



Hawai'i Interagency Biosecurity Plan

CTAHR Update of Progress

The College of Tropical Agriculture and Human Resources (CTAHR) has been given responsibilities within the postborder section of the Hawaii Interagency Biosecurity Plan (HIBP). As defined in the plan, "the term postborder refers to the area in which a pest is found after it has passed the point or opportunity of border inspection, whether or not it was detected. Postborder jurisdiction encompasses the policies, processes, and programs aimed at detecting, eradicating, or controlling the spread or impacts of pest plants, animals, and diseases after they are beyond the ports of entry and inspection process. Measures to address the interisland movement of pests are identified in this section."

The plan further defines the role of CTAHR by saying "The University of Hawaii (UH) supports biosecurity primarily through academic research and cooperative extension services. UH's College of Tropical Agriculture and Human Resources (CTAHR) Cooperative Extension Services (CES) is a partnership among federal, state, and local governments and has responsibility for providing science-based information and educational programs in agriculture, natural resources, and human resources. CTAHR CES programs address home and garden projects, commercial agriculture, natural resources, soils, and invasive species and pest control.

Extension agents and specialists directly support local farmers, aquaculturists, floriculturists, and others with research, survey, detection, and management of pest infestations. The CES programs also



Infestation: A coffee bean affected by the Coffee Berry Borer

provide agricultural diagnostic services, which include insect identification; disease diagnosis; soil, plant, water, and feed analysis; and support of local production through sales of seeds of vegetable and fruit cultivars developed by the college."

Many of CTAHR's programs are defined as biosecurity programs. The Plant and Environment Protection Sciences Department houses the Plant Pathology and Entomology sciences. The Tropical Plant and Soil Sciences Department also

deals with diseases that affect plant production. Normal hiring and operation in CTAHR address the biosecurity needs of Hawaii, however, the HIBP is meant to address enhancing what CTAHR does with both personnel and funding.

CTAHR's responsibilities under the HIBP were anticipated to be funded by the state of Hawaii. As outlined in the report: "The bulk (\$14.3 million, 51%) of UH's requested funds will be used to hire research and extension agents to provide pest control and plant pest and disease diagnostic and other research services to farmers, ranchers, and the nursery growers through CTAHR's cooperative extension programs. Additional (\$5.4 million, 19%) UH funds will also go to CTAHR to expand university-level teaching and research on biosecurity and provide outreach and education to targeted stakeholder groups through its communication programs."

Below is an update of the actions that CTAHR has taken to date that relate to the Biosecurity Plan. It is noted whether these actions are funded by this plan or if they are taken in the normal course of the actions of CTAHR in meeting its land grant mission. This update is focused on those tasks which note UH as the Lead Agency and where CTAHR is the arm of UH that would be most involved.

Implementation Tasks where CTAHR is the Lead Agency



COLLEGE OF TROPICAL AGRICULTURE
AND HUMAN RESOURCES
UNIVERSITY OF HAWAII AT MĀNOA

1. (PosPro1.6)

Write and adopt best management practices to control invasive species that state government agencies, counties, industry, and private individuals can follow.

Response:

CTAHR, working in concert with ARS and HDOA, has developed Coffee Berry Borer Best Management Practices. Approximately 80% of coffee plantations have adopted these practices that it is estimated that they have a \$22 million economic impact, annually.

2. (PosTifs1.12)

Hire four agricultural extension agents, and provide operating funds to facilitate areawide control (and prevent the reintroduction) of pests on farms, nurseries, and ranches. Support collaborative efforts to control those targeted pests on farms and in the surrounding areas.

Response:

- CTAHR hired 1 extension agent specifically addressing invasive species from 2017 legislative funding.
- CTAHR has hired an additional 8 Agents, funded by the 2018 legislature that, as part of their job responsibilities, deal with disease and insect damage to edible and non-edible crops and instruct in Integrated Pest Management.
- The State legislature provided \$50,000 for translation services so the CTAHR Extension Service can train, through workshops and written material, immigrant farmers.

Training topics include, but not limited to, biosecurity issues.

3. (PosTifs1.13)

Hire two aquaculture extension agents, one extension specialist, and one researcher to conduct research, develop screening and quarantine protocols, develop pest management strategies, and conduct outreach specific to Hawaii.

Response:

- CTAHR is currently hiring 1 Extension Specialist in Aquaculture that is a shared position with the UH Sea Grant Program. This position was not funded under the Biosecurity Plan.
- CTAHR does not have aquaculture extension agents, and currently does not have funding for such hires.
- CTAHR currently has one researcher in Aquaculture that predates the Biosecurity Plan.

4. (PosTifs1.14)

Hire four agricultural diagnosticians to provide for rapid screening, diagnostic testing, and identification of insects and diseases to support extension agents, farmers and ranchers, the general public, and other government agencies in monitoring, detection, and pest management efforts.

Response:

- CTAHR runs the Agricultural Diagnostic Service Center (ADSC).

Currently, the ADSC is being reorganized in order to improve its capacity to provide services. The ADSC includes 2 diagnosticians for diseases and insects. One is located on Oahu and another on the Big Island. Both of these predate the Biosecurity Plan. An additional 4 diagnosticians are critical to this operation, but we have not received any funding to hire and support them.

5. (PosTifs2.3)

Annually fund the development of techniques to control established invasive species, including chemical and mechanical means and new technologies, such as gene drive and other biotechnology, and support for maintaining or replacing the staff necessary to conduct research.

Response:

- CTAHR has researched control techniques on a number of invasive species including Coconut Rhinoceros Beetle (CRB), Coffee Berry Borer (CBB), Macadamia Felted Coccid (MFC), Little Fire Ant (LFA), Rapid Ohia Death (ROD), Coqui frogs, Stinging Nettle Caterpillar, the Two-lined spittle bug, slugs and snails, Erythrina gall wasps, Diamond Back moth, Fireweed, noxious weeds in our forests, and many other insect, disease, and weed species. Techniques tested include chemical and non-chemical controls such as trapping and physical barriers, integrated pest management strategies using multiple control approaches together, monitoring

and sanitation, herbicide ballistic technology, and biological control.

CTAHR has hybridized anthuriums, dendrobiums, papayas, and vegetables for disease resistance. It has also propagated plants for industry for import replacement. Much of this work predates the biosecurity plan, although some of the work is currently being funded through the State's Hawaii Invasive Species Council.

6. (PosTifs2.4)

Annually fund research and development of detection techniques (e.g., use of drones, remote sensing, environmental DNA) for new and established invasive species.

Response:

- CTAHR participates in the National Clean Plant Network to test and detect viral diseases on select plant material imported into Hawaii. No funding was provided based on the Biosecurity Plan.

7. (PwsPro3.8)

Expand University level teaching, both classroom and research, on biosecurity problems and solutions to provide an educated and trained workforce for biosecurity programs in the future.

Response:

- CTAHR hired a researcher in biosecurity in 2016. The incumbent addresses diverse aspects of invasive species management and developed graduate level courses in biosecurity. Undergraduate

courses in invasive species management and biological control of invasive species are taught by faculty hired earlier, and form part of the recently implemented Invasive Species track in the Tropical Agriculture and Environment B.S. degree.



Rapid 'Ōhi'a Death: Frass from ambrosia beetles infected with *Ceratocystis lukuohia*. The fungal spores spread to healthy 'ōhi'a lehua forests on Hawai'i Island and recently, Kaua'i.

CTAHR is currently hiring 2 instruction/research faculty members. One is focused on urban insect pest problems, including species of medical concern. The other will focus on instruction in the areas of general entomology Integrated Pest Management and address an aspect of pest management in their area of speciality.

8. (PwsTifs1.6)

Hire a communications specialist, videographer, and web developer for CTAHR Office of Communication Services to write, develop and disseminate new statewide comprehensive education and outreach materials targeted at specific audiences, such as the native Hawaiian community, tourists, boaters, nursery growers, livestock producers, and farmers, with specific invasive species messages.

The CTAHR communications team would work in close coordination with the HDOA biosecurity communications specialist.

Response:

- CTAHR has an Office of Communications. In the past 2 years we have hired a videographer and a communications specialist/director. These hires have not been funded by the Biosecurity Plan, but are due to reorganization of the CTAHR budget to meet internal needs. While biosecurity communication can be part of the job description of these positions, they are not specifically directed at biosecurity needs as outlined in the HIBP.

9. (PwsTifs1.7)

Hire two university instructors/researchers to teach and conduct research on biosecurity program and university field of study.

Response:

- See 7 above. These hires are in the normal course of CTAHR programs and do not represent the additional need to increase personnel in this area as outlined in this task.