners, and the scientific community.

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These labs also support numerous Scientific Aides, Agricultural Aides, Postdoctoral Scientists and USDA collaborators.

PLANT PEST DIAGNOSTICS CENTER

The Mission of the Plant Pest Diagnostics Branch is to serve as a scientific resource, providing timely and accurate plant pest diagnostics and professional expertise to our clients. Our scientists, technicians and support staff strive to provide leadership in science and excellence in service.

The tasks of our scientists and staff include:

- Timely and accurate diagnosis of plant pests, weeds, and diseases, and evaluation of seed quality and viability.
- Expert consultation for pest prevention programs and for external clientele.
- Services for the improvement of plant quality and for export of agricultural products.
- Cutting edge research on the identification and characterization of new pest and disease species, and on the methodologies to improve diagnostic procedures.
- Maintenance and curation of critical scientific resources, including the California State Collection of Arthropods, the Plant Herbarium, the Seed Herbarium, and plant disease collections.



Mediterranean Fruit Fly, *Ceratitidis capitata*
Photo courtesy of Scott Bauer, USDA ARS, www.forestryimages.org



<http://www.cdfa.ca.gov/phpps/ppd>



**Division of Plant Health
and Pest Prevention Services**

Department of Food and Agriculture

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Pierce's Disease, *Xylella fastidiosa*, on grapevine
Photo courtesy of Jack Clark, U.C. Berkeley, www.forestryimages.org

Plant Pathology Laboratory

Primary functions are to diagnose plant diseases caused by fungi, bacteria and viruses, as well as physiological, chemical and genetic disorders, to perform seed health testing, and to carry out research leading to better testing protocols. Common tools include molecular methods and assays, electron microscopy, immunological assays, and culturing plant pathogens.



Chrysanthemum White Rust, *Puccinia horiana*, pustule
Photo courtesy of John Dooley, USDA APHIS PPQ, www.forestryimages.org

This laboratory performs the diagnostic testing for many survey projects throughout California, including Plum Pox Potyvirus, Citrus Canker, and Karnal Bunt. In addition, much effort is expended in monitoring Sudden Oak Death. These surveys insure that new pests of concern are identified early, or monitor the progress of those pest species that already occur in the state.

Entomology Laboratory

Primary functions are to identify insects and other arthropods and molluscs that are potential pests, to diagnose damage caused by pests, and to perform research in insect systematics. Many survey projects insure that potential pests are found early, when regulatory action can be effective.



Asian Gypsy Moth, *Lymantria dispar*
Photo courtesy of John Ghent, USDA Forest Service, www.forestryimages.org

The California State Collection of Arthropods is an important international scientific resource, with significant representation of the state's insect fauna, and contains many historical specimens representing first detections of major pests in the state. Outside California, the New World holdings are its major strength. With a scientific staff of 10 insect systematists and one postdoctoral scientists, this lab represents one of the largest concentrations of insect systematic expertise in the United States.



Gill's Mealybug, *Ferrisia gilli*, named for retired PPD scale specialist Ray Gill
Photo courtesy of David Haviland, UC Davis Cooperative Extension



California Ground Cone, *Boschniakia strobilacea*

Botany Laboratory

Primary functions are to identify plants and provide noxious weed distribution information and biological support data to clientele. These activities help to prevent the introduction and spread of serious weed pests, and to identify host plants of insects, plant diseases, and plant parasitic nematodes. The plant herbarium has an active specimen exchange program with state, national and international herbaria. These specimens form the basis for accurate identification of plants new to or currently growing in California. Field investigations are also essential to populate the collection, to provide specimens for the exchange program, and to evaluate such things as the effects of environmental conditions on new or existing plant populations.



Soybean Cyst Nematode, *Heterodera glycines*, and egg
Photo courtesy of USDA ARS Electron Microscopy Unit

Seed Laboratory

Primary functions are to provide seed identification and seed quality assessment through standardized testing procedures and applied research and to maintain as the basis for accurate identifications a seed reference collection that reflects the diversity of seed-producing plants. These functions comprise the first line of defense to prevent introduction and spread of noxious weeds and assure the quality of seed for planting. Finding noxious weed seeds in shipments entering the state provides the basis for quarantine action.



Garden Bean, *Phaseolus vulgaris*, seedlings

Federal, Canadian and international standardized testing methods are used to provide data for seed labeling, export documentation and dispute resolution. Seed and fruit identifications may be used in human and livestock poisoning cases, criminal investigations, and in agricultural, archaeological, ecological and ethnobotanical research.

Nematology Laboratory

Primary functions are to identify plant parasitic nematodes and to perform research in nematode taxonomy, methodologies, and other areas of concern in regulatory nematology. Nematode diagnostics involves traditional morphological study supplemented, when necessary, with molecular analyses, biological assays and electron microscopy. This work supports agencies responsible for nursery certification, standards of pest cleanliness, preventing the introduction and spread of pests, and foreign export phytosanitary certification.