



It is a pleasure to present the Hawaii Department of Agriculture's Annual Report for Fiscal Year 2006. This report covers the period between July 1, 2005 and June 30, 2006, during which the state faced record-breaking amounts of rain and flooding that devastated areas across the state, including many agricultural areas.

Even in the best of agricultural years, the weather presents a challenge to farmers. However, the rains in the Spring of 2006 caused great hardship in our agricultural community, with farmers across the state suffering extreme crop losses. The emergency situation mobilized several divisions, including the Agricultural Resource Management Division, which is responsible for managing the state's agricultural irrigation systems and reservoirs and the Agricultural Loan Division, which also geared up to provide emergency financial assistance to about 45 farms, totaling more than \$1.6 million.

We would like to recognize and thank Governor Linda Lingle, the County Mayors and the many county, state and federal agencies, as well as private and non-profit organizations that provided assistance to our farmers during the recovery effort.

Other major events during this period include:

- ◆ The launch of the Hawaii Seals of Quality program, which distinguishes 100 percent Hawaii-grown and manufactured products for the local and export markets.
- ◆ Plant Quarantine inspectors expanded risk assessment activities to include neighbor island airports and ports to determine the greatest risks for the transport of invasive species.
- ◆ HDOA researchers have searched the world for biological control solutions to the problems of invasive species that have become established in the state.
- ◆ Work on enhancing bio-security preparedness for both plants and animals continues.
- ◆ Expansion of open-ocean aquaculture ventures and other diverse forms of land-based aquaculture.

On behalf of the more than 300 employees of the department, we appreciate the interest and dedication to support and expand farming in Hawaii.

Sincerely,

A handwritten signature in cursive script that reads "Sandra Lee Kunimoto".

Sandra Lee Kunimoto, Chairperson  
Hawaii Board of Agriculture





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**This annual report is also accessible via the department's website at: [www.hawaiiag.org/hdoa/](http://www.hawaiiag.org/hdoa/) or copies may be requested by calling (808) 973-9560.**



## Planning & Development

The Hawaii Department of Agriculture actively seeks to protect existing farming areas and promote increased access to and productive use of the thousands of acres of prime agricultural lands and infrastructure vacated by sugar plantations throughout the state.

The department, as principal advocate for agriculture among state agencies, offers consultative input into county, state, and federal land use planning and permitting, environmental program development and implementation, and undertakes broader planning and economic development efforts to ensure the availability of agricultural resources and the growth of agricultural businesses. The economic activity generated by diversified agriculture is solid and steadily increasing despite the decline in pineapple and sugarcane industries.

With the passage of the landmark Important Agricultural Lands Act (Act 183, 2005 Session Laws of Hawaii), the department, with the assistance of the Department of Taxation, established the 28-member Forum on Agricultural Related Matters. The forum's task is to develop and implement a comprehensive and integrated framework of incentives and programs that will promote agricultural viability, sustained growth of the agricultural industry, and the long-term use and protection of important agricultural lands for agricultural use in Hawaii. Initial efforts have spawned a wide array of potential incentives, including tax credits and

exemptions, agribusiness incubator and workforce development, loan programs, conservation plan report to the legislature will be ready by the 2007 legislative session and will contain findings and recommendations, including proposed legislation and recommended minimum criteria for determining when the "enactment of legislation establishing incentives and protection" has occurred for the purposes of this Act. The report will include an analysis of the impacts and benefits of its recommendations, a record of the stakeholder group's process and deliberations, and provide the supporting rationale for the incentives being proposed.

The department also supported the protection of agricultural lands and related infrastructure as well as the expansion of diversified agriculture development in general through a number of ongoing efforts. These efforts included the submittal of testimonies and position statements before county councils and departments, state departments, State Land Use Commission, and other organizations on agriculture-related issues such as amendments to agricultural property tax programs, county-level initiatives to protect prime agricultural lands, facilitating discussions between farmers and landowners on "good neighbor" and land tenure issues; amendments to county agricultural zoning and community plan ordinances; amendments to state and federal environmental regulations affecting the use of agricultural land and water resources.





## Office of the Chairperson Projects and Initiatives

**Important Agricultural Lands** – Act 183 (SLH 2005) mandates that the Hawaii Department of Agriculture (HDOA) develop incentives to promote viability, sustained growth, long-term use and protection of Important Agricultural Lands (IAL) in Hawaii. Together with other key agencies, organizations, stakeholders and small producer groups, a comprehensive report of potential incentives for IAL has been developed, and will be presented to the 2007 legislature.

**Agricultural Labor and Agricultural Worker Housing** – Agriculture businesses across the state are being impacted by the shortage of labor. As different types of labor are utilized it is important for employers to understand the laws that apply, including the H2A Agricultural Employment Visa Program and the Migrant and Seasonal Agricultural Workers Protection Act. HDOA partnered with the Hawaii Department of Labor (DOL) and Industrial Relations (DLIR), the United States Department of Labor and the United States Department of Agriculture (USDA) to conduct a series of free informational workshops in July and August. Presented on Oahu, Maui, Kauai and in Kona and Hilo on the Big Island, the team covered issues such as workers' compensation, pre-paid health care, joint employment, independent contractors, wages, worker benefits, transportation, housing and enforcement of federal and state basic labor standards. More than 100 people from the industry attended the educational meetings, and voiced their workforce concerns with the team.

In September, HDOA, DLIR and USDA partnered with the Micronesian Community Network to put on a pilot match-up meeting for Micronesian community leaders and Oahu producers to facilitate information sharing. A mini agricultural job fair connecting Micronesians to agricultural employers will take place in November.

Agricultural worker housing has emerged as a theme during these workshops and meetings, and HDOA has begun to work with USDA Rural Development and the Hawaii Housing Finance and Development Corporation to identify potential funding sources and partners for agricultural worker housing projects.

**Transportation** – In May, Young Brothers Limited (YB) proposed to end their less-than-container-load (LCL) service on Maui, a particularly important option for island farmers. The business decision reflected the significant growth in cargo and demand at Kahului Harbor, and the need for increased efficiency of operations and use of space at the port. In August, an agreement was reached between the State Department of Transportation and YB which provides that the company will continue to provide LCL service for several years. Numerous parties helped to bring about the resolution to this critical issue, including the Hawaii Farm Bureau Federation, the Maui Farm Bureau, YB, the State Departments of Transportation, Commerce and Consumer Affairs, Business, Economic Development & Tourism, Governor Linda Lingle, and HDOA.

**Emergency Management** – HDOA continues to progress in emergency management and preparedness. Utilizing United States Department of Homeland Security funds, HDOA awarded a contract to update emergency response plans in accordance with the National Response Plan and the National Incident Management System. Deliverables for the project also include crucial continuity of operations and plant health emergency plans, and the designation of department personnel within a departmental Incident Command System. HDOA continues to participate in emergency response training opportunities, including an agroterrorism course facilitated by the Institute for Security Studies at the University of Nevada at Las Vegas.

**Federal Farm Bill Legislation** – Through the National Association of the State Departments of Agriculture (NASDA), HDOA continues to participate in drafting policy for the federal Agricultural Appropriations Bill, also known as the Farm Bill. Issues range from funding for specialty crops and continued conservation programs to new bioenergy initiatives and increased border protection to prevent the entry of invasive species.



## ADMINISTRATIVE SERVICES OFFICE



**Elaine Abe**  
*Administrator*

**The goals of the Administrative Services Office are 1) to meet the staff support needs of the department's programs and personnel by providing guidance, training, information, efficient equipment and vehicles, and adequate facilities, and facilitating the processing of their requests in order to enhance managers' decision making capabilities and employee productivity; and 2) to meet the needs of the public by assisting them in their requests or directing them to the appropriate entity to address their needs.**

**Financial statements for the department may be found on pages 47 to 55.**

**The following is a list of projects that have been completed:**

- ◆ Attended briefing on issues of residency waiver/residency during employment.
- ◆ Participated in two job fairs at the Blaisdell Convention Hall.
- ◆ Coordinated a West Oahu College student's unpaid internship in Human Resources.
- ◆ Attended presentation on changes to Employee's Retirement System (ERS), primarily introduction of Hybrid Plan.
- ◆ Assisted ERS in helping employees interested switching over to this retirement plan.
- ◆ Assisted programs in filling 33 positions.
- ◆ Worked with the Plant Quarantine program to place an advertisement and article in "The Transition Magazine." This magazine highlights career opportunities to high school and younger students.
- ◆ Implemented the department's on-line telephone directory.
- ◆ Completed issuing new department IDs to all Plant Quarantine Inspectors.
- ◆ Expanded the use of the pCard (procurement card) to 46 employees as of June 30, 2006.
- ◆ Connected Aquaculture Sand Island office, Chemical Analysis Laboratory at Waimano, the Kona Plant Quarantine Office and Honolulu Plant Quarantine Office to the NGN network.
- ◆ Provided program managers access to DATAMART and pCard expenditure information to assist in managing program finances more efficiently.
- ◆ Updated pCard Merchant Category Codes (MCC) restrictions to correspond with State's restricted MCCs and requested exceptions to the State's list of restricted MCCs to allow purchases necessary to meet program objectives.
- ◆ Coordinated and worked together with the Department of Accounting and General Services (DAGS), System Accounting Branch and Information and Communication Services Division (ICSD) to print summary warrant vouchers and error reports onsite at the department.
- ◆ Implemented the State Procurement Office's delegation of authority to the departments to approve purchases off the travel price list.
- ◆ Developed a standard letter to explain to employees the after-the-fact payroll process and to answer frequently asked questions.
- ◆ Developed a computer equipment replacement schedule.
- ◆ Implemented new Plant Industry server to house Plant Pest Control and Pesticide information.
- ◆ Migrated Animal Quarantine Station application from Speed II to APPX.
- ◆ Developed database to track correspondences with the Attorney General's Office.
- ◆ Developed database for Commodities' Dealer Licensing Program.
- ◆ Updated network software for main office servers.
- ◆ Worked with ICSD to implement state's virtual firewall.
- ◆ Developed Ag Loan tracking database.
- ◆ Developed Inventory database.
- ◆ Modified Motor Pool System to collect information required by Act 96, SLH 2006, Relating to Energy.
- ◆ Developed database to import and summarize Tesoro and DAGS' Motor Pool transactions.
- ◆ Developed interface to Datamart to track fixed assets.



- ◆ Completed training of property custodians on inventory management with assistance from DAGS Inventory Management Branch.

**Major projects still in progress are:**

- ◆ Working with consultants to transfer Plant Quarantine on-line system to the department.
- ◆ Continuing to network all Oahu and neighbor island offices to state's Next Generation Network (NGN).
- ◆ Implementing replacement APPX application server.
- ◆ Transferring hawaiiag.org/hdoa webpages to ICSD.
- ◆ Upgrading Lotus Notes to Revision 6.5.5
- ◆ Replacing network equipment no longer under maintenance support.
- ◆ Coordinating various capital improvement projects to correct safety concerns and other deficiencies at department facilities including re-roofing and air conditioning improvements at the Lanikaula office, and air conditioning and electrical improvements at the King St. facility.
- ◆ Establishing six-year special repair and maintenance and capital improvement program for department's office buildings.
- ◆ Auditing leave records of program record keepers.
- ◆ Reviewing and rewriting internal personnel policies and procedures.
- ◆ Monitoring the length of time to service various program requests.
- ◆ Implementing the HDOA Workplace Violence Action Plan.
- ◆ Assisting the Plant Quarantine program in establishing and filling new Plant Quarantine Inspector positions and Plant Pest Control Aides/Technicians.
- ◆ Reviewing need to provide pocket masks for all first aid kits and automated defibrillators at key locations.
- ◆ Participating with other departments and the Personnel Transaction Office (DHRD) in a discussion group to find problem areas and streamline the Human Resource Management System process to record personnel transactions.

- ◆ Reviewing department's accounting manual to update existing procedures and developing new guidelines and procedures for various procurement and purchasing processes including contract management to address findings in the Legislative Auditor's financial audit of the department.
- ◆ Providing improved guidance and support to programs by attending State Procurement Office training sessions on various procurement methods and changes to the procurement law.
- ◆ Updating ASO Strategic Plan.
- ◆ Developing energy efficiency and conservation program and compiling energy data to meet requirements of Section 1168.5 of Act 160, SLH 2006, and Act 96, SLH 2006, Relating to Energy.
- ◆ Initiating project to complete the necessary National Pollutant Discharge Elimination System (NPDES) permit requirements for discharges of storm water from small MS4s (municipal sewer systems).
- ◆ Updating Oahu staff directory for dissemination.

Other future projects include working on replacing the server at Auiki St., modifying Animal Quarantine system application, conducting labor relations workshops for supervisors, developing flow charts and procedures for major personnel functions, developing travel handbook for employees to use as a guide in processing travel documents, and preparing for the implementation of Hawaii Electronics Procurement System (HEPS).



## AGRICULTURAL DEVELOPMENT DIVISION



**Matthew K. Loke, Ph.D.,**  
*Administrator*

**The Agricultural Development Division (ADD) serves to promote the economic viability of commercial agriculture in Hawaii by sponsoring joint marketing programs for agricultural products with high revenue growth potentials; facilitating the development and expansion of marketing opportunities for targeted agricultural and processed products; and providing timely, accurate and useful statistics.**

This fiscal year has been both challenging and rewarding for the division. Despite losing two key personnel in marketing during the year, we were able to keep our momentum and achieved some "milestone" successes including the following:

- ◆ Started administering the USDA National Organic Certification and Cost-Share Program, which encourages organic farmers in Hawaii to certify their farm. Nearly 80 organic growers have taken advantage of the program, which reimburses 75 percent of their certification cost (up to a maximum of \$500).
- ◆ Awarded export readiness-training (ERT) funds totaling \$245,000 from USDA-Foreign Agricultural Service (FAS) to train and prepare new-to-export, minority and women owned businesses in Hawaii. The grant from the FAS Emerging Markets Program will be jointly administered by the Western United States Agricultural Trade Association (WUSATA).
- ◆ Received approval for pilot crop insurance program in Hawaii for bananas, coffee, and papayas and conditional approval for the AGR-Lite, a whole-farm revenue insurance program from the USDA-Risk Management Agency (RMA). These insurance programs for Hawaii farmers will encourage higher production and reduce potential income losses.

- ◆ Coordinated and hosted the Associated Press (AP) television and wire service journalists on an assignment to review the expansion of diversified agriculture in Hawaii. The AP story was a hit and was featured in newspapers across the US mainland and in foreign countries.
- ◆ Launched the Hawaii Seals of Quality (SOQ) branding program, which promotes genuine, grown-in or made-in Hawaii, premium products. This program attracted 12 leading producers and 8 leading chefs (Hawaii Regional Cuisine). The SOQ launch received widespread press coverage.

### **New activities undertaken during FY 2006 were:**

#### **Agriculture Research Program Contracts**

The Agriculture Research Program was established to provide financial assistance to fund research projects, which would support local agricultural products with high-revenue growth potential or significant production in the next ten years. The goal of this program is to maintain Hawaii's competitive edge with foreign producers and sustain the long-run viability of Hawaii's agriculture. This fiscal year, ADD implemented a new procedure to solicit and award agriculture research funds on a competitive basis. To meet new expectations and to insure transparency, the State's RFP (Request for Proposal) process, which is set by the State Procurement Office (SPO), was followed. The new procedure included:

- i. Establish a RFP (Request for Proposal) process;
- ii. Establish a research evaluation panel and assessment criteria to review all applications in a fair, unbiased and professional manner;
- iii. Publicly post the RFP on the SPO website for 30 days as required by regulation;
- iv. Create a \$100,000 portfolio to address emergency pest outbreaks;
- v. Designate a funding priority for projects with industry matching funds and crops in the growth phase of their life cycle.

In FY 06, this program funded 12 research contracts totaling \$468,478 to study new crop varieties for melons, tomatoes, pepper and yams, pickleworm control, detection of ohia rust, cacao trials, improve noni germplasm, reduce papaya blemishes, pest infestation in Wili-Wili trees and other diverse agricultural projects.

#### **WUSATA/WASDA/NASDA Conference, Honolulu**

State marketing officials and Directors/Commissioners of Agriculture from 13 western states met with senior USDA officials including then-Assistant Secretary of Agriculture, William Hawks, and officials from other regional agricultural trade groups to discuss various marketing and legislative issues relating to U.S. agriculture. ADD/MDB assisted in organizing this highly successful conference.



*The founding producers of the Hawaii Seals of Quality program were honored at a luncheon at Washington Place as guests of Gov. Linda Lingle and Lt. Gov. James Aiona.*

*The event in May 2006 kicked off the program which distinguishes quality agricultural and value-added products that are truly Hawaii's own.*

**MARKET DEVELOPMENT BRANCH**

**Calvin Lee**, *Manager (retired December 2005)*  
**Todd Low**, *Manager (From December 2006)*

The mission of the Market Development Branch is to facilitate the development of the agricultural industry, consisting of commodity groups of agricultural producers and food processors, through the expansion of new and existing markets.

**Major activities during FY 2006 were:**

**Matching Funds Promotional Contracts**

This is the third fiscal year that the branch implemented a new procedure to solicit and award matching marketing funds. To insure transparency, the procedure followed the State's RFP (Request for Proposal) process that was posted on the State Procurement Office (SPO) Website. The applications fell into three predetermined categories:

1. Distribution systems focusing on encouraging Hawaii ag businesses to pool resources, at least four companies, in order to improve efficiency in transportation/shipping, distribution, sales representation, or consolidation issues. There were three awards in this category.
2. Mainland and international trade shows focusing on a Hawaii-theme exhibit with a minimum of four unrelated companies attending the trade show. There were six awards in this category.
3. Industry education and promotion of agriculture focusing on producer's competitiveness and human capital capacity building; and marketing effort or hosting events supportive of Hawaii's agriculture. There were 11 awards in this category.

The program attracted 23 applications from 10 trade associations and 20 of the applications were funded for a total of \$197,000. Based on previous experience, this program is expected to support an estimated \$3 million in annual sales.

**Local Market Promotions and Activities**

◆ **Lodging, Hospitality, and Food Service Expo, Honolulu**

Products that were sampled at the HDOA exhibit were a variety of melons from Aloun Farms including a new variety called musk melon; cheese from the Island of Hawaii from a new producer, originally from Holland, and flavorful escargots from Oahu. The HDOA exhibit was recognized and awarded the honorable mention plaque in the Multiple-booth Design Category. The event attracted some 5,500 potential buyers-chefs, caterers, grocers, convenience stores, hotels, and the military.

◆ **Hawaii State Farm Fair, Kapolei**

The traditional farm fair was organized by the Hawaii Farm Bureau Federation (HFBF) to showcase Hawaii's agriculture. The HDOA contributed in various ways including educational booths displaying the various activities of the department in keeping our plant and animal industries healthy, minimizing the introduction of invasive species, promoting the production and consumption of Hawaii's fruits and vegetables, maintaining viable measurements and standards for Hawaii's commerce, and exposing the public to the ornamental and business aspects of Hawaii's aquaculture. The fair attracted more than 49,200 attendees and generated some \$63,000 in gross sales for produce and plants.

◆ **Made in Hawaii Festival, Honolulu**

MDB was in charge of the Festival cooking demonstrations. MDB was a sponsor and coordinated the cooking demonstration of local agricultural products. A segment of the cooking demonstration was televised live on KHON-2's Hawaii's Kitchen, hosted by Manolo Morales. The space was decorated by carefully crafted floral arrangements that welcomed and attracted attendees while promoting local flowers and vegetables. The festival attracted an estimated crowd of 30,000. MDB sampled food for and distributed recipes to over 2,600 attendees to the various cooking demonstrations.



The KITV Morning Show features monthly segments to promote the “Buy Fresh, Buy Local” campaign to encourage consumers to support Hawaii agriculture. L to R: Ben Guiterrez, Mahealani Richardson, Chef Kele Smith of the Pacific Club, Kylie Matsuda of Kahuku Farms and Dan Meisenzahl.

- ◆ **Buy Fresh, Buy Local, Island Fresh Campaign**  
ADD/MDB is co-sponsoring a “Buy Fresh, Buy Local - Island Fresh” promotion with UH-CTAHR and the HFBF. This campaign seeks to create consumer awareness by featuring local produce in newspaper and magazine articles. Another popular item was the development of a local produce availability chart.
- ◆ **Wahiawa Pineapple Festival**  
MDB set up an educational booth at the Pineapple Festival at Wahiawa District Park on California Avenue in the heart of Wahiawa town. The booth displayed fresh pineapples, historical photos, pineapple recipes, and the “Buy Fresh, Buy Local - Island Fresh” seasonality charts. The event featured a parade, arts & crafts displays, games, and activities for children, and pineapple culinary creations from celebrity chefs. Approximately 7,500 people attended this annual event.

**Mainland and International Market Promotions and Activities**

- ◆ **Produce Marketing Association (PMA) Convention and Exposition, Atlanta, GA**  
HDOA lead a Hawaii delegation to the show to allow Hawaii vendors to network with the produce industry leaders, to see new products, strengthen relationships with current customers, gain information for future purchasing decisions, and to build their businesses. PMA is the place to learn the direction of the growing global produce industry.

- ◆ **Natural Products Expo West Trade Show, Anaheim, CA**  
MDB and DBEDT jointly lead 13 Hawaii exhibitors to the nation’s largest natural, organic and healthy products trade show. The show had 43,000 attendees and 2,600 exhibits. Hawaii producers’ seized the opportunity to meet distributors, retail chain, and representatives from natural food restaurants, independent/coop natural products retailers, discover and introduce new products, and attend education seminars. The expo is expected to gross over \$5.2 million in sales for participating exhibitors.
- ◆ **Trade Mission to Fukuoka, Japan**  
HDOA, DBEDT, and the Oahu Visitor’s Bureau jointly sponsored this trade mission in partnership with the U.S. Consulate-Fukuoka/USDA, Japan Airlines, Honolulu Japanese Chamber of Commerce, and the Hawaii Fukuoka Kenjinkai. The mission promoted Hawaii’s products and services, visitor industry, arts & culture, and entertainment to this growing business hub in Southern Japan.
- ◆ **Increasing Diversified Agricultural Exports to Canada (\$2.3 million in 2005)**  
The introduction of new direct flights from Vancouver, British Columbia to Honolulu and Kahului has stimulated new commercial activities between the Canadian province and Hawaii. ADD/MDB in partnership with the U.S. Department of Commerce and Harmony Airways has opened new markets for Hawaii agricultural producers and entrepreneurs. Various products, including papayas, pineapples, sweet potatoes, herbs, avocados, mangoes, flowers, and fish are being exported to Vancouver at an annual value of \$2.3 million. Another \$1 million worth of Canadian agriculture products (flowers/plants, fish



Market Development Branch display at the Wahiawa Pineapple Festival.



and specialized greenhouse products, such as tomatoes) were imported into the state, creating additional revenues for our local wholesalers.

- ◆ **China Emerging Market Grant Project (on-going)**  
This market access project is a joint effort between the Market Development Branch, the University of Hawaii, College of Tropical Agriculture and Human Resources (CTAHR), and the Hawaii Agricultural Research Center (HARC). The joint marketing collaboration has established a high-end gift basket of value-added Hawaii products that is being test marketed in China.
- ◆ **China Nursery Project – with Oregon and Washington (on-going)**  
After a successful venture to create a China-U.S. Friendship Garden at the Beijing Botanical Garden to display nursery products from Oregon, Washington, and Hawaii, the tri-state marketing team engaged in a similar activity at the Shanghai Botanical Garden. Negotiations with the Shanghai authorities were successful and shipment of plant materials from the tri-state will commence in March 2006. These projects will help to establish new flower and nursery markets for these three states. The return-on-investment is also significant. The China-U.S. Friendship Garden in Beijing currently has an asset value of over U.S. \$1 million.

## HAWAII AGRICULTURAL STATISTICS BRANCH

**Mark Hudson, State Agricultural Statistician/Director**

The Hawaii Agricultural Statistics (HAS) Branch is a cooperative effort between the Hawaii Department of Agriculture and the National Agricultural Statistics Service, U.S. Department of Agriculture. This partnership, spanning four decades, allows the efficient use of state and federal resources, while at the same time providing a comprehensive array of agricultural intelligence and reducing respondent burden.

Major activities of the HAS included data collection, analysis, and timely publication of agricultural statistics for the State. The result of these efforts was a measure of total farm-gate estimated value of \$576 million during 2005. Most of HAS data collection efforts were in the diversified agriculture sector, which was valued at \$438 million in 2005.

### Activities during FY 2006 included the following:

- ◆ Completed Census of Aquaculture data collection.
- ◆ Completed June Area Survey (first area survey in Hawaii since 1991).
- ◆ Completed Labor Language Survey.
- ◆ Conducted Economic Study for Hawaii Seed Industry.
- ◆ Published 130 reports.
- ◆ Made over 15,000 individual contacts via personal interviews, telephone, and mail questionnaires.

- ◆ Distributed more than 40,000 releases to farmers, other individuals, businesses, universities, and governments worldwide.
- ◆ Answered more than 1,000 individual requests for information by mail, telephone, and office handouts.

Statistical reports are available on the HDOA website at: [www.hawaiiag.org/hdoa/](http://www.hawaiiag.org/hdoa/) or free e-mail subscriptions are available at [www.usda.gov/sub-forms.htm](http://www.usda.gov/sub-forms.htm)

## MARKET ANALYSIS & NEWS BRANCH

The Market Analysis and News Branch (MANB) is responsible for enhancing the effectiveness and efficiency of agriculture by conducting economic, market and business feasibility research, evaluating the efficiency and effectiveness of market development programs, collecting data on agricultural commodity shipments, supply and wholesale prices and disseminating information through various media. Through these functions, MANB assists the state's agricultural industry in its development and expansion efforts and provides sound input for program planning and policy making within and outside the department.

MANB is tasked with two primary, yet distinct functions. The first involves research on all market aspects of agricultural products. Towards this end, MANB conducts some ten research or program evaluation studies annually. The second function is carrying out the market news program, jointly with the Market News Branch of the Agricultural Marketing Service, United States Department of Agriculture. This program provides up-to-date information on current market conditions – wholesale market prices throughout the state, movement of fresh fruits and vegetables, and supply and demand information on different products.

### Activities and accomplishments for FY 2006 included the following:

- ◆ Completed statewide compilation of Hawaii's fresh fruit and vegetable imports for 2005 and established a modified method of estimating Hawaii's imports (from all sources) of fresh fruits and vegetables.
- ◆ Completed a report on Hawaii's fresh fruit and vegetable imports by each of the state's four counties in 2005 and the re-estimation, based on new data and estimation method, of Hawaii's fresh fruit and vegetable imports from 2001 through 2004.
- ◆ Updated, due to industry demand, a research study which analyzes the effect of structural change on farm operations and growth of Hawaii's coffee industry, using new data.



- ◆ Continued to provide specialized data, research papers, sources of information, market/business conditions of commodities or agricultural related services to business owners, agricultural trade association and researchers engaged in Hawaii's agriculture.
- ◆ Continued to collaborate with the National Agricultural Statistics Service (NASS) and the National Association of States Department of Agriculture (NASDA) in enhancing the data collection efforts of the MANB.
- ◆ Continued to collect, compile, publish and disseminate weekly reports on a timely basis. The reports include:
  - Honolulu Wholesale Prices of Fresh Fruits and Vegetables;
  - Neighbor Island Wholesale Prices of Fresh Fruits and Vegetables;
  - Weekly Honolulu Arrivals of Fresh Fruits and Vegetables;
  - Honolulu Barge Arrivals; and
  - Honolulu Wholesale Egg Market.



**AGRICULTURAL LOAN DIVISION**



**Dean Matsukawa**  
*Administrator*

**The Agricultural Loan Division administers the Agricultural Loan Program and Aquaculture Loan Program. The primary objective is to promote the development of the state’s economy by stimulating, facilitating, and granting loans to qualified farmers, aquaculturists and food manufacturers.**

The division also serves as a safety net for agriculture and aquaculture by providing loans in times of emergency. The program strives to work with private lenders through participation loans and providing loan guaranties. The program, as a lender of last resort, also provides direct financial assistance to those that are unable to obtain financing from conventional sources. The program is self-sufficient, operating through interest collections, and is able to achieve its objective of growth, development and preservation of the agricultural and aquacultural industries without requiring any taxpayer funding. Administration of the program requires a balance between providing financial assistance while ensuring that loans have a reasonable expectation of repayment.

The Agricultural Loan Division is committed to the growth, development, and well being of the agricultural and aquacultural industries in Hawaii.

In FY 06, the division provided 40 loans totaling \$2,001,200 in low-interest financing for Hawaii farmers. The majority of the loans were emergency loans to help farmers recover from the heavy rains that affected the state from late February to early April. The state’s early activation of the its emergency loan program resulted in strong demand for operating loans to assist the farms in their recovery. The program featured a low-interest rate and no credit denials for loans \$50,000 and under to expedite the loan process. The division, in order to process the emergency loans on a timely basis, needed to utilize all of its personnel, including the neighbor island staff as the bulk of the loan requests originated from farms on Oahu.

Agriculture and aquaculture industries continue to face many challenges such as global competition, increasing costs, increasing regulations and adverse weather (droughts, floods and wind). Agriculture can no longer only adapt or react to these changes/situations but must become proactive, visionary and embrace these new realities. As the agricultural and aquacultural industries evolve, the division must also constantly adapt to the new markets, technologies and needs of the farm community.

The division’s mission is economic development and will continue to support the agriculture and aquaculture industries. The division will continue its outreach to increase awareness of the program and will continue to serve as a resource and safety net to these industries.



***The Agricultural Loan Division provided financing to enable Henry and Penny Hattal to relocate and develop their orchid nursery operation in Waianae. The Hattals have constructed a shadehouse and are starting to fill the facility with orchid plants.***



## Agricultural Loan Division

Major activities and accomplishments of the program for FY 2006 were as follows:

- ◆ Approved 40 loans for about \$2 million during FY 06. The loans helped farmers retain or increase farm acreage by 872 acres. The division's loans also helped to preserve or increase employment for 142 farm employees.
- ◆ The division's portfolio as of June 30, 2006 was valued at \$18 million with 186 loans booked. The loan breakdown by county is as follows:
  1. Hawaii County \$7.7 million
  2. Oahu County \$4.4 million
  3. Maui County \$3.5 million
  4. Kauai County \$2.3 million
- ◆ Collected \$4.4 million in FY 06. Of the amount collected \$920,164 was in interest and \$3.456 million was in principal.

- ◆ Modified 11 loans during FY 06 for a variety of purposes to assist farmers including restructuring and re-amortizing of payments, extensions of disbursements dates, substitute and releases of collateral and releases of guarantors.
- ◆ Approved \$990,000 participation loan with a private lender to provide assistance for a dairy operation. The participation loan is designed to benefit the operation by providing funds that would be above the state's direct loan limits while providing a blended interest rate that improved the operation's cash flow.
- ◆ Activated Emergency Loan program to assist qualified farmers recover from heavy rains and flooding which occurred throughout the state from February through April.

Charts depicting loan distribution may be found on page 56.

***Below: Ho Ho and Malia Chang's farm in Waianae was damaged by continuous rains and flooding that occurred in early 2006. With the assistance of an emergency loan, the Changs were able to replant a field of chives.***





## AGRICULTURAL RESOURCE MANAGEMENT DIVISION



**Brian Kau, P.E.**  
*Administrator/  
Chief Engineer*

**The Agricultural Resource Management Division works to ensure that the state has adequate and reliable sources of agricultural water, farmland, infrastructure for farming, and agricultural-related processing facilities. The division provides administrative oversight over state agricultural park lots, processing facilities, and several irrigation systems statewide.**

**By maintaining and operating abandoned plantation irrigation systems, the division supports and encourages the development and expansion of diversified agriculture on former mono-crop plantation lands.**

### **Activities for FY 2006 included the following:**

The past fiscal year was a landmark year for the irrigation program. This spring, all the existing, individual, administrative rules governing the irrigation systems were repealed and replaced with a single unified chapter governing all irrigation systems owned by the Hawaii Department of Agriculture. The new rules took over two years to complete as the department held over a dozen meetings with key stakeholders and several public hearings to receive input and revise previous drafts. Two of these meetings had direct, live interaction among representatives of the irrigation systems that allowed them to share their concerns with farmers from other islands and propose solutions to continue working together for the betterment of diversified agriculture. The consolidated rules will provide consistency throughout all of the systems and a simplified fee structure for meter installations, irrigation water delivery rates, etc. Also, the new chapter will govern any future irrigation systems that we receive or construct.

Many of Hawaii's farmers experienced extremely wet conditions in the second half of the fiscal year. For nearly seven weeks between mid-February and early April 2006, much of the state had a highly unusual, extended wet period. The Waimanalo area received 150 percent of normal annual rainfall in just seven weeks. The saturated ground and continuing rainfall caused widespread flooding and crop damage throughout the farming community.



***Emergency Breach of the  
Kailua Reservoir –  
Waimanalo, Oahu***



However, the opposite condition occurred from the beginning of April through the end of the fiscal year and forecasts indicate a dry summer and possibly drier than normal winter, causing concern for the availability of water to irrigate various crops and commodities. A rapidly falling reservoir coupled with the predicted weather led the Waimanalo Irrigation System to declare a Phase III, mandatory water conservation measure, effective July 7, 2006. The declaration requires a cutback of 30 percent of monthly average consumption in an attempt to prolong irrigation water service to farmers until the return of normal rainfall patterns.

The new non-agricultural park lands program continues to progress. This year, additional amendments were added to the statutes to allow the program to function correctly. In addition, we reviewed and inspected the Big Island and Molokai leases held by farmers identified as bona fide and created a preliminary transfer list of these tenants. We hope to complete the islands of Oahu, Maui, and Kauai by the end of the calendar year. Staff is also working to complete the administrative rules that will govern the program. A first draft has been completed and we anticipate beginning the approval process sometime in the fall. Also, an agreement is in the works with the Department of Land and Natural Resources for the temporary management of transferred parcels in the event that positions within HDOA are not staffed by the transfer date.

FY 2006 continues the successful trend of the division securing partnerships for its programs and goals. We continue to participate in partnerships with the Natural Resources Conservation Service, U.S. Army Corps of Engineers, U.S. Department of the Interior-Bureau of Reclamation, and State of Hawaii Department of Defense-Civil Defense Division. This year, the department has received more than \$4 million in federal grant funding that has been or will be applied to the renovation of our irrigation infrastructure.

Heavy rainfall in the months of March and April severely impacted several reservoirs in the State of Hawaii, including the department's decommissioned Kailua Reservoir in Waimanalo. A localized collapse of the reservoir's outlet pipe caused a sink hole, approximately 20 feet in diameter and 20 feet deep, to develop on the crest of the dam, jeopardizing the structural integrity of the reservoir. During two separate storm events, the department determined that an uncontrolled breach of the reservoir was possible and thus called for emergency evacuations of residents downstream of the reservoir. The extremely hazardous condition of the dam prompted the Governor to issue an Emergency Proclamation on April 24, 2006 to protect public health, safety, and welfare. The proclamation allowed the department and the Hawaii National Guard to team up and immediately address this



***Grant Schule displays organically grown papaya from Kumu Farms, which is located in the Molokai Ag Park.***

dangerous condition in order to reduce the possibility of a disaster. Royal Contracting Company (RCC) was contracted by Civil Defense to slip-line the deteriorated outlet pipe and repair the sinkhole. The department had RCC create a 12-foot wide breach with 1:1 horizontal to vertical slopes in the reservoir's dam embankment. Since then, the contractor has restored a heavily eroded area downstream of the outlet pipe and installed interim erosion control measures to contain sediment from entering the stream. The department continues to work with the contractor and a civil engineering firm to widen the existing breach, reduce stream velocities, and provide more stable and permanent erosion control measures. This work is scheduled to be completed by the end of the year and will provide a safer environment for residents immediately downstream of the reservoir.

After nearly 15 years of financial hardship, the Paauilo Rendering Plant looks to revive the Big Island's beef industry. Since taking over in 2003, Hawaii Beef Producers, LLC (HBP) has worked with the department to expand and develop the facilities into a full-scale beef processing operation. Modifications to the facility will allow the rendering plant to fully process animal waste into useful byproducts and eliminate the need to dispose of these byproducts in landfills. Byproducts such as tripe, hearts, and livers, which are currently discarded, will be harvested. In addition, higher grades of cowhide will be generated and marketed internationally, and raw ingredients will be extracted to develop bio-diesel fuel. All of HBP's products are 100 percent natural, grass-fed beef which is part of an expanding natural foods market. Hawaii's climate allows for year-round grazing which is ideal for the natural grass-fed beef industry. HBP has received cattle from more than 250 active independent ranching operations on the island of Hawaii. In the future, Kukaiau Cattle Company is



projected to be the largest supplier with guaranteed delivery contracts for high quality fed cattle cows and premium grass finished cattle. Renovations to the existing facility are nearing design completion and construction is scheduled to begin early next year.

Construction of the fourth and final phase of irrigation flume repairs/replacement in the Lower Hamakua Ditch (LHD) watershed district is underway. This phase of work will improve a total of 11 flumes and maximize the amount of irrigation water captured in the system. Seven of the existing flumes will be demolished and replaced with high density polyethylene (HDPE) pipe, two will be replaced with redwood flumes, and remaining two metal flumes will be cleaned and painted with a minimum of two layers of protective coating. A notice to proceed was issued on August 21, 2006 and construction is scheduled for completion by April of next year. Upon completion, the agricultural community will have a more reliable source of irrigation water with fewer interruptions. The department is eager and excited to see diversified agriculture prosper and foresees the LHD region as a major contributor to the state's agricultural economy in the near future.

The state agricultural (ag) park program continues to reach out to qualified farmers who are interested in becoming a lessee under this program. During fiscal year 2006, a total of 14 lots in the Waianae, Pahoa, Kalaeloa and Kekaha Ag Parks were offered to interested farmers. During that disposition, the program identified five qualified farmers who will receive state agricultural leases for their operations. The new lessees are experienced farmers who are engaged in the production of nursery plants, the division placed five qualified farmers in the program through lease assignments.



**Grayson Inouye, President of Pacific Floral Exchange, an anthurium farm in the Pahoa Ag Park.**

This year, we are proud to introduce three lessees in the ag park program whose successes speak to the value of cooperation between the public and private sectors.

Sunrise Capital, Inc. successfully purchased the assets of Ceatech USA, Inc. (Controlled Environment Aquaculture Technology), on September 30, 2005, and acquired the leasehold interest in 18 of 19 farmlots in the Kekaha Ag Park. Sunrise Capital has assembled a team to produce high health white shrimp brood stock for sale and distribution to commercial aquaculturalists, as well as grow the brood stock for retail sales. The aquaculture ponds have been cleaned and disinfected with operations restored in August 2006. In addition to the approximately 143 acres within the ag park, Sunrise has acquired interest in 433 acres of former Kekaha Sugar Company lands across the highway from the ag park for future expansion and a hatchery site leased from the Department of Land and Natural Resources and processing plant in Hanapepe.

Kumu Farms is located on the island of Molokai, and is one of the inaugural tenants in the Molokai Ag Park. Established in 1980, Kumu Farms currently specializes in culinary herbs and Sunrise papaya production with over 100 acres under cultivation. Recognizing that the fruit fly infestation in the Hawaiian islands presents a major barrier to export, and with help from the UH-Extension Service, Kumu Farms developed a USDA certified papaya treatment facility in the ag park. Nearly 80 percent of all production is destined for mainland markets. In response to the nation's growing interest in organically grown produce, Kumu Farms has successfully certified nearly 50 percent of their acreage in the ag park, producing "certified organic" culinary herbs and papaya. Despite the very significant challenges of operating on Molokai, Kumu Farms has succeeded by thoughtfully adapting to changing conditions both in the field, transport chain, and marketplace. Kumu Farms and its workforce exemplify the practical ingenuity and hard working values that have helped expand Hawaii's diversified ag sector.

Pacific Floral Exchange, a lessee in the Pahoa Ag Park, began as a small exporter of tropical flowers in 1989. Starting with only five employees, Pacific Floral Exchange quickly grew and shipped more than a million dollars worth of flowers in its first year of operation. Today, with 50 employees and 80 independent growers, Pacific Floral Exchange ships flowers grown on hundreds of acres, including several parcels located in the Pahoa Ag Park. Its success earned Pacific Floral Exchange the 2004 Governor's Exporter of the Year Award. In addition, it was named by Coopers and Lybrand, Pacific Business News and First Hawaiian Bank as one of Hawaii's fastest growing companies, becoming the recipient of the annual Ho'oulu (growing tree) Award in 1997.



**Capital Improvement Projects for FY 2006**

The following projects were completed on the Big Island this year:

- Intake Improvements - construction (Lower Hamakua Ditch)

The following projects are ongoing on the Big Island:

- Phase IV Flume Replacement - construction (Lower Hamakua Ditch)
- Paauilo Distribution Pipeline Improvements Phase 2 - construction (Lower Hamakua Ditch)
- Paauilo Rendering Plant – design
- Waimea Irrigation System Flume Improvements - design
- Honomalino Watershed - planning (South Kona)

The following projects were completed on Maui this year:

- Upcountry Phase III Main Line Extension construction

The following projects are ongoing on Maui:

- Upcountry Kimo Road Lateral - construction
- Upcountry Phase V Main Line Extension - construction
- Upcountry Pulehuiki Lateral – design
- Upcountry Phase VI Main Line Extension - design
- Lower Kula Watershed Project - planning

The following projects are ongoing on Molokai:

- Molokai Irrigation System Reservoir Improvements - design

The following projects are ongoing on Oahu:

- Waiahole Irrigation System Reservoir Improvements - design

The following projects are ongoing on Kauai:

- East Kauai Irrigation System, Flume Replacement - construction
- Kokee Irrigation System Improvements – design

Data on lease dispositions and irrigation systems may be found on pages 57 and 58.



**ANIMAL INDUSTRY DIVISION**



**James Foppoli, Ph.D., DVM**  
*Administrator/  
 State Veterinarian*

The mission of the Animal Industry Division is to protect Hawaii's livestock and poultry industries and public health by preventing disease introductions and detecting and controlling economically important diseases or pests within the state. The division conducts: animal disease surveillance, epidemiology and control; inspection of all animals and birds entering the state; livestock brand registration, voluntary livestock disease certification programs; laboratory diagnostic services; and dog and cat quarantine to reduce the risk of rabies introduction.

Recently, the focus of the division has been animal health emergency management, especially with respect to avian influenza virus. Public health and environmental programs aimed at preventing the introduction of rabies virus and West Nile virus into the state are important ancillary functions.

Hawaii's statuses for State-Federal Cooperative Disease Control Programs during FY 2006:

- ◆ **Brucellosis Free, cattle and swine**
- ◆ **Pseudorabies Free, Stage V**
- ◆ **Bovine Tuberculosis, Accredited Free**

Hawaii is also recognized as free of bluetongue virus and anaplasmosis, and surveillance programs for these diseases are ongoing to insure that the free status is documented and maintained. Hawaii remained free of notifiable foreign animal diseases during FY 2006; however, efforts to strengthen foreign animal disease preparedness continue.

*Right: Animal Quarantine caretaker Harrison Hoe (r) assists Veterinary Medical Officer Dr. Heather Honda, during a routine health examination of a dog in the quarantine veterinary office.*

**RABIES QUARANTINE BRANCH**

Isaac M. Maeda, D.V.M., Program Manager

For the third year in a row, there was a substantial increase in the number of dogs and cats that qualified for direct release at Honolulu International Airport since the Five-day-or-less rabies quarantine program began on June 30, 2006. In FY 06, an unprecedented 8,966 dogs and cats went through the rabies quarantine program with more than 84 percent (approximately 7,547) qualifying for direct airport release after inspection. This represents an approximate 17 percent increase from the 7,653 animals that entered the state in FY 05 and an 87 percent increase from the 4,771 animals that entered Hawaii prior to the start of the Five-day-or-less program in FY 03.

The following are rabies quarantine statistics for cats and dogs arriving between July 1, 2005 and June 30, 2006 (FY 06):

PROGRAM	NUMBER	PERCENT
120-day	600	6.7%
30-Day	152	1.7%
5-Day-Or-Less	667	7.4%
Airport Release	7,547	84.2%
<b>Total</b>	<b>8,966</b>	<b>100%</b>

The Five-day-or-less program relies heavily on staff and computerized databases to monitor and verify information relevant to qualification. Although 7,547 dogs and cats were released at the airport in FY 06, this statistic does not reflect the total number of pet documents processed, as more than 44,000 active records are currently maintained in the system. To increase efficiency and effectively manage the data and processing of Five-day-or-less dogs and cats, the program updated and is in the process of enhancing the computer system.





The dramatic increase in pets entering the state and the increase in dogs and cats qualifying for the Five-day-or-less program substantially increased the workload for the clerical, veterinary, accounting and inspection sections. More time is spent reviewing documents, qualifying pets, processing payments, receiving and inspecting pets and addressing the needs, questions and concerns of the general public.

The veterinary staff expends a considerable amount of time each day contacting pet owners and veterinarians to either verify qualification information or request additional information. It is estimated that up to half of the submitted documentation requires follow up. Clerical, veterinary and inspection personnel also spend a significant amount of time e-mailing and speaking with pet owners on the phone or in person explaining program requirements.

The Livestock Disease Control Branch port veterinarian and livestock inspectors also provide critical support to the program by assisting rabies quarantine veterinary technicians in processing dogs and cats released at the airport seven days a week.

The department updated its website and information brochure dedicated to Hawaii's rabies quarantine program that contains all of the information and forms relating to quarantine and the importation of cats and dogs. Pet owners may access pre-arrival FAVN rabies serological test results and Five-day-or-less quarantine-eligible dates at this HDOA website. Checklists for the Five-day-or-less program are available at the site to assist pet owners of both resident pets and non-resident dogs and cats with preparations to qualify for this reduced quarantine option. Under the Five-day-or-less program, pets may be released at Honolulu International Airport if they complete pre-arrival requirements that include (but are not limited to):

- ◆ Two rabies vaccinations, with the last vaccination administered no more than 12 months prior to arrival if it was a one-year vaccine, or no more than 36 months prior to arrival if it was a three-year vaccine. (The two vaccinations may not be administered within 90 days of each other; and the last vaccine must be administered no less than 90 days prior to the pet's entry into the state)
- ◆ Microchip implantation for identification purposes;
- ◆ OIE-FAVN rabies blood test results with sufficient level of rabies antibodies;
- ◆ 120-day pre-arrival waiting period between the time the lab receives the blood sample and the earliest date the pet may enter the state (the pre-arrival waiting period is necessary due to the long and variable length of rabies incubation, where the virus may hide in an animal before clinical signs of the disease become apparent); and
- ◆ Pet owners must also submit required paperwork more than 10 days before the pet's arrival.



***Quarantine Animal Caretaker Zachary Tom checks the microchip identification number on an arriving dog. The microchip number identifies the pet to the blood test that is required for entry under the Five-day-or-less rabies quarantine program.***

Pet owners that do not submit the required documents have their pets held in quarantine for up to 120 days until all requirements are completed and documents submitted.

Approximately 91 percent of arriving dogs and cats qualified for the Five-Day-or-Less program in FY 06. Furthermore, of those 8,214 pets that qualified for the Five-Day-or-Less program, 7,547 pets (approximately 91 percent) qualified for direct release upon arrival at Honolulu International Airport. In comparison only 6.7 percent (600) of the arriving animals were quarantined for 120 days.

Midway in FY 06, 30-day quarantine was eliminated as a distinct category since animals may qualify for quarantine periods between zero (airport releases) to 120 days under the early arrival provision in the Five-day-or-Less program. Animals previously in the 30-day category are now included within the Five-day-or-Less program as arriving early by 30 days.

The daily population of animals occupying the animal quarantine station at any given time during FY 06 ranged between 248 and 352 animals. The fluctuation in daily animal population at the station was lower and varied between 214 to 313 dogs and cats during FY 05. The average daily population was higher in FY 06 than FY 05.

In addition to rabies exclusion, the quarantine program continues to monitor dogs and cats carefully for ticks exotic to Hawaii. Two species *Dermacentor sp* and *Ixodes sp* were discovered and eliminated from two cats arriving in Hawaii during FY 06. These species have been reported to potentially serve as a vector for Rocky Mountain Spotted Fever, Lyme disease, Tularemia and other rickettsial and bacterial diseases of veterinary and human medical importance. *Rhipicephalus sanguineus*, the brown dog tick, is the only tick established in Hawaii associated with dogs.



## LIVESTOCK DISEASE CONTROL BRANCH

Jason D. Moniz, D.V.M., *Manager*

The Livestock Disease Control Branch prevents, investigates, conducts surveillance, controls and eradicates animal diseases that may have serious economic impacts on the state and nation's livestock and poultry industries, some of which impact public health. The branch inspects animals entering the state and insures compliance with division rules and laws pertaining to the control and eradication of animal diseases.

### ◆ Avian Influenza (AI)

As highly pathogenic Avian Influenza (AI) spread in Southeast Asia, Africa and Europe, Hawaii increased its preparedness and surveillance to AI. Several emergency response training sessions were held for key staff members, a large multi-agency mock scenario was conducted on Oahu, poultry producer information sessions have been held, biosecurity for producers is being stressed, supplies for an emergency response has been purchased and are held in storage, euthanasia and carcass disposal training has occurred and a mass carcass disposal plan is under development. The division has been conducting surveillance of dead and diseased domestic poultry. Microbiologist training and laboratory testing capability have been set up at the Department of Health laboratory for testing birds for AI. To date, no positive tests results have occurred in domestic or wild birds.

### ◆ West Nile Virus (WNV)

The rules and quarantine prohibiting the importation of birds into the state, without pre-entry isolation requirements to prevent WNV entry, remains in place. Birds not meeting entry requirements are refused entry. West Nile virus arrived in the continental U.S. in 1999 and since then it has made its way westward and now affects all states except Hawaii and Alaska. To reduce the risk of WNV entering Hawaii, new poultry and bird import rules were promulgated to disallow susceptible birds and poultry from entering the state without a pre-arrival mosquito-free isolation. In addition, an embargo on the movement of birds and poultry through the U.S. Postal Service continues to prevent entry without inspection. Failure to comply with pre-arrival isolation requirements results in a refusal of entry.

### ◆ Bovine Tuberculosis

#### **Bovine Tuberculosis free status maintained**

The State of Hawaii continues to maintain a "Bovine Tuberculosis Free Status." Bovine tuberculosis (BTB) a chronic, debilitating disease of cattle, bison, goats, cervids and other animals that can also cause a serious disease in humans, is caused by the bacteria *Mycobacterium bovis*.



***LDC branch manager, Dr. Jason Moniz, conducts bovine tuberculosis testing on newly imported bison at Hokukano Ranch in Kona.***

State and federal veterinarians test cattle herds annually and conduct hunter assisted surveillance of wildlife on the east end of Molokai, where bovine tuberculosis has been a recurrent problem for the past 60 years. The last BTB infected cattle herd, located on eastern Molokai, was depopulated without further spread in 1997 and no new cases of BTB in cattle have been found.

A hunter assisted survey for BTB in wildlife began in 1998 on Molokai to monitor the prevalence of infection in axis deer, feral swine, feral goats and mongoose. To date, seven feral swine have been found infected, the most recent from Mapalehu in March 2006. To date, all infected feral swine have been caught at, or adjacent to, Ualapue where the 1997 infected cow was found. The BTB infection appears to be maintaining itself in the feral swine population in and around the Ualapue to Mapalehu area.

To prevent the potential spread of bovine tuberculosis from eastern Molokai, all cattle east of Kamalo are required to have an annual negative BTB test or test negative within 30 days prior to movement out of the area. All herds are in compliance with established testing and movement requirements. In addition, feral swine movement out of areas east of Kamalo has been prohibited by a quarantine.

USDA funds have become available to address the infection foci in wildlife. Increase efforts to hunt and trap the affected area to reduce the feral pig population are underway. Further funding will be sought to possibly fence the affected area for a possible focal depopulation of feral swine in an attempt to eradicate BTB in wildlife in the Ualapue-Mapalehu area.



◆ **Bovine Brucellosis**

**Bovine Brucellosis class free status maintained**

Hawaii has been officially classified free of bovine brucellosis since 1983.

Bovine brucellosis is an infectious disease of cattle, bison and elk caused by the bacteria Brucella abortus. Brucellosis can also infect humans. During the fiscal year, 7,609 cattle were tested for brucellosis. No suspects or reactors were found. Occasional spill over of Brucella suis from infected feral swine and Yersinia enterocolitica will cause cross reactivity on cattle surveillance testing.

◆ **Swine Brucellosis & Pseudorabies  
Hawaii maintains free statuses for Swine Brucellosis and Pseudorabies**

**Brucellosis**

Hawaii retained its free status for swine brucellosis during FY 06.

Brucellosis in swine is caused by the bacteria Brucella suis. Infected swine experience reproductive problems including abortion and infertility. Brucella suis can cause serious infections in humans. No domestic swine herds were found infected in FY 06 and as a result Hawaii maintains its Brucella suis free status.

Feral swine in Kona, Hamakua (Hawaii), Kahakuloa (Maui), Ft. Shafter westward through Waianae, the North Shore and Windward (Oahu) are known to be infected with swine brucellosis. Exposure of domestic swine to infected feral swine and the practice of maintaining transitional herds of mixed feral and domestic swine have been the source of all domestic swine brucellosis infections in the past.

In addition to annual testing of all sows and boars over 6 months of age at slaughter, 25 percent of the herds in the state are randomly selected for testing to determine their brucellosis status. Surveillance for FY 06 included 543 domestic swine, 90 transitional swine and 49 feral swine. Fourteen percent of the feral swine tested were reactors to swine brucellosis.

**Pseudorabies**

Hawaii maintains a free status for pseudorabies in swine.

Pseudorabies (PRV), a viral infection of swine, causes respiratory disease and reproductive failure. Pseudorabies infection of other species (such as dogs) is typically fatal but humans are not susceptible.

Pseudorabies surveillance testing of 540 domestic swine during fiscal year 2006 found no infected domestic swine. Two transitional herds were

determined to be infected. Feral swine on the islands of Hawaii, Maui and Oahu are known to be PRV-infected. Infected feral swine are a constant threat to domestic swine herds. Ninety head of transitional swine and 57 feral swine were tested in FY 06. Eight percent of the transitional swine and 42 percent of the feral swine tested positive. A statewide quarantine order prohibits the commingling of feral and domestic swine as well as inter-island movement of feral swine.

Historically in Hawaii, all herds infected with pseudorabies or swine brucellosis have been transitional herds with exposure to infected feral swine.

◆ **Transmissible Spongiform Encephalopathies  
Scrapie**

Hawaii continues to be recognized as consistent with the USDA Voluntary Scrapie Certification Program Standards.

Scrapie is a transmissible, insidious, neuro-degenerative disease affecting the central nervous system of sheep and goats. Scrapie has not been diagnosed in goat or sheep flocks in Hawaii.

USDA cooperative agreements continued in FY 06 to provide sheep and goat flock owners with educational information, enroll flocks in the status program, conduct surveillance testing on cull and diagnostic animals and provide for some genotype testing. No evidence of infection has ever been found in Hawaii. Change of ownership identification requirements for certain classes of sheep and goats are to be put in place in CY 06 to allow Hawaii to remain consistent with the Scrapie program.

◆ **Bovine Spongiform Encephalopathy (BSE)**

During FY 06 BSE sampling of cattle exhibiting neurological signs, unknown cause of death and those unable to rise continued. There were no positive test results.

◆ **Voluntary Johne's Disease Herd Certification Program (VJDHCP)**

The VJDHCP goal is to implement disease control measures to reduce or eliminate Johne's disease from cattle herds and conduct annual surveillance to verify a herd's status. A USDA cooperative grant was used to conduct Johne's testing of dairy and beef herds, conduct risk assessments, write up individual herd plans and provide outreach during the fiscal year. During FY 06, 3,079 cattle were tested for Johne's disease. Sixteen herds are currently participating in the VJDHCP.



*Livestock inspectors Susan Matsusaka (l) and Aileen Wakayama (r) inspect a shipment of pigeons that arrived via air cargo at Honolulu International Airport.*

◆ **Importation/Exportation of Livestock, Poultry and Other Animals**

An embargo on the movement of poultry and other birds into Hawaii through the U.S. Postal Service implemented in September 2002 remains in place. The embargo remains in place to prevent the entry of West Nile virus, Avian Influenza and other avian diseases from entering the state with infected birds.

Inspected and approved for entry into the state: 18,957 head of livestock; 8,519 poultry and other birds; 779,745 day-old chicks and hatching eggs; 11,863 dogs and cats; and 11,195 other animals.

The branch staff conducted 50 compliance investigations, no citations were issued, 209 written warnings, and 23 animals were refused entry.

**VETERINARY LABORATORY BRANCH**

*Crane H. Hahn, D.V.M., Program Manager*

The Veterinary Laboratory Branch is primarily responsible for providing timely and accurate laboratory diagnosis of animal diseases to support the mission of the Animal Industry Division, including commitments of the Federal-State cooperative programs.

Annually, the laboratory receives more than 20,000 specimens from a wide range of animal species submitted from the livestock and poultry industries, as well as non-profit and other government agencies. These testing services, offered at no cost to the submitting agencies, encompass all phases of laboratory procedures including bacteriology, parasitology, serology, and clinical/anatomical pathology.

All technical staff, including microbiologists and chemist, are certified in one or more diagnostic areas by the National Veterinary Services Laboratories of the U.S. Department of Agriculture (USDA), and perform various laboratory tests to diagnose animal diseases, such as anaplasmosis, brucellosis, pseudorabies, Bluetongue, Johnes' disease, porcine respiratory-reproductive disease, and other infectious diseases important to Hawaii economy. The laboratory also actively participates in Federal-State cooperative programs in the prevention and surveillance of newly emerging infectious diseases, including avian influenza, West Nile viral disease, bovine spongiform encephalopathy and other prion diseases of ruminants.

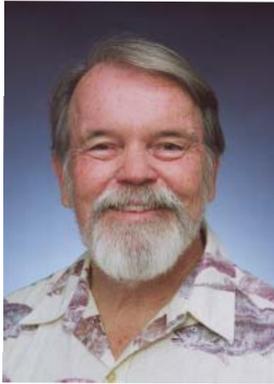
In FY06, the Veterinary Laboratory played a key role in the administration and execution of the Federal-State cooperative agreement for the National Animal Premises Identification System (NAIS) in the State of Hawaii. Two veterinary medical officers and a laboratory staff actively engaged in registering approximately 13 percent of the state's estimated 1,700 premises as part of the initial phase of the NAIS program.

Approximately 20,500 animal specimens, including routine diagnostic and surveillance blood samples were processed and tested during FY 2005-2006 at the laboratory. Among these animal specimens, 79 percent or 16,241 were collected by the activities of Livestock Disease Control Branch, with the remainder submitted by the Animal Quarantine Branch or other government agencies for diagnosis or surveillance of zoonotic diseases important to public health.

A separate data summary illustrating major categories of diagnostic and surveillance activities performed by the Veterinary Laboratory in FY 06 may be found on page 59.



## AQUACULTURE DEVELOPMENT PROGRAM



**John Corbin**  
*Manager*

**The Aquaculture Development Program (ADP) provides essential support services to encourage further growth and diversification of the aquaculture industry. ADP is a planning, development, and problem-solving organization whose goals are to assist in the start-up of production and service businesses, and to contribute to their success. Specific activities include planning and policy formulation, new business development, permit facilitation, marketing assistance, disease diagnosis and prevention assistance, and co-funding of statewide technical extension.**

The mission of ADP is to: prepare and implement state aquaculture plans and policies for the expansion of aquatic farming, and research and technology transfer business; coordinate statewide development activities; and directly assist both public and private sector interests in achieving their aquaculture-related goals, so as to create jobs and diversify the economies of all islands.

Wholesale product value for the industry hit a new record high of \$30 million for calendar 2005 according to department statisticians, and continues to be one of the fastest growing sectors of diversified agriculture.

### Major activities for FY 2006 were:

◆ Continued the joint implementation with the Department of Land and Natural Resources (DLNR) of the amended Chapter 190D, HRS, Ocean and Submerged Lands Leasing law by facilitating permit preparation for three additional aquaculture leases off various islands. Prepared annual joint report to Legislature, with DLNR, on status of the ocean leasing. Made presentation on offshore aquaculture to Humpback Whale Sanctuary Advisory Council. Participated in the on-going planning for establishing a national offshore research center, the Pacific Marine Aquaculture Center, in Hawaii. To honor one offshore aquaculture company, the Governor declared September 27, 2005 as "Kona Kampachi Day."

- ◆ Continued to provide a world-recognized Shrimp Surveillance and Certification Program to the growing shrimp broodstock industry. Held facilitated review of the Program with the industry to identify areas for upgrade and improvement. Established rules for Aquaculture Development Special Fund to implement fee-for-service program.
- ◆ Participated in the Organizing Committee for the Marine Ornamentals 2006 Conference held at Las Vegas, Nevada in February 2006. Served on the Program Committee and as Session Moderators. This international conference is the fourth in a series that originated in Hawaii. Reviewed industry proposals for the seventh year of the Pacific Tropical Ornamental Fish Program. Facilitated a major Japanese investment in large-scale koi farming on Oahu.
- ◆ Assisted with import and export permits for aquatic species by farmers on Oahu, Kauai, Maui and Hawaii.
- ◆ Co-sponsored Stakeholder Summit for the aquaculture industry to develop strategic plan for the industry.
- ◆ Co-sponsored and participated in the Hawaii Aquaculture Association's 2006 Hawaii Aquaculture Conference held in June.
- ◆ Promoted the local consumption of aquaculture products by participating in the Hawaii Lodging, Hospitality and Food Service Expo, State Farm Fair, Made in Hawaii Exposition, Taste of Hawaii Aquaculture and the Sam Choy Poke Contest. Worked with various internet, television, radio and print media to provide background information, place stories and promote the industry.



**Lt. Governor James Aiona proclaimed September 27, 2005 as "Kona Kampachi Day" in recognition of Kona Blue's first commercial ocean harvest of its open ocean farm of Kona Kampachi, a fish prized for sashimi. From left: John Corbin, ADP manager; Neil Anthony Sims, Kona Blue Water Farms; Pat Ross, Sea Engineering; and Lt. Governor Aiona**



***ADP's aquaculture veterinarian Allen Riggs (back) consults with Taro Kodama, President of Kodama Koi Farm, on the health of his valuable Japanese koi. Kodama Koi Farm is the largest online koi auction operating in the United States. ADP provides valuable diagnostic and health verification services, which are critical to the company's success.***

- ◆ Updated the Aquarium Industry Directory. Continued ADP's electronic industry newsletter, *Aquaflashes*, to get out time-sensitive information.
- ◆ Made presentations to the Air Cargo Association, Pew Trust Mariculture Task Force, and international workshop on Socioeconomics in Aquaculture.
- ◆ Participated in Science and Tech Day display, a special tradeshow for visiting Chinese investors, and workshops and tours for the American Veterinary Medical Association conference attendees.
- ◆ After a nationwide search, hired a new state aquaculture veterinarian with experience in both private and public sectors of the Florida aquaculture industry. Provided animal health management services to producers and research organizations statewide, with over 59 farm visits and 340 analyzed case submissions. Contributed Hawaii's aquaculture experience to a national publication reviewing the U.S. industry's application of best management practices.
- ◆ Co-funded statewide technical extension services to the aquaculture industry (with over 3,600 documented incidents of assistance), in cooperation with the UH Sea Grant Extension Service, leveraging more than \$500,000 in matching funds through the project. Also, collaborated with UH on the establishment of an aquaculture coordinator for the University of Hawaii System to gear up capabilities and provided input into aquaculture faculty selection by the College of Tropical Agriculture and Human Resources.
- ◆ Participated in the governing boards and advisory committees of: Pacific Aquaculture and Coastal Resources Center at UH Hilo, Center for Tropical and Subtropical Aquaculture, National Association of State Aquaculture Coordinators, Natural Energy Laboratory of Hawaii Authority (NELHA), Marine and Coastal Zone Management Advisory Group, University of Hawaii Sea Grant College Program, Hawaii Aquaculture Association and The Oceanic Institute's Hatchery Advisory Board.
- ◆ Provided technical reviews of research and development proposals to the UH Sea Grant College Program, U.S. Department of Commerce, U.S. Department of Agriculture, the Pacific Tropical Ornamental Fish Program (PTOFP) and NELHA. Provided reviews of Aquatic Species Import Permits for the department's Plant Quarantine Branch.



## PLANT INDUSTRY DIVISION



**Lyle Wong, Ph.D.**  
*Administrator*

**The Division of Plant Industry consists of three branches, the Pesticides Branch, Plant Quarantine Branch, and Plant Pest Control Branch. Together, the Branches work to protect Hawaii's agricultural industries by preventing the entry and establishment of detrimental insects, weeds and other pests and by assuring the safe and efficient use of pesticides in Hawaii.**

### **PESTICIDES BRANCH**

**Robert A. Boesch, *Manager***

The Pesticide Program regulates the distribution and use of pesticides through a program of licensing pesticide products, testing the competency of restricted-use pesticide applicators, and educating and monitoring pesticides distributors and applicators. This is to ensure the efficient, effective and safe use of pesticides to minimize adverse effects on the environment.

Statistical data on activities of the Pesticides Branch may be found on page 60.

Highlighted activities for the program in FY 2006 were as follows:

#### **Support for Pesticides Programs in Western Pacific**

The U.S. Environmental Protection Agency has requested help from the pesticides program to assist in pesticides program development in territories and possessions of the United States in the Western Pacific, including Guam, the Commonwealth of the Northern Mariana Islands, American Samoa, and Palau. Glenn Sahara has been traveling to these locales to meet with pesticide regulatory officials and train and assist them in conducting compliance monitoring activities such as conducting inspections and collecting samples. Samples are sent to the Chemical Analyses Laboratory in Honolulu for analyses and the results are provided to officials designated by their respective locales and EPA.

The program also trains and provides services such as respirator fit testing and medical monitoring to Western Pacific staff during the annual program workshop in November. These activities are paid for by the U.S. Environmental Protection Agency.

#### **National Plant Board Biotechnology Survey of States**

The U.S. Department of Agriculture's Biotechnology Regulatory Services contracted with the National Plant Board to determine state interest and potential state roles in assisting the Biotechnology Regulatory Services in the review of applications and monitoring the compliance with conditions of terms of rules and permits.

Dr. Lyle Wong, Carol Okada and Bob Boesch participated in three meetings with the National Plant Board Committee. All were held at the U.S. Department of Agriculture's offices in Riverdale, MD. The first meeting on September 13 and 14, 2005 was conducted to inform the National Plant Board Committee about the Biotechnology program to provide some background and develop survey questions. The second meeting was conducted on December 7 and 8, 2005. At this meeting results were compiled and a report drafted. The third was held on January 27, 2006 to present the survey results to the Biotechnology Review Services management. The report on the survey appears on the National Plant Board website.

The participation by the Hawaii Department of Agriculture is important because Hawaii serves as a key seed producing state for corn. While many states have considerably more acreage planted in genetically modified crops, Hawaii's temperate climate throughout the year makes it ideal for seed increase during the winter months, so there is considerably more corn seed research activity here than in other states.

#### **Kauai Coffee and Bananas Statewide Authorized to Use Provado®**

Provado® is a systemic pesticide containing the active ingredient imidacloprid. It is used to control insects with sucking mouthparts. Emergency authorization to use this product was obtained from EPA because of scale pests on Kauai and because bananas statewide are affected by the bunchy top virus, which is spread by aphids. Under the terms of the emergency exemption, reports must be filed with EPA concerning the extent of use, effectiveness of the pesticide in controlling the pest, and any adverse effect from the use of the pesticide. These authorizations are valid for one year.



## PLANT PEST CONTROL BRANCH

Neil Reimer, Ph.D., *Manager (from October 2005)*

The primary function of the Plant Pest Control Branch is to reduce population densities of plant pests that cause significant damage to agriculture and the environment to manageable levels. This is achieved through statewide programs to eradicate or control plant pests, which include destructive insects, mites, snails and slugs, noxious weeds, plant diseases, and any other organisms harmful to plants, by utilizing chemical, mechanical, biological, and integrated control measures. The branch consists of the Biological Control Section and the Chemical/Mechanical Control Section.

Statistical data from the Plant Pest Control Branch may be found on pages 60 and 61.

Some of the activities of the branch during FY 06 included the following:

### New Pest Detection and Identification

Identified 527 samples of insects and other organisms from which 130 specimens were processed and added to the branch's Zoological Reference Collection. The collection now contains approximately 166,200 specimens. In addition, 120 samples of insect specimens and 327 samples of plant diseases intercepted by the Plant Quarantine Branch were identified and 223 calls regarding various pests were received from the general public and processed.

The branch recorded 10 new immigrant insects in Hawaii during FY 06. Eight are plant pests, one is a fortuitous beneficial parasitic wasp, and one is a health concern. These were:

- ◆ **A mealybug**, *Rhizoecus americanus* Hambleton (Hemiptera: Pseudococcidae)  
After receiving a rejection notice from the California Department of Food and Agriculture, HDOA personnel inspected a nursery at Panaewa on the island of Hawaii and collected samples of mealybugs from fishtail palm, *Caryota mitis*. This detection represents a new state record for this species.
- ◆ **A thrips**, *Thrips imaginis* Bagnall (Thysanoptera: Thripidae)  
During surveys to study ants at Haleakala National Park on July 11-14, 2003, specimens of this thrips were collected from litter extractions and beating of pukiawe, *Styphelia tameiameia*, within the park. This collection in Hawaii represents a new U.S. record. The distribution of this thrips includes Australia, New Zealand, New Caledonia, and Fiji. It is known as the "plague thrips" in Australia. Crops, such as apples, pears, tomatoes, roses, and other flowers, are sometimes seriously damaged.
- ◆ **A coconut whitefly**, *Aleurotrachelus atratus* Hempel (Hemiptera: Aleyrodidae)  
Specimens of this whitefly were first found on Maui on coconut tree foliage at Kihei in May 2006. Surveys conducted several months later revealed that this whitefly was widespread in Maui's Central Valley. It has been recorded from coconut and other palms in tropical America, Samoa, and Florida. On Maui, nymphs of this whitefly have been observed to be heavily parasitized by a tiny wasp, tentatively believed to be a species of *Encarsia*.
- ◆ **European paper wasp**, *Polistes dominula* Christ (Hymenoptera: Vespidae)  
Specimens of this wasp were first collected in June 2006 by City and County of Honolulu Parks and Recreation personnel on Oahu after workers were stung as they were trimming trees. This potentially aggressive paper wasp hides its nest in voids and other enclosures, thus increasing the risk for unexpected encounters with human beings. First recorded in North America in 1981, it has rapidly increased its distribution in the United States in the past 20 years. It is the most abundant paper wasp in countries around the Mediterranean, its native region. Its distribution also includes southern Europe, northern Africa, and the Middle East, eastward to China.
- ◆ **Asian citrus psyllid**, *Diaphorina citri* Kuwayama (Hemiptera: Psyllidae)  
Specimens of the Asian citrus psyllid (ACP) were first found in a sample of navel orange foliage submitted by a resident of Waiakea on the Island of Hawaii in May 2006 for advice on an infestation of aphids. Subsequent surveys in the State revealed that ACP infestations were present only in the southeastern
- ◆ **A mealybug**, *Hypogeococcus pungens* Granara de Willink (Hemiptera: Pseudococcidae)  
Specimens of this mealybug were collected from hibiscus at Waimanalo, Oahu, in September 2005. Infestations of this mealybug resemble those of the pink hibiscus mealybug, *Maconellicoccus hirsutus* (Green), but the clusters of *H. pungens* are generally smaller. On hibiscus, terminal shoots were mostly affected by this mealybug.
- ◆ **A mealybug parasitoid**, *Aprostocetus* sp. (Hymenoptera: Eulophidae)  
Specimens of this mealybug parasitoid were reared from an infestation of *Hypogeococcus pungens* Granara de Willink collected from joyweed, a bedding plant, at a retirement housing site in Pawaa in June 2006. This parasitoid does not match other *Aprostocetus* species in the HDOA Insect Reference Collection and is new to the state.



part of East Hawaii in the districts of South Hilo and Puna. Adult psyllids are small (3-4 mm), mottled, brown, winged, jumping insects. Immature psyllids, called nymphs, appear like greenish or dull orange, flattened scales. The host range of the ACP is restricted to citrus and other plants in the family Rutaceae, most favorably mock orange, *Murraya paniculata*, also known as orange jasmine. The ACP is a known vector of citrus greening disease (CGD), also known as Huanglongbing (HLB or yellow dragon disease) in Asia. This disease has devastated citrus trees in Asia, Africa, and Brazil. It causes mottling and yellowing of the veins of citrus leaves and misshapen, green, and bitter-tasting fruit. There is no known cure for this disease and the only option is to destroy infected plants. It is not yet known if CGD is present in Hawaii. Surveys will be initiated and samples collected and sent to a USDA facility at Gastonia in North Carolina for disease analysis.

- ◆ **An armored scale**, *Pseudaulacaspis brimblecombei* Williams (Hemiptera: Diaspididae)  
After receiving information from the California Department of Food and Agriculture about this armored scale being occasionally intercepted on cut protea flowers exported from Hawaii to California since 2003, specimens previously collected at Kula, Maui, in 2000 were reexamined at the UH-CTAHR Insect Diagnostic Clinic. Those specimens were determined to be identical to currently identified *P. brimblecombei* specimens, thus confirming a new State record. Subsequent surveys conducted in Kula in May 2006 resulted in the collection of additional *P. brimblecombei* specimens.
- ◆ **Avocado thrips**, *Scirtothrips perseae* Nakahara (Thysanoptera: Thripidae)  
Specimens of the avocado thrips were collected from the foliage and flowers of avocado, *Persea americana*, at Kula, Maui, in March 2006. Subsequent surveys revealed severe scarring on the fruit of avocado trees that were apparently caused by this thrips. The results of the surveys indicate that this species appears to be restricted to the Upcountry area of Maui. Literature information suggests that the avocado thrips is not suited to high temperatures.
- ◆ **Kelly's citrus thrips**, *Pezothrips kellyanus* (Bagnall) (Thysanoptera: Thripidae). Specimens of this thrips were collected from loquat trees at Kula, Maui, in January 2006. According to the UH-CTAHR Insect Diagnostic Clinic, specimens were previously collected on Maui in 2000. This thrips is known from Australia and New Zealand. In New Zealand, it is mostly found on citrus leaves, flowers, and fruits. Collections have also been made from the flowers of Compositae, *Lycopersicon*, *Brassica*, *Acmena*, and *Camellia*, and the leaves of *Sparmannia africana*.

#### Projects of the Branch's Biological Control Section included the following during FY 2006:

- ◆ **Nettle Caterpillar** [*Darna pallivitta* Moore]  
*D. pallivitta*, after dispersing from its initial infestation site in Panaewa to Waiakea and Hilo in the South Hilo District and to Keaau, Kurtistown, and the Hawaiian Paradise Park (HPP) Subdivision in the Upper Puna District during FY 05, continued to steadily extend its range of infestation. In FY 06, the nettle caterpillar was commonly found in residential areas of Waiakea and Hilo and became widespread in HPP, extending southeastward into the Ainaloa Estates Subdivision. However, it is still confined to the southeastern portion of the Island of Hawaii. Reports of sightings have been made on few occasions in Kona but none have ever been confirmed.

Pest calls regarding this stinging caterpillar increased in mid-July 2005, mostly from HPP. This area is rapidly being developed so substantial numbers of landscaped house lots occur there now. In September, many calls continued to be received from HPP, but also from Waiakea, Waiakea Uka, and Kaumana. A total of 27 were received that month, most as a result of stinging incidents. Light trap counts of adults in HPP made by volunteers suggested some synchrony of the life cycle. The numbers of moths caught at lights were highest in September, following the outbreak of larvae. By November, only a single call was received, regarding the caterpillars.

In a cooperative effort with HDOA-PPC Branch personnel in Hilo, Dr. Matthew Siderhurst (USDA-ARS-PBARC), funded by the Hawaii Invasive Species Committee (HISC), developed a pheromone lure for *D. pallivitta* males. Lures given to Hilo PPC personnel for trials were set out in Kona to try to confirm recent reports of the nettle caterpillar at three different sites. No moths were captured in the traps at any of the sites so its presence in Kona remains unconfirmed.

Rearing of *D. pallivitta* in the Hilo Insectary continued to be a difficult challenge due to the infection of the larvae by a nuclear cytoplasmic polyhedrosis virus. It has become a routine practice to kill off the colony after enough pupae are collected because the infection becomes epidemic in the rearing cages. All supplies and equipment must then be sterilized and the colony restarted using eggs from the emerged moths of the last generation. Nonetheless, the Hilo Insectary has so far been able to keep the HDOA Insect Quarantine Facility (IQF) in Honolulu supplied with larvae as needed for rearing the parasitoid that was introduced from Taiwan.



Exploration for nettle caterpillar natural enemies in Taiwan during October 2004 resulted in the collection of a parasitic wasp, *Aroplectrus dimerus* Lin (Eulophidae) that was found attacking *D. pallivitta* larvae. Host-specificity testing in the IQF was conducted to determine if this potential biological control agent will attack any non-target species, mainly native Hawaiian caterpillar species or species that have been introduced as weed biocontrol agents. The testing was completed and a report of the results is being written for submission to the Board of Agriculture to request the release of this biocontrol agent from quarantine.

Propagation of the parasitoid *A. dimerus* is continuing in the IQF, however, it is greatly dependent on shipments of *D. pallivitta* larvae from the Hilo Insectary. Laboratory conditions appear conducive to the spread of the virus that has plagued the *D. pallivitta* colonies for several years. After rearing the larvae for one generation in the laboratory, the colony becomes badly diseased and propagation stock is needed for further colonization. Thus, supplemental larval shipments are routinely sent from the Big Island, where the virus disease is less prevalent but still an ongoing problem.

- ◆ **Giant Whitefly** [*Aleurodicus dugesii* Cockerell]  
The Giant Whitefly Biocontrol Project was terminated in FY 2006. There were no significant problems of this pest statewide. Although isolated outbreaks were detected in previous years, the parasitic wasp *Idioporus affinis* LaSalle and Polaszek (Hymenoptera: Pteromalidae) always managed to suppress infestations to low levels. The giant whitefly was first detected on Oahu during May 2002, followed by the discovery of *I. affinis* in March 2003 as a fortuitous biological control introduction. This parasitoid was found in association with the giant whitefly as an accidental introduction from California, where it had been purposely introduced from Mexico as a biocontrol agent.
- ◆ **Cardin's Whitefly** [*Metaleurodicus cardini* (Back)]  
Surveys for this whitefly continued in the Hilo area, where it was generally found at low levels. Occasionally, it was observed in moderate numbers at different sites, although never becoming a problem due to the presence of predacious ladybugs and parasitic wasps. It has yet to be detected on any of the other islands. To date, it has not shown itself to be a significant pest on any ornamental plants or crops. Ornamental hosts identified so far include plumeria (*Plumeria* spp.), fiddlewood (*Citharexylum spinosum*), and golden dewdrop (*Duranta erecta*). Fiddlewood seems to be a preferred host, just as it is for the giant whitefly. On crops, it was detected on common guava (*Psidium guajava*), but densities observed in the Panaewa area were too low to have any effect on guava

production. Citrus is the only other known crop host, but this whitefly has not yet been found on this plant in Hawaii.

It appears that this whitefly is under good biological control by the coccinellids *Halmus chalybeus* (Boisduval) and *Nephaspis* spp. and the parasitoid *Encarsia hispida* De Santis, as they suppress the densities of the whitefly nymphs. Survey counts of whitefly nymphs this year indicated that the giant whitefly was much more common wherever *M. cardini* had occurred previously.

- ◆ **Pickleworm** [*Diaphania nitidalis* Cramer]  
The Pickleworm Biocontrol Project was put on hold for the present time in favor of the Erythrina Gall Wasp Biocontrol Project, which was given a higher priority due to the severity of the damage being inflicted on the endemic wiliwili trees as well as on introduced ornamental *Erythrina* species. Another critical consideration was that, based on surveys and discussions with commercial farmers, timely insecticide applications are very effective in controlling the pest. The pickleworm is already well dispersed on all four of the major Hawaiian Islands. A report from Maui indicated that only organic cucurbit growers are still having problems with the pest. A survey of an Oahu farm at Ewa in August 2006 revealed that the cucumber fields were free of pickleworm damage. The grower reported that he was not using any insecticides to control the pickleworm. He firmly believed that his crop rotation practices and physical barriers were keeping the pest out of his plantings. Funds for the USDA (CAPS) Pickleworm Survey Project were received in August 2006. Orders were placed to purchase traps and lures. A statewide survey of this pest will commence as soon as the traps and lures are received.
- ◆ **Glassywinged Sharpshooter** [*Homalodisca coagulata* (Say)]  
An immigrant mymarid parasitic wasp, *Gonatocerus ashmeadi* Girault, played a major role in the suppression of the population of the glassywinged sharpshooter (GWSS) in Hawaii. In all likelihood, *G. ashmeadi* arrived in Hawaii in association within parasitized GWSS eggs on infested host plants that were shipped from the southern United States, most probably California or Florida. The presence of the parasitoid was not apparent when the pest was first detected in early 2004. Heavy infestations were observed on a wide variety of plants and an average of six dispersing adults was consistently caught per yellow sticky card until November 2004. However, beginning in December 2004, the trap counts began to decline to fewer than half as many adults caught per trap. The dramatic decline in GWSS densities continued throughout much of 2005 and, by June 2006, no GWSS was trapped anymore.



Concurrent to the rapid decline of GWSS, the very first evidence indicating the presence of *G. ashmeadi* in Hawaii was recorded in November 2004. Although GWSS parasitization was initially low (20 percent), by April 2005, the rates of parasitization had exceeded 90 percent. Periodic monitoring of GWSS eggs from at least seven locations indicated that 96 percent of 3,383 total eggs sampled from July to November 2005 were heavily parasitized. Subsequently, no parasitization data were generated because no GWSS eggs could be detected in the host habitat.

GPS surveillance, visual inspection of host plants, and egg sampling showed that the GWSS distribution was limited to the leeward side of Oahu. In addition to previously recorded hosts, tropical almond, *Terminalia* sp. (Family Combretaceae) and *Erythrina variegata* (Family Fabaceae) were also found to be infested by the GWSS. Although a small infestation was detected at Heeia in Kaneohe, continuous monitoring of the area indicated that the pest had not spread to other locations in Windward Oahu. Moreover, surveys conducted in February and March 2006 on Kauai and Maui showed that the GWSS had not yet dispersed to those islands.

◆ **Papaya Mealybug** [*Paracoccus marginatus* Williams and Granara de Willink]

The papaya mealybug (PM) was discovered on Oahu for the first time in September 2005 at Laie near the northernmost point of the island. Infestations were observed on papaya and hibiscus plantings. It was learned that the mealybugs were very likely introduced there from a nursery in Waimanalo that provided the hibiscus plants purchased by BYU-Hawaii to spruce up the campus for their Centennial Celebration. A visit to the Waimanalo nursery confirmed this information when PM infestations were found on hibiscus plants. It was disclosed that the nursery obtained some of the infested hibiscus from Maui, where the PM was first detected in Hawaii in May 2004. On Oahu, the PM was subsequently found in Downtown Honolulu and Hawaii Kai. So far, on Oahu, only generalist predators like syrphid larvae, brown lacewings, and ladybugs have been found in association with this mealybug. On Maui, however, a wasp, tentatively identified as *Anagyrus* sp. prob. *loeckii*, has been found to parasitize the papaya mealybug and is exerting some control.

A PM infestation was reported in June 2006 on some mature, fruiting, papaya trees at a Mililani residence in Central Oahu. It may have become established via a hibiscus plant that was purchased by the homeowner from a garden store in Waialeale although he did not recall any infestations on the plant after the purchase. Ornamental plants, including hibiscus, are distributed to garden stores by nurseries in Waimanalo, where the PM is now well established. A follow-up survey of the Mililani infestation disclosed

that the pest had already dispersed into the neighborhood. Heavy infestations were observed on a hedge of hibiscus, a papaya tree, and a rose-flowered jatropha shrub.

Four shipments of parasitic wasps for biocontrol of the PM had been sent in June 2005 from a USDA affiliated laboratory in Puerto Rico to the HDOA Insect Quarantine Facility in Honolulu. Propagation of *Pseudleptomastix mexicana* Noyes and Schauff, one of three species of PM parasitoids, has progressed well and host specificity studies have been initiated following colonization. Rearing of the other two parasitoids, *Acerophagous papayae* Noyes and Schauff and *Anagyrus loeckii* Noyes, was not successful and they failed to colonize. In the lab, *P. mexicana* appeared to be the most dominant of the three encyrtid species. After a while, the host plants for rearing the mealybug was switched from potato sprouts and sweet potato plants, used by the USDA lab, to papaya plants in an attempt to increase host density and parasitoid production.

◆ **Macadamia Felted Coccid** [*Eriococcus ironsidei* Williams]

The macadamia felted coccid (MFC) was first discovered in February 2005 in a macadamia nut orchard at Honomalino in the South Kona District of the island of Hawaii. Initial fears that this pest would spread rapidly and cause crop losses have not been realized. The grower has gained good control over the infestation using horticultural oil that had been tested and recommended by a UH-CTAHR entomologist. An outbreak was occurring in a mauka field of approximately 25 acres when the scale was first detected. Since then, the lower branches of the trees were attacked by boring beetles (probably Scolytidae) and many of the branches died. The manager mentioned that variety 344 (also known as Ka'u) was more susceptible to the MFC and damage seemed worse where canopies were denser. He was not overly concerned about the "biological pruning" of the branches because the trees had been planted too close together and were effectively pruned by the pest. The infestation was brought under good control with spray application of the oil. The MFC has not been much of a problem in other parts of the orchard.

A macadamia nut seedling nursery, which is a part of the business owned by the infested orchard, has been checked regularly by PPC staff personnel for MFC infestations and also to ensure that the plants being sold are sprayed by the nursery employees. No sign of the MFC has ever been observed at the seedling nursery. These plants are being sold to other growers so they present a risk of spreading the MFC to other parts of the island. An insect growth regulator will be tested by the UH-CTAHR researcher when MFC populations are high enough on infested trees in the



orchard. This product may prove to be very beneficial in keeping the seedlings from becoming infested.

- ◆ **Erythrina Gall Wasp** [*Quadrastichus erythrinae* Kim] The erythrina gall wasp (EGW) was first discovered in Hawaii in Honolulu in April 2005 and rapidly dispersed throughout the island of Oahu. Within six months, it had spread statewide and devastated nearly all of the most susceptible species of *Erythrina* trees. The alarming rate at which it spread had researchers both in the government and private sectors scrambling for ways to combat the invader with only limited success using imidacloprid formulations.

The Erythrina Gall Wasp Biocontrol Project was initiated in August 2005 with the planning of an exploration by the branch's Exploratory Entomologist in East Africa in December 2005. Preparation to receive shipments of natural enemies required information on the gall wasp biology and its development on *Erythrina* plants. No life history data was found in scientific literature because this wasp was a newly described species. Thus, studies were initiated in the HDOA Insect Propagation Facility by the EGW project leader and assistant. *Erythrina variegata* was chosen as the host plant to conduct these studies because of its susceptibility to the gall wasp, availability of seeds, and ease of propagation. Seeds were an efficient way to grow uniformly sized potted plants for laboratory work. Scarified seeds germinated in seven days and produced seedlings, six to eight inches tall, in three to four weeks.

Plant pests, mainly mites, thrips, and a fungus disease (powdery mildew), have presented problems during plant propagation. Plants are constantly monitored and routinely culled to eliminate pest infestations. EGW biology studies were also undertaken to determine the relationship with its host plant. Laboratory testing and observations were done to determine what plant parts were attacked and how long the different wasp stages required for development.

The search for EGW natural enemies evolved into a cooperative effort between the University of Hawaii (UH-CTAHR-PEPS) and the Hawaii Department of Agriculture (HDOA). Africa was determined to be the best starting point for the search based on literature information, such as the number of endemic *Erythrina* species in those countries and the presence of *Quadrastichus* species in South Africa. Another decisive factor was the proximity of two islands off the coast of East Africa, Mauritius and Reunion, where initial outbreaks of the EGW were reported. UH-CTAHR researchers selected Kenya, South Africa, and West Africa (Benin, Ghana, and Togo) for their exploration because of their professional contacts in those places.



**Exploratory Entomologist Mohsen Ramadan examining specimens of parasitic wasps he collected in East Africa that are being reared and studied in quarantine as potential biocontrol agents of the erythrina gall wasp.**

HDOA biocontrol practitioners chose to concentrate their search in Tanzania because of its geographical location in East Africa and the highest number of endemic *Erythrina* species in all of Africa. However, the HDOA explorer began his trip in South Africa to check out the report of the presence of some species of *Quadrastichus* and to take advantage of better travel and shipping options. Nevertheless, the highest priority for the HDOA Biocontrol Program is to determine the native origin or range of the target pest species and to collect parasitoids found in association with the specific target species, or those very closely related to it. This strategy gives the best chance of finding biocontrol agents that will be highly specific to the target pest species.

Collaborators of the UH researchers in Africa sent one shipment each of galled *Erythrina* leaves from their respective countries, the first from South Africa during December 2005 and the second from Kenya during January 2006. The HDOA Exploratory Entomologist began his travel in late December 2005, collecting extensively in Tanzania and South Africa, and making a total of six shipments before returning to Honolulu in February 2006. Three UH researchers traveled to South Africa and made four shipments during April 2006. Another UH researcher made collections from Benin, Ghana, and Togo during May and June 2006 and sent back three shipments.

As a result of these explorations, three potentially promising parasitoid species have been colonized in the HDOA Insect Quarantine Facility (IQF) in Honolulu. Specimens have been sent to specialists for species



**Above: Asian citrus psyllid was first identified in Hawaii in May 2006 on the east side of the Big Island.**

determination. This may take quite a while because, like the EGW when it first invaded Taiwan, Singapore, Mauritius, and Reunion in 2004, these parasitic wasps will most likely be found to be unknown species so they will have to be described by specialists and given a species name. One species belongs to the family Eurytomidae and the other two to the family Eulophidae. Each parasitoid will have to undergo host specificity testing in the IQF to determine that it is suitable for release in Hawaii as a biocontrol agent to suppress EGW infestations.

The data collected from the studies must provide assurance that the release will have minimal risk of impact on non-target organisms and native ecosystems in the Hawaiian Islands.

- ◆ **Asian Citrus Psyllid [*Diaphorina citri* Kuwayama]**  
The Asian citrus psyllid (ACP) was found accidentally in May 2006 when a resident of Waiakea, a suburban residential area adjacent to and southwest of Hilo on the Island of Hawaii, submitted a branch from a navel orange tree that was infested with aphids to the HDOA Lanikaula Office for control recommendations.

During microscopic examination of the aphids by PPC Branch personnel, one adult psyllid and some nymphs were found. Since no psyllids occur on citrus in Hawaii, the psyllid was believed to be the ACP on the basis of literature information about its recent invasion in Florida. Transmission of digital photos of the specimens initially, followed by the shipment of mounted specimens to the USDA Systematic Entomology Laboratory in Beltsville, Maryland, confirmed the identification as *D. citri*.

The association of the ACP as the primary vector of citrus greening disease (CGD), known in Asia as Huanglongbing (HLB), resulted in the immediate shipment of a sample of chlorotic foliage from the infested tree at the

Waiakea residence to the National Plant Germplasm and Biotechnology Laboratory in Beltsville, MD. The results were negative for CGD, caused by the bacterium *Liberibacter asiaticus*. However, only one citrus foliage sample has been sent to the USDA lab for detection of the bacterial DNA. Funds are being sought to ship more samples for diagnosis.

By the end of May 2006, surveys of East Hawaii had been made from Waimea to South Point Road by a joint effort of HDOA personnel (PQ and PPC Branches) and USDA-APHIS-PPQ personnel stationed in Hilo. The ACP distribution on the Big Island was determined to be extend from the original detection site in Waiakea north to Papaikou, southeast to Kalapana, and southwest to Glenwood and Ainahou Ranch (within Hawaii Volcanoes National Park).

Island-wide surveys for the psyllid continued through June. Preliminary surveys of all districts except North Kona for the ACP were completed with negative results. Surveys focused on mock orange, *Murraya paniculata* (also known as orange jasmine), because it is the preferred host of the ACP, and on residential citrus plantings because of limited commercial plantings in Hawaii. No ACP was detected during cursory surveys in West Hawaii. A GIS map has been generated by the Hilo PPC staff to show its range of establishment.

Samples of mock orange foliage infested with psyllid nymphs have been collected from several sites around Hilo to hold for parasitoid emergence. None had been recovered by the end of June. Some ladybird beetles, including *Halmus chalybeus* (Boisduval), *Olla v-nigrum* (Mulsant), and *Coccinella septempunctata* L., have been observed in association with the ACP nymphs.

- ◆ **Ivy Gourd [*Coccinia grandis* (L.) Voigt]**  
Propagation of the ivy gourd gall weevil, *Acythopeus burkhartorum* O'Brien, was terminated at the end of September 2005. The final two releases, consisting of 20 and 126 adults, were made on September 26 & 27, respectively, in Waimanalo along Kalaniana'ole Highway near Sea Life Park.

Propagation and establishment of this ivy gourd biocontrol agent has experienced difficulties because of its long life cycle, need for shady conditions, and probable field predation by ants and birds. Establishment had been spotty and, despite limited success at some sites, may now be in doubt.

Fortunately, the ivy gourd vine borer and ivy gourd leafmining weevil are well established and widespread on Oahu, as well as in Kailua-Kona on the Big Island. They are having significant impacts in suppressing ivy gourd population densities. Ivy gourd is now commonly observed only in localities, such as Waimanalo, Kahuku, and Waialua on Oahu, where the microclimate



is most favorable for its proliferation. It is very rarely seen in drier localities on the leeward side of Oahu, such as on the slopes of Punchbowl Crater, where it was once the dominant vegetation, shrouding all of the other plants, including many invasive weeds.

◆ **Miconia** [*Miconia calvescens* DC]

Due to its aggressive, invasive nature, miconia continues to be a major threat to ecosystems in the Hawaiian Islands, and exploration for, and research to utilize, other biological control agents continue to be ongoing projects.

In 1997, Plant Pathologist Robert Barreto of the University of Viçosa, Viçosa, Brazil, identified a foliar nematode on miconia in Brazil and Costa Rica. This newly described nematode, *Ditylenchus gallaeformis*, causes severe leaf distortion and galling and was proposed by Dr. Barreto as a potentially good biocontrol agent. In March 2006, nematode galls collected in Brazil were shipped to the HDOA Plant Pathogen Quarantine Facility (PPQF) for host range testing and a colony has been established. However, infection of this nematode onto miconia plants in the quarantine facility has been painstakingly slow, prompting Dr. Barreto to conduct a reassessment of the parasitism of the nematode to the Hawaiian miconia biotype. He is collaborating with Dr. Tracy Johnson of the USDA Forest Service Quarantine Facility at Hawaii Volcanoes National Park on the island of Hawaii to test the nematode in Costa Rica, where the miconia biotype more closely matches the biotype in Hawaii. A graduate student was hired to isolate the nematode in Costa Rica and to determine its pathogenicity to the Hawaiian miconia biotype. Shipments of the nematode and another fungal pathogen, *Coccidiella miconiae*, on miconia to the PPQF in Honolulu are scheduled for August 2006. Meanwhile, the biocontrol fungal pathogen *Colletotrichum gloeosporioides* f. sp. *miconiae* continues to be active in the wet Onomea area of East Hawaii and may be keeping miconia plants from becoming the dominant vegetation in that locality.

◆ **Fireweed** [*Senecio madagascariensis* Poirét]

The colonies of the two very promising, potential biocontrol agents of fireweed, *Secusio extensa* (Butler), an arctiid moth, and *Sphenella austrina* Munro, a tephritid fly, have died out in the HDOA Insect Quarantine Facility. The probable cause of the demise of both colonies was a decline in host plant suitability as a result of heavy aphid infestations and severe damage.

A third highly promising agent, *Nyctemera apicalis*, an arctiid moth, is being reared successfully and is undergoing host range testing. The first two species had been collected in Madagascar and South Africa, respectively, during an exploration for fireweed natural enemies in 1999. The third species was collected

more recently in South Africa during a second fireweed exploration in 2005.

The loss of the colonies of the first two agents was very unfortunate because host specificity studies were completed for the first species and nearing completion for the second. Both species are believed to be highly suitable for release in the Hawaiian Islands to suppress fireweed infestations, which are mainly found in pastures and wayside areas on Hawaii and Maui. Although this setback will delay the anticipated releases of *S. extensa* and *S. austrina*, which are eagerly being awaited by the cattle industry, it may have been a blessing in disguise because those insects were originally collected in 1999 and seven years of rearing in quarantine has very likely resulted in inbreeding. Plans are being made for new collections in Africa.

◆ **Maile Pilau** [*Paederia foetida* L.]

The Skunk Vine Biocontrol Project is a collaborative effort between the HDOA Plant Pest Control Branch and the USDA-ARS Invasive Plant Research Laboratory (IPRL) in Ft. Lauderdale, Florida. During FY 06, IPRL researchers informed the PPC Branch that a new IPRL quarantine facility was being built and that this activity would delay their efforts to collect and ship natural enemies of skunk vine (maile pilau) from Nepal and Thailand. Also, political unrest in Nepal has impacted the greatly anticipated collection and shipment of a highly promising metallic green, leaf-feeding chrysomelid beetle to the HDOA Insect Quarantine Facility for colonization and testing. The larvae of this beetle also feed on the foliage. Studies of another chrysomelid beetle, whose larvae feed on the roots, are still being conducted at Kyushu University in Fukuoka, Japan.

◆ **Banana Poka** [*Passiflora tarminiana* Coppens & Barney, sp.nov. (formerly *P. mollissima*)]

Personnel of the Plant Pathology Unit and the DLNR's Maui forester collaborated on two augmentation releases of the banana poka biocontrol pathogen *Septoria passiflorae* on Maui. The first release was made in the Kula Forest Reserve and the other at Poli Poli State Park. In order to obtain a culture of *S. passiflorae*, infected material was collected from roadside banana poka and sent to the Plant Pathogen Quarantine Facility (PPQF) in Honolulu, where the fungus was isolated. The *Septoria* isolate was then tested for pathogenicity. For each release, 200 culture plates were prepared in the PPQF and taken to the Kahului Biocontrol Lab for preparation. The inoculating procedure called for a solution of 2 percent sucrose and 0.5 percent gelatin with *Septoria* fungus spores at a concentration of  $1 \times 10^6$  spores per ml. This solution gives the fungal spores a boost in the germination and the infection process. Approximately 5 gallons of spore solution was prepared and sprayed on each occasion.



The Kula site was a follow-up release because the effects of previous fungal releases had diminished as a result of dry weather conditions that plagued the area for several years. During recent surveys of forests on Maui, new banana poka infestation sites have been identified, including the one at Poli Poli. The fungus had apparently not reached these sites because its dispersal requires wind and rain, which typically flow up the mountain from the plains below. Infestations that are laterally adjacent to the infected sites have remained free of the disease. Several months after the fungus was sprayed at Poli Poli, the disease was observed at that site and in the adjacent down-wind areas as well. This project has shown that some fungi may require a little manipulation to expand their range to be more effective in their role as biocontrol agents.

**Projects of the Branch's Chemical/Mechanical Control Section included the following during the FY 2006:**

- ◆ **Little Fire Ant** [*Wasmannia auropunctata* (Roger)]  
Personnel of the Chemical/Mechanical (C/M) Control Section continued to treat infestations of the little fire ant (LFA) on the Islands of Kauai and Hawaii. On the Big Island of Hawaii, CM staff assisted nurserymen in the detection of LFA and trained nursery personnel to detect and treat infested property. On Kauai, staff conducted quarterly monitoring at the one infested site on the island in collaboration with personnel from the Kauai Invasive Species Committee (KISC). Chemical trials were conducted jointly with UH-CTAHR-PEPS researchers to find effective insecticides for use at various LFA infestation sites, including plant nurseries, residences, golf courses, pastures, and fruit and nut orchards.
- ◆ **Coqui Frog** [*Eleutherodactylus coqui* Thomas].  
Coqui frog control efforts and sprayer loan programs continued on the islands of Hawaii, Maui, Oahu, and Kauai. Community groups, plant nurseries, and private individuals were allowed to borrow spray equipment from the HDOA at no charge on these islands. On the Island of Kauai, CM staff worked with members of KISC to prepare the one wild coqui infested site for chemical treatment. Ground and trail clearing was initiated to enhance access for personnel and to create less habitable environments for the coqui in designated areas. This also forced the frogs into green islands where treatment could be concentrated. HDOA, KISC and private agencies contributed to funding for chemicals and equipment.

Because of the concerted group efforts, the frog population diminished to lower levels than those observed the previous year. This assessment was

based on the decrease in male frog vocalizations. HDOA personnel assisted the Oahu Invasive Species Committee (OISC) and the U.S. Army, with surveys at the one wild population on Oahu. HDOA participated in night surveys for the frogs and OISC sprayed infested locations during the day.

These efforts have decreased frog populations to a handful of frogs in a couple of locations in what was once a heavily infested fifteen acre site. HDOA, OISC, and DLNR monitored and treated Oahu commercial nurseries for coqui frogs. The nursery staff also received training for coqui frog control by these groups. Frog populations have been eliminated at two of the three infested nurseries and have declined significantly at the third nursery due to these collaborative efforts.

- ◆ **Erythrina Gall Wasp** (EGW) [*Quadrastichus erythrinae* Kim]. C/M personnel collaborated with UH-CTAHR and DLNR in chemical trials of systemic insecticides on native wiliwili (*Erythrina sandwicensis*) for use against the EGW. These treatments are demonstrating some effectiveness but are still ongoing.
- ◆ **Banana Bunchy Top Virus** (BBTV)  
Containment and management practices for the banana bunchy top virus (BBTV) continued on the Islands of Hawaii, Kauai, and Maui, with limited chemical control work on commercial farms by HDOA personnel. On Oahu, HDOA personnel assisted commercial farmers in detecting and providing counseling on management of the disease.
- ◆ **Fireweed** [*Senecio madagascariensis* Poir.]  
Fireweed infestations on the Islands of Kauai and Oahu are contained. Personnel on both islands managed the sites and have no new plants since November 2005. Previously, this invasive weed had infested two acres on Kauai and about seven acres on Oahu.  
  
Increased communication between the Hawaii Department of Transportation (HDOT) and HDOA has resulted in a decline in the use of carpet grass seeds for HDOT roadside landscaping projects on Oahu. In previous years, fireweed emerged at several locations after carpet grass seeds, produced in Australia, were incorporated into hydromulch material to seed bare lands along roadways. Surveys were continued for the detection of new infestations of fireweed on Kauai, Oahu, Lanai, and Molokai.
- ◆ **Fountaingrass** [*Pennisetum setaceum* (Forssk.) Chiov.]  
Collaborative work was conducted by state, county, federal, and private sector agencies to detect and remove fountaingrass on Kauai, Oahu, and Lanai. Populations of plants discovered in the surveys were removed.



- ◆ **Long Thorn Kiawe** [*Prosopis juliflora* (Sw.) DC]  
Control efforts continued on Kauai and Oahu to remove long thorn kiawe (LTK) from shoreline areas. The work on Kauai was a cooperative effort with the Kauai Invasive Species Committee and the U.S. Navy's Pacific Missile Range Facility. On Oahu, responsible agencies such as Hawaii Department of Transportation – Harbors Division and the University of Hawaii have cleared LTK from properties which fall under their management.
- ◆ **Miscellaneous Noxious Weeds** Chemical or mechanical control of designated noxious weeds continued for gorse (*Ulex europaeus*), miconia (*Miconia calvenscens*), turkeyberry (*Solanum torvum*), and glory bush (*Tibouchina* spp.). Other species such as false kava (*Piper auritum*) and tetrastigma (*Tetrastigma pubinerve*) were controlled in limited areas that were deemed eradicable. The work on false kava and tetrastigma were cooperative efforts with the OISC.
- ◆ **Public Awareness Activities**  
C/M personnel participated in educational outreach programs for public awareness at activities such as the Hawaii County Fair, Maui County Fair, and Kauai County Fair. Topics of the presentations included noxious weeds, little fire ant, nettle caterpillar, and coqui frogs.
- ◆ **Seed Inspection**  
Routine surveys of agricultural and vegetable seed vendors to ensure the quality and proper labeling of seeds sold to consumers were conducted. Examination of seed lots entering the United States from foreign ports was performed in the C/M Control Section Seed Laboratory under an agreement with the U.S. Department of Agriculture, Animal and Plant Health Inspection Service. Seed lots containing prohibited noxious weed seeds or seeds of quarantine status were refused entry into U.S. commerce.

Germination tests were performed on vegetable and agricultural seed lots to ensure that minimum germination standards under the Hawaii Seed Rules were met. Tests were performed in the seed laboratory for Hawaii seed distributors, upon request, to ensure compliance with the Hawaii Seed Rules.



**Noxious Weed Specialist Derek Arakaki conducts germination tests in the Seed Lab to determine if imported seed lots comply with federal and state seed standards.**

#### PLANT QUARANTINE BRANCH

**Carol Okada, Manager** (beginning January 2006)

The function of the branch is to administer the department's plant and non-domestic animal quarantine law by preventing the introduction of invasive species, including pests and diseases into and throughout the state, as well as facilitating the export of Hawaii-grown plant materials to domestic and foreign markets.

This fiscal year marked the beginning of the Hawaii Biosecurity Program which focused on the following three components:

- (1) Improve phytosanitary controls by improving procedures based on:
  - (a) Risk assessments to evaluate high risk commodities;
  - (b) Pre-entry measures to enter into compliance agreements with other states by providing pest-free imports; and
  - (c) Post-entry treatments and procedures to mitigate pest introductions when discovered.
- (2) Reduce the dependence on imports by encouraging and promoting Hawaii-grown products.
- (3) Expand agricultural exports through approved post-harvest treatments of Hawaii-grown crops to add stability and economies of scale for Hawaii growers.



A major step was taken by improving the inspection facilities, capabilities and personnel support on the island of Maui. The Hawaii Department of Transportation with grants from the Federal Aviation Administration have provided funding support to construct a “state of the art” Alien Species Inspection Facility and adjoining cargo building at Kahului Airport. This commitment will go a long way in the prevention of invasive species into our State. With the continued support of our Governor and the 2006 Legislature the department is poised to launch into a comprehensive biosecurity program that will be second to none.

Statistical data on the activities of the Plant Quarantine Branch may be found on page 62.

### **FY 2006 Highlights**

- ◆ The Airport Plant Quarantine Office was notified by Honolulu Police that a snake was sighted in a garage located at a Kuliouou, Oahu property. Inspectors responded to the scene and captured a three-foot-long ball python (*Python regius*).
- ◆ Plant Quarantine Branch (PQB) Inspectors in Honolulu, Oahu retrieved a container with 17 land hermit crabs (*Coenobita clypeatus*) that was removed by Transportation Security Administration screeners from the luggage of a passenger that was en route to Kauai.
- ◆ A dead painted bronzeback snake (*Dendrelaphis pictus*) was found by Maui Builders’ workers while unloading a container of furniture at Wailea, Maui. The specimen was later turned in to U.S. Department of Agriculture inspectors who turned over the carcass to state inspectors.
- ◆ Aloha Airlines contract services employee captured an Indo-Pacific house gecko (*Hemidactylus frenatus*) that was discovered in cargo from Manila, Philippines.
- ◆ A three-foot green iguana (*Iguana iguana*) was caught by a Waimanalo, Oahu resident and turned in to the PQB.
- ◆ A resident reported finding a four-foot-long boa (*Boa constrictor*) in the laundry room area at a Hawaii Kai, Oahu property to PQB-Oahu who later captured the animal, which was coiled behind a bag of rice.
- ◆ Security guards at a Makiki, Oahu condominium captured an African pygmy hedgehog (*Atelerix albiventris*) that was found wandering in the courtyard area of the property and reported the incident to PQB-Oahu who later retrieved the animal. About a week later, a seven-inch Tokay gecko (*Gekko gekko*) was captured at the same location.
- ◆ A golfer from the U.S. mainland reported sighting an 18-inch-long garter snake near the 4<sup>th</sup> hole of the Kapalua Plantation course at Kapalua, Maui. Personnel from PQB-Maui, Department of Land and Natural Resources (DLNR), and Maui Invasive



**Proper handling of a brown treesnake during training session in Guam.**

- Species Committee (MISC) conducted a series of snake searches in the surrounding area including the deployment of traps for a three-week period; however, no snakes were captured or sighted during the response.
- ◆ A U.S. Department of Agriculture technician captured a four-foot iguana in the Kuaokala game management area in Waianae, Oahu. This is the first documented capture of this species in this area.
  - ◆ A recently arrived resident to Maui reported seeing what was described as a snake in the yard of a Lahaina, Maui property. Personnel from PQB-Maui, DLNR, and MISC searched the area and set up traps for a three week period; however, no snakes were sighted or captured during this response.
  - ◆ An albino African pygmy hedgehog was captured by a resident in the garage area at a Pearl City, Oahu property. PQB-Oahu was notified by the resident of the find, and inspectors later took custody of the animal.
  - ◆ A 17-inch albino corn snake (*Elaphe guttata*) was discovered by a resident in the lanai area at a Maunawili, Oahu residence. The resident then contained the snake and reported the matter to state authorities for disposition.
  - ◆ A green iguana was captured in the Waimanalo, Oahu area by a resident who reported the matter to PQB-Oahu. The iguana was later retrieved by state inspectors and safeguarded until shipment out of state.
  - ◆ An employee of a freight forwarding company captured a southern alligator lizard (*Elgaria multicarinatus*) in the landscaped area near Pier 35 at Honolulu Harbor, Oahu and turned in the animal to PQB-Oahu. The animal was later donated to the Panaewa Rainforest Zoo in Hilo, Hawaii.



- ◆ A 10-inch southern alligator lizard was recovered at the Resort Quest Islander on the Beach property in Kapaa, Kauai. The lizard was found inside the pool storage locker and retrieved by PQB-Kauai personnel.
- ◆ PQB-Oahu personnel retrieved a two-foot-long shingleback skink (*Tiliqua regosus*) from the Hawaiian Humane Society, which was earlier captured in Palolo Valley, Oahu and turned in by a resident living in the area.
- ◆ Honolulu police responded to a report of a Cuban Knight Anole (*Anolis equestris*) that was captured in the Kahaluu, Oahu area and notified the PQB-Oahu who then retrieved the animal.
- ◆ Throughout FY 06, PQB-Oahu personnel recovered a total of 13 Madagascar giant day geckos (*Phelsuma madagascarensis grandis*) at three different locations on the island of Oahu. Eleven giant day geckoes came from the Manoa area, and one each from Ewa Beach and Waimanalo areas. The various areas have been surveyed periodically by personnel from PQB-Oahu, DLNR and Oahu Invasive Species Committee.
- ◆ A total of 207 containers of Christmas trees were shipped to Hawaii from Oregon and Washington. In accordance with the Hawaii Department of Agriculture protocol, the Oregon and Washington Departments of Agriculture witnessed the shaking and cleaning of 100 percent of the trees in 76 percent of the containers. The remaining 24 percent of the containers were spot checked by the two mainland agriculture departments. Three containers were found by PQB-Oahu personnel to be infested with male yellow jackets. The contents of these containers were 100 percent inspected by PQB-Oahu personnel and seven yellow jacket queens were found.
- ◆ PQB inspectors submitted 2,058 insect identifications to the PQB entomologist. Of these, 29.3 percent were not known to be established in Hawaii; 36.1 percent were known to be established in Hawaii; and 34.7 percent, the presence in Hawaii of the insect was not known. Based in part on these identifications, the dispositions of these shipments were as follows: 39.4 percent had the pest removed before the commodities were released to the importer; 1.2 percent were refused entry (returned to the port of origin); 37.9 percent were treated before being destroyed; and 11.5 percent were treated and released.
- ◆ During the Kona Risk Assessment, PQB inspectors detected an aphid on mango which was grown in Peru. The aphid was identified as Aphididae: *Greenidea mangifera*; the mango aphid is not known to occur in Hawaii. The *Greenidea* is an Asian genera of aphids which is not known to occur in Central and South America.
- ◆ During the Maui Risk Assessment in August 2005, PQB personnel intercepted a stink bug on strawberry fruit. The stink bug was identified as Pentatomidae: *Halyomorpha halys*; the brown marmorated stink bug is not known to occur in Hawaii
- ◆ During routine inspections, PQB-Kona inspectors intercepted a shipment of bulk chicken mash infested with beetles. The beetles were identified as Curculionidae: *Sutophilus granaries*; Tenebrionidae: *Alphitobius diasperinus*; and Trogositidae: *Lophacateres pusilius*. All of these pests are cosmopolitan.
- ◆ During routine inspections, PQB-Maui personnel intercepted aphids infesting strawberry fruit. The aphids were identified as Aphididae: *Aphis forbesi*; the strawberry root aphid is not known to occur in Hawaii. *A. forbesi* is native to North America and is now found in Europe, Japan, and in parts of South America.
- ◆ During routine inspections, PQB-Oahu personnel intercepted a shipment of raspberry fruits infested with aphids. The aphids were identified as Aphididae: *Amphorophora agathonica*; the Large American raspberry aphid is not known to occur in Hawaii. The species is distributed throughout North America and is a vector of raspberry mosaic viruses such as black raspberry necrosis virus.
- ◆ During routine inspections, PQB-Maui personnel intercepted a shipment of mango fruits infested with a scale. The scale was identified as Diaspididae: *Aulacaspis tubercularis*; the white mango scale is not known to occur in Hawaii. This scale can be a serious pest of mangoes.

#### Brown Tree Snake Rapid Response Training

The U.S. Geological Survey has developed and implemented a rapid response training program in the event of a brown treesnake (BTS) sighting that may occur outside the island of Guam. An initial three-week course, which involves the proper handling of venomous snakes including BTS, search and trapping techniques as well as conducting formal interviews, provides participants with an organized plan of action should a BTS sighting occur. In fiscal year 2006, three additional PQB personnel successfully completed the three-week BTS training course, and six personnel attended a one-week refresher course in Guam. This brings the total number of trained Department personnel to ten (Oahu: 5; Maui: 2; Kauai: 1; and Hawaii: Hilo-1, Kona-1).

#### First Time Insect Interceptions for Plant Quarantine

- ◆ During the Kona Risk Assessment, PQB inspectors detected aphids on raspberries. The aphids were identified as Aphididae: *Amphorophora idaei*. This species is specific to this fruit and is not known to occur in Hawaii.



## QUALITY ASSURANCE DIVISION



**John Ryan, Ph.D.**  
*Administrator*  
*(beginning July 31, 2006)*

The Quality Assurance Division consists of two branches, the **Commodities Branch** and the **Measurement Standards Branch**. The branches provide services and enforce laws that help to improve the market quality of agricultural commodities, promote fair trade and honest business practices, and maintain stability in the dairy industry.

### COMMODITIES BRANCH

**Jeri Kahana, Manager**

The mission of the Commodities Branch is to “Set The Standards” and provide assurance that standardized, high quality, safe, and authentic Hawaii agricultural products can be showcased in Hawaii as well as throughout the world market through a fair and just agricultural business climate.

The Commodities Branch enhances the economic stability of Hawaii’s agricultural industries by maintaining grade standards for locally produced fruits and vegetables, nuts, coffee, flowers and foliage, processed foods and other agricultural products. The branch provides unbiased, professional, and timely service-for-fee grade, condition, and origin certification and food safety audits, to add value and desirability to agricultural products. Under federal-state cooperative agreements, the branch provides federal certification for fresh and processed fruits and vegetables, eggs, seafood and meat, which may not otherwise be available to local clients, as well as state certification for origin and quality of green coffee, and origin of certain products.

The branch provides just, and unbiased enforcement to assure safety and fair business dealings in agricultural products, to protect the agricultural community as well as the general public. The branch administers laws and rules pertaining to fresh fruit, vegetable, coffee, egg labeling and advertising; minimum export quality; licensing of dealers in agricultural products; certificate of ownership

requirements on the movement of agricultural commodities to deter agricultural theft; and sampling and testing of animal feed for label guarantee and adulteration.

The branch’s Milk Control Section regulates and maintains the stability of the dairy industry in the Honolulu and Hawaii milk sheds by licensing producers and distributors of milk, establishing milk production quotas, setting minimum class 1 price paid to dairy producers, and conducting retail milk surveys and inspections. This special-funded section is entirely self-funded through license fees assessed to milk producers and processors.

Listed below are brief overviews of developments that have impacted the branch’s activities. Statistical data for the Commodities Branch may be found on page 63.

- ◆ Inspected and certified more than 2.5 million cases of canned pineapple from Maui Pineapple Company, which continues to receive large federal government contracts and assessed more than \$198,000 in fees.
- ◆ Continued the fee-for-service papaya non-transgenic testing program and established and conducted a new “Identity Preservation Protocol” program for tighter control of non-transgenic papayas that are exported to Japan. More than 3.5 million pounds of papayas were checked and \$46,180 in fees were assessed over the year.
- ◆ Staff attended fresh fruits and vegetables, coffee, eggs and dairy industry meetings and conferences; and meetings for the “Seals of Quality” program.



**Commodities Inspector Gary Kumashiro shows the difference between a fresh Hawaii egg and a mainland egg to kids at the Hawaii State Farm Fair.**



***Measurement Standards inspector Wendell Murakami (I) tests a produce scale for accuracy at a market in Chinatown and explains the procedure to the vendor.***

- ◆ Educational visits were conducted on certificate of ownership requirements for agricultural commodities. Flyers were translated into nine foreign languages and distributed to various farmers and vendors.
- ◆ Hosted supervisory visits by USDA officials from the Poultry Programs, and U.S. Department of Commerce (USDC), National Marine Fisheries Service.
- ◆ Attended meetings with the coffee industry to discuss geographic region origin verification system to ensure that coffee being certified as "Kona" coffee originated within the Kona districts.
- ◆ Staff attended training on ISO 9000, Primuslabs Food Safety audit, USDC, National Marine Fisheries Service Seafood Hazard Analysis and Critical Control Point (HACCP), and Pacmar Seafood HACCP.
- ◆ Branch fee assessments and penalties collected totaled \$736,701; approximately two percent less than last year.

### **MEASUREMENT STANDARDS BRANCH** **William Pierpont, *Manager***

The Measurement Standards Branch works to protect consumers, businesses, and manufacturers from unfair practices, based on a measurement process or subject to a standard of quality. The goal is to minimize losses and inaccuracies due to incorrect or fraudulent commercial measuring equipment, processes, or substandard products.

The Standards and Technical Services Section assures that State measurement Standards conform to national standards. It performs metrological calibration of the enforcement standards used by the Branch and the field standards used by registered service agencies in testing, repairing, and calibrating commercial devices.

The Standards and Trade Practices Enforcement Section has the responsibility of assuring the consumer that transactions involving measuring instruments, labeling, content of packaged commodities, and pricing are accurate and fair to all parties.

Listed below is a brief overview of the branch's activities:

- ◆ The State Metrologist received advanced training and certification from the National Institute of Standards and Technology (NIST).
- ◆ The metrology laboratory received re-certification by the National Institute of Standards and Technology.
- ◆ The metrology laboratory inspected and calibrated 178 mass test standards, 501 mass enforcement standards, and 669 field standards for service agencies conducting business in the State of Hawaii.
- ◆ The metrology laboratory inspected and calibrated three volumetric test standards, three volumetric enforcement standards, and 20 volumetric field standards for service agencies conducting business in the State of Hawaii.
- ◆ The branch received and investigated over 15 odometer complaints. In conjunction with the Attorney General's Office the investigations completed by the branch have led to indictments, arrests, and prosecutions.
- ◆ The compliance rate for stores inspected for price verification was 100 percent.

Statistical data from this branch may be found on page 63.



## AGRIBUSINESS DEVELOPMENT CORPORATION



**Alfredo Lee**  
*Executive Director*

**The Agribusiness Development Corporation (ADC) was established pursuant to Act 264, SLH 1994 to coordinate the development of Hawaii’s agricultural industry and to facilitate its transition from a dual-crop (sugar and pineapple) industry to a diversified, multi-crop and animal industry. More specifically, ADC is responsible for devising means by which arable sugar and pineapple lands and their production infrastructure can be used again by a diversified agricultural industry and for providing marketing assistance that can lead to the development of local, national, and international markets for Hawaii-grown products. For administrative purposes, ADC is attached to the Hawaii Department of Agriculture.**

### **Mission Statement (revised August 30, 2004):**

“The Agribusiness Development Corporation (ADC) is a dynamic vehicle and process to create and to optimize agricultural assets throughout the state for the economic, environmental and social benefit of the people of Hawaii. It is a risk-taking advocate for agriculture with unique powers to assist agricultural business.”

### **Board Members:**

- Teena Rasmussen (Chair)
- Robert Sutherland (Vice-Chair)
- Yukio Kitagawa
- Robert Osgood
- Robert Cooper
- Susan Harada
- Wayne Katayama
- Eric Weinert
- Sandra Lee Kunimoto (Ex-Officio)
- Ted Liu (Ex-Officio), and
- Peter Young (Ex-Officio)

**Right: The heavy rains in March 2006 caused damage to crops, agricultural equipment and infrastructure, including this irrigation water filter station in Kekaha, Kauai.**

**The following are highlights of ADC’s activity during FY 2006:**

### **Kekaha Agricultural Lands**

In September 2005, the U.S. Navy awarded the ADC a \$1.7 million contract to operate and maintain the Kawaiele and Nohili pump stations and the related drainage canals. Besides the daily operations and monitoring of the pump stations, the contract involves maintenance of the canals, roads, and electrical transmission lines. Emergency opening of the drains at PMRF during flooding situations and continuous maintenance of the NPDES permit were also part of the work.

Record rainfall hit Kauai in March of 2006. The rain continued to fall on the island for over 40 consecutive days. ADC worked closely with the farmers and other government agencies to avert a major flooding disaster at the Kekaha town and at the Pacific Missile Range Facility. The large flood-control pumps at the Kawaiele pump station were brought into action. Drains to the oceans were opened as per directions from county Civil Defense. Although there were no major property damages at the town, substantial damages to the crops and the irrigation/drainage systems were reported. Since Kauai was declared a disaster area by President Bush, ADC became eligible to apply for federal assistance on repair and mitigation work on the property. About 75 percent of the estimated \$400,000 work could be reimbursed by FEMA.

The Kaloko Dam failure on March 14, 2006 brought to the forefront the importance of dam and reservoir safety. State emergency funding appropriated to the Department of Land and Natural Resources (DLNR) provided some relief on the cost of preparing inundation maps, Phase I, and Phase II studies on dams statewide. ADC initiated the process of preparing Emergency Action Plans for the Puu Lua, Kitano, and Mana reservoirs. Future projects might include





*The catwalk area at the Kawaele pump station in Kekaha was under water during the record rainfall on Kauai in March 2006.*

appurtenant structure repairs and vegetation removal from dam embankments pending capital improvement project (CIP) funding approval from the legislature.

On May 1, 2006, ADC executed its first 20-year license for approximately 1,175 acres of land at Kekaha to Far West Ag, Inc. (Far West), a diversified agriculture operation. Far West was one of the initial tenants of the property since Kekaha Sugar ceased its operations in 2001. Besides providing contract services to various seed companies, Far West grew melons and other tropical fruits for local consumption.

The ADC Kekaha Committee continued to work on the details of an agreement to be executed between ADC and the Kekaha Agriculture Association (Coop), which would allow the Coop to assume management of the common infrastructure to include the Kokee and Kekaha irrigation ditches, the Mauka and Waiawa hydroelectric plants, the backup generators, wells, main drainage ditches and access roads. ADC has a target to finalize the agreement by the ending of 2006.

ADC continued to receive inquiries for large tracts of agricultural lands on the Mana plain, unfortunately all farmable acreage, with the exception of about 2,000 acres of "mauka" land, have been committed to the current tenants.

### **Waiahole Water System (WWS)**

One of the major events affecting the WWS during this past year was the announcement of Del Monte's plantation closure. Del Monte was a major water user which consumed up to about 25-30 percent of the Kunia Water Coop's total water usage. Geographically, Del Monte plantation is located near the end of the system. Their consistent demand for irrigation water had prevented many million gallons of "overflow" system loss. The WWS will be faced with an economic pinch as well as a water-flow control challenge during this transitional period until new agricultural businesses come in to replace Del Monte.

Another major event was Campbell Estate's listing of its Kunia land holding for sale. The Campbell agricultural land in the Kunia area, including lands under the Del Monte plantation, was divided into nine parcels and a couple of the parcels have already been sold during this past year. It is anticipated that during a transitional period when existing farmers are displaced by new tenants, land would be vacant and little water would be used. This transition could affect the WWS water usage pattern and ditch operations for many years to come.

Anticipating ditch operating challenges in the near future, the ADC board approved the installation of a pump-back system at Reservoir 225. This system would be a similar setup which worked very well at Reservoir 155 located further down stream. When finished, the pump-back system would improve operating efficiency and reduce system overflow loss.

Fortunately for WWS, the March – April severe weather did not cause any major damages to the ditch system. Due to practically no demand for irrigation water, the windward



adjustment gate remained closed so that no windward water was diverted to the leeward side during this rainy period. Water developed in the leeward transmission tunnel over the Waiawa area, also not being used, was classified as “overflow” loss.

One of WWS's priorities to improve system loss following recommendations from the Commission on Water Resource Management was to target the unlined ditch sections of the system. Working with water users, the WWS crew altered the flow on a section of the ditch near Kunia road and totally eliminated about 800 ft. of unlined wing ditch which supplied water to a settling pond during this past year.

Since an easement on the ditch was never issued to the former Oahu Sugar Company by Campbell Estate, ADC initiated contact and obtained approval from the landowner for the issuance of a non-exclusive easement to ADC. The easement would include the ditch, Reservoir 155 and related discharge ditches. Surveying work on the easement has been completed. Similarly, a non-exclusive easement has also being worked out for Reservoir 225 with the Robinson Trust.

#### **Farm and Ranch Land Protection Program**

At its April 26, 2006 meeting, the ADC board of directors approved the establishment of an agricultural land conservation program. More specifically, ADC agreed to become an easement holder for agricultural easements set up under the federal Farm and Ranch Land Protection Program (FRPP) administered by the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS).

In May 2006, ADC and the Hawaii Agriculture Research Center (HARC) executed an option agreement to acquire an agricultural easement over a parcel of land in Kunia under the FRPP. Under this program ADC would apply for a grant with the NRCS covering 50 percent of the appraised development value of the property. Similarly, ADC would apply for a matching grant with the DLNR from funding set aside by the Land Legacy Act. It is also anticipated that the landowner (HARC) would also make in-kind contributions towards the funding of the easement purchase. Once the easement has been acquired, ADC's obligation will be to inspect the property at least annually and to enforce the conservation program. ADC will have about two years to finish the easement acquisition.

#### **East Kauai Irrigation System**

The legislature appropriated \$100,000 for the operation and maintenance of the East Kauai Irrigation System this year. In addition to repairs and maintenance work on deteriorated ditch sections, focus was also placed on maintenance of the reservoir spillways.

Transfer of the irrigation system and the approximately 7,000 acres of state-own agricultural land in the Kalepa area to ADC was temporary put on hold because of environmental concerns and a potential contested case involving water rights.



*The last harvest for Del Monte pineapple in Kunia.*



**Other activities and projects:**

- ◆ **Kauai Tropical Fruit Disinfestation Facility**  
In conjunction with College of Tropical Agriculture and Human Resources (CTAHR), the Kauai Farm Bureau Development Corporation, the County of Kauai and the Kauai Economic Opportunity, ADC worked with a group of farmers towards reopening of the Kauai's Tropical Fruit Disinfestation facility located near the Lihue airport. The planning part of the renovation and rehabilitation project has been completed and ADC would initiate work to have the construction portion of the project completed by December 2006. A total of \$150,000 CIP funding was appropriated by the legislature on this project. The facility will need to be re-certified before treatment could start.
  
- ◆ **Kau Irrigation District**  
ADC continues to work with the County of Hawaii and a group of farmer, ranchers, and landowners in Kau on a potentially very encompassing irrigation project. The farmers have been meeting frequently with the intention to form a water-users cooperative to manage the various irrigation ditch systems in the district. Conceptually, ADC would ask DLNR for the set aside of the state-own irrigation and work out a long-term agreement with the coop.

- ◆ **Tea Project**  
The ADC co-sponsored expansion and renovation of the tea pilot processing plant at the Mealani Experimental Station (Hawaii) was completed in the fall of 2005. The on-going next phase will focus on distribution of tea plant cuttings, processing techniques, and quality standards.
  
- ◆ **Solar Water Pasteurization Demonstrative Project**  
ADC signed an agreement and provided funding to a group of researchers at CTAHR to do a solar water pasteurization demonstration project. Objective of the project was to evaluate the feasibility and operating costs associated with solar water pasteurization technology in remote areas. The demonstrative unit will be assembled and situated on Maui.



*Will Hartzell from Safe Water Systems explains the working mechanisms of the solar water pasteurizer to members of the ADC Board of Directors.*

*The demonstration project is located in the Kula Ag Park on Maui and has been successful at pastuerizing surface irrigation water for use in washing produce in areas where potable water is not available.*