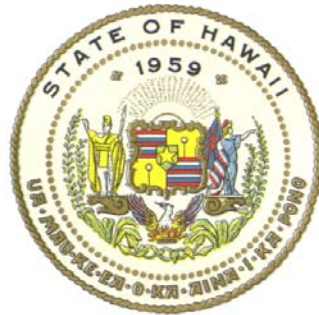


REPORT TO THE TWENTY-FOURTH LEGISLATURE

REGULAR SESSION OF 2008

RELATING TO THE DEVELOPMENT OF A TARO SECURITY AND PURITY
RESEARCH PROGRAM



Prepared by

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DEPARTMENT OF AGRICULTURE
PLANT INDUSTRY DIVISION

In response to Senate Concurrent Resolution 206, Session Laws of Hawaii 2007

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RELATING TO THE DEVELOPMENT OF A TARO SECURITY AND PURITY RESEARCH PROGRAM

SECTION 1 – INTRODUCTION

Taro is a sacred plant for Hawaiians and the growing of taro is an integral part of Hawaiian culture. Therefore, it is essential that measures be developed to protect it.

During the 2007 legislative session, taro farmers and Native Hawaiians expressed growing concern over increasing threats to the taro. Much of the dialogue was overshadowed by the issue of genetically engineered taro. Senate Concurrent Resolution 206 ([Appendix A](#)), passed into law in June 2007, requested the Department to develop a taro security and purity research program to address growing concerns.

SCR206 specifically mandates that the Department of Agriculture “develop a taro security and purity research program that is designed to ensure that taro can be saved and protected from natural attack” through means *other than* genetic engineering. It further mandates that HDOA collaborate with taro growers and Native Hawaiian groups to develop and establish a program that addresses four areas:

1. Allow the Department of Agriculture’s Biosecurity Program to protect crops in Hawaii by inspecting foreign crops upon entrance to the State, and preventing any viruses or insects from entering the State;
2. Allow alternative forms of research of taro other than genetic modification;
3. Provide public outreach, engagement, and education on taro research and protection; and
4. Request the United States Department of Agriculture to have the Alomae/Babone virus disease complex and taro beetles designated as “actionable pests” in the findings of the United States Department of Agriculture and the Hawaii Department of Agriculture report to prevent entry into Hawaii from foreign countries.

The purpose of this preliminary report is to provide legislators with a status update on HDOA’s efforts, a summary of the October 8, 2007 stakeholders meeting convened by HDOA, and its recommendations for subsequent legislation and activities based on that meeting.

1.1 Background

Invasive species are entering Hawaii at an alarming rate which is about two million times more rapidly than the natural rate. By far, Hawaii represents the worst-case example on the invasive species problem in the United States. No other area in the United States receives as many new invasive species annually, nor has a greater proportion of invasive species becoming established. Hawaii's rate of invasive species establishment is 500 times the rate of continental U.S.

Compounding the problem is that Hawaii is import dependent with over 90% brought in to meet consumer demand. The transportation of imports brings in invasive species into the islands. Invasive species already cause millions of dollars of crop losses, the extinction of native species, the destruction of native forests, and the spread of disease. The threat from invasive species is always present and growing due to the expansion of global trade. Foreign grown produce is coming in much more frequently replacing domestically grown produce in addition to locally grown produce and threatens not only taro but all farms.

The department is tasked with the mandate to protect the islands from invasive species through inspection and quarantine. However, protection obstacles have made our state laws more difficult to enforce.

The Plant Protection Act of 2000, Public Law No. 106-224 (June 20, 2000) Agriculture Risk Protection Act of 2000, Title IV—Plant Protection Act ([Appendix B](#)) has preempted the states or any political subdivision of a State from preventing the entry of any pest in foreign commerce.

The Homeland Security Act of 2002, Public Law No. 107-296, (Nov. 25, 2002), introduced in the aftermath of the September 11, 2001 attacks, created the Department of Homeland Security (DHS) giving federal law enforcement agencies broad powers to combat anti-terrorism threats. The new department assumed a number of government functions previously conducted in other departments, one of which being the transfer of agricultural inspection from United States Department of Agriculture (USDA) to DHS.

1.2 Taro Imports

Taro corms are imported into Hawaii from areas outside the United States and are almost exclusively for consumption. It is possible to propagate from corm although it is not the preferred method and taro corm imported for consumption is considered non-propagative by the Federal government and inspected by CPB. Hawaii Department of Agriculture, Plant Quarantine Branch is federally preempted from inspecting direct foreign shipments of taro.

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Direct Foreign Import of Taro into Hawaii (1,000 lbs.)	332	834	625	949	991	871	984	667	600	807
Transshipments of Taro through U.S. Mainland into Hawaii (1,000 lbs.)	690	656	1,491	1,293	713	463	681	1,081	764	1,055
Total Taro Import into Hawaii (1,000 lbs.)	1,002	1,490	2,116	2,242	1,704	1,334	1,665	1,748	1,364	1,862
Total State Taro Production (1,000 lbs.)	5,500	6,000	6,800	7,000	6,400	6,100	5,000	5,200	4,300	4,500

Source: U.S. Dept. of Commerce, Bureau of the Census, Hawaii Department of Agriculture's Plant Quarantine Branch, Market Analysis and News, and Agricultural Development Division

The amount of taro imported into Hawaii for consumption has steadily increased over the years. The U.S. Department of Commerce, Bureau of the Census reports nearly all direct foreign taro imports into Hawaii were from Fiji with sporadic shipments from China, Cook Islands, Western Samoa and Tonga. However, the department has not been able to confirm these reported numbers or the pathway for these shipments

HDOA has requested information from USDA and CPB, more specifically on tonnage and sources of imports (country of origin). CPB has stated that very little comes into the State directly from foreign countries and that taro may be coming in through mainland transshipments or in frozen form. If frozen, it is not regulated by either state or federal regulations. Because of the lack of specificity in manifests of foreign and domestic shipments, HDOA has been unable to verify the tonnage or origin of the imports.

USDA later responded that less than 600,000 pounds have been imported into Hawaii primarily through maritime. The maritime pathway of the fresh Fiji Taro is from Suva, Fiji to Auckland, New Zealand and then onto Honolulu, Hawaii. The stated length of delivery varies from 15 days to 1 month. The fresh taro consists of the cleaned, underground stem (corm), with the thick periderm largely intact. Part of the shoot apex (approximately 1 inch of the base of the leaves) remains on the closely cropped corms.

1.3 Taro Pests

According to USDA, taro pests have been intercepted from the following areas ([Appendix C](#)):

American Samoa, Antigua and Barbuda, Azores, Bangladesh, Brazil, Cameroon, China, Colombia, Cook Islands, Costa Rica, Cyprus, Dominica, Dominican Republic, Ecuador, Fiji, Ghana, Grenada, Guam, Guyana, Haiti, Honduras, Hong Kong, India, Indonesia, Iran, Israel, Jamaica, Japan, Laos, Mexico, Micronesia, Netherlands, Nicaragua, Nigeria,

Panama, Philippines, Portugal, Puerto Rico, Samoa, Sierra Leone, South Africa, South Korea, St. Kitts and Nevis, St. Lucia, St. Vincent and Grenada, Thailand, Trinidad and Tobago, Tonga, United Kingdom of Great Britain, Venezuela, and Vietnam

Prior to 2000, HDOA used to inspect taro shipments from Pacific Island countries. During the risk assessment this past year, taro was found in domestic air cargo shipments (transshipments from the Mainland) originating from Mexico, Costa Rica, and China.

A number of crickets were intercepted that may be of concern here as these will be generalist herbivores (non-specific plant feeders). Of greater concern, is the number of dung beetles (Scarabaeidae) that is being intercepted. These beetles could be serious range land or turf grass pest depending upon what species are found in areas that are importing taro.

Pests of concern:

1. All species in Formicidae (ants) pose significant risk to Hawaii. Many of the foreign taro growing regions have an abundance of ant species not known to occur in Hawaii. The Pheidole (big headed ants) alone pose significant risk to Hawaii. It should also be noted that Solenopsis (the fire ants) are known to be in taro growing regions and the economic impacts of Solenopsis introduction and establishment to Hawaii would be devastating.
2. Scarabaeidae: *Papuana* sp. (taro beetle): this species of beetle is devastating to taro in taro growing areas.
3. Diaspididae: *Aspidiella hartii* (tumeric scale): one of the few insects successfully eradicated in Hawaii. The wide host range, especially on ornamental flowering plants, causes this scale to be particularly undesirable for Hawaii.
4. Diaspididae: *Aulacaspis tubercularis* (mango scale): In addition to taro, this species could threaten mango production in Hawaii based on its performance in other areas of the world.
5. Aleyrodidae: *Aleuroglandulus malangae* (whitefly): In addition to attacking taro, this species is known to attack avocados.
6. Pseudococcidae: *Paraputo* sp. (mealybugs). These mealybugs are of a genus not known to occur in Hawaii. They are known to be found on plants of economic importance.

SECTION 2 – INSPECTION OF TARO SHIPMENTS

2.1 Preemption Under the Plant Protection Act

HDOA requested U.S. Department of Agriculture and U.S. Department of Homeland Security to notify us when taro shipments are imported into the State. However, the federal Office of General Counsel advised the federal agencies to no longer to notify the State on the grounds of federal preemption.

Under the Plant Protection Act, Congress has specifically and expressly addressed the issue of preemption. With regard to a state's regulation of foreign commerce, section 436, subsection (a), of the Plant Protection Act states that, "[n]o State or political subdivision of a State may regulate in foreign commerce any article, means of conveyance, plant, biological control organism, plant pest, noxious weed, or plant product in order -- (1) to control a plant pest or noxious weed; (2) to eradicate a plant pest or noxious weed; or (3) prevent the introduction or dissemination of a biological control organism, plant pest, or noxious weed." (7 U.S.C.A. § 7756(a).)

It is unclear whether plant products imported into Hawaii would be deemed to lose their status as foreign commerce upon entry into Hawaii and, therefore, would be beyond the reach of the preemptive power of the Plant Protection Act.

Currently, the HDOA has been and is currently inspecting foreign shipments upon entry into the State after federal inspection was completed and the products approved entry into the United States at the port-of-entry. However, foreign inspections have drastically declined because of lack of notification from the federal agencies. The Department's stance is that it is far cheaper and less damaging to the State if pests are treated or destroyed at the port-of-entry even at the cost of losing a legal challenge.

The argument could also be made that once plant products reach Hawaii and are unloaded into warehouses for sale and distribution, they are no longer "*in* foreign commerce," and, therefore, state law authorizing the inspection and/or quarantine of the same would not be preempted by the Plant Protection Act. Under this rationale, Hawaii should be permitted to inspect and quarantine plant products after they have arrived in the state and reached their intended destination (i.e., at the distribution warehouses). This argument is supported by the statutory language of the preemption clause, which only applies to plant products "*in* foreign commerce"; the fact that, historically, a state's ability to inspect and quarantine has been regarded as being within the state's police power; and that section 7760 of title 7 of the United States Code specifically provides for state terminal inspection. Therefore, a court may be persuaded that once a foreign import enters and comes to rest in Hawaii, it is no longer "*in* foreign commerce" and state regulation over the product would not be preempted by federal law.

ACTIONS: Senator Inouye is again introducing language to assist the State of Hawaii with federal preemption. Section 11063 Invasive Species Management, Hawaii was inserted into the Senate version of the Farm Bill ([Appendix D](#)).

This measure mandates that the Secretaries of Interior, Agriculture and Homeland Security, in the matters pertaining to restricting the introduction or movement of invasive species into Hawaii, consult and cooperate with the State.

This measure must still be worked in conference with the House. As of this date, USDA is still attempting to revise the measure to severely limit Hawaii's authority to inspect cargo of foreign origin.

2.2 Notification of Foreign Shipments

In 2003, all USDA inspectors were prohibited from clearing foreign passengers and their baggage in Customs and conducting inspection of all foreign agricultural commodities other than plants intended for propagation. This mission was transferred to U.S. Customs and Border Protection (CBP). With the transfer to CBP from USDA, notification of arrival of foreign products ceased, ending the ability of State inspectors to conduct agricultural inspections after federal clearance.

U.S. Customs and Border Protection (CBP), an agency of the United States Department of Homeland Security, is charged with multiple mandates and must perform the following functions with limited resources:

- Regulates and facilitates international trade;
- Collects import duties;
- Enforces U.S. trade laws;
- Prevents terrorists and terrorist weapons from entering the United States;
- Apprehends individuals attempting to enter the United States illegally;
- Prevents the flow of illegal drugs and other contraband;
- Protects the United States agricultural and economic interests from harmful pests and diseases; and
- Protects American businesses from theft of their intellectual property.

Since the agricultural inspection transfer to CBP, pest interceptions have dropped drastically creating invasive species problems in farms and conservation areas across the U.S. As a result, states and national agricultural organizations have pleaded for the transfer back to U.S. Department of Agriculture.

Taro, as well as all other culturally significant or important agricultural crops, is left extremely vulnerable until these protection obstacles are dealt with.

ACTIONS: HDOA requested greater cooperation and coordination with CBP and consideration of the following initiatives ([Appendix E](#)):

1. Sharing of CPB's manifest data of shipments coming into Hawaii with HDOA
2. Sharing of information of incoming commodities and pest interceptions

3. Allowing HDOA staff to inspect and treat foreign shipments carrying pests
4. Establish joint inspection stations

As of this date, DHS has not responded to the request. However, Senator Akaka has offered his assistance to seek a response from DHS ([Appendix F](#)).

2.3 Joint-Inspection Facilities

There is a critical need for three state plant quarantine agencies, one state and two federal, to more closely collaborate and share information to improve detection capabilities to prevent entry of pests and maximize opportunity to intercept pests at the port-of -entry. A critical component of this plan is the joint use inspection facility planned for Honolulu International Airport.

Honolulu International Airport is one of the national's busiest international airports. Three quarantine programs operate at the airport to inspect domestic arrivals (HDOA), domestic departures to the U.S. mainland (USDA) and foreign arrivals (DHS, USDA). Cargo inspections are conducted throughout the airport at airline cargo offices, in warehouses, and container storage areas under less than ideal conditions for inspection with no special provisions for containment to prevent escape of pests in shipments.

Furthermore, there are no programs in place to assure the timely exchange and sharing of information across jurisdictional lines for national security purposes to enhance the biosecurity of Hawaii and the U.S. through HIA. A joint use inspection facility (or facilities) at HIA is an opportunity for state and federal officers to work together, to share limited resources, and to develop programs to assess pest risk, to expedite diagnostics and for data management to increase the efficiency of the respective programs.

ACTIONS: Initiate planning for a joint use plant quarantine inspection facility for Honolulu International Airport. The facility will be designed to house three plant quarantine programs in Hawaii, the Hawaii Department of Agriculture, the USDA, Plant Protection and Quarantine (PPQ), and Homeland Security, Customs and Border Protection. The facility is envisioned to include dedicated office space for the respective agencies, laboratory space for diagnostic services, enclosed bays for the inspection of cargo and containment of pests that may be present, refrigerated storage for shipments being held pending final disposition and freezers to destroy insect infested shipments, and other necessary equipment for the treatment, refurbishing and/or destruction of commodities as a result of pest infestation. A grant from Homeland Security to State Civil Defense (\$100,000) was awarded to the Hawaii Department of Agriculture to start preliminary design discussions with the federal counter-part agencies, HDOT and user groups, including, airlines, freight forwarders and the community. Both federal agencies (USDA and DHS) are expected to contribute to the design and construction of the facility.

High-risk commodities will be directed to the facility for thorough inspection. Inspectors will be assigned to the facility in the numbers required to minimize delays in inspection and release.

Department of Transportation is requesting funding approval for the removal and construction of new cargo facilities on Elliot Street to service the Ewa side of the Airport. The expected completion date is five years from now. In the interim, the agencies are considering one or more transitional facilities at the airport so as to not delay the implementation of programs to assure greater collaboration and sharing of information through the operation of these facilities. DOT has identified space along the West concourse of the airport that can be renovated for a joint use inspection facility for air carriers along the west end of the airport. A site along the east end of the airport is also being discussed.

The Hawaii Department of Agriculture has hired a consultant to prepare preliminary design specifications for the permanent and interim facilities. The document is expected to be finalized by May-June 2008.

2.4 Invicta Manifest System

The Invicta information system is a database designed to support the inspection and permit processes for the Plant Quarantine Branch. Approximately 500,000 sea containers come into the State each year. A much smaller amount comes in through air cargo. Currently, manifest information for the air and sea containers is received by the Plant Quarantine Inspector at the time of inspection. The Hawaii Revised Statutes does not require transportation carriers to specify commodity and origin of the contents.

Because of this lack of necessary information, HDOA has not been successful in verifying or inspecting the amounts of taro imports indicated by U.S. Department of Commerce and Market Analysis.

ACTIONS: Last year, the Legislature allocated funds to the Department of Transportation for the Invicta manifest system. We are currently implementing a Memorandum of Agreement with Department of Transportation that will allow the interdepartmental transfer of funds to develop the Invicta manifest system. The development of the manifest system will allow HDOA to know in advance of importation, the contents of containers to allow the inspection of moderate and high-risk commodities such as taro.

This year, HDOA is requesting authority to expand our authority to allow for inspection of non-agricultural commodities and to require more specific manifest information.

SECTION 3 – ALTERNATIVE FORMS OF TARO RESEARCH

New pest introductions continue to tax available resources of control programs. All agree that prevention is the first priority, but when a new pest becomes established, growers look towards chemical and other control methods to mitigate the pest threat. Pests that have become established, such as the apple snail, have severely impacted the ability of taro growers to produce crops in infested areas.

3.1 Pesticide Registration Obstacles

Few pesticides are available for use on taro in Hawaii. Taro is a minor crop and with small acreage in production in Hawaii, chemical companies are reluctant to commit to high cost efficacy and residue studies to support the registration of products for use on taro for pest control in Hawaii.

Wetland taro presents additional problems for registrants because of the application of the chemical to water, the risk of movement of the chemical to irrigation systems, streams, and other water systems, and risk of exposure to non-target areas and species.

As a result, research to find effective pesticides and registrations must generally be conducted and funded locally.

3.2 Apple Snail Control

Most taro farmers agree that the apple snail is the most serious pest threat to commercial taro production in Hawaii.

Copper sulfate was approved for use for apple snail control in wetland taro in the mid 1990's under a State Special Use Registration. However, copper sulfate was classified as a restricted-use pesticide due to the water management required to avoid discharge to the streams. As a result of this and label restrictions requiring holding times in the lo'i and other certification requirements, limited the usefulness of copper sulfate for apple snail control in Hawaii and little product was subsequently used by growers. As a result, the registration of copper sulfate for apple snail control in Hawaii was not renewed when the initial registration expired.

Metaldehyde molluscicide is registered for use on dryland but not wetland taro in Hawaii. The product has not been tested for apple snail control in wetland taro. Metaldehyde has been only marginally effective for apple snail control in rice culture in the Far East and is not likely to be effective for the snail control in taro culture.

HDOA recently funded studies to assess the efficacy of ferric phosphate use for apple snail control in Hawaii. Ferric phosphate is a registered molluscicide on dry land crops. Ferric phosphate was only marginally effective for apple snail control in wetland taro at a rate of application of 5 lbs per 1,000 square feet (i.e. 218 pounds per acre). The same study evaluated the efficacy of several botanical products that could be applied to

wetland taro as soil amendments, one of which shows some promise. The use of a soil amendment specifically for pest control would require review by the U.S. Environmental Protection Agency for possible pesticide registration. Further studies are needed to determine the effects of non-target species such as fish, toads, and crustacean.

Apple snails seriously threaten the viability of wetland taro production in Hawaii. Funding support for on-going studies is the highest priority of the industry.

3.3 Germplasm Preservation



A taro plant cultivated through micropropagation techniques in Lyon Arboretum's Hawaiian Rare Plant Program.

In 1991, the Lyon Arboretum established a small micropropagation facility, to augment its plant propagation program. Through the years, this facility has evolved and expanded into the Hawaiian Rare Plant Program (HRPP), whose main objectives are to rescue and recover the Hawaiian endangered plants, as well as Hawai'i's culturally important crops primarily through the use of micropropagation. HRPP is the largest dedicated germplasm bank in the State of Hawai'i utilizing micropropagation techniques to conserve Hawai'i's endangered native plants and agricultural crop varieties. Today, the HRPP houses over 12,000 plants from 160 rare and endangered native Hawaiian plant species, approximately 60 Polynesian introduced taro varieties, and 8 Polynesian introduced banana varieties.

Hawai'i has more endemic (found only in Hawai'i) plant species than any other island land mass in the world. Hawai'i has been called the endangered species capital of the world primarily due to the fact that 25% of its approximately 1000 native plant species are federally listed as endangered or threatened. Over the years, many of the historically documented varieties of Polynesian taro and banana have been lost due to lack of interest or cultivation, disease, and loss of cultural knowledge. The Lyon Arboretum - Hawaiian Rare Plant Program's primary mission is to save, conserve and propagate all of the remaining "critically endangered" native plant species, taro and banana varieties, and other culturally important Hawaiian crops, within a living germplasm bank where they can be grown in a controlled, clean and secure

environment. The HRPP living germplasm bank stores representative samples of the rare plant species and Hawaiian plant crop cultivars as well as propagates plant material for restoration programs, education, research, other botanical gardens, forestry programs, cultural program, and other community and outreach functions.

Germplasm banking of rare plants and cultivars is an ideal way to store large numbers of plants in a small area. The HRPP collection consisting of 12,000 plants is kept within a 20 X 20 ft² room. The plants are grown in a temperature and light controlled room and kept clean and free of insects and disease. This is an advantage over the alternative of maintaining plant germplasm in the field or greenhouse, where it would take up more space, and might be subjected to disease infections and insect invasions. Through the use of micropropagation or tissue culture, it is relatively easy to propagate large numbers of disease free plants that can be used for restoration or field planting. Land owners and farmers are able to obtain adequate quantities of high quality planting material that is uniform, clean and healthy. Also, because HRPP serves as a germplasm bank, there exists an array of plant species and cultural varieties. Many times, the grower and/or landowner are able to find what is needed, and in turn, are able to accommodate the requests.

3.4 Exploration of Alternative Research

It should be noted that there has been other alternative research that has been brought to our attention and appear promising. If funding should become available, all alternatives should be explored and priority should be given on the merits of the research proposal.

SECTION 4 – PUBLIC OUTREACH AND EDUCATION

4.1 Opening the Dialogue

Since the passage of Senate Concurrent Resolution No. 206, members of the House, Hawaii Farm Bureau Federation, and HDOA visited commercial farms and cultural practitioners on the islands of Kauai, Hawaii, and Maui to discuss taro issues and concerns.

Kauai – Visits to the taro growing areas of Kealia and Hanalei on the island of Kauai allowed members of the tour a better understanding of the specific concerns to the taro grower or processor. Many in the taro community would like research to focus on addressing their current problems. A major issue is long term sustainability for which discussion over land and water is a priority. Any disruption to waterways on state owned land can affect an industry which relies heavily on water flow.

The taro growing community on Kauai has established the Kauai Taro Growers Association (KTGA). KTGA supports increased taro import restrictions as well as non-

GMO research for taro preservation. More help is being requested for the eradication or control of the apple snail, a serious pest responsible for decreasing crop yields.

Hawaii – Waipio Valley on the island of Hawaii was the meeting place between area taro growers and members of the tour. Everyone was reminded of the cultural significance of taro and how important it is to find a means to continue the traditional practice. Other concerns include stream management, water issues (too much during floods or too little during droughts). They request help in protecting agricultural land against development and like Kauai, apple snails are a huge problem. Growers here support more restrictive taro regulations to prevent pests and diseases.



Waipio Valley taro farmer Jim Cain discusses stream management with Representatives Clift Tsuji and Kyle Yamashita. The tour gathered to meet with other taro growers and the children of Pana oka aina Learning Center.

Maui – The tour met with a residential farmer in Waikapu. Because the GMO issue dominated the discussion, little else was discussed. Two weeks later, HDOA went back to Maui to visit Keanae taro growers to reopen the dialogue. Issues that were brought up included the lack of young people to continue the tradition and insufficient labor force to tend fields. Pocket rot is affecting the quality of taro in the area and there are issues with the lack of fresh running water. Growers in Keanae would like an availability of clean pure plant stock as well as methods to control the apple snail.



Tour participants met at the Pellegrino home in Waikapu. The Pellegrino's care for a few taro patches that they had restored on their property. Keanae taro farmers discussed the snail problems in their taro patches.

4.2 Taro Stakeholder Meeting

HDOA convened a meeting on October 8, 2007 with stakeholders from the scientific community, agricultural industry, cultural practitioners, and other Native Hawaiian groups to discuss development of a taro security and purity research program as requested in Senate Concurrent Resolution No. 206 ([Appendix G](#)).

Informational displays were set up around the room to help showcase concerns of the taro industry and some projects that were developed in response. Displays were set up by the following parties:

- HDOA: Biosecurity Program
- Kauai Taro Growers Association: Organic cover cropping to reduce pests and diseases
- Lyon Arboretum: Germplasm preservation
- Jerry Konanui and Penny Levin: Kalo Ohana Projects, Apple Snail report
- Jim Cain: Poi making
- John Cho (UH): Taro hybrid development, gene mapping, and pest research

Prior to opening discussion on taro security and purity, presentations were given by (1) HDOA on the Biosecurity program and the inability to inspect foreign taro; (2) Lyon Arboretum on the Hawaiian Rare Plant Program; (3) HDOA on developing better control strategies for established pests.

Participants broke up into groups to define “taro purity” and “taro security”, and to list desired outcomes.

Taro Purity

Defining “taro purity” is a critical first step in creating a common understanding and guiding future research priorities for taro. Participants described the meaning of “taro purity” from a diverse set of views and experiences. Various definitions “purity” include: Purity of the lineage; non-GMO plant; and native vs. non-native.

Taro Security

Participants generally defined “security” as protection from outside threats, from existing pests and diseases and outside competition, as well as more secure and improved livelihoods and markets. It also meant protection of traditional taro cultivars, of cultural practices and taro lands. Discussion continued on current security measures, or lack thereof, in place to protect the state and the problems created from federal pre-emption. There is a need for stronger inspection programs to prevent the introduction of new pests and diseases.

There was discussion on how to help secure present taro collections. A long-term storage, such as germplasm preservation by Lyon Arboretum, was recommended but it was suggested that such collections be spread to different islands and, if possible, at different elevations as added security in the event a localized disaster destroys one collection. Also discussed was the need to form collaborations with Lyon Arboretum and within communities.

Desired Outcomes

Participants broke up into groups to list desired outcomes. Again there was a diverse set of viewpoints on what should be considered for legislative review. A list of topics discussed throughout the meeting and during the neighbor island taro tour includes but is not limited to the following:

- Continued dialogue with stakeholders
- Long-term preservation through collections
- Protection from pests
- Access to land and water
- Funding for research for apple snails and other pests
- Protection of growing practices
- Securing markets
- Development of a taro working group
- Education for farmers and children

Despite stakeholder contention over the issue of genetic engineering, participants successfully initiated a healthy dialogue on taro issues and concerns. The participants showed appreciation towards Senator Kokubun for introducing the resolution and all agreed that dialogue should be continued among the stakeholders.

SECTION 5 – ACTIONABLE STATUS OF TARO PESTS

Currently, it is possible to have USDA and DHS, CPB release shipments infested with pests that are not known to occur in Hawaii because the pests are characterized as not “actionable.” This characterization is often because the pest is already established in the continental United States or the pest is not likely to cause harm to crops of national significance.

The federal quarantine status (actionable versus non-actionable) is not available to HDOA, and therefore, it is not known whether taro pests of concern to Hawaii will be treated and/or destroyed if found infesting taro shipments.

5.1 USDA-HDOA Pathway Risk Analysis

Through Congressional prompting, the pathway risk analysis for plant pests to Hawaii was initiated in early 2007. USDA suggested, with HDOA in agreement, that the first

step to effectively respond to Hawaii's invasive species problem is to accurately define it. The analysis evaluates what pests are currently established in Hawaii, what risks are posed by these pests, where they originated, and what threats to Hawaii are emerging in the next 10 to 20 years.

The draft report is currently being finalized. Upon finalization, this analysis will be useful not only to HDOA to prioritize its use of new resources and determine on which pathways to focus, but will also assist USDA in determining how best to protect Hawaii from invasive species through regulatory changes and other approaches.

ACTIONS: Finalize the USDA-HDOA Pathway Risk Analysis and incorporate findings into the Biosecurity Program. HDOA finalized the Memorandum of Understanding with USDA that allows each agency to enter into cooperative programs.

USDA has recently applied for a funding proposal that will identify non-actionable pests that are not known to occur in Hawaii. ([Appendix H](#)).

SECTION 6 – RECOMMENDATIONS

As requested by SCR 206, HDOA shall work with taro growers and various Native Hawaiian groups to develop a taro security and purity research program that will protect taro from insect, diseases, and other threats while supporting initiatives that will strengthen taro production and cultivation.

Regulatory elements of the program will be implemented in conjunction with the Congressional delegation, Legislature, and/or federal quarantine agencies. We recommend support for the following regulatory protection initiatives:

- Support the Congressional delegations' efforts to fight federal preemption and develop cooperative relationships with USDA and DHS, i.e. legislative resolutions.
- Support efforts to implement HDOA's Biosecurity program to prevent the introduction and further spread of insects and diseases.
- Support efforts to plan, design and construct joint-inspection facilities for the inspection of foreign and domestic shipments.
- Support efforts to expand HDOA authority to allow for inspection of non-agricultural commodities and to require more specific manifest information.

Taro regulations should also be updated to provide adequate protection. Rule changes should be drafted in consultation with taro growers, farming industry, and manufacturers.

Non-regulatory elements of the program will be developed in conjunction with taro growers, Hawaii Farm Bureau Federation, University of Hawaii, Native Hawaiian groups

and private and public research entities. However, at this time based on on-going discussions with stakeholders, we suggest support for the following non-regulatory program initiatives:

- Support for agriculture infrastructure, including land, water and labor
- Support continuation and expansion of taro dialogue among the interested parties.
- Support the establishment of a Taro task force that will provide guidance and support to initiatives.
- Support efforts to provide educational outreach to taro growers to improve farming viability.
- Support non-genetically engineered research for control of established pests.
- Support germplasm preservation and seed banking.

SECTION 7 – CONCLUSION

HDOA strongly recommends that this dialogue continue and there be expanded discussions on taro viability and growth. It should be emphasized that despite contention over the issue of genetic engineering, stakeholders were able to successfully initiate healthy dialogue on taro issues and concerns and pledge to continue discussions towards resolving these important issues.

Taro, as a valued component of our agricultural industry, requires and deserves equal opportunity to technology, legislation, education and funding that enhances their economic stability.

HDOA appreciates the opportunity to promote the growth of local agriculture and assist in active dialogue with all agricultural sectors.