Aloha! I am pleased to submit the Hawaii Department of Agriculture's Annual Report for the Fiscal Year 2004.

The responsibilities and talents of the department are as diverse as they are important to Hawaii's agriculture and environment. From the plant quarantine inspector protecting our ports of entry from pests, to the veterinarian providing technical assistance to mitigate disease threats, from the entomologist researching methods to combat established pests, to the market development specialist working to expand marketing opportunities for local products, the work of the department impacts so many aspects of life in Hawaii.

This annual report highlights important accomplishments realized during the fiscal year 2004, including:

- The completion of the Lower Hamakua Ditch Emergency Bypass Tunnel on the Big Island, which received several state and national awards for design and construction.
- The interception of 1,600 insect pests that arrived among 14 million pieces of baggage, cargo and mail parcels.
- The successful eradication of a serious plant disease, chrysanthemum white rust, within three days of its discovery at a Big Island nursery through a multi-agency effort.
- Implementation of the highly successful Five-Day-or-Less rabies quarantine program, which allows for the direct release of a dog or cat at the airport if the pet owner completes the requirements of the program.

Each of these accomplishments builds on the work of many people, both within and outside of the department, and we look forward to future collaborative initiatives to sustain and expand agriculture as a viable and significant industry in the State of Hawaii.

Sincerely,

Sandra Lee Kunimoto

Sandra Lee Kunimoto
Chairperson
Hawaii Board of Agriculture

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This annual report is also accessible via the department's website at: www.hawaiiag.org/hdoa/

This annual report may be also made available in large print, taped or in Braille to meet special needs, if requested in advance 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 land use zoning, environmental program development and implementation, and broader planning and economic development issues that affect agricultural resources and the growth of agricultural businesses.

While modest in comparison to the visitor industry's $11 billion in economic activity, the economic activity generated by diversified agriculture is solid, steadily increasing, and will be bolstered by the continued strength of the pineapple and sugarcane industries.

The Department participated in the 70+ member Agricultural Working Group (AWG) which resulted in legislation brought before the 2004 Legislature to identify and protect important agricultural lands (IAL) and provide for the development of incentives to benefit landowners and agricultural businesses situated on important agricultural lands. The effort of the AWG brought together a wide array of expertise to the promotion of agriculture as an important and respected segment of Hawaii's economy. Although no IAL legislation passed during the 2004 legislative session, significant progress was made in increasing the knowledge of legislators and the public of the broad effort and commitment necessary to accomplish the 25-year-old constitutional mandate.

The Department also supported the protection of agricultural resources, increased the use of former sugarcane lands and infrastructure, and expanded diversified agriculture development in general through a number of ongoing efforts. These efforts included the submittal of extensive testimony before County Councils and departments, State Land Use Commission, and community organizations on agriculture-related issues such as amendments to agricultural property tax programs, county-level initiatives to preserve prime agricultural lands, facilitating discussions between farmers and landowners on "good neighbor" and land tenure issues; and amendments to County agricultural zoning and community plan ordinances.

The Department also shepherded the establishment of Hawaii's Conservation Reserve Enhancement Program to encourage agricultural landowners to undertake soil protection and water quality enhancing activities.

AGRIBUSINESS DEVELOPMENT & RESEARCH

The Agribusiness Development & Research funds help the department address critical agricultural research, marketing and promotional needs to ensure the continued growth of Hawaii's agriculture. This program also allows the department to respond to urgent agricultural problems without having to wait for supplemental funds from the legislature.

The following are projects approved by the Hawaii Board of Agriculture during FY 2004:

- **Development and Evaluation of Strategies to Manage Closteroviruses, Mealybugs and Mealybug Wilt of Pineapple ($70,000) FY2002**

  Mealybug wilt of pineapple can be prevented by controlling the mealybugs or controlling the viruses. This is the final year of a three-year project that continues to work with the commercial pineapple industry to reduce the incidence of PMWaV's, develop reliable detection systems for mealybugs and evaluate different approaches to reduce MWP in Hawaii.

- **Evaluation of All Potential Post-Harvest and Pre-Plant Fungicides for Control of Pineapple Fruit Rot, Fruit Mold and Butt Rot ($14,076)**

  This research project will evaluate all post-harvest and pre-plant fungicides for control of pineapple fruit rot, fruit mold and butt rott, which could replace Bayleton and Tilt. Bayleton and Tilt are both registered for pre-plant seed dip to control butt rot and are in danger of being lost. This is the first year of a two-year project.

- **Biology and Control of Micro-Lepidoptera on Pineapple ($29,750)**

  A number of micro-Lepidoptera has been identified as significant pests of pineapple with estimated damage to pineapple crops from 15 percent to 60 percent in extreme cases. This project will determine the biology of the micro-Lepidoptera associated with pineapple damage; quantify mortality factors currently acting on populations of the moths in pineapple; and screen insecticides with potential for control of the moths.

- **Pineapple Nematode Management ($30,578)**

  As a result of many postplant nematicides being removed from the market, this project will evaluate environmentally sensitive products for their potential to control nematodes in pineapple. The objectives are to evaluate Dragonfire, Plantpro and Midas as new nematode control products and to determine the feasibility to an intercycle sunn hemp cover crop for preplant nematode control.

- **Symphylid Damage in Pineapple ($36,509)**

  Symphylids are not as widespread as nematodes, however they can cause significant damage to pineapple. Since little attention has been given to symphylids, fields that have experienced noticeable damage may be misdiagnosed. Misidentification of pest problems leads to inappropriate control measures which can be costly. The results of this project will provide the pineapple industry with information on the symphylid species and the distribution of these symphylids so that control methods may be quickly developed.

- **Breeding and Selection for Hawaii Coffee with Cupping Quality, Disease Resistance and High Yield ($37,300) FY2002**

  This coffee breeding and selection program continues to evaluate coffee hybrids for desirable characteristics such as enhanced flavor, increased yield and disease and pest resistance. Field trials are being conducted on Kauai and Oahu. This is the last year of a three-year project

- **Development of New Foliage Cultivars for the Hawaii Commercial Foliage Industry with Emphasis on Dracaena ($25,000)**

  The main objective of this project is to introduce new colors and leaf characteristics to the most important commercial cultivars of D. fragrans, D. deremensis, D. concinna, and D. marginata. This is the first year of a three-year project that will introduce new cultivars to the Hawaii commercial foliage industry.

- **Pest Management in Rambutan, Longan and Lychee ($30,000)**

  The goal of this research is to develop pest management information particularly during flowering and fruit set and during some critical periods of vegetative growth which will enable growers to produce crops more consistently in Hawaii. Currently there are no effective miticides for use in these crops. There are a few insecticides that are registered, however, the registered insecticides have not been fully evaluated for efficacy in Hawaii conditions. This is the first year of a two-year project.

- **Anthurium Germplasm Maintenance ($20,000) FY2002**

  This is the final year of a three-year project that will determine industry desired anthurium cultivars and available species desired for collection in flask. This collection of anthurium germplasm will be available to the industry upon request.

- **Genetic Resistance to Burrowing Nematode in Anthurium ($40,000) FY2002**

  Improvement of anthurium with genetic engineering is an approach to incorporate nematode resistance which will address the crop loss, export and environmental safety issues. This is the last year of a three-year project that will incorporate protease inhibitors into anthurium to control the burrowing nematode.

- **Updating Macadamia Nutrient Recommendations: Implementing Crop Logging and Correcting the Apparent Root Inefficiency ($25,000)**

  This is the fourth year of a four year project that will lead to more efficient use of applied nutrients by reducing the amounts of costs of fertilizer required and reducing the amounts of nutrients applied to the surface and susceptible to surface runoff which could be detrimental to the receiving water bodies.

- **Culture Management Strategies Associated with Macadamia Varieties ($5,000)**

  Research on the culture-management practices for new macadamia selections will be conducted to provide industry with field production information on the newest selections as well as established varieties. The information derived from this research will be useful for growers when deciding which varieties they would like to replace in their existing orchards production in terms of nutrient requirements and harvest intervals.

- **Affinity-purification of Sugarcane Yellowleaf Virus Antibody ($79,906)**

  Sugarcane yellowleaf disease caused by a virus does not always show visible symptoms, although yield loss occurs. For disease diagnosis, a rapid immunology technique is used that requires an antibody to the virus. Two more antibodies were produced in 2003 because the supply will soon be depleted. Both are active, but need additional purification and refinement for routine use. This project will evaluate three methods to further purify and refine these antibodies for routine use.

- **Development of Commercial Hawaiian Banana Varieties Resistant to Banana Bunchy Top Virus ($30,000)**

  Banana bunchy top is the most devastating viral disease of bananas in Hawaii and many areas of Asia, Africa and the South Pacific. Plants infected with Banana bunchy top virus (BBTV) do not produce marketable fruit, and spread of the virus throughout plantations can lead to 100 percent yield reductions. The objectives of this project is to produce more BBTV-resistant transgenic banana plants in Hawaii and obtain federal and state permits for importation of genetically engineered banana from Australia and permits and plot allocation for field trial.

ADMINISTRATIVE SERVICES OFFICE

Elaine Abe
Administrator

The goals of the Administrative Services Office are:

1) to meet the staff support needs of the department's programs and personnel by providing guidance, training, information, efficient equipment and vehicles, and adequate facilities, and facilitating the processing of their requests in order to enhance managers' decision making capabilities and employee productivity; and

2) to meet the needs of the public by assisting them in their requests or directing them to the appropriate entity to address their needs.

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

- Served as Department's Alternate Legislative Coordinator during part of the 2004 Legislative Session.
- Updated the Emergency Response Telephone Trees, Listing of Disaster Response Coordinators and Workers, and Listing of First Aid Certified Personnel and Kits.
- Compiled a listing of Departmental Civil Defense Volunteers with special skills who are willing to assist in state disaster emergencies.
- Compiled listing of Departmental employees living in flood identified zones.
- Assisted various programs in filling 42 positions (permanent/temporary and exempt).
- Updated list of employees who have military status.
- Reviewed all employee records for HGEA employees eligible for step movement pay raises and processed payments.
- Attended training and started implementation of Early Vacation Payout program.
- Initiated/completed/placed 3 employees from Animal Quarantine Branch in first reduction-in-force.
- Completed migration of the Agricultural Resource Management Information System and Administrative Services applications from Speed II to APPX.
- Installed fiber connection to provide network access to the Garage.
- Replaced outdated server at the Main Office.
- Replaced outdated server at Animal Industry.
- Implemented corporate version of anti-virus protection software.
- Upgraded Lotus Notes to version 6.03.
- Assisted DAGS with the implementation procedures for the Procurement Card interface with FAMIS.
- Implemented usage and in-house procedures for procurement cards for 21 department employees.
- Established procedures with personnel from Department of Transportation, Plant Quarantine Branch, and Fiscal, as well as with DAGS Accounting Branch as to how expenditures were to be treated from the Maui Risk/Alien Species programs.
- Worked with various branch personnel in establishing procedures for the new federal programs acquired.

Major projects still in progress are:

- Working with consultants to design and implement on-line system for Maui Risk Assessment.
- Working with consultants to migrate Animal Quarantine Station application from Speed II to APPX.
- Continuing network all Oahu and neighbor island offices to State's NGN.
- Continuing various capital improvement projects to correct safety concerns and other deficiencies at Department facilities including upgrading of electrical and fire systems and re-roofing the main buildings at the King St. Complex, demolishing unused kennels and modifying the service window at the Animal Quarantine Station and renovating portions of the Department of Health's State Laboratory Facility for use by the Quality Assurance Chemical Analysis Laboratory.

- Continuing work on updating and implementing the Department's on-line telephone directory.
- Implementing the HGEA Drug and Alcohol Testing Program.
- Continuing the recordation of fixed assets for the Department in accordance with GASB 34.
- Participating in the reviewing of new personnel policies and procedures.
- Monitoring the length of time to service various program requests.
- Implementing second reduction-in-force action for Animal Quarantine Branch.
- Continuing expansion of the procurement card use to other departmental employees.
- Expanding usage of the procurement card to include equipment, and out-of-state travel expenses, as well as purchases over $1,000.
- Continuing work with programs that have applied for federal assistance.
- Updating the department's accounting manual to include the procurement card procedures, as well as new travel procedures, and other changes to policies and procedures since the last revision. Future revisions include updating the contracts and payroll sections.
- Continuing issuance of new Department IDs to all Plant Quarantine Inspectors.
- Updating Department inventory procedures to insure that all fixed assets are recorded.

Other future projects include surveying departmental employees to determine customer satisfaction and program needs, developing a Standard Operating Procedures Manual for the department, implementing a new Plant Industry server to house Plant Pest Control and Pesticide information, conducting a workshop for program managers on using the FAMIS reports, and implementing in-house printing capabilities for summary warrant vouchers.

AGRICULTURAL DEVELOPMENT DIVISION

Matthew K. Loke, Ph.D.,
Administrator

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

MARKET DEVELOPMENT BRANCH
Calvin Lee, *Manager*

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

Major activities during FY 2004 were:

Matching Funds Promotional Contracts

This fiscal year the Branch implemented a new procedure to solicit and award matching funds marketing grants. To insure transparency, the procedure followed the State's RFP (Request for Proposal) process that was posted on the Web.

The applications fell into three predetermined categories:

1. Distribution Systems focusing on encouraging Hawaii Ag-businesses to pool resources, at least four companies, in order to improve efficiency in transportation/shipping, distribution, sales representation, or consolidation issues. There were five awards in this category.
2. Mainland and International Trade Shows focusing on a Hawaii-themed exhibit with a minimum of four unrelated companies attending the trade show. There were five awards in this category.
3. Industry Education and Promotion of Agriculture focusing on producer's competitiveness and human capital capacity building; and marketing effort or hosting events supportive of Hawaii's agriculture. There were 11 awards in this category.

Local Market Promotions and Activities

- Participated in agricultural trade and consumer fairs and exhibits such as the Lodging, Hospitality, and Foodservice Expo on Oahu and the Made in Hawaii Festival on Oahu.
- Directory of Hawaii Agricultural and Food Producers – Continued updating the registration of local companies in the branch's database (directory) that gives Hawaii companies and global buyers the ability to conduct business with each other.
- Updated directory of farmers' markets in Hawaii in cooperation with the counties.
- Assisted in organizing and coordinating the agricultural exhibit at the 2003 Hawaii State Farm Fair.
- Sponsored a promotion of Hawaii grown agricultural products from the North Shore of Oahu in cooperation with Daiei.
- Co-sponsored the Hawaii Agriculture 2003 Conference in cooperation with the Hawaii Farm Bureau Federation, University of Hawaii College of Tropical Agriculture and Human Resources, and the Agricultural Leadership Foundation.

Fairgoers at the Hawaii State Farm Fair enjoy the Country Market sampling booth, manned by HDOA volunteers and family members.

- Updated the Calendar of Events of trade shows, fairs, and festivals that benefit agricultural and food producers and Ag-tourism companies.
- Assisted with AgDay TV to produce several video segments on Hawaii's agricultural industry and products that were televised to Mainland audiences.

Mainland and International Market Promotions and Activities

- Co-sponsored, coordinated, and implemented the fifth annual Governor's Exporter of the Year program.
- Coordinated and administered the Western United States Agricultural Trade Association (WUSATA) Market Access Program of the USDA, Foreign Agricultural Service (FAS) that consists of 1) a generic program that included a reverse trade mission from Japan to develop markets for tropical flower and nursery products and a reverse trade mission from France to establish markets for Hawaii agricultural, food, and tropical flower products; and 2) a branded program that assisted Hawaii companies in developing specific export markets for their products.
- Assisted in coordinating a mini-tradeshow and agricultural producer tours featuring Hawaii value added food products in Honolulu for two separate food buyer groups from Guangzhou, China that were brought over by the Agricultural Trade Office in Guangzhou.
- Partnered with DBEDT and other state agencies in the Xintiandi, Shanghai, China "Hawaii Experience." Valued added agricultural and food products from Hawaii were featured the Hawaii exhibits.
- Participated in and provided in-kind support for a USDA Emerging Market grant to develop a market for value-added Hawaii products in China.
- Assisted in drafting and submitting a grant proposal entitled "Value Added Marketing and the Cruise Line Passenger Market" in partnership with the Hawaii Farm Bureau Federation (HFBF) to the USDA-Rural Business-Cooperative Service (RBS) value-added agricultural product market development program. The grant application was successful and was awarded $33,000.
- Participated with an inter-division HDOA team to coordinate the implementation of the "Seal of Quality" program for Hawaii agricultural products. Assisted in coordinating the development and redesign of the seal and participated in public outreaches on all major islands.
- Coordinated twelve Mainland floral design shows for professional floral designers in cooperation with the Hawaii Tropical Floral Council (HTFC) and other major national florists associations.
- Assisted in coordinating two mini-tradeshows featuring Hawaii agricultural and value-added food products in Honolulu and Hilo for the Norwegian Cruise Lines.
- Coordinated an exhibit of Hawaii fresh produce and flowers at the Produce Marketing Exposition in Orlando, Florida.
- Participated in the planning of the 2004 Agricultural Conference that will be held in Honolulu in October 2004.
- Attended a USDA Risk Management Agency (RMA) training conference in Kansas City, Missouri.
- Provided contract management services for the USDA Specialty Crop funded projects.
- Provided contract management services for the State Agricultural Research funds.

HAWAII AGRICULTURAL STATISTICS BRANCH
Donald Martin, *State Director (retired Sept. 2004)*

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

Major activities of HAS included data collection, analysis, and timely publication of agricultural statistics for the State. The result of these efforts was a measure of total farm-gate estimated value of $550.2 million during 2003. Most of HAS data collection efforts were in the diversified agriculture sector, which was valued at $382.9 million in 2003.

Activities during FY 2004 included the following:

- Completed Census of Agriculture for Hawaii
- Made 15,500 individual contacts via personal interviews, telephone, and mail questionnaires.
- Published 130 reports.
- Distributed more than 43,000 releases to farmers, other individuals, businesses, universities, and governments worldwide.
- Answered more than 1,200 individual requests for information by mail, telephone, and office handouts.

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

MARKET ANALYSIS AND NEWS BRANCH

Manager Position Vacant

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

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

Activities and accomplishments for FY 2004 included the following:

- MANB assisted in writing and submitting a grant proposal entitled "A Strategic Production and Marketing Plan for the Hawaii Beef Industry," in partnership with the Hawaii Cattle Producers Cooperative Association (HCPCA) and UH-CTAHR to the USDA-Rural Business-Cooperative Service (RBS) value-added agricultural product market development program. The grant application was successful and was awarded $320,000.

- MANB assisted in writing and submitting a grant proposal entitled "A Risk Management Education Program for Agri-Entrepreneurs in Hawaii" to the USDA Risk Management Agency. The grant application was successful and was awarded $51,800 for the project.

- Completed three studies on market outlook for fresh papayas, potted orchids and coffee in Hawaii.

- Continued to collaborate with the National Agricultural Statistics Service (NASS) and the National Association of States Department of Agriculture (NASDA) in enhancing the data collection efforts of the MANB.

- Continued to collect, compile, publish and disseminate weekly reports on a timely basis with limited personnel. The reports include:

  - √ Honolulu Wholesale Prices of Fresh Fruits and Vegetables;
  - √ Neighbor Island Wholesale Prices of Fresh Fruits and Vegetables;
  - √ Weekly Honolulu Arrivals of Fresh Fruits and Vegetables;
  - √ Honolulu Barge Arrivals; and
  - √ Honolulu Wholesale Egg Market.

AGRICULTURAL LOAN DIVISION

Dean Matsukawa
Administrator

The Agricultural Loan Division's primary objective is to promote the agricultural development of the State by stimulating, facilitating, and granting loans to qualified farmers, aquaculturists and food manufacturers. The Division also serves as a safety net for agriculture and aquaculture by providing loans in times of emergency. The Division administers the Agricultural Loan Program and the Aquacultural Loan Program. The program, as a lender of last resort meets the goal of agricultural development by providing financial assistance to those that are unable to obtain financing from conventional sources.

The program is self-sufficient, operating through interest collections, and is able to achieve its objective of growth, development and preservation of the agricultural and aquacultural industries without requiring any taxpayer funding. Administration of the program requires a balance between providing financial assistance while ensuring that loans have a reasonable expectation of repayment.

The Agricultural Loan Division is committed to the growth, development, and well being of the agricultural and aquacultural industries in Hawaii. For FY 04, the Division provided $3,302,000 in financing for Hawaii farmers. The loans assisted farm operations throughout the State from Kauai to the Big Island of Hawaii. The commodities that were financed varied from bananas, dairy, hogs, strawberries, nursery, orchids, and truck crops.

Diversified agriculture no longer encompasses only crops that were traditionally grown in the State but now includes new crops such as lavender, vanilla orchids, mushrooms, and baby vegetables. In addition, the agriculture industry faces challenges such as increased regulations, high capital costs, tax, and theft issues. As the agricultural and aquacultural industries evolve, the Division must constantly adapt to the new markets, technologies and needs of the farm community. The Division is optimistic that the agricultural industry will continue to grow and prosper as Hawaii's economy recovers.

The Division's major concern is having sufficient funding to meet the needs of the agricultural community and maintaining sufficient reserves to serve as a safety net in the event of emergencies. The legislature authorized the transfer of $2,000,000 from the Division's funds to the State general fund in FY 03. In FY 04, the transfer of an additional $900,000 was authorized. The Division, over the years, has returned significant sums back to the State's general fund, which has resulted in tightening of funds available to assist farmers. To stretch its limited funding the Division has expanded its outreach effort to private lenders, micro-lenders and other government lenders. The Division's intent is to build a strong network of lenders that will work together to provide joint funding for agricultural and aquacultural loans. The Division has been seeing the results of its efforts and for FY 04 26 percent of the loans approved were done in conjunction with others lenders.

The Division provided financing for Kula Country Farms, LLC to expand their strawberry operation.

Shown at left are workers harvesting the fresh island-grown strawberries. The operation provides employment for approximately 20 Maui residents.

Agricultural Loan Division

The Division remains supportive of agriculture and will continue to serve as a resource and safety net to the agricultural community. The Division will continue its outreach to the farming community to increase awareness of the program.

Major activities and accomplishments of the program for FY 04 were as follows:

- Approved 23 loans for $3.302 million during FY 04. The loans helped farm farmers retain or increase farm acreage by 409 acres. The division's loans also helped to preserve employment for 126 farm employees.

- The division's portfolio as of June 30, 2004 was valued at $22.0 million with 211 loans booked. The loan breakdown by county is as follows:

1.	Hawaii County	$10.9 million
2.	Oahu County	$4.4 million
3.	Maui County	$3.9 million
4.	Kauai County	$2.8 million

- Collected $3.444 million in FY 04. Of the amount collected $895,131 was in interest and $2.549 million was in principal.

- Modified 14 loans during FY 04 for a variety of purposes to assist farmers with cash flow, extensions of disbursements dates, exchanges and releases of collateral, and changes in use of loan funds.

- The year 2004 was year of change for the division's personnel. Due to personnel changes an internal reorganization was conducted to effectively service the agricultural community. The Division has refocused its attention on outreach and service, which required acceptance of new responsibilities, procedures, and change in attitude for the division personnel.

See agricultural loan charts on page 50.

The Division in cooperation with Central Pacific Bank provided financing to complete the Hawaii Livestock Cooperative's facility in Kalaeloa. The operation uses new bio-technology to process wastewater into reusable water for washing and irrigation.

AGRICULTURAL RESOURCE MANAGEMENT DIVISION

Brian Kau, P.E.
Administrator/
Chief Engineer

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

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

Activities for FY 2004 included the following:

- The Lower Hamakua Ditch Emergency Bypass Tunnel that was completed in 2003 has proven to be a great success. The project has received several awards for its design and construction from the American Public Works Association (state), American Council of Engineering Companies (national), The Associated General Contractors of America (national), and the American Society of Civil Engineers (state and national). The success of the project was due to a great team of dedicated partners with the common goal to complete this challenging project safely and on schedule.
- Approximately ten years ago, the concept of a new agricultural park in Kunia was developed. In an effort to ensure the longevity of agriculture in the ewa plains, a mandatory condition was created to dedicate an agricultural park in the area in order to obtain the zoning changes necessary to further develop the ewa plains. On February 23, 2004, the state received the deed to 150 acres of agricultural land in Kunia. Currently, there are farmers on the land under a revocable permit and plans to develop the parcel into a full agricultural park are pending appropriate funding.
- 2004 has been a banner year in partnerships for the department. Successful partnerships with the Natural Resources Conservation Service, U. S. Army Corps of Engineers, U. S. Department of the Interior – Bureau of Reclamation, and the State of Hawaii Civil Defense Department have provided an opportunity to expedite projects by providing expertise and funding. This year, the department has received approximately $4 million in additional funding that has been applied to the renovation of our irrigation infrastructure.
- The Department of Agriculture has completed the first two phases of the Hawaii Agricultural Water Use and Development Plan (AWUDP). The AWUDP includes a master inventory of irrigation water systems, which will allow the department to ascertain and plan for future water demands, both state run and private. It also provides a justification for future agricultural water demands and identifies the appropriate water sources to meet these demands such as supply sources, transmission and infrastructure, storage facilities, conservation programs, and direct and indirect use of reclaimed water. Although the AWUDP itself does not reserve water for future use, it will provide a quantitative projection of planned agricultural activities, associated water demands, and strategies for supplying such water, which may be used to justify requests for water reservation.
- The agricultural park program continued to monitor and replace lessees who did not meet the program's objective and continued to re-award leases to qualified applicants. Staff continued to counsel and work with lessees who were experiencing difficulty meeting their lease terms and conditions at older agricultural parks in Pahoa, Keahole, Panaewa, Waimanalo, and Waianae. Farmers with new or recently granted leases at Kahuku, Hamakua, Molokai, and Kalaeloa, started their farming operations.
- Rental re-openings for the Waimanalo Agricultural Park, Phase I, was completed with lease rentals rising from $260 per acre per year to $598 per acre per year. These rates will remained fixed until 2011.
- On Oahu, farmers experienced real property tax increases of up to 500 percent even though they had farmed the same lands for over 10 years. They were now required to submit a Petition to Dedicate Land for Agricultural Use. The division assisted over three dozen lessees in applying for land dedications and encouraging the lessees to participate in the Hawaii Farm Bureau's efforts to realize the passage of Bill 35 by the Honolulu City Council. Bill 35 provides for a one-year exemption of real property tax assessments for the FY 2004-2005.

Capital Improvement Projects for FY 2004:

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

- Phase II Flume Improvements (Lower Hamakua Ditch)
- Lalamilo Distribution Pipeline Improvements (Waimea)

The following projects are ongoing on the Big Island:

- Phase III Flume Replacement - construction (Lower Hamakua Ditch)
- Phase IV Flume Replacement - design (Lower Hamakua Ditch)
- Intake Improvements - construction (Lower Hamakua Ditch)
- Paauilo Distribution Pipeline Improvements Phase II - design (Lower Hamakua Ditch)
- Honomalino Watershed-planning (South Kona)

The following projects are ongoing on Maui:

- Upcountry Phase II Main Line Extension - construction
- Upcountry Phase III Main Line Extension - construction
- Upcountry Kimo Road Lateral - design
- Upcountry Phase IV Main Line Extension - design
- Upcountry Phase V Pulehiki/Kamehamehaiki Lateral - design
- Lower Kula Watershed Project - planning

The following projects are ongoing on Molokai:

- Emergency Electrical System Improvements - construction
- Molokai Irrigation System Reservoir Improvements - planning

The following projects are ongoing on Oahu:

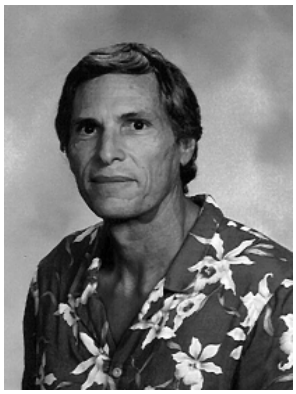
- Waianae Agricultural Park Drainage Improvements Phase II - design and construction
- Waiahole Irrigation System Reservoir Improvements - design

The following projects are ongoing on Kauai:

- East Kauai Irrigation System - design
- Kokee Irrigation System Improvements - design

Left: An orchid farm in the Waianae Agricultural Park, which consists of 150 acres subdivided into 17 lots.

ANIMAL INDUSTRY DIVISION



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

The mission of the Animal Industry Division is to protect Hawaii's livestock and poultry industries and public health by preventing disease introductions and detecting and controlling economically important diseases or pests within the State.

The Division conducts the following: animal disease surveillance, epidemiology and control; administration of voluntary livestock and poultry disease certification programs; laboratory diagnostic services; dog and cat quarantine to prevent rabies introduction; inspection of all animals and birds entering the State; and livestock brand registration. In recent years, the focus of the division is shifting from mandatory to voluntary disease surveillance and control programs and animal health emergency management in support of the livestock industry.

Public health and environmental programs aimed at preventing the introduction of rabies virus and West Nile virus into the State are important ancillary functions.

Hawaii's statuses for State-Federal Cooperative Disease Control Programs during FY 04:

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

Hawaii is also recognized as free of bluetongue virus and anaplasmosis, allowing the export of cattle from Hawaii to Canada without costly holding and testing procedures. Surveillance for anaplasmosis and bluetongue continue to insure that the free status is documented and maintained.

Continuing activities relating to voluntary disease control programs include: scrapie in sheep and goats; chronic wasting disease in cervidae; and Johne's disease in dairy cattle. Surveillance for bovine spongiform encephalopathy (mad cow disease) is an important continuing State-Federal cooperative program. Mad cow disease has adversely impacted the cattle industry in many countries and may cause human disease. Import restrictions placed on birds continued through FY 04 in an effort to reduce the chances of West Nile virus introduction.

The Division received grants from the United States Department of Agriculture, Animal and Plant Health Inspection Service, totaling $294,537 during FY 2004. The grants supported the voluntary scrapie herd and flock certification program, evaluation of waste feeding by swine producers, foreign animal disease response, and Johne's disease surveillance and control. The division also received $53,705 as part of a Hawaii Department of Agriculture Homeland Security grant ($133,705) for bio-terrorism/agro-terrorism response related activities.

RABIES QUARANTINE BRANCH

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

June 30, 2004, marked the end of the first year of operation for the five-day-or-less rabies quarantine program. The five-day-or-less program dramatically changed both the workload and nature of duties for the different sections in the branch, in addition to the numbers of animals in quarantine.

In contrast to the 120-day program, the reduced five-day-or-less program relies heavily on staff and computerized data base(s) to monitor and verify information relevant to qualification. The dramatic increase in pets qualifying for the five-day-or-less program substantially increased the duties for the clerical, veterinary and inspection sections. In addition, the program receives assistance from Livestock Disease Control inspectors to process dogs and cats released at the airport seven days a week.

The Department also maintains an interactive website dedicated to Hawaii's rabies quarantine program that contains all of the information and forms relating to quarantine and the importation of cats and dogs. Pet owners may access pre-arrival rabies test results, 30-day and five-day-or-less quarantine-eligible dates, as well as download relevant forms and information at this DOA website. Checklists for both the 30-day and five-day-or-less programs are at the site to assist pet owners with preparing their pets to qualify for these reduced quarantine options.

Under the five-day-or-less program, pets may be released at Honolulu International Airport if they complete pre-arrival requirements that include:

- √ 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 18 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 serum 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 under the new program. (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.)
- √ Pet owners must also submit required paperwork at least 10 days prior to the pet's arrival
- √ Pet owners that do not submit the required documents have their pets held in quarantine for up to five days or until all requirements are completed and documents submitted.

On February 12, 2004, rules were implemented that allowed more pets that meet specific pre-arrival requirements to qualify for five-day-or-less quarantine.

For animals unable to complete the required 120-day waiting period for qualification but meet all other five-day-or-less requirements, the quarantine period is determined by the number of days the animal arrives before its 120-day eligibility date. These animals are eventually able to qualify for five-day-or-less quarantine by remaining in quarantine until completing the "120-day waiting period."

The 30-day and 120-day programs remain in effect for pets that do not qualify for the 5-day-or-less program. Fees for the five-day-or-less program remain at $165 if the pet qualifies for direct release from the airport and $224 if the pet is held for up to five days in quarantine.

Pets that arrive before completing the required 120-day waiting period are assessed a daily fee of $14.30 and the five-day-or-less fee of $224 when the pet qualifies for the five-day-or-less option. The cost of the 30-day and the 120-day quarantine programs was unchanged at $655 and $1,080, respectively.

Other modifications in February 2004 made it easier for Hawaii residents to travel with their pets and return to the state without quarantine. A key difference for resident Hawaii pet requirements is the timing of the most recent rabies vaccination and the OIE-FAVN rabies serological test. For Hawaii's resident dogs, that rabies vaccine and qualifying blood test may be done no less than 14 days before leaving the state. This is in comparison to pets arriving from rabies-endemic areas that must have the most recent rabies vaccine administered no less than 90 days before arrival and pass the rabies serological test no less than 120 days before arriving. However, due to the variable length of time the laboratories take to complete the serological test, pet owners are advised to make sure their pet passed the test before departing Hawaii as pets without passing titers will be quarantined on return.

The total number of animals entering Hawaii through the rabies quarantine program increased dramatically from 4,548 dogs and cats in FY 03 to 6,834 animals in FY 04. In addition, approximately 79 percent (5,447) of arriving dogs and cats have qualified for the program. Furthermore, of the 5,447 pets that qualified, 5,276 pets (96 percent) qualified for direct release upon arrival at Honolulu International Airport. In addition to the 6,834 animals completing quarantine, more than 300 dogs and cats spent varying lengths of time at the quarantine station while transiting to other destinations.

The following are quarantine statistics for cats and dogs arriving between July 1, 2003 and June 30, 2004 (FY 2004):

PROGRAM	NUMBER	PERCENT
120-day	788	11.5
30-Day	599	9
5-Day-Or-Less	171	2.5
Airport Release	5,276	77
Total	6,834	100

During FY04, the portion of quarantined dogs and cats undergoing 30-day quarantine decreased to approximately nine percent compared to 69 percent in FY 03. The effect of these combined changes resulted in the daily population of animals occupying the animal quarantine station at any given time during FY 04 to range between 232 and 537 animals. In contrast, the fluctuation in daily animal population at the station varied between 443 to 738 dogs and cats in FY 03.

In addition to rabies exclusion, the quarantine program continues to monitor dogs carefully for ticks exotic to Hawaii. One species Dermacentor variables was discovered and eliminated from a dog during FY 04. This species has been reported to potentially serve as a vector for Rocky Mountain Spotted Fever, Tularemia and other rickettsial and bacterial diseases of medical importance. Rhipicephalus sanguineus, the brown dog tick, is currently the only tick established in Hawaii associated with dogs.

LIVESTOCK DISEASE CONTROL BRANCH

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

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

➡ **West Nile Virus (WNV)**

West Nile virus continued its westward spread across North America having reached epizootic levels from August through October 2003. The epidemic area was focused on the eastern foothills of the Rockies. Spring 2004 saw WNV reach Arizona and Southern California. With the infection reaching the West Coast, Hawaii is at higher risk than previous years.

Entry requirements related to WNV were implemented in 2002 to reduce the probability of virus entry. Susceptible species of birds are required to be isolated in a mosquito-proof environment for seven days, under veterinary supervision, immediately prior to entry, and all bird shipments must be accompanied by an entry permit stating that pre-arrival requirements have been met.

The department, as well as the Animal Industry Division continues to participate in the WNV working group that also includes representatives from the Department of Health, Department of Land and Natural Resources, US Fish and Wildlife Service, US Geological Survey and the University of Hawaii. In addition, the Livestock Disease Control Branch continues to work with the US Postal Service to prevent the movement of birds through the mail, thereby allowing inspection of all shipments entering the state.

➡ **Bovine Tuberculosis**

Bovine Tuberculosis free status maintained

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.

The State of Hawaii continues to maintain a "Bovine Tuberculosis Free Status;" however, state and federal veterinarians routinely monitor cattle herds and wildlife on eastern Molokai, where bovine tuberculosis has been a recurrent problem for the past 60 years. The last BTB infected cattle herd, located on eastern Molokai, was depopulated without further spread in 1997 and no new cases of BTB in cattle have been found.

A hunter assisted survey for BTB in wildlife began in 1998 on Molokai to monitor the prevalence of infection in axis deer, feral swine, feral goats and mongoose. Six feral swine have been found infected, the most recent from Mapalehu in May 2004. To date, all infected feral swine have been caught at or adjacent to Ualapue, where the 1997 infected cow was found.

Wildlife Surveillance for Bovine Tuberculosis (1998 to date)

Animal	Number Sampled	Infected
Feral swine	454	6
Axis deer	446	0
Feral goat	72	0
Mongoose	915 (61 pools of 15)	0
Captive wildlife	15	0

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

During FY04, LDC in conjunction with USDA, APHIS, evaluated feral swine disease data and developed a plan to reduce the potential for feral swine to transmit BTB to cattle. The ultimate goal is eradication of BTB in feral swine on eastern Molokai.

➡ **Bovine Brucellosis**

Bovine Brucellosis class free status maintained

Bovine brucellosis is an infectious disease of cattle, bison and elk, caused by the bacteria Brucella abortus. Brucellosis can also infect man. Hawaii has been officially classified free of bovine brucellosis since 1983.

During the fiscal year, 7,800 cattle were tested for brucellosis which resulted in two (2) suspects being identified. Supplemental testing, epidemiological investigations, and herd tests found no evidence of herds infected with Brucella abortus. Infrequent suspects and reactors have been caused by Brucella suis which causes brucellosis in swine; however, this organism in cattle rarely causes disease. The two suspect cattle originated in areas with known infected feral swine. Due to the self-limiting nature of Brucella suis in cattle, no quarantines or other control actions were necessary. Gastrointestinal infections with Yersinia enterocolitica also may cause false positive reactions to Brucella abortus.

➡ **Swine Brucellosis & Pseudorabies**

Hawaii maintains free statuses for Swine Brucellosis and Pseudorabies

Brucellosis

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. Hawaii retained its free status for swine brucellosis during FY04.

No swine brucellosis infected domestic swine herds were found during FY04; however, two transitional herds (herds that commingle feral and domestic swine) adjacent to each other were found infected in Keauhou on the island of Hawaii. The two herds were placed under quarantine and a “test and removal” herd plan implemented to rid the herds of infection. On-farm surveillance detected a suspect animal on a domestic pig farm in the Waianae area of Oahu; however, the infection has not been confirmed.

Feral swine in Kona, Hamakua (Hawaii), Kahakuloa (Maui), Ft. Shafter westward through Waianae, the North Shore and Windward (Oahu) are known to be infected with swine brucellosis.

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 FY04 included 958 domestic swine and 111 feral swine. No domestic swine herds tested positive for brucellosis; however, 3.6 percent of feral swine samples tested positive.

Pseudorabies

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 962 swine during fiscal year 2004 found no infected domestic swine. An additional 111 feral swine were tested with 24 percent testing positive for PRV. Feral swine on the island of Hawaii, Maui and Oahu are known to be PRV-infected. Infected feral swine are a constant threat to domestic swine herds. A statewide quarantine order prohibits the commingling of feral and domestic swine as well as inter-island movement of feral swine.

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

Transmissible Spongiform Encephlopathies Scrapie

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

Hawaii continues to be recognized as consistent with the USDA Voluntary Scrapie Certification Program Standards. The Hawaii Scrapie Certification Board is in place to oversee the program which certifies goat and sheep flocks participating in a national voluntary scrapie eradication program. Whenever possible, surveillance sampling of culled sheep in carried out by Branch veterinarians. Thus far, all samples collected have tested negative for scrapie.

Bovine Spongiform Ecephalopathy (BSE)

During FY04, 75 BSE samples were collected with no positive test results. Hawaii is participating in the enhanced national BSE surveillance efforts that started June 1, 2004.

Voluntary Johne's Disease Herd Certification Program (VJDHCP)

A USDA grant was used to conduct Johne's testing of dairy and beef herds during the fiscal year. In addition, herd risk assessments were funded and conducted on dairies and ranches by private veterinarians through the grant. During FY 04, 7,392 cattle were tested for Johne's disease. 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.

Importation/Exportation of Livestock, Poultry and Other Animals

An embargo on the movement of poultry and other birds into Hawaii through the US Postal Service was implemented in September 2002. The embargo remains in place to prevent the entry of West Nile virus through infected birds.

Inspected and approved for entry into the state:

- 21,190 head of livestock (primarily pigs);
- 12,567 poultry and other birds;
- 365,117 day-old chicks;
- 5,009 cases of hatching eggs;
- 9,362 dogs and cats; and
- 10,737 other animals.

The Branch staff conducted 44 compliance investigations resulting in eight citations being issued, 255 written warnings, and 178 animals refused entry.

Additional statistical data available on page 53.

VETERINARY LABORATORY BRANCH

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

The Veterinary Laboratory provides timely and accurate disease surveillance and diagnostic activity to support the Division (Livestock Disease Control Branch and Animal Quarantine Branch) as well as other government agencies responsible for the animal disease control programs.

Ongoing local and national cooperative programs include laboratory diagnoses and surveillance testing for livestock and poultry diseases of economic importance, such as brucellosis, Johne's disease, bluetongue, anaplasmosis, pseudorabies, and porcine reproductive and respiratory syndrome (PRRS). The laboratory also actively participates in providing tests or specimen collection for animal diseases of public health importance and/or bioterrorism potential.

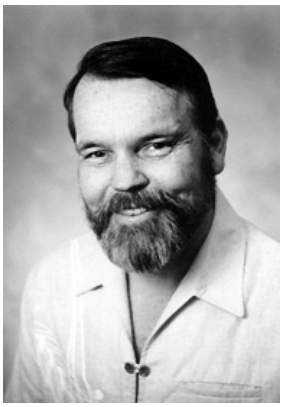
During the fiscal year 2003-2004, the laboratory tested approximately 24,000 samples, of which 7,243 (26 percent) were for Johne's disease, 8,947 (32 percent) for brucellosis, 3,945 (14 percent) for anaplasmosis, and 1,167 (4 percent) for pseudorabies.

The laboratory's clinical pathology section conducted approximately 3,600 tests on samples from imported dogs and cats (primarily internal and external parasites) and 689 tests on blood samples collected from imported horses (Equine Infectious Anemia) during fiscal year 2004. Other diagnostic services included necropsy (275 cases) and histopathology (299 slides) for livestock, poultry, and imported pets.

Currently, four microbiologists, one chemist and one veterinary medical officer are certified in one or more areas of immuno-serological test methods and interpretation by the National Veterinary Services Laboratory.

Statistical data on the activities of the Veterinary Lab are available on page 53.

AQUACULTURE DEVELOPMENT PROGRAM



John Corbin
Manager

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

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

Major activities for FY 2004 were:

- Briefed U.S. Senator Daniel K. Akaka on State plans and initiatives for aquaculture development and discussed federal assistance.

- Continued the joint implementation with the Department of Land and Natural Resources (DLNR) of the amended Chapter 190D, HRS, Ocean and Submerged Lands Leasing law by facilitating the approval process for authorization of one additional lease (three currently authorized) and document preparation for five additional aquaculture leases on various islands. Prepared a joint report to the state legislature on status of the ocean leasing law.

- Served as a Team Member for a study managed by the University of Delaware, Center for Study of Marine Policy that produced a report for Congress entitled, Operational Guidelines for Aquaculture Leasing in the U.S. Exclusive Economic Zone (EEZ). Provided input into proposed Federal legislation to allow aquaculture leasing in federal waters. Cooperated with Grassroot Institute study of Hawaii offshore aquaculture.

- Participated in the governing boards and advisory committees of: Pacific Aquaculture and Coastal Resources Center at UH Hilo, Center for Tropical and Subtropical Aquaculture, National Association of State Aquaculture Coordinators, Natural Energy Laboratory of Hawaii Authority, Marine and Coastal Zone Management Advisory Group, Commodity Advisory Group for Agriculture, University of Hawaii Sea Grant College Program, Hawaii Aquaculture Association, and Aquatic Nuisance Species Task Force.

- Assisted with permits for species importation and farm siting for farmers on Oahu, Kauai, Maui and Hawaii.

- Co-chaired the Marine Ornamentals 2004 Conference Organizing Committee, as well as Finance Program, Marketing and Publications Committees. This international conference, the third in a series originating in Hawaii, was held March 1-4, 2004 at the Hawaii Convention Center and was attended by more than 250 people from 20 states and 21 countries and island groups.

A landmark stop on the North Shore of Oahu, Romy's Kahuku Prawns and Shrimp sells "just harvested" shrimp and prawns from its roadside stand right next to their farm. The shrimp stand is very popular with both locals and tourists and has attracted competition to the area in recent years.

Lei Yamasaki, Aquaculture Development Program's laboratory assistant, prepares a fish sample for testing and disease diagnosis. ADP's disease management program handles hundreds of cases a year and is critical to the success of the aquaculture industry.

- Assisted with the World Aquaculture Society's Aquaculture 2004 conference from March 1-5, 2004 at the Hawaii Convention Center, attended by over 3,500 delegates from over 90 countries. Organized a large trade show "Hawaii pavilion" to feature local companies and promote new business development.

- Promoted the consumption of aquaculture products by participating in buyers meeting Norwegian Cruise Lines, the State Farm Fair, Made in Hawaii Exposition, Maui Moi Festival, Sam Choy's Poke Contest, Hawaii Lodging, Hospitality and Food Service Expo, and the Taste of Waipahu. Worked with various internet, television, radio and print media to place stories and promote the industry. Also, worked with industry association to implement a grant to develop a promotional video. Continued electronic bi-monthly newsletter, Aquaflashes.

- Carried out for aquatic animal health management more than 100 field trips and analyzed 300 case submissions, and provided animal health consultation services to producers and research organizations, statewide, including conducting workshops on disease diagnosis and prevention.

- Received a continuation grant from the USDA for research and technical assistance in disease management for the Hawaii aquaculture industry. Provided reviews of proposed Federal protocols for shipping live Hawaii broodstock shrimp to Japan and live shrimp importation protocols for New Caledonia.

- Co-funded statewide technical extension services to the aquaculture industry, in cooperation with the UH Sea Grant Extension Service leveraging over $400,000 in matching funds through the project. Also, advised UH on the establishment of an MS/Ph.D Program in Tropical Aquaculture.

- Provided technical reviews of research proposals to the UH Sea Grant College Program, U.S. Department of Commerce, U.S. Department of Agriculture, the Pacific Tropical Ornamental Fish Program (PTOFP) and the Biosystems Technology Program. Also assisted in organizing the proposal solicitation and review process for the fourth year of the PTOFP program.

- Served on the Board of Directors and provided major assistance to the Hawaii Aquaculture Association (HAA) to host the Aquaculture 2004 conference. Members organized three field trips and three oral presentation sessions of eighteen papers to put Hawaii aquaculture on display. Hawaii aquaculture products were featured in two conference reception.

- Served on the University of Hawaii Search Committee for the Director of the Waikiki Aquarium.

Michael Buchal, President of Big Island Abalone Corporation (BIA), accepts the 2003 Governor's Exporter of the Year Award from Governor Linda Lingle. BIA, located at the Hawaii Ocean Sciences and Technology Park/NELHA, is now one of the largest abalone farms in the world and has plans to produce upward of 100 tons of abalone per year. The majority of their abalone is shipped live to Japan.

PLANT INDUSTRY DIVISION

Lyle Wong, Ph.D.
Administrator

The Plant Industry Division consists of three branches, the Pesticides Branch, the Plant Pest Control Branch and the Plant Quarantine Branch. Together, the branches work to protect Hawaii's agricultural industries by preventing the entry and establishment of detrimental insects, weeds and other pests and by assuring the safe and efficient use of pesticides in Hawaii. The division also works with growers, exporters, and other government agencies to resolve quarantine restrictions in order to allow export of Hawaii's fresh fruits, vegetables, flowers and foliage products to markets worldwide.

PESTICIDES BRANCH
Robert A. Boesch, *Manager*

The Pesticide Program regulates the distribution and use of pesticides through a program of licensing, 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.

Three of the major activities of the program in FY 2004 were as follows:

➡ **Emergency Request to Use Hydrated Lime to Control Coqui Frogs Submitted to the EPA**
The program initiated tests and forwarded an application to the Environmental Protection Agency (EPA) to enable the use calcium hydroxide (hydrated lime) to control Caribbean tree frogs. After reviewing the request, EPA approved the the request in April 2005.

➡ **Pesticides Rules Under Review**
The Advisory Committee on Pesticides and Subcommittees on Ground Water Review and Notification met during FY04 and made recommendations on revising the pesticides rules (Title 4, Subtitle 6, Chapter 66, Hawaii Administrative Rules or 4-6-66, HAR), including:

√ 4-66-32, HAR, concerning restricted use pesticides, changes are proposed to add criteria for restricted-use classification, including contamination of ground water and pesticide uses authorized by an emergency exemption issued by EPA.

The pesticides proposed for restricted-use are: Alachlor, Atrazine, Bromacil, Chlorine Gas, Chloropicrin (including its use as a warning agent when used with any pesticide), cyanazine, hexazinone, metolachlor and its isomers, paraquat, picloram and simazine. Many pesticides are being removed from the list, most of which are no longer being manufactured.

√ 4-66-52, HAR, concerning restricted use pesticide dealers proposals are to require dealers to notify the department when changes in personnel responsible for restricted use pesticides sales occur, and to have the license for personnel responsible for restricted use pesticides sales expire in five years, with renewal by examination.

√ 4-66-53, HAR, concerning dealer's records and reports changes are proposed to track all transactions effecting the inventory of restricted use pesticides, not just sales.

√ 4-66-55, HAR, concerning disposal of pesticides containers is being revised to refer to the Department of Health's requirements concerning management of solid and hazardous wastes and to eliminate burial on-site as an option for disposal.

√ 4-66-57 and 58, HAR, concerning general and specific standards for certification of applicators, changes are proposed to establish a minimum age for certification at 18 years old and make other amendments for consistency with other sections.

- √ 4-66-60, HAR, concerning certification procedures is proposed to be amended to be more comprehensive in including the precise procedures for certification and recertification, including the number of hours of education credit that must be earned in the five (5) year certification period to be renewed without examination. This section also establishes procedures for approval of classes for certification credit and issuing replacement certificates.

- √ 4-66-62, HAR, concerning certified pesticide applicator record keeping requirements have been amended to require commercial and private applicator records to be kept and to require commercial applicators to provide agricultural employers with information required by the EPA's Worker Protection Standard.

A new section is proposed on enforcement penalty guidelines on license and certificate suspension and monetary penalties.

➡ **School Integrated Pest Management Program Launched**

The Pesticides Program has been working with facilities management staff at the Department of Education on an integrated pest management program for schools. Seminars have been conducted on Oahu and Kauai and are planned for Maui and Big Island to provide custodial and administrative staff at schools with information on selecting pest management measures that will control pests that are safe and effective. Methods to control common pests such as ants, roaches, and rats are discussed at these seminars.

➡ **Biotechnology Field Experiments to be Monitored**

The pesticides program has agreed to conduct inspections of experimental use permits issued by EPA for plant-incorporated protectants, which involve gene transfer from species with pesticide characteristics to crops. In recent years, EPA inspectors have conducted the inspections and pesticide program staff accompanied and observed the procedures use by EPA. The pesticides program will use EPA authority to conduct the inspections and provide all information collected to the EPA for their review.

PLANT PEST CONTROL BRANCH

Larry M. Nakahara, *Manager (retired December 2004)*

The Plant Pest Control Branch (PPC) consists of two sections, Biological Control and the Chemical/Mechanical Control Sections. Both sections work on developing efficient methods to manage and reduce populations of plant pests that cause significant damage to agriculture and the environment. Plant pests include destructive insects, vertebrates (such as coqui frogs), invertebrates (such as snails and slugs), noxious weeds, plant diseases and any other organism harmful to plants.

The Biological Control Section seeks out natural enemies of the pests. Many times, this requires exploratory entomologists to travel around the world to the native area of the pest to find a possible bio-control agent. Those found must be held under strict quarantine protocol and tested on native and beneficial plants and insects to assure that the bio-control agent only attacks that particular pest before it may be released.

The Chemical/Mechanical Control Section works on finding effective pesticides and manual removal methods to control pests. In many instances a combination of biological control and chemical/mechanical methods may be used in an integrated pest management program.

Some of the activities of the Branch during FY 2004 included the following:

New Pest Detection and Identification

➡ Identified 673 samples of insects and other organisms from which 96 specimens were processed and added to the Branch's Zoological Reference Collection. The collection now contains approximately 166,000 specimens. In addition, 258 samples of insect specimens intercepted by the Plant Quarantine Branch were identified and 281 calls regarding various pests were received from the general public and processed.

➡ Recorded 6 new immigrant insects and one disease organism in Hawaii during FY 2004. The following are considered to be of potential significance as plant pests if not successfully eradicated or subsequently suppressed by biocontrol agents:

➡ **Pickleworm**, Diaphania nitidalis Cramer (Lepidoptera: Crambidae). Larval specimens of the pickleworm were first found in November 2003 in fruits of cucumber, zucchini, and kabocha at farms in central Oahu at Kunia, Poamoho, and Ewa, respectively by UH-CTAHR researchers conducting Area-Wide Fruit Fly Suppression activities. Immature caterpillars usually feed on the blossoms of various cucurbits and, later, burrow into the fruit, causing small holes through which frass exudes, making the fruit unmarketable.

Multi-agency effort to eradicate chrysanthemum white rust (CWR) at a Big Island plant nursery in Mountain View.
Inset: chrysanthemum leaf with typical CWR pustules.
Photos by A. Hara (CTAHR)

- **Chrysanthemum white rust (CWR)**, Puccinia horiana P. Henn. (Uredinales: Pucciniaceae). This rust disease was first discovered infecting chrysanthemum plants in a commercial ornamental plant nursery at Mountain View on the island of Hawaii in January 2004.

  Because this rust has been designated a quarantine pest for the United States, personnel of the United States Department of Agriculture, Animal and Plant Health Inspection Service, Plant Protection and Quarantine (USDA-APHIS-PPQ) worked cooperatively with State personnel in an eradication attempt. Within three days of its discovery, CWR was successfully eradicated from the nursery through the efforts of personnel from the nursery, UH-CTAHR, USDA-APHIS-PPQ, Big Island Invasive Species Committee, and HDOA.

  The one-half acre planting of infected mums was destroyed by roguing, bagging, burning, and burying. No evidence of this rust has reappeared, thus far. CWR originated in eastern Asia and is now established in Europe, Africa, Australia, and Central and South America. Outbreaks in the U.S. have been eradicated in each instance. This disease can be managed with the careful and thorough disposal of infected plants and weekly fungicide sprays.

- **Cardin's whitefly**, Metaleurodicus cardini (Back) (Homoptera: Aleyrodidae). Specimens of this whitefly were first collected in December 2003 from fiddlewood (Citharexylum spinosum) trees planted in parking lots in Hilo on the island of Hawaii. The copious honeydew excretions that fall like microscopic raindrops and abundant white, waxy filaments produced by the whitefly nymphs that are blown by winds can result in major nuisance problems under the canopy of these heavily-infested trees. Fortunately, the activities of several locally-established whitefly predators and parasitoids have limited the density and dispersal of this whitefly. This whitefly can easily be distinguished from the other 33 species of whiteflies presently established in Hawaii by a distinct black spot on each of the wings of the adult. Its current distribution includes Florida, Bermuda, Cuba, and Jamaica. Recorded hosts include guava, mountain apple, paperbark, allspice, golden dewdrop, citrus, plumeria, and numerous others.

- **Glassywinged sharpshooter (GWSS)**, Homalodisca coagulata (Say) (Homoptera: Cicadellidae). Specimens of this leafhopper were first collected on Oahu in a residential area of Waiau, near Pearl City, in May 2004. It is a large leafhopper species that is native to the southeastern United States and is known to be one of the main vectors of the bacterium Xylella fastidiosa, a plant pathogen that causes a variety of plant diseases, including phony peach disease of peach and Pierce's disease of grape.

  The GWSS is usually not a serious pest in its native range, but it recently became established in southern California, where it has become a serious threat to viticulture because of its ability to vector Pierce's disease. Although there is no evidence of the bacterium occurring in Hawaii, another potential problem posed by infestations of this leafhopper it that of "leafhopper rain," which is the excretion of copious amounts of liquid as they feed in the water conducting tissue (xylem) of plants. The GWSS has a very wide host range with a list of more than 200 species of plants.

➡ **Papaya mealybug (PM)**, Paracoccus marginatus Williams and Granara de Willink (Homoptera: Pseudococcidae). Specimens of this mealybug were first observed infesting papaya plants in central Maui in early May 2004 by UH-CTAHR-CES and HDOA personnel. This mealybug has a wide host range with its favorite hosts in Hawaii being papaya, plumeria, hibiscus, and jatropha. As it feeds, a toxin is injected which results in yellowing, stunting, deformation, and dropping of leaves and fruits. Heavy infestations may even kill plants.

The PM was first described in 1955 from specimens collected on cassava in Mexico. Interestingly, it is believed to be native to Central America, where it was reported only recently. It spread to the Caribbean in the early 1990's and recently to the Virgin Islands, Puerto Rico, Florida, the northern part of South America, and Guam. In addition to papaya and the other hosts reported previously, other common hosts include soursop, sugar apple, mango, plum, guava, Surinam cherry, eggplant, peppers, sweet potato, avocado, tomato, pigeon peas, allamanda, oleander, ixora, and many other crops, fruit trees, ornamentals, and even weeds.

Projects of the Branch's Biological Control Section included the following during FY 2004:

➡ **Yellow Sugarcane Aphid** [Sipha flava (Forbes)]. In mid-July 2003, production of the yellow sugarcane aphid (YSA) biocontrol agent, Lysiphlebus ambiguus (Haliday) (Pakistan biotype), in the Hilo Insectary was terminated. This aphid parasitoid was introduced from Pakistan through a cooperative agreement between the State of Hawaii and the International Institute of Biological Control (IIBC, CABI International), headquartered at Silwood Park, England, United Kingdom.

From FY 1998 through FY 2003, a grand total of 519,784 L. ambiguus (Pakistan biotype) adults were released in pastures on the islands of Hawaii and Maui and in fields of young sugarcane on Kauai. Most of the adults released were reared in Hilo. Final L. ambiguus emergence in the Hilo Insectary during the first half of July 2003 totaled 5,300 adults, 4,500 of which were sent to Molokai for release at two ranches. These releases represent the culmination of the YSA Biocontrol Project that began with the initial discovery of the YSA at Hualalai Ranch in North Kona in November 1988.

By June 2004, surveys confirm the establishment of this biocontrol agent on Maui as well as on Hawaii. For the present, the YSA Biocontrol Project will be put on hold until further clues surface to provide viable leads to additional natural enemies that would be worthwhile to pursue.

Heavy infestation of papaya mealybug on trunk of papaya tree on Maui.

➡ **Nettle Caterpillar** [Darna pallivitta Moore]. Propagation and studies of the nettle caterpillar continued in the HDOA Insect Quarantine Facility in Honolulu, as well as in the Hilo Insectary. Periodic disease infections have hampered production at both facilities so emphasis has been placed on sanitation and keeping minimum numbers in each container to avoid overcrowding.

In June 2004, many dead late instar larvae were found at a Waiakea site on the leaves of hono hono (Commelina diffusa). Specimens sent to UC Davis were confirmed to be infected with a virus, which is common in many wild moths and much more lethal in lab colonies. It is apparent that the virus has some impact on nettle caterpillar field populations.

The Hilo colony is being maintained to produce eggs and larvae that will be set out in the field to detect parasitoid activity. The colony in the HDOA Insect Quarantine Facility on Oahu is being maintained for use in colonizing and testing potential bio-control agents.

The nettle caterpillar has now expanded its range from Panaewa into the lower Waiakea Subdivision. New infestations have been reported and confirmed in Panaewa and Waiakea.

A parasitoid, Trichogramma papilionis Nagarkatti, collected at a Panaewa infestation site is being monitored for its affect on nettle caterpillar eggs. A significant detection was made in early November

2003 when five sets of sorghum plants with nettle caterpillar eggs were set out at three sites in Panaewa. At the commercial nursery site, where three sets of sentinel plants with a total of 383 eggs were placed on three nearly consecutive days within a week, 324 of them were parasitized after two to three days of exposure for an average parasitism rate of 84.6%. More remarkably, all 67 eggs set out on November 5 were parasitized.

Perhaps, this may be a reason for the slow dispersal of this species since it was first discovered at Panaewa in September 2001. However, it appears that parasitism by T. papilionis is highly variable throughout the year as other surveys have detect much lower incidents of parasitism.

➡ **Giant Whitefly** [Aleurodicus dugesii Cockerell]. Infestations of the giant whitefly (GtWF) on Oahu had dispersed eastward to Hawaii Kai by mid-July 2003 and the Kaneohe infestations, mainly on fiddlewood trees, continued to be severe. Later in the month, initial detections were made on Kauai in Kapaa and on Hawaii in Hilo, both on Chinese red hibiscus plants. Samples collected at both neighbor island sites did not reveal the presence of the parasitic wasp Idioporus affinis LaSalle and Polaszek, which was now well established on Oahu as a result of fortuitous biocontrol, most likely via shipments of GtWF-infested plant material from California.

The only parasitoid found attacking GtWF nymphs during early surveys was the aphelinid wasp Encarsia guadeloupae Viggiani that was introduced from Trinidad in 1980 as a biocontrol agent of the spiraling whitefly, A. dispersus (a very closely related species).

During July 2003, a total of 16,900 I. affinis adults that emerged in the Oahu Insectary from field-collected GtWF-infested leaves were released on heavily-infested plants at sites in East Oahu (Moanalua, Kalihi, McCully, Waikiki, Hawaii Kai, and Kaneohe). The following month, two shipments totaling 3,900 adults were sent to Kauai and released in Kapaa, while another shipment of 300 adults was sent to Hilo for release amid the incipient infestation at a shopping mall. On Oahu, two releases totaling 500 adults were also made in August at two sites in Kaneohe. Amazingly, these 14 augmentative releases in FY 2004 were all that was required to supplement the initial releases of this pteromalid wasp made in FY 2003 in order to gain complete control of the GtWF statewide.

From September 2003, routine surveys began to detect significantly increased rates of parasitism and a decline in GtWF population densities. By January 2004, GtWF infestations were not readily detected so routine monitoring was terminated on Oahu. On the neighbor islands, the parasitic wasp was also found to be established on Kauai and in Hilo. Also, the bio-control agent was also found in Pukalani, Maui, where the initial GtWF detection was logged in May 2004.

The GtWF Biocontrol Project is a supreme example of the effective and permanent control of a potentially serious pest insect that can be achieved in a relatively short period of time with the minimum expenditure of funds. Statewide control was secured so quickly, just two years after the initial detection of the pest, that the majority of residents were not even aware of the problem.

➡ **Cardin's Whitefly** [Metaleurodicus cardini (Back)]. A new state record was made on December 19, 2003 when this species was discovered on fiddlewood trees in Hilo on the island of Hawaii. There are now 33 whitefly species established in Hawaii, none of which are native. The infestation was heavy and honeydew was falling on the cars parked under the trees. Follow-up surveys in the area during the next few months disclosed continued heavy infestation levels, associated defoliation, and honeydew excretion onto cars. Beginning in January 2004, coccinellid beetles were observed on the underside of infested leaves. A sample of the beetles collected and sent to Honolulu for identification revealed the presence of the coccinellid species Nephaspis bicolor Gordon, N. indus Gordon, and Delphastus catalinae (Horn). All three species had been introduced from Trinidad in 1979-1980 for biocontrol of the spiraling whitefly. However, very few nymphs of the whitefly were parasitized. A very low rate of parasitism by a parasitic wasp, believed to be Encarsia sp. poss. transvena (Timberlake), was observed at that time.

In February, a totally unexpected recovery of a parasitic wasp was made when a single specimen of Encarsia hispida De Santis emerged from a sample of infested fiddlewood leaves that had been collected from trees at the drugstore site and sent to the Oahu Insectary to evaluate parasitism. This whitefly parasitoid was introduced into Hawaii in 1998 from Brazil along with another species and two others from Egypt as potential biocontrol agents to suppress silverleaf whitefly infestations. By April, the infestation at the site had decreased dramatically following the upsurge in the population densities of the ladybugs.

➡ **Clidemia** [Clidemia hirta (L.) D. Don]. Field collections of clidemia berries, infested by the clidemia fruit-feeding caterpillar, Mompha trithalama Meyrick, and also by the clidemia flower-feeding caterpillar, Carposina bullata Meyrick, continued to be conducted in East Hawaii periodically. During nettle caterpillar

surveys in February 2004, M. trithalama larvae were discovered in the berries of clidemia plants at the UH-CTAHR Experiment Station in Waiakea and at a commercial ornamental plant nursery in Panaewa. The former is more than a mile from the original release site of this moth, while the latter is more than two miles away. These detections were encouraging indicators that this clidemia biocontrol agent is steadily dispersing.

➧ **Gorse** [Ulex europaeus L.]. The HDOA cooperative project with Manaaki Whenua Landcare Research New Zealand to introduce an additional biocontrol agent, Cydia succedana Denis and Schiffermuller, commonly known as the gorse pod moth, into Hawaii for further suppression of gorse infestations is continuing on the island of Hawaii and in New Zealand. As of July 2003, host specificity testing had been completed and a report had been received from Landcare Research. However, an additional field test in New Zealand with one species of native Hawaiian plant was still needed to complete the work. Exploration for new gorse natural enemies in Western Europe was funded by the Bio-systems Technology Program and a report by cooperators was completed.

On the Big Island, all of the data collected during the twelve original experiments provided a better understanding of the longevity, including seed bank density and survival, and the spread of gorse. The data also showed the potential for expansion of gorse infestations if not properly managed. The formulated model resulting from this study of gorse will facilitate the building of a template management plan for Humuula and for its future land development.

➧ **Ivy Gourd** [Coccinia grandis (L.) Voigt]. Propagation of the ivy gourd gall weevil, Acythopeus burkhartorum O'Brien, continued in the HDOA Insect Propagation Facility on Oahu throughout FY 2004. This biocontrol agent has been extremely impressive in the lab but has yet to become well established and widespread in the field. This may be due to predation, probably by birds and ants, as a result of its long life cycle and vulnerable pupal stage on the ground. Also, lab production has been retarded by low fecundity. A total of 19 field releases during FY 2004 from July 2003 through April 2004 only amounted to a total of 614 adults being liberated at release sites in Moanalua, Waimanalo, Haleiwa, and Waimalu.

The ivy gourd vine borer, Melittia oedipus Oberthur, and the ivy gourd leafmining weevil, A. cocciniae, are well established throughout the island of Oahu and also in Kailua-Kona on the island of Hawaii and are doing an excellent job of reducing the aggressiveness of ivy gourd to a level where it no longer is the most

Oahu Insectary Entomologist Juliana Yalemar collecting pickleworm caterpillars from a zucchini fruit at a farm in Ewa.

dominant plant in the natural landscape that it had been in the past. In drier leeward Oahu coastal areas and areas such as the slopes of Punchbowl Crater where it once shrouded all vegetation, ivy gourd has become difficult to find. Even in some of its most favored localities like Waimanalo in East Oahu, other invasive plants are displacing it. One such plant, Neonotonia (=Glycine) wightii, may be considered more favorable than ivy gourd because, being a legume, it fixes nitrogen, is used for fodder, and does not climb vertically.

In April 2004, a survey was conducted in the Kailua-Kona area of West Hawaii in response to the capture of an adult specimen of M. oedipus by a student at the old Kona Airport in March. The airport is more than 4 miles from the only site on the island where two releases of this biocontrol agent were made, one in April and the other in September of 2001. An inspection of ivy gourd vines in the area disclosed signs of the moth, either larvae or empty pupal cases, indicating that it had dispersed well throughout the range of ivy gourd in this area. Ivy gourd leaves had larval mines and adult feeding damage made by the leafmining weevil. Both biocontrol agents were well established in Kailua-Kona. In May, UOG researchers and assistants visited the area to collect ivy gourd stems infested with M. oedipus larvae. They were highly successful and returned to Guam with many larvae, which they planned to rear to adults to establish another colony in quarantine to replace the original colony that was lost in the aftermath of a recent hurricane. In comparison, they experienced difficulty in finding M. oedipus larvae on Oahu.

➡ **Miconia** [Miconia calvescens DC]. The miconia biocontrol pathogen, Colletotrichum gloeosporioides f. sp. miconiae (Cgm), is very well established amid the major infestations on the islands of Hawaii and Maui. No release of the fungus was made during the past year. Invasive species committees on the two islands were advised to limit their eradication work to mature trees so that the younger growth may serve as reservoirs for the Cgm. Research continued in a collaborative project with the USDA Forest Service Invasive Species Unit on assessing the effect of the Cgm on miconia plants.

HDOA's Plant Pathologist attended two seminars on miconia biocontrol and went on two field trips in Tahiti in February 2004. Heavy rainfall and hazardous driving conditions hampered the field trips. Nevertheless, the tour group was able to observe the diseased miconia plants along the roadsides. This trip concluded the release phase of the cooperative project in French Polynesia.

➡ **Fireweed** [Senecio madagascariensis Poiret]. During exploration for fireweed natural enemies in South Africa and Madagascar in 1999, the HDOA Exploratory Entomologist collected eleven phytophagous insects. After colonization and host specificity testing in the Insect Quarantine Facility in Honolulu, only two species still remained as viable candidates for fireweed biocontrol.

The most promising species, Secusio extensa (Butler), is an arctiid moth whose larvae defoliate fireweed. The colony was established from one lot of about 100 larvae collected from fireweed at Ft. Dauphin, Evatra, Madagascar. Additional testing and a report of the bionomics and host range of this species were completed during the year.

A final report is being prepared as a prelude to a request for release of this species from quarantine. The other potential fireweed biocontrol agent, Sphenella sp. poss. austrina, is a tephritid fly, whose larvae feed on the flower heads of S. madagascariensis. This fly was colonized through the receipt of two shipments from South Africa, each containing hundreds of fireweed flower heads infested by two tephritid species.

The host specificity study for this tephritid fly is nearing completion. Thus far, it has not had a negative effect on any other Asteraceae species, other than the targeted fireweed and another noxious weed in the same tribe, commonly known as Cape ivy or German ivy (Delairea odorata; formerly Senecio mikanioides).

Oahu Insectary Supervisor Renato Bautista (left) conducting orientation on the glassywinged sharpshooter (GWSS) during the PPC Annual Meeting at the Pearl City Urban Garden Center. To the right of Bautista is entomologist Juliana Yalamar, insect taxonomist Bernarr Kumashiro and Hilo Pest Control Technician Clyde Hirayama. Inset: GWSS adult.

➡ **Maile Pilau** [Paederia foetida L.]. The Skunk Vine Biocontrol Project, a collaborative effort between the HDOA Plant Pest Control Branch and the USDA-ARS Invasive Plant Research Laboratory (IPRL) in Ft. Lauderdale, Florida, continued in FY 2004 but activities were very limited. One shipment of the chrysomelid beetle, Trachyaphthona sp., was received from Kyushu University, Fukuoka, Japan, on June 20, 2003. The package contained 100 (87 alive, 13 dead) adults that were collected on skunk vine at Mt. Unzen-dake in Nagasaki Prefecture. They were placed in cages containing potted skunk vine in the HDOA Insect Quarantine Facility. Thereafter, a total of nine exposures of potted skunk vine were made with the beetles, but only one adult emerged. As a result of the extreme difficulty of rearing this species in quarantine in Hawaii, the decision was made to have the Kyushu University graduate students, who did the collections, conduct life cycle studies and develop rearing techniques for these beetles. Current reports indicate that they have successfully obtained eggs from the captured beetles and have reared the larvae on the fine roots of skunk vine to the third instar stage. Shipments of other promising candidates from Nepal and Thailand are anticipated during the following year.

➡ **Fountaingrass** [Pennisetum setaceum (Forssk.) Chiov.]. Fountaingrass, a bunchy, erect perennial native to northern Africa, has now been introduced to many regions of the world as an ornamental. In Hawaii, it was cultivated and is naturalized in dry, open

places, including barren lava flows and cinder fields. It grows well in rocky, shallow soils and can withstand long periods of drought. Fountaingrass seeds profusely and spreads rapidly. It is a very serious pest in dry areas, especially along the western coast of the island of Hawaii. Records indicate that it was first collected on Lanai in 1914 and is now also established on Kauai, Oahu, and Hawaii. It is an extremely aggressive colonizer so it outcompetes most native species for establishment. It is fire-adapted, its dry biomass burns swiftly, causing extensive damage to associated dry forest species, and then quickly reestablishes after fires.

A cooperative project was launched with plant pathologists at Mansoura University for the conduct of explorations in Egypt to obtain natural enemies of fountaingrass to suppress infestations in Hawaii. Funding is being provided by the United States/Egypt Joint Scientific and Technology Board, whose mission is to promote international cooperation in a scientific endeavor between the two countries.

In Hawaii, the collection of native and economically important grasses for the host specificity testing of potential biocontrol agents was initiated in July 2003.

The HDOA's Exploratory Entomologist visited Egypt in early-September to mid-October 2003 to conduct a preliminary exploration for fountaingrass natural enemies and to coordinate project activities with the Egyptian collaborators. The trip was of great value because the collaborators had targeted P. glaucum instead of P. setaceum. In addition to targeting the proper species, he advised the collaborators on the preferred way to collect, rear, and ship the biocontrol candidates. On his return to Hawaii, he hand-carried two potential biocontrol pathogens to the Plant Pathology Quarantine Facility in Honolulu. These were a rust fungus collected from P. glaucum to attack the foliage and a smut collected from Imperata cylindrica to attack the inflorescence. Because rusts and smuts are highly specific, they may not attack P. setaceum. Nevertheless, inoculations of both fungi onto P. setaceum were done in Hawaii and Egypt, but proved to be unsuccessful. An interesting note is that I. cylindrica (cogon grass) is on the State and Federal noxious weed lists and is known to be a serious weed problem in the southeastern United States.

Projects of the Branch's Chemical/Mechanical Control Section included the following during the FY 2004:

➡ **Banana Bunchy Top (BBTV)**

On April 12, 2004, BBTV was confirmed in fields of cavendish and apple bananas in a major commercial banana farm in Keaau, Hawaii. This marked the first sighting of the disease outside of the only known infections in North Kona, west Hawaii. BBTV now seriously threatens the state's major banana production areas found in east Hawaii which together Oahu, had a statewide value of $9.2 million in 2003.

Surveys estimated that BBTV had gone undetected on the farm for at least a year and had spread to bananas in surrounding commercial and residential properties up to 3.5 miles south at Orchidland, and to Panaewa, one mile to the north of the infected farm. A total of 11 commercial banana farms were identified with BBTV. Subsequent island wide surveys also identified previously unknown BBTD infections in roadside bananas in North Kohala at Hawi, Kapaau, and Halaula. A cooperative control program to suppress BBTV in Keaau and surrounding areas was initiated and a total of 87 mats, 348 banana plants from 26 sites (farms, residential properties, and unattended bananas) were destroyed.

To assist in BBTV control, commercial growers received a Crisis Exemption Supplemental Label allowing the use of Provado 1.5 Flowable Insecticide for banana aphid control. In North Kona, surveys detected four residential lots with BBTV and efforts will continue to suppress BBTV in the 10 square-mile area of the Post-Phase II Project Eradication Program.

The University of Hawaii's College of Tropical Agriculture's Cooperative Extension Service started the Banana Action Group, to provide extensive BBTV website information to commercial growers and home gardeners on BBTV identification and control.

On Maui, BBTV was detected in 10 residential home gardens in Pukalani and Makawao. A total of 21 mats infected bananas were destroyed. The sighting of BBTV in Makawao on May 4, 2004 was the first finding of BBTV outside of the Pukalani core area, where the disease was initially discovered at a private residence on December 21, 2002 by a department entomologist. The implementation of surveys and chemical control measures have to date discovered BBTV on 39 residential lots and no farms were found with the disease. A total of 176 mats of infected banana plants have been destroyed in FY 2003-2004. Surveys on Molokai confirm no BBTV during this fiscal year.

Continued to provide early BBTV disease detection assistance to Kauai commercial banana growers as part of the department's Long Range Management Control Program. During this fiscal year, BBTV was detected in farm lots and residential areas on Kauai in Lawai, Poipu, Koloa, Omao, Numila, Lihue, Kawaihae, and Kapaa. A total of 110 mats and 19 mats infected bananas were destroyed, respectively from farms and residential areas. BBTV was detected in Kapahi in April 2000. This was after an earlier eradication effort was unsuccessful after BBTV was initially discovered at Kilauea Town in October 1997.

Continued surveillance on agricultural lands on Oahu where BBTV is widespread. A total of 1,885 mats bananas infected with BBTV were tagged for destruction by growers in the early disease detection program provided to commercial growers impacted by the virus. Commercial growers were urged to continue to manage the virus on their farms by controlling the insect vector and chemically treating diseased plants by herbicide injection.

Hilo PPC staff initiated a cooperative effort with federal/state/private/volunteer assistance to eradicate Chrysanthemum White Rust (CWR), *Puccinia horiana*, which was reported by a commercial grower in Mountain View, Hawaii on January 6, 2004. The disease was confirmed by Dr. R. Hara, CTAHR-CES, and confirmed by ADSC-CTAHR. The disease outbreak was significant as CWR is not known to occur in the U.S. A three-week effort, from January 9-30, 2004, succeeded in destroying two acres of 157,850 imbedded greenhouse plants, worth $552,476, with the use of 489 man-hours. The project proceeded quickly because of the voluntary consent of the grower, who received no compensation. The USDA-APHIS-PPQ National Management Plant for Exclusion and Eradication of CWR protocol was followed. In March 2004, post-eradication surveys at the farm detected no traces of CWR. Trace forwards also did not detect further source of the pathogen and CWR was declared eradicated in Hawaii.

➡ **Papaya Ringspot Virus (PRV)**

Continued to assist papaya growers on Hawaii by identifying PRV in commercial field plantings. A total of 52,070 infected plants were tagged for destruction by growers this fiscal year, an 18.5 percent increase over last fiscal year's total of 43,947 plants tagged on over 277 farm lots in the Puna and Hamakua Districts on Hawaii.

➡ **Miconia**

Continued to collaborate with Invasive Species Committee staff on Kauai and Oahu involved with controlling miconia (*Miconia calvescens*).

➡ **Glorybush**

Successfully removed 97 glorybush, *Tibouchina urvilleana*, plants from Mililani Mauka Lehiwa Ridge subdivision roadway plantings in November 2003 with cooperation of the land developer, Castle & Cooke Homes.

➡ **Coqui Frog**

Continued research on chemical toxicants to control coqui frog infestations found on Hawaii, Maui, Oahu and Kauai. A Section 18 request for Quarantine Exemption of FIFRA was sent to EPA by the Pesticides Branch to allow use of hydrated lime to control the coqui. If approved by EPA, applications under certain conditions would allow use in outdoor plants, plant nurseries and residential areas, parks, hotels and resorts, and forest habitats as a dust, soil drench or foliar application with ground application equipment.

The department's Sprayer Loan Program, initiated on Hawaii last fiscal year, resulted in 115 loans to residents from community associations, allowing them to spray citric acid for coqui frog control. A State of Emergency over the coqui frog invasion was declared by the Mayor of Hawaii County. Following a Hawaii County plan implemented in June 2004, HDOA would assist in a certification program to train users of the department's 100-gallon sprayer and use of citric acid.

Continued efforts to work cooperatively with the Department of Land & Natural Resources, Oahu Invasive Species Committee, and U.S. Army Environmental Division to control the coqui frog on Oahu. At Wahiawa East Range and gullies, wild coqui frog populations were treated with 2,293 lbs. citric acid (est. 2,982 gallons) from August 2003 – July 2004. While the earlier efforts helped to significantly reduce coqui populations, re-treatment of the areas were necessary as remnant frogs and maturing new hatchlings began calling in increasing numbers from April 2004.

Continued involvement with the Coqui Frog Working Group on Hawaii led to the successful completion of the beautification of the Lava Tree State Park through habitat modification (removal of under-story weeds, havens as frog breeding sites) and replanting with native plants by volunteer civic groups.

➡ **Thorny Kiawe**

Continued chemical and mechanical control for designated noxious weeds such as thorny kiawe (*Prosopis juliflora*) on Oahu and Kauai; miconia (*Miconia calvescens*) on Kauai and Oahu, fountaingrass (*Pennisetum setaceum*) on Maui, Lanai and Oahu; ivy gourd, (*Coccinia grandis*) on Kauai,

gorse (*Ulex europaeus*) on Hawaii, and fireweed (*Senecio madagascariensis*) at Schofield Barracks, Oahu. Continued eradication efforts resulted in reducing fireweed populations by 85 percent at Halfway Bridge on Kauai.

➡ **Little Fire Ant**
Continued to conduct surveys to delineate the spread of the little fire ant (LFA), *Wasmania auropunctata,* and apply suitable ant baits for control on Hawaii and Kauai. On Hawaii, where LFA was first known in March 1999, LFA has now been found in the major areas along the Hamakua coastline from Laupahoehoe, Pepeekeo/Papaikou, and Hilo to Keaau, Kurtistown, Hawaiian Acres, Kaloli, Makuu, Kapoho, Opihikao, Kahena, and Kalapana; a total of 129 sites, 321 acres were found infested with LFA, and as surveys increase, more sites of infestations are expected to be found. On Kauai, where LFA was detected in October 6, 1999, and was thought to have been eradicated, the ant resurfaced in September 2003 where it infests 0.4 acres of the original two properties in Kalihiwai. Populations are being successfully contained using ant bait treatments.

➡ **Fountaingrass**
Continued to establish a working relationship with OISC (formerly known as the Fountaingrass Working Group) composed of U.S. Army, Federal, State, University of Hawaii and various other non-profit agencies whose goals are to detect and control invasive alien species that are deleterious to Hawaii's agriculture and natural resources.

➡ **Seed Inspection**
Conducted routine surveys of agricultural and vegetable seed vendors to ensure the quality and proper labeling of seed sold to consumers. Germination tests were also performed on commercially sold vegetable and agricultural seed lots to ensure that minimum germination standards were met.

Examined incoming foreign seeds for noxious weed seeds under a cooperative agreement with USDA-APHIS-PPQ. Eight seed lots were rejected because of corn import regulations that prohibit the entry of foreign millet seeds in U.S. seed imports.

Completed the transfer of the Hawaii Seed Certification Program to the Commodities Branch in the Quality Assurance Division in December 2003, and continued to train new field inspectors. This transfer allows the Plant Pest Control Branch to concentrate on agricultural that affect the agricultural industry and environmental pests to protect Hawaii's natural resources.

PLANT QUARANTINE BRANCH
Neil Reimer, *Manager*

The branch administers Hawaii's plant and non-domestic animal quarantine program by preventing the introduction of harmful pests and diseases into the State and by facilitating plant exports. This is done through:

(1) permit reviews;
(2) air and sea ports-of-entry inspections,
(3) interisland inspections,
(4) investigating and enforcing State quarantine laws and regulations,
(5) educating travelers and the public, and
(6) inspecting and certifying plants for export.

Plant Quarantine Branch statistics may be found on page 56.

FY 2004 Highlights

➡ A total of 299 containers of Christmas trees were shipped to Hawaii from Oregon and Washington. In accord with the HDOA protocol, Washington and Oregon Departments of Agriculture witnessed the shaking and cleaning of 100 percent of the trees in 92 percent of the containers. The other 8 percent of the containers were spot checked by the two mainland agriculture departments. No containers were found by HDOA inspectors to be infested with yellowjacket wasps. Two containers were held and treated and released for infestations of midges not known to occur in Hawaii.

➡ In FY04, 99 animal reports were investigated by PQ personnel, which concerned 157 animals and included 34 veiled chameleons (*Chamaeleo calyptratus*) captured in a Makawao, Maui subdivision and 13 Madagascar giant day geckos (*Phelsuma madagascarensis grandis*) captured within a residential block in Manoa, Oahu.

➡ A search warrant was served at a Hawaii Kai residence and PQB personnel with assistance from investigators from the Office of the Attorney General seized an albino kingsnake (*Lampropeltis* sp.) and a collared lizard (*Crotaphytus* sp.) from a 22-year-old Honolulu man. The man was later issued two citations at $1,000 per animal.

➡ Brown Treesnake Rapid Response training sessions were conducted on Guam for a three-week period from March 30 thru April 16. Three PQB personnel from Oahu (Keevin Minami and Nathan Paracuelles) and Maui (Kyle Yagi) received training in the detection, trapping and handling of brown treesnakes. A one-week refresher course was later conducted in mid-May for PQB Inspector Domingo Cravalho.

- After the year-long Kahului Airport Pest Risk Assessment (KARA) was completed in July 2001, HDOA decided to further evaluate the effectiveness of the PQB program. This was done in an effort to improve quarantine services to Kahului Airport and at ports-of-entry statewide through the implementation of the Quality Control program. This Quality Control program, which is funded by FAA through DOT, used the methodology of pest risk assessment known as KARA.

  Two pest risk assessments were conducted in this fiscal year. Both risk assessments continued the tracking of seasonality in regards to intercepted pests. The assessment in November 2003 focused on integrating the new Invicta database system and evaluating new technology including the use of laptops, pda's (personal digital assistant), and wireless network. The second assessment was conducted in May 2004. The assessment focused on pest risks associated with interisland movement of agricultural goods.

- The Invicta database system was released in October 2003. This system, which was funded by FAA through DOT, was developed to assist PQB in the interdiction of invasive species through Kahului Airport to fulfill the requirements of the Kahului Airport Alien Species Action Plan (ASAP). Invicta allows PQB to input data on flights, inspections, interceptions, and permit information. In addition, reports and forms can be generated directly off the system. The new database is based on Microsoft's dot.net technology and allows computers with internet access to run the application using an internet browser.

- Maui PQ staff met and cleared 7,671 nonstop flights from the U.S. Mainland which brought in 1,375,642 passengers. They rejected 565 individual air freight shipments which were either insect infested or diseased. These shipments consisted of 2,229 parcels of 29,376 pounds produce, 79 parcels of 4,603 plants; and 91 parcels of cut flowers which were either destroyed or returned to origin.

- With the assistance of the U.S. Postal Service, the Maui PQ Maui staff was able to intercept a parcel from Texas which was heavily infested with immature termites.These subterranean termites, *Reticulitermes sp.,* are not known to occur in Hawaii. The infested box was destroyed by freezing and incineration. The health supplement contents were released.

- A United Airlines employee found a partial body of a snake in the right back tire assembly of Flight 49 from San Francisco. It was caught between the tires and was found hanging. The body appeared to have been stretched, loosing the head. Part of the body appeared to be smashed. It was about 14 inches long without the head. And about one inch in diameter.

- Staff submitted 1590 insect interceptions to the Plant Quarantine entomologist for identification. Of these, 42 percent were not known to occur in Hawaii, 39 percent were known to occur in Hawaii, and 19 percent were unidentifiable. Based on these identifications, the dispositions of these shipments were as follows: 53 percent had the pest removed and were released to the importer, 14 percent were refused entry and returned to the port of origin, 34 percent were treated and destroyed, and one percent were treated and released.

- There was a 23 percent increase in flight arrivals inspected from Guam and other high risk brown tree snake areas during FY 04 as compared to FY03.

Plant Quarantine Land Vertebrate Specialist, Keevin Minami, inspects enclosures for visiting tigers at the 50th State Fair to assure compliance with permit conditions.

- There was a 31 percent increase in the number of inspected plant and animals parcels imported into the State through Honolulu International Airport as passenger baggage, cargo, and mail during FY04 as compared to FY03.

- An iguana was caught by a homeowner in Kalihi, Oahu. The homeowner said that she saw two more iguanas in her yard. The iguana was picked up by Inspectors from the Airport Plant Quarantine Office, and it was sent to the Plant Inspection Office for safekeeping.

- A light brown, approximately two-foot snake skin was found by a maintenance worker at Martin Warehousing, Honolulu. The snake skin was found against the chain link fence on the ewa side of the warehouse. No live snakes were found.

- During an investigation of a possible homicide at a Manoa home, detectives found a Tegu Lizard (*Tupinambis teguixin*) in the home. Inspectors from the Plant Quarantine Airport Office were called to retrieve the animal, as well as a large aquarium which housed the lizard. Another larger aquarium was present in the same room, but no animals were in it. The owner was arrested by police officers as a suspect in the murder case.

- In September, two gold dust day geckos were picked up from areas near the Honolulu International Airport by inspectors from the Plant Quarantine Airport Office. One was caught by an employee from the Airport Group International, whose office is at the diamond head end of the terminal, and one was caught by an employee at the Duty Free Shoppers Warehouse on Koapaka Street near the airport.

- Two greenhouse frogs were turned in to the Airport Plant Quarantine Office by a USDA inspector who brought in the frogs for his neighbor, who lives at Mariners Cove, Hawaii Kai. A report was called in by the resident earlier, thinking that the chirping sounds were that of coqui frogs.

- A Molokai resident arrived from Portland with a Nanday Conure. Because the Nanday Conure is on the Restricted A list of birds, the owners were given the opportunity to ship the bird out of the state to a person of their choice. If not, the Department was prepared to ship it to a bird sanctuary on the mainland. The owners finally decided to ship the bird to a friend in Portland, Oregon. The bird was sent out via Hawaiian Airlines cargo.

- Two Jungle Runner Lizards (*Ameiva ameiva*) were confiscated from a shipment destined to go to a Honolulu resident. The consignee did not have an import permit for the lizards, and the carton was not labeled properly. The shipment arrived via Federal Express from San Diego, California. The owner was cited $1,000 for illegal importation of a restricted animal without an import permit.

Although established in some areas on Oahu, iguanas are illegal to possess or transport to Hawaii.

- A Crestview resident caught a large iguana in the gulch behind his home. The iguana was picked up by an inspector from the Airport Plant Quarantine Office and taken to the Plant Inspection Office.

- Four common mynah birds (*Acridotheres tristis*) were imported by a couple moving to Waianae from California. The mynahs were brought in under a permit for Indian Hill Mynahs (*Gracula religiosa*), which is on the conditionally approved list of birds. The common mynah is on the prohibited list of birds. The mynahs were originally from Hawaii, but brought to California as pets, and the owners were going to move back to Waianae with their birds to take care of their elderly mother. Because the birds could not be brought back in to Hawaii, they decided to go back to California to live with their birds instead. The birds and the owners returned to California on March 9th.

- An iguana was dropped off at the Hawaiian Humane Society in Honolulu. The iguana was picked up by an inspector from the Honolulu International Airport Plant Quarantine Office, and later brought to the Plant Inspection Office for safekeeping.

- A four-foot-long corn snake and a one-foot-long king snake were left in a box at a Honolulu Zoo employee's home. The snakes were picked up by inspectors from the Plant Quarantine Branch's Airport Section and sent to the Plant Inspection Office for safekeeping.

- A Manoa resident called the Honolulu International Airport Plant Quarantine Office to report that she saw the same types of lizards that were shown in an article in the newspaper. Inspectors sent to the address caught two juvenile Madagascar Day Geckos.

QUALITY ASSURANCE DIVISION

Samuel Camp
Administrator
(retired 9/04)

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

Vacant, *Manager*

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

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

The Branch provides just and unbiased enforcement to assure safety and fair business dealings in agricultural products, to protect the agricultural community as well as the general public. The Branch administers laws and rules pertaining to fresh fruit, vegetable, and egg labeling and advertising; minimum export quality; licensing of dealers in agricultural products; prevention of agricultural theft; and sampling and testing of animal feed for label guarantee and adulteration.

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

The Commodities Branch's Chemical Analysis Laboratory Section provides chemical analysis services for the Feed Program as well as the Pesticides Branch. Animal feed samples are analyzed for adulteration from agri-chemicals and mycotoxins; environmental samples are analyzed for contamination from agri-chemical and other substances; and pesticides are tested for ingredients. The Chemical Analysis Laboratory Section, under an inter-departmental agreement, is located in the State Department of Health's State Laboratories Division in Pearl City, Oahu.

Listed below are brief overviews of developments that have impacted the Branch's activities. See page 57 for a detailed table of activities.

- Inspected and certified over 1.4 million cases of canned pineapple from Maui Pineapple Company, which continues to receive large federal government contracts and assessed over $258,000 in fees.
- Continued the fee-for-service papaya non-transgenic testing program and established and conducted a new "Identity Preservation Protocol" program for tighter control of non-transgenic papayas that are exported to Japan. More than five million pounds of papayas were checked and $27,118 in fees were assessed over the year.
- Assisted the Measurement Standards Branch in establishing a taximeter testing course on Kauai. Commodities inspectors were cross-trained to conduct taximeter inspections, as there is no Measurement Standards inspector on that island.
- Through the enactment of Act 49, SLH 2003 the Branch hired seven Agricultural Commodities Aids to: 1) provide auditing and certification services for food safety, food security and product traceability; 2) provide temporary help in various programs under one certification services revolving fund; and 3) conduct the seed certification inspection, previously performed by the Plant Pest Control Branch, Plant Industry Division. With current fiscal constraints, reduced full-time staff, and changing demands in the agricultural community, this act allowed the Branch to address new demands, and cross-utilize temporary staff to assist where needed, for better efficiency.

- Staff attended papaya, coffee, and cattle industry meetings and conferences; and Hawaii Marketing Alliance meetings for a "Seal of program.

- Staff participated in planning a pilot project to educate wholesalers, farmers market vendors and retailers in East Hawaii regarding Chapter 145, part II, HRS, which requires a certificate upon transport or commercial sale of agricultural products. Staff carried out preliminary outreach efforts to farmers' market vendors in conjunction with county police officers and prosecutors for greater effect. Educational flyers were also distributed to various processors, wholesalers, shippers, truckers, and airlines. Wholesalers have reported an increase in compliance with the law following this effort.

- Attended mainland training sessions and conferences, which included: USDA/AMS sponsored Fresh Products Branch Terminal Market Class, Processed Products Branch National Supervisor's Conference, and a Plant System Auditor's Workshop; EPA sponsored Pesticide Analytical Workshop on Commercial Formulation End Product Analysis; and the International Association of Milk Control Agencies annual conference. The costs to attend these conferences were mostly paid by federal agencies and the milk special fund, at minimal or no cost to the state.

- Hosted supervisory visits by USDA officials from AMS-Processed Products Branch, Fresh Products Branch, and Poultry Division. Met with visiting officials from USDA Grain Inspection, Packers and Stockyards Act.

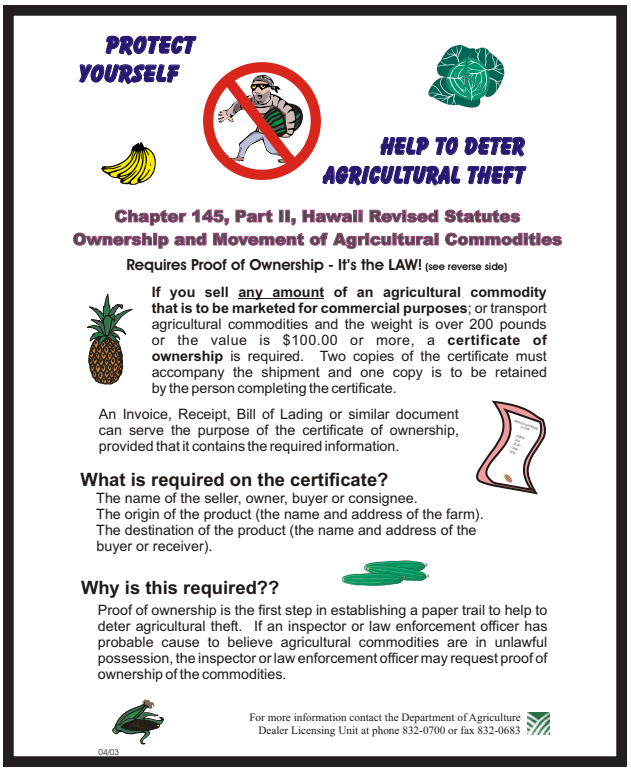
- Hosted USDA, Fresh Products Branch instructors on a weeklong training of Good Agricultural Practices/ Good Handling Practices. All fourteen staff participants successfully completed the training.

- Participated in a Fed-State agreement to distribute up to $40,000 under a USDA Organic Certification Cost-Share Program, to qualified organic producers and handlers in Hawaii for the period 10/01/02 through 09/30/04.

- The Chemical Analysis Laboratory was credited for analysis performed in a research paper presented by Dr. Chittaranjan Ray, associate professor, Department of Civil and Environmental Engineering and Water Resources Research Center, University of Hawaii, Manoa on evaluating the transport of pesticides in tropical soils in Hawaii.

- Through EPA and Pesticides Branch funding, the Chemical Analysis Laboratory continued to analyze soil samples for a soil leaching project. This project is geared to help farmers find an easy method to purge their soil of persistent pesticides.

- Branch fee assessments and penalties collected totaled $606,254; about 22 percent more than last year.



MEASUREMENT STANDARDS BRANCH
William Pierpont, *Manager*

The Measurement Standards Branch works to protect consumers, businesses, and manufacturers from unfair practices, which are 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 repairing 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.

Quality Assurance Division

Listed below are brief overviews of developments that have impacted the branch's activities See page 57 for a detailed table of activities.

- The State Metrologist received advanced training and certification from the National Institute of Standards and Technology (NIST).
- The metrology laboratory received re-certification by the National Institute of Standards and Technology.
- The metrology laboratory inspected and calibrated 93 mass test standards, 672 mass enforcement standards, and 499 field standards for service agencies conducting business in the State of Hawaii.
- The metrology laboratory inspected and calibrated 11 volumetric test standards, 33 volumetric enforcement standards, and 40 volumetric field standards for service agencies conducting business in the State of Hawaii.
- The Branch received and investigated over 28 odometer complaints, a significant increase from the 18 investigations done in 2003. In conjunction with the Attorney Generals office the investigations completed by the Branch have led to indictments, arrests, and prosecutions.
- The compliance rate for stores inspected for price verification was 98 percent.
- The Branch identified and certified a two-mile taxi course in Captain Cook, on the Big Island. The Branch was also able to provide taximeter inspection services on Kauai, Oahu, Maui and the Big Island.

AGRIBUSINESS DEVELOPMENT CORPORATION

Alfredo Lee
Executive Director

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

Mission Statement: The Agribusiness Development Corporation is a vehicle and process to make the optimal use of agricultural assets for the economic, environmental, and social benefit of the people of Hawaii. It is a risk-taking advocate for agriculture.

Board Members: Larry Jefts (Chair), Yukio Kitagawa (Vice-Chair), Bert Hatton, Denis Kam, Chris Kanazawa, Wayne Katayama, Teena Rasmussen, Eric Weinert, Sandra Kunimoto (Ex-Officio), Ted Liu (Ex-Officio), and Peter Young (Ex-Officio).

The following are highlights of ADC's activity during FY 2004:

➡ **Kekaha Agricultural Lands**

In September, pursuant to Executive Order No. 4007, the Department of Land and Natural Resources (DLNR) officially transferred 12,500 acres of agricultural lands to ADC. To facilitate a smooth transition, ADC honored existing tenants' revocable permits and applicable rents.

A coalition of tenants formally organized the Kekaha Agricultural Association (Coop) to manage common infrastructure vacated by Amfac/JMB. These include two irrigation systems, an extensive drainage system with two pump stations, an electrical system with two hydroelectric plants, and roadways. ADC's Kekaha Committee and the Coop are in discussion regarding rental areas, long-term licenses, and maintenance of common areas and infrastructure.

Navy Phase II and Phase III projects, totaling $4.46 million, are continuing with termination dates in December 2004 and March 2005, respectively. A major milestone was accomplished when the design of the repair/replacement of the Kawaiele and Nohili pump stations was completed. This undertaking includes replacing six drainage pumps, strengthening the pump station structure, replacing transformers and improving the drainage channel. The infrastructure is critical in controlling the flood plain in Kekaha.

The Navy also successfully obtained a 270-acre lease and an agricultural restrictive use easement for the Mana plain from the Department of Land and Natural Resources in May 2004.

The Waimea (Mauka) hydroelectric plant, since becoming fully operational in November 2002, has continued to produce most of the electricity needed for the pump stations and for farming.

Kekaha ag lands near the old mill

Kekaha main canal

Aerial view of Kekaha agricultural lands with the Pacific Missile Range Facility in the foreground.

Waiahole Water System (WWS)

Weather patterns drastically affected water use this fiscal year. In contrast to the near drought conditions during the first half of the fiscal year, the second half brought stormy weather and flooding in some areas. Total water usage for FY04 decreased from FY03 by about 223 million gallons.

Rainy weather on Oahu's windward side also caused a few landslides, making an access road inaccessible for maintenance vehicles. Continuous rainy conditions deterred efforts to perform repairs and clear debris from the development and main transmission tunnels. Water from the rain also increased total water development in the tunnels, consequently increasing the amount of system loss.

Due to reduced federal matching funds to State agencies, ADC's agreement with the U.S. Geological Survey (USGS) to monitor gauging stations at North Portal, Gate 31 and Adit 8 terminated in September 2003. WWS purchased, installed and calibrated new electronic dataloggers for the three stations. Our goal is to convert the remaining gauging stations from the use of mechanical recorders to digital dataloggers in the next few years.

During its regular session in 2003, the Hawaii Legislature determined that the WWS Revolving Fund was in excess of $400,000. This money was then transferred into the General Fund in FY04 to balance the state budget. This move threatens the revolving fund's long-term solvency and its sufficiency to re-pay our debt service for the general obligation bonds issued to purchase the water system in 1999.

In June 2004, the Hawaii Supreme Court issued a remand on the Commission on Water Resource Management's (CWRM) Decision and Order on the Waiahole Water Contested Case Hearing. The Supreme Court requested further findings and conclusion regarding: (1) the designation of interim instream flow standards for windward streams; (2) the 2.2 mgd of unpermitted water; (3) the practicability of The Estate of James Campbell and Puu Makakilo using alternative groundwater resources; (4) the actual needs of Field Nos. 115, 116, 145 and of 229 acres in Field No. 146; and (5) ADC's permit for system losses.

East Kauai Irrigation System

In a continuing effort to transition the East Kauai Irrigation System from sugarcane irrigation to diversified agricultural use, ADC contracted out services to operate and maintain the water system. The system is currently managed by the East Kauai Water Users Cooperative, providing irrigation water to about 738 acres of land in the upper Kapaa area, and is reportedly in better shape than it has been over the past decade.

- **Hamakua Agricultural Subdivision**

  A formal planning session among community members was held to discuss development of the agricultural subdivision project in Hamakua. It appears that community interest has evolved into developing a community-based agricultural plan to preserve future agricultural activity on agricultural lands in the Hamakua region.

- **Marketing of Maui Produce and Products**

  To fulfill its cooperative agreement with ADC, the University of Hawaii, College of Tropical Agriculture and Human Resources (CTAHR), began to: (1) perform preliminary studies on the potential of a tea industry in Hawaii; (2) conduct a preliminary assessment to brand the Maui onion and assist the Maui Coop with record keeping and marketing issues, and (3) provide assistance to bolster Kauai Community College's entrepreneur program.

- **State of Hawaii, Twenty-third Legislature, 2004**

  House Bill 2341 was introduced to stagger terms for ADC board members and was signed into law as Act 29. This will preserve continuity of policy and decision-making within the corporation.

  Act 216 was signed into law to reform state procurement, a part of which will discontinue ADC's procurement exemption, effective January 1, 2005.

Other Ongoing Activities

- The Environmental Protection Agency awarded ADC a grant to provide pesticide usage training to Korean farmers on the island of Hawaii. Various brochures and posters have been translated into the Korean language and Korean farmers are attending pesticide usage training classes.

- Lease negotiations between ADC and the University of Hawaii (UH) continue for Kauai's Tropical Fruit Disinfestation facility. The 2004 Hawaii State Legislature approved capital improvement project funding for the facility.

- ADC participated with the Agricultural Working Group's (AWG) concerted effort of a broad group of 70+ representatives of public, private, and corporate organizations and farmers, to propose legislation to preserve important agricultural lands.