

2002 ANNUAL REPORT

of the

California Department of Food & Agriculture

Plant Health & Pest Prevention Services

April 2003

PLANT HEALTH AND PEST PREVENTION SERVICES

ADMINISTRATION

The California Department of Food and Agriculture's (CDFA) Plant Health and Pest Prevention Services (PHPPS) mission is legislatively mandated and clearly articulated within the California Food and Agricultural Code. The California Legislature, in enacting this mandate, also recognized that pest prevention is uniquely positioned to protect California's urban and natural environments as well as its agriculture. It specifically instructs the CDFA to protect ornamental and native plantings as well as agricultural crops from the harm caused by exotic pest invasions. These mandates serve as the basis for the pest prevention program's mission, vision, values, and goals statement:

Mission: *Protect California from the damage caused by the introduction or spread of harmful plant pests.*

Source – California Food and Agricultural Code, Sections 24.5, 403, 5006, 5301, 5322, 5761

Vision: To provide leadership of pest prevention and management programs that effectively protects California's agriculture, horticulture, natural resources, and urban environments from invasive plant pests. "Find the big problems and fix them."

Values:

- Leadership: Provide clear direction, guidance and support.
- Communication: Open, constructive exchange of ideas, opinions and information.
- Decision: Decision-making based on the best available science, technology, and common sense.
- Team Work: Accomplishing division goals through the cooperative efforts of each of our employees.
- Credibility: A team that maintains the division as a responsive, accountable, and trusted organization.
- Development: Maintain a system that develops employees, expands capabilities, acquires and utilizes accurate information and new technologies, while employing innovative pest prevention strategies.

Goals: To prevent the entry, spread and establishment of invasive plant pests that could be detrimental to the State's agriculture, public, or natural resources by:

- Accurate and timely pest identification;
- External and internal exclusion activities designed to prevent pest entry or establishment;
- Early detection of plant pests before they become well established;
- Timely and effective eradication actions to eliminate new pest infestations;

- Control and containment systems for plant pests that have become widely established;
- Research, information technology, and pest risk analysis systems to assure that the pest prevention program is relevant, scientifically based, and continuously improved;
- Maintain outreach programs to enlist public support of pest prevention activities through enhanced public awareness and education; and
- Development of division employees, foster teamwork and a sense of accomplishments and enjoy our work.

In California, a series of federal and state plant quarantine laws and regulations are enforced to restrict the entry and movement of commodities capable to harboring targeted plant pests and enable our eradication and control efforts. This approach of prohibiting or restricting the movement of plants, plant products, or other commodities capable of harboring exotic plant pests is done in the interest of the food security. In this case, the public insurance of a safe and secure supply of food and fiber is based on the premise that it is more economically and environmentally-sound to prevent the entry and establishment of dangerous plant pests than to live with them. PHPPS is currently reviewing its strategic plan and our entire pest prevention program to enable their continual improvement and ensure their relevance to the pest prevention mission.

Along with the United States Department of Agriculture (USDA), PHPPS actively participates in the development of standards for pest prevention under the International Plant Protection Convention. The PHPPS Division is also a sustaining associate member of the North American Plant Protection Organization (NAPPO), a regional trade organization that develops pest prevention standards for the three country members—the U.S., Canada, and Mexico. California industry representatives are active participants in NAPPO panel committees and its Industry Advisory Group.

PERMITS AND REGULATIONS

The Permits and Regulations Program develops all regulations administered by the Division of Plant Health and Pest Prevention Services and develops associated legally required documents such as notices, statements of reason, orders, and certificates of compliance. The Special Assistant serves as regulatory coordinator for the Division and technical staff assistant to the Director.

This program issues state permits involving agricultural pests, approved laboratories, soil, and quarantine commodities as authorized under administrative regulations and the Food and Agricultural Code. In addition, this program approves or disapproves applications for federal permits that are issued by the USDA. These permits concern movement into California of plant pests, foreign soil, foreign post-entry quarantine plant material, genetically engineered organisms (biotechnology permits), and foreign plants and plant products normally prohibited entry into the United States.

ACCOMPLISHMENTS

The primary activities of the Permits and Regulations Program during the 2002 calendar year were:

State Permits. There were 336 state permits issued including:

- 111 plant pest permits (49 for pathogens, 62 for arthropods),
- 209 quarantine commodities permits,
- 11 biotechnology authorizations,
- 5 approved laboratory permits.

Federal (USDA) Permits. A total of 508 applications for federal permits were reviewed and processed including:

- 55 post-entry quarantine agreements,
- 35 soil permits,
- 188 plant pest permits (87 for pathogens, 101 for arthropods),
- 191 biotechnology permits,
- 39 permits for federally prohibited plant material.

Regulations. There were 110 regulatory actions completed which included the adoption, repeal, or amendment of 52 regulations; 13 certificates of compliance; and 19 notices of changes in the regulations.

AGRICULTURAL COMMODITIES INVESTIGATIONS TEAM

The Agricultural Commodity Investigative Team works to identify and close pest introduction pathways statewide by stopping smuggling of agricultural products into California. The investigators conduct training as well as investigations, prosecute identified smugglers, and collaborate with their counterparts in the USDA. The following is a summary of their activities for 2002:

Investigations 2002

TOTAL CASES	CRIMINAL ACTION	ADMINISTRATIVE ACTION	NO ACTION
11	2	0	9
Total Fines	\$2,650.00		

Summary:

- Investigation: Wholesaler/tejocotes –Mexico. Manifested as frozen and released by the USDA at LAX. The tejocotes were found to be fresh, seized 3,320 pounds.
Action taken: Charged with a criminal misdemeanor, ordered to pay investigative costs of \$1,680.00 and placed on two years informal probation. In addition, this year staff began working with Pest Exclusion biologists to collect fruit for research on trace minerals of California grown fruit to determine if this

methodology could be used to identify foreign grown fruit under a grant received from the USDA.

- Investigation: Truck driver/bee colonies. Rejected load of bees bypassed inspection station. The shipment was inspected and released by county.
Action taken: None.
- Investigation: Individual/coconut palms and ginger plants. Plants intercepted at FedEx facility in Alameda County without proper certification, no pests found.
Action taken: None.
- Investigation: Wholesaler/fresh Kaffir lime leaves
Action taken: None. Some citrus canker infected leaves found in Minnesota were traced back to California. An investigation determined infected leaves were not from California but were from Florida.
- Investigation: Nursery/plant material. California nursery suspected of receiving uncertified plants from nursery in Florida.
Action taken: No pests found.
- Investigation: Wholesaler/Sichuan pepper – China. Sichuan pepper seized at wholesaler's warehouse (3,250 pounds). One week later same wholesaler imported 19,150 pounds of Sichuan pepper from China seized by USDA at port.
Action taken: Charged with a criminal misdemeanor and ordered to pay a fine of \$970.00. Placed on three years informal probation.
- Investigation: Wholesaler/citrus peel – China. Heat treated citrus peel from China did not meet heat-treatment requirement. Shipment accompanied by Chinese treatment certificate. Seized 300 pounds of citrus peel.
Action taken: None - USDA released peel due to Chinese treatment certificate. USDA, IES is investigating.
- Investigation: Broker/post entry roses – Holland. Broker claimed damaged roses were thrown away by mistake in Los Angeles without County or State oversight. Case referred to USDA, IES.
Action taken: None.
- Investigation: Wholesaler/winged beans – Mexico. Importer did not manifest the winged beans. Importer provided a USDA permit for the winged beans. Permit found to be invalid. There were discrepancies at ports of entry on enterability of the product.
Action taken: None.
- Investigation: Wholesaler/citrus peel – China. Citrus peel from China was located and the receipt provided was dated 1983. The peel was seized and no disease was found.
Action taken: None.

- Investigation: Cruise Line/avocados – Mexico. A food service company was suspected of supplying a cruise line with Mexican avocados. It was determined the cruise line purchased the Mexican avocados in Canada.

Action taken: None

Trace Elements Analysis

Location	Longan	Lychee	Guava	Avocado	Mango	Sweet Lime	Sapote	Mamey
Camarillo	X			X				
Vista	X	X						
Fallbrook			X	X		X		
Escondido	X		X					
Produce Wholesaler					Puerto Rico Treated			
Grocery Store					Ecuador Treated			
Cal Poly Pomona	X							

Collected samples of targeted fruit for submission to the lab for testing of trace elements.

Other Activities

- Investigated the possible pathway for the introduction of the Mexican fruit fly in Valley Center. This included interviewing property owners, Pest Control Advisors, and mobile vendors. Tracked fruit from larval properties to end-users.
- USDA Strategic Planning Targeting Fruit Fly Pathways: Participated in the planning session focused on identifying and closing fruit fly pathways in California. The first action plan for 2003 activities was jointly developed directed toward identifying *Bactrocera* species pathways by sharing information, planning, and coordinating field operations among different organizations involved.
- Oriental fruit fly, Santa Clara County: Investigated the possible pathway of an intercepted infested fruit shipment (by mail) from Hawaii destined for San Jose by looking at the correlation between intercepted mail shipments and fruit fly finds in the San Jose area.
- Red imported fire ant, Merced County: Investigated possible means of introduction of red imported fire ant into the area. Traced bee shipments used for pollination in the area and correlated them to infested bee shipments rejected at border stations destined to the area.
- USDA Treatment Failures: Located and coordinated the inspection activity and fruit cutting of Mexican mangos and Texas citrus. These commodities originated from USDA facilities investigated for apparent failed treatments.
- CDFA Superior Accomplishment Award: Received the Department's Silver Superior Accomplishment Award.

ENVIRONMENTAL COMPLIANCE

The Environmental Compliance Program exists to ensure that all PHPPS pest prevention programs are in compliance with all applicable environmental protection laws and regulations. It does this by:

- Keeping abreast of environmental mandates
- Preparing and/or reviewing scientific and legal documents
- Facilitating scientific debate of environmental issues
- Developing and defending environmental compliance strategies
- Representing PHPPS with other governmental agencies
- Advising PHPPS Division on environmental compliance mandates

ACCOMPLISHMENTS

- Managed the development of an Environmental Impact Report (EIR) for the Pierce's Disease Control Program. This process included direct interaction with CDFA professional staff in coordination with consultants to prepare a Draft EIR for public review and the preparation of the final EIR to address the comments of the public.
- Participated in environmental monitoring of endangered species which was required by a permit issued to the Division's Curly Top Virus Control Program by the U.S. Fish and Wildlife Service.
- Participated in the preparation of a Water Monitoring Plan for the Division's Hydrilla Eradication Program. This included analysis of program treatment methods, such as the use of Flouridone and copper in lakes.
- Participated in obtaining compliance with permit requirements from the San Diego Regional Water Control Board for application of pesticides for the Mexican fruit fly infestation in Valley Center, California.
- Reviewed and commented on, when needed, other environmental documents of concern to the Department and Division.
- Represented the Department and Division at meetings with other agencies regarding requirements for environmental compliance and permits, policy on agricultural land and water quality issues.
- Provided information about environmental compliance and environmental law to individuals and groups in the Division.

PLANT HEALTH AND PEST PREVENTION SERVICES

P E S T E X C L U S I O N B R A N C H

Interior Pest Exclusion

County High Risk Program

Exterior Pest Exclusion

Nursery, Seed and Cotton Program

INTERIOR PEST EXCLUSION

The mission of the Interior Pest Exclusion Program is to prevent the introduction and spread of harmful and invasive plant pests, and to maintain and expand market access for California agricultural products. Harmful and invasive exotic pests are a major threat to California's agricultural industry, and pest exclusion is the cornerstone of pest prevention. In many instances, exclusion is the first, last and only means to keep exotic pests from invading California. Federal and state enacted quarantines, as well as county ordinances, help protect the State from exotic pests. Enforcement of these quarantines is accomplished through direct inspection of arriving commodities and by treatment, destruction or return to shipper when pests contaminate the commodity. Interior Pest Exclusion provides regulatory oversight, training, and direction to the county agricultural commissioner's office according to the Pest Exclusion mission.

Interior Pest Exclusion Program works cooperatively with the USDA to enforce federal plant pest quarantines. Interior Pest Exclusion also cooperates with the United States Department of the Interior, the United States Customs Service, and the California Departments of Fish and Game, Forestry and Fire Protection, Public Health, and Pesticide Regulation to enforce their respective regulations.

To promote California agricultural commodities in foreign and domestic markets, Interior Pest Exclusion maintains a close working relationship with the USDA to facilitate the export of California's products worldwide by providing up-to-date pest risk assessments on locally grown commodities. Additionally, Interior Pest Exclusion works cooperatively with agricultural officials in other states to determine the best pest mitigation measures that will allow the movement of pest-free commodities into California.

Interior Pest Exclusion activities include:

- Quarantine Response
 - Emergency response to a pest infestation
 - Quarantine response to a pest incident
- Quarantine Training, Direction, Oversight, and Consultation
- Quarantine Enforcement
- Trade Facilitation
- Commodity Treatment Coordination and Consultation
- Data Collection and Information Management

Below are highlights for the year 2002.

Quarantine Response

Interior Pest Exclusion is mobilized for:

Emergency Response to a Pest Infestation

When a reproductive population of a pest is discovered in California, an infestation is declared. Interior Pest Exclusion responds by enacting emergency pest abatement and control measures to contain the infestation and determine effective commodity host treatments that facilitate movement to market. Emergency regulatory responses are coordinated with USDA if the pest

is a federal action pest. In 2002, emergency responses were conducted for infestations of Mexican fruit fly, Oriental fruit fly, Mediterranean fruit fly, and red imported fire ant.

Mexican fruit fly, Valley Center. In November 2002, Arizona Department of Agriculture informed the CDFA that *Anastrepha ludens* larvae were found at an Arizona citrus juicing facility. The grapefruit was determined to have originated in California. The CDFA responded by immediately investigating the shipper, and traced the fruit to a grove in Valley Center, San Diego County. Mexican fruit fly larvae were found in grapefruit still on the tress in the 65-acre grove. Immediately a Mexican fruit fly federal and state interior quarantine was declared. Since the initiation of the quarantine, over 270 adult flies have been detected and larvae have been found on 12 other properties. The quarantine area encompasses approximately 130 square miles, and 20 varieties of commercial crops, including grapefruit, oranges, avocados, and persimmons. To date, over 900 properties, producing over 18,000 acres of host material, have entered into a treatment program to meet the federal and state quarantine requirements and to facilitate the movement of certified host material into foreign and domestic markets.

Mexican fruit fly, Monterey Park/South Pasadena. In November 2002, a Mexican fruit fly infestation was declared in the Monterey Park/South Pasadena area of Los Angeles County. This is primarily an urban area, covering approximately 105 square miles. Affected businesses in urban quarantine situations can include produce markets, wholesale produce distributors, fruit packing facilities, flea markets, swap meets, farmers markets, landscaping companies, and community gardens. In the Monterey Park/South Pasadena area, over 300 businesses are affected and are operating under compliance agreements. Hold notices have been issued on 22 properties in the area. Two nurseries are undergoing treatment.

Oriental fruit fly, Ontario/Chino. In April 2002, an Oriental fruit fly infestation was successfully eradicated in the Ontario/Chino area of San Bernardino County, and emergency regulatory response activities were concluded. The quarantine area included both urban and agricultural areas. Over 300 businesses were affected and operated under compliance agreements. Commercial agricultural production consisted of avocado, citrus, chili pepper, cucumber, fig, guava, kumquat, lemon, loquat, orange, quince, stone fruit, tangerine and tomato. Treatments were conducted on over 60 commercial fruit production properties and at over 30 nurseries.

Oriental fruit fly, Rancho Cucamonga. In November 2002, an Oriental fruit fly infestation was successfully eradicated in the Rancho Cucamonga area of San Bernardino and Los Angeles counties. This was primarily an urban area. Over 160 businesses were affected and operated under compliance agreements. Hold notices were issued to over 130 properties. One nursery underwent treatment.

Oriental fruit fly, La Mirada. In November 2002, an Oriental fruit fly infestation was declared in the La Mirada area of Los Angeles and Orange counties. This is primarily an urban area covering approximately 59 square miles. Over 120 businesses are affected and operating under compliance agreements. Hold notices were issued to nine properties in the area. Two nurseries are currently undergoing treatment.

Mediterranean fruit fly, Hyde Park. In June 2002, when a Mediterranean fruit fly infestation was successfully eradicated in the Hyde Park area of Los Angeles County, emergency regulatory response activities were concluded. This is primarily an urban area. Over 700 businesses were affected and operated under compliance agreements.

Mediterranean fruit fly, Redlands. During 2002, Oriental, Mexican, and Mediterranean fruit flies were trapped in the Redlands area of San Bernardino County. These were all single fly finds, and infestations were not declared. Hold Notices (to prevent movement of fruit) were issued to all property owners where flies were trapped. Interior Pest Exclusion conducted surveys and documented all the fruit fly host material produced in the area and the businesses affected. No additional emergency regulatory response activities were initiated.

Red imported fire ant. Federal and state quarantines regulate areas of California for the red imported fire ant (RIFA). Currently, there are 790 square miles in the quarantine area including the entire county of Orange and parts of Riverside and Los Angeles counties. RIFA has also been discovered in areas outside the regulated area. Here Interior Pest Exclusion implemented regulatory actions and eradication treatment programs. Currently, RIFA has been found in the following counties:

Fresno	Merced	San Diego
Kern	Riverside	Santa Barbara
Los Angeles	Sacramento	Stanislaus
Madera	San Bernardino	

Regulatory enforcement of the RIFA quarantine is accomplished through compliance agreements with businesses and/or individuals in the quarantine area. Interior Pest Exclusion signed 600 new compliance agreements during 2002, bringing the total number of businesses being monitored to 3,294. Businesses operating under compliance agreements are production nurseries, non-production or retail nurseries, landscapers, golf courses, sod farms, bee-keepers, soil movers, hay dealers/handlers, green-waste recyclers, landfills and yard maintenances. A compliance agreement requires businesses to follow approved treatment procedures to ensure RIFA-free status when articles are moved outside the regulated area. Homeowners are also placed under a compliance agreement if regulated articles will be moved from their property.

Since the beginning of regulatory activities, the number of compliance agreements for nurseries, sod farms and golf courses has leveled off, but there continues to be an increase in new compliance agreements issued to other high-risk operations such as landscapers and soil movers.

The primary focus of RIFA quarantine enforcement is to ensure the movement of RIFA-free nursery stock by placing production nurseries under a compliance agreement. In 2002, Interior Pest Exclusion staff conducted 1,029 (73%) SPAM-bait inspection surveys in production nurseries, not including 2,703 soil inspections for construction/swimming pool installation sites (see Figure 1). Soil inspections increased 28% in 2002 over last year's inspections. This may be due to an increase in the outreach program conducted by county and city/municipal planning departments. To ensure compliance to RIFA program procedures, the goal is to inspect 100% of all production nurseries within the quarantined area during each quarter. This goal was accomplished in 2002.

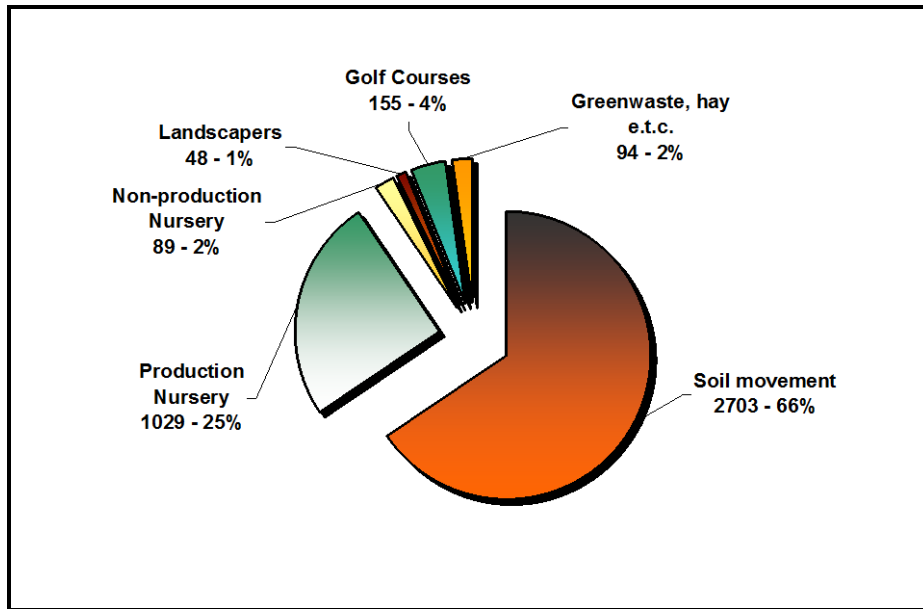


Figure 1. RIFA Inspection Surveys in 2002 (number, percentage of total)

Since inspections began in November 1998, RIFA has been found in 59 nurseries. Forty-one (69%) of these nurseries completed the required four consecutive treatments and negative quarterly surveys and so were removed from the positive nursery classification (Figure 2). Currently only 18 nurseries (31% of the total infested nurseries) are under eradication bait treatment. All nurseries within the quarantined area are being monitored and surveyed using SPAM[®] bait traps. All nurseries within the quarantined area continue to treat all nursery stock by drenching or incorporating pesticides in the soil mixture to comply with federal domestic and California state interior RIFA quarantine requirements.

Regulatory inspections of establishments other than nurseries resulted in RIFA finds in 16 soil-movement related sites, two landscape holding grounds, 12 golf courses and one greenwaste recycling site. Each site was treated (broadcast bait) and was monitored according to program protocol.

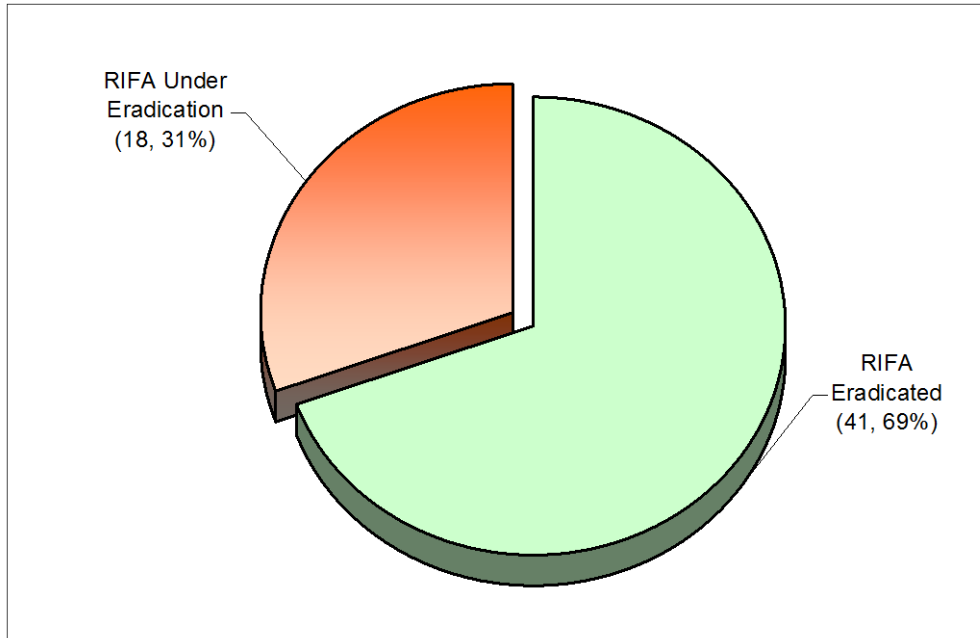


Figure 2. RIFA eradication in nurseries (number, percentage of total)

The Arizona Department of Agriculture (ADA) and the CDFA continue to use a Master Permit Agreement as authorization for the shipment of nursery stock from California to Arizona. This agreement allows RIFA-free nurseries located within the quarantine area to ship nursery stock into Arizona without being held in a special ADA approved quarantine holding area. There are 19 nurseries (approximately 1,593 acres) participating under the terms of this Master Permit. One nursery was suspended from shipping for violating the terms of the Master Permit after testing positive for RIFA.

Sudden oak death. Interior Pest Exclusion developed regulatory enforcement work plans and cooperative agreements for the 12 regulated counties to enforce state regulations controlling the artificial spread of *Phytophthora ramorum*, the causal agent of sudden oak death (SOD). These regulations govern the intrastate movement of nursery stock, unprocessed wood, bark, firewood, and cut greens of 15 different types of host plants from the 12 infested counties and are part of a comprehensive plan developed by the California Oak Mortality Task Force to address the multiple impacts of SOD. Cooperative agreements also were initiated with the United States Forest Service, the California Department of Forestry and Fire Protection, and the USDA to reimburse the CDFA for SOD diagnostic support of regulatory enforcement, disease survey, and monitoring activities. A total of 73 nurseries were placed under compliance for the federal interim rule. County agricultural staff performed 783 inspections of nursery stock at wholesale and production nurseries. In February, the USDA issued an interim rule for *Phytophthora ramorum* that is not identical to the state regulation. To address these differences, the CDFA, the USDA, the COMTF, and other stakeholders are working to harmonize the state and federal regulations concerning the movement of nursery stock, greenwaste, wood products, and soil.

Quarantine Response to a Pest Incident

When pests are discovered in arriving commodities, Interior Pest Exclusion responds by taking immediate action to contain the pest and eliminate the risk of the pest escaping and becoming

established in the State. The immediate action, conducted in cooperation with the local county agricultural office, is to locate and dispose of the entire infested commodity. Additionally, investigations are conducted to determine the extent of distribution in the State of the infested commodity, to determine how the commodity became infested, and to determine if certification or other pest cleanliness procedures must be implemented at origin or corrected to prevent similar incidents in the future. The following are some of the pest incidents in 2002:

Snail interceptions. Two types of destructive and invasive snails were intercepted in a pet store and on incoming nursery shipments during 2002. The channeled apple snail (*Pomacea canaliculata*) is a recent popular item in pet and aquarium supply stores in California. The channeled apple snail is a fresh water snail native to South America. A prodigious breeder with a voracious appetite, it possesses an extremely destructive capability. In other parts of the world, the channeled apple snail is a pest of rice. Interior Pest Exclusion and county inspectors discovered the snails in numerous pet stores and in backyard situations. Each discovery has been successfully eradicated. Interior Pest Exclusion released an educational pamphlet directed to the industry and consumers on the harmful effects this pest can cause to California agriculture.

The giant African snail (*Achatina fulica*) was intercepted on a shipment of nursery stock from Hawaii. This snail is destructive to numerous types of plants, including vegetable plants, ornamentals, and woody species. Interior Pest Exclusion worked with the Hawaii Department of Agriculture to implement snail-prevention measures at the problem nursery to reduce the risk of infestation in future shipments to California.

Mexican mangos infested with Mexican fruit fly. In February 2002, Interior Pest Exclusion received a report from the Arizona Department of Agriculture that live *Anastrepha* sp. fruit fly larvae were detected in a shipment of Mexican mangos destined to California. The shipment had undergone the hot water quarantine treatment at Mexican treatment facility number 319. Three additional shipments of mangos from the same treatment facility had entered Arizona and were en route to California. One of these shipments was refused entry into Arizona; the other two had already entered California, destined for Los Angeles and San Diego counties. The CDFA Interior Pest Exclusion responded by coordinating with county agricultural offices for the interception, fruit sampling for documentation, and the final destruction and disposal of all mangos from treatment facility number 319.

Texas grapefruit infested with Mexican fruit fly. In March 2002, the Blythe Agricultural Inspection Station detected five live suspect Mexican fruit fly (*Anastrepha ludens*) larvae during routine sampling of Texas-origin grapefruit. The five larvae, initially identified via transmission of digital images from the inspection station to the Plant Pest Diagnostics Laboratory, were later confirmed as *A. ludens*. The federal certificate that accompanied the shipment indicated that the fruit had been treated according to requirements of the federal domestic quarantine for the Mexican fruit fly (7 CFR 301.64). The infested shipment of 1,080 cartons of grapefruit and oranges was rejected and returned to origin.

The CDFA Interior Pest Exclusion temporarily suspended future shipments from the Texas shipper. The border agricultural inspection stations increased the sampling rate for all other Texas-origin citrus to ten boxes per truck shipment. The USDA completed an investigation of the treatment facility and determined that the fumigation chamber was in proper working order, and no commingling of treated and untreated fruit had occurred. The CDFA Interior Pest Exclusion began accepting shipments from the Texas shipper on the condition that the USDA monitors all fumigation, safeguarding, and loading procedures.

Prohibited citrus from Korea and Mexico. In December 2002, USDA prohibited the entry into the U.S. of two types of citrus from two countries. Mandarins were prohibited from Korea due to citrus canker concerns. Tangerines were prohibited from certain treatment facilities in Mexico after USDA inspectors found live Mexican fruit fly (*Anastrepha ludens*) in fumigated fruit. In response to the prohibitions, CDFA Interior Pest Exclusion informed border station and county agricultural inspectors to be watchful for any prohibited fruit. No prohibited fruit was found in the State.

Daylily rust. Daylily rust (*Puccinia hemerocallidis*) is a fungus affecting ornamental plants. In 2002, Pest Exclusion staff conducted a survey in Southern California counties to determine the extent of this fungus in commercial nurseries. The fungus was found in nurseries in six counties: San Luis Obispo, Ventura, Orange, Santa Barbara, San Diego, and Riverside.

Chrysanthemum White Rust, Ventura County. In October 2002, Interior Pest Exclusion was notified by the USDA that a nursery in New York was found infested with Chrysanthemum White Rust (CWR) (*Puccinia horiana*), a federally regulated disease of chrysanthemums. The infested nursery indicated that the supplier of the chrysanthemums was located in Ventura County, California. Pest Exclusion responded to the information by inspecting the California production nursery for CWR. All the chrysanthemum-growing areas in the nursery (12 acres) were inspected and found negative for CWR.

A CWR follow-up survey was conducted at all chrysanthemum production nurseries in Ventura after finding CWR in a production nursery in Ventura County in 2001. Interior Pest Exclusion and the Ventura County Agricultural Commissioner conducted the survey on approximately 47 acres at nine nurseries with negative results.

Potato Mop Top Virus. In 2002, the Canadian Food Inspection Agency began testing shipments of potatoes (including seed potatoes and potatoes for consumption and processing) from all states in the U.S. for Potato Mop Top Virus (PMTV). The USDA was notified that the virus was detected in shipments from several states, including California. In order to determine the extent of the virus in the U.S., the USDA required that 3,000 seed potatoes from each state be tested for PMTV. Interior Pest Exclusion, in conjunction with county agricultural commissioners and the California Crop Improvement Association (CCIA), completed the survey (collecting over 3,000 tubers from 41 seed lots produced in four counties) with negative results.

Simultaneously, Interior Pest Exclusion notified California seed potato growers and agricultural officials in other seed potato producing states that all seed potato shipments entering California would be subject to PMTV testing upon arrival, unless the shipments were accompanied by a certificate, issued by an agricultural official from the state of origin, confirming that the seed potatoes in the shipment had tested negative for PMTV. This action was necessary in order to prevent the entry of PMTV into California until the status of the virus in the U.S. is known.

Upon completion of the national survey, the USDA notified all participating states that seed potatoes produced in the state of Maine were the only ones that tested positive for PMTV. Because the status of PMTV in Canada remains unknown, seed potato shipments from Canada and infested areas of the U.S. will continue to be subject to PMTV testing upon arrival.

Root gall wasp. Larvae of a root gall wasp, *Diastrophus radicum*, were intercepted in multiple shipments of raspberry and blackberry nursery stock from Arkansas. This pest is not known to occur in California, and little is known about its destructive potential. All shipments of infested

material have been destroyed or returned to the shipper. Interior Pest Exclusion has contacted the Arkansas Department of Agriculture to determine if any pest mitigation measures can be taken at the origin to eliminate the presence of this pest in shipments to California.

Red imported fire ant in almonds. RIFA in the San Joaquin Valley is associated with almond orchards. It is the result of bee-associated equipment coming from RIFA infested states. Honeybees are necessary for pollination and there are not enough locally to meet market demand. This pathway has existed ever since beekeepers began placing honeybee hives on pallets about 25 years ago. The RIFA build nests between the pallet boards. In 2002, an assessment of the risk associated with the harvest and movement of almonds from infested orchards to the huller was completed and new procedures were implemented that eliminate most on-site fumigation treatments. In 2002, RIFA was detected in Merced County in about 3,500 acres of almonds, apples, apricots, blueberries, cane berries, and pasture. Great progress has been made in intercepting infested bee pallets at the border stations and upon arrival in the county of destination.

Quarantine Training, Direction, Oversight, and Consultation

Each county agricultural department provides the necessary staff to perform pest exclusion inspections at many locations within California. Interior Pest Exclusion provides training, direction, oversight, and consultation to each county agricultural office in order to ensure uniform inspection procedures throughout the State.

Interior Pest Exclusion conducted 17 regional training sessions for 845 county staff during 2002. Topics included chrysanthemum white rust, sudden oak death, glassy-winged sharpshooter, nematology, exotic fruit identification, exotic fruit fly information, market inspection procedures, and exotic fruit fly rapid response.

Regional Training Sessions

Region	Sessions	Participants
Northern California	4	420
Central California	7	29
Southern California	6	396
Totals	17	845

Interior Pest Exclusion provides direction and information to county agricultural departments by issuing documents such as Pest Alerts, Pest Exclusion Advisories, and Phytosanitary Advisories. There were 42 of these documents issued in 2002.

Documents Issued by Interior Pest Exclusion

Document	Number Issued	Purpose
Pest Alerts	3	To relay urgent information regarding infested shipments
Pest Exclusion Advisories	23	To advise of specific handling, inspection, or treatment protocols for specific situation
Phytosanitary Advisories	16	To relay import information regarding the certification requirements of other states

Interior Pest Exclusion also provides consultation to agricultural officials in other states, the USDA, the agricultural industry, and the general public. Interior Pest Exclusion advises on issues relating to quarantine enforcement, interpretation of regulations, and methods of certification and inspection.

Most of the consultations are performed through inquiries received via telephone or electronic mail. The majority of the inquiries are from agricultural industry members and the general public. Figure 3 illustrates the percentages of each type of consultation.

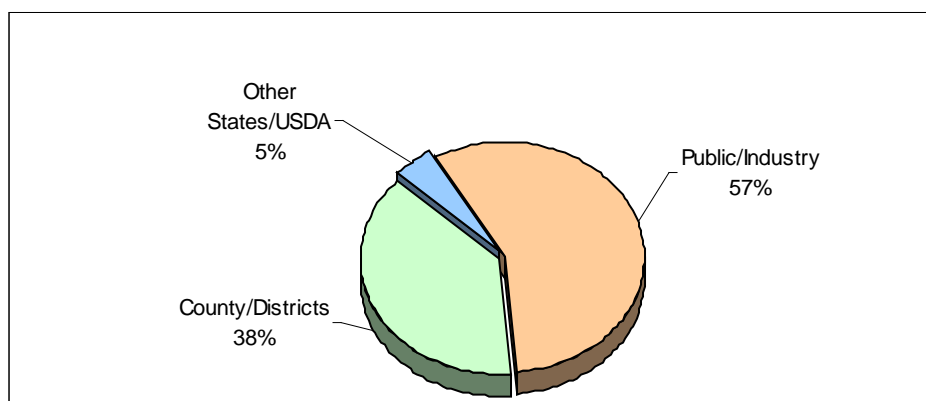


Figure 3. Quarantine Consultations

General information on the Internet. Interior Pest Exclusion utilizes the Internet to publish quarantine and pest prevention information. Information on the website includes current exotic fruit fly quarantines, frequently asked questions for travelers, and the Plant Quarantine Manual (a summary of all the state, federal, and county restrictions and quarantines affecting agricultural commodities entering the State). Additionally, a password-protected site is used to communicate important regulatory information to county and border station inspectors.

Quarantine Enforcement

Interior Pest Exclusion is responsible for the enforcement of California's plant pest quarantines by conducting routine inspections of all incoming shipments of agricultural commodities and all plant material. Commodity shipments arrive in our state via cargo ship, airplane, railcar, and truck. Routine port and terminal point inspections help keep California pest-free. These inspections are done cooperatively with the USDA with help from the local county agricultural commissioner.

Port inspections. Interior Pest Exclusion is responsible for inspecting domestic aircraft, second port-of-call foreign and domestic vessels, crew quarters, and passenger baggage and cargo shipments for pests detrimental to California agriculture at the ports of San Pedro, San Francisco, and San Diego. Additional responsibilities are to enforce aircraft and vessel garbage regulations; issue permits to remove food stores from vessels and seal vessel stores where high pest-risk food items are contained on board to prevent crew members from taking these food items ashore while on leave; to monitor shipments of commodities while transiting California to foreign destinations; issue compliance agreements for aircraft owners/operators, catering facilities, vessel dry docks, and vessel/aircraft garbage handling facilities and monitor them as needed; and supervise quarantine treatments of commodities that are infested with exotic agricultural pests. All of this work is done in cooperation with U.S. Customs, USDA, U.S. Food

and Drug Administration, CDFA Animal Health Branch, county agricultural departments, agricultural officials in other states, plus representatives from the trucking, airline and shipping industries.

Vessel inspections. In 2002, a total of 692 shipments were inspected on 143 vessels arriving at major California seaports. A total of 52 pests were intercepted and 68 shipments were rejected. A total of 65 rejected shipments were treated under CDFA supervision and released. Rejected shipments originated from foreign countries and Hawaii for quarantine violations or the presence of prohibited pests.

Vessel Inspections

Port Area	Vessels	Shipments	Rejections	Total Pest Interceptions	Treatments Supervised
Northern California	45	531	29	13	3
Southern California	98	161	39	39	62
Totals	143	692	68	52	65

Other inspections. Interior Pest Exclusion staff coordinate with the county agricultural offices to inspect other businesses such as high-risk ethnic markets, pet stores, etc. Types of pests intercepted through these activities include: *Colletotrichum crassipes* (fungus) on *Dracaena* sp. from Thailand; *Puccinia horiana* (chrysanthemum white rust) on chrysanthemum in Golden Gate Park; citrus canker on kaffir lime leaves from Thailand; *Pomacea* sp. (apple snail) at pet store and private residences; *Anastrepha ludens* (Mexican fruit fly) larvae in mangos from Mexico; *Phylosticta capitalensis* (fungus) on orchids from Thailand; and *Caleurpa* (aquatic weed) in pet stores. Some other types of intercepted pests include green shield scale (*Pulvinaria psidii*); white-footed ant (*Technomyrmex albipes*); longlegged ant (*Anoplolepis longipes*); Formicid ant; and bigheaded ant (*Pheidole megacephala*).

Port Inspection Activities

Activities	Northern California	Southern California	Totals
Warning/Hold Notice Issued by Port Inspector	117	431	548
Storage Facility	35	5	40
Export Transit Shipments	241	193	434
Port Operations Coordination Contacts	1,251	1,098	2,349
Vessel Stores Sealed	3	0	3
Steamship Line Manifests Read	57	98	155
Lumber Inspection	3	0	3
Hawaiian Vehicle Inspection	725	0	725
Dunnage Inspection	38	2	40
Biotechnology/Soil Lab Inspection	12	0	12
Ethnic Market Inspection (Cooperation with Counties)	75	32	107

COUNTY HIGH RISK PROGRAM

High-Risk Inspections

The County High Risk Pest Exclusion Program (CHRPE) is a cooperative program that provides funding to county agricultural commissioners to conduct high-risk pest exclusion activities at first point of entry terminals and is a vital component in the State's overall pest prevention efforts. Terminal points continue to include airports, nurseries, and U.S. postal and private parcel facilities, etc., as well as high-risk destination points including specialty markets, swap meets, and flea markets. Other high-risk entry points include locations where household goods from gypsy moth infested areas were delivered, locations where material in post-entry quarantine is held, rail yards, and feed/seed mills. Rapidly increasing population, coupled with expanding worldwide travel and trade opportunities, has increased the number of locations of infested areas, which continually test the State's pest prevention strategies and limited resources. A great number of high-risk exotic and invasive plant pests become established in California because of human activities such as trade and commerce, tourism and travel, or illegal smuggling.

The State budget allocated \$5.5 million from general funds for high-risk activities. For fiscal year 2001/2002, the Pest Detection/Emergency Projects Branch designated \$150,000 to the County High Risk Program for Scientific Evaluation inspection trapping in citrus and cherries to detect the presence of high-risk pests. Eleven counties are participating in this program. In total, 51 county agricultural commissioners participated in high-risk exclusion activities with contracts totaling \$5,650,000.

A variety of different species of exotic pests was intercepted in shipments inspected. These interceptions of high-risk exotic pests averaged 260 pests per month for 2002. Over the past year, July 2001 through December 2002, the CHRPE Program has netted 4,672 high-risk pest interceptions (Figure 2 and Figure 3). County biologists assist this important program by retrieving infested lots that may have already entered the State. Below are two county agricultural inspectors conducting high-risk air freight inspections.



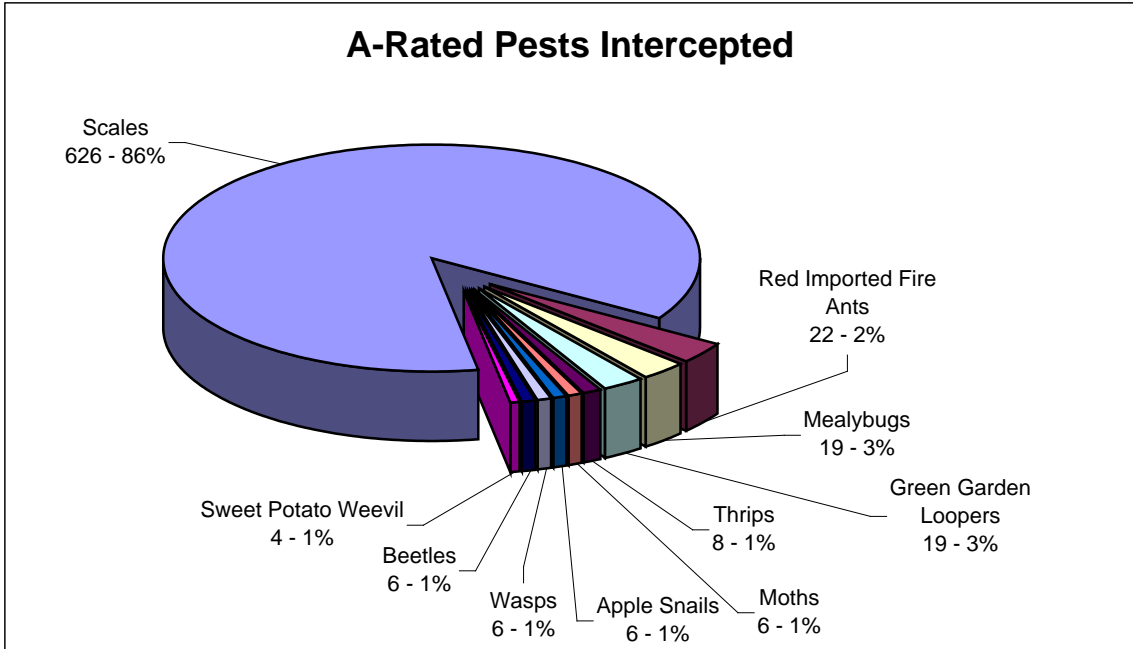


Figure 2. Frequently intercepted A-rated pests (number, percentage of total)

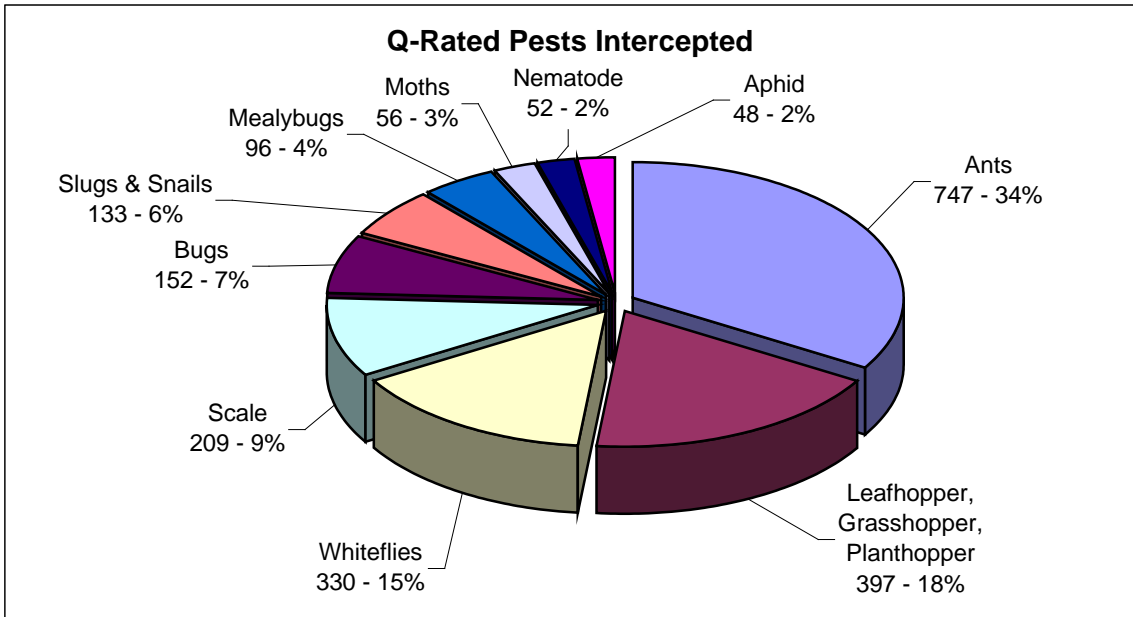


Figure 3. Frequently intercepted Q-rated pests (number, percentage of total)

Significant A- and Q-Rated Pest Finds by County in Year 2002

COUNTY	PEST FINDS	COUNTY	PEST FINDS	COUNTY	PEST FINDS
San Mateo	1340	Santa Clara	28	Santa Cruz	8
Los Angeles	943	Sonoma	25	Humboldt	7
Stanislaus	345	Tulare	22	Ventura	7
San Joaquin	240	San Luis Obispo	20	Yolo	5
Orange	143	Santa Barbara	16	Merced	4
San Diego	73	Kern	16	Yuba	4
Alameda	66	Marin	14	Placer	4
Sacramento	59	San Francisco	11	Riverside	4
Contra Costa	56	Fresno	9	Mendocino	3
Shasta	51	San Bernardino	8	Monterey	1

Since the CHRPE Program started, shipments of plant materials rejected for violations of plant quarantine laws have increased an average of 220 percent. The numbers over the last seven years show an annual average of 3,334 from December 1994 to November 1998, to an annual average of 9,901 from July 2001 to December 2002. Many of these shipments were rejected because they were infested with live high-risk pests. Many were rejected because they were shipped into California without origin or treatment certification required for plant materials known to host high-risk pests.

There were 268 seizures of foreign-origin plant pest and quarantine material that were brought into California illegally to be sold in markets specializing in exotic foods. Some of these items were Mexican tangerines infested with fruit fly larvae and channeled apple snails at a pet store in San Francisco, which shows the wide diversity of pest and host material that is shipped into California.

Foreign Origin Materials Rejected in Year 2002*

MATERIAL	ORIGIN	SHIPMENTS REJECTED
Dracaena Plants	Costa Rica	151
Flowers, Cut	Canada, Colombia, Ecuador, Holland, Honduras, Israel, and Thailand	126
Corn	Mexico, Canada, and Tahiti	80
Citrus fruits	Mexico, South Africa, Spain, Argentina, Jamaica, Kuwait, Chile, and Costa Rico	46
Papaya	Mexico, Brazil, and Honduras	22
Mangos	Mexican, Philippines, and Brazil	17
Roses	Canada, Columbia, Ecuador, and South America	15
Apples	Chile and New Zealand	10
Peppers	Canada, Mexico, and Thailand	7
Ti leaves	Costa Rica, Ecuador, and South America	7
Schefflera Plants	Costa Rica and Guatemala	6

High Risk Pest Exclusion Activities in Year 2002

ACTIVITY	PEST FINDS	REJECTIONS	PREMISE VISITS	SHIPMENTS
Post Office	28	781	7,878	34,446
United Parcel	32	1,109	13,758	72,296
Federal Express	426	2,109	16,639	244,961
Air Freight	2,103	1,855	20,653	35,362
Air Freight – fwd	206	183	2,741	5,143
Gypsy Moth	23	44	1,872	1,841
Truck (008) plant	450	581	15,744	56,320
Truck (008) other	180	51	3,665	90,784
Specialty Markets	6	34	3,216	3,687
Swap Meets	6	56	159	1,438
Post Entry	0	0	97	232
Other High Risk	97	86	12,266	11,852
Total	3,557	6,889	98,688	558,382

*This information was compiled from County Report Number 4As submitted by county agricultural departments. At the time of publication, not all report 4As have been submitted for 2002.

Other terminal point inspections. The county agricultural commissioner conducts routine terminal inspections of mail carriers, airfreight, sea freight, etc. with oversight by the Interior Pest Exclusion. Over 690,000 shipments were inspected in 2002. The following table shows the results of these terminal inspections:

Terminal Point Inspections*

Terminal	Shipments	Notice of Rejection	Pest Rejections
Post Office	62,882	1,002	58
UPS	79,911	928	40
Federal Express	321,206	2,385	468
Express Carrier	4,983	21	0
Air Freight	40,408	2,066	2,500
Sea Freight	6,420	41	44
Railroad	192	1	1
Gypsy Moth	1,962	22	21
Truck	163,041	541	485
Other	13,743	27	20
Totals	694,748	7,034	3,637

*This information was compiled from County Report Number 4s submitted by county agricultural departments. At the time of publication, not all counties had reported.

Facility and property inspections. The county agricultural commissioner conducts routine facility and property inspections with oversight by the Interior Pest Exclusion staff. These inspections include feed grain/screening facilities, research facilities, and destination properties of post-entry shipments. Over 5,000 facilities and properties were inspected in 2002. The following table shows the distribution of these inspections:

Facility and Property Inspections

Facility/Property	Number of Inspections
Feed Grain/Screening	125
Post-Entry Property	139
Testing/Research	40
High Risk Markets	4,721
Q.C.C.211 Facility	299
Totals	5,324

Smuggling interdiction. Interior Pest Exclusion works closely with the USDA's Smuggling Interdiction and Trade Compliance teams and CDFA's Agricultural Commodities Investigative Team to intercept shipments of uncertified plant material coming to California markets. Interior Pest Exclusion organizes and participates in market surveys and study pest pathways. Through joint field work and information sharing, a cooperative team approach has developed. A total of 176 pounds of exotic fruit fly host material from Asia was seized and destroyed.

In addition to fresh fruit, there were numerous seizures of dried citrus products from Asia sold for medicinal purposes. All seized products were examined for plant diseases prior to destruction. Suspect samples were submitted to the CDFA Plant Pest Diagnostics Laboratory

for identification. Approximately 500 pounds of noxious weed seeds sold for consumption and/or planting were also seized and destroyed.

Facilitation of Trade

Interior Pest Exclusion works cooperatively with the USDA, agricultural officials from other states, and the county agricultural departments to facilitate both domestic and foreign trade of agricultural products. This is accomplished by:

- Collaboration with other states
- Administrating Federal Phytosanitary Program

Collaboration with Other States

Interior Pest Exclusion works with the agricultural officials in other states to coordinate certification and inspection procedures that will meet California entry requirements.

Origin inspection program. The Origin Inspection Program (OIP) is a cooperative program between the CDFA and regulatory officials in other states to inspect qualifying agricultural commodities and certify that all of California’s entry requirements are met. On-going negotiations with other regulatory agencies is required, as shippers request new commodities to be included in the program. This program is an integral part of California’s pest prevention system because it mitigates the pest risk at origin. Presently, the commodities covered under the OIP include fruits and vegetables, cut flowers and cut greens, canola pellets, bulbs, seed, and nursery stock.

There are 138 companies participating in the OIP. One new company was entered into the program in 2002, and one company was suspended from participating due to non-compliance. One company left the program in 2002 because it went out of business.

Origin Inspection Program

State/Country	OIP Participants
Arizona	1
Canada	2
Colorado	1
Florida	2
Hawaii	35
Mississippi	1
Nevada	1
New Mexico	1
Ohio	1
Oregon	63
Utah	1
Washington	29
Totals	138

Master permits and compliance agreements. Interior Pest Exclusion worked with agricultural officials in Texas, Georgia, Tennessee, and South Carolina to develop compliance agreements

that allowed shippers in those states to ship commodities to California. Compliance agreements were approved for the shipment of cottonseed, nursery stock, and fresh fruit gift packages.

Administrating Federal Phytosanitary Program

Interior Pest Exclusion works cooperatively with the USDA, regulatory officials in other states and countries, private industry, and the county agricultural commissioners, to provide quarantine consultations to facilitate trade to both foreign and domestic markets.

Phytosanitary Export Certification Administration. Phytosanitary certification is a service provided to industry to help them meet the plant quarantine requirements of foreign countries, other states, or California’s own interior quarantines. This service helps facilitate the domestic and foreign trade in agricultural commodities. The USDA is the federal agency responsible for the overall nationwide implementation of the international phytosanitary certification program. Interior Pest Exclusion administers both this federal program in California for the USDA and the domestic phytosanitary certification program. Interior Pest Exclusion provides training to county agricultural commissioner’s staff to issue phytosanitary certificates.

Phytosanitary inspections may include post-harvest inspections of agricultural commodities at packing sheds or terminal inspection points; and/or growing season inspections of seed fields, nursery stock, and fruit and vegetable stock.

The following chart lists the number of inspections and certificates issued for various areas of responsibility:

Inspections and Certificates Issued*

County Certification Activities		
Type of Cert	Inspections	Certificates Issued
Federal Phytos	113,088	148,125
State Phytos	8,441	13,221
Compliance Certificates	24,282	55,597
Quick Decline Permits	3,606	4,031
Compliance Agreements	10,595	712
Others	11,298	5,834
Totals	171,310	227,520

*Compiled from County Report Number 4s. Not all counties have reported.

Phytosanitary issues management. Phytosanitary issues management (PIM) encompasses a range of activities that support export market access and maintenance of open export markets. The main PIM activities include: assisting the USDA in developing and implementing of commodity export work plans; providing requested information to foreign plant protection officials regarding pests of their concern; and providing technical support to the USDA during in-state meetings with foreign plant protection officials. The chart below summarizes Interior Pest Exclusion PIM activities for 2002.

Phytosanitary Issues Management

Commodity	Country	Action
Bareroot strawberry nursery stock, and containerized nursery stock	Canada	Developed certification programs
Nectarine, Cherry, Fresh Prune	Japan	Meet with Japanese Ag Officials, implement work plans
Pomegranate	South Korea	Develop pest list
Cotton Seed	Israel	Provide data on pests of concern
Cherry	Chile	Meet with Chilean Ag Officials, provide data on pests of concern
Apple, Stone Fruit	Mexico	Meet with Mexican Ag Officials, implement work plans, provide data on pests of concern
Raisin, Grape	Cuba	Meet with Cuban Ag Officials, provide data on pests of concern
Grape	Australia	Implement work plan
Apple	Taiwan	Develop and implement work plan
Citrus, Cherry, Grape, Plum	China	Meet with Chinese Ag Officials, develop and implement work plan, provide information on pests of concern
Grape	New Zealand	Meet with NZ Ag Officials, develop work plan
Hosts of Pink Hibiscus Mealybug	Various	Provide information on pest status, distribution, mitigation

Phytosanitary field inspection of seed program highlights. The Phytosanitary Field Inspection of Seed Program (PFISP) inspects crops during the growing season for diseases of concern to importing countries. The seed from the inspected crops may be certified for export depending on the results of the inspection and the importing countries' phytosanitary concerns. Growers submitted 2,563 applications for crop inspections to the CDFA in 2002. The following tables indicate the top three crops entered into the program, and the top three counties where crops entered into the program were grown.

Top Three Crops Entered and the Top Three Counties

Top Three Crops in the PFISP	
Sunflower	309
Beans	309
Squash	227

Top Three Counties of Origin	
Yolo	442 applications
Colusa	395 applications
Monterey	273 applications

Phytosanitary training program. In conjunction with the USDA in 2002, Interior Pest Exclusion provided phytosanitary training to 51 county inspectors, and refresher training was provided to 26 county inspectors.

Commodity Treatment Coordination and Consultation

Situation. The fumigant methyl bromide is being phased out of use. Thus there is an increased emphasis on non-chemical post-harvest treatments for commodities. The treatment options listed in the old 1991 edition of the California Commodity Treatment Manual are approximately 75% methyl bromide and 20-25% organophosphate insecticides. New commodity treatments may be increasingly non-chemical in nature. Examples include controlled atmospheres and radio frequency generated heat treatments.

In 2002, Pest Exclusion and Pest Detection/Emergency Projects supported seven Special Local Need Registrations. In 2002, the U.S. Environmental Protection Agency (USEPA) began a formal process of re-registration of Diazinon with more restrictive use patterns. As a result, the CDFA lost one Diazinon Special Local Need (SLN) for use on nursery stock. However, the CDFA has maintained a second Diazinon SLN for use as a soil drench (including potted host nursery stock) against exotic fruit fly larvae. Two new SLNs were added in 2002 for Spinosad GF-120 fruit fly bait and Spinosad GF-120 NF "organic" fruit fly bait. The USEPA has granted a federal Section 3 Registration for Spinosad GF-120 and the California Department of Pesticide Regulation is currently processing the necessary Section 3 Registration for Spinosad GF-120 to make the product available in California. The regular Section 3 Registration of Spinosad GF-120 in California is expected to render the SLN registrations unnecessary.

Commodity Treatment Manual. Interior Pest Exclusion is revising the California Commodity Treatment Manual (CTM). The CTM document is intended to address those pest quarantine concerns that are unique to California. Accordingly, the CTM is a companion document to the federal treatment manual. The current revision of the CTM includes a major effort to create an intranet document as well as adding new treatment schedules. The intranet document is constructed to facilitate rapid information retrieval by presenting the user with a topical index from which content is accessed via direct linkages to the topic of choice.

The USDA Agricultural Research Service (ARS) has approved several irradiation treatment schedules for Tephritidae fruit flies. For those federal pests that are also California pests of quarantine concern, the new ARS irradiation treatments will be entered as updated treatments in the CTM.

Data Collection and Information Management

New pest and damage record system. During the past two years, Interior Pest Exclusion and other CDFA staff worked with an outside contractor to analyze the current Pest and Damage Record (PDR) data keeping system to develop a new system. The new system is based on a single database with all data accessible via the Internet and a new application for the Plant Pest Diagnostics Lab, the Specimen Identification System (SIS). This new system was beta-tested February through May by two counties (Los Angeles and Orange) and two border stations (Blythe and Needles). As a result, a total of 869 PDRs were submitted to the lab using the new system. The beta sites utilized web data entry and lab specific submittal forms, printed from the web interface, which must accompany the sample that is sent to the lab.

Entomology was the first lab to begin beta-testing the SIS, soon followed by Nematology and then Plant Pathology. During beta-testing, the labs entered 937 identifications of plant pests

submitted on 775 PDRs created by the beta sites. A statewide release/training for county and state use of the new system began in October.

Phytosanitary issuance and tracking system. During the past two years, the USDA has been working to analyze and develop a computer-based system for the issuance and tracking of federal phytosanitary certificates. The CDFA represents the Western Plant Board on the Steering Committee for this project. The Phytosanitary Issuance and Tracking (PCIT) system went through functional testing in January 2002. In February, the CDFA offered a training facility for the Western Region beta-testing sites. Beta-testing ran April through June/July with the finding that additional work was needed. A new contractor conducted a survey of the beta-testing sites and their recommendations are currently being analyzed.

The new timeline for this system includes development of tool analysis, which is currently underway, followed by development of a new front end. San Joaquin County's cherry season may be used for functional testing with beta-testing to follow in June.

Quarantine response. Previously the application used for regulatory response to quarantine finds by the Pest Exclusion Interior Program was based on the Medfly Information Management and Analysis (MIMA) system developed in 1994. With the help of information learned during prior emergency eradication projects, this database was completely reworked. This system continues to be fine tuned as we progress through the Valley Center Mexican Fruit Fly project. Next year should allow for both a free-standing, network-ready application, as is now used, as well as a web-based interface.

Pest Exclusion Information Management (PEIM) System. The electronic system used by county and state offices, to issue a Notice of Rejection (NOR) for a pest infested commodity, has been rewritten so that all offices will be using the same software application to issue Warning/Hold Notices (008) and Gypsy Moth Warning Notices (008a). The Pest Exclusion Exterior Program border inspection stations will now be able to utilize computer networks for input into a single database allowing multiple offices to input records simultaneously and a single point for data transfer to Sacramento. The interface has been re-worked to look and function more like the new PDR interface cutting down on required training. This system has been installed in most border inspection stations and is being tested in six counties.

EXTERIOR PEST EXCLUSION PROGRAM

The Exterior Program's mission is to mitigate the risk of actionable pest introductions, via the entry of private and commercial vehicles, at California's interstate land borders. To accomplish this goal, at 16 border agricultural inspection stations, Exterior Pest Exclusion personnel:

- Enforce the Food and Agricultural Code, federal and state quarantines, and county enforcement policies;
- Perform inspections on both commercial and private vehicles to ensure quarantine compliance and to intercept exotic pests transported by these vehicles;
- Provide quarantine consultations to the agricultural industry and the public; and
- Collect, analyze, and disseminate data.

Additionally, the program has cooperative working relationships with several other branches of the Department: Fruit and Vegetable Quality Control Standardization; Animal Health; Egg Quality Control; Feed, Fertilizer and Livestock Drugs; and Agricultural Statistics. It also

cooperates with other federal and state agencies (e.g., United States Department of Agriculture, California Public Utilities Commission, Federal Immigration and Naturalization Service, California Parks and Recreation, California Fish and Game, California Department of Water Resources, California Department of Transportation, CAL/EPA's Department of Pesticide Regulation, California Board of Equalization, California Highway Patrol, California Department of Conservation, and the Bureau of Land Management) in the enforcement of laws pertinent to them.

At the local level, border station personnel assist the county agricultural commissioners, county sheriff/city police, and fire departments. They also provide information to the Arizona, Nevada, and Oregon Departments of Agriculture and the Oregon-Washington-Idaho Potato Commission. They provide public assistance with emergencies that arise at or in the vicinity of the stations. Also, the California Travel Ideas Map and other handouts are distributed.

Mission: *Protect California from the introduction of invasive pests via overland highways.*

Vision: We are California's first line of defense in its pest prevention system. We enforce quarantine laws and regulations through the use of the best available technology and biologically sound methods at California's Agricultural Inspection Stations.

Values:

- **Communication:** Open, constructive exchange of ideas and information
- **Consistency:** Enforcement of laws and regulations is standardized throughout the program
- **Credibility:** We have a responsive, accountable, and trusted program
- **Decision:** Decision-making based on the best available science, technology, and common sense
- **Employee Development:** Provide an environment that develops employee skills, potential, and capabilities
- **Integrity/Dependability:** Our employees are committed to excellence in job performance
- **Team Work:** Accomplishing program goals through the cooperative efforts of each of our employees

Goals: To accomplish our mission by:

- Inspecting all vehicles based on pest risk profiling;
- Educating and soliciting the cooperation of the affected industry and traveling public;
- Maintaining an informed and well-trained workforce; and
- Continuously striving to expand and improve our service to the citizens of California.

ACCOMPLISHMENTS

Private Vehicle Inspections

In 2002, a total of 26,994,473 vehicles entered the State through California's agricultural inspection stations. This number included 26,148,130 passenger type vehicles and 848,343 recreational vehicles. Of these, approximately 3% were identified as presenting a high risk of carrying prohibited materials and were physically inspected; the remainder were released with a cursory visual and verbal inspection. From these vehicles, 63,527 lots of prohibited or pest infested plant material were found and destroyed, or returned out of state.

Significant pest finds from private vehicles. Border station personnel intercepted actionable ("A"- or "Q"-rated) pests on 550 occasions during 2002. These interceptions are outlined below:

"A"-Rated Pests Intercepted From Private Vehicles – 2002			
Common Name	Genus	Species	Times Intercepted
Western cherry fruit fly	<i>Rhagoletis</i>	<i>indifferens</i>	153
Gypsy moth	<i>Lymantria</i>	<i>dispar</i>	25
Vanda orchid scale	<i>Genaparlatoria</i>	<i>pseudaspidotus</i>	17
Japanese beetle	<i>Popillia</i>	<i>japonica</i>	12
Pecan weevil	<i>Curculio</i>	<i>caryae</i>	10
Gracillariid moth	<i>Conopomorpha</i>	<i>litchella</i>	10
Hickory shuckworm	<i>Cydia</i>	<i>caryana</i>	9
Red imported fire ant	<i>Solenopsis</i>	<i>invicta</i>	8
White marked tussock moth	<i>Orgyia</i>	<i>leucostigma</i>	5
European corn borer	<i>Ostrinia</i>	<i>nubilalis</i>	4
Eastern tent caterpillar	<i>Malacosoma</i>	<i>americanum</i>	3
Walnut husk maggot	<i>Rhagoletis</i>	<i>suavis</i>	2
Sugarcane borer	<i>Diatraea</i>	<i>saccharalis</i>	1
Oriental scale	<i>Aonidiella</i>	<i>orientalis</i>	1
Magnolia white scale	<i>Pseudaulacaspis</i>	<i>cockerelli</i>	1
Red banded thrips	<i>Selenothrips</i>	<i>rubrocinctus</i>	1

"Q"-Rated Pests Intercepted From Private Vehicles – 2002			
Common Name	Genus	Species	Times Intercepted
Apple leaf gall midge	<i>Dasineura</i>	<i>mali</i>	57
Zebra mussel	<i>Dreissena</i>	<i>polymorpha</i>	8
Psyllid	<i>Pachypsylla</i>	<i>sp</i>	1
oak phylloxera aphid	<i>Phylloxera</i>	<i>sp</i>	1
Corn silk fly	<i>Euxesta</i>	<i>stigmatias</i>	1
Grasshopper	<i>Melanoplus</i>	<i>sp</i>	1
Pillbug	<i>Armadillidium</i>	<i>sp</i>	1
Periodical cicada	<i>Magicicada</i>	<i>sp</i>	1
Snail	<i>Zachrysia</i>	<i>provisoria</i>	1
Flatheaded wood borer	<i>Chrysobothris</i>	<i>sp</i>	1
Marine snail	<i>Nerita</i>	<i>sp</i>	1
Snail	<i>Succinea</i>	<i>sp</i>	1
Chamber's dagger nematode	<i>Xiphinema</i>	<i>chambersi</i>	1
Moths (tiger moths, casebearing moths, tent caterpillars, bagworms, etc.)			98
Ants (white-footed ant, carpenter ants, bigheaded ants, etc.)			28
Scales (arrowhead scale, soft, etc.)			22
Mealybugs			13
Flies (leafminer fly, silk fly, etc.)			11
Insect eggs			9
Aphids			9
Scarab beetles (May beetles, June beetles, etc.)			7
Leafhopper/Planthoppers			4
Centipede/Millipede			3
Barklouse			3
Lacewing			2
Cockroach			2
Mayfly			1

Commercial vehicle inspection. A total of 6,319,367 commercial trucks entered through California's inspection stations in 2002. Of these, approximately 4% were identified as presenting a high risk and were opened and physically inspected; the remainder were released after verifying the contents by inspection of paperwork accompanying the load.

Summary of Commercial Shipments of Regulated Commodities – 2002			
Commodity	Inspected and Released	Sent to Destination Under Hold Notice	Rejected Due to Lack of Certification or a Pest Was Found
Feed Grain	4,301	340	
Hay	39,039	119	
Misc. Fruits, Vegetables, Nursery Stock and Seed	305,420	38,057	1,694
Household Goods from Gypsy Moth Areas		3,185	

Significant pest finds from commercial vehicles. Border station personnel intercepted actionable (“A”- or “Q”- rated) pests on 491 occasions during 2002. These interceptions are outlined below:

“A”-Rated Pests Intercepted From Commercial Vehicles – 2002			
Common Name	Genus	Species	Times Intercepted
Red imported fire ant	<i>Solenopsis</i>	<i>invicta</i>	125
Vanda orchid scale	<i>Genaparlatoria</i>	<i>pseudaspidiotus</i>	20
Exotic fruit fly	<i>Anastrepha</i>	<i>sp.</i>	6
Mexican fruit fly	<i>Anastrepha</i>	<i>ludens</i>	6
Magnolia white scale	<i>Pseudaulacaspis</i>	<i>cockerelli</i>	3
Mediterranean fruit fly	<i>Ceratitis</i>	<i>capitata</i>	3
European corn borer	<i>Ostrinia</i>	<i>nubilalis</i>	1
Exotic fruit fly	<i>Anastrepha</i>	<i>striata</i>	1
Japanese beetle	<i>Popillia</i>	<i>japonica</i>	1
Lesser snow scale	<i>Pinnaspis</i>	<i>strachani</i>	1
Southern cornstalk borer	<i>Diatraea</i>	<i>crambidoides</i>	1
Spotted knapweed	<i>Centaurea</i>	<i>maculosa</i>	1
Sweet potato weevil	<i>Cylas</i>	<i>formicarius elegantu</i>	1
West Indian sugarcane root borer	<i>Diaprepes</i>	<i>abbreviatus</i>	1
White peach scale	<i>Pseudaulacaspis</i>	<i>pentagona</i>	1

"Q"-Rated Pests Intercepted From Commercial Vehicles – 2002			
Common Name	Genus	Species	Times Intercepted
Apple leaf gall midge	<i>Dasineura</i>	<i>Sp.</i>	8
Zebra mussel	<i>Dreissena</i>	<i>polymorpha</i>	1
Cockroach	<i>Periplaneta</i>	<i>Sp.</i>	6
Katydid	<i>Conocephalus</i>	<i>Sp.</i>	3
Centipede	<i>Scolopendra</i>	<i>Sp.</i>	2
Gall wasp	<i>Callirhytis</i>	<i>Sp.</i>	2
Ants (white-footed ant, carpenter ants, bigheaded ants, etc.)			94
Flies (corn silk fly, crane fly, scuttle fly, picture wing flies, etc.)			88
Moths (tiger moths, casebearing moths, tent caterpillars, bagworms, etc.)			48
True bugs (lygaeid bugs, seed bugs, plant bugs, etc.)			13
Aphids			11
Snails			11
Scales (mango shield scale, armored, etc)			9
Leafhopper/Planthoppers			7
Scarab beetles (May Beetles, June Beetles, etc.)			7
Beetles (longhorned beetle, click beetles, bark beetles, weevils, etc.)			6
Whiteflies			3

Commercial citrus sampling. A total of 9,607 commercial shipments of citrus entered California in 2002 from the regulated areas of the Bahamas, Mexico, Spain, Florida, and Texas. From these shipments, border station personnel sampled 8,026 containers of fruit. There were 140 shipments rejected due to lack of proper certification. Dead fruit fly larvae were found in eight fumigated or cold treated shipments, indicating the treatments were properly applied.

One shipment from Texas was found to be infested with live Mexican fruit fly larvae and was rejected. This resulted in the prohibition of Texas citrus entering California until the Texas Department of Agriculture and the United States Department of Agriculture could provide assurance that future shipments would be properly treated.

Commercial mango sampling. To ensure freedom from exotic fruit flies and other pests, a total of 22,847 containers from 6,357 commercial shipments of mangoes were sampled in 2002. Only dead fruit fly larvae were discovered, indicating that the hot water treatments were properly applied. Shipments originated from Haiti, Mexico, and other Central and South American countries. Twenty-nine shipments were rejected for various violations of entry requirements (usually lack of proper certification); the remainder were inspected and released.

Cherry fruit fly origin sampling and certification. Under special permit, approved shippers are allowed to ship unfumigated cherries to California. Fruit entering under this program is certified as being pest free, based on field treatments and fruit sampling both at origin and upon arrival at the California border, thus eliminating the need for fumigation. Ninety-one shippers participated in the 2002 program. This number included 66 from Washington, 11 from Oregon, 10 from Idaho, 3 from Utah, and 1 from British Columbia.

This season, a total of 2,474 commercial cherry shipments entered the State. Of these, 1,241 shipments were destined to California markets. The remainder were transiting the State to foreign destinations. Border station personnel sampled all shipments entering California by special permit. There were 115 shipments that failed to meet the special permit requirements. Those shipments were either shipped out of state or released after the requirements were met.

Gypsy moth regulatory activities. There were no operational changes to the border station procedures pertaining to gypsy moth in 2002. Border station personnel issued 72 citations for lack of proper certification to drivers carrying high-risk gypsy moth shipments. Three thousand one hundred and eighty-five shipments of used household goods were quarantined and sent to destinations for final inspection.

Four thousand seven hundred and thirty-six recreational vehicles were found to be originating from the gypsy moth quarantine area and inspected for gypsy moth life stages. Of these, 25 were found to be infested with gypsy moth life stages and were cleaned at the stations.

Intra and Inter Agency Cooperative Activities

Game importation declarations. In cooperation with the California Department of Fish and Game, exclusion inspectors collected 3,359 game declarations from hunters returning to California with fish or game taken in other states. These declarations assist Fish and Game in identifying and prosecuting hunting regulation violations. This year, the information was also used to regulate and track importation of animals of the family *Cervidae* (deer and elk) to prevent the spread of Chronic Wasting Disease.

Livestock tracking. During 2002, 42,445 shipments of livestock were recorded as entering California. This information was forwarded to the Animal Health Branch for ownership and disease tracking. Additionally, with the outbreak of Exotic Newcastle Disease, border inspectors began tracking information on all live birds entering the State.

Animal rejections. A total of 271 animals, which were prohibited under Department of Fish and Game Regulations, were intercepted during the course of the year.

Animal Rejections at Border Stations – 2002			
Common Name	Times Intercepted	Common Name	Times Intercepted
Ferret	156	Black Bear	1
Monk Parrot	40	Capuchin Monkey	1
Gerbil	20	Chipmunk	1
Sugar Glider	20	Crow	1
Prairie Dog	5	Falcon	1
Squirrel	5	Lynx	1
Coati	3	Mockingbird	1
Hedgehog	3	Snake	1
African Clawed Frog	2	Snapping Turtle	1
Caiman	2	Sparrow	1
Catfish	2	Spider Monkey	1
Alligator	1	Tiger	1

California Travel Ideas Magazine/Map. Under an agreement with the California Department of Commerce, Division of Tourism, the border stations distributed 1.2 million California Travel Ideas Maps, which provides a detailed map of California as well as a message on California's Pest Prevention System.

Technological Advances

Digital pest identification. The digital pest identification system uses a digital microscope and the Internet to allow for laboratory personnel to readily identify insect specimens. In 2001, a system of this type was installed and successfully used at the Blythe Station. In 2002, an additional system was purchased for the Needles Station. A total of 374 insect specimens were identified using these two systems in 2002. This facilitated prompt quarantine action, with minimal delays, on trucks hauling insect infested commodities.

Satellite Internet connections. Three of our stations (Blythe, Vidal and Winterhaven) were fitted with satellite Internet equipment. This greatly enhanced Internet access at these locations. Prior to this upgrade, these stations were using dial-up connections that were costly and unreliable due to their remote locations.

NURSERY, SEED, AND COTTON PROGRAMS

Nursery Program

The value of nursery and floral products produced in 2002 was \$3.2 billion, an increase of 3.2% from the previous year. The nursery program's activities are funded entirely from revenue received in the form of license and acreage fees and registration and certification fees. Revenue received in 2002, totaling \$1,575,757, was used to offset the costs of these activities.

Mission: The mission of the nursery program is to prevent the introduction and spread of agricultural pests through nursery stock and to protect agriculture and the consumer against economic losses resulting from the sale of inferior, defective, or pest-infested nursery stock.

Nursery regulatory and inspection activities. This function is financed primarily through license and acreage fees. Nursery regulatory activities are conducted by the county agricultural commissioners and their staff and are an integral part of the State's agricultural pest prevention system. Nursery inspection and regulatory activities have prevented numerous pests from being disseminated throughout agricultural and suburban communities by preventing and/or eradicating pests at the nursery level. The quality of nursery stock has improved as a direct result of the regulation of nursery stock.

In 2002, there were 11,066 licensed sales locations with 787 production (growing grounds) locations. The county agricultural commissioners were contracted \$400,000 of the annual nursery license and acreage fees to conduct nursery inspection and regulatory activities at the local level.

The California Department of Food and Agriculture nursery program staff, working with county staff, performed 179 nursery regulatory and plant registration and certification inspections during the year. In addition, 29 training sessions were provided to county staff at various times throughout the year.

Registration and certification services for plant materials. The California Food and Agricultural Code authorizes the Department to establish plant Registration and Certification (R&C) programs. These programs are established by the California Code of Regulations and enforced by the Secretary. The registration and certification service is provided by CDFA staff and not shared with the county agricultural commissioners. In 2001/02 CDFA staff performed 1,038 inspections for R&C programs, including site approvals, growing season inspections, sampling for various purposes, and harvest inspections. In addition to making inspections to meet the R&C requirements, CDFA staff also conducts regulatory inspections of nursery stock entered in the R&C program for pest cleanliness standards.

The registration and certification programs are voluntary programs developed at the request of various segments of the agricultural industry for the exclusion of specific plant pests, which are not readily detected by ordinary inspections. These programs are the result of close working relationships between the University of California, the United States Department of Agriculture, and the Department, with the added support of the agricultural industry. Specific viruses, viroids, fungi, soil-borne pathogens, and nematodes are the targeted pests of the nursery stock registration and certification programs.

The criteria for establishing these programs are: 1) there is an established need; 2) sufficient technical information is available; 3) a source of "clean" propagating stock has been established; and 4) methods have been developed to assure the continued pest cleanliness of the stock.

California presently has eight "clean stock" (registration and certification) programs and a nematode certification program available for use by the various segments of the agricultural industry.

Table 1. Registration and Certification Programs

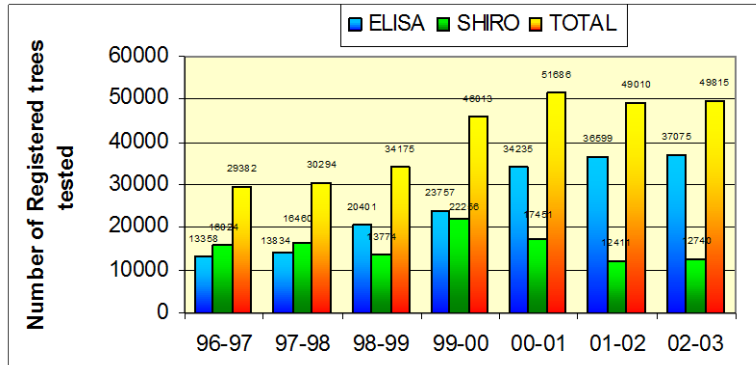
PROGRAM	PLANTING TYPE (BLOCKS)	TARGET PEST	TESTING OR TREATMENT REQUIRED
Avocado Certification	Certified	<i>Phytophthora cinnamomi</i>	Hot water treatment of seed and soil fumigation
Avocado Registration	Registered tree and Increase block	Sun Blotch Viroid	Foundation tree index-testing for sun blotch viroid (UC)
Citrus Registration and Certification	Foundation, Increase and Certified	Citrange stunt, concave gum exocortis, psorosis, tatterleaf, seedling yellow tristeza, tristeza vein enation and yellow vein viruses.	Index testing (UC) + individual tree identification index-testing (CDFA)
Deciduous Fruit and Nut Tree Registration and Certification	Foundation, Mother, Registered, Certified, Increase, and seed	Various virus diseases, including prunus ringspot virus (PRSV) and prune dwarf virus (PDV)	Index-testing (UC) + index-testing for PRSV and PDV (CDFA) (Participant)
Grapevine Registration and Certification	Foundation, Increase and Certified	Fanleaf, fleck, asteriod mosaic, leafroll, yellow vein (Tomato ring-spot), corky bark virus	Nematode sampling (CDFA)
Seed Garlic Certification	Increase and Certified	Stem and bulb nematode (<i>Ditylenchus dipsaci</i>) and white rot	Nematode sampling (CDFA)
Pome Fruit Tree Registration and Certification	Foundation, Mother, Increase and Certified	Various virus diseases	Index-testing (USDA & UC) fumigation
Strawberry Nursery Stock Certification	Foundation, Increase, and Certified	Mottle, vein-banding, crinkle, mild yellow-edge, necrotic shock, pallidosis, tomato ring-spot, witches-broom, pseudo mild yellow-edge, latent "c," leafroll, and feather-leaf viruses.	Index-testing (UC & CDFA) Nematode sampling
Nematode Certification	Nursery plantings produced for on-farm planting	Various plant-parasitic nematodes	Nematode sampling, fumigation supervision, and commodity treatment (CAC & CDFA)

The primary tools developed for maintaining the pest cleanliness of the stock in these programs are: 1) biological indexing (use of indicator plants which exhibit symptoms of virus or virus-like diseases) and enzyme linked immunosorbent assay (ELISA); 2) laboratory techniques for the detection of nematodes; 3) eradication treatments (thermo-therapy, fumigation, and hot water treatments); and 4) visual field inspections targeted to specific life cycles of the pests and plants.

Avocado Registration and Certification Program. The Avocado Registration program provides for the registration of avocado rootstock and scion wood sources when inspected and tested for sunblotch virus. Avocado nursery stock may be certified when grown under specific guidelines and inspected for freedom from *Phytophthora cinnamomi*, avocado root rot. One

nursery is currently participating in the registration program and three nurseries are participating in the certification program.

Deciduous Fruit Tree, and Nut Tree Registration and Certification Program. In the R&C program for deciduous fruit and nut trees, all trees in a Registered Mother Block, Registered Scion Block and Registered Seed Block are tested annually for viruses. The testing may be

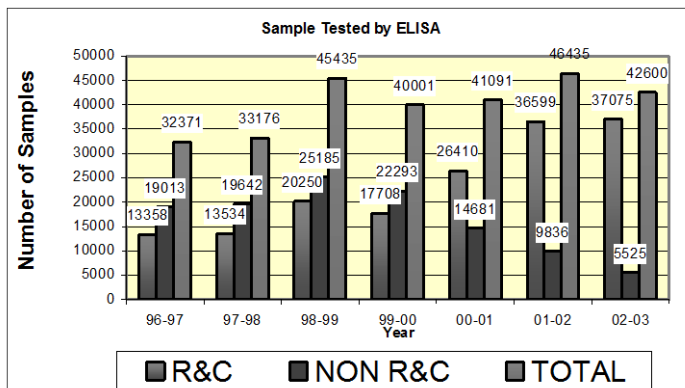


be done by biological indexing using Shirofugen cherry as an indicator plant or by Enzyme Linked Immunosorbent Assay (ELISA), an approved laboratory technique. The trees are tested for Prunus Necrotic Ring-Spot Virus and Prune Dwarf Virus, by biological indexing at least once every five years and by ELISA for these viruses and others in the other four years. These tested trees

may be used as a source of certified propagative material in the year following testing.

In 2002, there were 18 participating nurseries. The total number of registered trees tested was 49,815 (37,075 by ELISA and 12,740 by Shirofugen indexing). This is 805 trees more than the previous year (2001-02).

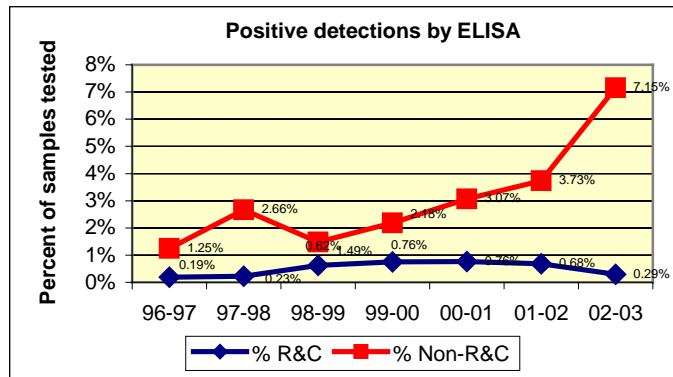
The total number of trees tested using the ELISA technique was 42,600 (37,075 Registered Trees and 5,525 service samples (Non R&C). This represents 3,835 fewer total samples tested



by ELISA than the previous year. The service samples are obtained from non-registered trees and tested as a service to the industry. The Fruit Tree, Grapevine and Nut Tree Improvement Advisory Board (IAB) provides assessment fees to fund the annual testing.

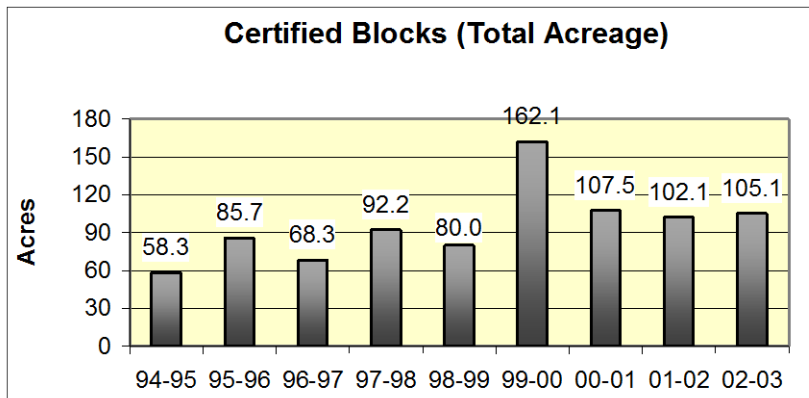
Of the 42,600 samples tested by ELISA, 503 (1.18%) were positive for viruses. However, only 108 (0.29%) of the registered samples tested positive for

viruses. Of the service samples, 395 (7.15%) tested positive for viruses. 73 samples from registered trees (0.57%) tested positive for viruses using the Shirofugen cherry biological indexing technique.



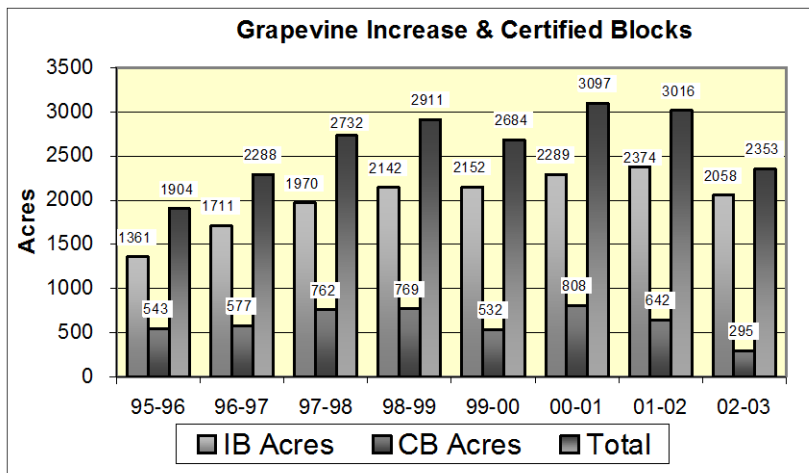
Positive Detections

<u>Year</u>	<u>R&C</u>	<u>Non-R&C</u>
1996	0.19%	1.25%
1997	0.23%	2.66%
1998	0.62%	1.49%
1999	0.75%	2.18%
2000	0.76%	3.07%
2001	0.67%	3.73%
2002	0.29%	7.15%

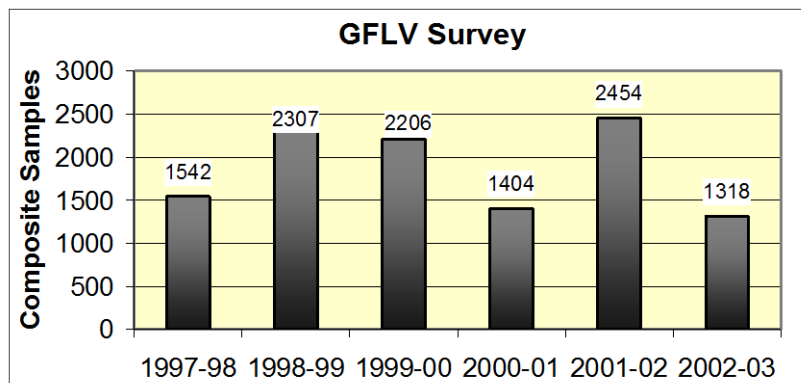


The certified nursery plantings acreage remained about the same as the previous year. In 2002/03, 105.11 acres were entered into the program for certification and were inspected by CDFA nursery biologists. This is 3.01 acres (2.9 %) higher than the previous year (2001/02).

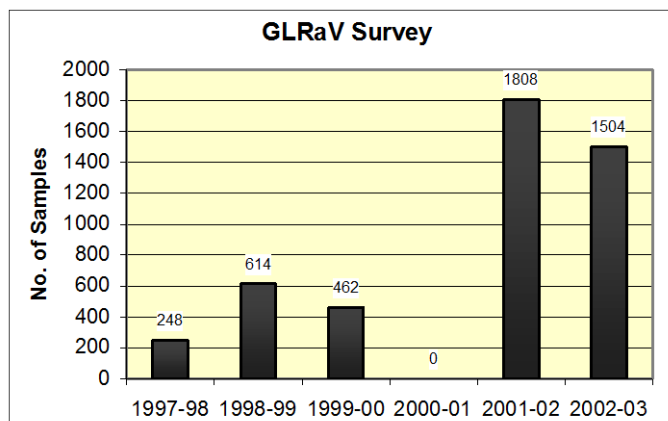
Grapevine Registration and Certification Program. There were 43 nurseries participating in the program in 2002. The acreage in the grapevine R&C increase blocks decreased over the last year. In 2002, there were 2,058 acres of primary increase blocks. This is 316 acres (13.3%) less than last year. The acreage of grapevine certified blocks (nursery plantings) was 295 acres and four greenhouse blocks. This is down 347 acres (54%) from the previous year.



The nursery program has continued the survey for grapevine fan leaf virus (GFLV), and grapevine leafroll associated virus (GLRaV) as done in the last few years.



There were 1,318 composite samples collected and tested. Plants were selected randomly for testing. However, if plants exhibiting typical grapevine fan leaf virus symptoms were seen, those plants were included in the survey.



In 2002, 1,504 vines were sampled and tested for grapevine leafroll associated viruses. All the samples were negative.

Citrus Registration and Certification Program. Legislation enacted in 1992 and sponsored by the California citrus nursery industry established the California Citrus Nursery Advisory Board. This legislation was renewed in 2000, for an additional five-year period. Through assessment on citrus nursery stock produced and sold, the Board funds research projects to improve the quality of citrus trees. It also sponsors educational programs to increase the awareness and importance of the citrus nursery industry.

The citrus registration and certification program provides for the testing of propagative source trees for tristeza, exocortis, and psorosis. The tristeza test also helps to meet the requirements of the citrus tristeza quarantine. In 2002, there were 33 citrus nurseries participating in the

program. Two thousand one hundred and four citrus seed and scion source trees were sampled and tested for tristeza virus and other viroids.

Strawberry Nursery Stock Registration and Certification Program. In 2002, there were 10 nurseries participating in the Strawberry Nursery Stock Registration and Certification Program. The strawberry program differs from other registration programs in that the nurserymen maintain the foundation stock in their isolated plantings rather than by the Foundation Plant Materials Service of the University. Strawberry plants in foundation plantings are index-tested annually using *Fragaria vesca* and *Fragaria virginiana* strawberry indicator hosts for the following viruses: mottle, vein-banding, crinkle, mild yellow-edge, necrotic shock, pallidosis, tomato ringspot, witches' broom, pseudo mild yellow-edge, latent C, leafroll and featherleaf. The CDFA nursery staff index-tested 2,943 foundation plants during the year. This was 3.4% fewer plants indexed than the previous year. Nine of the indexed plants tested positive for viruses and were rejected from the program. Visual inspection was made to 656.9 acres of registered and certified strawberry nursery stock for the presence of virus diseases and other pests and 792 samples were collected and tested for nematodes. This is an acreage increase of 5.4% from the previous year.

Pome Fruit

The Pome Fruit Tree Registration and Certification Program provides for the registration of rootstock and scion sources for the propagation of certified nursery stock when inspected and tested for virus diseases and other important pests. Two nurseries are currently participating in the program, down from three the previous year. Four hundred ninety-three trees were inspected and registered in 2002, and 5.3 acres of nursery plantings were inspected and certified.

Seed Services

The value of seed sold for planting in California exceeded \$339 million in 2002, which is up from sales in 2001. The value of seed had been steadily increasing until last year when sales were off about six percent. However, the value reported has rebounded. The total number of firms registered to sell seed in California was 403. Over the past few years, the number of firms has remained around 400.

The Department administers the statewide seed law enforcement program that is funded entirely through an annual assessment on the value of seed sold in California by seed labelers and others. The county agricultural commissioners conduct the program. The CDFA staff evaluates seed enforcement workload; provide information, assistance and training on the program to the counties. Additionally, the CDFA staff works with the seed industry to determine the effectiveness of the program, and interacts with other states, the United States Department of Agriculture, and with the California Crop Improvement Association, the state seed certification entity. An advisory board of nine seed industry members and two public members provides oversight to the Department.

Program expenditures for 2001/02 totaled \$981,953, which was slightly more than two percent over the previous year. Expenditures include a research contract of \$150,000 to fund the new Seed Biotechnology Center at the University of California in Davis. The Center has wide support in the seed industry and the Seed Advisory Board has approved the funding. Other significant program expenditures were the funding of the CDFA Seed Laboratory (\$302,521) and the agricultural commissioners (\$120,000). In order to cover the funding for the Center, the

Seed Advisory Board recommended that the assessment rate be increased from \$0.25 to \$0.28 per hundred dollars gross annual sales in California for the reporting period. The increased assessment, combined with program reserves, will provide adequate funds to cover program expenditures in 2002/2003.

Subvention of county agricultural commissioners for enforcement of the California Seed Law remains at the maximum of \$120,000 annually, as provided by law. The voluntary program has established annual performance measures as the basis for funding county seed law enforcement workload. By contract, the commissioners have to maintain an 85 percent compliance level of all seed offered for sale or labeled in their respective counties. The performance measures, which were introduced in 1999, resulted in a substantial increase in the number of official samples collected. In 2002, county personnel collected 994 samples for analysis of seed lots being offered for sale. This is almost double the number of samples collected in 1997. In addition, a total of 38 "stop-sale" orders were issued on 236,506 lbs. of seed in violation. Over half of the "stop-sale" orders were placed on seed that was "out of date" at the time of inspection.

Program staff continued to promote TEAM SEED activities. The TEAM SEED concept, developed in 1997, recognizes the many groups which play a vital role in providing the highest quality seed to California agriculture and the public. As part of this effort, seven workshops were presented by staff from Seed Services, the State Seed Laboratory, and the California Crop Improvement Association. A new addition to the workshop in 2002 was a presentation on biotechnology by staff from the Seed Biotechnology Center, University of California at Davis. Workshop participants included 79 county staff from 25 counties and 48 representatives from 30 seed companies. The workshops provide county personnel training on enforcement of the California Seed Law while providing valuable training to the industry on labeling requirements and on the county's role.

In addition to enforcement activities, the California Seed Law provides an alternative dispute resolution procedure to assist farmers and labelers to settle disputes through conciliation or mediation when seed planted in California fails to perform as represented. Thirty-eight complaints were filed during the year, which were investigated by field staff and are pending further investigation, grow-out tests, and appointment of Investigational Committees. Except for an initial filing fee, the cost of dispute resolution procedures is borne by the program. These procedures provide an economical alternative to litigation when the dispute can be resolved, but are a mandatory prerequisite to pursuing the matter in court.

Quality Cotton Program

The Quality Cotton Program has primary responsibility for enforcing the San Joaquin Valley Cotton District Laws and Regulations. The Cotton District consists of the following San Joaquin Valley counties: Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus and Tulare. The San Joaquin Valley Cotton Board composed of cotton growers, cotton industry representatives, and public members administer it. The cotton grower and industry members are elected by their peers. One of the Board's major duties is to establish quality standards for San Joaquin Valley Acala and Pima varieties. To accomplish this, the Board has an extensive multi-location cotton variety-testing program. The Board meets at least five times a year to review the progress of its variety-testing program and determines which new varieties meet or exceed existing quality standards and are superior in some meaningful respect, such as improved yield or resistance to disease. The exceptional quality and yield of the cottons in the District are a reflection of the Board's sound decisions. Throughout the year, numerous Board

committees examine major cotton issues in order to make well-researched recommendations to the full Board.

Acala and Pima cotton grown within the San Joaquin Valley Quality Cotton District again had exceptional quality, including the highest fiber strength of any cotton grown in the nation. The crop progressed well during the year, despite some early cool spells in late April and early May. Favorable weather conditions for the remainder of the growing season and light insect pressure resulted in exceptional yields for 2002. The USDA estimated that Upland cotton yields (including Acala) averaged a record setting 1,439 pounds per acre; Pima yields were an amazing 1,332 pounds per acre. However, cotton acreage in the District was at its lowest level since 1946. Upland cotton acreage decreased to 440,000, 27% lower than 2001. Pima cotton acreage also decreased to 209,000, 9% lower than 2001.

The year 2002 is the third full season in which cotton growers were allowed to plant any commercially available variety of cotton in the San Joaquin Valley. This was the result of the 1998 legislation allowing the planting of varieties not previously allowed under the Quality Cotton Law. Section 52981 was added to the Food and Agricultural Code to allow varieties not tested and approved by the San Joaquin Valley Cotton Board to be planted as "non-approved" varieties beginning in 1999. The new law also authorizes the Department to adopt regulations to ensure that the growing of non-approved varieties does not adversely affect the quality of Acala and Pima approved by the Board. Regulations to implement this law were developed by the Department in conjunction with the cotton industry. Program personnel are responsible for enforcing these regulations. This law also provides authority to the Secretary to set the District assessment to meet additional regulatory costs of enforcing the law.

In 2002, approximately 35,342 acres of non-approved varieties were harvested in the District. This is significantly less than the 80,597 acres planted in 2001, and the 216,000 acres planted in 2000. The non-approved cotton was marked at harvest and ginning with tags supplied by the Department with one of the following designations: California Pima, California Upland, or SJV Experimental. Non-approved acreage is projected to remain about the same in 2003.

There was considerable interest on the part of researchers to develop new cotton varieties in 2002. Twelve cotton breeders were approved to conduct research on non-approved cotton in the District. The most promising cotton varieties from private and public breeding programs are submitted to the Board for inclusion in its testing program. Genetically enhanced varieties were widely grown in researcher's test plots and for seed increases. Program staff monitored the planting, harvesting, ginning, delinting, and marketing of all experimental cotton.

After extensive testing by private breeders and the Board, three Acala varieties were approved for commercial release in 2002, increasing the number of approved cotton varieties to 51 that are available to area cotton growers. No new Pima varieties were approved in 2002.

In 2002, the assessment rates for the San Joaquin Valley Cotton District were set by the Secretary, upon recommendation from the Board, at \$3.75 per hundredweight of undelinted approved seed and at \$5.50 per hundredweight of undelinted non-approved seed for commercial planting within the District. The assessments are the primary source of revenue for the Board's testing program and the enforcement of the San Joaquin Valley Quality Cotton District Laws and Regulations.

PLANT HEALTH AND PEST PREVENTION SERVICES

**P E S T D E T E C T I O N
A N D
E M E R G E N C Y P R O J E C T S B R A N C H**

Exotic Fruit Flies

Japanese Beetles

Gypsy Moth

Red Imported Fire Ant

Africanized Honey Bees

Disease Surveys

Pink Hibiscus Mealybug

Plum Pox Survey

EXOTIC FRUIT FLIES

2002 Detections

During 2002, the Detection Trapping Program found 324 individuals of four different fruit fly species. The large number is due primarily to the 259 Mexican fruit flies associated with an ongoing eradication program in San Diego County.

Table 1: Exotic Fruit Flies Detected in California During 2002

PEST (Fruit Fly)	COUNTY	NUMBER FOUND	TOTAL BY SPECIES
Guava Fruit Fly	Los Angeles	5	10
	Riverside	1	
	San Diego	1	
	Santa Clara	3	
Mediterranean Fruit Fly	San Bernardino	1	1
Mexican Fruit Fly	Los Angeles	8	269
	Riverside	1	
	San Bernardino	1	
	San Diego	259	
Oriental Fruit Fly	Los Angeles	27	44
	Madera	1	
	San Bernardino	13	
	San Diego	1	
	Santa Clara	2	
TOTAL			324

Fruit Fly Eradication Programs

Guava Fruit Fly

The first Western Hemisphere infestation of guava fruit fly (GFF) was detected in Garden Grove, Orange County, California in 1986. This and subsequent infestations have been successfully eradicated in the State.

Between July 31, 2002 and October 3, 2002, a total of 10 guava fruit flies were trapped resulting in two infestations being identified, one in the community of Cerritos, Los Angeles County, and one in the City of San Jose, Santa Clara County. Three GFF adults (two male and one unmated female) were found in the community of Cerritos, Los Angeles County. On July 31, 2002, a male and female GFF were found on separate properties in proximity to each other. As per protocol, an eradication program was implemented in a 13 square mile area. On September 9, 2002, a second male GFF was trapped on the perimeter of the treatment area, necessitating an eight square mile expansion of the eradication area for a total of 21 square miles. In Santa Clara County (City of San Jose), two male GFF were trapped at separate sites, one on September 10 and one on September 12, 2002, initiating eradication efforts in an 11 square mile area. On October 3, 2002, a third male GFF was trapped just outside the northern boundary of the treatment area. Based on this find, the eradication area was increased to 19 square miles. None of the eradication programs required the implementation of quarantine and all were successfully eradicated.

Table 2: 2002 Guava Fruit Fly Eradication Information

County	City	Number Trapped	Last Find Date	Treatment Sq. Miles	Quarantine Sq. Miles	Eradicated
Los Angeles	Cerritos/Norwalk	3	09/09/02	21	N/A	Yes
Santa Clara	San Jose	3	10/03/02	19	N/A	Yes

Oriental Fruit Fly

The Oriental fruit fly (OFF), first found in California in 1960, has been detected in the State every year since 1966. The first California outbreak occurred in San Diego in 1974, and since that time, numerous major infestations have been delimited and successfully eradicated.

The initial OFF infestation was detected on July 25, 2002 in the community of Atwater Village, Los Angeles County, when four male flies were detected on one property. The OFF eradication area was seven square miles. No quarantine was implemented. A second OFF infestation was detected on August 21, 2002 in the community of Rancho Cucamonga, San Bernardino County, when two male adult OFF were detected on two separate properties. As per protocol, male annihilation treatments were initiated in a seven square mile area. On August 23, 2002, five additional male flies were trapped requiring the treatment area to be expanded to 11 square miles. Host fruit surveys found five third instar larvae in a peach tree located within the epicenter of the adult finds. To date, a total of 10 adults (eight males and two unmated females) have been detected in the eradication area. No additional larvae have been found. As required by protocol, a 73 square mile quarantine was implemented. A third OFF infestation was detected on September 24, 2002 in the community of Westchester, Los Angeles County, when a single male was detected in a pineapple guava tree. Subsequent delimitation trapping revealed a second male in proximity to the first find site triggering eradication efforts. The eradication area is 10 square miles. No quarantine has been imposed. A fourth OFF infestation was found in the community of Redlands, San Bernardino County on September 4, 2002, with the detection of a single male OFF. Subsequent delimitation trapping arrays found single OFF males on October 1, 2002 and October 2, 2002. Eradication treatments began on October 3, 2002 in a seven square mile area encompassing all three find sites. Between November 20 and January 28, 2003, 19 adult OFF have been detected in the community of La Mirada, Los Angeles County (15 males and four females). An eight square mile eradication area was established and a 53 square mile quarantine was implemented. In each of the above infestations, a decision was made to conduct eradication programs consisting of the deployment of male annihilation bait stations and when warranted, diazinon soil drenches were utilized. With the exception of the La Mirada infestation, which is still in progress, all the fore-mentioned eradication programs were successfully completed. The Rancho Cucamonga program quarantine was rescinded on November 23, 2002.

Table 3: 2002 Oriental Fruit Fly Eradication Information

County	City	Number Trapped	Last Find Date	Treatment Sq. Miles	Quarantine Sq. Miles	Eradicated
Los Angeles	Atwater Village	4	07/25/02	7	N/A	Yes
	La Mirada*	19	01/28/03	8	58	In Progress
	Westchester	2	09/26/02	10	N/A	Yes
San Bernardino	Rancho Cucamonga/Upland	10	10/08/02	11	73	Yes
	Redlands	3	10/02/02	7	N/A	Yes

Mediterranean Fruit Fly

The Mediterranean fruit fly (Medfly) is widespread throughout Central and South America, Australia, Europe, and Africa. Its distribution in the United States is restricted to the Hawaiian Islands, where it was discovered in 1910. This pest has been introduced into the State periodically since 1975. Several infestations have been eradicated successfully since that time.

In 2002, a single mated adult female Medfly was trapped on August 8, 2002 within the community of Redlands, San Bernardino County. The fly was trapped within the boundary of the Medfly Preventative Release Program, where millions of sterile Medflies are released weekly (see PRP below). The female fly spermatheca was sent to a United States Department of Agriculture expert in Hawaii who determined the fly had been mated by a sterile male Medfly based on the determination that the sperm within the spermatheca was sterile. A high density trapping array remained in place for three life-cycles and no additional adult Medflies were detected.

Mediterranean Fruit Fly Preventative Release Program (PRP)

California's Medfly strategy shifted in 1996 to a proactive approach that emphasized prevention of Medfly infestation through the use of sterile Medflies. The PRP uses continuous release of sterile Medflies to interfere with Medfly colonization in 2,500 square miles of Los Angeles, Orange, Riverside, and San Bernardino counties. The PRP is a major component of the joint CDFA/USDA ongoing effort to prevent the establishment of this pest in California. In 2002, sterile Medfly releases were completely transitioned to the use of the highly effective male-only temperature sensitive lethal strain. The PRP is periodically reviewed by the Mediterranean Fruit Fly Science Advisory Panel (MedSAP), an independent panel comprised of international Medfly experts.

JAPANESE BEETLES

The Japanese beetle (JB) is an exotic insect which has a long history of being a serious pest of turf, crops and ornamental plants in the Eastern United States. First found in California in 1961, the JB has been detected periodically since then. The first California infestation occurred in Sacramento in 1961, and since that time two other infestations (1972 and 1983) have been delimited and successfully eradicated.

Detection

The Japanese beetle detection program has two major components: statewide trapping and aircraft detection. During 2002, over 11,000 JB traps were deployed throughout the urban and high-risk areas. The trap density for JB detection is two traps per square mile. A high-density trapping array is deployed in a one-mile buffer area around each airport and transfer/sorting facility utilized by express mail carriers. As a result, there were 19 JB's trapped in the urban/residential area of the State during the 2002 season. All of these detections are in proximity to either airports used by express mail carriers or their transfer/sorting facilities located in urban areas (See Table 4).

Table 4: Japanese Beetles Detected in California in 2002

County	City	Beetles Trapped	Comments
Alameda	Oakland	3	Oakland International Airport, Fed Ex
Butte	Chico	1	Chico Airport
Los Angeles	Van Nuys	2	Proximity to U.S. Postal Hub
	Sun Valley	1	Trapped adjacent to Burbank Airport
	Los Angeles	1	LA International Airport trap
Orange	Irvine	1	Airborne Express Facility
Sacramento	Sacramento	5	Mather Field, Express carrier airport
San Bernardino	Ontario	2	Trapped in proximity to Airborne and Federal Express facilities.
San Diego	SanDiego	1	Airborne Express sorting facility

Airport/Aircraft Inspections

On-board inspections of aircraft from high-risk areas of the eastern United States resulted in the collection of 1,499 total specimens (239 live). See Table 5 for a listing of beetle collections by county/airport. Large numbers of live and dead beetles were collected from Airborne Express and Fed Ex aircraft this year--due primarily to the very heavy JB populations at the Wilmington, Ohio Airborne Express hub and the Indianapolis, Indiana Fed Ex hub.

Table 5: Number of Aircraft Inspected and Beetles Collected by Airport

County	Airport	Aircraft Inspected	Beetles Collected
Alameda	Oakland International	300	206 : 40 alive
Fresno	Fresno/Yosemite International	27	35 : 8 alive
Los Angeles	Burbank	25	9 : 0 alive
	Long Beach	200	33 : 12 alive
	Los Angeles International	4627	561 : 83 alive
Orange	John Wayne	88	33 : 4 alive
Yolo	Sacramento International	63	63 : 0 alive
Sacramento	Mather Airport	131	21 : 4 alive
San Bernardino	Ontario International	890	24 : 4 alive
San Diego	San Diego International	1857	328 : 11 alive
San Mateo	San Francisco International	306	6 : 0 alive
Santa Clara	San Jose International	337	178 : 73 alive
Solano	Travis AFB	3	2 : 0 alive

GYPSY MOTH

The gypsy moth (GM) is an exotic insect that has a long history of being a serious forest and urban pest in Europe and Eastern North America. The GM is currently the most destructive insect attacking hardwood forest and shade trees in the United States. First trapped in California in the early 1970's, the GM has been detected every year since 1977. The first California infestation occurred in San Jose in 1977, and since then at least 20 localized infestations have been detected and successfully eradicated.

Detection

During the 2002 season, over 19,000 traps were deployed and monitored as part of California's program to detect and delimit new GM and/or Asian gypsy moth (AGM) infestations. Trap density in the 19 coastal California counties is at three traps per square mile, and two traps per square mile in the remaining 39 counties. Traps are deployed in urban areas and in rural residential areas of 300 or more homes per square mile. This season, a total of four moths were trapped (Table 6) at four sites in three counties. All four of the finds were single-moth catches. One of the find areas in Fallbrook, San Diego County, was treated during the Spring of 2001, as the result of multiple moth catches during the 2000 season. Evidence was found to link the Fallbrook find to transportation of farm equipment from infested states to the find property. No evidence was found to identify any of the remaining finds to move-ins from the infested areas of the Northeastern United States.

An egg mass survey was conducted in Fallbrook, San Diego County. Spent egg masses were found at a site in Fallbrook; this area had single moth catches on different sites in 1998 and 1999. Seven moths were trapped during the 2000 season, prompting an eradication program. No other viable egg masses were found at any of the other 2001 find locations. An eradication program is under consideration by CDFA staff, as the 2001 find is within the treatment boundaries for last season. Intensive trapping will occur at the sites where GM was trapped during 2001. Trap density for intensive trapping is 25 to 49 traps per square mile in a four square mile area around the find site.

All specimens were analyzed for possible AGM identification. The Mitochondrial DNA test, as well as the FS1 Nuclear DNA test, was utilized. The analyses of these specimens did not identify any AGM.

Eradication Programs

The eradication procedure for GM involves treating the foliage of susceptible hosts with an insecticide to kill the feeding caterpillars. Multiple treatments using the biological insecticide Bt (*Bacillus thuringiensis*) with ground or aerial application equipment are applied in the vicinity of GM finds. Two GM eradication programs were conducted in California during 2001. One infestation within the community of Navato, Marin County was eradicated after no post-treatment adults were trapped. However, in the community of Fallbrook, San Diego County, a single adult male moth was trapped following ground applications of the insecticide Bt (*Bacillus thuringiensis*). In the Spring 2002, treatments were repeated within the Fallbrook eradication area in response to the single find of 2001. No GM life stages were detected in the post-treatment trapping array and the infestation was declared eradicated in 2002.

Table 6: 2002 Gypsy Moth Finds

COUNTY City	ADULTS TRAPPED		TOTAL ADULTS	PROPERTIES W/ VIABLE EGG MASSES/PUPAL CASES*
	DETECTION	QUARANTINE		
FRESNO Clovis	1	0	1	N/A
LOS ANGELES Cerritos Maywood	1 1	0	2	N/A
SANTA CRUZ Rio Del Mar	1	0	1	N/A
TOTALS	4	0	4	0

RED IMPORTED FIRE ANT

In 1997, RIFA was discovered in an almond orchard in Kern County, arriving there on a shipment of honeybees from Texas. During 1998, RIFA was found infesting large urban areas in Orange County. Subsequent surveys and public notifications discovered a major infestation in Southern California with Orange County as the major infested area. Plant quarantine was established to stop the spread of the pest while allowing the nurseries in the infested areas to ship plants that were treated and certified free of this pest. Currently, all of Orange County (790 square miles), parts of Riverside County (67 square miles), and Los Angeles County (nine square miles) are under quarantine.

Based on the RIFA Science Advisory Panel (SAP) recommendations and input from various stakeholders, the CDFA developed the California Action Plan to contain and eradicate this pest. The plan provides funding and direction for local agencies in Southern California to develop local RIFA survey, control, and treatment programs. The plan also includes statewide survey, public outreach, and quarantine enforcement of the infested areas and strengthened surveillance for RIFA at California's border inspection stations.

In the San Joaquin Valley counties, almond orchards are the primary infested sites. In that area, eradication activities are being undertaken by the CDFA.

The CDFA, with the consultation of the RIFA SAP, develop survey and treatment protocols for all infested counties. Surveys are conducted both visually and by using SPAM™ bait. Granular bait treatments using a metabolic inhibitor (MI) such as AmdroPro® (hydamethylnon) and insect growth regulator (IGR) such as Distance® (pyriproxyfen) are the treatment methods of choice for RIFA.

Although additional RIFA sites continue to be found in the Central Valley, they are successfully being eradicated. The earliest infestations have been eradicated and work is continuing on the newest sites. Of the total 30 RIFA sites, 19 have been eradicated and 11 were treated in 2002. The rate at which infestations are being discovered in the Fresno and Sacramento districts is

declining. The Bay Area/Delta District has seen an increase in the number of infested orchard sites. This is due to the increase in the acres surveyed the past two years. Most of the high hazard orchards have been identified, treated and eradicated. General survey of almonds is producing fewer infested properties. As the acreage of almonds remaining to be surveyed declines, the number of new infestations will approach zero. With the present sustained effort, RIFA should be eradicated from the Central Valley and since there is no evidence that any other part of Northern California is infested, only parts of Southern California will be left with active RIFA infestations.

During 2002, there was an overall 51 percent increase in the number of RIFA treatment locations in Southern California (Table 7). While continuing surveys have discovered new sites infested with RIFA, by and large, the infestations are within the same generally infested areas. It should be noted that the percent increase in RIFA treatment locations is primarily due to the finding of new mounds within existing sites. New sites have been found in Los Angeles (184), Orange (10,832), Riverside (908), San Bernardino (2), San Diego (1), Santa Barbara (0), Merced (5), Fresno (1), Madera (1), Sacramento (1) and Stanislaus (1) counties.

Table 7: 2001 and 2002 Red Imported Fire Ant Information

County	Entity	Treated Sites		Remarks
		2001	2002	
Los Angeles	Los Angeles Co. Ag. Comm.	393	398	Sites under post treatment monitoring
Orange	Orange Co. Fire Ant Authority	11,000	22,403	49% increase in treated sites
Riverside	Coachella Valley RIFA	1,707	2,935	New sites within generally infested areas
Riverside	Riverside Co. Ag. Comm.	352	699	New sites in Lake Elsinore area
San Bernardino	San Bernardino Co. Ag. Comm.	32	34	2 new sites
San Diego	San Diego Co. Ag. Comm.	31	5	Only 1 new site. Most under post treatment monitoring
Santa Barbara	Santa Barbara Co. Ag. Comm.	1	0	No new sites. All under post treatment monitoring
Total		13,516	26,474	
		75%	51%	

AFRICANIZED HONEYBEES

The Africanized honeybee (AHB) first migrated into California during 1994, arriving at Blythe, Riverside County. This year AHB found its way into Tulare County for the first time. The total number of California square miles colonized with AHB is 55,900--an increase of 4,860 square miles from last year. The AHB currently colonizes the entire Counties of Imperial, Riverside, San Diego, San Bernardino, Orange, Los Angeles, Kern, Tulare, Ventura, and portions of San Luis Obispo County.

DISEASE SURVEYS

During 2000, no significant plant diseases were discovered through detection activities. The CDFA participated in several surveys, including Citrus Canker, Karnal Bunt, and Plum Pox.

Citrus Canker

The statewide citrus canker survey for 2002 was conducted as a continuation of an annual survey, which targets twenty five percent of the total citrus acreage present in the State on a rotation basis. This year, a total of 13 counties were surveyed. No citrus canker was found in California for 2002. The results for the 2002 survey are outlined in Table 8.

Table 8: Citrus Canker Survey Results

County	Acres Surveyed by Citrus Variety						Total Acres by County
	Orange	Grapefruit	Lemon	Tangelo	Mandarin	Various	
Fresno							1470.0
Glenn	199						199.0
Imperial		391.8	270	27		20.5	709.3
Kern							5559.0
Orange *	35.7						35.7
Placer					21.5		21.5
Riverside *	567.6	222.6	44.7	13.5		.2	848.6
San Bernardino *	992.1	118.5	11.7			4	1126.3
San Diego *	1,003.1	86.85	138.8	26.7		17	1,272.5
Santa Barbara *			711.5				711.5
Tulare							~3000.0
Yolo	10	3			11	11.25	35.25
Ventura	2700	1.5	7400				10,101.5
TOTALS							25,090.2

* Individual citrus acreage breakdown for these counties will be available next year.

Karnal Bunt Survey

The California portion of the Karnal Bunt National Survey was run according to the USDA protocol for CY 2002. In California, there were samples taken from 32 counties. The results for the 2002 survey are outlined in Table 9.

Table 9: Karnal Bunt Survey Results

County	Samples Needed	Samples Taken	Results
Alameda	1 Composite	0	
Butte	1 Composite	1 Composite	Negative
Colusa	2	1	Negative
Contra Costa	1 Composite	1 Composite	Negative
Fresno	5	5	Negative
Glenn	1 Composite	0	
Imperial	5	5	Negative
Kern	3	3	Negative
Kings	5	5	Negative
Lassen	1 Composite	0	
Madera	1 Composite	0	
Merced	1 Composite	0	
Modoc	1 Composite	0	
Monterey	1 Composite	1	Negative
Placer	1 Composite	0	
Riverside	2	0	
Sacramento	1	1	Negative
San Benito	1 Composite	1 Composite	Negative
San Diego	1 Composite	0	
San Joaquin	3	3	Negative
San Luis Obispo	1 Composite	0	
Santa Barbara	1 Composite	0	
Shasta	1 Composite	1	Negative
Siskiyou	1 Composite	0	
Solano	2	2	Negative
Sonoma	1 Composite	1	Negative
Stanislaus	1 Composite	0	
Sutter	1 Composite	0	
Tehama	1 Composite	1 Composite	Negative
Tulare	3	0	
Yolo	4	2	Negative
Yuba	1 Composite	0	

* No samples taken; harvested before survey implemented.

Plum Pox Virus Survey

Survey:

- The 2002 Plum Pox Virus survey began on April 2 and was terminated on June 19, 2002 due to continued high temperatures.
- The goal for this year's survey was to sample commercial production stonefruit orchards in as many counties as possible throughout California. Stonefruit orchards were sampled in twenty-one counties (Table 10).
- A small amount of nursery budwood sources were tested. These trees are used for the production of common nursery stock.

Results:

- The total number of samples tested: 24,751 samples. (A sample is composed of two trees, resulting in two samples per quadrant.)
- All tests were negative.

Sampling Levels:

- Commercial orchards and orchards used to produce common stock are sampled according to the 25 percent hierarchical survey plan.
- Trees registered in the California Certified Nursery Program, and used to produce certified nursery stock, are sampled at the 100 percent level.
- High-risk or experimental plant material is tested at the 100 percent level.
- *Prunus* spp. located at the University of California Wolfskill Experimental Orchard in Winters, CA (plant breeder materials) were included in the survey and sampled at the 100 percent level.

Table 10: Stonefruit Orchards

County	Varieties	# Of Samples	# Of Acres	Results
Butte	Peach, Prune	2391	153.69	Negative
Colusa	Almond, Prune	1090	78.32	Negative
Contra Costa	Apricot, Cherry, Nectarine, Peach, Plum	1046	42.94	Negative
El Dorado	Cherry, Nectarine, Peach, Plum, Prune	677	35.11	Negative
Fresno	Peach, Plum	707	44.09	Negative
Glenn	Prune	1349	84.00	Negative
Kern	Apricot	1088	61.18	Negative
King	Nectarine, Peach, Plum	810	44.80	Negative
Los Angeles	Apricot, Nectarine, Peach, Plum	1200	100.00	Negative
Madera	Peach	1080	75.29	Negative
Merced	Nectarine, Peach	909	25.60	Negative
San Benito	Apricot	956	19.00	Negative
San Joaquin	Apricot	722	38.80	Negative
San Luis Obispo	Almond, Apricot, Peach, Plum	385	20.08	Negative
Santa Clara	Apricot, Nectarine, Peach, Pluot	660	36.70	Negative
Solano	Almond, Apricot, Cherry, Peach, Plum, Prune	2184	53.00	Negative
Stanislaus	Apricot, Peach	1488	74.20	Negative
Sutter	Peach, Prune	1360	73.00	Negative
Tehama	Almond, Apricot, Peach, Pluot, Prune	1804	57.20	Negative
Tulare	Nectarine, Peach, Plum	1599	33.90	Negative
Yolo	Apricot, Peach, Prune	1245	34.90	Negative

PLANT HEALTH AND PEST PREVENTION SERVICES
INTEGRATED PEST CONTROL BRANCH

Biological Control

Beet Curly Top Virus

Hydrilla

Pink Bollworm and Other Cotton Pests

Vertebrate Pest Control

Weed and Vertebrate

Weed Management

BIOLOGICAL CONTROL

The primary objective of the Biological Control Program is to find, introduce, distribute and evaluate new natural enemies of insect and weed pests in California. The Biological Control Program is divided into two working groups: one for insect pests and the second for weeds.

Insect Pests

Olive Fruit Fly: The olive fruit fly is specific to olives and recently invaded Southern California and portions of Mexico. Eradication is not feasible. The USDA, Agricultural Research Service (ARS), European Biological Control Laboratory is performing foreign exploration for olive fruit fly parasitoids in eastern and southern Africa. In 1999, 2000, and 2002 the CDFA released 4,000 adults of the fruit fly parasitoid, *Psytalia concolor*, in Southern California. This parasitoid was recovered within-season in low numbers in 2001. Limited data from 2002 suggests this parasitoid has successfully established at a Santa Barbara release site. Two parasitoid species collected in East Africa were released in very small numbers in October 2002 in Santa Barbara. Funding from the Olive Council and the University of California will be used to begin testing, importation, and release of additional parasitoids in 2003.

Lygus Bug (Western tarnished plant bug): Lygus bug, *Lygus hesperus*, is a serious pest of cotton, strawberries, and most other crops grown for seed in California. It has developed resistance to traditional insecticides and newer, effective products cause outbreaks of other pests. Field surveys showed that this pest lacks nymphal parasitoids. The USDA-ARS imported two nymphal parasitoids into the east coast of the United States that were collected from a related *Lygus* species infesting alfalfa in Europe. One species became established and reductions in levels of lygus bug infesting alfalfa from Delaware north to New York are attributed to the introduction of this parasitoid. The CDFA has spent the last four years importing and releasing these two parasitoids into central California. Over 20,000 were reared and released at five locations in 2002. Both parasitoids have successfully overwintered at most of our release sites and are now permanently established at the original release site in Sacramento. Both species of released parasitoids combined have reached a maximum of 60 percent parasitism in 2002. The California Cotton Pest Control Board has most recently been funding this work.

Silverleaf Whitefly: Until recently, the silverleaf whitefly caused widespread damage to a variety of field and vegetable crops in Imperial and San Joaquin valleys. Over the last six years, growers in these regions have utilized highly specific insecticides. These insecticides, along with changes in cultural practices and the introduction of new parasitoids, have greatly reduced the problem. To date, six different species of exotic Aphelinidae (*Encarsia* spp. and *Eretmocerus* spp.) parasitoids have been reared and released by the CDFA in conjunction with the USDA, Animal and Plant Health Inspection Service (APHIS), Plant Protection and Quarantine, and County Agricultural Commissioners in the Imperial and San Joaquin valleys. Crops receiving these parasitoids included melons, cotton and a variety of cole crops. The last releases of exotic parasitoids were in summer 2000. Post-release monitoring in 2002 showed that at least three species of exotic parasitoids are persisting and spreading in the Imperial and San Joaquin valleys. One species of parasitoid, *Encarsia sophia*, has yet to be recovered in the San Joaquin Valley but has spread rapidly and shows promise for regional impact in the Imperial Valley.

Red Gum Lerp Psyllid: The CDFA initiated a parasitoid-rearing program in cooperation with Dr. Donald Dahlsten of the University of California, Berkeley to establish a new, exotic

parasitoid recently imported from Australia. To date, the parasitoid, *Psyllaephagus bliteus*, has been released and is now established at over 50 sites throughout the State. Initial difficulties in rearing this parasitoid were greatly reduced by preparing a rearing facility with improved environmental controls such as providing long day length and better control of temperature and humidity. During 2002, the CDFA produced and released over 45,000 parasitoids statewide.

Pink Hibiscus Mealybug (PHM): The PHM, *Maconellicoccus hirsutus* (Green), is native within the area encompassing Southeast Asia and nearby Australia. Its host range is very large, exceeding over 200 plant species, many of which are important in agriculture and as ornamentals. It was first discovered in Imperial County, California in 1999. In response to this pest, a cooperative PHM management team was formed comprising of representatives from the USDA, APHIS and ARS, the University of California, CDFA, and the Imperial County Agricultural Commissioner. In addition, a close line of communication with neighboring Mexico was facilitated by the attendance of officials from *Secretaria de Agricultura Ganaderia y Desarrollo Rural* (SAGAR) and *Instituto Nacional de Investigaciones Forestales Y Agropecuarias* (INIFAP) at all workshops and at each meeting. Staff from the Arizona Department of Agriculture also attended meetings. Following training by USDA-APHIS, a parasite insectary was established and two parasite species, *Anagyrus kamali* and *Gyranusoidea indica* were mass-reared and released. In all, over 390,000 parasitoids were produced and released in 2000 and well over 200,000 in 2001 and 2002. A significant part of the production in 2001 and 2002 was provided to Mexico for release in the Mexicali Valley and to Florida in response to their infestation in 2002. To date, *A. kamali* is well established in Imperial Valley, commonly reaching levels of parasitism exceeding 50 percent. *Gyranusoidea indica* is established as well; however, its percent parasitism is generally much lower. PHM densities are a fraction of those found in September 1999, and no evidence of significant spread by PHM has been observed since 2000. For 2003, we are rearing a third parasite species (*Allotropa* sp. nr. *mecrida*, family Platygasteridae) for release, intending to reduce the PHM population density to even lower levels.

Cotton Aphid: Enhancement of the biological control of cotton aphid was initiated in 1996 with the establishment of a cooperative project involving the CDFA, USDA-ARS, and the University of California Cooperative Extension Service. The long-term goal of this project is to reduce densities of the cotton aphid by constructing a natural enemy complex that has more species richness than currently exists in the San Joaquin Valley. After extensive field-testing of five natural enemies at the Shafter Research and Extension Center, two parasites, *Aphelinus* near *paramali*, and *Aphelinus gossypii* Timberlake, were deemed appropriate for more wide-scale release. During 2002, 10 parasite nurseries were maintained in the San Joaquin Valley, and releases of the parasites were made. Recovery of one of the parasites occurred at one nursery over a two-year period and at another nursery for one year, suggesting that the parasite is slowly becoming established at these locations. Maintenance of the parasite nurseries will continue. Attempts are also being made to import the parasites, *Lipolexis oregmae* (Mackauer) and *Trioxys indicus* Subba Rao and Sharma, to establish lab colonies and begin to test the suitability of these two parasites for use in California.

Citrus Peelminer: In the past year, the citrus peelminer, *Marmara gulosa* Guillen and Davis, has caused extensive damage to citrus and other crops in the southern San Joaquin Valley. Unlike previous infestations in which this insect damaged predominantly citrus, it has been feeding upon a wide range of other crops, causing direct damage to many of the crops that must be marketed as fresh products. A consortium of researchers, pest control advisors, and growers in the effected crops has been formed in an attempt to construct an area-wide management program for this insect. The role of the CDFA is to assist in the distribution and conservation of

natural enemies and to elucidate citrus peelminer inter-crop dynamics. In 2002, a study was conducted to determine the seasonal use of various hosts by the citrus peelminer, and to determine if the use of transgenic cotton (Bt cotton) would deter peelminer feeding. Analysis of data from these studies is currently underway. The results will be shared with the consortium to determine the best tactics for use against this insect.

Vine Mealybug: In 2002, the vine mealybug, *Planococcus ficus* (Signoret), began appearing in vineyards throughout the grape-growing regions of California. Previously, this mealybug had been found only in three of the State's seven grape-growing regions. This mealybug causes direct damage to the berries, decline in grape vines, and may vector leafroll viruses. Working cooperatively with the University of California Cooperative Extension and county agricultural commissioners, the CDFA has been providing information on the biology and management of this insect, and methods to slow the spread of this mealybug.

Weed Pests

Squarrose Knapweed: In 2002, releases of biological control agents occurred on seven weed species: yellow starthistle, squarrose knapweed, diffuse knapweed, spotted knapweed, purple loosestrife, Klamath weed, and puncturevine. Of special importance is the release of three insects for control of squarrose knapweed. In cooperation with the Oregon Department of Agriculture and Montana State University, two seedhead-feeding weevils, *Bangasternus fausti* and *Larinus minutus*, and the root beetle, *Sphenoptera jugoslavica*, were released in selected Northern California sites. Follow-up monitoring was encouraging, as 96 percent of seedheads were attacked at one release site in Lassen County.

Spotted Knapweed: Six biological control insects have been released on spotted knapweed at one site in Shasta County: the gall flies, *Urophora quadrifasciata* and *U. affinis*; the seedhead fly, *Terellia virens*; the seedhead weevil, *Larinus minutus*; the root-feeding moth, *Agapeta zoegana*; and the root-boring weevil, *Cyphocleonus achates*.

The root-feeding insects have not fared well. *A. zoegana* continues to exist at very low numbers despite repeated release efforts. Adult moths are extremely rare and larval numbers have plummeted following the initial population surge in 1997. Field samples showed infestation rates of three percent to six percent. The weevil, *C. achates*, now appears to be established and its infestation rate has increased to 24 percent to 60 percent for plants with roots greater than 1 cm in diameter. The gall fly, *U. quadrifasciata*, likely migrated to the site prior to 1995. Adults of the first generation are highly visible in the field but the seedhead weevil larvae easily consume gall fly larvae and limit final infestation levels which range from six percent to 32 percent annually. The gall fly, *U. affinis*, is still increasing in abundance, but feeding damage by the weevil larvae limit the size of the overwintering population. The infestation level was estimated around 30 percent. The seedhead fly, *T. virens*, has remained at a low level (less than five percent) for several years and is hard to locate in the field. The weevil, *L. minutus*, is well established at this site. Adults are visible during most of the flowering season. Larvae appear to have a significant impact within infested seed heads, and most reach maturity, successfully producing visible exit holes. Field samples showed the infestation level to be over 50 percent.

Diffuse Knapweed: The gall fly, *Urophora affinis*, is established on diffuse knapweed at several sites in Trinity County. In addition, the seedhead weevils, *Bangasternus fausti*, and *Larinus minutus* are well established. The root-boring beetle, *Sphenoptera jugoslavica*, is established and occurs in high numbers (over 70 percent of the plants are attacked).

Purple Loosestrife: Purple loosestrife, *Lythrum salicariae*, a serious invasive weed of wetlands in the northern United States, is limited to relatively small acreages in Northern California, although the number of reported sites has approximately doubled during the 1990s. In 2002, approximately 10,000 *Galerucella californiensis* and *G. pusilla* leaf beetles were released at five sites in Shasta, Butte, and Kern counties and approximately 1,600 *Nanophyes marmoratus* flower weevils were released at three sites in Shasta County. The leaf beetles were obtained from the United States Bureau of Reclamation nursery site in Moses Lake, Washington and the flower weevils were obtained from a site near Vale, Oregon. This biological control project is a cooperative project between the CDFA, the United States Bureau of Reclamation, the USDA, and the Oregon Department of Agriculture.

BEET CURLY TOP VIRUS

Beet curly top virus (BCTV) is an extremely serious plant virus affecting several hundred varieties of ornamental and commercial crops in California. The only known vector of this virus is the sugar beet leafhopper (BLH), *Circulifer tenellus* (Baker).

BCTV is highly destructive to commercially produced sugar beets, tomatoes, peppers, cucumbers, muskmelons, watermelon, squash, pumpkins, green and dry beans, spinach and varieties of vine seed. Because of the threat to commercial crops, the growers of susceptible crops contribute 100 percent of the funds necessary to control BCTV in California. BCTV also infects backyard gardens upon which many people in California depend to provide fresh table vegetables.

The Curly Top Virus Control Program (CTVCP) utilizes intensive surveys to locate and monitor BLH populations throughout the year. Once the populations are located, they are evaluated as to the amount of virus in BLH samples, potential for migration of BLHs to susceptible crops in the area, and feasibility of control versus natural mortality due to parasites, predators or weather trends affecting host plants.

The general pest control strategy developed by the CTVCP is to:

1. Reduce the potential number of over-wintering female BLHs through the application of insecticide on Russian thistle and other weed hosts in the early fall.
2. Further reduce surviving gravid over-wintering BLH females, prior to egg deposition, once they have concentrated on winter host plants.
3. Selectively treat areas of habitat where a spring population of BLHs has developed preventing migration to crops during late spring and early summer.

The goals of the CTVCP for 2002 were to:

1. Monitor and selectively suppress over-wintering female BLH populations on winter host plants prior to egg deposition.
2. Locate, monitor and selectively suppress the spring hatch of BLHs to maturation and migration into susceptible crops.

3. Assess the program's success by surveying susceptible crops for BCTV.
4. Map all Russian thistle acreage and suppress high BLH populations prior to dispersal to over-wintering areas.
5. Continue to support and solicit research that will improve the efficiency of BLH control, enabling the CTVCP to use less insecticide while maintaining BCTV damage below economic levels.

During 2002, a total of 153,075 acres was treated aerially with malathion to control BLH populations. The acreage totals for 2002 were well above the 10-year aerial treatment average. Below normal winter rainfall left sparse, ideal host plant conditions on the west side of the San Joaquin Valley. Widespread development of the general BLH population and BCTV infection during the spring of 2001 increased the potential for infection to susceptible crops and indicated the increase in treatment acreage. Aerial treatment activities were needed in rangeland in the Salinas Valley where aerial treatments had not been performed since 1977.

HYDRILLA

Hydrilla (*Hydrilla verticillata*) was first discovered in California in 1976 in Lake Ellis, Marysville, Yuba County. A large infestation was discovered the next year in the Imperial Irrigation District in Imperial County. Since the first discovery, there have been 28 separate introductions in 17 counties. The last reported discovery of hydrilla in California was in 1997.

The CDFA Hydrilla Eradication Project was authorized in 1977 when the California Legislature mandated that the Secretary of Agriculture survey the State for hydrilla and eradicate it wherever feasible (California Food and Agriculture Code [FAC], Section 6048). The Legislature has also authorized research and implementation of biological control agents against hydrilla (FAC, Section 6049). The authority to establish exterior quarantine against hydrilla was authorized by regulation (California Code of Regulations [CCR], Section 3281); the authority for interior quarantines and for hydrilla eradication areas were also established by regulation (CCR, Sections 3410 and 3962, respectively).

As the lead agency, the CDFA administers the Hydrilla Eradication Program, but does so in cooperation with the local county agricultural commissioners and other federal, state, county, city, Native American tribes, and private individuals and entities. In addition, in 2002, the Program received financial support from the United States Army Corps of Engineers-Eastman Lake, the USDA-APHIS, the United States Department of the Interior-Bureau of Reclamation, the California Department of Boating and Waterways, the California Department of Water Resources, the Yolo County Flood Control and Water Conservation District, the Lake County Agricultural Commissioner's Office, and the Lake County Department of Public Works.

Since the first discovery of hydrilla, the CDFA Hydrilla Eradication Program has eradicated hydrilla from 19 introduction sites in 12 counties. There are currently eight active hydrilla eradication projects in eight counties. These active projects are as follows (see map):

1. Anderson River Park ponds and Riverside Golf Course in Shasta County
2. Clear Lake in Lake County

3. Yuba County Water District canal and associated ponds in Yuba County
4. Bear Creek in Calaveras County
5. Mokelumne Hill pond in Calaveras County
6. Eastman Lake and the west fork of the Chowchilla River in Madera and Mariposa counties
7. Springville ponds in Tulare County
8. Imperial Irrigation District in Imperial County



In addition to survey and treatment of the active project, the CDFA Hydrilla Eradication Program also conducts annual surveys of “high risk” water bodies in the State. The largest of these annual surveys is in the Sacramento-San Joaquin River Delta.

In 2002, the Program consisted of four permanent employees and 17 seasonal employees. The permanent employees are one Senior Scientist, one Agricultural Pest Control Supervisor, and two Agricultural Pest Control Specialists.

The Program’s field activities in 2002 were approximately distributed as follows:

- 50 percent consisted of survey and detection of hydrilla at known and historical find sites and defined “high risk” water bodies in the State.

- 25 percent consisted of eradication activities, such as physical removal, biological control (the triploid grass carp), and chemical control.
- 10 percent consisted of outreach and education to elicit the help of the public to report possible hydrilla finds.
- 15 percent consisted of water monitoring.

Highlights of each of the active projects in 2002 follow below, by county.

In Shasta County, the main eradication tools were small-scale dredging of tubers and fluridone aquatic herbicide treatment. No hydrilla has been detected in the previously lightly infested Anderson ponds since 1999. In the Riverside Golf Course ponds, no hydrilla was found in the previously heavily infested smaller ponds. In the previously heavily infested six-acre pond, plant counts decreased to 10 plants. However, in the largest pond, scattered plants continue to cover a ten-acre section of the pond. Water monitoring of the aquatic herbicide treatment showed that it did not adversely affect the “Beneficial Use” of the water.

In Lake County, the main eradication tools were copper and fluridone aquatic herbicide treatments. Because of these treatments, the number of hydrilla finds in Clear Lake has decreased every year since discrete finds could first be counted in 1997 (see Table 1).

Table 1. Level of Hydrilla Infestation in Clear Lake by Number of Finds (1997 to 2002)

Year	1997	1998	1999	2000	2001	2002
Number of hydrilla “finds”	208	194	122	67	41	12

Water monitoring studies have shown that both the copper and the fluridone aquatic herbicide treatment did not adversely affect the “Beneficial Use” of the water.

In Yuba County, the main eradication tools were hand removal of plants and tubers and copper and fluridone aquatic herbicide treatment. No new infested ponds were detected in 2002. In the Yuba County Water District canal, the tuber abundance has decreased every year since first counted in 1998 (see Table 2).

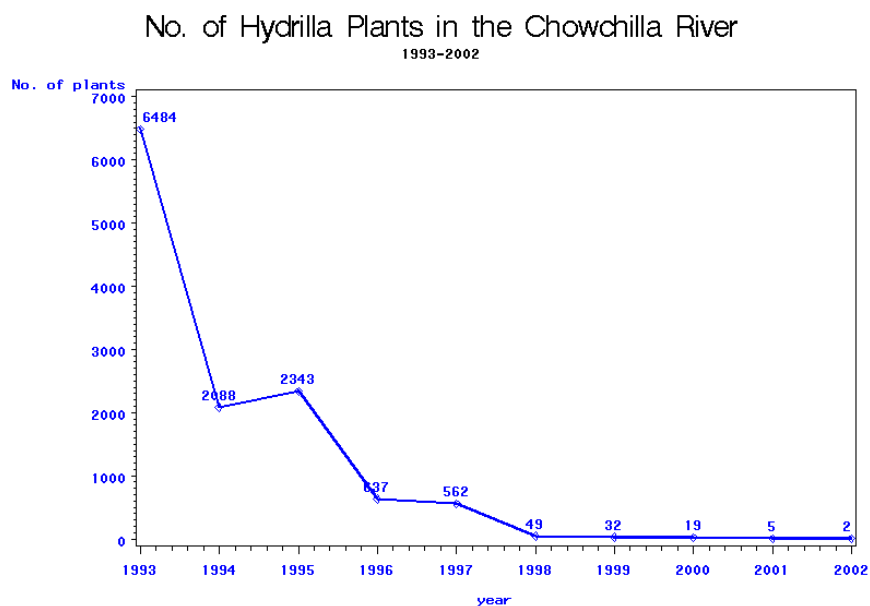
Table 2. Tuber Abundance in the Oregon House Irrigation Canal (1998-2002) D. F. Spencer & G. G. Ksander, USDA-ARS, Davis, California

Year	Fall-1998	Fall-2000	Spring-2001	Spring-2002	Fall-2002
Mean Tubers/m ²	316	84	76	28	13
Standard Error	+/- 61	+/- 21	+/- 24	+/- 9	+/- 5

In Calaveras County, the main eradication tools were hand removal, small-scale dredging, and copper aquatic herbicide treatment. Some fluridone treatments were also done. In the Bear Creek project, scattered hydrilla plants and tubers were found in the lowest ponded area of the creek. No hydrilla has been found in the more upstream ponded areas of the creek since 1999. In the Mokelumne Hill project, scattered plants were also found in 2002. The two projects are not connected, despite being in the same county. Water monitoring of a copper aquatic

herbicide treatment in the lowest ponded area of Bear Creek showed that the treatment did not adversely affect the “Beneficial Use” of the water.

In Madera and Mariposa counties, the main eradication tools were hand removal, small-scale dredging, and some aquatic herbicide treatment. No hydrilla plants have been detected in Eastman Lake since 1993. In the Chowchilla River, the number of plants was too numerous to count at the beginning of the project, but has declined from 6,484 in 1993 to five plants in 2001 and two plants in 2002 (see graph below).



In Tulare County, the main eradication tool used was treatment with fluridone aquatic herbicide. No hydrilla plants were detected in 2002.

In Imperial County, the main eradication tools were hand removal, mechanical dredging, and use of the triploid grass carp. The number of infested sites decreased from 67 in 1994 to four in 1999. In 2002, there were four infested sites, but each site only had a few plants each.

In summary, the CDFA Hydrilla Eradication Program continued to make significant gains in eradicating hydrilla from California’s waterways in 2002.

PINK BOLLWORM AND OTHER COTTON PESTS

Program personnel developed a risk-based management approach to maximize cost efficiencies without significantly sacrificing program detection and control objectives. The San Joaquin Valley was divided into bio-potential zones, based on climate data and native moth capture history. The program activities of sterile release, mapping, and trapping were then coordinated within each zone using the pink bollworm (PBW) heat unit model.

A grand total of 692,385 acres of cotton was mapped in California during 2002. Southern California cotton acreage totaled 21,290 acres. The four cotton-growing counties of Northern California’s Sacramento Valley had a total of 17,760 acres. PBW Program personnel mapped 653,335 acres of cotton in six counties of the San Joaquin Valley. This acreage is down 20.4

percent from the 869,980 acres mapped in 2001. Pima cotton plantings in the San Joaquin Valley for 2002 amounted to 200,805 acres, down 5.4 percent from the 212,350 acres in 2001.

Early detection trapping was done at selected San Joaquin Valley sites having native PBW moth catches in the year 2001 to detect possible over-wintering populations and monitor sterile release. The early detection trapping was conducted from April 16 through July 25. General detection trapping activities were matched to the bio-potential zones. The program also utilized different trapping ratios: 1) one trap per 60 acres, 2) one trap per 80 acres, and 3) one trap per 100 acres. The starting dates for each bio-potential zone were staggered to align with the PBW heat unit model. The earliest general detection trapping began in the southern San Joaquin Valley on June 24. The total number of traps deployed during the peak of the season was 8,239 traps. Traps were inspected weekly through October 11, and were removed by October 18.

The PBW Identification Lab in Visalia examined 14,686 traps containing suspect moths submitted by trappers. A total of 293,394 sterile moths and 111 native moths were identified in the San Joaquin Valley traps.

The sterile moth receipts from the PBW Rearing Facility in Phoenix, AZ were consistent throughout the entire release period. Approximately 272,887,267 sterile moths, roughly three tons of moths, were released in the San Joaquin Valley.

PBW Program personnel conducted trapping and boll collection in the cotton-growing areas of Southern California. Cooperating with the USDA, the Arizona Cotton Research and Protection Council, and the University of Arizona, PBW Program staff conducted trapping and boll survey designed to evaluate PBW resistance to Bt cotton. Monitoring was done in Riverside and Imperial counties. Staff also conducted a project to measure the susceptibility (resistance) of beet armyworm to Bt cotton.

Cotton Boll Weevil

Since November 19, 1990, no boll weevils, *Anthonomus grandis*, have been trapped in California. The declaration of eradication of boll weevil was issued December 1993. Program efforts continue to help keep the State free of boll weevil. Traps are deployed in Southern California cotton-growing areas to monitor any post eradication boll weevil activity. The Imperial County Agricultural Commissioner, under contract with the CDFA, monitors boll weevil traps year round along the borders of Arizona and Mexico. No cotton boll weevils were detected in California.

VERTEBRATE PEST CONTROL

The primary objectives of the Vertebrate Pest Control Program are to maintain the CDFA's field-use rodenticide registrations and to administer the Vertebrate Pest Control Research Program. The agricultural community and other stakeholders utilize the CDFA's rodenticides in order to prevent and control vertebrate pest damage to agricultural commodities, agricultural infrastructure, and water control and conveyance structures and to protect the public health and safety.

The rodenticide registrations are currently in the United States Environmental Protection Agency's (USEPA) Reregistration Eligibility Decision (RED) process. In evaluating pesticides

for reregistration, the USEPA obtains and reviews a complete set of studies from pesticide producers, describing the human health and environmental effects of each pesticide. The USEPA then develops any mitigation measures or regulatory controls necessary to effectively reduce each pesticide's risks. The USEPA reregisters pesticides that can be used without posing unreasonable risks to human health or the environment. The CDFA's rodenticide registrations are currently in complete compliance with the RED requirements and timelines.

In order to address issues outlined in the RED, the Vertebrate Pest Control Research Program funds studies to investigate experimental application strategies to improve rodenticide efficacy, non-target hazard studies to reduce the potential hazard of secondary poisoning to non-target species, and product chemistry and residue data to support the expanded use of rodenticides on food crops. Since 1991, the Vertebrate Pest Control Research Program has funded 67 research proposals on efficacy, product chemistry, residues, and non-target hazards, totaling \$4.5 million to support reregistration and to expand the uses of the CDFA's rodenticides.

The following highlights program progress in 2002:

- Completed the data-call-in for reregistration of the Department's rodenticides including a review, evaluation and response to the Rodenticide Ecological Risk Assessment issued by the USEPA.
- Prepared, submitted, and received approval from control agencies for a Section 18 Emergency Exemption for the use of zinc phosphide on alfalfa to control voles.
- Prepared and submitted to control agencies a request for a Section 24c Special Local Need registration and associated federal petition for food tolerance for the use of zinc phosphide on alfalfa to control voles.
- Initiated, coordinated, and completed a product reformulation project for one of CDFA's rodenticide baits that is utilized by the artichoke industry in California.
- Initiated research contracts for seven new vertebrate pest control research proposals and reviewed and finalized 43 vertebrate pest control research studies that included chemistry, efficacy, residue, and ecological effects data.

WEED AND VERTEBRATE

The Noxious Weed Eradication projects are a cooperative effort between the CDFA and the county agricultural commissioners. The objective of the projects is the early detection, containment and eradication of A-rated noxious weeds.

The Noxious Weed Eradication projects are authorized in the California FAC, Section 403 where it states, "The department shall prevent the introduction and spread of ... noxious weeds." The term "noxious weed" is defined in the FAC, Section 5004 as "any species of plant which is, or is liable to be, detrimental or destructive and difficult to control or eradicate."

The CDFA has established, by way of policy, a noxious weeds rating system. Noxious weeds are classified as "A," "B," "C," or "Q". These ratings can be found in the following sources:

- “Pest Ratings of Noxious Weed Species and Noxious Weed Seed” (California Department of Food and Agriculture, Division of Plant Health and Pest Prevention Services, Integrated Pest Control Branch, 1220 “N” Street, Sacramento, CA 95814).
- Plant Quarantine Manual (<http://www.cdfa.ca.gov/pqm>).

The definition of an A-rated noxious weed, which is the target of the Noxious Weed Eradication projects, is briefly described and summarized below:

"A" Eradication, quarantine or other holding action at the state-county level. Quarantine interceptions to be rejected or treated at any point in the State. Noxious weeds are rated as “A” if they are of limited distribution within the State and eradication efforts are likely to be successful.

In addition, Q-rated weeds are treated like A-rated weeds. The “Q” rating is a temporary rating pending more information.

Currently, there are twenty-five A-rated weeds under eradication, control or containment within California. These are:

- 1) Bidly bidly (BB) - *Acaena anserinifolia*, *A. novae-zelandiae* and *A. pallida*
- 2) Punagrass (PG) - *Achnatherum brachychaetum*
- 3) Camelthorn (CT) - *Alhagi maurorum*
- 4) Alligatorweed (AW) - *Alternanthera philoxeroides*
- 5) Fertile capeweed (FC) - *Arctotheca calendula*
- 6) Plumeless Thistle (PT) - *Carduus acanthoides*
- 7) Musk Thistle (MT) - *Carduus nutans* (BC)
- 8) Diffuse knapweed (DKN) - *Centaurea diffusa* (BC)
- 9) Iberian starthistle (IST) - *Centaurea iberica*
- 10) Spotted knapweed (SKN) - *Centaurea maculosa* (BC)
- 11) Squarrose knapweed (SqKN) - *Centaurea squarrosa*
- 12) Skeletonweed (SKW) - *Chondrilla juncea* (BC)
- 13) Yellowspine Thistle (YSPT) - *Cirsium ochrocentrum*
- 14) Wavyleaf Thistle (WT) - *Cirsium undulatum*
- 15) Bearded creeper (BC) - *Crupina vulgaris*
- 16) Dudaim melon (DM) - *Cucumis melo* var. *dudaim*
- 17) Leafy spurge (LS) - *Euphorbia esula*
- 18) Halogeton (HN) - *Halogeton glomeratus*
- 19) Dalmatian toadflax (DTF) - *Linaria genistifolia* spp. *dalmatica*
- 20) Scotch Thistle (ST) - *Monopodium acanthi*
- 21) Illyrian Thistle (IT) - *Monopodium illyricum*
- 22) Taurian Thistle (TT) - *Onopordum tauricum*
- 23) Harmel (HL) - *Peganum harmala*
- 24) Wormleaf salsola (WS) - *Salsola vermiculata*
- 25) Golden Thistle (GT) - *Scolymus hispanicus*

BC = Biological Control

In addition, the State of California incorporates the federal noxious weeds as state noxious weeds, by regulation (CCR, Section 3161).

To date, the Noxious Weed Eradication projects have eradicated 14 weeds from the State. These are whitestem distaff thistle, dudaim melon, giant dodder, serrate spurge, Russian salttree, blueweed, tanglehead, creeping mesquite, meadowsage, heartleaf nightshade, Austrian peaweed, wild marigold, Syrian beancaper, and perennial sowthistle. Weeds approaching eradication at the statewide level include camelthorn, golden thistle, smooth groundcherry and Illyrian thistle.

The statewide distribution of current A-rated noxious weed infestations can be seen on the map below. Note that a disproportionate number of the A-rated noxious weed infestations in California are found in the four most northeastern counties, Shasta, Lassen, Siskiyou, and Modoc. This probably results partially from the large amount of open rangeland in these counties and the movement of cattle from out of state. It probably also results partially from the movement of weed seed and parts on vehicles from out of state into these counties.



In 2002, the Noxious Weed Eradication projects personnel consisted of eight permanent employees and four seasonal employees. Seven of the permanent employees were Associate Agricultural Biologists and one was an Agricultural Biologist. The Associate Agricultural Biologists were all assigned to specific districts (see map below). The Agricultural Biologist and the seasonal employees assisted the Associate Agricultural Biologists in the districts.



The Noxious Weed Eradication project's field activities in 2002 were approximately distributed as follows:

- 35 percent consisted of survey and detection of A-rated noxious weeds at known and historical find sites and defined "high risk" corridors of entry into the State.
- 50 percent consisted of eradication activities, such as physical removal, assistance to the Biological Control group in introducing and evaluating biological weed control agents, and chemical control.
- 10 percent consisted of outreach and education to elicit the help of the public to report possible A-rated noxious weed finds.
- 5 percent consisted of establishing and evaluating monitoring plots to measure the efficacy of the eradication effort and changes in A-rated noxious weed populations through time.

WEED MANAGEMENT

The mission of the weed management area initiative is to demonstrate the power of local cooperative action in:

1. Eradicating and controlling weeds in an integrated, strategic and prioritized fashion;
2. Stopping the spread of noxious and invasive weeds on public and private lands; and
3. Educating people at all levels about the need and opportunities to control weeds.

Weed Management Areas (WMA) are local working groups that bring together interested landowners, land managers (private, city, county, state, and federal), special districts, and the public for the purpose of combining their actions and expertise to deal with their common noxious weed control problems. This organizational concept originated with the federal government in the Greater Yellowstone region, resulting in increased weed control across the boundaries of three states. This type of collaborative weed control is widely recognized as an ideal way to implement weed management programs locally.

California Governor Gray Davis signed legislation (Assembly Bill 1168, Frusetta and Senate Bill 1740, Leslie) providing the CDFA sufficient funding to develop pilot weed management programs (through local WMAs) in several counties. Assembly Bill 1168 (Chapter 961, Statutes of 1999) was adopted in 1999. It established a Noxious Weed Management Account in the CDFA, allocating \$200,000 for each of three years to support work by WMAs. Senate Bill 1740, adopted in 2000, added \$5,000,000 to the Noxious Weed Management Account and extended the time over which funding will be available to WMAs throughout the State.

The following highlights program progress in 2002:

- The number of countywide WMAs in California has grown from seven in early 1998 to 45 in 2002. The groups cover 54 out of 58 counties in the State.
- Over 1,858 individuals attended regular WMA meetings throughout California in 2002. New local partnerships have been created among public agencies, private landowners, agriculturalists and conservationists.
- An estimated 130,896 landowners and citizens have participated in noxious and invasive weed education events statewide.
- Over \$1,200,000 has been distributed to 42 WMAs in 2002, resulting in over 33,690 acres of high priority weed infestations treated under this program. Most sites had close to 90 percent control. Additionally, at over 473 sites, 100 percent of targeted weeds were eradicated from the site and are not expected to return.
- This state seed money has been matched locally by a total of \$3,416,342 of "in-kind" resources (donated equipment or services) and matching cash dollars. Of these resources, \$599,563 is direct cash matches by county government and outside grants.
- On September 23 and 24, 2002, 150 WMA members attended the forth Annual Statewide WMA Meeting in Woodland, California for training, exchange of information, to hear panels on WMA success stories, and to network with WMAs throughout the State.

PLANT HEALTH AND PEST PREVENTION SERVICES

PLANT PEST DIAGNOSTICS BRANCH

Mission

The primary mission of the Plant Pest Diagnostics Branch (PPDB) is to provide timely and accurate diagnostics in support of the CDFA pest prevention programs. The Branch also serves as a scientific resource for a number of clients in addition to the CDFA, including the USDA, other federal and state agencies, county agricultural commissioners, University of California Cooperative Extension, the agriculture industry, and the public. The scientific and technical staffs contribute to global scientific knowledge in plant pest diagnostics and biosystematics.

Workload

The number of diagnostic samples processed in 2002 at the PPDC include:

Nematology	5,042	
Plant Pathology	88,402	(including special projects)
Entomology	41,529	
Seed Sciences	3,861	
Botany	4,150	
Total	142,984	

New Staff

Three new staff members joined PPDB staff during 2002. These include scientists Dr. Jeffrey Skevington (Hemiptera, Diptera) and Dr. Charles Bellamy (Coleoptera), and Margie Barela (Office Assistant). In addition, we have a federal employee (Julia Scher) assigned to our seed lab to develop web based identification keys.

Facility Changes

Work continued on adapting existing laboratory space to accommodate new molecular technology. The PPDB has made a major commitment to expand molecular biological techniques to all levels of diagnostics in the five laboratories in the Branch. In addition, a major renovation to the library was completed adding new compactor storage for scientific literature. The plant pathology laboratory added a new large capacity autoclave and a third large environmental growth chamber.

Collections

Two new curators, Dr. Gaimari and Dr. Bellamy, were named to manage the ever-expanding California Collection of Arthropods. This collection of approximately 1.8 million labeled

specimens has an estimated value of over \$10 million. Other collections in PPDB including the literature collection (approximately 60,000 volumes), the plant herbarium (40,000 specimens), and the seed collection (over 50,000 specimens) are also expanding with new additions.

Research

Part of the ongoing mission of the Branch is the research and publication of scientific papers by the professionals in the five laboratories. In the past year, the scientific staff published 15 peer reviewed papers, nine book chapters, and 15 non-peer reviewed publications on topics ranging from nematode, plant, and insect systematics, to reports of new plant diseases, to basic biology. In addition, PPDB scientists participated in a number of professional scientific meetings and symposia. Initiation of new research grants, including a \$350,000 grant for fruit fly genomics research, will greatly expand the research function in the Branch.

Projects

The major new project begun in 2002 was the initiation of planning for the merger of the diagnostics functions of PPDB with the University of California, Davis, using the transfer of the veterinary diagnostics function as a model. Eventually, a larger, more comprehensive diagnostic capability will provide advanced scientific support for the CDFA pest prevention programs.

A second initiative, funded by USDA, was begun in 2002 as a response to the need for better homeland security for agriculture. The creation of the National Plant Pest and Disease Diagnostics Network resulted in UC Davis being selected as the western regional center. Because the University lacks a diagnostic capability, PPDB was asked to partner with UCD to provide the scientific support. PPDB will now provide advanced diagnostic support to nine western states and the Pacific protectorates.

