

**SB 709**

LINDA LINGLE  
Governor



SANDRA LEE KUNIMOTO  
Chairperson, Board of Agriculture

DUANE K. OKAMOTO  
Deputy to the Chairperson

State of Hawaii  
DEPARTMENT OF AGRICULTURE  
1428 South King Street  
Honolulu, Hawaii 96814-2512

TESTIMONY OF SANDRA LEE KUNIMOTO  
CHAIRPERSON, BOARD OF AGRICULTURE

BEFORE THE SENATE COMMITTEE ON ENERGY AND ENVIRONMENT  
TUESDAY, FEBRUARY 10, 2009  
3:45 P.M.  
ROOM 225

SENATE BILL NO. 709  
RELATING TO AGRICULTURE

Chairperson Gabbard and Members of the Committee:

Thank you for the opportunity to testify on Senate Bill No. 709. The purpose of this bill is to impose a moratorium on the planting, growing and testing of genetically modified "Hawaiian taro" in the State of Hawaii. In addition, this bill seeks to list certain varieties of taro known to have been grown in Hawaii over the past sixty years as "Hawaiian taro". The Department respects that the growing of taro is an integral part of the Hawaiian culture. However, this issue seems to have a broader implication reaching beyond the Hawaiian culture. Due to the risks to taro from invasive species and serious concerns that this measure may be used as a means to prevent research and use of biotechnology for other important crops, we must oppose this measure as proposed.

The Taro Security and Purity Task Force was established with the signing of Act 211 in July 2008. This taskforce, comprised of taro farmers, cultural practitioners, regulatory agencies, and the scientific community is finally moving forward with meaningful discussion in hopes that satisfactory non-GMO solutions can be found to address many of the issues concerning taro farming in Hawaii.

Taro plants in Hawaii continue to remain vulnerable to the introduction of foreign pests and disease. Due to federal preemptions, the Department is not provided notification of arrivals or information on the origins of foreign taro that is allowed to enter Hawaii without State inspection. The Department will continue to work with our Congressional Delegation to overcome federal policies even as we continue efforts to build and secure joint federal-state inspection facilities to deal with both foreign and domestic imports. These solutions will not happen quickly and given that the threats to taro and other crops are very real, we caution against limiting the tools available to combat these threats.

Agriculture, from its beginning to present, has suffered from pest and disease infestation causing enormous, unpredictable losses in food production. Biotechnology is a critical tool used in many countries to combat crop threatening insects and diseases. Without the biotech development of the ringspot virus resistant papaya, all papaya production in Hawaii, both conventional and organic would have been devastated by the disease. There is a perception, promoted by opponents to biotechnology, that there is something inherently wrong with the technology which is contrary to what is widely accepted by the scientific community.

The loss of taro or any major industry in agriculture, by any means, would be devastating to Hawaii. However, advancements in biotechnology exist only through continued research. Passage of this bill will take away a valuable tool available to us which may prevent industry losses. Some threats have already arrived, while others are knocking at the door. We hope that serious consideration is given to the known threats of diseases and pests to taro versus the perceived fears of biotechnology.

Agriculture is already at a critical state as battles rage over water, land and limited resources. Instead of undermining ongoing efforts to seek alternative solutions, let us continue to support co-existence among all agricultural sectors.



**DEPARTMENT OF BUSINESS,  
ECONOMIC DEVELOPMENT & TOURISM**

LINDA LINGLE  
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THEODORE E. LIU  
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Statement of  
**THEODORE E. LIU**  
**Director**  
Department of Business, Economic Development, and Tourism  
before the  
**SENATE COMMITTEE ON ENERGY AND ENVIRONMENT**  
Tuesday, February 10, 2009  
3:45 p.m.  
State Capitol Auditorium  
Room 225

in consideration of  
**SB 709**  
**RELATING TO AGRICULTURE.**

Chair Gabbard, Vice Chair English and Members of the Senate Committee on Energy and Environment.

The Department of Business, Economic Development, and Tourism (DBEDT) understands the intent of SB 709, which would establish a moratorium on genetic modification of Hawaiian taro in Hawaii and testing, planting, or growing of Hawaiian taro genetically modified outside the State, and although we have respect for the cultural importance of taro to native Hawaiians, we have serious concerns that other groups may use this to set a precedent for a moratorium on all genetically modified plants and therefore, do not support this bill.

The life sciences industry in Hawaii plays an important role in diversifying the economy. We are concerned that a moratorium on this type of research would send an anti-science message to the community, at a time when we need to promote the importance of science to our children in Hawaii schools. Work is being pursued on many fronts to increase the availability of Science, Technology, Engineering and Math (STEM) education, both locally and nationally to better prepare our future workforce to meet the challenges of today's economy. By banning research,

we would send the wrong message to our children, whom we are trying to interest in future careers in science.

In addition, Hawaii's science and technology business leaders rely on a positive business and community attitude toward science in order to qualify for research grants and attract investment. The growth of Hawaii's science and technology businesses provides opportunities to create higher paying jobs to bring back our children to Hawaii after college education on the mainland. This bill would send an anti-business message, particularly within the science and technology sector.

Furthermore, it is our understanding that a de facto moratorium regarding research on Hawaiian varieties of taro already exists with the University of Hawaii, College of Tropical Agriculture & Human Resources (CTAHR). We believe that CTAHR has previously agreed not to pursue genetic engineering research on native Hawaiian varieties of taro without prior consultation with the community. This approach to solving the problem, without excluding a valuable tool should the need arise, would seem to be more productive and inclusive.

Thank you for the opportunity to provide these comments.



**SB 709, RELATING TO AGRICULTURE**  
House Committee on Energy and Environment

February 10, 2009  
Room: 225

3:45 p.m.

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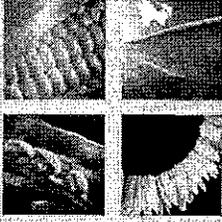
The Office of Hawaiian Affairs (OHA) **SUPPORTS** Senate Bill 709, which would prohibit any individual from either genetically modifying Hawaiian varieties of kalo or growing Hawaiian varieties of kalo that have been genetically modified. The bill would also establish a civil fine of not more than \$1,000 for violations of the moratorium on genetically modifying Hawaiian kalo.

OHA supports this measure as an important recognition of a plant that has genealogical, spiritual and cultural links with Native Hawaiians and Hawai'i. Furthermore, kalo is integral to the identity of Native Hawaiians and, thus, the State of Hawai'i as a whole.

The traditional mo'ōlelo of Wākea and Papahānaumoku explains that the first kalo plant, Häloanakalaukapalili, is the elder brother of Native Hawaiians. As the elder sibling, Häloa provides sustenance to Native Hawaiians, and in return, we, the younger sibling, care for him and ensure that he flourishes. The bond that connects Native Hawaiians to kalo remains a sacred one, and our kuleana dictates that we preserve that bond and protect Häloa. A living entity of this eminence cannot be modified or scientifically "improved." He must be honored and left alone.

OHA recognizes that Häloa is facing many challenges today, including diseases, invasive species and a dearth of water and farmable land. However, we believe that there are natural alternatives to genetic engineering - such as fallowing lo'i, restoring stream flows and improving the overall health of the environment - that have yet to be fully explored. We suggest scientists work with kalo farmers and the Native Hawaiian community to conduct a complete and comprehensive examination of these natural methods, which are neither intrusive nor offensive to Häloa or our culture.

OHA respectfully urges the committee to PASS S.B. 709,  
and we thank the committee for the opportunity to testify.



# Hawaii Crop Improvement Association

*Growing the Future of Worldwide Agriculture in Hawaii*

Testimony By: Alicia Maluafiti  
SB 709, Relating to Agriculture  
Senate ENE Committee  
Tuesday, Feb.10, 2009  
Room 225, 3:45 pm

Position: Strong Opposition

Chair Gabbard, and Members of the Senate ENE Committee:

My name is Alicia Maluafiti, Executive Director of the Hawaii Crop Improvement Association. The Hawaii Crop Improvement Association (HCIA) is a nonprofit trade association representing the agricultural seed industry in Hawaii. Now the state's largest agricultural commodity, the seed industry contributes to the economic health and diversity of the islands by providing high quality jobs in rural communities, keeping important agricultural lands in agricultural use, and serving as responsible stewards of Hawaii's natural resources.

As stated in previous years, HCIA member companies do not grow taro nor do we have an interest in taro as a commercial research and development crop. We consistently affirm and respect the cultural meaning of Hawaiian taro and firmly believe that the Hawaiian community must lead the discussion of the future of Hawaiian taro, and Hawaiian taro research and education programs.

HCIA does not support legislating a moratorium on taro or any other agricultural crop grown in Hawaii. Such policies send a chilling message that Hawaii is not in support of science and technology. It undermines future investments and growth potential for responsible use of agricultural biotechnology as a 21<sup>st</sup> Century tool for farmers.

We stand firmly on the thousands of science-based and peer reviewed studies and 3,400 scientists around the world that attest to the safety of agricultural biotechnology. (The Safety of Agricultural Biotechnology study listing is available upon request) Plant research using this technology is not only safe but has the advantage of being more efficient. It requires significantly less time to produce new cultivars and is more precise than traditional plant breeding. As a result, varieties can be developed which are more productive and better adapted to local needs. It is an option or tool for plant breeding when other methods fail.

Thank you for the opportunity to present testimony.

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TESTIMONY RE: SB 238 & SB 237 & SB 709

DATE: Tuesday Feb 10<sup>th</sup>, 2009

TIME: 3:30pm

PLACE: CR 225

Testimony on SB 238 Relating to Labeling of Genetically Engineered Crops [In Support]

I support this measure because I am a consumer who wants to exercise my right to choose the best food I can for my family and for myself. There is a growing debate on the safety of GMO foods, and it is well documented that people with food allergies may be severely injured by GMO. Please support and pass this measure.

Testimony on SB 709 Relating to GMO TARO [Support with amendments]

I support this measure but ask that the language and form be amended to reflect the language in HB 1663. These amendments would strengthen the measure by protecting all varieties of Kalo and addressing economic and health concerns that are not adequately Protected at present. Please amend and support these measures.

Testimony ON SB 237 Re: GMO FISH: [Support]

I strongly support this measure as it will protect not only our right to choose the food we eat and feed our families but it will protect our fishing industry. The introduction of live GMO fish would contaminate our own clean fishing products and injure the future fishing industry by contaminating our fish. We know that consumers in Japan have already rejected Hawaii Papaya because of discovered GMO contamination. Will Asian consumers be rejecting our fish next? Please Support this measure

Mililani B. Trask Big Island



# LIFE OF THE LAND

76 North King Street, Suite 203

Honolulu, Hawai'i 96817

Phone: 533-3454; E: [henry.lifeoftheland@gmail.com](mailto:henry.lifeoftheland@gmail.com)

## COMMITTEE ON ENERGY AND ENVIRONMENT

Senator Mike Gabbard, Chair

Senator J. Kalani English, Vice Chair

## COMMITTEE ON WATER, LAND, AGRICULTURE, AND HAWAIIAN AFFAIRS

Senator Clayton Hee, Chair

Senator Jill N. Tokuda, Vice Chair

Tuesday, February 10, 2009

3:30 p.m.

Conference Room 225

SB 238 Labeling GE Crops

SB 237 GE Fish

**SUPPORT**

**SUPPORT**

3:45 p.m.

Conference Room 225

SB 239 GE Plants

SB 709 GE Taro

**SUPPORT**

**SUPPORT**

Aloha Chairs Gabbard, Hee, Vice Chairs English, Tokuda, and Members of the Committees,

My name is Henry Curtis and I am the Executive Director of Life of the Land, Hawai'i's own energy, environmental and community action group advocating for the people and `aina for almost four decades. Our mission is to preserve and protect the life of the land through sound energy and land use policies and to promote open government through research, education, advocacy and, when necessary, litigation.

## **Life of the Land's Position**

Genetically Engineering is a very young field of study (3 decades), and the terminology, techniques, and risks are undergoing rapid change. Reasonable regulations are trailing badly. Proponents are hiding behind terms like "life sciences". Some positive actions have occurred (creating cheap insulin in labs), however, the money is in experimental research, not in safety or risk analysis. Focusing on the money that can flow into the state and not the risks that the public will face is short-sighted.

Hawai'i should adopt the Precautionary Principle for all genetic engineering projects. The Precautionary Principle places the burden of proof on the proponent of new technologies. The requirement is to demonstrate, not absolutely but beyond reasonable doubt, that what is being proposed is safe.

Genetic Engineered crops, if grown at all, should be located within labs and enclosed structures. If they are grown outside, the fields should be clearly identified.

All consumer goods (food, clothing) containing genetically engineered materials and ingredients should be clearly labeled.

There must be a ban on Genetic Engineering of cultural crops such as kalo.

Genetic Engineering must never be used in species located in the open ocean where they can intermingle with wild ocean species.

Open field growing of Genetic Engineered pharmaceuticals, especially in food crops must be banned.

## **Background**

Genetically engineered insulin using recombinant DNA technology was approved for use by diabetics in 1982. The first transgenic domestic animal, a pig was created in 1985. The gene that is responsible for cystic fibrosis was found in 1990. The Human Genome Project to map the entire human genome was launched in 1990.

## **Risks**

Scientists at the Centers for Disease Control and Prevention have successfully reconstructed the influenza virus strain responsible for the 1918 pandemic. ([www.cdc.gov/od/oc/media/pressrel/r051005.htm](http://www.cdc.gov/od/oc/media/pressrel/r051005.htm)). The Spanish Flu Pandemic (La Grippe Espagnole, La Pesadilla) affected 1 billion people, killing 50-100 million people in 1918-19. More people died from the Spanish flu than the Black Death Bubonic Plague (1347-51) or from World War I (1914-18).

Hawaii regulates the importation of microorganisms and their movement between regulated labs, but not their creation in unregulated facilities. In Hawai'i it is legal to genetically engineer the avian bird flu and other deadly diseases. State laws pre-date genetic engineering, and policy-makers encouraging genetic research do not want to send any "wrong" signals by regulating this new technology.

## Animal-Human Hybrids Spark Controversy

by Maryann Mott (National Geographic News, January 25, 2005)

Scientists have begun blurring the line between human and animal by producing chimeras—a hybrid creature that's part human, part animal. Chinese scientists at the Shanghai Second Medical University in 2003 successfully fused human cells with rabbit eggs. The embryos were reportedly the first human-animal chimeras successfully created. They were allowed to develop for several days in a laboratory dish before the scientists destroyed the embryos to harvest their stem cells. In Minnesota last year researchers at the Mayo Clinic created pigs with human blood flowing through their bodies. And at Stanford University in California an experiment might be done later this year to create mice with human brains. But creating human-animal chimeras—named after a monster in Greek mythology that had a lion's head, goat's body, and serpent's tail—has raised troubling questions: What new subhuman combination should be produced and for what purpose? At what point would it be considered human? And what rights, if any, should it have? There are currently no U.S. federal laws that address these issues.

What's caused the uproar is the mixing of human stem cells with embryonic animals to create new species.

Human Born to Mice Parents? For example, an experiment that would raise concerns, he said, is genetically engineering mice to produce human sperm and eggs, then doing in vitro fertilization to produce a child whose parents are a pair of mice. Last year Canada passed the Assisted Human Reproduction Act, which bans chimeras. Specifically, it prohibits transferring a nonhuman cell into a human embryo and putting human cells into a nonhuman embryo.

Irv Weissman, director of Stanford University's Institute of Cancer/Stem Cell Biology and Medicine in California, is against a ban in the United States. "Anybody who puts their own moral guidance in the way of this biomedical science, where they want to impose their will—not just be part of an argument—if that leads to a ban or moratorium. ... they are stopping research that would save human lives," he said.

Mice With Human Brains. Weissman has already created mice with brains that are about one percent human. Later this year he may conduct another experiment where the mice have 100 percent human brains. This would be done, he said, by injecting human neurons into the brains of embryonic mice.

Mahalo,

Henry Curtis



# SIERRA CLUB HAWAI'I CHAPTER

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## SENATE COMMITTEE ON ENERGY AND ENVIRONMENT

February 10, 2009, 3:45 P.M.

### TESTIMONY IN SUPPORT OF SB 709

Chair Gabbard and members of the Committee:

The Sierra Club, Hawai'i Chapter, with nearly 5500 dues paying members statewide, supports SB 709, placing a moratorium on the growth of genetically modified taro plants.

Genetically modifying organisms—the practice of splicing DNA from bacteria, viruses and other organisms into plants to lend them certain traits, like resistance to chemical weedkillers—poses extreme risks to our common environment. Manipulation of genetic material by inserting bacteria, plant, animal, and human genes into food products is a radical departure from traditional breeding techniques and represents an unprecedented break with natural processes.

In Hawai'i, such genetically modified organism (GMO) biotechnology is mainly experimental. Most of the experiments are taking place not in a laboratory, but in the open air, in locations concealed from the public. In fact, Hawai'i has had more plantings of experimental biotech crops than anywhere else in the nation—or the world.

Hawaii's small size, its close proximity of agricultural and populated areas, and its unique, sensitive, natural environment combine to dramatically raise the stakes of testing GMO crops here. A December 2005 report from the Inspector General of the US Department of Agriculture (USDA), found that USDA's inadequate safeguards "increase the risk that genetically engineered organisms will inadvertently persist in the environment before they are deemed safe to grow without regulation."

While decision makers are just beginning to understand the magnitude of the problem in Hawai'i, Taro is an important, cultural crop that is immediately at risk. This crop is primarily grown by small, local farmers. To adequately protect the environment and the Hawai'i taro industry, a moratorium on genetically modified taro needs to be in place.

Thank you for the opportunity to testify.



# Waikīkī Hawaiian Civic Club

President, Malia Nobrega  
[malianob@gmail.com](mailto:malianob@gmail.com)

E HUKI LIKE!

## TESTIMONY IN STRONG SUPPORT OF SB 709, RELATING TO AGRICULTURE

Hearing Date: February 10, 2009

Time: 3:45pm

Conf. Room: 225

Committee: ENE

Submitted by: Malia Nobrega, President, Waikīkī Hawaiian Civic Club

Mahalo nui for the opportunity to provide testimony in strong support of SB 709 relating to agriculture and placing a moratorium on the growth of genetically modified taro plants.

My name is Malia Nobrega and I'm the President of Waikīkī Hawaiian Civic Club and a Native Hawaiian concerned about the sustainability of our unique environment that my kupuna took care of and lived off of, and that Native Hawaiians today struggle to protect for our use and for generations to come.

Waikīkī Hawaiian Civic Club strongly supports this bill because it calls for a moratorium on the genetic modification of Hawaiian taro and testing, planting, or growing of Hawaiian taro genetically modified outside the State. **We also propose that the bill be amended to say that a moratorium be on the genetic modification of all taro here on our aina, our kulaiwi, our one hanau.**

Taro or kalo is a part of my genealogy as my elder sibling. It is not just food that we put on our table but a part of our 'ohana. I am appalled that researchers feel that they can genetically engineer our taro and play around with my genealogy and my family members. 'A'OLE!!!!

### Paoakalani Declaration Addresses This Issue

Waikīkī Hawaiian Civic Club helped to organize and participated in the two Ka 'Aha Pono-Native Hawaiian Intellectual Property Rights Conference. This conference gathered Kanaka Maoli including kumu hula, elders, artists, teachers and academics, attorneys, and many others concerned about this very topic. Those gathered at Ka 'Aha Pono produced the Paoakalani

Declaration which is a unifying statement that collectively shares the responsibility to determine a pono future for Hawai`i nei, her culture, and indigenous peoples. The Paoakalani Declaration addresses the issue of bioprospecting and states that:

- We have the right to free, prior and informed consent before research relating to our biological resources commences. Researchers, corporations, educational institutions, government or others conducting such research must fully and entirely inform Kanaka Maoli regarding the purposes of their research and recognize our right to refuse to participate.
- Biological samples are being transferred, traded, bought, and sold without the agreement or consent of our peoples, in violation of our inherent human rights.
- Although biological and genetic samples have been transferred, sold, patented or licensed, Kanaka Maoli never relinquished our rights to our biological and genetic materials and, therefore, call for the rightful repatriation of such samples and due compensation.
- We further support a moratorium on patenting, licensing, sale or transfer of any of our plants, animals and other biological resources derived from the natural resources of our lands, submerged lands, waters, and oceans until indigenous communities have developed appropriate protection and conservation mechanisms.

#### **Waikīkī Hawaiian Civic Club's Commitment To Protect Hawai`i's Biodiversity**

The Association of Hawaiian Civic Clubs has adopted four resolutions relating to research at the University, the collective intellectual property rights of Native Hawaiians, and the protection of Hawai`i's flora and fauna, over the past four years. One resolution adopted in 2002 calling for regulation of bioprospecting. Two others passed in 2003 related to the collective intellectual property rights of Native Hawaiians as well as a proposed Hawaiian Genome Project at the UH Medical School. In 2005, the Association of Hawaiian Civic Clubs urges the Hawai`i State Legislature to enact legislation to protect Hawai`i's flora and fauna. Collectively, these Civic Club resolutions and the Paoakalani Declaration evidence a strong conviction of the Hawaiian community to protect Hawai`i's biological resources and our related rights. The resolutions and the Declaration also indicate our concern regarding activities of the University and its researchers to undermine our rights.

In January 2006, the O`ahu Council of Hawaiian Civic Clubs has taken a position against the manipulation and patenting of our biodiversity, namely our kalo.

We continue to produce educational videos and organize community workshops related to protecting our biodiversity in Hawai`i and it's implications. We have committed ourselves to work to create legislation and continue educational efforts in the community regarding our biodiversity. In particular, the Waikīkī Hawaiian Civic Club offers its assistance to your committee.

Mahalo again for this opportunity to testify and share my mana`o regarding Hawai`i's biodiversity.

Aloha,  
Malia Nobrega

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**From:** nancy redfeather [nredfeather@kohalacenter.org]  
**Sent:** Monday, February 09, 2009 4:00 PM  
**To:** ENETestimony  
**Subject:** Testimony for SB 239 Support with Suggestion and SB 709 Support with Reservation

Testimony given by:

Nancy Redfeather  
Kawanui Farm  
P.O. Box 906  
Kealahakua, Hawai'i  
96750  
808-322-2801

Statement on SB 239: This bill is particularly important to farmers, market gardeners, home producers, school gardens, and community gardens who choose to grow corn and/or soy beans. Both of these crops are grown in "experimental" field trials in the open air on Maui, Kauai, Molokai, and Oahu. Experimental meaning that the "traits" have NOT yet proven to be effective or safe for production or consumption. Both of these crops will easily cross pollinate non GMO varieties in the same geographical region, up to a few miles depending on wind flow and pollinator travel. The Public has a right to know what types of genetic material might end up in their food.

Suggestion: I did not see "the plan" for HDOA to inform the public of these trials. I suggest they post it in a newspaper for everyone to see, and perhaps send it to CTAHR Extension Stations to "post" for the public to read. Or, perhaps there could be an announcement sent out to those farmers, gardeners, teachers, and home producers who sign up to be notified "by island." That would probably be the simplest way.

Statement with Reservation on SB 709: Although this bill seeks to protect Hawaiian Taro, it does not go far enough. If ALL taro in the state is not protected, it will only be a matter of time, before genetically engineered hulis will be out in the environment, mixed up, and passed around. That is the "traditional" way the Hawaiians and farmers and gardeners distribute taro keikis. Why not protect ALL varieties of Taro from being grown in the State of Hawai'i? It is a minor crop to UH Manoa, but a major food security crop for the state, and elder brother of the Hawaiian people. Please do not allow any Taro to be genetically engineered. Dr. Susan is quite capable of other work.

Mahalo,

Nancy Redfeather  
Kawanui Farm  
Kona

Testimony transmitted by email 10 Feb 2009 from:

Penny Levin  
224 Ainahou Place  
Wailuku, Maui 96793

**TO:** Committee on Energy and the Environment, Rm225, February 10<sup>th</sup>, 3:45pm

**RE:** *Testimony for SB709 Relating to Agriculture*

Aloha Honorable Committee members;

Regarding *SB709 Relating to Agriculture*, I support with amendments the proposed legislation to protect taro in the State of Hawaii from genetic engineering.

Taro farmers and Hawaiians have now been coming out of the lo'i and traveling to the legislature for three years to lay this threat to their crop, their livelihood and their culture to rest. Last year, more than 7,000 people testified in support of similar legislation including taro farmers, Hawaiians, three County Councils, consumers, organic farmers, scientists, health practitioners and specialists, and other supporters from across the state. In November 2008, the County of Hawai'i passed an ordinance banning the genetic engineering of taro.

As a taro farmer with a background in science and biodiversity conservation, I have weighed the benefits and risks of genetically engineered taro carefully and found it to be too great a risk to the integrity of the plant as a food crop, the environment, fragile taro markets, and consumer health. It is also inappropriate in the context of the significance of taro in Hawaiian culture.

For every proposed benefit, there are serious questions that remain in the highest standards of the science regarding the safety of transgenic crops for human consumption and the natural environment, as well as its true productivity and economic impact. The National Academy of Science, the highest regarded scientific organization in the US, along with the International Assessment of Agricultural Science and Technology for Development [IAASTD] project (a rigorous four year study involving 400 scientists worldwide and producing a 2,500 page report in 2008), the FAO and World Health Organization support this conclusion.

The State of California, recognizing the uncontrollable persistence and irreversibility of gmo plants that hybridize non-gmo crops or escape into adjacent fields, passed into law this year landmark legislation (AB541) protecting farmers from crippling lawsuits by the biotech industry over cross-contamination (the companies do not compensate farmers for contaminating their fields even when organic certification is destroyed, rather, they consider cross-pollination which occurs by wind, birds or insects to be theft of property rights).

But more important for taro in Hawaii are three clear facts;

First, there are many problems that face taro that cannot be resolved by genetically modifying the plant. I have spent the last six years documenting the impacts and researching

solutions with taro farmers to control the invasive apple snail, which is responsible for the highest percentage of crop and huli loss annually. We know from experience and observation that solving the apple snail problem, improving soil organics, fallow durations, cultivar diversity and restoring water to lo'i kalo will significantly reduce pests and disease occurrence and increase crop production. Removing the apple snails alone will eliminate an 18-25% crop loss and increase the available time a farmer has to care for his farm and his family by 50%. Proposed yield increases and disease resistance for GMO taro are hypothetical and untested; the apple snail will eat it anyway. There is no need or demand to grow GMO taro from local taro farmers or consumers. Better and safer options exist.

Second, taro will survive without genetic engineering. It is one of the oldest human-managed food crops in the world; its use dates back more than 50,000 years by some accounts. For an estimated 1,200 years, taro in Hawai'i has survived volcanic fallout, floods, droughts, pests and disease. The presence of the word, *kakane* (a leaf blight on plants) in the Hawaiian language illustrates that taro leaf blight has been around a very long time. Archival records dating back to the early and mid-1800s indicate it was attention to the soil and the water that kept the taro robust. Queen Emma herself grew taro whose corms averaged 20lbs and documented the careful management of the soil and the plants by which she achieved this standard (undated manuscript written by Queen Emma, Bishop Museum); something very few taro farmers still practice.

Third, protecting the biodiversity of taro is critical to future survival. Hawai'i retains many of the ancient Hawaiian taro varieties, some of which are extremely rare, along with extensive ex-situ collections of taro from throughout the Pacific, and Asia. A ban on genetically engineered taro in Hawai'i provides a buffer of protection not just for the Hawaiian varieties, but all taro cultivars found in the state, an important resource for continuing to build leaf blight resistance using conventional hand-pollination hybridization techniques – or restoring traditional varieties back to their original islands throughout the region.

The attached amendments align the intent and language of SB709 with HB1663 *Relating to Taro Security*. The suggested increase in penalties in SB709 from \$1,000 to \$10,000 gives more teeth to the law and discourages those that might consider the development or use of gmo taro without considering the impacts they may have on other farmers, consumers and the taro itself.

What we are asking for is a return to ethics in agriculture. The State of Hawaii made a commitment to taro by making it the State Plant and by establishing the Taro Security and Purity Task Force to address non-gmo issues for farmers in 2008.

I urge the members of the Committee on Energy and the Environment to further this commitment by supporting SB709 with the suggested amendments.

Respectfully,  
Penny Levin  
Taro Farmer and conservation planner, Maui

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# A BILL FOR AN ACT

RELATING TO AGRICULTURE.

**BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:**

1       SECTION 1. Kalo (colocasia esculenta), the Hawaiian word  
2 for taro, is a culturally significant plant to the kanaka maoli,  
3 (Hawai'i's indigenous peoples) and the State of Hawaii. ~~According~~  
~~to the kumulipo, the~~  
4 ~~Hawaiian creation chant, kalo grew from the first born son of~~  
5 ~~Wakea, the sky father, and Papa, the earth mother, through~~  
6 ~~Wakea's relationship with his and Papa's daughter, Hoohokulani.~~  
7 ~~This son, named Halea, was stillborn and buried. From Halea's~~  
8 ~~grave grew the first kalo plant. Wakea and Hoohokulani named~~  
9 ~~their second son Halea, after his older brother. From the~~  
10 ~~second Halea came the genesis of man. Kalo provides the kanaka~~  
11 ~~maoli's life giving sustenance, poi, and is seen as the older~~  
12 ~~brother of mankind.~~  
13 ~~More than three hundred kalo varieties may have existed at~~  
14 ~~the time European explorers arrived. Today, there are~~  
15 ~~approximately seventy varieties of taro, and of these, the~~  
16 ~~majority are unique to the Hawaiian Islands due to the~~  
17 ~~horticultural skills of native Hawaiian farmers.~~

~~Page 2~~

~~1 The important cultural relationship between kalo and the  
2 kanaka maoli continues today in the cultivation of kalo and  
3 'ohana, the Hawaiian word for family. The cut stalk of the kalo,  
4 called huli, is planted to become the next generation. Huli  
5 means to turn or curl over. The word 'ohana is derived from two  
6 root words: 'oha, which is the smaller taro corm growing from the  
7 older part of the taro plant used to feed one's family; and ana,  
8 a conjunctive word connoting regeneration or procreation.~~

~~9 Therefore, kalo intrinsically ties the interdependency of  
10 our past, present, and future - the essence of procreation and  
11 regeneration - as the foundation of any sustainable practice.  
12 Kalo not only expresses the spiritual and physical wellbeing of  
13 the kanaka maoli and their heritage, but also symbolizes the  
14 environmental, social, and cultural values important to the  
15 State. This relationship is symbolized in the use of the kalo  
16 plant upon the crown of King Kalakaua and today in the logo of  
17 the office of Hawaiian affairs and many commercial enterprises  
18 throughout the State.~~

~~19 The purpose of this Act is to impose a moratorium on  
20 genetically modifying any Hawaiian taro within the State of  
21 Hawaii and testing, planting, or growing any Hawaiian taro  
22 within the State that has been genetically modified outside the~~

~~1 State. The list of "Hawaiian taro" in this Act consists of  
2 varieties of taro known to have grown in Hawaii over the past  
3 sixty years, and the Act shall not apply to non-Hawaiian taro.~~

Kalo intrinsically embodies the interdependency of the  
past, the present, and the future, the essence of procreation  
and regeneration, as the foundation of any sustainable practice.  
Kalo expresses the spiritual and physical well-being of not only  
the kanaka maoli and their heritage, but also symbolizes the  
environmental, social, and cultural values important to the  
State. This relationship is represented in the use of the kalo  
plant upon the crown of King Kalakaua. The State Seal  
established in 1959 includes eight taro leaves below the shield  
as described in Act 272 HRS §5-5 State Seal, description,  
honoring the connection between the health of the land and the  
health of the state. Today, the logo of the Office of Hawaiian  
Affairs and many commercial enterprises throughout the State use  
this symbol to communicate 'ohana, integrity and a connection to  
Hawaiian culture. In 2008, the State of Hawaii further  
recognized the cultural and historic significance of taro by  
designating it as the Official State Plant (Hawaii State  
Legislature Act 71, HRSS§5-15.5 State plant).

Over three hundred kalo varieties may have existed at the  
time of the arrival of European explorers (Pukui and Elbert,

Hawaiian Dictionary, 1986). Today, there are eighty-five known traditional varieties of taro remaining, including Bun-Long (Chinese) whose use in Hawaii dates back more than 150 years. Of these, sixty-nine are unique to the Hawaiian Islands due to the horticultural skills of native Hawaiian farmers (according to Bulletin 84: Taro Varieties in Hawaii, 1939). Some are extremely rare. The state is also a repository for many taro varieties from around the world. Leaf blight-resistant cultivars were developed from this resource using conventional hand-pollination methods to restore taro crops in Samoa in the 1990s. Protecting and maintaining the genetic identity of these varieties is critically important to the recovery of old taro races in Hawaii and the Pacific.

Kalo is an important food crop in Hawaii and a complex carbohydrate whose hypo-allergenic properties are life-saving for those with digestive disorders and allergies, including young children and the elderly. The health implications of non-taro genes in genetically engineered kalo have never been tested, nor have they been approved for human consumption.

Historically, there were thousands of acres under taro cultivation in Hawaii. There remain less than 500 acres of taro in production. In 2006, the most recent year for Hawaii Agriculture Statistic Services (HASS) market values, 4.5 million pounds were produced on 380 acres of commercial taro land

(11,842 lbs per acre) at a value of \$2,565 million dollars  
farmgate, an estimated per acre value of \$6,750 excluding lu'au  
leaf. Raw taro and value-added taro products are a multi-million  
dollar crop in Hawaii with great potential for further growth as  
the State moves towards food security and self-sufficiency.  
Control of the single worst taro pest, the apple snail *Pomacea*  
*canaliculata*, will increase taro production on existing acreage  
by as much as 25 percent (Levin 2006). Cold water and adjusting  
growing regimes will further reduce taro disease. Neither of  
these issues requires a genetically engineered taro solution.  
Most locally-grown taro is consumed within the state indicating  
a highly specialized market. Millers and consumers have  
specifically and consistently rejected the use of genetically  
modified taro or poi.

The 2008 Legislature established the two-year Taro  
Security and Purity Task Force under Act 211 to address non-gmo  
alternatives to taro farmer issues; including, land and water  
concerns, threats from pests, diseases and taro imports,  
educational opportunities and economic issues. In this same  
year, the Counties of Hawaii, Maui and Kauai supported a  
moratorium on genetically modified taro. In November 2008, the  
County of Hawaii passed Ordinance 361 banning the testing,  
propagating, cultivating, raising, planting, growing,

introduction or release of genetically modified taro on that island.

The purpose of this Act is solely to further protect(1) the cultural integrity of kalo as part of the heritage of the Hawaiian people and the State; (2) the genetic biodiversity and integrity of all traditional taro varieties in the state as part of the sacred trust between the State and the indigenous peoples of the Pacific; and (3) Hawaii's taro farmer raw, poi, lu'au and value-added markets, by establishing a ban on developing, testing, propagating, releasing, importing, planting and growing of genetically modified taro in the State of Hawaii.

4 SECTION 2. Title II, Hawaii Revised Statutes, is amended  
5 by adding a new chapter to be appropriately designated and to  
6 read as follows:

7 "CHAPTER

8 GENETICALLY MODIFIED TARO

9 § -A1 **Definitions.** For the purposes of this chapter:

10 "County regulatory action" means a county ordinance,  
11 charter provision, rule, permit condition, or executive or  
12 administrative directive or order.

13 "Genetic modification" means alteration to a life form or  
14 its living progeny at the nucleic acid level using the  
15 techniques collectively referred to as recombinant DNA

16 technology.

17 "Growing" includes cultivating, propagating, and raising  
18 irregardless of location.

18 ~~"Hawaiian taro" means the following varieties of~~  
19 ~~taro: aweu, mana ulu, mana opelu, mana weo, mana ulaula, mana~~  
20 ~~laulea, mana keekee, mana kukulu hema, piko lehua apii, piko~~  
21 ~~ulaula, piko kea, piko keekee, piko uaua, piko uliuli, piko~~  
22 ~~eleele, elepaio, uahi a Pele, manapiko, kai uliuli, kai ala, kai~~

~~Page 4~~

1 ~~kea, apuwai, apu, piialii, paakai, moana, laulea eleele omao,~~  
2 ~~laulea eleele ula, laulea palakea eleele, laulea palakea ula,~~  
3 ~~laulea palakea papamu, laulea palakea keekee, laulea keekee,~~  
4 ~~eleele makoko, eleele naioca, manini owali, kumu eleele, nawao,~~  
5 ~~ulaula kumu, ulaula poni, ulaula moano, oopukai, manini uliuli,~~  
6 ~~manini kea, papakolea koae, ula, nihopuu, manini opelu,~~  
7 ~~hinupuaa, ohe, lehua maoli, lehua keekee, lehua eleele, lehua~~  
8 ~~palaii, apowale, wehiwa, papapueo, kuoho, leo, maea, haokea,~~  
9 ~~kalalau, hapuu, laalea, laulea uliuli, lihilihimolina, mana~~  
10 ~~eleele, mana okea, moi, eene, pikoele, pololu, Maui lehua, and~~  
11 ~~red moi.~~

12 "Recombinant DNA technology" means the transfer of genes,  
13 regulatory sequences, or nucleic acid between hosts by the use  
14 of vectors or laboratory manipulations and includes the

15 insertion, excision, duplication, inactivation, or relocation of  
16 specific genes, regulatory sequences, or sections of nucleic  
17 acid. This term does not apply to a material or an organism  
18 developed exclusively through traditional methods of breeding,  
19 hybridization, or nondirected mutagenesis.

"Release" means a discharge, emission or liberation of any  
genetically engineered organisms, or the product of a  
genetically engineered organism, into the open environment.

"Transgenic" means "genetically modified".

20 "State regulatory action" means a state statute, rule,  
21 permit condition, or executive or administrative directive or  
22 order.

Page 5

1 ~~§-B2 Moratorium on genetic modification of Hawaiian taro~~  
2 ~~and testing, planting, or growing of Hawaiian taro genetically~~  
3 ~~modified outside the State.~~ Genetically modified taro; ban.

4 ~~(a) No person shall genetically modify Hawaiian taro~~  
5 ~~within the State or test, plant, or grow any Hawaiian taro that~~  
6 ~~has been genetically modified outside the State.~~

(a) No genetically modified taro shall be developed,  
tested, propagated, released, imported, planted or grown in the  
State of Hawaii.

7 (b) Any person who violates subsection (a) shall be

8 subject to a civil fine of not more than ~~\$1,000~~ \$10,000 for each  
day a

9 violation occurs. The department of the attorney general shall  
10 enforce this section and may establish procedures to  
11 administratively adjudicate an alleged violation and recover  
12 from a violator the department's cost to investigate and  
13 adjudicate the violation and collect the fine. When requested  
14 by the department of the attorney general, the department of  
15 agriculture shall assist the department of the attorney general  
16 in the performance of these duties.

17 (c) Any person who violates subsection (a) shall be  
18 civilly liable for damages resulting from the violation,  
19 including adverse effects on taro and other crops, taro markets  
and the health of  
20 ~~other~~ individuals exposed to the genetically modified taro."

SECTION 3. This Act shall not to be seen as a referendum  
on the merits of biotechnology nor be applicable to any other  
crop. It does not prohibit the use of controlled hand-  
pollination taro breeding methods (taro-to-taro) to improve taro  
as a crop.

1 SECTION 4. This Act shall take effect upon its approval.

---

**From:** FOSTER, RAY [AG/2004] [ray.foster@monsanto.com]  
**Sent:** Monday, February 09, 2009 9:12 AM  
**To:** ENETestimony  
**Subject:** OPPOSE SB709 Relating to Genetically Modified Taro

COMMITTEE ON ENERGY AND ENVIRONMENT, Senator Mike Gabbard, Chair; Senator J. Kalani English, Vice Chair  
DATE: Tuesday, February 10, 2009  
TIME: 3:45 p.m.  
PLACE: Conference Room 225, State Capitol, 415 South Beretania Street

Senators and Committee Members,

I am a Hawaii Resident and have worked in Hawaii agriculture for 18 years. I OPPOSE SB 709.

There are no taro plants at risk of cross pollination with genetically engineered taro.

Hawaii's commercial taro producers must have the freedom to choose the varieties they grow. This legislation seriously restricts their freedom to operate.

Would you prohibit the development of medical advancements for the interest of a small segment of the community whose religious beliefs deny the use of medical technology? How is this legislation different?

Respectfully,

Raymond Foster

PO Box 40

HCO1 Box 104

Kaunakakai, HI 96748

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Caren Diamond  
P. O. Box 536  
Hanalei, Hi. 96714  
February 9, 2009

**Testimony in Strong Support SB 709, with amendments**

ENE

Room: 205  
Hearing Date 2/10/2009  
3:45:00 PM

Aloha Committee Members,

Malama Aina, translated as that which feeds us. Something so sacred about taro, as each huli reaches back in history, to our ancestors and past farmers who sustained their families farming taro. Taro is often synonymous with Hanalei. Our verdant green valley is home to many varieties of taro. We support SB709, and urge you to both support and amend the language to include all varieties of taro.

Variety and diversity is the key to life, and in this time of high food insecurity, all taro should remain "natural", not modified by man and science. When I plant taro huli , it brings me back in touch with the past, and much respect must be given to this plant , no other plant has the very same beginning as in the past, it is an amazing plant, where the future and past are one. There is no place for biotechnology in this sacred dance of nature. Truly, taro, in all its varieties, belong to the Hawaiian People. Why mess with a staple crop of the Hawaiian people? Each Taro plant has its history rooted with the ancestors, and it should remain that way. Please support amendments to include all varieties of taro.

Mahalo for your support, Caren Diamond

**TESTIMONY ON SB 709**

**SENATE COMMITTEE  
ON  
ENERGY AND ENVIRONMENT**

**CHAIRPERSON:** Senator Mike Gabbard  
**BILL NO:** SB 709 GE Crop Notification  
**TITLE:** Moratorium on Growing GE Kalo in Hawaii  
**HEARING DATE & TIME:** Tuesday, February 10, 2009 3:45 PM  
**HEARING LOCATION:** Conference Room 225

**TO: Chairperson Senator Mike Gabbard and Members of the Committee:**

As most know, this has already been done by the Hawaii County Council. It illustrates very poor knowledge of agriculture in general and the kalo or taro industry in particular.

As stated in the preamble of the bill, there were 300 kalo varieties in Hawaii and now we are down to around 70 varieties. A reduction of 230 available varieties or 76% of those 300 varieties are gone.

Why the reduction? Diseases and other pests. And, there is absolutely no guarantee that the remaining 70 varieties will not go the way of the 230 varieties, and be gone in the future. There are no fungicides, insecticides, or other preventative materials registered by EPA to use on kalo to prevent or reduce an attack from some new pest.

Genetic engineering as a method of plant breeding offers some future to kalo. To limit the import of "non-Hawaiian" kalo or even establish a moratorium severely limits the potential saving of the kalo industry from devastation by disease or unknown pests.

A similar occurrence happened in Samoa in 1996. Their kalo industry was devastated by a disease. This very same thing could happen in Hawaii. There is no short term solution for the re-establishment of the industry. Genetic engineering offers a rapid solution to such a problem. Limiting genetic engineering research and importation of resistant varieties into Hawaii only insures a long term, or a high probability, of the complete demise of the kalo industry in Hawaii.

Approving this bill is like signing on to the future demise of the kalo industry in Hawaii.

I strongly urge the committee to not pass this bill out of committee.

Don Gerbig  
6 Tulip Place  
Lahaina, HI 96761-8322

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**From:** mailinglist@capitol.hawaii.gov  
**Sent:** Monday, February 09, 2009 7:59 AM  
**To:** ENETestimony  
**Cc:** molokailori@gmail.com  
**Subject:** Testimony for SB709 on 2/10/2009 3:45:00 PM

Testimony for ENE 2/10/2009 3:45:00 PM SB709

Conference room: 225  
Testifier position: support  
Testifier will be present: No  
Submitted by: Lori Buchanan  
Organization: Individual  
Address: 14 Akeu Way Kalae, Molokai, Hi.  
Phone: (808 336-0625  
E-mail: [molokailori@gmail.com](mailto:molokailori@gmail.com)  
Submitted on: 2/9/2009

Comments:  
I support SB 709

---

**From:** Mark Mararagan  
**Sent:** Monday, February 09, 2009 12:41 PM  
**To:** ENETestimony  
**Subject:** FW: SB709 kalo moratorium s/b gutted and have wording of HB1663 GMO taro ban on all varieties of kalo

Aloha,

Please accept the email below as written testimony regarding SB 709.

Mahalo,



Mark A. Mararagan  
Office Manager to Senator Gary L. Hooser  
Senate Majority Leader  
Hawai'i State Senate  
Seventh Senatorial District - Islands of Kaua'i & Ni'ihau  
Office: (808) 586-6030 Toll Free: 274-3141, ext. 66030  
Fax: (808) 586-6031 Email: [mararagan@capitol.hawaii.gov](mailto:mararagan@capitol.hawaii.gov)

*phone message taken by  
Sen. Hooser's office (M. Mararagan)  
about Chris Kobayashi -  
see note below*

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---

**From:** Chris Kobayashi [mailto:waioli2@hawaiiintel.net]  
**Sent:** Monday, February 09, 2009 11:12 AM  
**To:** Sen. Josh Green; Sen. Gary Hooser  
**Subject:** Fw: SB709 kalo moratorium s/b gutted and have wording of HB1663 GMO taro ban on all varieties of kalo

----- Original Message -----

**From:** Chris Kobayashi  
**To:** [senenglish@capitol.hawaii.gov](mailto:senenglish@capitol.hawaii.gov) ; [Senator Mike Gabbard](mailto:Senator Mike Gabbard) ; [sengree@capitol.hawaii.gov](mailto:sengree@capitol.hawaii.gov) ; [Clayton Hee](mailto:Clayton Hee) ; [senhemming@capitol.hawaii.gov](mailto:senhemming@capitol.hawaii.gov) ; [senhoosercapitol.hawaii.gov@lava.net](mailto:senhoosercapitol.hawaii.gov@lava.net) ; [senihara@capitol.hawaii.gov](mailto:senihara@capitol.hawaii.gov) ; [senkokubun@capitol.hawaii.gov](mailto:senkokubun@capitol.hawaii.gov)  
**Sent:** Monday, February 09, 2009 10:58 AM  
**Subject:** SB709 kalo moratorium s/b gutted and have wording of HB1663 GMO taro ban on all varieties of kalo

Aloha Senators,

Please change the language of SB 709, a moratorium on the genetic modification of Hawaiian varieties of taro, to that of HB 1663 which calls for a ban on gmors on ALL varieties of taro.

A ban on Hawaiian varieties of taro is not enough.  
We want a ban on all varieties of taro in Hawaii.  
Contamination is forever. Coexistence is impossible.

There are those who say they simply want the research to continue just in case. And they also claim they would never plant it. Do you really believe that? Do you think that this research and technology would stay "safely" in the lab? For the safety of all of us who kanu taro, who cherish it as a family member because it provides and feeds us, for our aina - the

land and water- which supports the growing of our food in a respectful and healthy manner. It is time to stop and think what we are doing to all that is real and all that matters to us as human beings on this planet. Money and the drive to own and control does not make for anything healthy.

Malama Haloa. Malama kalo. Malama `aina.  
One earth, one land, one water, one air, one people.

We are all connected and all one. But many have forgotten the connection. And in the process, we don't know who we are.

Mahalo nui for helping us keep kalo pure and secure.

Chris Kobayashi  
Kalo Planter  
826-7836

---

**From:** mailinglist@capitol.hawaii.gov  
**Sent:** Monday, February 09, 2009 3:41 PM  
**To:** ENETestimony  
**Cc:** bonzib@hawaiiantel.net  
**Subject:** Testimony for SB709 on 2/10/2009 3:45:00 PM

Testimony for ENE 2/10/2009 3:45:00 PM SB709

Conference room: 225  
Testifier position: support  
Testifier will be present: No  
Submitted by: Edward J. Bonse  
Organization: Individual  
Address: S. Makaleha Place Makawao, HI  
Phone: 808-264-1618  
E-mail: [bonzib@hawaiiantel.net](mailto:bonzib@hawaiiantel.net)  
Submitted on: 2/9/2009

**Comments:**

As a resident of Maui for nearly 20 years, I have seen many changes. One of the most frightening has been the forfeiting of the power of the people for large corporations and universities who want to think they have the best interest of the people in mind. The proof that they do not shows when they genetically alter taro, a sacred Hawaiian crop.

As legislators, I urge that you don't allow yourselves, your colleagues and your constituents to be blinded by this science. It is not pono. There is enough evidence available to show negative health effects, non-target effects and economic loss from contamination of conventional and organic crops to make a sensible, responsible decision about genetically engineered crops - and especially taro!

This decision should not be made based on fear, the main weapon of biotech proponents. It needs to be made by doing the research, because there you will find the truth: not enough is known about GMOs' effects on us and our earth. Plenty is known about the track records of the biotech companies exploiting this `aina.

Do not allow transgenic taro of any kind in Hawaii. Please support this bill and broaden it to include ALL taro.

Thank you for the opportunity to testify.

Senator Mike Gabbard, Energy and Environment Committee Chair  
Senator J. Kalani English, Energy and Environment Committee Vice Chair

Dear Sen. Gabbard and Members of the Senate Energy and Environment Committee:

My name is Harold Keyser, and I am the Maui County Administrator with the University of Hawaii at Manoa's College of Tropical Agriculture and Human Resources (CTAHR). I am pleased to provide personal testimony on bill SB 709. This testimony does not represent the official position of the University of Hawai'i or CTAHR.

I respectfully oppose bill SB709 because it is wrong for many reasons, and because it could put Hawaiian taro in our state at greater risk than it is at the present.

There is absolutely no justification for this bill, which is evident from the lack of justification in the written bill itself.

The College of Tropical Agriculture & Human Resources has a long and proud history of working with many stakeholders to help them in a multitude of pursuits. We have a big tent, and pursue many truths down many paths. For 107 years CTAHR research and extension faculty have worked with taro farmers on constant and ever changing challenges they encounter. We took the initiative almost 80 years ago to assemble and maintain a collection of the remaining Hawaiian taro varieties. Over the subsequent decades we have engaged in a wide array of activities, including the following:

- Taro collection description, maintenance, distribution
- Research and extension on dry land production, diseases, insects, invasive species, nutrition, processing, marketing, industry analyses
- Handbooks, newsletter, fact sheets, field guides
- Conferences on taro in Hawaii and in Pacific region
- Developing hybrid taro developed with Asian lines for increased disease resistance and increased yields
- Genetically engineering the Chinese taro 'Bun Long' for increased disease resistance, though still only in the laboratory stage.

It is only this last activity that has even brought attention to all that CTAHR has done regarding taro over the past 100-plus years; pursuits that have benefited the preservation of taro for the Hawaiian community and for the commercial farmers who put the taro and poi on our table. Anti-biotechnology advocates have even suggested that it is disrespectful to use

genetic engineering – which quite simply is a modern method of plant breeding – on any taro. That judgment is irrational. If we ignored taro, that would be disrespectful. If we did not maintain, promote and share the taro collection, our knowledge, or our findings, that would be disrespectful. If we did not bring our best research efforts, use our best tools and apply our most effective techniques to current and potential future threats of taro, that would be disrespectful.

Why the equivalent of a prison sentence for use of a plant breeding technique on a crop so widely important in Hawaii? No one knows what the future will bring (for example the wiliwili gall wasp or the devastation from disease of taro in American Samoa); so many varieties of Hawaiian taro have already been lost, is it wise to risk more loss due to policy making that is not justified?

Because kalo is so important for cultural, historical, and economic reasons, researchers should have at their disposal all available tools to meet all challenges. To limit that ability is to assign Hawaiian taro to the category of less-than-deserving-of-our-best-efforts.

Thank you for the opportunity to testify and for the hard work you do on behalf of all the citizens of Hawaii.

Sincerely, Harold Keyser

---

**From:** Wailua De Lima [delimal009@hawaii.rr.com]  
**Sent:** Monday, February 09, 2009 5:46 PM  
**To:** ENETestimony  
**Subject:** GMO Taro

"I support protecting all natural taro and banning GMO-taro."

"I support the amendments that the taro farmers are proposing to SB709 to protect all varieties of taro and to protect the health of consumers & our local taro industry from GMO-taro, by changing the bill language to reflect that of HB1663."

"Please support taro farming in Hawaii by showing up to vote in support at the committee hearing on Tuesday at 3:30 and pass this bill with those appropriate amendments."

"Mahalo for listening to our community concerns and taking action to protect this sacred and important food resource in Hawaii."

NO GMO TARO OR ANY OTHER GMO PLANTS IN HAWAII We the People want it  
stopped!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!  
NOW NOW NOW!!!!!!!!!!!!!!!!!!!!!!

Wailua De Lima  
[delimal009@hawaii.rr.com](mailto:delimal009@hawaii.rr.com)

---

**From:** mailinglist@capitol.hawaii.gov  
**Sent:** Monday, February 09, 2009 4:48 PM  
**To:** ENETestimony  
**Cc:** yamakawa@hawaii.edu  
**Subject:** Testimony for SB709 on 2/10/2009 3:45:00 PM

Testimony for ENE 2/10/2009 3:45:00 PM SB709

Conference room: 225  
Testifier position: oppose  
Testifier will be present: No  
Submitted by: Roy M. Yamakawa  
Organization: Individual  
Address: 3060 Eiwa St., #210 Lihue, HI 96766  
Phone: (808) 652-7606  
E-mail: [yamakawa@hawaii.edu](mailto:yamakawa@hawaii.edu)  
Submitted on: 2/9/2009

Comments:

I oppose SB709. It exceeds its authority of attempting to place a moratorium on GE research which is already allowed if performed in accordance with valid permits from relevant agencies.

Even the National Farm Union's policy supports GE research, as long as it conforms with valid permits from relevant agencies, and furthermore, the University of Hawaii already has a moratorium with goes beyond SB709, in that it prohibits GE work with Hawaiian Taro varieties even if valid permits from relevant agencies are obtained.

---

**From:** JoH [johof@aloha.net]  
**Sent:** Tuesday, February 10, 2009 8:53 AM  
**To:** ENETestimony  
**Subject:** GMO'S at the legislature

Chairman, Energy and Environment Committee,

The following four bills are GOOD ones and we urge strong committee support on them: HB1663, HB368, HB367, and SB709. However, HB1226, by speaker Calvin Say, if passed, would prohibit the state or counties from banning GMO'S.

I'll bet Monsanto just loves this one!

HB1226 unquestionably deserves to go down in resounding defeat. We urge a NO vote on this one for sure!

Phil and Josephine Hoffman

P. O. Box 1813

Kealahou, HI 96750

Committee on Energy and the Environment  
Chairman Sen. Mike Gabbard  
Vice-Chair Sen. Kalani English

Testimony in strong support of SB709

Aloha Chair Gabbard, Vice Chair English and members of the committee;

Please pass this bill with amendments. Please include a ban on all genetic engineering of taro in the state, not just Hawaiian taros. You know what is right.

Mahalo

Una Greenaway

Kealakekua

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**From:** mailinglist@capitol.hawaii.gov  
**Sent:** Monday, February 09, 2009 11:09 PM  
**To:** ENETestimony  
**Cc:** hokuokekai50@msn.com  
**Subject:** Testimony for SB709 on 2/10/2009 3:45:00 PM

Testimony for ENE 2/10/2009 3:45:00 PM SB709

Conference room: 225  
Testifier position: support  
Testifier will be present: No  
Submitted by: Mary Lacques  
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Submitted on: 2/9/2009

Comments:

Dear Senators,

I respectfully urge you to support taro farming in Hawai'i by being present to vote in support of SB709 at the committee hearing at 3:30 this afternoon. I support SB709, with amendments, to protect all natural taro, and to ban genetically altered taro. I support these amendments that the taro farmers themselves are proposing, by changing the bill language to reflect that of HB1663. These amendments protect all varieties of taro, which in turn, protect and show solidarity with, and economic viability for the local taro industry. The health of our communities, and the health of our millions of visitors will also be protected from the unknown risks of this radical, untested technology. We cannot assume that genetically engineered taro is safe until proven so.

We cannot risk losing any more biodiversity in our island ecosystems, or the genetic integrity of taro. Culturally speaking, we must respect the spiritual beliefs of native Hawaiians, and leave the sacred ancestral roots of an indigenous people intact. Hawaiian farmers have maintained the largest number of taro varieties for over 1200 years. As you know, taro is a hypoallergenic food. There are numerous examples of how a taro diet has kept at-risk people alive and healthy. With 25% of the population showing signs of digestive problems, the potential for taro to become an allergen-free substitute for rice and wheat in our food staples is tremendous. Genetically modified taro could destroy these valuable hypoallergenic properties. A clean, abundant water supply is what our farmers need to perpetuate and cultivate this sacred and vital food supply. I urge you to be a part of the solution to preserve Hawaii's taro industry.

Mahalo for the opportunity to testify.

Mary Lacques