



Aloha! It is a pleasure to present this annual report for the Hawai'i Department of Agriculture for Fiscal Year 2008.

Farming has always been a challenging business, and this past year has been some of the hardest economic times of our lives. As business and industry work to adjust to these considerable pressures and position themselves to go forward in this new reality, it becomes even more apparent that we must support the farming industry here in our state and move toward reversing our state's dependency on imported foods, products and energy. Raising our food self-sufficiency is key to a more stable local economy.

We must continue to address the issues of protecting our best agricultural land and assuring that adequate irrigation water is available for local production. Support also means raising the public's awareness of what is produced in Hawai'i so that they can make conscience purchasing decisions that support our farmers and communities.

As we continue to provide services that support agriculture in the state, department is also looking ahead and continuously developing and updating emergency plans in case of accidental or intentional introduction of serious plant and animal pests and diseases that may have devastating affects on our agricultural industries, economy and public health.

The department is also helping to lead the nation in developing food safety programs that can trace food from the farm to the table. Combined with efforts to help farmers and food distribution systems to increase good agricultural practices, these efforts will increase food safety in our state.

As you read the pages of this report, know that the department and the agricultural industry appreciate the support of all who understand the vital role that Hawai'i's agriculture fills in our community.

Sincerely,

A handwritten signature in black ink, reading "Sandra Lee Kunimoto".

Sandra Lee Kunimoto, Chairperson  
Hawai'i Board of Agriculture





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This annual report is also accessible via the department's website at: <http://hawaii.gov/hdoa/> or copies may be requested by calling (808) 973-9560.



## Planning & Development

The department 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.

While modest in comparison to the visitor industry's \$11.6 billion in economic activity, the economic activity generated by diversified agriculture is solid and stable. Furthermore, characteristics associated with agricultural activity (scenic planted and open landscapes, locally-grown fresh produce, reduction in atmospheric carbon dioxide, groundwater recharge) provide real value to Hawai'i residents and visitors.

The passage and enactment of the Important Agricultural Lands Incentives Act (Act 233, 2008 Session Laws of Hawai'i) fulfills the fundamental requirement in the Important Agricultural Lands Act of 2005 that a wide range of incentives be available to landowners and farmers who have their qualified agricultural land designated as Important Agricultural Lands. The process and actions required of state and county agencies to identify potential Important Agricultural Lands (IAL) and have them designated are now set in motion, with the department having a significant role in identifying and designating IAL and implementing some of the incentives such as the IAL Qualified Agricultural Cost Tax Credit. This tax credit is the most significant incentives as it encourages landowners/farmers to have their lands designated IAL and to establish and maintain their agricultural use by offsetting costs related to agricultural production including development, rehabilitation, and maintenance of agriculturally-related roads and utilities, irrigation water facilities, leasehold agricultural housing for farmers and farm workers, equipment for crop cultivation, harvesting, and processing; and professional services necessary to obtain sufficient water and protecting a farmer's right to farm.







The Hawai'i Department of Agriculture (HDOA) also introduced a measure to mitigate problems arising from the proliferation of "fake farms," or subdivisions of agricultural land where there is little or no agricultural activity. A major impact of these subdivisions is that they increase the value of agricultural lands for residential use rather than agricultural production. The price of land is often far beyond what a farm income is able to afford. Farmers seeking to lease lands often find lease terms and rents very short and expensive, respectively. The measure requires every lot in agricultural subdivisions approved after the bill's effective date to be used solely for agricultural activities, agribusiness, or subsistence farming; it requires the counties to require lot owners of subdivided agricultural lands applying for a building permit to substantially establish agricultural activity and submit farm plans, prior to approving building permits; and requires lot owners to have recorded deed restrictions that run with the land requiring agricultural use of the subdivided lots. These features are significantly more rigorous and descriptive than what currently exists in Chapters 205 and 46, Hawaii Revised Statutes. The department plans to resubmit the bill for consideration by the 2009 Legislature.

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 buffer zones to protect agricultural activities from encroaching non-agricultural uses, ensuring subdivisions of agricultural land result in the establishment and maintenance of substantial agricultural activity, 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.





## ADMINISTRATIVE SERVICES OFFICE



**Elaine Abe**  
*Administrator*  
*Retired 6/08*  
**Keith Aragaki** from 9/08

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 facilitates 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.

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

- ◆ Personnel Staff attended "Conducting Investigation Certification Program", and training on Managing a Multi-Generational Work Force.
- ◆ Conducted Labor Relations Workshops for supervisors.
- ◆ Instituted the statewide BU 01 Drug/Alcohol Testing Program.
- ◆ Coordinated training for all managers on Domestic Violence and its impact in the workplace
- ◆ Personnel Staff conducted Performance Appraisal System training.
- ◆ Personnel Staff participated in Job Fair for displaced workers of Aloha Airlines, Nordstroms and Moloka'i Ranch.
- ◆ Implemented the HDOA Workplace Violence Action Plan.
- ◆ Assisted the Plant Quarantine Program in establishing and filling new biosecurity Plant Quarantine Inspector positions and Plant Pest Control Aides/Technicians.

- ◆ Established new Hawai'i Electronic Procurement System (HePS) buyers, as requested by programs. In 2008, 25 solicitations were awarded on HePS.
- ◆ Implemented additional security procedures at King Street Facility.
- ◆ Updated and improved the contract checklist for certification and encumbrance by creating checklists by type of contract, and combining the contract requirements of the department and DAGS on one form.
- ◆ Provided training on vehicle maintenance and operation to new employees.
- ◆ Issued new department identification badges to all employees.
- ◆ Updated O'ahu and neighbor island staff directories.
- ◆ Developed telecommunication database to inventory all phone and data lines.
- ◆ Installed DSL connection at Maui baggage claim areas and frame relay connection at Captain Cook.
- ◆ Developed Pesticides Enforcement database.
- ◆ Moved Pesticides labels to State's server housed at ICSD.
- ◆ Removed Social Security numbers from Requisition/PO system and Position/Personnel System.
- ◆ Created new calendar on State's website to report Market Analysis and News statistics.
- ◆ Modified Pesticides Dealer Licensing application to reflect new license number configuration.
- ◆ Developed spreadsheet to generate Coffee Inspection invoices.

### Major projects still in progress are:

- ◆ Working with consultants to transfer Plant Quarantine on-line system to be housed at ISCD.
- ◆ Continuing to network all O'ahu and neighbor island offices to State's NGN.
- ◆ Transferring applications to new APPX application server.
- ◆ Replacing server at Auiki Street.
- ◆ Coordinating various capital improvement projects to correct safety concerns and other deficiencies, and make improvements at department facilities including re-roofing and air conditioning improvements at the King Street facility, re-roofing at the Kahului facility, and retro-commissioning projects at various facilities.



- ◆ Auditing leave records of program record keepers.
- ◆ Reviewing and rewriting internal personnel policies and procedures.
- ◆ Implementing procedures for processing contracts for services.
- ◆ Continuing to update the department's accounting manual with existing procedures and new guidelines and procedures for various procurement and purchasing processes.
- ◆ Attending State Procurement Office training sessions on various procurement methods and changes to the procurement law to provide improved guidance and support to programs.
- ◆ Attending HePS System Administrator training sessions to provide oversight for the solicitations conducted on HePS.
- ◆ Creating a travel handbook to provide the programs with a reference guide for Fiscal transactions related to travel.
- ◆ Providing training for managers on the Department of Agriculture Limited English Proficiency Plan, and conducting survey to determine what kind of interpreter services and in what languages these services are needed.
- ◆ Developing department-wide safety plan including installation of proper signage and other improvements in compliance with OSHA requirements
- ◆ Implementing the use of Grants.gov as a means of searching and applying for federal grants electronically.

Other future projects include, implementing the transition of the pCard system from PVS Net to Centresuite; this includes updating the procedures and providing training for the pCardholders, as required, establishing approval routing for solicitations conducted on HePS, and setting up journal vouchers in a shared network folder, which will allow the programs to access information and use as a tool for financial management, replacing administration server at King Street, modifying Animal Quarantine System application for web access, and developing a FAQ web page for major personnel functions.



## AGRICULTURAL DEVELOPMENT DIVISION



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

**The Agricultural Development Division (ADD) serves to promote the economic viability of commercial agriculture in Hawai'i 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.**

The landscape for Hawai'i agriculture improved slightly compared to the previous year with two commodity groups emerging as clear market leaders – seed crop and floriculture. Both these groups have surpassed sugarcane and pineapples as leading revenue earners. After a 13-year effort by the HDOA, Japan finally approved the importation of potted anthuriums from Hawai'i under

specific quarantine conditions in July 2007. Governor Linda Lingle called this development great news for Hawai'i anthurium growers. Notable achievements for ADD in this fiscal year include the following:

- ◆ Successfully petitioned the USDA Risk Management Agency (RMA) to expand the Adjusted Gross Revenue-Lite (AGR-Lite) insurance program to all counties in Hawai'i. This program provides farmers with insurance protection against low revenue due to unavoidable natural disasters and market fluctuations that affect farm income. Previously, federal crop insurance was only available in Hawai'i for macadamia nuts and nursery plants. A pilot program is also available now for papaya, banana and coffee.
- ◆ Awarded \$208,000 for a marketing proposal submitted to the USDA-AMS, Specialty Crop Block Grant Program (SCBGP) FY 2006 and FY 2007 to increase consumer awareness and generate sales for Hawai'i specialty crops.
- ◆ Successfully launched and implemented the State's new Livestock Feed Reimbursement Program (LFRP) to help revitalize Hawai'i's livestock industry, which is struggling with the high cost of feed that must be imported from the U.S. mainland. By assisting the livestock industry with feed costs, the program will also help Hawai'i livestock farmers to remain competitive with mainland producers and contribute to Hawai'i's food security. The State Legislature appropriated \$6 million over two years for this program.



*The KITV Morning Show went "live" in August 2007 at the Green Growers Farm in Hau'ula, where they grow the juicy vine-ripped Hau'ula tomatoes.*

*Farmer Terry Shintaku (back) and his wife, Cindy (middle) and daughter, Erin (right), welcomed KITV Morning Show anchor Mahealani Richardson (left), who just happens to love tomatoes.*





## MARKET DEVELOPMENT BRANCH

Todd Low, *Manager*

The mission of the Market Development Branch (MDB) 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 FY08 were:

#### ◆ Matching Funds Promotional Contracts

This is the fourth fiscal year that the branch implemented a new procedure to solicit and award marketing funds under the State of Hawai'i Request for Proposal (RFP) process. The commodity groups that participated included the Hawai'i Egg Producers Association (HEPA), the Hawai'i Food Manufacturers Association (HFMA), the Hawai'i Export Nursery Association (HENA), the Hawai'i Cooperative of Organic Farmers (HICOF), the Hawai'i Tropical Fruit Growers Association (HTFGA), the Kona Coffee Council (KCC), and the Hawai'i Papaya Industry Association (HPIA). The applications fell into three pre-determined categories:

- Distribution systems focusing on encouraging Hawai'i Ag-businesses (minimum of four) to pool resources in order to improve efficiency in transportation/shipping, distribution, sales representation, or consolidation issues. There were three awards in this category.
- Mainland and international trade shows focusing on Hawai'i-theme exhibits with a minimum of four unrelated companies attending the trade show. There were six awards in this category.
- Industry education and promotion of agriculture focusing on producer competitiveness, human capital capacity building, and marketing efforts to support Hawai'i's agriculture. There were 11 awards in this category.

The program attracted 18 applications from eight trade associations and funded 16 applications for a total of \$158,675. Based on past results, the Matching Marketing Funds program is expected to support an estimated \$3 million in annual sales.



#### ◆ Seals of Quality Program

The Hawai'i Seals of Quality (SOQ) program was launched in May 2006 with 12 companies representing the cream of the crop of Hawai'i's agricultural producers. The SOQ program was established to protect the integrity and value of the marketing cachet for Hawai'i branded farm and "value-added products." Products with this seal are genuine, Hawai'i-grown or Hawai'i-made premium products, a guarantee that is enforced by the State of Hawai'i.

MDB was able to increase the number of participants in the SOQ program to approximately 40 during FY08 through several marketing development efforts. In terms of marketing collateral, MDB developed a consumer-focused brochure and added a pop-up panel display and video kiosk to its marketing tool box.

MDB promoted the SOQ program through displays at community events, including Ag Awareness Day at the State Capitol, Wahiawa Pineapple Festival, Chefs du Jour events on August 11, 2007 & June 21, 2008, and Coffee Fest at the Hilton Waikoloa, among others. The online channel was accessed via a new food site called *ShareYourTable.com* and a new O'ahu Visitors Bureau site which translated the existing SOQ information into Japanese. Promotional projects will continue to focus on the online and print media, and international markets.

#### ◆ Livestock Feed Reimbursement Program

Developed based on parameters established in Act 221, SLH 2007. The purpose of the program is to create a livestock revitalization and food security program to administer and disburse funds to qualified cattle, dairy, hog and poultry



farms. A Qualified Producer is defined as any person that, at the time of application, is in the business of producing the following: milk from a herd of not less than 350 cows or poultry from a flock of not less than 3,000 birds or pork from a herd of not less than 50 sows or beef producers who finish at least 100 head annually.

Reimbursement amounts are limited to a percentage of the feed costs excluding transportation and are capped at \$250,000 per vendor annually. For FY08, the program has dispersed approximately \$2 million to more than 20 applicants.

◆ **USDA National Organic Certification Cost-Share Program**

This four-year USDA program reimburses organic producers and handlers 75 percent of their certification cost (up to a maximum of \$500). The cooperative agreement between USDA and the State of Hawai'i extended from October 1, 2004 to September 30, 2008. Organic certification is an important marketing tool for organic farmers. As of September 30, 2008, MDB had reimbursed 116 applications totaling over \$38,000 statewide. The \$40,000 funding for this program was fully expended prior to the expiration of the cooperative agreement. Applications for an additional \$10,000 were received after the funding limit was reached, showing the popularity of the program and its benefit to organic growers and handlers in Hawai'i.

**Local Market Promotions and Activities**

◆ **Hawai'i Lodging, Hospitality, and Foodservice Expo in Honolulu - July 11-12, 2007**

Featured new products included local ground beef and Kulana's 21-day dry-aged, grass-fed beef and a new variety of cantaloupe from Aloun Farms. HDOA along with the Aquaculture Development Program was recognized and awarded a First Place plaque in the best booth in the Expo which includes discounted booth space in the 2008 Expo. The event attracted nearly 6,000 buyers-chefs, caterers, retail grocers, convenience stores, hotels, military, and others.

◆ **Made in Hawai'i Festival in Honolulu - August 17-19, 2007**

MDB coordinated the chefs demonstrations at the 12th Annual Made in Hawai'i Festival at the Neal Blaisdell Center, which consisted of more than 400 booths and attendance of more than 37,000 in attendance. The chefs included Derek Kurisu of KTA Super Stores, Eldon Ricardo of Holokai Grill, Elmer Guzman of Poke Stop, Grant Sato of KCC, Greg Denton and Mark Ellman of Mala Ocean Tavern, Fred DeAngelo of Ola Restaurant, University of Hawai'i Coaches Chili Cook-off, Michael Imada of Waikiki Hyatt Resort, and Bill Bruhl of Bluwater Grill. Nearly 4,000 food samples were served during the cooking demonstration. The chefs prepared dishes made from Island Fresh products. The area was decorated with Hawai'i-grown fruits, vegetables, flowers, and foliage from local farmers. Five local retail florists decorated the perimeter of the cooking demonstration area.



*Derek Kurisu (right) of KTA Superstores on Hawai'i Island entertains the audience during the cooking demonstrations at the Made in Hawai'i Festivals. Assisting Derek are Tom Asano (left) of Kulana Foods and Chef Jason Takemura (center) of Hukilau Honolulu.*



## Mainland and International Promotions and Activities

### ◆ Natural Products Expo West Trade Show in Anaheim, CA – March 14-16, 2008

Hawai'i participated in the world's largest natural, organic and healthy products trade show attended by more than 52,000 industry professionals from across the globe. It also attracted a record 3,392 exhibits to the Anaheim Convention Center in California. The Big Island Bee Company, Big Island Organics, Hawaiian Health Ohana, Hawaiian Host, NOH foods of Hawai'i, Noni Biotech International, and Tropical Traders Specialty Foods participated in the Hawai'i section. The \$57 billion dollar natural and organic products industry continues to enjoy brisk sales with strong growth in certified organic meat and seafood, herbs and botanicals, and personal care. Estimated sales attributed to the event as reported by participants were \$1.4 million.

### ◆ Produce Marketing Association (PMA) Convention and Exposition in Houston TX – October 13-15, 2007

Six companies filled a 20' X 30' island booth at the PMA Expo in Houston, TX. Participating companies included Alembic International, Happy Hawaiian Plants, Hawai'i Papaya Industry Association, Hawai'i Tropical Fruit Growers Cooperative, Hawaiian Sunshine Nursery, and Ohana Banana Company. An estimated \$1.3 million in sales were attributed to the event.

### ◆ Western United States Agricultural Trade Association (WUSATA)

Promotion of the Branded Program via seminars in Kahului and Hilo and webinar presentations, one of which was specific to Hawai'i, resulted in three new Hawai'i companies joining the 2008 Branded Program. The Taiwan Direct Marketing Activity included a follow-up presentation to discuss the consumer sensory evaluation of the nine products selected for testing, seven of which were from Hawai'i companies. The WUSATA State Export Intern Program provided Hawai'i with an intern to produce an export trade reference containing export requirements for Hawai'i Agricultural Products. This document will begin with some of the commodities that are ready for export, such as chocolate, coffee, honey, macadamia nuts, and papayas to Canada, China, Hong Kong, Japan and Taiwan.

## 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 four research studies annually. The second function is carrying out the market news program, jointly with the Market News Branch of the Agricultural Marketing Service (AMS), 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 2008 included the following:

- ◆ Completed and jointly published a study with the University of Hawai'i at Manoa, College of Tropical Agriculture and Human Resources (UH-CTAHR) entitled, "*Comparative Advantage Trends of Selected Hawai'i Agricultural Products in the U.S. Mainland Market*," Economic Issues, Feb. 2008, EI-14.
- ◆ Completed and jointly published a study with UH-CTAHR entitled, "*The Contribution of Agriculture to Hawai'i's Economy: 2005*," Economic Issues, Jan. 2008, EI-13.
- ◆ Completed an internal study entitled, "*Wahiawa Irrigation System Economic Impact Study*."
- ◆ Completed annual estimation of Hawai'i's fresh fruit and vegetable inshipment for the 2007 calendar year, which will be published in the upcoming Statistics of Hawai'i Agriculture 2007.
- ◆ Assisted in a study entitled, "*Economic Impacts of Agricultural Reservoir Closures in Hawai'i*" to provide technical expertise in economic impact analysis model application and data analysis.



- ◆ Provided technical assessments, data extraction and analysis, study evaluations and research briefs to both internal and external clients of the department. Some examples include the following:
  - Technical review of a study entitled, "*Hawai'i Agricultural Water Use and Development Plan*," UH-CTAHR.
  - Evaluation of the Hawai'i Farm Bureau Federation's management practices of its grant-in-aid projects.
  - Data and statistical analysis on Hawai'i's macadamia nut industry's global competition and update on U.S. macadamia nut imports.
  - Data and statistical analysis of changes in fuel surcharge-handling and commodity prices in Hawai'i over 2007-2008.
  - Data and statistical analysis of changes in world fertilizer prices over 2007-2008.
  - Statistical update of Hawai'i's papaya production and trade, for papaya Market Report. Also compiled and provided papaya export data to USDA-NASS and USDA-AMS for use in their monthly reporting.
  - Monthly reports on volume inshipment of fresh fruits and vegetables into Honolulu for use by HAS/USDA-NASS Hawai'i Field Office.
- ◆ Continued to collaborate with the HAS/USDA-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 with limited personnel. Published 416 reports which 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.

### HAWAII AGRICULTURAL STATISTICS BRANCH

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

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

Major activities of the branch included data collection, analysis, and timely publication of agricultural statistics of the State. The result of these efforts was a measure of total farm-gate estimated value of \$582 million during 2006. Most of the data collection efforts were in the diversified agriculture sector, which was valued at \$456 million in 2006.

#### Activities during FY08 included the following:

- ◆ Completed Census of Agriculture Area Coverage Survey.
- ◆ Collected 2007 Census of Agriculture Data.
- ◆ Published Hawai'i Ag Tourism Release.
- ◆ Began publishing sod value of production in our Hawai'i Flowers and Nursery Products Annual Summary release.
- ◆ Published 130 reports.
- ◆ Made over 15,000 individual contracts 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.hawaii.gov/hdoa/](http://www.hawaii.gov/hdoa/) and free e-mail subscriptions are available at [www.usda.gov/sub-forms.htm](http://www.usda.gov/sub-forms.htm)





## AGRICULTURAL LOAN DIVISION



**Dean Matsukawa**  
*Administrator*

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

The program works with private lenders through participation loans and provides loan guaranties to increase the amount of funding available to agriculture and aquaculture industries. The program provides direct financial assistance to those that are unable to obtain financing from conventional sources. The division also serves as a safety net for agriculture and aquaculture industries by providing assistance in times of emergency. The program is self-sufficient, operating through interest collections, and is able to achieve its objectives of growth, development and preservation of the agricultural and aquacultural industries without any taxpayer funding.

The Agricultural Loan Division is committed to the growth, development, and well-being of the agricultural and aquacultural industries in Hawai'i. For FY08, the division provided 23 loans totaling \$2,121,500 in low interest financing for agriculture. The loans funded a wide variety of projects including land purchase, expansion of farm operations and improvement of farm infrastructure. The emergency loan program provided relief and assistance to farmers that were affected by the heavy rains, flooding, winds and wildfires. The types of farm operations assisted were varied and included truck crops, nursery, papaya, orchid, vegetable and flower operations.

The division's mission is to support economic development by supporting the agriculture and aquaculture industries. These industries have been experiencing rapidly escalating energy costs which significantly affected operations. The unprecedented high oil prices resulted in higher transportation, fuel, fertilizer and chemical costs for farmers making their operating environment very challenging. A new loan program was created to help full-time farmers, ranchers and aquaculturists become more sustainable by reducing dependence on fossil fuels. Projects would create renewable energy through sources such as photovoltaic, hydroelectric, wind, methane, biodiesel, and ethanol. The program also allows for funding of food safety projects to create a safer food supply for the citizens of Hawai'i.

Major activities and accomplishments of the program for FY08 were as follows:

- Approved 23 loans for \$2.122 million during FY08. The loans helped farmer and aquaculturists retain or increase acreage by 2,867 acres. The division's loans also helped to preserve or increase employment for 259 farm employees and laborers.



***On August 12, 2007 a wildfire began in Waialua, O'ahu that lasted five days and burned approximately 7,000 acres in the area. An emergency loan was provided to James Song to help him to recover from the fire that destroyed a substantial amount of his papaya and banana crop.***



**Above: Hui Ku Maoli Ola LLC, owned by Matthew Schirman and Richard Barboza, has been rapidly increasing production of native Hawaiian plants at their nursery in Haiku, O'ahu. The division provided them with financing to acquire additional farm land to further increase their production.**

- The division's loan portfolio as of June 30, 2008 was valued at \$15.37 million with 205 loans booked. The loan breakdown by county is as follows:

Hawai'i County	\$5.86 million
O'ahu County	\$3.18 million
Maui County	\$4.81 million
Kaua'i County	\$1.52 million

- Collected \$2.73 million in FY08. Of the amount collected \$646,860 was in interest and \$2.085 million was in principal.
- Activated an Emergency Loan program to help farmers recover from wildfires which affected the State in August of 2007.
- The division modified nine loans during FY08 for a variety of purposes including change in lien position, release of collateral, payment relief, etc.
- Activated an Emergency Loan program to help farmers recover from storms which affected the state in December of 2007.





## AGRICULTURAL RESOURCE MANAGEMENT DIVISION



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

The Agricultural Resource Management Division (ARMD) 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 a majority of state agricultural land in production, 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 2008 included the following:

### Capital Improvements

#### ◆ Earthquake Recovery

Nearly two years after the October 15, 2006 earthquake devastated the Honokaa-Paauiilo and Waimea Irrigation Systems, HDOA can finally see the light at the end of the tunnel. Over the past year, the HDOA has made significant progress to restore the two systems. Notable projects completed include the Alakahi Intake Restoration – Phase 1, which removed landslide material and repaired the stream crossing tunnel roof; debris and sediment removal from 28 tunnels which totaled over 10,000 linear feet; replacement of the 90-foot long Waimea Flume No. 1 which catastrophically failed; and the restoration of the Waimea Access Trail that was decimated by landslides. Completion of these projects enabled the HDOA to substantially restore irrigation water flow back into the systems. HDOA currently has four ongoing earthquake related projects remaining that are anticipated to

be completed by the end of the year and another project scheduled for completion in early 2009. The most difficult and dangerous project remaining is the Alakahi Intake Restoration Phase 2 which is located deep in Waipio Valley. This project will provide additional reinforcement for the intake structure that will help minimize damages from future landslide occurrences. Thus far, HDOA has secured over fourteen million dollars worth of projects which include federal funding from the USDA-Natural Resources Conservation Service. The road to recovery has been a long and grueling journey. When damages from the earthquake are repaired and flow is fully restored in the systems, the agricultural community will have a reliable source of irrigation water. The department foresees the Honoka'a-Paauiilo and Waimea Irrigation Systems as major contributors to the state's agricultural economy in the near future.

#### ◆ Waimanalo Irrigation System

As the HDOA's oldest system, the Waimanalo Irrigation System is looking forward to much needed improvements that will help to maximize efficiency in transportation of irrigation water. Constructed in 1878 for the Waimanalo Sugar Company, the Maunawili Valley collection system consists of approximately four miles of open ditches, pipe siphons, culverts, flumes, and tunnels which transports irrigation water to the 60 million gallon (MG) Waimanalo Reservoir.

Age, weather, and lack of resources have led to a steady deterioration of the system, including severely eroded ditch embankments, leaking flumes and culverts, landslide damages, overgrown access roads, root damages from large trees, and seepage of unlined ditch sections.

The HDOA received a \$6 million appropriation which couldn't have come at a better time. Funds will be used to design and construct improvements that will mitigate the deficiencies and enable the department to capture, retain, and deliver the maximum amount of irrigation water to the Waimanalo agricultural community.

In the interim, HDOA staff and farmers who graciously volunteered their services have been actively taking on smaller projects to help minimize leakage throughout the system. Debris catchment baskets were fabricated and installed at several open ditch sections to reduce potential clogging of downstream grates.



Another project involved installation of a sheet metal lining in a deteriorated and leaking section of unlined open ditch. If all goes well, construction could begin as early as Fall 2009 and the Waimanalo Irrigation will be on its way to a more reliable source of irrigation water.

### ◆ **Waimea Irrigation System**

Another system scheduled for major upgrades is the Waimea Irrigation System (WIS). As the department's second most productive system, the century year old WIS transported over 340 million gallons per year to approximately 640 acres.

The majority of use comes from the Lalamilo Farm Lots which produce an assortment of crops including Chinese cabbage, tomatoes, asparagus, strawberries, cantaloupe, watermelon, and a wide variety of lettuce. Over the past few years, the distribution system which services the Lalamilo Farm Lots has encountered several pipeline failures stemming from deteriorated inner walls. Each occurrence resulted in water losses, crop disruption, temporary "shut-down" of the system, and emergency repairs.

Design of the "Lalamilo Distribution Pipeline Replacement Phase 2" project was completed earlier in the year and construction is anticipated to begin by the end of 2008. This phase of work will include replacement of service laterals, meters, pressure reducing valves, and installation of approximately three miles of new distribution pipeline which will vary in size from eight to 24 inches in diameter. Issues regarding low pressure in the system will also be addressed which will provide farmers more flexibility in irrigation of crops. The department is eager to implement these improvements which will allow farming in Waimea continued success.

### ◆ **Non-Agricultural Park Lands Program**

The non-agricultural park lands program rules went into effect on December 6, 2007. The parcels identified for the initial transfer are being processed by the Department of Land and Natural Resources so a Governor's Executive Order can be issued to formally transfer the lands to the HDOA. Following the formal transfer, the HDOA will begin actively managing the parcels. Identification of the next group of parcels is currently underway.

**Ronald and Dora Okazaki** operate a 10-acre farm in Panaewa under the non-agricultural park lands program. Mr. Okazaki was a school teacher at Laupaho'e schools for 30 years. While there, he started a mail order business selling ti leaf and anthuriums as a side business. Upon retiring, Mr. Okazaki started up his cut foliage business and is currently harvesting leaves from his plantings that include ti leaf, Song of India, lauhala leaf, red ginger, banana leaf, and various types of palms.

Mr. Okazaki exports to California and Seattle; however, the bulk of his business is done locally. His local clients include: Green Point Nursery, Pacific Floral, Floral Resources, Hata's, Hawaiian Green House Nursery, Orchids of Hawaii, Hawaii Tropical Foliage, Lillies of Kona, and Flowers for Mama in Kona. Mr. Okazaki is constantly looking for more items to add to his well kept nursery.

**Raymond Tanouye dba Mountain Meadows, Inc.** also operates a farm in Panaewa under the non-agricultural park lands program. Mr. Tanouye started Mountain Meadows, Inc., which consists of 2.468 gross acres, approximately four to five years ago. Prior to starting his landscaping business, Raymond worked for an anthurium farm for 30 years. He had absolutely no experience with landscaping plants when he decided to venture out into this new business.

Like many starting out, Mr. Tanouye had no funds to start. He decided to see his banker of 40 years and ask to borrow some money. With no hesitation, he was granted a \$200,000 loan by his banker, confident that Raymond would "make it happen". Today, Mr. Tanouye's nursery brings in approximately one million dollars per year. He exports to Honolulu, Maui, and Kauai and supplies various companies on the Big Island. He ships a forty foot trailer to Maui Island weekly.

Raymond's work crew consists of six people, including him. Although Mr. Tanouye is nearing 71 years of age, he obviously loves what he does and has no intention to quit just yet.

### ◆ **Agricultural Parks Program**

**Hawaiian Sunshine Nursery** started in 1978 in the backyard of the home of its founders Sandy Kasman and David Fell. From its humble beginnings, the husband and wife team built Hawaiian Sunshine Nursery to become one of the largest producers of nursery products in Hawaii.





*Hawaiian Sunshine Nursery,  
Panaewa Agricultural Park,  
Hawai'i Island*

**Hawaiian Sunshine Nursery** specializes in growing bromeliads and tropical foliage for the retail, landscape, and resort industries. With locations on the Island of Hawai'i (fee and leased) and on O'ahu, Hawaiian Sunshine Nursery produces over 400,000 plants annually for the local and export markets. Their local clients range from independent florists to big box retail outlets and their export markets include the mainland, parts of Europe, Costa Rica, and aspirations towards Japan.

In the highly competitive nursery business, the team continues to thrive by adhering to the philosophy of providing healthy, quality products; adapting to changing market environments through innovations; and carving out niche markets by developing unique proprietary products.

Co-founder David Fell holds several patents and breeder's rights to plants that he developed over the years.

Hawaiian Sunshine Nursery has been a lessee in the Panaewa Ag Park since 2006. During the last two years, they have completely remade the 10-acre site into a thriving nursery for dracaena field stocks and other foliage. A plant sanitation facility has been targeted for the location.

Besides being the recipient of the 2008 Tropical Plant Industry Exposition's Favorite New Flowering Plant Award, Hawaiian Sunshine Nursery was named by the U.S. Small Business Administration earlier this year as the 2008 Small Business Administration Exporter of the Year for Region IX, which includes Hawai'i, California, Nevada, and Arizona.

**Hikari Nursery** was formed in 1988 by Lew and Sheila Nakamura. The husband and wife team are owners and sole employees of Hikari Nursery. They became a lessee of the Pahoa Ag Park in 1988. The couple developed the two lots in the Pahoa Ag Park financed with an Agricultural Loan from the Department. Specializing in the production of interior dracaenas, in particular the D. Lisa and D. Janet Craig, Hikari Nursery is mainly an exporter with markets that include California. Hikari exports between 5,000 to 6,000 plants a year.

The nursery is currently working on new varieties of plant products that should be ready for release in 2009. The nursery grows 50 percent of its stock on site and purchases the other half from local stock growers.

Ag park fiscal data is available on pages 61 & 62.

#### ◆ Irrigation Systems

##### **Drought**

Each summer, our division is faced with the difficult task of encouraging farmers to plan their water use through conservation and efficiency.

Drought is a chronic and troublesome problem in Hawai'i, at one time or another affecting virtually every part of the state. These events often reduce crop yields, diminish livestock herds, desiccate streams, irrigation ditches and reservoirs, deplete ground water supplies, and lead to forest and brush fires. Periods of drought invariably give rise to water crises, sometimes requiring imposition of emergency conservation measures.



Lack of rainfall is not the only factor contributing to the impacts of drought. Both natural events and human activities, such as expanding populations, irrigation, and environmental needs, all put pressure on water supplies. The agricultural industry is usually the first to be impacted by drought.

The Waimanalo Irrigation System has been hit the hardest by drought in recent years. This year, a mandatory conservation measure requiring a 20 percent reduction in water use went into effect April 7, 2008 in an attempt to forestall the shortage of irrigation water stored at the 60 MG Waimanalo Reservoir. Unfortunately, rainfall patterns did not improve and the initial conservation measure was intensified to a 30 percent mandatory cutback on July 11<sup>th</sup>. Both of these measures were implemented many months prior to conservation orders in previous years.

The Moloka'i Irrigation System (MIS) delivers approximately 3.0 million gallons of water daily to irrigate about 2,800 acres of agricultural lands. ARMD staff had met with the Moloka'i Irrigation System Water Users Advisory Board and the largest non-homestead water users to discuss alternatives to mandatory system wide conservation measures. Several of the largest irrigation water users have expressed their desire to cooperate with the MIS by voluntarily designing a functional conservation plan wherein each large user will reduce consumption by 20 percent compared to the same time over the past several years. In spite of these efforts, a mandatory 20 percent cutback for all non-homestead users

was required effective June 1<sup>st</sup> and remained in effect through the end of the fiscal year.

A declaration of a drought emergency for the entire State of Hawai'i was granted on July 30, 2008 by the Secretary of the U.S. Department of Agriculture. This action triggered Federal low-interest loan services and activation of the State's Emergency Loan Program.

The lack of rainfall in parts of the Big Island has impacted pasture lands and depleted catchment water for livestock. It has also reduced the available grazing land and feed for cattle. Ranchers are forced to find alternative sources for feed and water and reduce herd sizes to cope with drought. The one bright spot in this situation is the repairs completed on the Lower Hamakua Ditch. These improvements have allowed the ditch to meet all the water demands of the ranchers and farmers through these dry times.

**Kazuto Yamada** is a second-generation farmer who grew up on Maui, where his family farmed cabbage and other vegetables. He moved to Oahu to attend the University of Hawai'i and majored in chemistry where he met Ayako Sumida and they were married in the mid '60's.

During this time, Ayako grew fragrant tuberose on four acres of leased State land in Waimanalo. Kazuto, working as a chemist, also attempted to produce orchids and other crops, however, found difficulty in maintaining consistency in a quality commodity which was economically viable. Ayako established sales of the fragrant tuberose to the lei vendors of the Honolulu International Airport.

*Repairs to Waimea Irrigation System Flume #1 after it was suffered severe earthquake damage in October 2006.*





In 1967, they decided to do the tuberose propagating full-time. Thus, A&K Nursery was created and four acres eventually grew to approximately 20 acres. In 1986, son, David, began to help in the family business. The tuberose production was also relocated to Hale'iwa in 1996 on 150 acres of former sugar land. To this day, they provide tuberose and white ginger to the local and mainland markets.

John F. Queeny founded the original **Monsanto** in 1901. Their first product was saccharine. The original Monsanto diversified and produced and marketed agricultural products, including 'Roundup'. During the past 107 years, many changes have taken place and Monsanto has acquired other entities to expand its capabilities into biotechnology and pharmaceuticals yet still remaining primarily an agricultural company.

Today's Monsanto Company (in Moloka'i) started as Holden's Foundation Seeds in 1967. Monsanto acquired Holden's Seed in 2000 and operated on 30 acres of land in Kaunakakai. Over the next eight years, Monsanto has increased its productive acreage to 1,600 acres. Planting and harvesting continue year round in Hawai'i's ideal climate producing approximately 20,000 bushels of seed corn or about one million pounds. Monsanto employs 100 full-time and 50 seasonal employees who are all residents of Moloka'i.

Monsanto typically plants 250 to 300 different varieties of seed corn each year. The development of improved varieties are used in all growing environments around the world and for the many different products that are made from corn, such as oil, feed, fuel, and food.

Irrigation system fiscal data available on pages 61 & 62.

#### **Capital Improvement Projects for FY 2008**

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

- Lower Hamakua Ditch (LHD) Phase IV Flume Replacement - construction
- Pre-Disaster Mitigation, Flood Proofing of the LHD – design
- Waimea Irrigation System (WIS), Bridge Replacement – design
- WIS, Lalamilo Distribution Pipeline Replacement, Phase 2 - design

##### **The following projects are ongoing on the Big Island:**

- Honomalino Watershed (South Kona) - plans
- Paauilo Rendering Plant – construction

##### **The following projects were completed on Maui this year:**

- Upcountry Kimo Road Lateral - construction

##### **The following projects are ongoing on Maui:**

- Upcountry Phase V Main Line Extension - construction
- Upcountry Pulehuiki Lateral – construction
- Upcountry Phase IV Main Line Extension - design
- Upcountry Phase VI Main Line Extension – design

##### **The following projects were completed on Moloka'i this year:**

- Irrigation System Electrical/Telemetry Improvements – design

##### **The following projects are ongoing on O'ahu:**

- Waiahole Irrigation System Reservoir Improvements - design

##### **The following projects were completed on Kaua'i this year:**

- East Kaua'i Irrigation System, Miscellaneous Improvements - design

##### **The following projects are ongoing on Kaua'i:**

- East Kaua'i Irrigation System, Upper Kapahi Flume Replacement – construction

##### **The following statewide projects were completed this year:**

- Hawai'i State Irrigation Systems Water Conservation Improvement Study - plans





## ANIMAL INDUSTRY DIVISION



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

**The mission of the Animal Industry Division is to protect Hawai'i'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 and premise registration programs; laboratory diagnostic services; and dog and cat quarantine to reduce the risk of rabies introduction.

An important focus of the division continues to be animal health emergency management, especially with respect to avian influenza virus or other highly contagious livestock and poultry diseases. Public health and environmental programs aimed at preventing the introduction of foreign animal diseases into the state continue to be important functions of the division.

Hawai'i's statuses for State-Federal Cooperative Disease Control Programs during FY08:

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

Hawai'i is also recognized as free of blue tongue virus and anaplasmosis, and surveillance programs for these diseases are ongoing to insure that the "free" status is documented and maintained. No new livestock and poultry disease agents were detected during FY07; however, White Spot Syndrome Virus, a reportable disease was detected at a Kaua'i shrimp operation.

The division continues to encourage livestock owners to register their premises as part of the National Animal Identification System. The University of Hawai'i, College of Tropical Agriculture and Human Resources, has been contracted for a second year to hold outreach sessions for producers on O'ahu and neighbor islands.

Continuing activities relating to voluntary disease control programs include scrapie in sheep and goats, Johne's disease in beef and dairy cattle, classical swine fever surveillance in pigs, and bovine tuberculosis in feral swine on east Moloka'i. Stringent import requirements remain in place for birds entering Hawai'i in an effort to reduce the chances of West Nile virus introduction.

The division received cooperative agreement funds from the United States Department of Agriculture, Animal and Plant Health Inspection Service, totaling \$173,800 during FY08. The agreements supported specific activities such as the voluntary scrapie herd and flock certification program (\$10,000), swine health protection (\$32,600), classical swine fever (\$40,100), foreign animal diseases (\$15,000), Johne's disease surveillance and control (\$20,500), and National Animal Identification System (\$55,600).

### RABIES QUARANTINE BRANCH

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

The Rabies Quarantine Branch processed an all time high of approximately 9,504 dogs and cats entering Hawai'i during fiscal year 2008 (FY08). This number exceeded the previous high of 8,966 in FY 06 and was nearly eight percent higher than the total of 8,804 animals in FY07. The entries in FY08 represent an increase of almost 100 percent from the 4,771 animals that entered Hawai'i prior to the start of the 5-Day-or-Less program in FY03. In addition, 321 animals transited through the State and approximately 251 guide and service dogs were processed resulting in approximately 10,076 dogs and cats that were managed by the program in FY08.

The following are rabies quarantine statistics for cats and dogs arriving between July 1, 2007 and June 30, 2008 (FY08):

PROGRAM	NUMBER	PERCENT
120-day	649	6.8
5-Day-Or-Less*	1,010	10.6
Airport Release	7,845	82.6
Total	9,504	100
Transiting Through Hawai'i	321	
* Includes dogs and cats arriving early		





Since the 5-Day-or-Less program was implemented in June 2003, the rabies quarantine program has transitioned away from a “quarantine only” system to one that permits the release of qualified dogs and cats directly from the airport when specific pre-entry requirements are met. Such requirements include:

- ◆ Positive pet identification (electronic microchip);
- ◆ A minimum of two pre-entry rabies vaccinations;
- ◆ Rabies serological testing to measure vaccination response and 120-day waiting period after a passing test before entry into the state; and
- ◆ Inspection upon arrival.

The direct release of qualified dogs and cats at the airport has increased the workload for the veterinary, inspection, clerical and accounting staff. Staff and computerized databases are relied upon to monitor and verify information relevant to qualification. Considerable time is spent reviewing documents, pre-qualifying pets, processing payments, receiving and inspecting pets and addressing the needs, questions and concerns of the general public. The clerical, veterinary and inspection personnel spend a significant amount of time e-mailing and speaking with pet owners on the phone or in person explaining program requirements. It is still estimated that about half of all submitted essential documents require follow-up contact with veterinarians or pet owners due to deficiencies.

Although approximately 7,845 dogs and cats were released at the airport in FY08, this number does not reflect the workload of the total number of pet documents processed, as the database contained over 56,000 files of animals for the 5-Day-or-Less program alone. Livestock Disease Control Branch staff including the port veterinarian and livestock inspectors provide critical support to the program by assisting rabies quarantine veterinary technicians in inspecting and processing dogs and cats released at the Airport Animal Quarantine Holding Facility seven days a week. The 5-Day-or-Less program continues to be very successful, but it is labor intensive in documentation and verification. An estimated amount of more than eight percent of arriving pet owners do not submit the required pre-arrival documents beforehand resulting in additional screening and verification of these cases by the inspection staff at the airport facility. Pet owners that do not submit the required documents beforehand along with increasing numbers of animals arriving in the state contribute to the challenges faced by the staff.

The department routinely updates its website and information brochure dedicated to Hawai'i's rabies quarantine program that contain 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 5-day-or-less quarantine-eligible dates at this HDOA website. Checklists for the 5-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. Enhancements to the computer system are ongoing to effectively manage the data and processing of 5-day-or-less dogs and cats.

Under the 5-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.

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 93 percent of arriving dogs and cats qualified for the 5-Day-or-Less program in FY08. Furthermore, of the approximately 8,855 pets that qualified for the 5-Day-or-Less program, 7,845 pets (>88 percent) qualified for direct release upon arrival at Honolulu International Airport. In comparison only 6.8 percent (649) of the arriving animals were quarantined for 120 days.



Midway in FY06, 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 5-Day-or-Less program. Animals previously in the 30-day category are now included within the 5-Day-or-Less program as arriving early by 30 days. Modifications to the computer system that were completed in January 2008 now permit the compilation of data on early arrivals.

The daily population of animals occupying the animal quarantine station at any given time during FY08 ranged between 222 and 370 animals. The fluctuation in daily animal population at the station was lower and varied between 182 to 341 dogs and cats during FY07. In turn, the average daily population was higher in FY 08 than FY07.

In FY07, the department initiated a system that allows dogs and cats to enter Hawai'i directly at Kona International Airport at Keahole, Kahului Airport on Maui and Lihue Airport on Kaua'i. Quarantine approved veterinary facilities serve as private contractors to inspect animals upon arrival at these airports because the rabies quarantine program does not have personnel on islands other than O'ahu. A pet owner must apply for a Neighbor Island Inspection Permit (NIIP) to fly with their dog or cat directly to one of these airports from the continental U.S.

The following are requirements to obtain a NIIP:

1. Every dog or cat must meet all the requirements listed on the "Checklist for the 5-Day-or-Less Program" except that all required documents must be submitted earlier (30 days or more before the intended date of arrival).
2. Pet owners must submit the following documentation to the Animal Quarantine Station 30 days or more ahead of the planned arrival:
  - Completed and notarized Dog & Cat Import Form, AQS 278
  - Original rabies vaccine certificates for the two most recent vaccinations
  - Payment of \$165 in cashier's check or money order made out to the Hawai'i Department of Agriculture
  - Flight information
  - A letter from the owner requesting Direct Airport Release at either "Kona" or "Kahului" or "Lihue"
3. Owners must make reservations for inspection with an approved contractor. Contractors will then send a confirmation to the Animal Quarantine Station that they have agreed to perform the inspection and release procedure on the dog or cat. Owners are responsible for the additional fees to the contractor for this service.
4. A Kona, Kahului or Lihue Neighbor Island Inspection Permit will be mailed to the owner once the Animal Quarantine Station has:
  - Received the above required documents, information and payment (see 2 above);
  - Confirmed the pet meets all of the requirements for the 5-Day-or-Less program and neighbor island inspection and release; and
  - Received confirmation from the approved contractor that they will meet the pet.
5. The original Neighbor Island Inspection Permit must accompany the dog or cat on the aircraft and be submitted to the inspector upon arrival in Hawai'i.

Pet owners are informed that all airlines may not be participating in flying dogs and cats with Neighbor Island Inspection Permits to Kona, Kahului and Lihue.

In addition to rabies exclusion, the quarantine program continues to monitor dogs and cats carefully for ticks exotic to Hawai'i. Although animals were discovered that were carrying Rhipicephalus sanguineus ticks in FY08, Amblyomma americanum ticks were also discovered and eliminated from an animal arriving in Hawai'i during FY08. This genus has been implicated in the transmission of diseases of veterinary and human medical importance. Rhipicephalus sanguineus, the brown dog tick, is the only tick established in Hawai'i associated with dogs.



**HDOA's Hawai'i Island veterinarian Dr. Kim Kozuma conducts annual surveillance activities for Scrapie at the Kukaiau Ranch on the Hamakua Coast.**



## 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 impact on the state's 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)

Highly pathogenic Avian Influenza (H5N1) continues to circulate in wild birds and poultry in Asia, Africa and Europe and continues to cause disease in humans closely associated with infected birds/poultry in those areas. The program participates with statewide efforts to monitor birds for AI by testing diseased poultry found on farms and imported to the state. To date, no positive AI (H5N1) tests results have occurred in domestic or wild birds in Hawai'i or North America.

### ◆ West Nile Virus (WNV)

To prevent WNV from entering the state undetected, an embargo on the movement of poultry and other birds, except chicken hatching eggs and chicken day-old chicks through the U.S. Post Service remains in place. A "Poultry and Bird Import Permit" for all poultry and other birds including all hatching eggs and day-old chicks is also required for entry into the state. Those species of poultry and birds capable of producing high WNV levels are required to undergo a seven-day pre-arrival quarantine before qualifying for an entry permit. Poultry and other birds arriving in the state not meeting entry requirements are refused entry. In FY08, nineteen shipments of poultry or other birds were refused entry or returned by carriers to their origins for failing to meet entry requirements. 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 Hawai'i and Alaska.

### ◆ Bovine Tuberculosis (BTB)

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

The State of Hawai'i 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 man, is caused by the bacteria Mycobacterium bovis.

State and federal veterinarians continue to test cattle herds annually and manage hunter assisted surveillance of wildlife on the east end of Molokai, where bovine tuberculosis has been a recurrent

problem for the past 65 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. BTB is reoccurring nationally with infected herds being found in several states including (NM, CA, WI, and MI).

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. Since the surveillance began in 1998 only infected feral swine have been detected. From 1998 through June 30, 2008, 15 feral swine have been found infected. So far, six of the 15 infected feral swine were found in FY08. Trapping is also used to capture feral swine. One axis deer and 49 feral swine were tested during FY08. To date, all infected feral swine have been found within a two-mile radius of Ualapue where the 1997 infected cow was found. The BTB infection appears to be maintaining itself in the feral swine population. One infected feral pig was detected near the western edge of the control area at Kamalo. Increased hunting and trapping efforts are being made to determine if spread has occurred in this area.

To prevent the potential spread of bovine tuberculosis from eastern Molokai, all cattle east of Kamalo are required to obtain a permit and have an annual negative BTB test to move. 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.

A USDA grant for \$30,000 received in FY07 was extended in FY08 to continue surveillance in wildlife species on the East End of Molokai. This grant supports preparation and shipping of samples to the National Veterinary Service Laboratory and provides outreach to livestock producers, hunters and the community. The hunter-assisted program also reduces the feral swine population in the affected area thereby reducing the risk for transmission.

### ◆ Bovine Brucellosis

#### **Bovine Brucellosis class free status maintained**

Hawai'i 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 man. During the fiscal year, 8,857 cattle were tested for brucellosis. One suspect and no reactors were found. The suspect was reclassified as negative after an epidemiological investigation was completed. Spill over of Brucella suis from infected feral swine and Yersinia enterocolitica cause cross reactivity on cattle surveillance testing



resulting in herd epidemiological investigations that may include herd testing. These investigations find that in areas where B. suis is endemic in feral swine, a single or few head may become transiently infected with B. suis but no cattle to cattle spread has been seen and no herd reproductive abnormalities have been found.

### ◆ **Swine Brucellosis & Pseudorabies (PRV)** **Hawai'i maintains free statuses for Swine Brucellosis and Pseudorabies**

#### ● **Brucellosis**

Hawai'i retained its free status for swine brucellosis during FY08.

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 man. No domestic swine herds were found infected in FY08 and as a result Hawai'i maintains its Brucella suis free status.

One significantly infected transitional herd was found in Kona and depopulated in FY08. After depopulation, cleaning and disinfection, the premise was double fenced to prevent reinfection after repopulating with negative domestic swine. Transitional herds are herds that commingle or allow feral swine to come in contact with domestic swine; therefore, posing a significant risk for infection.

Feral swine in Kona, Hamakua, Kohala (Hawai'i), Kahakuloa (Maui), Ft. Shafter westward through Waianae, the North Shore and Windward (O'ahu) 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 six 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 FY08 included 747 domestic swine, 39 transitional swine and 474 feral swine. Ten percent of the feral swine tested statewide were reactors to swine brucellosis.

#### ● **Pseudorabies**

Hawai'i 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 785 domestic swine during FY08 found no infected domestic swine. One transitional herd was determined to be infected. Feral swine on the islands of Hawai'i, Maui and O'ahu are known to be PRV-infected. Twenty-seven percent of the feral swine tested in FY08 were positive for PRV. Infected feral swine are a constant threat to domestic swine herds. Twenty head of transitional swine and 525 feral swine were tested in FY08. A statewide quarantine order prohibits the introduction of feral swine into domestic swine herds and the inter-island movement of feral swine.

### ◆ **Transmissible Spongiform Encephalopathies** **Scrapie** Hawai'i 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 Hawai'i.

Hawai'i received a \$10,000 grant in FY08 to continue providing 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. A quarantine order is in place to require change of ownership identification requirements for certain classes of sheep and goats for Hawaii to remain consistent in the National Scrapie program.

### ◆ **Bovine Spongiform Encephalopathy (BSE)**

During FY08 BSE sampling on cattle exhibiting neurological signs, unknown causes of death and those unable to rise continued. There were no positive test results.

### ◆ **Chronic Wasting Disease (CWD) in Cervids**

During FY08 the program worked cooperatively with the State Department of Land and Natural Resources and USDA, APHIS Veterinary Services to conduct surveillance testing on captive and wild cervids in the State. No positives were found.

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

The causative agent for Johne's disease is the bacterium *Mycobacterium avium subspecies paratuberculosis* (MAP). 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 of \$20,500 received in





FY08 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 FY08, 956 cattle were tested for Johne's disease. No cattle were cultured positive for MAP in FY08.

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

An embargo on the movement of poultry and other birds into Hawai'i 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:** 19,439 head of livestock; 6,965 poultry and other birds; 673,313 day-old chicks and hatching eggs; 19,613 dogs and cats; and 9,231 other animals.

The branch staff conducted 52 compliance investigations, 4 citations were issued, 178 written warnings, and 19 animals were refused entry.

#### **VETERINARY LABORATORY BRANCH**

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

The Veterinary Laboratory continues to provide a diverse range of animal disease diagnostic services, ensuring accurate and timely support to the department's goals and objectives.

Ongoing laboratory tests for livestock diseases are to support the division's disease surveillance programs and to participate in various State-Federal cooperative programs. It also has a critical role in providing a solid basis for the state to demonstrate livestock disease-free statuses that would facilitate animal movements to national and international markets.

During FY08, with improved test techniques and turn-around time, approximately 26,000 tests/samples, almost 5,000 more than FY06-07, were processed and tested for serological, parasitological, and pathological diagnoses of livestock/poultry and pet animal diseases. In this the same period, the laboratory also participated in surveillance of potentially zoonotic infectious agents, such as avian influenza, West Nile virus, and prion diseases of animals. In cooperation with other agencies, such as Department of Health and Department of Land and Natural Resources, the laboratory collected and submitted 159 avian specimens to reference laboratories to rule out avian influenza, West Nile and highly pathogenic Newcastle's disease viruses; all samples tested negative for these agents.

Laboratory staff, in conjunction with University of Hawai'i, College of Tropical Agriculture and Human Resources, is continuing to participate in the National Animal Identification System - Hawai'i Animal Premise

Identification System under a State-Federal cooperative agreement. Currently approximately 26 percent of farms/producers are registered, an increase of approximately three percent from FY07. The program's goal is to establish rapid (within 48 hours) traceability in the event of an outbreak of a highly contagious disease, foreign animal disease or newly emerging disease to minimize animal health and economic impacts of such a disease introduction.

As part of the division's goal to expand disease surveillance programs, the laboratory initiated surveillance for Classical Swine Fever (CSF) under a USDA cooperative agreement for \$40,000. Samples for testing will be from pigs with clinical signs consistent with CSF. Classical Swine Fever, also known as Hog Cholera, is a highly contagious viral septicemia affecting only swine. It has been eradicated from the United States, but is still endemic in much of the world. Disease surveillance programs allow for the early detection of introduced disease agents that improve the chances of disease control and eradication.

#### **Veterinary Laboratory's Statistical Highlights:**

**Serological section:** Tests performed in serological diagnoses are Anaplasma ELISA, Bluetongue ELISA, Brucella testing (Card, BAPA and Rivanol), Equine Infectious Anemia AGID, Johne's disease ELISA, and Pseudorabies ELISA. The 19,021 tests performed during FY08 is approximately a 20 percent increase over FY07. Significant increases were reflected primarily in Johne's disease and Pseudorabies testing. All microbiologists performing serologic testing are proficiency tested and certified by the NVSL-USDA.

**Clinical Pathology section:** This section, including parasitology, hematology, urinalysis and cytology, processed and tested 6,060 in FY08; 1,838 more tests than in FY07. The majority of samples were from the Rabies Quarantine Branch, and the remainder from the Livestock Disease Control branch.

**Pathology section:** This section's responsibilities fall under the veterinary medical officers and chemist/histologist. During FY08, the pathology section handled 1,410 samples, including 279 necropsy cases and 1,089 slides for histopathological examinations. The number was about the same as in FY07.

**Disease Surveillance (Federal-State cooperative programs):** The laboratory collected and processed samples, such as brains from birds or sheep and goats or cloacal and throat swabs from birds for specialized testing. Three hundred sixty-six avian specimens collected were primarily for avian influenza, West Nile virus and highly pathogenic Newcastle's disease testing. The sheep and goat samples were evaluated for scrapie, a prion disease. Approximately 100 more samples were collected during FY08 compared to FY07.

See chart on page 59 for more detail.



### AQUACULTURE DEVELOPMENT PROGRAM



**Todd Low**  
Manager  
(from September 2008)

**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, in order to create jobs and diversify the economies of all islands.

#### Major activities for FY08 were:

- ◆ Estimated wholesale product value for the industry was \$21.3 million for calendar year 2006 according to department statisticians, which represents a 25 percent decline from 2005. The majority of the production, 82 percent, was produced on the Hawai'i Island. Algae continue to constitute high value and with finfish and shellfish amounted to 78 percent of the total value of the industry.
- ◆ Continued the joint implementation of the amended Chapter 190D, HRS, Ocean and Submerged Lands Leasing law with the Department of Land and Natural Resources (DLNR) by facilitating permit preparation for two new aquaculture projects off various islands. Prepared annual joint report to Legislature, with DLNR, on status of the ocean leasing.

- ◆ Continued to provide an internationally recognized Shrimp Surveillance and Certification Program to the growing shrimp broodstock industry. The Aquaculture Veterinarian provides third-party diagnostic sample collection with chain of custody documentation for all Hawai'i broodstock operations including the Oceanic Institution/US Marine Shrimp Farming Program stocks based on O'ahu. At present there are eight shrimp broodstock export farms under the surveillance program. Hawai'i's shrimp broodstock are as essential to the intensely competitive global shrimp production market in Asia, as bull and cow breeders are to the beef industry. To date, we have provided support to enable one local shrimp breeding facility to provide seedstocks to the food shrimp production sector.

- ◆ Provided expertise in handling disease outbreaks on two local *specific pathogen free* shrimp farms on O'ahu and Kaua'i. These two cases were monitored and handled according to standards of the Animal and Plant Health Inspection Service, U.S. Department of Agriculture, and were successfully resolved.



**ADP mascot, Freshy the Fish, poses with some newfound friends at the Hawai'i State Farm Fair at the Bishop Museum.**



**Governor Linda Lingle visits the ADP display at a special event during the "Second Saturday at the Garden," at the Pearl City Urban Garden Center.**



- ◆ Assisted farmers with import permits and export health documentation for aquatic species on O`ahu, Kaua`i, Maui, Moloka`i and Hawai`i. The Aquaculture Veterinarian is continuing to provide chain of custody sampling for a voluntary screening of imported koi stocks while in quarantine before being transferred to grow-out systems destined for export. This effort is contributing to the now significant numbers of koi being exported to the mainland and future expanding market into the European Union. Hawai`i is also one of the primary beta test sites for a new Koi Best Health Practices program, which places emphasis on biosecurity and veterinary oversight. The disease prevention program continues to provide health screens of land-based hatchery produced moi fingerlings before stocking into open ocean net-pens, and provides assistance for hydrogen peroxide biopsy and treatment approval forms in cooperation with federal oversight in developing new aquaculture drugs for food fish species.
- ◆ Promoted the local consumption of aquaculture products by participating in the Hawai`i Lodging, Hospitality and Food Service Expo, Agriculture in the City, Hawai`i State Farm Fair at the Bishop Museum, Hawai`i Agriculture Conference 2008, Made in Hawai`i Exposition, and Second Saturday at the Garden. Worked with various Internet, television, radio and print media to provide background information, place stories and promote the industry. Continued ADP's electronic industry newsletter, *Aquaflashes*, to get out time-sensitive information to our farmers.
- ◆ Hired an Information Specialist III and a Laboratory Assistant. These new hires bring the personnel of the program to full staffing.
- ◆ Co-funded statewide technical extension services to the aquaculture industry (with over 1,540 documented incidents of assistance), in cooperation with the UH Sea Grant Extension Service, leveraging over \$762,000 in matching funds through the project.
- ◆ Participated in the governing boards and advisory committees of the Center for Tropical and Subtropical Aquaculture, National Association of State Aquaculture Coordinators, Western Pacific Regional Fishery Management Council, Ocean Resources Management Plan Work Group, and Hawai`i Aquaculture Association.
- ◆ Provided technical reviews of research and development proposals to the Hawai`i County Economic Development, Center for Tropical and Subtropical Aquaculture, UH Sea Grant College Program, U.S. Department of Commerce, and U.S. Department of Agriculture. Provided reviews of Aquatic Species Importation 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 Hawai'i'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 Hawai'i.**

### 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.

**Highlighted activities for the program in FY 2008 were as follows:**

#### **Regulatory Support Provided for Western Pacific Nations**

At the request of the U.S. Environmental Protection Agency (EPA), Pesticides Specialist Glenn Sahara visited the Federated States of Micronesia (Kosrae, Chuuk, and Pohnpei) and the Republic of the Marshall Islands (Majuro) from July 28, 2007 to August 15, 2007. Sahara is assisting the EPA in strengthening pesticide regulatory programs in the Pacific Island nations and territories associated with the United States. In the areas visited there was an influx of immigrants who are bringing in unauthorized pesticides. The Federated States are developing regulatory programs and Sahara shared Hawai'i's law and rules with public officials. He also shared forms used by Hawai'i and EPA to document inspections and record information.

### **Hawaii Hosts 81<sup>st</sup> National Plant Board Meeting**

Hawai'i hosted the 81<sup>st</sup> National Plant Board Meeting at the Waikiki Beach Marriott Resort & Spa from August 19, 2007 to August 23, 2007. More than 170 participants from throughout United States, Canada, and Mexico attended. The event established a new standard for success of this meeting. Dean Yoshizu was the lead for administrative support and a large part of the success of this event was the attention to detail and flawless execution of plans. Dean Yoshizu was awarded the Sustained Superior Performance Award in part because he provided quality administrative support for the meeting in addition to his other assignments.

### **Chlorine Gas Restricted**

Chlorine gas became a restricted-use pesticide effective on January 1, 2008. Nineteen facilities use chlorine gas and 68 individuals are certified to use chlorine gas. The users certified for chlorine gas by county is as follows:

Hawai'i	27
Kaua'i	9
Maui	22
O'ahu	10

The most common uses are for drinking water treatment, waste water treatment and to clean-out drip tubing used for agricultural irrigation.

### **Wildlife Protection Agencies Apply Rodenticide to Control Predators on Mokapu Island**

Predators (rats and mongooses) are one of the primary threats to endangered birds. To counter these threats, land managers are developing control methods, including rodenticides for application to conservation areas. One method is the aerial application of rodenticide pellets to forests where predators are a problem. Mokapu Island, a small islet off North – Central Moloka'i was treated with diphacinone pellets in mid-February 2008. The expected result of rat eradication is the recovery of seabirds and native plants.

### **Methamidophos from Acephate Misuse Detected in Big Island Papayas**

A papaya packinghouse reported that residues of methamidophos were detected by the Japan Ministry of Agriculture and Food. Subsequent investigations showed that several of the papaya growers supplying the packinghouse had used acephate, a systemic insecticide which results in methamidophos residues. Warning notices were issued to growers using acephate.





### Rocky Mountain Poison Control Center (Which Operates the Hawai'i Poison Hotline) Expands Activities in Hawai'i

The Department of Health has received funding from the Department of Homeland Security to monitor anomalies in poison exposures. Arrangements were made with the Rocky Mountain Poison Control Center (RMPCC) to report anomalies in reports of exposures to poisons. The Department of Health will receive a biweekly report of irregularities and disseminate this report to appropriate state officials.

The week following the agreement to report anomalies, the RMPCC reported the increase in exposures following the application of pesticides to control fleas in the Bank of Hawai'i Call Center in Kapolei; so the system seems to be working.

### Contract Awarded for Unwanted Pesticide Collection Program

A two-year contract for the collection and disposal of up to 200 pounds of unwanted pesticides from any farmers or small business was awarded. Registration of participants is expected to begin in the Fall of 2008.



**Above: PPC entomologist Walter Nagamine uses an aspirator to collect samples of the *Erythrina* gall wasp that has devastated Hawai'i's wiliwili and coral trees. More information on page 32.**

### PLANT PEST CONTROL BRANCH

Neil Reimer, Ph.D., *Manager*

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 includes 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 Section.

Some of the accomplishments of the branch during FY 2008 included the following:

#### New Pest Detection and Identification

##### Insects and other Arthropods

The HDOA insect taxonomist identified 525 samples of insects and other organisms. Twenty species were added to the branch's Zoological Reference Collection. The collection now contains approximately 166,300 specimens. In addition, 171 samples of insect interceptions were identified for the Plant Quarantine Branch and 265 calls regarding various pests from the general public were processed.

Four newly established insects were recorded during the year. These were:

**A whitefly parasitoid, *Aleuroctonus vittatus*** (Dozier) (Hymenoptera: Eulophidae). Specimens of this parasitoid were first collected in the State from cattail leaves infested with the spiraling whitefly, *Aleurodicus dispersus* Russell, near Sand Island in Honolulu during October 2007. Although the spiraling whitefly has generally been under good biological control with existing natural enemies, low-lying coastal areas continue to have whitefly infestations during the summer and fall months. Observations made since the initial detection indicate that infestations of the whitefly in coastal areas have declined as a result of this new fortuitous parasitoid in the State.

**A thrips, *Dichromothrips smithi*** (Zimmermann) (Thysanoptera: Thripidae). Specimens of this thrips were collected on wild bamboo orchids in the Puna area of Hawai'i Island in October and November 2007. This insect is known to feed on various orchid species in India, Malaya, Thailand and Taiwan.

**A scarabaeid beetle, *Cyclocephala pasadenae*** (Casey) (Coleoptera: Scarabaeidae). Subsequent surveys at a nearby golf course in Waikoloa revealed that that young beetle grubs were present in the kikuyu grass fairways. Beetles of the genus *Cyclocephala* are commonly known



as masked chafers and the young grubs are known to feed on roots of turf grass. Damage caused by the grubs at the golf course is believed to be minimal due to birds searching for and feeding on the grubs. However, holes in the turf have been observed, presumably caused by the birds while digging up and feeding on the grubs.

**A scarabaeid beetle, *Temnorhynchus retusus* (Fabricius)** (Coleoptera: Scarabaeidae). Specimens of this relatively large beetle were collected at several golf courses along the south Kohala coast on Hawai'i Island in August 2007. This beetle is recorded to occur in Tanzania, Mozambique, Malawi, and South Africa. It was accidentally introduced into southeastern and western Australia. It is believed to have been transported to Australia from South Africa in soil used for ballast in ships. Like *C. pasadenae*, it is also known as a pest of turf grass. However, damage caused by the beetle grubs is minimal compared to damage caused by birds searching for and removing the grubs from the turf.

### Plant Pathogens

The HDOA Plant Pathologist diagnosed 458 plant disease samples intercepted by the Plant Quarantine Branch inspectors. Staff also reported the detection in the state of three newly established plant diseases. These were:

**A fungal disease on sweet basil, *Ocimum basilicum* L.**, caused by *Pseudocercospora ocimicola* (Petr. & Cif) Deighton was detected by the USDAAPHIS PPQ inspectors on basil consignments being exported from Hawai'i to the U.S. Mainland where the disease is not known to occur. Leaf spots caused by the pathogen are irregularly necrotic with some yellowing and usually situated at the edges of the leaves. The disease is spread by airborne spores of the fungus, which appears to infect only species within the Genus *Ocimum* or basil and is known to occur in Mexico, Taiwan, China, South and Central America. Basil exports have not been affected by this disease but all shipments must be certified disease-free.

**Fruit rots on rambutan, *Nephelium lappaceum* L., and lychee, *Litchi chinensis* Sonn.**, caused by the fungus *Pestalotiopsis virgatula* (Kleb.) Stey and **a stem canker on rambutan and lychee** caused by the fungus *Dolabra nepheliae* C. Booth & Ting were identified by plant pathologists at the Tropical Plant Genetic Resource Management Unit of the Pacific Basin Agricultural Research Center in Hilo, Hawai'i. *P. virgatula* causes dark brown to black spots on the skins of mature fruits, but does not affect the fleshy parts of the fruit. This insidious disease may be more of a marketing issue because of the discoloration of the skin. The pathogen *D. nepheliae* causes cankers on stems thereby weakening branches, and may pose a more serious problem for these fruit trees. Both diseases are commonly found worldwide where rambutan and lychee are grown.

### Projects of the branch's Biological Control and Chemical/Mechanical (CM) Sections included the following during FY 2008:

**Nettle caterpillar [*Darna pallivitta* Moore]**. The nettle caterpillar (NC) has become more widespread on the island of Hawai'i (Big Island) since its discovery in a plant nursery in Panaewa in September 2001. It has since spread to the islands of O'ahu and Maui through commercial movements of infested nursery plants.

The NC has increasingly become a human health concern because of the potential for an allergic reaction and anaphylactic shock in people that contact the larvae. The larvae are adorned with rows of spines that give off a venom upon contact. The sting may cause an itching, burning sensation and/or welts on the skin which could last for days, weeks or longer. The stinging caterpillars infest a wide variety of plants. It is not uncommon to come in contact with them on palms, pasture plants, ornamental grasses, weeds and foliage plants. They are most abundant in summer months because the weather is warmer and conditions favor a shorter life cycle and higher reproductive rate. In fact, the frequency of pest calls and inquiries concerning the nettle caterpillar increased in summer, peaking in August, when they are most abundant.

The parasitic wasp, *Aroplectrus dimerus* L. (Fam. Eulophidae), is a biocontrol agent that HDOA has petitioned for release to control NC. PPC staff collected the parasitoid in Taiwan in October 2004. It has been in colonization at the HDOA Insect Containment Facility (ICF) since then. It has undergone a comprehensive and rigorous risk assessment evaluation and findings have yielded no indication that it would be a risk when liberated in the natural habitat. The request and proper documents, including an environmental review seeking approval for its release from the ICF, have been submitted to the Federal and State regulatory agencies.

In anticipation for the NC's release, the extent of its spread and distribution is being monitored on the major islands. Ground surveys on the island of Hawai'i showed that the East Hawai'i infestation has spread from Panaewa (Hilo District) to as far as Papaikou (North), west to Mountain View (Hilo District), and south to Hawaiian Beaches (Puna District). On West Hawai'i (Kona District), NC was first detected in July 2006 in a garden section of a retail store in Kona. Then, in September and October 2006, respectively, additional detections were made at Keahole and Hualalai. Recently, in June 2008, NC was found in Holualoa. An infestation was confirmed in February 2007 in a plant nursery and a school yard in Kohala. Additional survey data are being generated using sticky traps baited with pheromone lures. As many as 33 traps have been deployed every half a mile covering a distance of 16 miles in the Puna District, from an elevation of 580 ft (Kurtistown) to as high as 3,800 ft (Volcano Village). A second trap line



consisting of 25 sticky traps were spread out across 12 miles at half mile apart between Hilo and Ninole in the Hamakua District.

On O`ahu, CM section personnel coordinated with cooperating agencies, HDOA-PQB, USDA-ARS, USDA-APHIS, and O`ahu Invasive Species Committee, to set out more than 500 traps that house nettle caterpillar (NC) pheromone plugs on sticky surfaces to attract male moths in an effort to eliminate some of the moths and to determine the boundaries of the infestation in West and Central O`ahu. Traps were monitored between one and four times per month. Data collected on the numbers of moths caught in the traps has never before been done in Hawai`i and will play a key role in devising a plan for the release of biological control agents.

Nursery workers discovered NC caterpillars at a Waianae ornamental plant nursery that belonged to the owner of the two nurseries that were originally infested in Central O`ahu in FY07. The quick actions taken by CM Section staff and nursery management achieved eradication at this location. Chemical treatment, male NC moth trapping, use of black light bug zappers, and halting the movement of plant materials out of the nursery eradicated the incipient population of nettle caterpillars. Monitoring with NC pheromone traps in this area during this past year has demonstrated that the moths are no longer present.

In Haiku on the island of Maui, a resident found a caterpillar, which was identified as the nettle caterpillar by HDOA Maui staff. Nettle Caterpillar pheromone traps that were set up by HDOA, USDA-APHIS, and MISC revealed that the Haiku infestation had been centered at two plant nurseries in Haiku. The NC moths found in various life stages indicated that the population of NC had been established for more than one year. It is suspected that plants had been moved from the Big Island to the nurseries on Maui.

**Pickleworm** [*Diaphania nitidalis* Cramer]. The pickleworm (PW), *D. nitidalis* (Lepidoptera: Crambidae), is a potential threat to production of cucurbits in Hawai`i because of the severe feeding damage it causes on the crop. The warm and semi-tropical climate ensures the survival and build-up of the pest population and the farming practice of growing cucurbit vegetables all year round makes available a continuous supply of plant hosts.

The Pickleworm Survey Project supported with the USDA CAPS funds was undertaken from September 2006 through June 2007. Survey and monitoring of the pest on O`ahu and the neighbor islands consisted of moth trap baited with synthetic floral extracts and collection of infested fruits to rear out the natural enemies that may be associated with the PW. The survey data reported in FY07 indicated that the PW is widespread throughout the island of O`ahu and that incipient pest infestations had been found on the leeward, windward, central and east sides of O`ahu. On

the neighbor islands, PW has found refuge on Kaua`i, Big Island and Maui.

Known to infest cucurbit crops, squashes are the most favored host by PW. Squashes are infested first by the PW even if grown adjacent to or inter planted with other cucurbit vegetables. Cucurbit crops however, have different levels of resistance or susceptibility to the PW among or within varieties. Although it is not understood why, it appears that gravid adult moths prefer hosts with hairy (pubescent) plant surface and rough foliage texture. In one of the sites surveyed on leeward O`ahu, PW infestation on an accession of cantaloupe ('Arko') reached >50 percent compared with <1percent in accession 'C1591.'

Several natural enemies of the PW, which included at least two Ichneumonid and four braconid parasitoids, have been reported elsewhere. Collections of infested fruits during the course of the 12-month survey yielded one naturally-occurring biocontrol agents of PW in Hawai`i. This was a lacewing, a general predator, which was observed to prey on PW larvae but its impact is not significant.

**Glassywinged sharpshooter** [*Homalodisca vitripennis* (= *H. coagulata* (Say))]. The glassywinged sharpshooter (GWSS) which was building up large populations and expanding its range in Hawai`i shortly after arriving here is now difficult to find. Periodic inspection of host plants on at least five locations across leeward O`ahu, where selected sites were surveyed and monitored during the peak of sharpshooter abundance after its discovery in May 2004, showed no signs of their presence. The adults and nymphs were absent on at least 30 recorded host plants, mostly ornamentals or trees planted for landscaping purposes along highways, and in recreation areas and public parks. Likewise, there was no evidence of the characteristic powdery shades of white color on the foliage of infested plants which results from the so-called sharpshooter 'rain' - dried exudates given off by the sap-feeding sharpshooters. To date, the sharpshooter population is deemed completely suppressed through biological control. Although the pest may not have been completely eradicated, their numbers have decreased substantially.

At the time GWSS was first discovered in Hawai`i at Pearl City on the island of O`ahu, the pest posed a potential threat to Hawaiian agriculture and native flora because it transmits a plant pathogen, *Xylella fastidiosa*, the causal organism of a bacterial disease on a number of fruit crops and ornamentals including Pierce's disease in grapes, citrus variegated chlorosis, alfalfa dwarf, and scorch diseases in almond and oak, among others. However, the timely intervention of a mymarid egg parasitoid, *Gonatocerus ashmeadi* Girault, in 2005 – 2006 brought about a rapid decline in sharpshooter population. The parasitoid, believed to have immigrated into O`ahu in parasitized eggs, is one of the few natural enemies that were effective against the GWSS in southeastern U.S. and





Mexico. The unique ability of *G. ashmeadi* to attack the first stage of sharpshooter development makes it a potent mortality check that negated the explosive surge of GWSS populations. The level of egg parasitization that was exerted by *G. ashmeadi* on GWSS reached a high of 97-100 percent. This was determined from more than 5,000 sharpshooter eggs inventoried from as many as 384 sharpshooter egg masses collected at the conclusion of the project in early 2007.

Additionally, the impact of *G. ashmeadi* parasitization was complimented with the concerted action of a predator, the Mexican ant, *Pseudomyrmex gracilis mexicanus* (Hymenoptera: Formicidae), and an unidentified microbial pathogen.

The benefits of fortuitous biocontrol could be appreciated in terms of the additional funds, manpower, and time HDOA would have expended for a biocontrol project of this magnitude had overseas exploration for natural enemies of the glassywinged sharpshooter been needed.

**Papaya mealybug** [*Paracoccus marginatus* Williams and Granara de Willink]. In 2007, the papaya mealybug (PM) was reported to have spread from Maui, where the pest was initially discovered, to the neighbor islands, (O'ahu, Hawai'i, and Kaua'i). The number of pest calls related to papaya mealybug had declined considerably in mid-2007 to early 2008. On O'ahu, few calls were received from residents in Honolulu, Kailua, and East O'ahu. Although the papaya mealybug prefers papaya, plumeria, hibiscus and jatropa, in most cases, the mealybug infestation was reported on Singapore plumeria trees (*Plumeria obtusa*) growing in residential backyards. The infestations were small and fairly well isolated. Pest calls were followed through with visits to residences to inform about the pest mealybug and explain how biological control works in terms of regulating the pest populations to manageable levels. The natural enemies often observed associated with the papaya mealybug on infested plants, were shown and demonstrated to the callers. Generally, the residents, fully aware of the risks and safety concerns associated with using potent pesticides, were comfortable with shooting the infested plants with water and practicing sanitation by collecting and discarding trimmed plant parts and fallen leaves in sealed plastic bags for disposal.

Papaya mealybug infestations have subsided considerably because of the complex of natural enemies attacking them. Although their concerted action on the pest had not been measured quantitatively, samples of infested host plants, collected and inventoried, indicated that 20-80 percent of various insects found were predaceous predators, including, brown lacewings, syrphid fly larvae and coccinellid beetles. Of particular importance was the parasitoid *Anagyrus loecki* Noyes, thought to have immigrated to Hawai'i with the papaya mealybug. This small wasp was dispersed in an augmentative release program by Biocontrol Section staff

and is now widespread throughout the islands. It is now difficult to find dense populations of PM in the field due to the actions of these natural enemies.

**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 on the island of Hawai'i. 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. The infestation was brought under good control with spray application of the oil. Surveys by Biocontrol Section staff discovered a parasitic wasp and a predacious ladybird beetle that are contributing to the suppression of this pest.

**Erythrina gall wasp** [*Quadrastichus erythrinae* Kim]. It was reported in FY07 that a eurytomid parasitoid showed potential as a biocontrol agent of Erythrina gall wasp (EGW). Risk assessment evaluations of non-target gall-formers that attack various host plants indicated the parasitoid was specific to EGW. The eurytomid parasitoid is the first biocontrol agent that has been proposed for release against the EGW.

HDOA collaborated with two insect specialists at the USDA Systematic Entomology Laboratory in Beltsville, Maryland, and the Centre de Cooperation Internationale en Recherche Agronomique in Montpellier, France, to obtain a description and name, *Eurytoma erythrinae*, for this insect that was new to science. A detailed description and taxonomic status of *E. erythrinae* was published in a technical paper titled "A new species of *Eurytoma* (Hymenoptera: Eurytomidae) attacking *Quadrastichus* spp. (Hymenoptera: Eulophidae) galling *Erythrina* spp. (Fabaceae), with a summary of African *Eurytoma* biology and species checklist" on April 2008. This publication facilitated the process to move forward a request for a permit to release *E. erythrinae* from the HDOA Insect Containment Facility. *E. erythrinae* completed the State and Federal environmental review processes for its release in Hawai'i.

A comprehensive Host Specificity Report on *E. erythrinae* was compiled from studies conducted by the HDOA Plant Pest Control Branch, and an accompanying Draft Environmental Assessment Report was written using specific guidelines. These two documents were submitted to each agency and all the appropriate permits were received by late November 2008.

In December 2008, the branch released *E. erythrinae* around the state in native Erythrina trees. Efforts to raise the parasitoid in large numbers at HDOA Insect Containment Facility (ICF) was intensified to build up the population levels required for successful field releases.





In anticipation of parasitoid release, the PPC staff had collaborated with researchers of CTAHR at UH Manoa to locate potential release sites and began pre-release surveys of infested *Erythrina* trees. Field activities included taking inventory of surviving *Erythrina* trees, particularly, native wiliwili, *E. sandwicensis*, assessment of tree stand and estimates of the rate of EGW infestation and qualitative (photo images) evaluation of several trees. The objective was to generate baseline information on the extent of EGW infestation prior to parasitoid release then compare this data to post-release data to determine if the parasitoid had successfully established itself and to document its impact on EGW. Release sites consist of a wide variety of habitats where native or exotic *Erythrina* trees or both are present. These include botanical gardens, dry forest habitats, hillsides, valleys and golf courses.

The 2<sup>nd</sup> promising biocontrol agent is also an ectoparasitoid that was collected in Kenya, East Africa. It is an undescribed species in the Genus *Aprostocetus*. A gravid female lays an egg singly by inserting it into a gall which then hatches into a larva that feeds on a developing immature of EGW within a gall. It takes about 15 days for a parasitoid immature to reach the adult stage. But, unlike *E. erythrinae*, the parasitoid utilizes only one host individual to complete its development. The risk assessment evaluation of *Aprostocetus* sp. is currently on-going at HDOA/ICF.

**Asian citrus psyllid** [*Diaphorina citri* Kuwayama]. The Asian citrus psyllid (ACP) was initially found in Hawai'i in May 2006 when a Waiakea resident submitted a branch from a navel orange tree that was infested with aphids to the HDOA Hilo Office to obtain control recommendations. During microscopic examination of the aphids by PPC Branch personnel, one adult psyllid and some nymphs were found. The association of the ACP as the primary vector of citrus greening disease (CGD), also known 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, Maryland. The results were negative for CGD, caused by the bacterium *Liberibacter asiaticus*. CGD has not been found in Hawai'i to date. Samples of mock orange foliage infested with psyllid nymphs have been collected from sites around Hilo to hold for parasitoid emergence, but none have been detected. Some ladybird beetles, including *Halmsus chalybeus* (Boisduval), *Olla v-nigrum* (Mulsant), and *Coccinella septempunctata* L., have been observed feeding on ACP nymphs.

**Varroa mite** [*Varroa destructor* Anderson and Trueman]. In April 2007, an O'ahu beekeeper with a base yard in Manoa reported that he had observed tiny, red mites in three honey bee hives that he obtained from the Hawai'i Nature Center site several miles away in Makiki. The colonies were no longer being managed and were considered to be abandoned. After a report was received from the beekeeper via the HDOA Pest Hotline, specimens were collected by HDOA entomologists and identified as the varroa mite, *Varroa destructor* Anderson and Trueman. Prior to this discovery, Hawai'i was one of the few places in the world that was still free of this very destructive honey bee pest. The varroa mite is considered to be the most serious pest of honey bees in the world. It has been spreading rapidly throughout most of the beekeeping countries in the world. Adult varroa mites are tiny (1.0 x 1.5 mm), reddish-brown, crab-shaped, flattened mites. They are external parasites that attack honey bee adults, larvae, and pupae and use their piercing-sucking mouthparts to feed on the hemolymph ("blood") of bees.

In varroa mite-infested honey bee colonies, newly emerging bees are malformed. Severe infestations of the mite will result in an eventual decline of bee colonies and a reduced honey bee population. Commercial beekeeping in Hawai'i, which includes queen bee and honey production, has been estimated at more than \$4 million. However, the greatest value of honey bees is their ability to pollinate fruit trees, vegetables, and seed crops. With the presence of the varroa mite in Hawai'i, a great decline in the honey bee population is anticipated. This will significantly reduce pollination of many commercial and residential fruit trees and vegetable crops, especially cucurbits, which are highly dependent on honey bees for pollination.

Immediately following the positive identification of varroa mite on O'ahu, surveys were launched statewide to determine the extent of infestation. Sampling was conducted utilizing the alcohol shake method and sampling of the drone brood. Sampling and surveys done both by HDOA staff and by bee keepers quickly determined that the island of O'ahu was infested. The rest of the state appeared to be free of varroa mite.

HDOA developed a varroa management strategy incorporating statewide surveillance for the rapid detection of varroa mite and other bee pests and to minimize the possibility of varroa mite moving from O'ahu to other islands. The surveillance program consists of swarm traps set up to capture bees as they attempt to create new hives and monitoring systems such as sticky trap boards sent to bee keepers. A total of 137 swarm traps were set up statewide with a focus around air and sea ports. Traps are monitored on a bi-monthly to monthly basis. Any trap found with bees are removed during routine servicing and tested for the presence of varroa mite and other bee parasites and diseases. All bees are killed in the process. No bees were found on other islands with signs of varroa as of June 30, 2008.



**Maui Entomologist Mach Fukada (l) and Exploratory Entomologist Mohsen Ramadan (r) survey a beehive on Maui for varroa mites. Surveys on uninfested islands are key to early detection and determining whether control and eradication operations are appropriate.**

Sticky board traps are a useful tool for monitoring the presence of varroa mite in managed hives. A board lined with adhesive is placed at the bottom of a hive. Mites that fall off of bees are caught on the boards and the level of infestation can be determined as a function of the number of mites caught per days the trap is placed in the hive. Traps are more effective when used in conjunction with the miticide Apistan, however, due to restrictions in the usage of apistan during honey production, some bee keepers are against the use of toxicants such as Apistan in their hives. Sticky boards and apistan were purchased by HDOA for distribution to bee keepers. Sticky boards are then sent to HDOA staff for readings. As of June 2008, no infestations of varroa mite were detected utilizing sticky boards on neighboring islands. On O'ahu, sticky boards can be used as a management tool for varroa mite infestation.

Movement of bees, whether accidental or deliberate, was identified as a high risk pathway for the potential spread of varroa mite from O'ahu to other parts of the state. On August 28, 2007, an interim rule was passed by the Board of Agriculture (Plant Quarantine Interim Rule 07-01) preventing the movement of live bees, dead bees and used bee equipment Interisland from infested areas within the state to uninfested areas.

HDOA staff has responded to over 73 calls and referrals from the public. These calls were for swarms and feral hives. The hives were sampled for varroa mite and other bee parasites and pathogens, then destroyed.

**Miconia** [*Miconia calvescens* DC]. Host range testing of the potential biocontrol gall forming, foliar nematode

*Ditylenchus gallaeformis* sp. nov. from Brazil commenced this year in the plant pathogen containment facility. Nematode galls were chopped and secured to the tips of the test plants using dampened strands of cotton. The test plants, Koster's curse, *Clidemia hirta* (L.) D. Don, and ohia, *Metrosideros polymorpha* Gaud, were then placed in humid chambers and the cotton removed after two weeks. After three months incubation time, the plants were examined for gall formation. There were incipient gall formations on all of the clidemia plants but none were formed on ohia.

Research on the potential of the gall-forming nematode *Ditylenchus gallaeformis* as a classical type of biocontrol agent for Miconia was continued at the Plant Pathology Facility. Since a large number of nematodes is needed for the studies, various ways were tried in the past several months to increase and maintain the nematode population. These included developing methods for extracting the nematode from the gall tissues, optimizing the techniques of inoculating the nematode on the Miconia plants, and culturing the nematodes on various callus tissues that included *Miconia* and *Clidemia* species. While there have been successes in standardizing the extraction and inoculating methods, culturing of the nematode on callus tissues were met with initial difficulties due to contamination. The contamination probably occurred during the plant or nematode axenizing process and would probably be alleviated when the process is conducted under a laminar flow hood (part of the feature of a type 2a biosafety cabinet), which will be available in the Plant Pathology in the near future.

Production of the nematode on miconia plants with the developed methods is underway. Once large population



**Left: Eric Garcia (l) and Mohsen Ramadan (r) install a swarm trap on Kaua'i. Swarm traps are used to capture feral bee swarms and to help in the early detection of varroa mites.**

of the nematode and gall tissues are available, the biology of the nematode and its interaction with the host, including the environmental conditions that affect the epidemiology of the disease, can then be studied in details. Greenhouse tests of host range and efficacy can subsequently be conducted with confidence. In the meantime, a technique of staining the nematode inside the leaf tissue has also been developed to facilitate monitoring the nematode's infection process.

**Fireweed** [*Senecio madagascariensis* Poirét]. The Madagascar moth, *Secusio extensa* (Butler) (Lepidoptera: Arctiidae), is one of the most promising herbivores for the biocontrol of fireweed of the natural enemies collected in Africa during exploratory trips conducted by Plant Pest Control staff. The larvae of *S. extensa* are voracious defoliators of fireweed. More than 70 different species of endemic and naturalized plants in the Family Asteraceae have been screened in a risk assessment evaluation test. Results show that *S. extensa* is highly specific to fireweed. Given a choice, the larvae preferred to feed on fireweed rather than non-target plants.

*Secusio extensa* is the first biological control agent that has been proposed for release against fireweed to alleviate the spread of this invasive weed in Hawai'i. The application and supporting documents to request the release of *S. extensa* in Hawai'i have been submitted to the federal and state agencies. Pending approval by the regulatory agencies, the release of the Madagascar moth is anticipated to alleviate the spread of the invasive weed in the state.

The HDOA Exploratory Entomologist sent new stock of *S. extensa* from East Africa in FY07. This provided sufficient

insect materials to re-establish the moth colony in the Insect Containment Facility (ICF). Colony maintenance is continuing until the necessary permits for release are obtained. Rearing techniques were developed to ensure that the moths do not lose their close affinity to the host plant (as oviposition substrate) as successive generations of progeny are continuously produced.

The CAPS project on the biological control of fireweed was extended by the funding agency (USDA APHIS) for another year until June 2008. As reported in Annual Report for FY07, the original project was proposed around the liberation and evaluation of the biocontrol agent, *S. extensa*. However, it was pushed back because of a delay in the approval of the permit to release the moth from the ICF. Consequently, the project was modified to include studies on fireweed phenology (plant development), ground survey of fortuitous organisms infesting fireweed, and development of an experimental larval diet formulation for mass production of the moth. The information currently being generated on fireweed phenology consists of recording the weather patterns in the fireweed habitat and monthly site visits in pre-selected sampling sites on Maui and Big Island to keep track of fireweed development and its encroachment capability.

Observations on fireweed phenology as affected by weather and other environmental conditions will be used to determine the proper timing of the liberation of the biocontrol agent and critical in ensuring the survival and performance of the Madagascar moth against the fireweed. The latest ground survey data from random locations on the islands of Hawai'i and Maui indicated that the likelihood of finding pest organisms on fireweed that are already present in Hawai'i is remote except for one species of aphid that was found infesting fireweed. On at least four occasions, the same aphid was observed to infest several fireweed plants on Hawai'i and Maui. A test was undertaken to determine if a semi-synthetic diet could be formulated for rearing the larvae of the Madagascar moth, *Secusio extensa*. The composition of the experimental diet was modified from a commercially available formulation that was developed for larval rearing of Arctiid moths, including, *Nyctemera* spp. and other closely related moth species to the Madagascar moth, *Secusio extensa*. These tests are not completed.

The HDOA Exploratory Entomologist had left recently for East Africa to resume collections of potential natural enemies of fireweed. Search and collection for the arctiid moth, *Nyctemera apicalis*, in South Africa and *Sphenella*





*austrina* Munro, a flower head feeding tephritid fly, have been given priorities.

**Banana Poka** [*Passiflora tarminiana* Coppens & Barney, sp. nov. (formerly *P. mollissima*)]. Releases of the banana poka biocontrol agent *Septoria passiflorae* continued for another year. A total of six shipments each consisting of 200 to 240 culture dishes of four-week old *S. passiflorae* were air-cargoed to Kahului, Maui over the winter months. DLNR DOFAW crew members prepared the fungal inoculum by scraping the spores from the cultures into a sugar/gelatin solution which promotes a faster spore germination and infection rate. The fungal solution was sprayed at Poli Poli State Park on the slopes of Haleakala. This collaborative project was highly successful in reducing the banana poka population in the treated area.

**Little Fire Ant** [*Wasmannia auropunctata* (Roger)]. Personnel of the Chemical/Mechanical (CM) Control Section continued surveying nurseries on Oahu for the presence of little fire ant (LFA). No detections of LFA have been made on O'ahu to date. CM staff continued to monitor and treat infestations of the LFA at one location on the Island of Kaua'i. On the Big Island of Hawai'i, CM staff continued to assist nurserymen in detecting LFA and training nursery personnel to detect and treat infested property. Chemical trials continued to be 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 have continued on the islands of Hawai'i, Maui, O'ahu, and Kaua'i. Community groups, plant nurseries, and private individuals are allowed to borrow spray equipment from the HDOA at no charge on these islands. On O'ahu, HDOA personnel assisted the O'ahu Invasive Species Committee (OISC) and the U.S. Army, with night surveys at the one wild population on the island. Coqui frogs have not been detected at this 15-acre site during the last two years. Selected O'ahu commercial nurseries were monitored, treated and nursery staff trained for coqui frog control by HDOA and OISC. Frog populations at the nurseries have declined but single frogs have been captured throughout the year at both residential and commercial sites. The O'ahu staff operated a steamer to sanitize nursery containers and vehicles to disinfest them of coqui frogs. On the Big Island, CM staff worked with researchers from the University of Hawai'i to create additional hot water shower boxes to be used by the nursery industry. Also on the Big Island, CM personnel continued to explore deterring coqui frogs with physical barriers and searching for better materials and barrier configurations for nursery use.

**Banana Bunchy Top Virus (BBTV).** Containment and management practices for the banana bunchy top virus (BBTV) continued on the Islands of Hawai'i, Kaua'i, and Maui, with limited chemical control work on commercial farms by HDOA personnel. Big Island and Maui personnel traveled to Moloka'i when BBTV infected plants were found. CM staff worked with personnel from the University of Hawai'i-Cooperative Extension Service and the Moloka'i Invasive Species Committee (MOMISC) to determine the extent of the infestation of diseased banana plants on Moloka'i. Efforts were made to meet with residents on the Island to provide educational materials and for training on detection and treating diseased plants.

#### Public Awareness Activities

CM Section personnel participated in educational outreach for public awareness at activities such as the Hawai'i County Fair, Maui County Fair, Earth Day on Moloka'i, and the Kaua'i County Fair. Personnel also made visits to public schools to support agricultural awareness. Topics of presentations included noxious weeds, little fire ant, nettle caterpillar, and coqui frogs.

#### Seed Inspection

Routine surveys of agricultural and vegetable seed vendors were conducted to ensure that seed packages sold to consumers were properly labeled. Examination of seed lots entering the United States from foreign ports were performed in the CM 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 compliance with standards. Tests upon requests were performed in the seed laboratory for Hawai'i seed distributors to ensure compliance with the Hawai'i Seed Rules.



**PLANT QUARANTINE BRANCH**

**Carol Okada, Manager**

The Plant Quarantine Branch provides essential services by protecting the people and environment of Hawai'i by preventing the introduction, further spread, and establishment of invasive species and dangerous non-domestic animals that cause harm to agriculture, natural resources, including native biota, and public health.

The branch regulates, through the permitting process, the importation of plants, non-domestic animals, including live seafood for consumption, some types of pets, and microorganisms for human diagnostics, research and bioremediation.

The continued introduction of invasive species is an extremely significant threat to Hawai'i's economy and natural environment and to the health and lifestyle of Hawai'i's people. Reports prepared for the U.S. Congress and USDA have stated that invasive species are entering Hawai'i two million times more rapidly than the natural rate and establishing in the islands five hundred times more than any other state in the nation.

The environmental impact of the high rate of pest introductions is reflected in the numbers of extinct, threatened, and endangered species. Although Hawai'i only occupies 0.2 percent of the nation, a third of the country's Federal Endangered Species list comes from Hawai'i. Furthermore, much of the unique plant and animal life is already extinct. Of all the plants and birds known to be extinct in the U.S., two-thirds are from Hawai'i.

The economic impact of the high rate of pest establishment is seen through the difficult problems that our agricultural industries face when exporting products to the mainland. Agricultural producers are left with increased production costs to combat pests in the field and additional costs for quarantine treatments upon shipment to domestic and foreign markets.

To address invasive species introductions, the branch has formulated and began to implement a new biosecurity program for the state consisting of preclearance programs, port-of-entry inspections, post-entry rapid response and eradication programs, and initiatives to spur the growth of agriculture in Hawai'i to reduce the state's dependency on imported agricultural products. The growth of the agriculture component is vital to reduce the amount of invasive species introductions by lessening the dependency on high-risk imports through locally-grown replacement crops.

Several major projects were undertaken. Specifically, the branch initiated:

- ◆ the planning and installation of joint-use facilities at the airports and harbors to mitigate environmental concerns for the improvements to the transportation infrastructure at ports statewide; and
- ◆ coordinated federal-state programs targeting risk assessments, diagnostics, detection, control and suppression, and emergency management programs.

By merging federal and state resources to implement a comprehensive pest prevention and detection program, we can take a pro-active stance on pest management that benefits Hawai'i and the Nation.

**Joint-Use Inspection Facilities****◆ Alien Species Inspection Facility at Kahului Airport**

The Alien Species Action Plan (ASAP) inspection facility at Kahului Airport is the first joint-use inspection facility in the state. The inspection facility is part of the Alien Species Action Plan, which was developed to prevent the introduction of alien species into Maui via Kahului Airport to the greatest extent possible. It incorporated the measures set forth in the Final Environmental Impact Statement, the Biological Assessment and the Biological Opinion for Kahului Airport Improvements.

The ASAP Inspection Facility houses the federal and state agencies responsible for receiving and inspecting articles arriving on domestic and foreign flights. The facility was designed so that inspection and treatment/destruction can be done within the inspection facility so invasive species cannot escape.

**◆ Joint inspection facilities at Honolulu International Airport**

The joint inspection facilities incorporates ASAP methodology for Honolulu. The port of Honolulu clears 95 percent of the passengers and cargo into the state.

Over the past 10 years, cargo volume has grown and shipping patterns have become more diverse and complex. The result is that federal and state quarantine agency workload and staffing requirements have increased dramatically requiring a fragmentation of inspection offices and working space because of



*Plant Quarantine inspectors shake down every Christmas tree in containers where hitchhiking pests have been found during the initial inspection at the dock.*

the unavailability of appropriate facilities. In order to address the need for a consolidated inspection facility, a study was funded to:

- Provide a secure facility for the inspection and quarantine of commodities for the interdiction of non-native species.
- Provide treatment options for incoming and outgoing commodities.
- Develop the facility to enhance communication and cooperation between agencies, and increase the efficiency and productivity of agency staffs.
- Provide a “one-stop” facility for incoming and outgoing commodities, especially for those shipments which require “multi-agency” inspection. The intent is to expedite the shipping and clearance process and simplify logistics for carriers and other members of the logistics chain.
- Provide facilities to reduce product spoilage that is sometimes the result of limited capacity to hold perishable products in a climate-controlled environment while awaiting shipping. This provides the added financial benefit of reduced insurance costs and direct shipping losses.
- Lastly, a centralized facility will facilitate truck movements and reduce airport traffic.

The joint inspection facilities will be constructed and operated by HDOA, USDA, and potentially US Customs and Border Protection. Inspection facilities would also serve the export and import markets for marshalling, consolidation and deconsolidation of cargo for smaller farm operators.

#### **Preclearance Programs**

To increase quarantine measures, HDOA is working toward conducting more pre-entry site inspections to help lower the amount of invasive species in high-risk commodities destined for Hawai'i.

#### **◆ Christmas Tree Pre-Entry Site Inspection**

HDOA inspectors met with officials of the Oregon Department of Agriculture (ODA) and Washington State Department of Agriculture (WSDA) to observe the harvest, production, inspection and export certification of Christmas trees destined for Hawai'i customers.

An inspection protocol was developed to prevent the introduction of harmful “hitchhiking” pests and to streamline port-of-entry inspection of containerized Christmas trees from Oregon and Washington. The protocol requires each shipment of Christmas trees destined for Hawai'i be accompanied by a phytosanitary certificate of inspection declaring that the trees originated in areas free of gypsy moth (*Lymantria dispar*), sudden oak death (*Phytophthora ramorum*), and were inspected and found to be



apparently free of the yellow jacket, *Vespula germanica*. Shippers are given the option of mechanically shaking 10 percent or 100 percent of trees in each shipment and the intensity of port-of-entry inspection in Hawai'i is dependent on the percentage of trees shaken prior to entry.

In all, 247 containers of fresh cut trees made its way to Hawai'i for Christmas in 2007. Pests of quarantine concern were intercepted in five containers and an option was given for those containers to be treated to 100 percent manual shaking at the HDOA Plant Quarantine office. Four containers were subjected to this treatment and later released to the importer. One container, whose owner did not find this option feasible, had the shipment returned to the shipper.

Other significant interceptions in 2007 include one container containing shrews; thought to have perished on the voyage to Hawai'i. A shrew is a small mouse-sized mammal with a long snout and sharp teeth which it uses to feed on insects. This container was taken to the Plant Quarantine office for treatment; however, no other shrews were discovered. The HDOA Rapid Response teams were dispatched to follow up pest alerts and were able to capture additional yellow jackets, a Pacific tree frog, a Southern alligator lizard, Woolly bear caterpillar, Western Conifer Seed bugs, and an African snail.

HDOA unexpectedly received its' first **air** shipment in a cargo hold containing 3,150 cut trees. It was also the first rejection of this kind when several different types of wasps were discovered along with dirt and rocks. Because there was no available method for moving the shipment to an enclosed area while keeping the shipment contained against pest escape, the treatment option was not presented to the importer and the shipment was refused entry into Hawai'i.

The importation of large shipments of containerized Christmas trees presents a unique challenge for Hawai'i's plant quarantine program. Plant material imported in bulk pose higher risks of introducing insects, pests and disease pathogens. Christmas trees in particular are proven hosts for hitchhiking pests such as yellow jackets, garter snakes, shrews, frogs, lizards, salamanders, snails, and slugs. Shaking the trees prior to importation will not guarantee a pest-free tree; however, it does provide an effective and feasible method of pest mitigation. Just as important to the quarantine effort is having full cooperation of the agricultural officials involved in pre-clearance inspection. With continued interaction and communication, these agencies might better understand Hawai'i's concerns and, in turn, take a more active role in providing cleaner shipments to Hawai'i.

### Rapid Response Programs

In 1905, after 14 poisonous snakes were seized, the responsibility of preventing detrimental non-domestic animals from coming into the islands and establishing was added as a program mandate in order to protect Hawai'i's people and the native environment.

Rapid Response initiates a protocol of an immediate deployment of Plant Quarantine personnel to investigate, capture, monitor, survey, recover, or destroy an environmentally hazardous pest, utilizing modern methods and technology available. The Rapid Response mode is normally activated in response to a credible report (pest call), from a resident, company employee, military personnel, tourist, or law enforcement officer.

ANIMAL RAPID RESPONSE CALLS		
Animal Type	# of calls	# of captures
Turtle	14	7
Snake	36	12
Monkey	1	0
Salamander	1	1
Lizard	80	29
Frog	145	50
Bird	2	2
Cat	1	1
Miscellaneous	9	1
<b>TOTAL</b>	<b>289</b>	<b>103</b>



**Snapping turtle captured by a resident near Lake Wilson in Wahiawa. The turtle weighed 52 lbs.**



- ◆ The Maritime office of the Plant Quarantine (PQ) Branch, received a report of a 7 ¼" dead snake discovered inside a surface container with furniture from Shanghai, China. PQ inspectors retrieved the recently dead snake and identified it as an Asian viper (*Gloydius blomhoffii*). The snake was taken to Bishop Museum for confirmation. The container held love seats and sofas. Due to the hazard and difficulties to inspect the furniture, the container and contents were fumigated and followed by a post-treatment inspection. No other snakes were found.
- ◆ Honolulu International Airport (HIA) received a report from a resident that captured a snapping turtle in the Wilson River near Lake Wilson. The animal was retrieved and identified as an alligator snapping turtle. The animal was turned over to the Honolulu Zoo for exhibition. The turtle weighed 52 lbs. and its carapace was about 20-inches in length. This is the second or third alligator snapping turtle caught in the Wahiawa area. The last one was an immature caught in November of 1995 according to documents provided by the Bishop Museum.
- ◆ Maui inspectors received a report of a large lizard in a shipping container with commercial roofing materials. The lizard was about eight-inches long with dark brown, brown and white markings. Maui inspectors retrieved the lizard and sent it to O`ahu for identification. The lizard was later identified as an alligator lizard (*Elgaria multicarinatus*).
- ◆ A large cat was sighted multiple times in Hilo by a Keaukaha resident. PQ inspectors responded by installing a pig trap in the area which was borrowed from DLNR. The cat was captured and sent to a special sanctuary on the mainland. The official at the sanctuary said that the animal is a hybrid cross between a Bengal and a Serval cat (*Leptailurus serval*) and resembles a Savannah cat. Both Bengal and Savannah cat hybrids are prohibited in Hawai`i.

### Education and Outreach Programs

Outreach consists of presentations given to school children, clubs, and senior citizen groups. We also participate at county fairs, expos, and job fairs to raise awareness about our inspection program, including information on imports/exports of agricultural commodities, invasive pests, career opportunities, and rapid response.

Emphasizing the importance of Hawai`i's statewide Pest Hotline assists the Plant Quarantine Branch's Rapid Response Program in the search, seizure, quarantine, and eradication of invasive pests into the state or from one island to another.

#### PUBLIC OUTREACH & EDUCATION ACTIVITIES FY08

Type	# of Groups	# of participants
Schools	51	6,700
Senior Citizens	4	75
Community organizations	5	650
Career fairs & other public events	11	12,500

Outreach also includes training personnel of local transportation carriers to prevent the introduction of invasive species into Hawai`i and deter the movement of pests between islands.

Training consists of:

- Importing/exporting of agricultural items/non-domestic animals requirements.
- Intra-state movement of plants and parts/non-domestic animals.
- Prevention, control and eradication of invasive pests.
- Summary of the nursery export certification program.
- Responsibilities of businesses to follow state laws and other regulations.





## QUALITY ASSURANCE DIVISION



**John Ryan, Ph.D.**  
*Administrator*

**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 Hawai'i agricultural products can be showcased in Hawai'i as well as throughout the world market through a fair and just agricultural business climate.

The Commodities Branch enhances the economic stability of Hawai'i'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 Hawai'i's 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.

In addition, 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 fruits, vegetables, 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 Hawai'i 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 (See page 67 for a detailed table of activities):

- Due to the closure of the state's last pineapple cannery operation, the Branch no longer conducts certification of canned pineapple products.
- Entered into a cooperative agreement with the United States Department of Agriculture, Agricultural Marketing Service to conduct Country of Origin Labeling audits on fish and shellfish products. Audits were conducted at assigned retail establishments.
- Continued fee-for-service papaya non-transgenic testing program utilizing the "Identity Preservation Protocol" program for tighter control of non-transgenic papayas that are exported to Japan. More than 2.5 million pounds of papayas were checked and over \$44,000 in fees were assessed during the year.
- Staff attended fresh fruits and vegetables, coffee, eggs and dairy industry meetings and conferences; and meetings for the "Island Fresh Buy Fresh, Buy Local" promotion program.
- Celebrated "June is Dairy Month" by participating in Island Fresh and Buy Fresh, Buy Local program to increase public awareness about the importance of buying Island Fresh milk.
- Hosted supervisory visits by USDA official from the Poultry Programs.
- Staff attended meetings with the coffee industry to discuss coffee grading certification and origin verification to ensure the quality of coffee being certified originated within the respective growing districts.



***Eager 4-Hers on Hawai'i Island help promote Milk Month at the Puainako KTA Superstore.***

- Staff continued to conduct audits and educational visits with farmers on food safety awareness. Conducted 33 food safety audits at farms, distributors, packing warehouse facilities.
- Staff conducted greater number of fruit and vegetable inspections due to the Defense Commissary Agency (DECA) implementing the use of a prime vendor for commissary orders.
- Increased number of fields inspected attributed to a greater volume of seed corn certified by the branch.
- The closure of the last O'ahu dairy ended the availability of locally produced milk on the island.
- Branch fee assessments collected totaled \$761,504; approximately 2.6 percent greater 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 (See page 67 for a detailed table of activities.)

- The Measurement Standards Branch hosted the 2008 Western Regional Metrology Conference. The conference was attended by nineteen Metrologists from various state and private laboratories and officials from the National Institute of Standards and Technology (NIST).
- The state metrology laboratory received re-certification by NIST.
- The metrology laboratory inspected and calibrated 179 mass test standards, 693 mass enforcement standards, and 530 field standards for service agencies conducting business in the State of Hawai'i.
- The metrology laboratory inspected and calibrated 15 volumetric test standards, 29 volumetric enforcement standards, and 31 volumetric field standards for service agencies conducting business in the State of Hawai'i.
- The branch received and investigated four odometer complaints.
- The compliance rate for stores inspected for price verification was 99 percent.
- The branch performed 87 retail gasoline octane tests.



## 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 Hawai'i's agricultural industry and to facilitate its transition from a dual-crop (sugar and pineapple) industry to a diversified, multi-crop and animal industry. One of ADC's major goals is to preserve agriculture land and infrastructure abandoned by former plantations for current or future agriculture use. For administrative purposes, ADC is attached to the Hawai'i Department of Agriculture (HDOA).

The ADC is headed by a board of directors consisting of eight private-sector members appointed by the governor and three ex-officio members to include the Chairperson of HDOA, Chairperson of the Department of Land and Natural Resources (DLNR), and Director of the Department of Business, Economic Development and Tourism (DBEDT).

Board members: Teena Rasmussen (Chair), Robert Sutherland (Vice-Chair), Robert Osgood, Robert Cooper, Christine Daleiden, Duane Lau, Wayne Katayama, David Rietow, Sandra Kunimoto (Ex-Officio), Ted Liu (Ex-Officio), and Laura Thielen (Ex-Officio).

The following summarizes ADC's various projects and activities during FY 2007-2008:

### **Kekaha Agricultural Lands and Infrastructure**

A major rainstorm in December 2007 challenged ADC and its contractors to execute emergency procedures. We opened all the outfalls from Kekaha Town to the Pacific Missile Range Facility (PMRF) to facilitate flood water drainage and monitored discharge water quality following NPDES permit requirements. With both 200-hp pumps running, the discharge canal at Kawaieie pump station was at full capacity. Despite all the efforts, flooding occurred on some of the lower elevation fields resulting in crop damage. It took over a week to get the water back down to the target level of 1.5 ft. below sea level. No flooding was reported at the PMRF.

ADC continues to work on the issuance of long-term land licenses to its tenants. Currently tenants with 20-year licenses include Syngenta, Pioneer-Hi-Bred, BASF Plant Science, and Wines of Kauai.

Since a formal agreement with ADC has been executed, the Kekaha Agriculture Association (Coop) continues to make improvements on the deteriorating infrastructure. The Halemanu stave pipe, which supplies water to the Puu Lua reservoir, was replaced with a HDPP pipe. Security gates were also installed on main entrances to and from the property.

Pacific West Energy and Gay and Robinson approached ADC expressing interest to license approximately two thousand acres of land as the companies made plans to combine resources to create an energy company. A major component of the plan includes the production of ethanol using sugar cane as the feedstock.

ADC enlisted the help from experts of the College of Tropical Agriculture and Human Resources (CTAHR) and has completed preliminary assessment of the piggery area and recommended actions to isolate the piggery waste. The ADC board of directors approved a budget of \$150,000 to make improvements on the ditch, piping and pumps.

By the end of September 2008, ADC will have completed a three-year contract awarded to the ADC by the U.S. Navy to operate and maintain the Kawaieie and Nohili pump stations and the related drainage canals. With experienced and reliable contractors in place, ADC encountered no major issues during this third optional year.

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

Except for a brief period in December 2007, O'ahu rainfall, like many areas in the state, had been below normal during this year. As a result demand for irrigation water remained stable and slightly above average.

The installation of a pump-back system at Reservoir 225 was completed during this fiscal year and has been working as expected. This new pump back system is an integral part of components being added to the WWS in recent years to improve the overall operating efficiency of the ditch and to reduce system loss.

ADC continued to work with the James Campbell Company and the new landowners to transfer water allocation from the old Campbell water use permit to the new permits. Staff also provided input into the design of the new water distribution lines as the landowners were preparing to upgrade the deteriorated infrastructure. Replacing the old plantation water lines has helped to reduce system loss since a section of the old line was known to leak badly.





The acquisition of thousands of acres of former Campbell land by major agribusinesses such as Monsanto and Pioneer was good news to agriculture and to the well being of the WWS. In addition, the land being preserved for agricultural use, millions of dollars of infrastructure improvements and construction have been planned for the area as well. In addition, many former Del Monte workers have found employment with the new landowners. It is estimated that several hundred agricultural jobs will be created in the future as these companies increase their production and research activities.

As part of the Waiahole Combined Contested Case Decision and Order III, reservoirs 225 and 155 were to be lined with an impermeable material and ADC's reduce system loss permit would be reduced from 2.03 mgd to 1.42 mgd by June 2008. The reservoir lining project is a 65/35 cost-sharing project between the U.S. Army Corps of Engineers and HDOA, the local sponsor. Unfortunately, due to cost escalation and dam modification processes, the project was delayed. ADC will need to go through a ground water use permit modification process to account for the system loss until the reservoirs are lined.

### **East Kaua'i Irrigation System**

ADC continues to assist the East Kaua'i Water Users Cooperative to operate and maintain their irrigation system with a \$50,000 contract. The set aside of the irrigation system to ADC has been on hold because of water diversion concerns relating to two hydroelectric plants owned and operated by the Kaua'i Island Utility Cooperative.

### **East Kaua'i (Kalepa) Land**

At its April 25, 2008 meeting, the Board of Land and Natural Resources (BLNR) approved the set aside of approximately 6,200 acres of former sugar land located in Kalepa, Kaua'i, to the ADC. About 2,000 acres of this land are irrigated fields serviced by the East Kaua'i Irrigation System. The set aside will not take place until the subdivision of about 58 acres of land to the Division of Forestry and Wildlife has been completed.

Although management of land and water together are preferred, BLNR's decision to set aside the Kalepa land to ADC separately from the water system was expedited by the inquiry of available state land on Kaua'i for an energy project proposed by the Green Energy Team LLC. The proposed project would require the use of 2,000 acres of state land to grow molucca albizia, a highly invasive and fast growing tree, for energy production. The proposal was highly controversial due to several reasons: the cultivation of an invasive species on state land, the displacement of agricultural tenants on revocable permits, and the use of fertile agriculture land for energy production. ADC was asked to facilitate a co-existence plan between the energy company and the existing tenants resulting in a series of

three meetings that took place on Kaua'i in December 2007. Green Energy Team eventually agreed to grow eucalyptus urophylla/grandis, instead of molucca albizia on state land and reduced its land request from 2,000 acres to 1,000 acres. In turn each of the existing tenants, mainly ranchers, would give up a portion of their permitted area to accommodate the energy project. Fence buy back agreements also had to be worked out. Subsequently the BLNR approved the issuance of a revocable permit to Green Energy Team and the re-issuance of new revocable permits to all the tenants.

The realignment of boundary lines between the tenants created another controversial issue, since about 200 acres of the 1,000 acres given up by the tenants to the Green Energy Team were irrigated fields. The use of irrigated land for a forestry project is not consistent with the master plan developed for the project area. Consensus from ADC and the Farm Bureau is that irrigated land should be reserved for diversified agriculture projects only. ADC plans on working with the Green Energy Team and the other tenants to resolve this issue in the future.

### **Ka'u Irrigation District**

At its January 11, 2008 meeting, the BLNR approved the set aside of various Ka'u District irrigation water sources and a management right of entry to ADC. Before an executive order for the set aside can be initiated, ADC is required to provide a CAD map with metes and bounds descriptions of the water sources. This requirement has proven to be a challenging task because most of the tunnels are not clearly marked on state or plantation maps. Hence, ADC enlisted the help from key members of the Ka'u master coop to help locate the water tunnels and to identify the tunnels with GPS coordinates.

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

With \$1.8 million secured from the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) and another \$1.1 million from Department of Land and Natural Resource's Legacy Land Conservation fund, ADC continued to work with the various agencies and the landowner on issues relating to the purchase of the perpetual agriculture easement in Kunia. Within this year, an environmental assessment, a phase I inspection, a baseline report, and a yellow-book appraisal have been completed. The purchase cannot be closed until the appraisal is approved by the NRCS.

### **Kaua'i Tropical Fruit Disinfestation Facility**

ADC continued to work with CTAHR, the Kaua'i Farm Bureau Development Corporation, the County of Kaua'i and the Kaua'i Economic Opportunity (KEO), on reopening Kaua'i's Tropical Fruit Disinfestation facility. The main focus for the group has been on increasing production.



ADC is the expending agency of a \$250,000 legislative grant, awarded to the KEO, to papaya farmers and treatment facility workers. During this past year, several selected new farmers were being trained to grow papaya on 9 acres of private land. The USDA Animal and Plant Health Inspection Service (APHIS) will need to re-certify the plant before treatment for exporting can begin.

### **Wahiawa Irrigation System**

Since Dole Food Company offered to gift the Wahiawa Irrigation System (WIS) to the state in late 2006, ADC commissioned an engineering study of the system to identify the potential benefits and liabilities, and to evaluate the cost of repairing the WIS. The report, completed in the fall of 2007, summarized major repairs needed on the reservoirs, siphons, tunnels, flumes, and outlets. Estimated repair costs within the first 5 years (2007 dollars) is \$4.2 million of which approximately \$1 million is required to repair the gate valves designed to release water from the Wahiawa reservoir. Dole reportedly has begun to do some of the repairs on their own. In the future, an estimated \$2.9 million is required to repair some of the siphons and structures. The 2.8 mile Wahiawa tunnel has not been inspected and the cost to repair it is unknown.

In a draft Phase I engineering report prepared for the DLNR Engineering Division in 2008, the Wahiawa dam, a high-hazard dam, is described as "in poor condition and not safe, non-emergency." Among the various findings, the most critical is an undersized spillway which will not be capable of handling the Probable Maximum Flood (PMF). Preliminary estimates place the cost of construction of an auxiliary spillway to mitigate this issue in the range of \$6 –

8 million. The engineering report also indicated the need to do further investigations, various repairs on the dam and spillway, and replacement of the monitoring instrumentation.

Since both the Wahiawa wastewater treatment plant and the Schofield wastewater treatment plant discharge R2 effluent into the irrigation system, a National Pollutant Discharge Elimination System (NPDES) permit is required to operate the WIS. As the Hawai'i Department of Health is still in the process of implementing Total Maximum Daily Load (TMDL) standards as part of the Clean Water Act requirements, concerns and liabilities relating to water quality standards are unknown at this time.

A preliminary report prepared by the HDOA estimated that in 2007 the WIS supported agricultural activities that generated about \$38 million in farm gate value and 635 full-time and part-time jobs. The Wahiawa Reservoir impounds up to 3 billion gallons of irrigation water which is absolutely critical for agricultural operations on the north shore of O'ahu. Currently an average of 10 million gallons of water from this system is being used by pineapple and diversified agriculture operations daily. The WIS will continue be very important to the state's economy for the years to come as diversified agriculture continues its expansion.

Although there were no actions taken after an initial meeting between ADC and Dole, negotiations are ongoing. The Wahiawa reservoir and dam issues are also directly related to the Galbraith Estate land, another project involving ADC.



*New plantings of  
Norfolk pine in Ka'u*



*The spillway area at the Wahiawa Reservoir*

#### **Galbraith Estate Land**

The Galbraith Estate land refers to about 2,200 acres of agriculture land located between Whitmore Village and Schofield Barracks on Oahu. Until a few years ago, the land was leased and farmed by Del Monte for pineapple production. The strategic importance of this land is its location, which is considered to be the gateway to the north shore of Oahu. The Galbraith Estate was dissolved in 2007 and Bank of Hawaii, its trustee, has been trying to sell the land without much success. Act 234, SLH 2008, authorized the Agribusiness Development Corporation (ADC) to purchase the land on behalf of the state. Funding of \$13 million (G.O. bond) was also approved by the legislature for the purchase.

The Galbraith Estate land is relatively flat. A deep well on the property can provide up to about 2 mgd of irrigation water to the former pineapple fields. Due to its relatively high elevation (about 1000 ft), the land is not suitable for the commercial production of many crops grown around the island. However, crops that benefit from cooler temperatures such as lettuce, cabbage, and some orchard crops could do well in this area. A portion of the land could also be ideal for the establishment of a dairy since milk production tends to be higher in cooler climates.

This property comes with major liabilities as the Galbraith Estate owns half of the Wahiawa Reservoir (Lake Wilson) which was leased to Dole Food Company. The Galbraith half of the reservoir includes half of the dam and the entire spillway. Repair and upgrade costs were mentioned in the Wahiawa Irrigation System part of this report.

#### **Other projects**

- ADC, with help from the Manufacturing Extension Partnership (MEP) of the High Technology Development Corporation, finished an inter-island transportation study of agricultural products. Focus of the study was on less-than-container load cargo service and its potential impact to agricultural producers in the event that Young Brothers decides to discontinue its service.
- The ADC board of directors also approved funding to conduct several industry supporting projects during this fiscal year including: (1) an animal feed demonstrative project on Hawaii; (2) a waste stream handling project on Maui; and (3) a browse feeding workshop study tour for the cattle industry.





**The Incentive Service Awards Program recognizes the “Cream of the Crop.”  
Congratulations to the awardees for 2008!**



**State Employee of the Year  
& HDOA Employee of the Year**

**Dexter Cho**

**Plant Pest Control Branch**

Dexter supports staff entomologists working on biological control measures by collecting and propagating host and test plants, mass producing biocontrol insects for release and assists in field evaluations of effectiveness of biocontrol programs.



**HDOA Manager of the Year**

**Carol Okada**

**Plant Quarantine Branch**

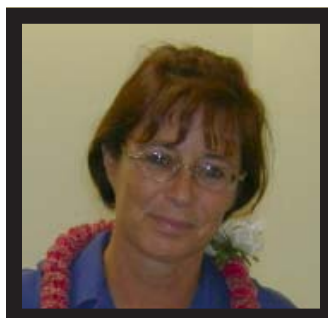
Carol oversees the statewide Plant Quarantine regulatory program, which includes 115 inspectors, pest control aids and clerical staff. She is responsible for Hawai'i's import and export programs.

**Sustained Superior Performance Awards**



**Barbara Schafer**  
**Market Development**  
**Branch**

Barbara provides support for the entire division in an efficient and professional manner. She was instrumental in establishing and maintaining the Livestock Feed Subsidy Program and for managing the division's contracts and documents.



**Laura Ayers**  
**Livestock Disease Control**  
**Branch**

As a livestock inspector, Laura was recognized for her mastery of the livestock database program. She was also cited for her sensitivity, professionalism and genuine care and concern for animals and their owners.



**Dean Yoshizu**  
**Pesticides**  
**Branch**

Dean is responsible for managing federal grants, which allow the Pesticides program to enforce federal requirements to assure the safe use of pesticides and enforcing worker protection standards.

