

**REPORT TO THE THIRTIETH LEGISLATURE
2019 REGULAR SESSION
STATE OF HAWAII**

**ANNUAL REPORT ON THE
BIOSECURITY PROGRAM**

ACT 236, SLH 2008

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SECTION I

Background

A. Act 236, 2008 Session Laws of Hawaii

Act 236 of the 2008 Session Laws of Hawaii recognized that the unchecked spread of invasive species was a threat to Hawaii's economy, natural environment, and the health and lifestyle of Hawaii's people. Act 236 created a Biosecurity Program within the Department of Agriculture to support the Department's efforts in combatting invasive species. In particular, Act 236 recognized that the Department was undertaking several activities to fight invasive species by:

1. Administering pre-entry measures to minimize the risk of invasive pests entering the State;
2. Conducting port-of-entry inspections to detect and quarantine or destroy pests upon arrival; and
3. Administering post-entry measures to mitigate the establishment of pests in the State.

Additionally, Act 236 acknowledged the Department's efforts to reduce the State's dependency on imported agricultural products by increasing the capacity of Hawaii's agricultural industry that would in turn reduce the risk of importing agricultural commodities that could contain invasive pests. The Biosecurity Program was created to support the Department's ongoing efforts to combat invasive pests. The Legislature also established the Pest Inspection, Quarantine, and Eradication (PIQE) fund to finance much of these activities.

B. Role of the Hawaii Department of Agriculture

Efforts to prevent the introduction of invasive species, control and mitigate existing invasive species, and where possible, to eradicate invasive species incursions, are covered by multiple divisions and branches within the Department of Agriculture. There are also multiple funding sources used to fund these activities including general funds, Pest Inspection, Quarantine, and Eradication (PIQE), barrel tax, and federal funds.

The Plant Industry Division is composed of the Plant Quarantine Branch, Plant Pest Control Branch, and the Pesticide Branch. All three branches play a role in biosecurity with HDOA and work closely together to accomplish the objectives. The Plant Quarantine Branch (PQ) is largely tasked with the inspections and permitting of agricultural commodities (live plants; non-propagative plant parts such as fresh produce, cut flowers, animal feed; non-domestic animals; microorganisms; and soil) at ports of entry to prevent the introduction and interisland spread of

new or existing invasive species. This branch works closely with its federal partners (USDA-APHIS and USDA-PPQ) to ensure Hawaii's ports of entry are being kept free of invasive species threats. The Plant Pest Control Branch focus is primarily on the detection, response, control, containment, and eradication of pests that have managed to bypass inspections at the ports of entry. It is staff from this branch that are in the field actively working with farmers, homeowners, and businesses to help treat, prevent, and where possible, eradicate invasive species threats when they are discovered. The Pesticides Branch ensures that pesticide technologies are available for these efforts and are being properly used. Specific activities of the Plant Industry Division relating to biosecurity are as follows:

Prevention – activities to prevent the introduction of invasive species

- Inspection at port-of-entries for agricultural commodities entering the State and moving inter-island.
- Issuance of permits for the importation and possession of restricted commodities such as restricted plants, non-domestic animals, and microorganisms.
- Origin certification programs for high risk commodities (compliance agreements between origin state, commodity handlers/shippers, and destination state) designed to minimize or eliminate pest risk levels.

Diagnostics – ability to identify pests and invasive species: Insects, Slugs, Snails, Plant Pathogens, Non-domestic Animals, Microorganisms, and Noxious Weed identification.

Detection – surveillance for the existence and location of an invasive species that may be introduced.

Rapid Response – Immediate survey, control, and eradication measures to detect, capture, or eliminate a single threat or incipient population of invasive species before it can become established.

Monitoring – ongoing surveys to track the presence or absence and status of introduced invasive species over time and to evaluate effectiveness of prevention, control and restoration activities. Surveys are conducted at high risk areas, including within the *airport and harbor environs, surrounding the ports-of-entry, agricultural lands, and selected protected areas within the State.*

Biological Sampling – ongoing surveys to track the presence and status of existing species over time and to evaluate effectiveness of prevention, control and restoration activities.

Research and development – the development of scientific knowledge, methods, and technologies to prevent, detect, control and/or monitor invasive species and assist in implementing technologies to control invasive species' effects on agricultural production.

Education outreach – actions taken to support public education and outreach programs.

Partnerships & cooperative activities – cooperative efforts with stakeholders (agricultural industries); federal, state, county, and private partners; including domestic and international partnerships and agreements.

Information management – activities to facilitate access to and exchange of information concerning invasive species. Includes storage and sharing of data and databases.

Quality Control Programs – activities to measure levels of effectiveness, including on-going risk assessments to determine pest-risk pathways, evaluation of mitigation activities, and re-prioritization of inspection activities for invasive species.

Quarantine Treatment Facilities – “shared” government certified treatment facility(ies) approved to conduct disinfestations treatments to recondition and/or destroy shipments infested with quarantine pests, or to subject shipments to treatments that will exterminate the quarantine pest.

Permitting – issuing permits based on statutes, administrative rules, and prior Board of Agriculture decisions to ensure the introduction of regulated commodities can be appropriately imported into the State and not introduce or become invasive species in accordance with pest risk.

Compliance and Enforcement – strengthening the enforcement components to compel compliance with quarantine laws and regulations.

Export Programs – providing services to facilitate the export of agricultural goods to domestic and foreign markets.

The Animal Industry Division approaches biosecurity as a process for risk management of high impact animal diseases. This is accomplished as a spectrum of activities that encompasses mitigation of invasive animal disease occurrence and appropriate response methods to support continuity of business and protect human health. Detection of high impact animal diseases will affect both local industries as well as global trade. The Rabies Control Branch and the Animal Disease Control branch share the same objective of minimizing the impact of animal disease occurrence but focus on different species. Pre-arrival requirements provide assurances that newly imported animals have been properly identified, complied with disease testing and have undergone pre-transport examination. Upon arrival, inspection occurs to verify animal identification, examine for clinical signs of illness and check for the presence of foreign parasites. In addition to monitoring newly importing animals, Animal Division staff performs routine surveillance of existing populations to detect emerging or re-emerging animal diseases that are subject to control or eradication. To determine the level of impact when irregularities

are detected, the Veterinary Laboratory provides diagnostic support. Upon confirmation of the presence of invasive animal disease or parasites, response methods are initiated to contain disease spread, work towards eradication, and minimize the impact on existing industries, human health and global trade.

Section II

Description of Projects and Activities Funded by the Pest Inspection, Quarantine, and Eradication Fund

Plant Quarantine Branch Database and e-Manifesting.

PQ maintains a database called INVICTA to record import inspection, permitting, and pest hotline reporting activities. The database is a critical and essential tool not only for information storage but is also used to determine effectiveness of operations and aids commodity and pathway risk analysis. Once analyzed, the data is used by PQ to focus inspection activities to intercept pests. However, the database is outdated, limiting among other things, the ability to retrieve information needed for comprehensive risk analysis. The database is being maintained and updated as much as possible with PIQE funds while PQ contracts out for a more comprehensive and modern database. A request for proposals (RFP) was completed and HDOA selected Pacific Point, Inc to develop PQSYSTEM17. HDOA implemented the contract in March 2018 and anticipates the completion of PQSYSTEM17 in the second quarter of CY2019.

Previous risk assessments conducted at ports of entry statewide, have determined that different commodities pose different risk levels for the introduction of pests. INVICTA has been instrumental in the implementation of these risk assessments but does not have the capacity to efficiently determine commodity and pest risk and allow for efficient electronic-manifesting (e-Manifest). The new database will incorporate a standardized e-Manifest module that will allow shippers and importers to electronically submit a shipping manifest to HDOA before (sea containers typically 5 days prior and air shipments typically 6-8 hours prior) the commodities arrive in the State. This will allow PQ to efficiently utilize limited manpower by scheduling inspections based on the risk level of the arriving commodities. A pilot project for the e-manifesting system has continued throughout this fiscal year to better design a module that can be incorporated into the new database.

Nursery Certification and Compliance Project.

PQ has established a compliance project with selected nurseries who ship nursery stock in soil for Rapid Ohia Death (ROD). It includes best management practices as well as periodic testing of soil in the nursery for the fungus that causes ROD. To date, there has been 100% compliance through this program.

Christmas Tree Inspection Project.

PQ continues to work collaboratively with Oregon Department of Agriculture (ODA) and the Washington Department of Agriculture (WSDA) to maintain implementation of best management practices (BMPs) and inspection protocols with Oregon Christmas tree shippers to ensure that the shipments are free of pests. In previous years, ODA personnel have come to Hawaii to work with HDOA to inspect the trees as they arrive and to assess the results of the efforts. The BMPs continue to be successful with a 94% of the shipments found free of pests in 2016, 97% in 2017, and 98% in 2018.

PQ worked directly with Amazon, who voluntarily restricted the shipping of Christmas trees to Hawaii from suppliers in North Carolina which are not utilizing the appropriate BMPs that ODA and WSDA enforce and could introduce additional pests into the state.

Funding of Personnel.

The PIQE is a significant source of funding (\$3.5 million) for PQ staff positions. PIQE supports approximately half (42 of 90) of the PQ positions. These positions were originally general funded but lost during the RIF in 2009. The staff in these positions conduct the day-to-day inspection, permitting, pest response activities, and special projects funded by PIQE which meet the mandates of ACT 236, SLH 2008.

Funded Projects.

Rapid Ohia Death Research. The spread of ROD throughout the native forests on Hawaii island have been devastating. The Department is working with the UH College of Tropical Agriculture and Human Resources to determine vectors of the disease, such as beetles. The Department is working with DLNR to develop diagnostic tools for early identification and monitoring of ROD progression over time in order to better understand the movement and distribution of the fungus. Application of canine detection paired with qPCR methods may help to inform how fast the fungus is spreading, the prevalence of asymptomatic trees, dispersal agents and movement around infected trees, and to aid inspectors and managers tasked with preventing the spread of this pathogen. This project will receive \$71,000.

Hawaii Ant Lab Core Funding. This statewide initiative focuses on the development and use of novel and proven technologies to prevent, detect, respond, and control little fire ant. Increased spread of the little fire due to tough terrain, non-cooperative land owners, and unique natural environments have allowed the little fire ant to spread to various locations throughout the State. To affect change, the Hawaii Ant Lab will need available resources to address this invasive pest. The Hawaii Ant Lab at the University of Hawaii will receive \$350,000.

Early Detection and Prevention little fire ant on Oahu. This project funds a trained research, survey and response team to provide monitoring of high-risk sites such as nurseries and landscape suppliers. The Hawaii Ant Lab at the University of Hawaii will receive \$124,000.

Little Fire Ant Research. This project allows the Hawaii Ant Lab and the University of Hawaii to perform research and field trials on the effectiveness of hydrogels and other water-storing granules to control little fire ant populations. The University of Hawaii will receive \$60,000.

JADAM Korean Natural Farming Organic Methods to Address Papaya Mealybug and Coffee Berry Borer. The Department recognizes that there have been advances in control methods for both the papaya mealybug and coffee berry borer, however new, innovative techniques may serve the local farmers through the development of alternative methods for pest management. These issues are also challenging the organic industry to produce a federally certified organic product without the control of effective and cost-efficient methods. Korean Natural Farming, specifically the JADAM method, provides an opportunity to address the papaya mealybug and the coffee berry borer through natural, USDA organically certified ingredients for pest control. This project will receive \$120,000.

Support for Big Island Invasive Species Committee. This project funding of \$115,000 will support three projects central to the Big Island Invasive Species Committee's mission. The projects include community-based training for residents to control little fire ants; promotion of the Plant Pono plant industry endorsement program; and survey and control of high-impact invasive plants that have escaped into the natural environment.

County of Hawaii Coqui Frog Control in North Kohala. This project will allow for educational activities and outreach events, prevention activities and control and eradication efforts of the coqui, and the maintenance of a 24/7 coqui hotline and response team. This project will receive \$50,000.

Two-Lined Spittlebug. The two-lined spittlebug has caused severe impacts to key pasture grasses. In response to the recent invasion and the severe impact of the two-lined spittlebug to the Big Island of Hawaii, immediate actions to restrict its further spread and to prohibit establishment on the other non-infested Hawaiian Islands is necessary. The \$300,000 in funds will address rancher education, surveillance, biology and ecology research, Integrated Pest Management, and biological control.

Plant Quarantine/Invasive Species Awareness at the Daniel K. Inouye International Airport. An initiative by Plant Quarantine Branch personnel was launched to promote awareness of the impact of invasive species on our environment and the promotion of the Plant Quarantine Branch as the first line of defense in combatting invasive species in Hawaii. The effort will

include 10-second videos on a 1-minute loop with other products or organizations. The videos will appear on all the television monitor screens above the escalators going down to Baggage Claim from all domestic arrivals and will include the escalator going down to Baggage Claim at the interisland terminal for a total of 4 video monitors. The videos will also be displayed on both sides of the new arrival and departure board at the Hawaiian Airlines/interisland ticket lobby. This is a 3-year project funded with \$300,000.

Citrus Grey Mite. The Department initiated surveillance, host range evaluation, and diagnostics for the citrus grey mite. This project was funded with \$4,000.

Apiary. Statewide biosecurity surveillance for Africanized Honey Bees (AHB), AHB DNA diagnostic, Asian Giant Hornet (AGH) surveillance, supplies for trapping AGH, inspections for honey bee pests: Varroa, Nosema, Tropilaelaps Mites, American and European Foulbrood. This project was funded with \$25,000.

Hawaii Administrative Rule amendments.

PQ administers Hawaii Administrative Rules that directly apply to biosecurity. These rules are continually being reviewed and updated as needed. This is a multi-tiered process which involves staff, various Advisory Subcommittees, the Advisory Committee on Plants and Animals, and Board of Agriculture review followed by the public hearing process. The process was initiated for the following changes:

Chapter 4-70 Plant Import Rules. Addition of a subchapter restricting plants in the family Myrtaceae (Myrtle family) to address the risk of the importation of new strains of the rust fungus, *Puccinia psidii*, commonly known as Ohia Rust or Guava Rust.

Chapter 4-71 Non-Domestic Animal Import Rules. Changes in list placement of various non-domestic animals from the List of Restricted Animals, Part A, to the List of Restricted Animals, Part B, including: the Nile tilapia, *Oreochromis niloticus*, that would allow for commercial use such as aquaculture, and the house cricket, *Acheta domestica*, for animal feed in municipal zoos or aquariums. Changes in import requirements of certain non-domestic animals, deemed "dangerous wild animals," for short-term performance or exhibition purposes such as a circus or carnival. Changes for general housekeeping of this chapter.

Section III

Description of Proposed Projects and Activities to be funded by the PIQE Fund

Funded Projects.

Hawaii Ant Lab Core Funding. This statewide initiative focuses on the development and use of novel and proven technologies to prevent, detect, respond, and control little fire ant. Increased spread of the little fire due to tough terrain, non-cooperative land owners, and unique natural environments have allowed the little fire ant to spread to various locations throughout the State. To affect change, the Hawaii Ant Lab will need available resources to address this invasive pest. The Hawaii Ant Lab at the University of Hawaii will receive funds to carry out this project.

Early Detection and Prevention little fire ant on Oahu. This project funds a trained research, survey and response team to provide monitoring of high-risk sites such as nurseries and landscape suppliers. The Hawaii Ant Lab at the University of Hawaii will receive funds to carry out this project.

Little Fire Ant Research. This project allows the Hawaii Ant Lab and the University of Hawaii to perform research and field trials on the effectiveness of hydrogels and other water-storing granules to control little fire ant populations. The University of Hawaii will receive funds to carry out this continued work.

Ornamental Ginger survey and identification. Commercial production of ornamental ginger has been on the decline for the past 10 years on Oahu. Extension agents worked with CTAHR pathologist to learn that there are 3 plant viruses affecting ginger production (banana bract mosaic virus (BBrMV), canna yellow mottle virus (CaYMV), and banana streak virus (BSV) and at least one fungal pathogen (*marasmius*) that attributes to crop decline and death. More diagnostic work and a statewide survey is warranted before quarantine is pursued. The University of Hawaii will receive funds to carry out this work.

Coffee Nematode Management. The coffee root-knot nematode (CRKN) *Meloidogyne konaensis* is a serious pest of coffee in the Kona and Kau coffee producing regions. A current project will be expanded to address the lack of awareness of CRKN among growers and how rootstocks and grafted plants can help while also conducting more research on CRKN. Extension outreach efforts have focused on workshop/field-day events, including printed and online outreach materials. The University of Hawaii will receive funds to carry out this work.

Support for Big Island Invasive Species Committee. This project funding will support projects central to the Big Island Invasive Species Committee's mission. The projects include,

but are not limited to, community-based training for residents to control little fire ants; promotion of the Plant Pono plant industry endorsement program; and survey and control of high-impact invasive plants that have escaped into the natural environment.

County of Hawaii Coqui Frog Control in North Kohala. This project will allow for continued educational activities and outreach events, prevention activities and control and eradication efforts of the coqui, and the maintenance of a 24/7 coqui hotline and response team.

Two-Lined Spittlebug. The two-lined spittlebug has caused severe impacts to key pasture grasses. In response to the recent invasion and the severe impact of the two-lined spittlebug to the Big Island of Hawaii, immediate actions to restrict its further spread and to prohibit establishment on the other non-infested Hawaiian Islands is necessary. The funds will continue to address rancher education, surveillance, biology and ecology research, Integrated Pest Management, and biological control.

Plant Quarantine Branch Database and e-Manifesting.

Plant Quarantine Database Development. The Department has contracted Pacific Point, Inc. to develop, implement and maintain a Statewide, modern, automated, data collection, reporting, permitting, and eManifest system. The contract addresses system design and implementation to meet PQ biosecurity efforts. Development and implementation of this project is expected to be up to 13-15 months.

Nursery Certification and Compliance Project.

This project will continue as described in Section II.

Funding of Personnel.

Continuing as described in Section II with minimal change.

Hawaii Administrative Rule amendments.

The review and amendment process for Hawaii Administrative Rules is a dynamic process. The activities will continue as described in Section II.

Section IV

Act 243, Session Laws of Hawaii 2016 Report

The Department of Agriculture provided a report to the 2018 Legislative Session regarding Act 243, SLH 2016. The Act calls for annual reporting based on expenditures from general funds

appropriated for FY2016-2017. General funds were not provided for additional years and as such there are no expenditures to report on regarding Act 243, SLH 2016.

Section V

Act 163, Session Laws of Hawaii 2017 Report

Act 163, SLH 2017 identified various tasks to implement with the Departments Agricultural Development and Food Security Special Fund.

Activities to support the development and implementation of diagnostics to quickly and reliably identify new and evolving pests and diseases included:

- Airfare, Inter-island travel and expenses to conduct surveys, collect samples, meet with stakeholders on pest issues: Hymenoptera and Malacology identification workshops in Taiwan and Honolulu respectively for entomologists within the Plant Pest Control and Plant Quarantine branches.
- Microscopes, scope cameras, and accessories for Plant Pest Control and Plant Quarantine diagnostic services were purchased.
- Training for HDOA staff: Identification instruction on orders Hymenoptera, Lepidoptera, and Malacology

Activities to support the improvement of productivity of inspection capacity within the plant quarantine branch:

- Airfare, including other inter-island travel expenses for Plant Quarantine Inspectors to conduct certified nursery inspections to address a requirement mandating increased sampling rates for certification, and to improve the inspection and certification process for the inter-island movement of propagated plant material.

The Department is assessing other potential projects identified within Act 163, SLH 2017, so as not to duplicate efforts currently being pursued via other existing funding mechanisms. The Department's projects funded by the Pest Inspection, Quarantine, and Eradication Special Fund include various efforts to address import replacement, quarantine protocols, systems management enhancement, and public and agricultural industry education activities as evidenced in this report's sections II and III.

Section VI

Financial Plan

Pest Inspection, Quarantine, and Eradication Special Fund										
	Actual					Projected				
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Beginning Fund Balance	4,643,716	6,843,938	7,767,876	8,101,937	8,410,388	8,060,393	8,104,791	7,955,937	7,916,323	7,918,017
REVENUE										
Fees	5,846,025	5,100,803	5,369,318	6,644,219	6,074,598	5,900,000	6,018,000	6,138,360	6,261,127	6,386,349
Investment Pool Interest	15,843	33,616	57,162	76,287	43,205	43,000	44,000	45,000	46,000	47,000
Other	562	6,255	-	175	4,282	-	-	-	-	-
TOTAL REVENUE	5,862,430	5,140,674	5,426,480	6,720,681	6,122,085	5,943,000	6,062,000	6,183,360	6,307,127	6,433,349
EXPENDITURES										
Personnel Costs	2,821,868	3,196,542	3,226,237	3,145,506	3,273,310	3,798,602	4,110,854	4,122,974	4,205,433	4,289,542
Other Current Expenses	837,446	986,084	1,717,101	3,176,525	2,993,157	2,100,000	2,100,000	2,100,000	2,100,000	2,100,000
Equipment	2,895	34,110	83,400	33,520	205,613					
Motor Vehicles	-	-	65,681	56,679	-					
TOTAL EXPENDITURES	3,662,208	4,216,736	5,092,419	6,412,230	6,472,080	5,898,602	6,210,854	6,222,974	6,305,433	6,389,542
BALANCE	6,843,938	7,767,876	8,101,937	8,410,388	8,060,393	8,104,791	7,955,937	7,916,323	7,918,017	7,961,824