#1

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 HOUSE COMMITTEE ON AGRICULTURE
WEDNESDAY, MARCH 19, 2008
9:00 A.M.

SENATE BILL NO. 958, S.D. 1, H.D. 1
RELATING TO GENETICALLY MODIFIED ORGANISMS

Chairperson Tsuji and Members of the Committee:

Thank you for the opportunity to testify on SB 958, S.D. 1, H.D. 1. Taro is a sacred plant for Hawaiians and the growing of taro is an integral part of Hawaiian culture. As such, we respect the cultural importance of taro. However, it seems that this issue has grown to where there are far broader implications reaching beyond Hawaiian culture. Due to the increasing risk to taro from invasive species and disease and serious concerns that this measure may be used as a means to prevent the use of biotechnology for other crops, we must oppose this measure as proposed.

During the 2007 legislative session, taro farmers and Native Hawaiians expressed growing concern over increasing threats to taro. As a result, Senate Concurrent Resolution 206, which passed into law in June 2007, requested the Department to develop a taro security and purity research program to address growing concerns.

Last year, we informed the Legislature about the lethal insects and diseases of taro that occur in the Pacific and the federal laws and policies that prevent the inspection of taro from foreign countries. Since that time, we received information that roughly 1.8 million pounds are imported into Hawaii. Across the U.S., pests have been intercepted on taro from 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, The United Kingdom, Venezuela, and Vietnam. Given the large number of exporting countries, it is reasonable to expect that Hawaii will or has already received taro from some of these countries.

The Department still has not inspected one foreign shipment due to federal preemption, and we have not been provided information on the origins of the imported taro that have entered the state. While the Department will continue to work with our Congressional Delegation to overcome federal policies and a federal-state inspection facility should resolve the issues dealing with federal notification of taro shipments, these solutions will not happen quickly. In the interim, taro will remain very vulnerable.

Given that there are these very real threats to taro that could come to Hawaii from the Pacific islands and the rest of the world, 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 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. Now, the banana industry is threatened with the same demise that once endangered the papaya industry with the establishment of banana bunchy top disease.

The perception promoted by opponents to biotechnology is that there is something inherently wrong with the technology, which is contrary to what is widely accepted by the scientific community.

There is no doubt that the loss of the taro industry, by any means, would be devastating to Hawaii. Passage of this bill will effectively tie the hands of research to develop solutions to what many believe is the inevitable problem of introduced diseases and pests, some of which have already arrived. We hope that serious consideration be given to the known threats of diseases and pests pose to taro versus the perceived fears of biotechnology.

The Department has serious concerns when farmers fight farmers. Agriculture is already at a critical state. Instead, we will continue to support co-existence among all agricultural sectors.

#2

LINDA LINGLE
GOVERNOR
THEODORE E. LIU
DIRECTOR
MARK K. ANDERSON
DEPUTY DIRECTOR

DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM

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Statement of

THEODORE E. LIU
Director
Department of Business, Economic Development, and Tourism

before the
HOUSE COMMITTEE ON AGRICULTURE

Wednesday, March 19, 2008
9:00 a.m.
State Capitol Auditorium

in consideration of
SB958 SD1 HD1
RELATING TO GENETICALLY MODIFIED ORGANISMS.

Chair Tsuji, Vice Chair Brower and Members of the House Committee on Agriculture.

The Department of Business, Economic Development, and Tourism (DBEDT) understands the intent of SB 958 SD1 HD1, which would establish a ten-year moratorium on all aspects of developing, growing, raising and testing genetically modified taro in the State of Hawaii, however we have serious concerns and do not support this bill.

The life sciences industry in Hawaii plays an important role in diversifying the economy. We are concerned that a ten-year moratorium on important 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.

Finally, in Hawaii taro is exposed to a constant threat of invasive species and plant diseases. DBEDT participates as a member of the Hawaii Invasive Species Council. According to the University of Hawaii, College of Tropical Agriculture & Human Resources (CTAHR), if a ten-year moratorium were to be placed on research of genetically modified taro, and a severe challenge to taro production were to be experienced in Hawaii, no work could be done to address this problem. Any transgenic variety would take between five to seven years to develop, with the need being mostly laboratory and greenhouse work.

Furthermore, it is our understanding that a de facto moratorium already exists because CTAHR has 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 would seem to be more productive.

Thank you for the opportunity to provide these comments.

#3

UNIVERSITY OF HAWAI'I SYSTEM
Legislative Testimony

Testimony Presented Before the
House Committee on Agriculture
March 19, 2008 at 9:00 a.m.
by
James R, Gaines
Vice President for Research, University of Hawai'i System

SB 958 SD1 HD1
RELATING TO GENETICALLY MODIFIED ORGANISMS

Aloha Chair Tsuji, Vice Chair Brower, and Members of the Committee,

Thank you for the opportunity to provide **testimony in opposition to SB958 SD1 HD1** which provides a 10-year moratorium specifically so that no genetically modified taro shall be developed, tested, propagated, cultivated, raised, or grown in the State.

The University of Hawaii's history of supporting agriculture and farming in Hawaii goes back to the beginning of the last century and its contributions to those activities are well documented. As the primary research organization of the State of Hawaii and a nationally and globally respected research institution, the University is sensitive to legislation that may impede its research and educational mission especially when such legislation is based on misinformation promulgated by individuals and organizations whose primary motivation is not the well-being of taro in Hawaii, but opposition to genetic engineering.

Please make no mistake; The University is very sensitive to the spiritual and cultural significance of taro in Hawaii. By abandoning its patents on disease resistant, traditionally cross-bred, hybrid taro and entering into an agreement to consult with the Hawaiian community before conducting any research on genetically engineered Hawaiian taro, the University exhibited its respect for the cultural significance of Hawaiian taro.

Since the last legislative session there has been much discussion between the University and taro farmers. We believe significant progress has been made in understanding the problems they face on the ground and in their loi. Moreover, the University is strongly in support of SB2915 SD2 to create a Taro Security and Purity Task Force. We strongly believe that the issues surrounding the long-term health and purity of Hawaiian taro will be insured with dialogue and focused research. We also believe that a moratorium may end taro research in Hawaii and that should a pest or disease afflict taro in new and unforeseen ways, the University would be unable to respond in a timely manner.

As such, we ask your committee to ask the following questions:
In 10 years will taro be any less revered by the Hawaiian community than it is today? No.
In 10 years will taro be at any less risk from disease, pests and invasive species? No.
In 10 years will the University be conducting genetic engineering on Hawaiian taro without consultation from the Hawaiian community? No.
In 10 years will the University and taro farmers be working together to solve problems and provide the proper care for our revered taro? Maybe.

A moratorium will not change the answer to any of the questions above, however to insure that the last question is answered 'yes', we ask that the legislature focus its energy on bringing parties together and properly funding the taro task force proposed under SB2915 SD2 so that we can positively address the problems facing taro. If in the future, the taro task force recommends a similar moratorium to the legislature, the University would have a better appreciation of the need.

Mahalo for your consideration.

#9

OFFICE OF HAWAIIAN AFFAIRS
Legislative Testimony

SB 958, SD 1, HD 1, RELATING TO GENETICALLY MODIFIED ORGANISMS
House Committee on Agriculture

March 19, 2008 9:00 a.m. Room: Auditorium

The Office of Hawaiian Affairs (OHA) **SUPPORTS**, **with amendments**, S.B. 958,
S.D. 1, H.D. 1, which would create a 10-year moratorium for any developing, testing, propagating, cultivating, growing, or raising of genetically engineered kalo. OHA would like to see the moratorium be made permanent.

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 moʻolelo of Wākea and Papahānaumoku explains that the first kalo plant, Hāloanakalaukapalili, is the elder brother of Native Hawaiians. As the elder sibling, Hāloa 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 Hāloa. A living entity of this eminence cannot be modified or scientifically "improved." He must be honored and left alone.

OHA recognizes that Hāloa 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 loʻi, 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.

With this in mind, OHA urges the Committee to PASS, with amendments, S.B. 958, S.D. 1, H.D. 1. Mahalo for the opportunity to testify.

#10

HAWAII FARM BUREAU FEDERATION
2343 ROSE STREET
HONOLULU, HI 96819

TESTIMONY

SB 958 SD1 HD1
RELATING TO GENETICALLY MODIFIED ORGANISMS

HEARING BEFORE THE
HOUSE COMMITTEE ON AGRICULTURE

Chair Tsuji and Members of the Committees:

My name is Alan Takemoto, Executive Director of the Hawaii Farm Bureau Federation, the largest non-profit general agriculture organization representing approximately 1,600 farm and ranch family members statewide.

The Hawaii Farm Bureau Federation **STRONGLY OPPOSES** SB 958 which imposes a 10-year moratorium on any work on genetic modification of taro. Instead we strongly recommend that Best Management Practices to protect culturally significant varieties be identified. Furthermore, we implore the State to develop a thoughtful, comprehensive and well structured policy on biotechnology based on facts and sound science.

Freedom of choice for farmers and ranchers is absolutely critical – freedom to choose what to grow as well as how to grow it. Farming is essential to our society's survival, but it is a very challenging career choice. Farmers must be allowed to choose every tool available that will help ensure the viability of their farms and their crops. Genetic modification is nothing more than one of those important tools. Biotechnology can help farmers reduce pesticide use, increase production and improve the quality of their crops. When farmers are given full freedom of choice, it increases freedom of choice for consumers as well.

A major issue during this debate has been the cultural aspects of taro. Hawaii Farm Bureau respects and agrees that we should have protective mechanisms to protect those Hawaiian varieties with cultural significance.

The solution to this lies in one of the basic coexistence concepts, which is KNOW YOUR CROP. Knowing your crop means that you understand your crop so you can implement practices to ensure variety purity. Knowing your crop means you understand how pollen flow takes place for your crop, and how you can address it. Taro propagation is well known, and those who know their crops have many methods at their disposal to protect their varietal pureness. Those who know their crops will understand that they are not at risk from research in genetic modification.

Over the past decade, Samoa lost its taro to Phytophthora, which resulted in major negative societal and cultural impacts. Today, they continue to struggle to bring taro back to their islands. Would the people of Samoa, given the choice, have accepted genetically modified taro? GM development does not happen

overnight. When problems appear, it is too late if the research work has not already begun. A ten-year moratorium means that we will be at least ten years behind when a problem appears, and it could easily take ten years or longer to find a solution after starting the research. Is this acceptable?

Throughout this debate, we have heard all kinds of arguments in support for this moratorium. Many are rooted in emotional fears and lack of understanding, and are not based on good logic or science.

One of them is a fear of contamination. The highly successful GM papaya industry on the Big Island co-exists alongside conventional and organic papaya trees. The approval process for export to Japan is well underway in Japan. An identity protocol procedure is in place that conventional papaya growers use to prove their fruit is GM free. This is a zero tolerance protocol. Knowledge of their crop allows papaya farmers to successfully grow conventional and biotech papaya side by side. It has often been said that conventional papaya exists because of GM papaya. The GM papaya reduces the incidence of papaya ringspot in the environment, thereby allowing the non resistant trees to exist.

Another argument is that GMO work is not needed, that marker-assisted breeding is sufficient. This is like saying that a tool box with everything except the screwdriver is enough to build a house. Marker-assisted breeding is a major advancement beyond conventional breeding methods. Recombinant DNA technology is a major step beyond marker-assisted breeding. Researchers will often use one tool to gain valuable knowledge, which in turn helps them use other tools to get to a solution.

Clouding this debate is anti-GMO activism. During this decision-making process, it is critical that anti-GMO activism be separated from issues of agriculture and issues of Hawaiian culture. GMO activism is not founded in protecting agriculture or the Hawaiian culture; it is founded solely for the advancement of the anti-GMO movement.

GMO opponents frequently cite the unknown as a reason to stop the technology. In reality, GM technology is one of the most regulated, well tested and highly precise forms of breeding. The difference is like using a surgical knife rather than a chain saw. GM technology strictly limits its plant modifications to one trait at a time, and one trait only. No other type breeding method, including conventional and traditional methods, can say the same. Biotechnology is not some kind of weird, unknown science. It is founded in decades of solid research and has a stellar track record.

All of the "negative impacts" of GM research on taro are purely theoretical. They haven't happened and they don't exist. The real problems we face are in the form of pests and diseases that are making it difficult for taro to survive. This bill would handcuff research for fear of non-existent problems, and take away a tool that could be used today to fight the problems that already exist.

It's also been said that this bill would provide a much needed "time out" so we can have a dialogue about protecting taro's future. That is completely backwards. The dialogue must come first before any such legislation is even considered.

HFBF strongly believes in co-existence of all forms of agriculture: conventional, organic and biotech. We have spent tremendous time and effort to foster greater education among farmers about what coexistence is and how all farmers can succeed by adopting good coexistence practices. Farm Bureau has worked diligently

to lay the groundwork for this coexistence effort, and we strongly oppose any legislation that would sabotage this important effort.

SCR 208, passed in the 2005 Legislative Session, started a year-long effort of nearly monthly meetings between conventional, organic and biotech farmers. Their goal was to identify Best Management Practices for successful coexistence. SCR 208 was unfunded and HFBF used its funds along with USDA grants to finance the effort. The findings of this effort were reported to the 2007 Legislative Session, and subsequently, a brochure was drafted (Attachment 1) in order to share these findings with the greater agricultural community. Our staff spent a significant amount of time this past year organizing meetings among taro growers to discuss issues related to their industry. During our visits to active commercial taro farms, the issues of greatest concerns were not about biotech research, but about land, water, labor, disease and pest problems. Farm Bureau strongly supports research to address these critical issues.

We need to continue this coexistence process. It supports diversity in agriculture and benefits not only farmers but the people of Hawaii. We want to see taro farmers succeed. We want them to expand their production and be competitive in today's global market. We should not take actions that would inhibit their success.

We respectfully request this Bill be held and instead:

- Steps be taken towards a the development of a thoughtful, comprehensive and well structured policy on biotechnology based on facts and sound science.
- The research community in Hawaii be asked to immediately identify Best Management Practices for the protection of important Hawaiian varieties.
- Additionally, we request funding be approved to maintain the present taro collection in good form so that propagation material of culturally important varieties will always be available.

Thank you for this opportunity to testify.

Attachment: Coexistence Brochure

Reference Sites

General

- United States Department of Agriculture: www.usda.gov
- "Peaceful Coexistence" Report: pewag-biotech.org/events/0301/WorkshopReport.pdf

Pesticides

- Environmental Protection Agency: www.epa.gov/pesticides/index.html
- National Pesticide Information Center: www.npic.orst.edu/index.html

Genetically Modified Technologies

- AgBioWorld: www.agbioworld.org
- Biotechnology Industry Organization: www.bio.org

Organic

- National Sustainable Agriculture Information Service: www.attra.ncat.org
- Organic Trade Association: www.ota.org

Mahalo!

- Ms. Lilly Bloom Domingo, whose patience and guidance brought growers together to discuss these important issues.
- Hawaii Department of Agriculture and Ms. Carol Okada, for providing the meeting site as well as funding this valuable process.
- Hawaii Rural Economic Transition Assistance Program and Ms. Susan Matsushima, for the funding that made this informational brochure possible.

"Oftentimes policymakers, particularly state agricultural officials, are challenged to "pick sides" among GE, conventional, and organic production methods. In reality, however, all of these production methods provide key opportunities for U.S. farmers and are critical to the long-term viability of our rural communities. In fact, the rapid adoption rates in the U.S. of both organic and GE production methods over the past decade could suggest that some synergy does exist...at the macro level, coexistence between organic, conventional, and GE crops is taking place."

The National Association of State Department of Agriculture (NASDA) and the PewInitiative on Food and Biotechnology

Hawaii Farm Bureau
FEDERATION

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"All for one... one for a

Remember that famous line from The Three Musketeers? The story is set in 17th century France, but the underlying message is universal: success comes from working together.

In agriculture, this message is more important today than ever. We all want agriculture to succeed in Hawaii. The only way to make it so is by working together – with mutual respect and honesty – to overcome our challenges and strengthen our roots.

It was in that spirit that the Hawaii Farm Bureau Federation, at the request of the 2005 Hawaii State Legislature, organized a series of important meetings involving organic, conventional and biotech farmers in Hawaii.

The group defined agricultural practices that benefit our economy, environment and community while mitigating negative consequences. They identified areas of common ground that must be addressed so the industry can forge a strong voice for agriculture and work together to preserve and develop Hawaii's ag industry.

After months of hard work and dialogue, the group provided a report that identified preliminary Best Management Practices (BMPs) for successful coexistence of our industry. Highlights of the report are included here for your information, and better still, for your active participation.

Hawaii's ag industry is wonderfully diverse, ranging from sizable plantations to small family farms, cutting-edge research to crops with ancient cultural roots, traditional produce to tasty new hybrids, flowers, cattle, dairy, eggs. It is our diversity that gives us strength, and our commitment to cooperation that will let us flourish.

Aloha,
Dean Okimoto, President
Hawaii Farm Bureau Federation

Highlights:

Coexistence of Organic, Biotechnology & Conventional Farming Methods

Subject areas discussed by the Coexistence Group:

- Maintaining and securing seed supply
- Biological drift management
- Chemical contamination

Common themes that arose from the discussions:

- Communication between stakeholders is critical.
- Grower-to-grower dialogue and discussion of planting intentions can mitigate risk and possible confrontation.
- Effective educational outlets and resources are needed for growers, and may benefit the larger community as well.

Agreed-upon framework to guide Best Management Practices

- The achievement of a balance wherein farmers may engage in any farming practice or farming culture with minimal incursion, influence or detriment to and from other farming practices;
- The establis methodolog and solutior balance;
- The recogni farming cult equal oppo legislation, enhances th
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#11

Emily I. Naoele
Council Member

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MEMORANDUM

To: The Honorable Rep. Clift Tsuji, Chair
And Members of the House Agriculture Committee

From: The Honorable Councilmember Emily I. Naeole
County of Hawaii

Date: March 17, 2008

Subject: Support for SB 958

I strongly support S.B. 958 S.D.1 H.D.1 regarding a moratorium on GMO taro based on my cultural beliefs. My native people and others do not want the taro to be tampered with.

The Hawaii County Council passed a resolution in support of S.B. 958 S.D.1 H.D.1 to impose a ten-year moratorium on developing, testing, propagating, cultivating, growing, and raising genetically modified taro in the State of Hawaii. At the same time, the Hawaii County Council also passed a resolution to temporarily prohibit the growing of genetically modified coffee for a period of five years.

When something has no problem, leave it alone.

EIN/dg

#14

Personal Testimony Presented before the
House Committee on Agriculture
March 19, 2008
at 9:00 a.m.
by
Dr. Andrew G. Hashimoto

SB 958, SD1, HD1, Relating to Genetically Modified Organisms

Chair Tsuji, Vice Chair Brower, and Members of the Committee:

My name is Andrew Hashimoto, and I serve as Dean of the UH Mānoa College of Tropical Agriculture and Human Resources (CTAHR). I am pleased to provide personal testimony on Senate Bill 958, SD1, HD1, which proposes a ten-year moratorium on developing, testing, propagating, cultivating, growing, and raising genetically engineered (GE) taro. This testimony is presented from the perspective of the dean of CTAHR and an ex-officio member of the Board of Agriculture. It does not represent the position of the University of Hawai'i or of CTAHR.

I oppose SB 958, SD1, HD1.

CTAHR recognizes and respects the cultural significance of Hawaiian taro. CTAHR scientists are not conducting genetic engineering research on Hawaiian taro, and CTAHR has agreed not to pursue research to genetically engineer Hawaiian taro without first obtaining community input on a case-by-case basis.

The broad moratorium proposed in SB 958, SD1, HD1 applies to all taro varieties, not just Hawaiian taro. In Hawai'i about 30 percent of the taro crop is lost each year to taro leaf blight alone, and crop losses during a recent leaf blight epidemic in Samoa topped 90 percent. The moratorium would halt ongoing research to assess whether the introduction of disease resistance genes from rice, wheat, and grape into a Chinese taro variety, 'Bun Long', will improve its resistance to fungal pathogens that cause diseases such as taro leaf blight. This research may shed light on mechanisms of disease resistance in taro and offer future benefits to taro farmers. CTAHR has no plans to field test this variety in Hawai'i. Since there is no genetically engineered Hawaiian taro and no plans to field-test genetically engineered non-Hawaiian taro, this moratorium is attempting to prohibit a hypothetical future threat while at the same time stopping research that can address existing threats to taro.

There is broad consensus that Hawaiian taro faces many threats. Hawaiian taro has experienced steep declines in crop cultivar biodiversity—from about 300 named varieties before Western contact to fewer than 70 today—and is currently under threat from diseases and pests such as taro leaf blight, taro pocket rot, apple snails, aphids, and root-knot nematodes. Invasive species pose constant challenges to Hawai'i's agriculture and environment. The continual inflow of new invasive species is

unpredictable and can have far-reaching effects. The current situation with indigenous wili wili (*Erythrina sandwiciensis*) trees being decimated by an invasive gall-wasp species is a distressing example. Taro diseases and pests that may soon reach our shores include the devastating viral disease Alomae-Bobone and the taro beetle currently moving through the South Pacific.

During the past 60 years, taro yields in Hawai'i plummeted by nearly 75 percent, from 14 million pounds in 1948 to 3.6 million in 2005. Between 1900 and 2006, Hawai'i's taro acreage shrank by more than 70 percent, from 1,300 acres to 360 acres. Pest and disease pressures, rising costs, lack of access to quality water and land resources, low wholesale prices, and cheap imports all contribute to declining taro yields and a decrease in the number of families engaged in taro farming.

An important step forward in protecting Hawaiian taro was the passage of SCR 206 in 2007, which requested the Hawai'i Department of Agriculture to develop a taro security and purity research program. As a result, HDOA has been participating in dialog with taro farmers from each island, the Hawaii Farm Bureau Federation, the Office of Hawaiian Affairs, and CTAHR. This dialog includes a diversity of opinions relating to GE taro, but there is much agreement on many aspects of taro protection and security. The parties engaged in this dialog feel that an important next step is to form a taro security and purity task force as described in SB 2915, SD2. This task force will guide policy and prioritize research, education, and preservation efforts to sustain taro farming in Hawai'i and help taro growers achieve greater economic viability.

The moratorium proposed in SB 958, SD1, HD1 would limit scientific inquiry and discourage the expansion of human knowledge, a fundamental mission of any research university. When cultural traditions and beliefs come into conflict with the pursuit of knowledge, the solution is not legislative action to prevent discovery and innovation. Rather, the answer to such disagreements is dialog as is being pursued under SCR 206, the search for common ground, and the forging of voluntary agreements, such as the commitment CTAHR has already made to refrain from the genetic engineering of Hawaiian taro. Passage of SB 958, SD1, HD1 would send an unfortunate message to agricultural researchers that they are not welcome in Hawai'i. This not only could discourage prospective UH faculty members but also could have a chilling effect on the state's seed industry, which has grown remarkably during recent years and now has an annual value exceeding $97 million.

In summary, the moratorium mandated by this bill targets a hypothetical, unsubstantiated, future threat by prohibiting research that can address existing threats to taro that are hurting farmers today. For this reason, I oppose SB958, SD1, HD1.

Thank you for the opportunity to testify.

#15

Testimony: Against SB 958 (10-year moratorium against genetically modified taro)

Committee: The House Agriculture Committee
Representative Clifton Tsuji, Chair
Representative Tom Brower, Vice-Chair

Date: Wednesday, March 19, 2008
Time: 9:00 AM

Name: My name is Dr. Susan C. Miyasaka. I am an Agronomist and Interim County Administrator, College of Tropical Agriculture & Human Resources, University of Hawaii – Manoa, but I am testifying today as a private citizen. I was the lead scientist in a now-completed research project to genetically engineer Chinese taro Bun long for improved disease resistance. I was born and raised in Hawaii. I grew up eating laulau and poi, and I respect all the diverse cultures found in Hawaii.

Reasons to vote against SB 958:
1. Research to improve disease resistance of taro using all available technologies is needed:

Senate Bill 958 would unnecessarily restrict research to improve disease resistance of taro in Hawaii. This bill states "Over 300 kalo varieties may have existed at the time of the arrival of European explorers. Today, there are approximately 70 varieties of taro..." *Why* did this loss of taro varieties occur?

One major factor was probably invasive pests and diseases, such as Taro Leaf Blight that was introduced into Hawaii during the 1910s. This disease can result in crop losses up to 50% in Hawaii due to loss of leaf area. During the 1990s, when Taro Leaf Blight was introduced accidentally into Samoa, it decimated production of susceptible Samoan taro varieties, causing a 95% loss of yield.

My research team has found that insertion of an oxalate oxidase gene from wheat into Chinese taro Bun long resulted in genetically engineered (GE) lines that completely stopped the spread of Taro Leaf Blight under tissue-culture conditions. These are very promising results; however Senate Bill 958 would require that these promising transgenic lines be destroyed without allowing further testing. More information on this now-completed research project is attached.

In addition, new pests and diseases enter Hawaii all the time. It may just be a matter of time before the Alomae-Bobone viral complex found in the Solomon Islands reaches Hawaii. Hawaiian taro varieties were tested in the Solomon Islands and all were killed by this viral complex. The insect vector required to transmit this viral complex is found in Hawaii. Imagine what it would do to our taro production if it reaches Hawaii. It would be foolish to throw away any potential tools that could help to sustain taro production in Hawaii.

2. There is little risk that traditional Hawaiian taro varieties will lose their genetic purity due to GE Chinese taro.

Traditional Hawaiian taro varieties are grown by vegetative propagation ('hulis'). They are not grown from seed. It would be easy to maintain traditional taro varieties without a high risk of accidental transfer of disease-resistance genes from GE Chinese taro.

In order for transgenes to move from GE Chinese taro to Hawaiian taro varieties, Chinese taro Bun long would need to flower and produce healthy pollen (rare event in Hawaii), then the pollen would need to move via wind or insects to a female flower in a Hawaiian taro variety, then seed capable of growing into whole plants would need to develop (rare event – I have read or heard of only 3 incidences in 70 years in Hawaii). These two rare events would need to happen simultaneously with plants in close proximity, resulting in a risk that is almost nil. In order to produce conventional crosses of taro, breeders must hand-pollinate Hawaiian taro varieties to produce seed capable of growing into whole plants.

3. There is little risk of food safety problems or increased allergic reactions *if* GE Chinese taro is commercialized.

The federal government requires extensive testing that would identify and eliminate problems prior to commercialization. I am not an expert in food safety of GE crops; I defer to the experts. "It is the position of the American Dietetic Association that agricultural and food biotechnology techniques can enhance the quality, safety, nutritional value, and variety of food available for human consumption and increase the efficiency of food production, food processing, food distribution, and environmental and waste management. The American Dietetic Association encourages the government, food manufacturers, food commodity groups, and qualified food and nutrition experts to work together to inform consumers about this new technology and encourage the availability of these products in the marketplace."

Based on scientific evidence, I believe that it is possible to have a win-win situation here. Allow pro-active research using all available technologies including biotechnology on Chinese taro Bun long to ensure the sustainability of taro production in Hawaii. As a compromise, place a 10-year moratorium against genetic engineering of Hawaiian taro varieties (but not all taro varieties).

Update on Genetic Engineering of Chinese Taro (variety Bun long) for Increased Disease Resistance

Susan C. Miyasaka

Dec. 14, 2006

Why utilize genetic engineering (GE) of taro to increase disease resistance?

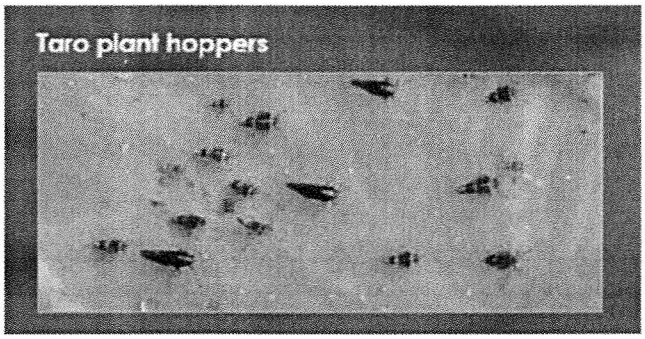
Conventional breeding of taro is being conducted at the University of Hawaii, and new hybrids have been developed with increased resistance to *Phytophthora* leaf blight. However, under weather conditions suitable for this disease organism, this resistance can break down. The taro variety shown above with leaf blight is one of the new hybrids conventionally bred for greater disease resistance.

Genetic engineering offers the possibility of increased disease resistance beyond the level found within the taro germplasm. And, the taro variety remains the same genetically except for the few new genes engineered into it.

The greatest success of genetic engineering of crops for increased disease resistance has been to improve viral disease resistance in plant species without any known natural resistance. For example, genetic engineering of papaya for resistance to *Papaya ringspot virus* has helped to save the papaya industry in Hawaii.

The Alomae-Bobone viral complex is found in the Solomon Islands today, where it has wiped out 96% of the native taro varieties there and decreased taro production by 95%. Hawaiian taro varieties were tested in the Solomon Islands and all were found to be susceptible to this virus complex[1].The insect vector required to transmit this virus complex is found in Hawaii. Imagine if that virus reaches Hawaii - what would it do to our taro production?

Alomae, a lethal viral disease of taro, is spread by taro planthoppers.



[1] S. Pacific Commission., 1978, Advisory Leaflet.

In the Solomon Islands, "it is by no means certain that the crop [taro] can be reinstated to its former abundance and usage. Its day may have gone forever, as has happened in many parts of coastal Melanesia."[2] Could this viral disease decimate taro production in Hawaii in the future?

Is the movement of genes across species unnatural?

No. Conventional breeding of plants and animals have moved genes across species for specific purposes, such as increased hardiness. For example, mules are the offspring of a female horse and a male donkey. And triticale is a hybrid of wheat and rye. In addition, all organisms, including humans, carry genes inserted from different species. For example, all humans carry genes that have been incorporated from viral infections.

The bacterium *Agrobacterium tumefasciens* transfers its DNA (genetic material) into woody or herbaceous plants and causes crown gall disease. In our project, we are utilizing this naturally occurring bacterium to transfer disease resistance genes into Chinese taro.

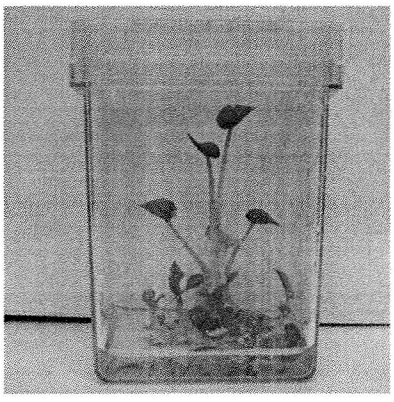
What is the progress of our project on genetic engineering of Chinese taro to increase disease resistance?

Three disease resistance genes have been transferred into Chinese taro variety Bun long:

1. Oxalate oxidase gene from wheat;
2. Chitinase gene from rice; and
3. Stilbene synthase gene from grapevine.

Each disease-resistance gene was transferred separately into callus (undifferentiated tissue) of variety Bun long in tissue-culture. Then, we manipulated plant hormones to produce shoots and then whole plants from the callus.

Taro calli (undifferentiated tissue)

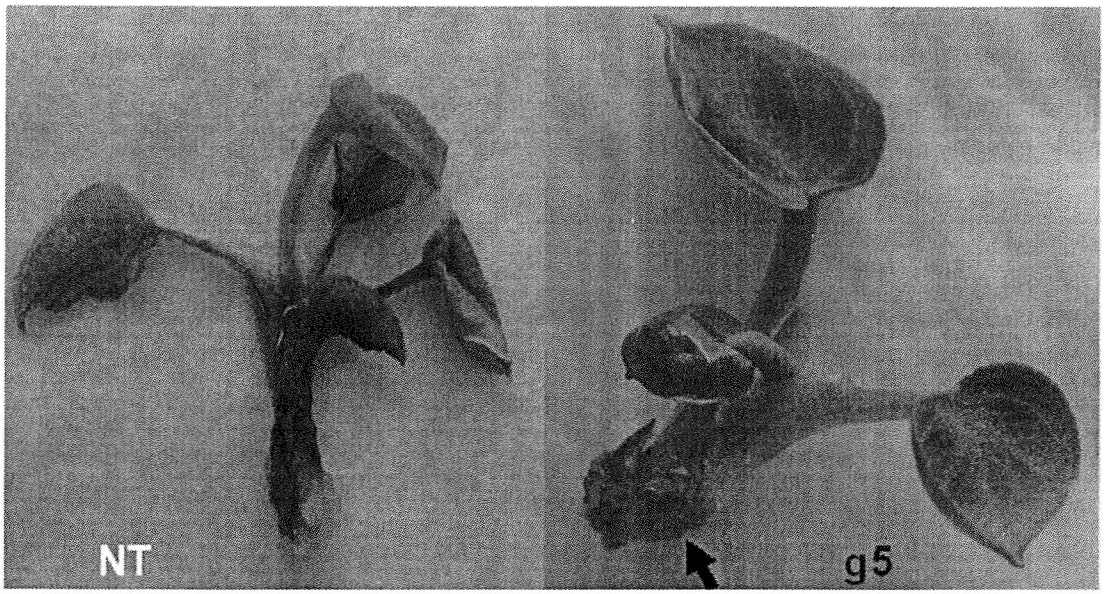


Taro plantlets in tissue-culture

[2] Kastom Gaden Association, Solomon Islands, 2005., People on the Edge, www.terracircle.org.au.

Do these disease resistance genes help Chinese taro resist pathogens?

Yes, in preliminary tests using small, tissue-cultured plants.



Untransformed Chinese taro (NT) infected with *Phytophthora colocasiae* at 12 days after inoculation. Note plant is almost dead.

Chinese taro transformed with oxalate oxidase gene (g5) shows complete arrest of *Phytophthora colocasiae* without any diseased lesions spreading to the leaves.

Chinese taro transformed with an oxalate oxidase gene completely arrested the spread of the pathogen *Phytophthora colocasiae* which is the organism responsible for leaf blight. In comparison, untransformed Chinese taro was almost dead at 12 days after inoculation with the pathogen. Other preliminary tests showed that Chinese taro transformed with an oxalate oxidase gene or a chitinase gene slowed the spread of the fungal pathogen *Sclerotium rolfsii* but the disease eventually killed the plants.

How do the products of these disease resistance genes work?

Oxalate oxidase catalyzes the breakdown of oxalate to produce hydrogen peroxide which inhibits growth of pathogens. Remember the hydrogen peroxide your mother used to cleanse your skinned knees?

Chitin is a hard, semitransparent material that's found in the cell walls of some fungi and molds. Chitinases degrade the chitin found in the cell wall of fungal pathogens, causing the fungi to die.

Stilbene synthase catalyzes the production of resveratrol, a compound that is found naturally in grapes and peanuts. Resveratrol stops the growth of fungal pathogens.

Could these disease-resistance genes accidentally move from GE Chinese taro?

Not likely. First, Chinese taro variety Bun long rarely flowers under the environmental conditions of Hawaii. Second, traditional Hawaiian taro varieties rarely

produce viable seed in Hawaii without human intervention. Taro breeders must manually move the pollen from one taro flower to another flower when its female part is ready because the insect that naturally pollinates taro flowers is not found here. Also, since taro is vegetatively propagated, it would be easy to maintain traditional taro varieties without a high risk of accidental transfer of disease-resistance genes from GE Chinese taro.

How might these disease-resistance genes affect the nutrition of taro?

The health risk of GE food is so low that after more than 10 years of experience, GE crops have been grown on more than a billion acres and been consumed by millions of humans without a single negative health issue[3]. The federal government requires intensive testing of genetically engineered crops for possible health and environmental hazards prior to approval.

The official position of the American Dietetic Association is that "Agricultural and food biotechnology can enhance the quality, safety, nutritional value, and variety of food available for human consumption and increase the efficiency of food production, food processing, and food distribution, and environmental and waste management"[4]. Did you know that if you eat cheese made in the United States, almost certainly you are eating the product of a genetically modified organism?

The anti-microbial compounds produced in GE Bun long should have little negative effect on its nutrition. For example, oxalate oxidase possibly might improve the digestibility of taro, because it breaks down oxalate, a known anti-nutritive compound that contributes to the 'itchiness' of taro. Chitinases should have little effect on humans when consumed, because chitins are found in true fungi and insects but not in plants or mammals. Resveratrol is found in the skin of red grapes and it might *improve* the nutrition of GE Chinese taro due to its anti-cancer, anti-viral, and anti-inflammatory effects. Of course, prior to any potential commercialization of GE Chinese taro, federal government regulations require intensive food safety tests.

What are the plans for GE Chinese taro when this project terminates?

The early results for increased disease resistance of GE Chinese taro appear promising, but much more research is needed. Obviously, researchers cannot state that GE Chinese taro is more disease resistant without testing plants in the greenhouse and ultimately in the field. In addition, the federal government would require tests of GE Chinese taro for food safety and environmental concerns prior to commercialization.

This federally funded project on genetic engineering of Chinese taro for increased hardiness will run out of funds in early 2007. As a result of the current controversy about genetic engineering and taro, it isn't likely that future funding will be available without support from the taro industry and/or consumers in Hawaii. Without further funding, the GE Chinese taro lines either must be discarded or sent to other cooperators in the world who are willing to conduct further tests. We will lose the opportunity in Hawaii to test these promising lines for increased disease resistance.

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[3] International Service for the Acquisition of Agri-Biotech Applications, 2006, Brief No. 34-2005.
[4] Journal of the American Dietetic Association, Feb. 2006, p. 285-293.

This brief summary presents the scientific facts about potential benefits such as increased hardiness of GE Chinese taro and an evaluation of possible risks. You, as taro consumers, need to weigh the possible risks against potential benefits of GE Chinese taro. Ask yourselves what risks are acceptable to ensure that taro is here for future generations to enjoy?

#16

Hawaii Agriculture Research Center

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TESTIMONY BEFORE THE HOUSE COMMITTEE ON AGRICULTURE

SENATE BILL 958 SD1 HD1

RELATING TO GENETICALLY MODIFIED ORGANISMS

March 19, 2008

Chair Tsuji and Members of the Committee:

Stephanie Whalen, Executive Director of the Hawaii Agriculture Research Center (HARC) asked me to provide these comments.

I deeply regret that I cannot be here in person today but feel it is important to be represented as I have been a party to this discussion on genetically engineered materials since it first began in the late 1980s. HARC is having its regularly scheduled board meeting this morning.

HARC strongly OPPOSES AS UNNECESSARY Senate Bill 958 SD1 HD1, Relating to Genetically Modified Organisms which proposes a 10-year moratorium on genetically modified taro in the state. The research community has already agreed to limit research in this area with respect to Hawaiian taro **but most significant** is that the process to commercialize an engineered plant requires grower commitment and involvement.

First, with all due respect to the Native Hawaiian Culture to which my children belong, there is no rational connection between section 1 of this bill which discusses the culture and spiritual values of Hawaiians and its purpose of imposing a moratorium on genetic engineering other than the clever manipulation of the opponents of this technology. It is unfortunate that these groups are using indigenous people with agendas of their own throughout the world to stir up the emotional appeal necessary to carry the opponent's agenda forward.

Who were those entities at the table in the past having to discuss this issue on its technical merits and whom have been slowly losing ground to facts? They are in the wings continuing to provide outdated information while hiding behind the emotional appeal of other groups.

I urge you to focus on the facts that support the position that a moratorium is not necessary and not the emotional elements that have been aroused.

Current facts:

1. The research community has already made commitments to the Hawaiian community to continue conversations with respect to indigenous material.
2. Commercialization is a non issue without a willing industry. There is no return on investment of a technology for a hand full of growers. Assume the research community has developed a new plant. Before this plant becomes commercially available an industry has to be willing to go through any intellectual property licensing process if applicable and any applicable regulatory process before a new plant will progress further. This is what is commonly referred to as technology transfer: from the research community to the user community, and is applicable to all new products developed, not just agriculture. It is not uncommon for products for any economic sector to be dropped at this stage. The reason for this is there needs to be some compelling economic outcome associated with a product to justify its adoption. The present national agricultural grant system focuses on basic research of wide and/or regional applicability and not on the commercialization of individual products. Private sector involvement and resources are required for commercialization. The point here is that just because there is research on a particular product does not mean that it will end up as a commercial product. This is as true for an agriculture product as well as for any other product in our society. For Hawaii for genetically modified plants, the affected industry sector will have to step up to the plate just like the papaya industry did. If they do not step forward to participate in the later stages of product development, intellectual property right's acquisition and deregulation, there will be no commercial product. And interestingly enough, it is this legislative body that would have the final say as it would have to provide the funding, just like it did for papaya, to cover the costs of commercialization. These costs have risen dramatically as this controversy continues making it very difficult for any but the large scale crops to use this technology.

Contrary to the perception promoted by opponents this technology is not proliferating in specialty crops found in Hawaii, California, Oregon, Washington, Arizona, Florida, etc. because of the uncertainty in the requirements of the regulatory process (currently case by case/crop by crop and event by event) and public acceptance: both embroiled in political and emotional struggles such as this one. Quick acceptance of some commercialized large scale commodities does not equal availability of lots of different engineered small scale crop products. As has occurred with other innovative tools in the history of agriculture, economics and acceptance, not availabilit,y will determine which crops adopt this technology. Since the earliest agricultural innovation in 1701 AD, advances in this area have been controversial. The current experience is no different.

And lastly on a technical note, this bill defines Recombinant DNA technology specific to the recent and more precise genetic manipulation technology of genetic engineering while allowing a prior less precise and certainly shot gun method of nondirected mutagenesis. You might ask what is that? Prior to being able to take specific genes with known function(genetic engineering) breeders subjected plant seeds to either harsh chemicals or irradiation to force changes that may or may not ever change due to the natural radiation background we live in or the mistakes made when cells divide. This technology is specifically allowed. That means by the language of this

bill the breeders can subject taro to radiation or harsh chemicals to make improvements. Has that been explained to all the advocates of this bill? Is that in all the electronic messaging and requests for testimony in support? I think not. Where does this definition come from, the Hawaiians? I think not; but it can be found in all the definitions provided throughout the years by the opponents of this technology.

Why do they allow this technology? Maybe, because so much of the produce in the marketplace today was developed using that technology! This includes wheat, rice, barley, cotton, peanuts, sesame, sunflowers, beans, date palm, apple, potato, sweet potato, peas, pineapple, pears, peppermint, grapefruit, bananas, cassava, sorghum, and many ornamentals. How would the Europeans, where fears were first generated and embraced, respond to this knowledge!

Maybe because that might upset all food growers irrespective of the process they use, conventional, biotech, or organic, and not allow the differentiation that is being promoted! Solution carve out a place for this technology in the definition since the vast majority of the public does not understand any of the technologies being used today and won't question it. Others who do understand won't challenge it since they do not want to spread the fear mongering any further.

Maybe because there is really a different agenda than saving taro!

Lastly, if what is claimed in this measure and proposed to be needed, then where is the logic for a 10-year moratorium? Will the culture and spiritual positions change in 10 years?

HARC, a non-profit scientific organization, cannot support this proposed legislation because the system for product development and commercialization as it already exists addresses the concerns, and the research community has agreed to work with the industry making this proposed legislation unnecessary.

The only thing that passing this measure will accomplish is providing a win to major opponents to this technology. It will not help the Hawaiian taro growers or the Hawaiian community at all.

Thank you for this opportunity to provide comments for your consideration.

#17

From: Pono Kealoha Jr. [
Sent: Friday, March 14, 2008 2:15 PM
To: sb958inpersontaro
Subject: RELATING TO GENETICALLY MODIFIED ORGANISMS

AGRtestimony@capitol.hawaii.gov

Against GMO

GMO has been cited as more than possible to endanger the health of people and on nature. It has been stated that "no scientific studies exist that guarantee that genetically modified crops won't have negative effects on human health and on nature."
This is a worldwide concern and many countries have banned GMO products and the growing of it within their country. What affects us here in Hawaii is the same thing. The idea of GMO companies tampering with our traditional food and plants are unconcionable and seditious. They have no right to do it or claim ownership of our taro nor do they have our permission to experiment with it in our country.
If you do not pass this moratorium to safeguard our important food source; then one can only assume you disrespect us and plan to intentionally cause us harm and create a dangerous situation. It can also be assumed that you are in conflict of interest for not protecting your constituents while catering to GMO lobbyists for pecuniary reasons. This would be discernable by investigating your campaign donors.
It stands to reason that anything as controversial as this would demand a moratorium to further investigate the rammifications of such irresponsible activity done by GMO corporations, especially with a troublesome history and shady reputation. Therefore I urge you to vote for SB 958 and place a moratorium on experimenting with our taro. Let's leave it to our local farmers and not the infamous GMO corporations to develop our taro.
Mahalo,
Pono K.McNeil

taro research and education programs. While we oppose this legislation, we strongly support efforts such as SCR 206 which would convene stakeholders in a dialogue to arrive at real solutions for Hawaiian Taro cultivation. This discussion is critical because risks of devastation to taro will require tools to preserve the future of this crop.

Science and technology hold the key to the future of our state. Not only will careers in these areas provide our children with living wage jobs, science and technology hold the solutions for preserving our environment and innovating solutions for healthcare. The passage of this bill sends a very clear message that Hawaii is an anti-science state at the exact moment when it is critical for us to support the rich potential for innovation that is the key for sustaining our future.

We urge the legislature to reject this bill.

Thank you for the opportunity to testify.

Lisa Gibson

#19

March 9, 2008

TO: Legislators

FROM:
Hector Valenzuela, Ph.D.

hectoruh@yahoo.com
http://www2.hawaii.edu/~hector/

RE: TESTIMONY- IN SUPPORT
SB958- 10 Year Moratorium on the Genetic Modification of Taro

I write this testimony in support of bill SB958, which supports a 10 Year Moratorium on the Genetic Modification of Taro. I have worked as a UH-Manoa Professor and Crop Production Specialist for 17 years, but write this on a personal capacity. My field research to support commercial farmers is in the area of sustainable agriculture, organic farming, and crop ecology. As someone who supports sustainability and environmental protection I have become increasingly concerned about the open-field plantings of GMO crops in Hawaii. In general I have concerns about the health risks to humans, about environmental risks, and also about the long-term cultural and socioeconomic impacts on rural communities in Hawaii.

Statements by proponents on safety is not backed by data

While proponents of GMO crop technology make strong statements about the safety of these crops, they actually show little or no data to support their statements. Their statements are reminiscent of those made by tobacco researchers and industry to claim that tobacco was non-addictive. To date, relatively few independent studies, often cited as a 'handful', have been conducted to evaluate the environmental and human health-risk from planting and consuming GM crops. Why is it that no environmental impact nor health studies have been conducted in Hawaii, even though we have been planting GM crops for about 15 years? For instance, a recent permit application by Monsanto for the planting of a new GM corn variety had NO citations of safety or environmental studies that were conducted in Hawaii, simply because none have been conducted (EPA, Experimental Use Permit Amendment Application 524-EUP-97, Genetic Modified Corn Testing).

GM crop proponents also repeatedly state that GM crops are well regulated by three federal agencies. However the regulatory system in the US (especially the FDA which deals with health issues) has been declared a "broken system" by the New York Times, the Wall Street Journal and Nature Magazine (the preeminent scientific journal), and

even by its own internal audits. The federal courts have also ruled several times in the past few years that GM crop regulators have failed to properly enforce the law to protect the environment and human health, with regard to their oversight of GM crops. How then, can citizens trust regulatory agencies that are understaffed, under funded, and laden from top to bottom with former industry insiders?

Proponents also fail to indicate that most approved GM crops grown today are actually DE-regulated (which precludes the need for environmental and safety studies), using the non-scientific determination of "substantial equivalence." The terminology of equivalence was proposed by the biotech industry, and approved by industry-friendly regulators during the business-friendly administration of president Reagan. In my view the term of substantial equivalence doesn't pass scientific scrutiny and further believe that it was established purposefully to allow GM crops to be planted and introduced into the global food market without the need for independent safety and environmental studies.

Concerns about GM taro

I support a 10-year moratorium on GM taro research in Hawaii for the following reasons:

Academic Freedom does not justify GM taro research

Academic Freedom is cited by researchers as a justification for GM taro research, but this reasoning is invalid. UH is a land grant university and its mission is to conduct research to support small family farms and diversified agriculture in the state. Research should be considered on its merit, based on whether it can help our state. Because state and federal funding is so limited, funding should be funneled to high priority issues. The taro industry, and taro farmers in the state have unequivocally opposed the need for GM taro varieties. Top-down research models (i.e. doing research not needed nor requested by farmers) have long been a recipe for failure, in the long history of agricultural development.

Another question is what are the odds of success with the GM taro project. The University has worked to genetically engineer about 15-20 crops over the past 15 years, costing the tax-payers millions of dollars; however most of these projects didn't lead to any new varieties nor benefits to the ag industry. A UH researcher even worked for over 10 years to genetically engineer anthuriums, a relative of taro, at a cost of over $1 million dollars, but no variety was ever released because of unexpected side-effects. The millions of dollars that were spent by UH-CTAHR over the past 15 years, at one time led

by a staff of over 60-70 highly-paid researchers, have essentially led to no benefits for the agricultural industries in the state.

The only GM variety that has been release by the UH GM program, the GM papaya was shut down by export markets and the industry has been in an economic decline since the GM variety was introduced. A negative, but expected result, after the release of the GM papaya was industry consolidation: scores of small farmers went out of business, but some larger farmers became bigger and gained a larger market-share. This type of industry consolidation, when experienced in other parts of the country, has resulted in the economic and social decline of rural communities.

This bring the question of opportunity-cost. The question arises of whether the millions of dollars that have been spent on GMO research at UH could have been spent on more applied research to help farmers deal with many of their top priority day-to-day problems. As an applied field researcher I argue that many other avenues of research exist that can solve many of the problems that our farmers face today- such as seeking alternative environmentally friendly techniques to manage pests or how to better apply fertilizers. However, over the past 15 years, the monies that could have been used to assist our farmers, were diverted to fund a large number of failed GMO projects.

After so many failures, and after so much money invested in failed GMO projects, it is not unreasonable to place a moratorium on further GM taro research, until more is learned about this new technology. Because there are also important cultural issues of biopiracy to the indigenous people of Hawaii and the Pacific Region, and because many questions still exist about potential environmental and human health risks from the planting of GM crops—citizens and farmers are further justified to call for a 10 year moratorium on GM taro research.

I thus encourage you to support bill SB958, which supports a 10 Year Moratorium on the Genetic Modification of Taro.

Sincerely,

Hector Valenzuela

http://www2.hawaii.edu/~hector/

Professional Bio:

Hector Valenzuela, Ph.D.
http://www2.hawaii.edu/~hector/
hector@hawaii.edu

Dr. Hector Valenzuela a full Professor and Vegetable Crops Specialist at the University of Hawaii-Manoa received his Ph.D. from the University of Florida. Dr. Valenzuela has conducted applied agroecology research for over 20 years in support of commercial farmers, organic farming, and sustainable agriculture. He has authored over 350 technical and educational publications, has conducted over 200 field research trials with over 60 different vegetable and cover crop species, has organized over 60 field days and workshops for farmers in Hawaii and the Pacific Region, and has participated in 13 international assignments. A staunch supporter of organic and sustainable farming in Hawaii, Dr. Valenzuela established the first long-term organic research plots in Hawaii in 1993, and established the first Web sites to assist vegetable farmers (1998) and organic farmers (2005) in the Pacific Region.

#20

SB958- Testimony in Support
House Agriculture Committee, Auditorium, March 19, 2008, 9am

Clare Loprinzi, CPM- *Kumu Palekeiki*
Holualoa, Hawaii
Ehunuikaimalino Immersion School, South Kona

No GMO Taro

Aloha my name is Clare Loprinzi. My family and I live in Holualoa on the island of Hawai'i. I am a teacher at Ehunuikaimalino, an immersion school in South Kona where I am known as Kumu Palekeiki (midwife). I have worked as a teacher and midwife for over thirty years. I come from many generations of Sicilian farmers and when I moved to Hawai'i it was of utmost importance that I respect the 'aina and ways of the people here. We incorporated the traditional plants of the island into our diet and life. Our acre garden grows many varieties of kalo, besides fruits and vegetables. Interspersed amongst the plants we have native teas and herbal medicines. This balance creates a healthy garden, which is shared with na keiki of Ehunuikaimalino and the community at large. This creates balance in our lives and others. Kalo is one of our staples. Teaching health and exercise is part of my life, learning more is my passion.

Presently I am finishing up a master's certificate through JABSOM in the maternal/child masters program. With 50% of Hawaiian people dying from diabetes and heart disease, healthcare providers must do all we can to work with exercise and diet. Hawaiian people have to fight for the kalo to stay as it is, as do I. This is their life, their connection to their Creator and to the health of their people. Kalo is perfect in and of itself and for any human to think they can change it is not only culturally insensitive, but arrogant. It is simple; changing kalo changes the people. As a midwife, I work with many Hawaiian families in natural birth. Kalo is an important food for pregnancy, breastfeeding and one of the child's first foods. It needs to remain pure. Most of my master's work has focused on birth and na keiki. With some of the highest maternal and fetal mortality rates in the industrialized world, na ohana of Hawai'i needs to become healthier. It is a fact that 50% of na keiki of Hawai'i are obese. This needs to change. Although most of my portfolio for this MCH program is filled with mother/keiki issues, legislative issues are also included. Although I have written testimonies on numerous maternal and childcare issues, SB958 is the most important bill on the floor. It is the mother of all the other bills that concern the welfare of the ohana. Being that we are here in the island, we should all remember this importance of kalo. All the rest of the healthcare issues branch out like keiki from the mama kalo.

The health of na keiki and ohana is of utmost importance to me and the na kumu at Ehunuikaimalino. It is so important that kalo is grown in gardens all over the school. Every kumu from Po'o Kumu (the principal), Hope Po'o Kumu (vice principal) down to every keiki wrote a testimony for this bill. The artwork and writing from this Hawaiian School touches your na'au. I hope when this bill is passed that you have a moment to sit back, take a big breathe and read what na keiki wrote and drew.

With all respect, pass this bill and let the people move on to better health.

O me ka ha'aha'a
Clare Loprinzi, CPM

#21

Dr. Harold Keyser
Personal Testimony

Position: Oppose

SB 958 SD1 HD1, GMO Taro Bill
Wednesday, March 19, 2008
Capital Auditorium - 9:00 am

Rep. Clift Tsuji, House Agriculture Committee Chair
Rep. Tom Brower, House Agriculture Committee Vice Chair

Dear Rep. Tsuji and Members of the House Agriculture 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 958 SD1 HD1. This testimony does not represent the official position of the University of Hawai'i or CTAHR.

I respectfully oppose bill SB958 because it is wrong for many reasons, and because it could put taro in our state at greater risk than it is at the present.

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
- Hybrid taro developed with Asian lines for increased disease resistance and increased yields
- Genetically engineered 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 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.

The mere presence of controversy should not cause government to overreact. An important role of science is to help society discern fantasy from reality. On the issue of a moratorium on genetic modification research of taro, we need much more education and more time to carry this out, rather than restrictive legislation. In a show of respect to the concerns of some our stakeholders, CTAHR imposed a voluntary moratorium on genetic engineering of Hawaiian Taro while education and discussions take place with stakeholders. This moratorium remains in place, and is approaching its third year. This should continue to be the mechanism for addressing controversy in this area, not restrictive legislation that would mandate throwing away for 10 years a value tool that could be needed at any time.

The need for education on this subject is substantial, and further complicated by misinformation promulgated by those opposed to biotechnology. This misinformation distracts from the multitude of benefits and the minimal risks from this technology. Biotechnology has given society an amazing array of beneficial products, including (1) insulin, and medicines that fight cervical and other cancers, heart attacks, strokes, cystic fibrosis, anemia, growth failure in children, hemophilia, hepatitis B, and childhood diseases; and (2) enzymes produced using genetic engineering that are used to make cheese, keep bread fresh, produce fruit juices, wines, treat fabric for blue jeans, and de-inking newsprint for recycling, and (3) crops that resist destructive viruses and insects. The perfect safety record of biotech crops and foods combined with the well documented benefits can only lead to the conclusion that the greatest risk of this technology is not to use it. Yet, that is what SB 958 wants to mandate.

Biotechnology opponents commonly claim that moving DNA and genes between species is unnatural. This vacuous claim evaporates when the overwhelming scientific evidence is considered – viruses and bacteria have been moving DNA and even whole genes between many organisms representing many species since life began on earth. We now can detect this evidence as we find the footprint of viral DNA in the genome of virtually every organism we look at, including humans and other animals, plants, and microorganisms. Such movement across species boundaries is natural and has occurred throughout evolution of life on earth; the reason it can happen lies in the marvelous fact that all life has a common origin, we are all related, we all share common ancestors. And our common origin is revealed by DNA, which is the same whether it comes from an amoeba or a 40 ton humpback whale. That is why the human gene for insulin works when inserted into laboratory bacteria. Science has learned from nature the universal genetic code, and how DNA is transferred between species, and then applied this knowledge to great benefit, examples of which I gave previously.

The college had the foresight to conduct research on papaya ring spot virus using genetic engineering before the disease arrived in full force on the Big Island; had a 10-year moratorium been in place there would very likely be no commercial production of papaya

on the Big Island or Oahu. This particular method has also provided viral disease resistance in yellow squash, zucchini, and potatoes. It would be the obvious method to investigate should the most significant threat to taro reach Hawaii – the Alomae-Bobone viral complex currently found in the Solomon Islands and Papua New Guinea. Knowing that this threat is on the horizon in the Pacific region, that it is devastating taro production in the ancestral homeland of taro with much greater genetic diversity, and knowing that Hawaiian varieties did not survive exposure to the virus - knowing this, we should certainly not enact legislation that could cripple our ability to address such new challenges.

The fourth paragraph in section one of the bill states that the purpose "is to recognize the importance of the kalo in the heritage of the State by creating a ten-year moratorium on developing, testing, propagating, cultivating, raising, and growing of genetically modified taro in the State of Hawaii." The premise that the importance of kalo is recognized through elimination for 10 years the use of a powerful and effective, modern method of plant breeding is profoundly mistaken. Why the equivalent of a prison sentence for a plant breeding technique? Because kalo is so important for cultural, historical, and economic reasons, researchers should have at their disposal all available tools to meet current and future challenges.

We need to recognize that no Hawaiian taro has been genetically engineered. The Chinese taro "bun long" has been engineered. Since there is no evidence they hybridize, and since the engineered plants have not even been beyond a greenhouse, the allegations of risks to existing Hawaiian taro remain hypothetical and negligible at best. The existence of Alomae is not hypothetical, nor is the ability of invasive species, including diseases, to reach our shores as we know all too well.

I support the Kauai Taro Growers Association's position that restricting research that may be necessary is not a good thing. No one knows what the future brings---look at the unexpected devastation of the wiliwili trees. Our society would be ill-served by SB 958 legislation that restricts intellectual progress and academic freedom for the continued advancement of taro.

Your support of positive bills like SB 2915 Taro Security and Purity Task Force, and HB 3425 (research on apple snails) is needed. These are bills that will help the taro industry. SB 958 is divisive and is bad legislation. It's time it is stopped, and I encourage this committee to hold and defeat this bill.

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

#22

In Support SB958
House Committee on Agriculture, Clift Tsuji Chairman, March 19, 2008

GMO TARO—A TARO FARMER'S PERSPECTIVE

Jim Cain
Waipio Valley, Hawaii

Aloha, my name is Jim Cain, my family and I farm taro in Waipi'o Valley, island of Hawai'i. We also own and operate a family-run poi shop, King Laulau Brand Poi, where we process the taro we grow on our 6 acre farm, as well as taro we obtain from other farmers, providing poi for our Big Island community. I stand united with all the farmers of Waipi'o and strongly oppose the genetic modification of taro. My opposition to genetic engineering of taro is based on cultural, economic, and nutritional concerns.

The cultural concerns relating to the genetic manipulation of kalo cannot be overstated. Kalo's position as a high ranking family member in Hawaiian cosmology reflect deep rooted cultural values. These values, reinforced by kalo's role as a kinolau of Kane, show reverent respect for the natural world and kalo's ability to sustain and nourish people. These sacred family relationships can be traced back centuries to the very beginnings of Hawaiian culture, and every week when I deliver poi to my loyal customers, I am reminded of the importance of this ancestral food and its ability to nourish physically as well as spiritually. Genetic manipulation of haloa shows utter disrespect for Hawaiian culture. In addition, recent attempts to patent and own taro hybrids derived from Hawaiian cultivars of taro are a cultural violation of these precious gifts that have been handed down to us generation to generation and are a direct link to our past.

Economically, genetic modification poses several risks to taro farmers and the poi industry. In recent years, there have been efforts to hybridize new varieties of taro in an attempt to produce disease resistance and increased yields. Cultivars of taro have been brought to Hawai'i from many places in the taro growing world to hybridize with Hawaiian varieties. After showing some initial promise, extensive testing by poi processors has shown that these hybrids produce inferior quality poi. Also, foreign cultivars of taro such as Palauan have been introduced into lo'i all around the state. While high-yielding, these varieties produce a low quality poi. Farmers have been left with no market for their crop, which takes over a year to produce, as poi millers universally reject these inferior taros. Subsequently, the availability of huli of the preferred Hawaiian varieties has been reduced. This has created both short-term and long-term economic hardships for taro farmers and poi processors and has contributed to the recent shortage of poi.

Of primary concern is the very real danger of contamination. A genetically engineered taro huli will look identical to the original Hawaiian variety from which it is derived. Once released into the lo'i, either controlled or by accident, recall will be impossible. Should problems arise, the effects of this contamination would be devastating to our industry. A history of contamination of other food crops world-wide by GE varieties has proven that containment, despite the reassurances of the bio-tech industry, is impossible.

Another economic concern of taro farmers is the issue of patenting of taro varieties. The traditional system of sharing huli between farmers is a proven way of ensuring the availability of planting material. The introduction of GE taro would seriously disrupt the ability of farmers to share huli and reduce the availability of suitable planting material. Recent attempts by the University of Hawai'i to patent and sell huli to farmers is seen as an unacceptable precedent to make money off those who can least afford it. The bio-tech industry is not here for community service, but is predicated on the goal of controlling the incredibly profitable seed supply.

Nutritionally, poi has a world-wide reputation as a pure and healthy complex carbohydrate. There are no known allergies to poi, it is a food that can be assimilated by anyone. As a poi maker, I am honored to provide this nutritious food to babies whose parents use our poi as the first food to nourish their children, to elders who have been eating poi all their life, and to a wide range of people in between. Also, poi plays such an important role in celebrating families' life events such as baby lu'aus, graduations, weddings and funerals. A lu'au is not complete without poi on the table. Genetic engineering of taro consists of imposing genes from other plants such as rice and wheat into taro's DNA. The resulting changes could have untold effects on the hypo-allergenic qualities of taro and poi. When researchers are asked if they can guarantee the safety of their work, they honestly answer no. The dangers posed to the nutritional quality of this ancestral staff of life are completely unacceptable.

From my perspective as a Waipi'o taro farmer and poi processor, the disagreement over this issue is really a clash of values. University researchers value and are concerned about their perceived right to academic freedom. The bio-tech industry values and is concerned about their perceived right to precedence that restricts their rights to unregulated free-market economics. Waipi'o, where I come from, is a very traditional Hawaiian valley. The still intact protocols and values that have been handed down are based on the value of Kuleana—rights that are based in the concept of responsibility. While moving forward, it is important to remember our connection to the past. That is why, in Waipi'o, the titles that garner the most respect are not Dr. or Professor, but begin with Auntie or Uncle or Tutu. It is important to note that the UH researcher responsible for the GE research on taro has never even been to Waipi'o Valley. Technology is seen as a tool not as a guiding principle. Science can be a wonderful tool for advancement, but science without a conscience, without the guidance of the precautionary principle, can wreak havoc. There must be a balance. In other words, Go easy. Be respectful.

In these troubled times of global warming, resource depletion, and world-wide unrest, the buzz word in Hawai'i has become sustainability. Reducing our dependence on off-island petro-chemical control, and becoming self-sufficient in food production are of huge concern. The proven methods of producing taro and poi can be seen as a model for the future of sustainable agriculture in Hawai'i. Producing taro with little or no outside resources, and providing food for our local population is a practice that has a track record that is centuries old in Hawai'i and stretches back many thousands of years in the history of mankind. It is vitally important that we support farmers who are feeding our local population.

The decline of taro production can be seen as a mirror duplicating the problems of self-sufficient food production in Hawai'i. The problems are rooted in availability of land and water and re-elevating the job of farmer to a viable occupation and way of life. Claims made by the bio-tech industry of impending devastating diseases are seen as scare tactics. Any good farmer knows that the key to crop health is soil fertility and it is in this direction we should be focusing our policies and research efforts. These are not new concepts, but lessons handed down to us from our kupuna. We just need to listen.

There is nothing wrong with our Hawaiian taros. They were developed over centuries by some of the most respected farmers the world has ever known. The sad decline in the number of varieties of taro that was grown by our ancestors has nothing to do with disease, but lies in the fact that, over the last century, people have moved off the land and instead of growing their food, are now buying all their food. In the interest of Hawai'i's long term security we need to reverse this practice.

Support for the passage of SB958 that calls for a 10 year moratorium on the genetic engineering of taro in Hawai'i has swelled as people have become educated about this issue. The Hawaiian community, the taro farming community, and the poi eating community will continue to be passionately vocal in their efforts to protect Haloa. This will not go away because this is ohana. Precedence for the careful regulation of biotechnology has been established at every level of government world-wide, and it is important that the decision makers in Hawai'i educate themselves about the risks associated with this potentially dangerous technology.

In conclusion, I advise people that the best way to identify a taro farmer is to look at their feet. No can help, us taro farmers have ugly feet, it's an occupational hazard. So when someone claims to be speaking in the interest of the taro farmers, look at their feet. Look at who they represent. Please support our local farmers. Please malama Haloa.

Jim Cain, Waipi'o Valley

See Attachments:
-Petition in Support of SB958- from EVERY Taro Farming Family in Waipio Valley
-County of Hawai'i Resolution No. 462-08 Supporting SB958
-Letter from HPC Foods, dated November 12, 2007

The following petition contains the names of every taro farming family in Waipi'o Valley. Many of the families trace their ancestry deep in Waipi'o's past. This is a historical document. There are over 500 years of combined taro patch experience on the page, and is a direct link to knowledge that has been passed down from generation to generation for centuries. Please support the taro farmers. Please support SB958. Please malama Haloa!

I am a taro farmer from Waipi'o Valley, and I support SB958 which calls for a 10 year ban on genetic engineering of taro in the State of Hawai'i.

Kala Rau
Betty Kawashima
Suichi Kawashima
Gretchen Cain
Larry Miller
Malina McMorfe
Theodore K. Kaaekuahiwi
Rocky B. Lapina
Virginia Salazar
Bradford Mock Chew
Kaimal Lutzen
Kuulie Badua
Ben Badua
Kaiulani Pahia
Cecilio Rodrigues
J. I. Boulanger
Jim Cain
Byron Thomas
AKA Reucia
Dodie Thomas
DELTON Thomas
KAAI BATALONA
Boysen Loo
Alston Toko
Lynn Dehmer - Loo
Noah Campbell
Leo Lactaoen
Kelly Loo
Norma Loo

COUNTY OF HAWAI'I STATE OF HAWAI'I

RESOLUTION NO. 462 08

A RESOLUTION SUPPORTING S.B.958 S.D.1 H.D.1 TO IMPOSE A TEN-YEAR MORATORIUM ON DEVELOPING, TESTING, PROPAGATING, CULTIVATING, GROWING, AND RAISING OF GENETICALLY MODIFIED TARO IN THE STATE OF HAWAI'I.

WHEREAS, kalo (Colocasia esculenta), the Hawaiian word for taro, is a culturally significant plant to the kanaka maoli, Hawai'i's indigenous peoples; and

WHEREAS, today, there remain approximately 85 varieties of taro from the hundreds that were known in Hawai'i and, of these, the majority (69) are unique to the Hawaiian Islands due to the horticultural skills of native Hawaiian farmers; and

WHEREAS, the important cultural relationship between kalo and the kanaka maoli 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 of Hawai'i; and

WHEREAS, cross pollination of genetically modified taro would place an immeasurable threat on traditional varieties; and

WHEREAS, experimenting with the genetic engineering of this crop without thoroughly examining and evaluating the adverse effects of that process is careless and could very well have far-reaching, irreversible, and unintended consequences; and

WHEREAS, the purpose of S.B.958 S.D.1 H.D.1 is to recognize the importance of kalo in the heritage of the State by creating a ten-year moratorium on developing, testing, propagating, cultivating, growing, and raising of genetically modified taro in the State of Hawai'i; now, therefore,

BE IT RESOLVED BY THE COUNCIL OF THE COUNTY OF HAWAI'I that the Hawai'i State Legislature pass S.B.958 S.D.1 H.D.1 to impose a ten-year moratorium on developing, testing, propagating, cultivating, growing, and raising of genetically modified taro in the State of Hawai'i, and

BE IT FINALLY RESOLVED, that the County Clerk shall forward copies of this resolution to Mayor Harry Kim; Governor Linda Lingle; Sandra Kunimoto, Director, State Department of Agriculture; Andrew Hashimoto, Dean, U.H. Manoa C.T.A.H.R.; Dr. William Steiner, Dean, U.H. Hilo C.A.F.R.M.; and all members of the Hawai'i State Legislature.

Dated at Hilo, Hawai'i, this 24th day of January, 2008.

INTRODUCED BY:

COUNCIL MEMBER, COUNTY OF HAWAI'I

COUNTY COUNCIL
County of Hawai'i
Hilo, Hawai'i

I hereby certify that the foregoing RESOLUTION was by the vote indicated to the right hereof adopted by the COUNCIL of the County of Hawai'i on January 24, 2008.

ATTEST:

Casey Jarman
COUNTY CLERK

CHAIRMAN & PRESIDING OFFICER

ROLL CALL VOTE

	AYES	NOES	ABS	EX
FORD	X			
HIGA	X			
HOFFMANN	X			
IKEDA			X	
JACOBSON	X			
NAEOLE	X			
PILAGO	X			
YAGONG	X			
YOSHIMOTO	X			
	8	0	1	0

Reference: C-882/EMC-11

RESOLUTION NO. 462 08

HPC Foods, Ltd.

November 12, 2007

To All Taro Farmers:

Subject: Problem With New Taro Varieties

Recently, we have received many complaints from our regular Poi Customers about the Taro Brand Poi NOT TASTING RIGHT, COLOR PERIODICALLY TURNING BROWN and POI TURNING WATERY AS IT SOURS.

After performing a detailed study on the taro coming in from our growers, we have found that most of the quality problems are caused by growers sending the Palauan Taro often mixed with their regular Lehua (both Maui and Kauai varieties).

EFFECTIVE IMMEDIATELY DO NOT SHIP ANY PALAUAN TARO.

We have also found that the new taro Hybrids (Palehua, #6, #7 and #9) ARE NOT CONSISTENTLY PRODUCING the Quality Poi demanded by our customers.

Because the new hybrids do not improve the quality of our poi, hereafter, we strongly recommend that you DO NOT PLANT THE NEW HYBRIDS.

We will continue to accept the new hybrids already being grown, but to make sure we can still produce a quality poi product; we are using only a small amount in each batch of poi produced. In order to do this, we will REQUIRE ALL HYBRID TARO TO BE MARKED WITH A RED/YELLOW TAG on each bag. The agents will provide you with the special tags.

On the tag, we need to know the farmer's name, and what type of hybrid taro is being shipped.

We have tried to work with the new varieties. But, to insure that we are able to produce the High Quality Poi demanded by our customers, we recommend our farmers to continue to plant the proven Lehua (both Maui and Kauai) varieties.

Thank you for your cooperation.

Eric Enomoto
President

288 Libby Street, Honolulu, HI 96819 • (808) 848 2431 • FAX (808) 845-5155

#23

Rep. Clift Tsuji, Chair

Rep. Tom Brower, Vice Chair

Committee on Agriculture

Eden Marie Peart

Hawaii Farmers Union

c/o Kawaiholehole Farm

-

Wednesday, March 19, 2008

9:00 a.m., State Capitol Auditorium

Support of SB 958

Rep. Clift Tsuji, Chair

Rep. Tom Brower, Vice Chair

Committee on Agriculture

Eden Marie Peart

Hawaii Farmers Union

Wednesday, March 19, 2008

9:00 a.m., State Capitol Auditorium

Support of SB 958

Dear Committee on Agriculture Members,

Concerning SB 958, the GMO taro moratorium bill - thank you for taking up this vitally important and complex issue! It will require continued effort to educate everyone about the implications of this technology. Thank you for making the effort yourselves and for supporting this bill, which not only acknowledges the value of honoring and perpetuating Hawaiian traditional farming practices, but is also a first legislative step in addressing the concerns of family farmers in Hawaii, the U.S. and internationally.

I am submitting my testimony as a member of the recently established Hawaii Farmers Union. HFU is the newest subdivision of the National Farmers Union.

National Farmers Union (www.nfu.org), established in 1902, is a general farm organization representing nearly 300,000 family farmers and ranchers nationwide. Farmers Union serves its membership by presenting the organization's policies to lawmakers at the local, state and national level. Farmers Union also serves its membership by assisting with education and by providing stimulus and know-how for farmer-owned cooperatives.

The following policy from NFU best articulates the position of family farmers in relation to GMO crops. Please note especially the first point calling for a moratorium. (**...**)

Policy of the National Farmers Union

Enacted by delegates to the 106th anniversary convention
Las Vegas, Nevada
March 2-5 - 2008

12. Genetically Modified Organisms and Biotechnology

1. Genetically modified organisms (GMOs) have created a series of ethical, environmental, food safety, legal, market and structural issues that impact everyone in the food chain. Consumer and producer concerns need to be addressed.

We acknowledge concerns that biotechnology is being used as a trade barrier. We respect all nations' sovereignty and food policies and thus encourage open dialogue, cooperation and understanding in trade negotiations relating to biotechnology. We support:

a) A moratorium on the patenting and licensing of new transgenic animals and plants developed through genetic engineering until the broader legal, ethical and economic questions are resolved. The moratorium should include the introduction, certification and commercialization of genetically engineered crops, including all classes of wheat, until issues of cross-pollination, liability, commodity and seed stock segregation and market acceptance are adequately addressed. Research conducted in an environmentally secure facility should be exempt from this moratorium. Research conducted in open field production should be subject to mandatory public disclosure of; persons or entities initiating the research, location of test sites, and specific species and traits involved and the characteristics of the intended resultant genetically modified plant to be created.

Should commercialization of a new GMO become imminent, we encourage the appropriate regulatory authority to provide for a public input and review process, including production of economic and environmental impact analysis prior to commercialization;

b) Legislation to exempt farmers from paying royalties on patented farm animals and

technical fees on seeds which have been genetically modified;
c) Legislation to prohibit the patenting of heritage seed, animal and biological genetics;
d) Legislation to prohibit the further use of tax dollars in developing terminator technology, e.g., a gene to ensure that seed will not reproduce;
e) Legislation to prohibit the development and selling of seed that is sterile;
f) The right of farmers to plant seed derived from proprietary organisms on their own land;
g) New products involving GMOs be certified as safe by the FDA in testing done independently of the patent holder, at the specific patent holder's expense before being allowed on the market. Such testing is to be done at the expense of the specific patent holders seeking to market such products;
h) Legislation requiring that patent holders or owners of GMO technology be held strictly liable for damages caused by genetic trespass including safety, health, economic and environmental effects. Farmers are not to be held liable for food safety, human health or environmental problems, including cross pollination, related to the use of GMOs as long as generally accepted crop production practices are followed;
i) Congressional action to regulate the biotech industry's technology agreements. Farmers should not have to sign away their fundamental rights, including, but not limited to, a jury of their peers in court in exchange for the privilege of growing biotech crops. Grievances should be settled in the home state of the farmer, not the state of the biotech corporation;
j) Any damages caused to farmers through lower prices, lost markets or contamination shall be fully reimbursed to farmers, including legal fees, by the company producing the genetically modified product;
k) All data used in the analysis of the health and environmental effects of GMOs be public record, and that criminal penalties be established for the willful withholding or altering of such data;
l) Prohibiting government regulatory agencies from licensing genetically modified products that are not acceptable for both human consumption and animal feed;
m) Until USDA and FDA improves oversight and regulation of pharma crops, NFU cannot endorse or support pharma farming based on economic, environmental, food

safety and liability risks to producers and consumers;
n) Requiring government regulatory agencies and input suppliers to ensure that farmers are informed of all potential market risks and segregation requirements associated with planting any licensed genetically modified crop;
o) Government regulatory agencies shall consider domestic and foreign consumer acceptance of the product when licensing;
p) Requiring all GMO seed to be clearly labeled with the following information: 1) markets (foreign or domestic) where the product is not accepted; and 2) all planting restrictions;
q) Development of a paper verification system and a storage and marketing plan to aid farmers with non-GMO grains;
r) Identity-preserved systems and insist they receive protection from cross contamination; and
s) Requiring genetically altered or engineered food products to be appropriately labeled to inform consumers. Food products derived from cloned animals should be labeled at the retail level.

Thank you again Committee members, for conscientiously considering this opportunity to support Hawaii family farmers *and* the perpetuation of Hawaiian culture - by passing HB958.

Sincerely,

Eden Marie Peart
Hawaii Farmers Union

#24

ASSOCIATED STUDENTS OF THE UNIVERSITY OF HAWAI'I AT MĀNOA
2465 Campus Road, Campus Center 211A
Honolulu, HI 96822

SENATE RESOLUTION 21-08

IN SUPPORT OF A MORATORIUM ON GENETICALLY MODIFIED KALO

BE IT ENACTED BY THE UNDERGRADUATE SENATE:

WHEREAS, the Associated Students of the University of Hawai'i at Mānoa Senate is the elected body representing approximately 11,000 full-time classified undergraduate students; and,

WHEREAS, Kalo (colocasia esculenta) is a culturally significant plant to the indigenous people of Hawai'i; and

WHEREAS, Cosmogonic genealogies such as the Kumulipo connect all kanaka maoli to Hāloanakalaukapalili. 'O Wākea ke kāne. 'O Papahānaumoku ka wahine. Noho pū lāua a hānau 'ia 'o Hawai'i, he moku. 'O Maui, he moku. 'O Ho'ohōkūkalani, he akua wahine. 'O Wākea ke kāne. 'O Ho'ohōkūkalani ka wahine. Noho pū lāua a hānau 'ia 'O Hāloanakalaukapalili, he keiki alualu. A Hāloa, ke kanaka Hawai'i mua loa; and,

WHEREAS, Hāloa, the second son of Wākea and Ho'ohōkūkalani, named after his brother, is seen as the progenitor of mankind; and,

WHEREAS, Kanaka maoli have learned throgh this relationship their kuleana or responsibility of mālama 'āina, to honor, respect and protect Hāloa, so he in turn will sustain the Hawaiian people in providing food, and medicine; and,

WHEREAS, the relationship between kalo and kanaka maoli continues today in the perpetuation of the cultivation of kalo, the cultural practices associated with kalo and the acknowledgement of the familiar relationship with kalo; and,

WHEREAS, Kalo "intrinsically ties the interdependency of the past, the present, and the future, the essence of procreation and regeneration, as the foundation of any sustainable practice" as stated in Senate Bill 958; and,

WHEREAS, There were once over 300 kinds of Hawaiian kalo, descended from a few types first brought to the Islands from Polynesia in the 4th to 5th century AD; and,

WHEREAS, Hawaiians bred these different varieties of kalo through traditional farming practices to grow better in different environments, for higher yield to feed a growing population, for special qualities of color and taste, and for medicinal and ceremonial uses without genetic engineering; and,

WHEREAS, Genetically modifying any variety of kalo is culturally disrespectful and also poses irreversible and irresponsible dangers to food, health, environment and economy.

WHEREAS, The terms Genetically Engineered and Genetically Modified Organism refer to organisms that have had genetic material from a different species, or organic or chemical compound, inserted into their DNA; permanently altering their structure and character; and,

WHEREAS, The genetic makeup of a plant modified or engineered with a bacteria for example, becomes part of the plant and could create allergic reactions, antibiotic resistance, or new bacteria that are resistant to antibiotic treatment in the consumer; and,

WHEREAS, In the past, a couple of biotech companies wanted to introduce a genetically engineered algae that produced experimental drugs to the Kona coast of the island of Hawai'i; and,

WHEREAS, Several community groups represented by Earthjustice took the State Board of Agriculture to court on this issue and won their case, mandating that the State conduct a proper environmental study of the potential risk to the environment and the people of Hawai'i; and,

WHEREAS, A few months later, a drug made from a product similar to the one proposed to be tested in Kona was given to six people in a human test trial in London, and all six experienced a sudden and unexpected super-immune response and were sent to intensive care suffering from multiple organ failure; and,

WHEREAS, There are no long term studies or research done on the effects of Genetically Modified Organisms on humans; and,

WHEREAS, Over thirty (30) countries around the world such as Japan and those in Europe have banned GMOs in some way; and,

WHEREAS, Kalo farmers from all over Hawai'i have been opposed to the genetic engineering and modification of kalo and the patents that arise from the newly created hybrid species; and,

WHEREAS, Researchers developing GMOs seek to "solve" the problems faced by farmers, by genetically engineering plants that provide higher yield with less water, less nutrient rich soil, less weeding, and the ability to be resistant to chemicals, but these "inventions" do not address the issue of environmental and social disparities such as access to water and land or the lack thereof, poor soil health and a poor ecological system that has a larger impact on the community as a whole; and,

WHEREAS, Students from all over the UH campus as well as the members of the campus community participated in the protest of GMOs and called for the State Legislature to grant them a hearing; and,

WHEREAS, The ten year moratorium would allow the Hawaiian community, farmers and others much needed time to educate the residents of the State and gain support to permanently end GMOs in Hawai'i.

BE IT RESOLVED, that the Associated Students of the University of Hawai'i at Mānoa firmly supports the Senate Bill 958 Relating to Genetically Modified Organisms; and,

BE IT FURTHER RESOLVED, that the Associated Students of the University of Hawai'i at Mānoa encourages the implementation of a moratorium on the genetic modification of kalo not only for ten years but indefinitely to protect the cultural, social and economic integrity of the kalo plant, and the ancestor of the Hawaiian people; Hāloanakalaukapalili.

BE IT FINALLY RESOLVED, that copies of this resolution shall be sent to: University of Hawai'i President David McClain, the University of Hawai'i at Mānoa Chancellor Virginia Hinshaw, the Board of Regents, The Hawai'inuiākea School for Hawaiian Knowledge, Dean Andrew G. Hashimoto of The College of Tropical Agriculture and Human Resources, Vice Chancellor for Research and Graduate Education Gary Ostrander, the State of Hawai'i Senate and House of Representatives, The Honolulu Advertiser, the Honolulu Star Bulletin, Ka Leo O Hawai'i, Ka Lamakua, and KTUH-FM.

ROLL CALL **SENATE RESOLUTION 21-08**

Ayes:	**Treasurer Sohn, Secretary McKellen; Senators-At-Large Baker, Fallon, Long; Senators Alton, Anderson, Arena, Chang, Choe, Chung, Fung, Green, Hovanec, Jones (Jennifer), Kaestner, Kron, Ragudo, Sakamoto, Serry, Whiter [21]**
Nays:	**[0]**
Abstain:	**Vice President Saiki [1]**

Motion passed 21-0-1.

ADOPTED BY THE 2007-2008 ASUH SENATE ON TUESDAY, MARCH 11, 2008.

Introduced by Robert Green, Senator, Hawai'inuiākea School of Hawaiian Knowledge and School of Pacific and Asian Studies; Bryan Whiter, Senator, College of Arts and Science; Cecil Bernhard, Senator, School of Ocean Earth Science; Theodore Chang, Senator, College of Arts and Science; Kalani Baker, Senator-at-Large; Brian Kron, Senator, College of Arts and Science; Jaime Sohn, Treasurer; Ikaika Payomo, Senator, College of Arts and Science

#25

Kahale Kaulana Kuakane Mawae
Onipa'a Na Hui Kalo, Na Pua No'eau,
Kanuikapono PCS, Halau Wanana
Anahola, Kamawaelualani he moku o Manokalanipo
96703

A Portrait of Haloa: Our Elder Brother

A Testimonial Essay in Support of a Ten Year Moratorium
of Genetic Modifcation of Kalo

Haloa. Kalo. Our elder brother who became one with the 'aina. Our great ancestor who's only breath could be taken from the lau(leaf) at the core of the piko(center). The plant which feeds all kanaka. The plant that nourishes our kino(body). The plant, which connects us to our piko, our na'au, and all of our ancestors, who have come before us. But most importantly it is the plant that gave our people life and a sustainable future for hundreds of generations that continues to this day.

This immortal being transcends far beyond my connection to that piko, beyond all capability of human understanding and thought, beyond all scientific and cultural explanation and is being raped by scientists who's only goal is to reap extreme profit with methods of science that can only be considered universally to be unethical, immoral, and falling under illegal practice because of our indigenous cultural ancestry to this plant.

Haloa-na-ka-lau-ka-pa-lili

Haloa takes his first breath.

The lau cascading to the piko as it curves to the neck of the ha,

The stalk of the great plant.

It's withered leaves hang gently in the warm sun

Toward the reflecting pool of the lo'i(taro patch).

Each leaf slowly drifting into its own reflection

Pulling away from it's mother.

It's source.

The resemblance to an 'iewe(lit. placenta)

Cascading into a pool that could easily cradle a hundred children,

All tied to the earth,

Nursing from its great source, kumu honua.

The ʻaina(lit. that which feeds. Def. land) nurturing the expanding kalo into all its great many feasts that follow after; with poi, kulolo, laulau, or Tutu's famous squid luau, that was so ono, to ask for the recipe would mean living in a life of culinary secrecy.

Tutu's hearty meals of fresh fish, ulu, uala, a salad of ʻopae and hoʻio fern shoots, and a modest portion of kalua puaʻa freshly salted, placed on a large table surrounding a large wooden ʻumeke(def. bowl. calabash) filled with freshly made paʻi ai, that tutu would mold with her hands with moderate portions of water until she had rich poi with the kalo from uncle's loʻi just up the road.

From the eldest member of the family to the youngest baby in her mama's arms, we hold hands, bow our heads and pule.

"Mahalo e na akua. Mahalo e na kupuna o keia ʻaina. E malama oukou ia makou keia ʻohana. E ola no ke kino. E ola no ka Haloa. E ola no keia ohana, I ka wa mamua, I ka wa mahope. Amama ua noa."

The prayer is lifted. It is ended. It is free.

Tutu puts her hand on her hip, smiles big, and wipes the sweat from her brow, after finishing preparing such a lavish feast. "Go eat! Go eat!" She says softly as she shoos the flies away with a ti-leaf gripped in her hand. Her hands with creases in her fingers like rings on a tree, but as soft as her weaved lauhala bracelet that hangs from her gentle wrist.

She watches as all her mo'opuna(def. grandchildren) drift by the table and take food on their plate. Each mo'opuna smiling with mouthfuls of good Hawaiian food, and giggling with joy as they take a warm spoonful of fresh poi from the ʻumeke.

As each passing generation takes poi from that same ʻumeke to feed their na'au. Entailing each following generation will continue on and flourish. That it will survive.

Taking the huli, and gently placing it back into the ʻaina, as it promises the hope of harvest for the next generation. A promise for the next seasonal feast.

Haloanakalaukapalili.

Haloa of the trembling leaf.

Concieved is the child from the sacred union of Wakea and Ho'ohokukalani.

E ala e Haloanakalaukapalili!

Haloa, the first born.

Carried is the child of the mother, Ho'ohokukalani.

Ho 'ohokukalani, the mother, who is born of the sacred union between the father of the heavens, Wakea; and the mother of the Earth, Papa.

The mother of Haloa, who is birthed from po(lit. night), where dwells all past, present, and future akua who make up all things both light and dark on this kumu honua(lit. earth).

Born is the child of the sacred mother, Ho'ohokukalani.

E ala e Haloanakalaukapalili!

Haloa, the still born child.

Ho'ohokukalani and Wakea give this still born child back to the earth. And from this burial, straight from the piko of this still child, rose the ha. And as the lau uncurled itself and opened to the sun, Haloa took his first breath and trembled into the wind.

E ola ka Haloa. E ola mau. Haloa lives. He lives again.

The trembling leaf that gives hope to the promise for the next generation.

The trembling leaf that gives hope for the birth of the younger sibling from this same sacred union.

Haloa-na-kanaka.

Haloa the younger sibling.

Haloa of the second generation.

Haloa of the people.

Haloa of the kanaka maoli.

Our sacred connection to Haloa can only be held in the highest regard and utmost respect for the origin of such a birth in nature for the kanaka maoli, who are undeniably the true people of this 'aina.

It goes beyond the aspect of gods and mythological unions. It goes beyond that from which stems Hawaiian philosophy of creation of life and of such a beings as Haloa. It tells us a story that man must respect for nature because if nature can create such a life as Haloa, then nature must be the highest form of mythical like endurance. How can we as mere human beings even begin to comprehend or even pretend to comprehend the infinite unpredictability that nature wields?

The law of nature must govern not only kalo, but all of our food crop and plants. To say that we have the power over natural law, and can manipulate life without question says that we have come to a place in humanity when we no longer respect life, when we think outside of the environment we live.

But most importantly, it presents the question, if nature is capable of creating such a rich life in nature, which is ultimately meant to feed people at large demands, why are we having to tamper with it's life through genetic engineering, indefinitely altering that plants natural law and it's natural life for the purpose of research? Are we as humans so inclined to control life that we must understand nature's richest creation's?

Is it the curiosity for how the nature of such a thing is made up, or are we wanting to understand how we can control nature and produce life for our own greedy profit in controlling our food source? Tightening the grip of have's and have not's

Man has proven incapable and highly irresponsible to hold and wield this power. They have shown no restraint in pushing forward with unregulated research on our sovereign land. Genetically Modified food research that has been stopped in a majority of our international community because of the ethical, moral, and serious health and human welfare questions regarding their methods of research and farming. One of the biggest questions being that these company's have the intent for patenting any plant they create so they may ultimately control a food crop.

Control for how it is grown. Control of how it cooks and is put on the table. How it tastes in your mouth. How it digests in your stomach. How the genetically modified nutrients are absorbed into your body. Complete and total control as your huli shrivels up and dies instead of being able to turn it back into the earth for it's next season. Instead, having to turn to the company who licensed and patented the plant you harvested in your ground, to be purchased in order for you to have a new season.

Not only that, but any keiki's or hybrid keiki's that stem from your plant, the patenting research company could then own and seize at their disclosure because of its patent on that plant.

A case in the Midwest of an independent canola farmer proved true as the giant Mansanto biotech company's seeds blew into the farmer's fields naturally. His organic canola

fields were naturally contaminated with genetically modified canola. The farmer then pg. 5

received a letter by mail stating that the company owning the patent, was filing suit, and would be taking him to court as a violation of Mansanto's corporate patent. Mansanto is also based here in our state on Kaua'i doing corn research. Corn research, which has caused medical conditions at a public school here in Waimea by Syngenta a company with similar genetic farming practices.

We the people cannot allow a government or corporate entities of this kind to control any type of food source, especially Haloa, who is cradled in the great bosom of our sovereign land.

We do not want manipulative corporate and government backed scientists, funded largely by Government and private agencies to continue this type of research here in our sovereign kingdom of Hawai'i and in the U.S. occupying state of Hawai'i. We do not want, nor do we see the need for this type of control. There has been enough done already to control our lives as a Hawaiian nation and culture, leave our plants alone.

We cannot stand by and allow genetics labs under the guide of Government and Corporate interests to research and take properties from kalo and other plants. Privatized entities, who, have shown no restraint in pushing their research forward when there are too many risks surrounding research already being conducted here in our islands. i.e. Mansanto, Syngenta, Pioneer.

Taking properties, which they intend to manipulate, produce, create, and sell at the cost of unregulated genetically infected food and land, high-risk potential for damages to human health and welfare, and the continuing destruction of safe, naturally bio-diverse, environments.

The human hand has made too many mistakes to allow another potential mistake to sneak in the door. "For every action, there is an opposite and equal reaction." I believe we all should think about this, before making any decision regarding how our elder brother Haloa should be played with.

I ask that we start our year off in making the right decision to save Haloa. Save Him from the grasp of illegal manipulation and control. Save him from the genetic touch of human hands, and question yourself why other genetically modified foods are being allowed to continue without your jurisdiction. We face too great a risk in even thinking on it and having Haloa on our discussion table.

Please support our plea to stop genetic engineering on Kalo. Ke'olu'olu mai. Please think about the repercussions your decision could affect if a moratorium isn't in place, and how that will effect the kanaka maoli community indefinitely. Think about the damaging effects genetic research in Hawai'i has already caused, and what we can do to stop further damages to address the people's demands.

I think sometimes it must be easy to forget when you hold so much power in your hands. It's easy to forget the few people that you run into in your early years as a budding politician, who may have been the one who affected your life with one single sway of a vote. A vote that mattered amongst thousands and sometimes millions of others.

Sometimes it's just that easy to forget.

So it is with the power of what the people speak that says something to remember. To speak with positions of those who represent themselves and what they truly believe to be right, especially when it comes to food and the livelihood of farmer's that it supports.

"Mai ho 'omauna i ka 'ai o huli mai auani'i o Haloa e nana.

Do not be wasteful of food lest Haloa turn around and stare [at you].

Do not be wasteful, especially of kalo, because it would anger Haloa, the taro god, who would sometime let the waster go hungry."

Mary Kawena Pukui, 'Olelo No'eau: Hawaiian Proverbs & Poetical Sayings

Heed to these words for all food's sake.

Mahalo nui loa me ke aloha pumehana no. E ola mau Haloanakalaukapalili!

Kahalekaulanaakuakane Mawae
Eo Lono!

#26

Lorrin Pang, MD, MPH
as private citizen

HOUSE AGRICULTURAL COMMITTEE- Auditorium 3/19/08 9:00AM

TESTIMONY IN SUPPORT- SB958
10 YR MORATORIUM ON GENETICALLY MODIFIED TARO

15 March 2008

There have been three key bits of information that I presented for the past few years to this body regarding genetically engineered foods. These have not changed. 1. New products which we ingest, inhale or inject should follow the precautionary principle. We should not allow products to be sold if we do not know if they are safe or unsafe (if we violate this rule we should at least have them labeled so that consumers have a choice). 2. The World Health Organization states that no GE foods have been adequately tested in humans for safety – they are "unknown" entities. 3. Even without human data the US National Academy of Science publishes that GE foods have a higher risk of unintended health effects compared to non-GE foods.

Since these statements were made two worrisome issues have come to light: 1) In Britain TGN1412 a GE product tested in several human produced unexplainable, horrible side effects. Before the company shut down they claimed that their TGN1412 might have had a production contaminant. German authorities determined that good manufacturing procedures were followed, concluding that if there was a contamination it was inevitably inherent in the process. 2) There was wide spread, economically devastating (maybe over a $1.2 billion) contamination of long grain rice with experimental GE rice. No one knows if contamination occurred via the laboratory, fields or silos. The rice seed (for new planting) was also found to be contaminated and no one knows if containment/recall is possible. During the rice investigation a second GE contaminant rice strain was discovered.

So if GE taro is allowed and is marketed or somehow escapes, I will ask that it be labeled and speak against its consumption (including taro from contaminated fields) - until rigorous safety tests are performed (that may take years). The containment and clean-up of this life form may be impossible.

Ask yourselves if the speakers have conflict of interest and what are their scientific/health credentials. If there are issues on either count then they really should be referencing what they say – and we all have the obligation to check out the references. My references are listed.

Finally, some who oppose the moratorium cite academic freedom. When products rather than ideas are involved this argument needs to be balanced by at least an effective Biosafety Committee (covering EIS and occupational risks), liability assurances, and agreement there will be no retaliation against those who give opposing views. This past year the Advertiser raised UH Biosafety concerns and the Maui News raised issues of retaliation to which the UH has not yet responded. I myself have called for a US Congressional investigation of another key UH research unit, the ethical committee, for failing to follow their own written rules. There was a recent ruling by Judge Seabright who found that several biopharmaceutical GE projects in Hawaii were wrong not to have prepared EIS's. Was the UH involved in any way with these? If so do they feel that the Judge unfairly restricted their academic freedom?

Lorrin Pang, MD, MPH
As Private Citizen
Consultant to World Health Organization
Consultant to Glaxo Smith Kline
Retired Army Medical Corp
America's Best Doctors List 2006-8

References

A. BANGKOK POST
October 13, 2004

"At this point, we have no evidence to say that it is dangerous to consume food products that contain GMOs, but at the same time we also don't know its negative side. So, we have to say that we do not know the adverse health effects of GM food," WHO assistant director-general Kerstin Leitner said yesterday.

B.. U S National Academy of Sciences, Safety of Genetically Engineered Foods – Approaches to Assessing Unintended Health Effects (www.nap.edu/books/0309092094/html/4.html., pages 4 and 64)

C.. TGN1412: http://en.wikipedia.org/wiki/TGN1412

D.. Long Grain Rice: http://www.greenpeace.org/international/press/releases/bayer-rice-scandal-could-cost

#27

Carol Viola Gonsalves
(A Hawaiian Perspective)

Position: Oppose
SB 958, SD1, HD1
"Relating to Genetically Modified Organisms" (GMO Taro Bill)
Wednesday, March 19, 2008: 9:00 a.m.
Capital Auditorium – 415 South Beretania Street

email: SB958InPersonTaro@Capitol.hawaii.gov (If you will be present)

Representative Clift Tsuji
House Agriculture Chair

Dear Representative Tsuji and Members of the House Agriculture Committee:

I am Carol Viola Gonsalves - born and raised in the sugar plantation town of Kohala by my parents Obed and Violet Kaiawe. My father was a Hawaiian from from Kaohe, South Kona. His parents were Obed Sr. and Ella Wentworth Kaiawe. This information may seem trite to some, but it is important to me, that my father, and thus I am Hawaiian. I was always proud of being Hawaiian, and still today I wish that I could have met more of my kupuna. Included among them were Mikala Kuahine and Kaiawe Hao, Alice Ale Wentworth Hawila Kaleohano and Abel Apela Kaleohano, Annie Kawaiola Eni and Albert Wentworth.

I write this with fear and trembling because my perspective differs from Hawaiians who are in favor of SB 958 which would impose a 10-year moratorium on developing, testing, propagating, cultivating, growing, and raising genetically engineered taro in the State of Hawaii. Nevertheless, although I am not a confrontational person, I felt it was my kuleana to step forward in opposition to SB 958.

I oppose this bill because it's not good to close options and this bill will do that. There are a lot of needs that can be addressed through agriculture biotechnology. The genetically engineered Rainbow papaya is a good example of a crop that is now able to withstand a virus that was at one time killing off the trees. Now, the farmers are happy and the consumers have a lot of papayas to eat. Kalo has disease problems too, and it is very likely that they can be made resistant to these diseases with the help of biotechnology research. For non-Hawaiian islands that suffer from sea surges that damage their crops, salt tolerance is a trait that could help these people increase their food supply. We need to do research.

I am very sad because I hear my Hawaiian people condemning GMO without trying to learn what it is really about. As for me, I have seen the amazing restoration of the papaya crop in Hawaii because of GMO research. I have been involved in this work as a voluntary researcher for 14 years in my husband Dennis Gonsalves laboratory at Cornell University prior to our moving back to Hawaii. Also I have done research that shows overwhelming adoption of the new Rainbow variety by papaya farmers ("Transgenic Virus-Resistant Papaya: The Hawaiian

'Rainbow' was Rapidly Adopted by Farmers and is of Major Importance in Hawaii Today," APSnet Feature Story August-September 2004)

In closing, I must say that I treasure the Hawaiian legends, including the one about Haloa being our ancestor. In my comprehension of the Hawaiian description of creation I do not see a conflict with today's advanced biotechnology research and the beliefs of my ancestors and some of us Hawaiians today. As a Christian I have put my trust in Jesus as my Savior and Leader, and thus for me, I do not "believe" in this story as in a religious way. Instead, I see the wonderment of biotechnology research and its benefits, and I do not think Haloa needs to be protected by any of us mere mortals. He and the multitude of Hawaiian gods possess mana that is amazing to behold, and that they will express, when the time is right.

Thank you for the opportunity to testify.

Yours truly,
Carol Viola Gonsalves

#28

DATE: March 19, 2008

TO: Representative Clift Tsuji, Chair
Representative Tom Brower, Vice-Chair
House Committee on Agriculture

FROM: Dr. Fred Perlak
Kunia, Oahu

HEARING: Wednesday, March 19, 2008, 9:00 a.m., State Capitol Auditorium

SUBJECT: Opposition to SB958, Relating to Genetically Modified Organisms

Dear Chairman Tsuji, Vice-Chairman Brower and Honorable Members of the Agriculture Committee:

My name Dr. Fred Perlak. I am a scientist presently working for Monsanto Hawaii, and have spent much of my career as a molecular biologist in the agriculture industry. I have had the privilege to witness tremendous advances and benefits in science and agriculture over the last 30 years. I have been following this debate over taro research with great personal interest.

Monsanto does not, nor does it intend to, conduct research on taro. As an individual and a company, we recognize and respect its cultural significance and time-honored heritage.

Personally, as a scientist and as an individual, I oppose SB958 because passing an anti-research moratorium presents significant risks and challenges of its own. It is personally troubling to me.

There are those who have very strong emotional feelings about taro. I can appreciate that. Government decisions should be based on facts, information and most importantly, must anticipate the changes in the world around us.

Taro is under attack from a number of destructive pests and diseases. Without research, it will become more difficult to grow taro. Our society readily embraces research of many evolving human diseases with the hope that a cure will be revealed. The knowledge obtained in this research often provides indirect insights into sustainable solutions. Why not afford that option to the production of taro through research and understanding of the potentially destructive diseases and pests that currently besiege taro?

Placing a moratorium on taro research would take potentially valuable agricultural tools and technology away from researchers and eventually farmers. I can tell you first-hand, it takes years, sometimes decades, for research to find a solution, if one even exists Our society cannot effectively take on the challenges of the future without the freedom to investigate all safe, responsible, potential solutions.

At a time when science and technology-based industries comprise the fastest growing sector of Hawaii's economy, providing career opportunities in skilled professional positions, and more importantly, creating valuable knowledge that could greatly benefit people and communities, passing anti-research legislation would severely harm Hawaii's reputation as an emerging center for excellence in technology development.

I ask, as a matter of public trust, that you as our state's leaders make decisions based facts, science and logic, taking into consideration that while passage of this bill may please some, it will undoubtedly create significant negative consequences for all of us in the future.

Please do not pass SB958. Thank you very much for your consideration.

#29

Roy and Gladys Oyama Farm

POSITION OPPOSE
SB958hd1, GMO Taro Bill
Wed., March 19, 2008

Rep. Cliff Tsuji

House Agriculture Chair

Dear Rep. Tsuji and members of the House Agriculture Committee;

I am Roy Oyama from Kalaheo Kauai and have been farming for the past 55 years. I have farmed taro in my early days and have lost the lease, so have farmed other crops such as truck farming, Poultry (eggs and meat birds) cattle, hogs, fruit tree's and tropical flowers. With years of farming, I have learned that we cannot go on with farming in Hawaii if we stopped research work for the future. As you may have some knowledge to our taro industry since it began in the 1800, with acerage at that time begin over 2,000 acres and today it has declined to just 350 acres, which has a shortage of taro for poi plus other products can be produced.
This in it self has shown research is needed very badly, also how are we to look at sustainability if production is low and research is stopped!!!

I oppose the bill because reasearch and development should be based on facts, not fear!!!

Your support of positive bills like SB 2915 taro security and purity task force, and HB 3425 is needed!! This bills will help the taro industry. SB 958 has divided the community too long. Its time it is stopped!!

Thank You for the opportunity to testify.

Roy and Gladys Oyama

Roy and Gladys Oyama

#30

Personal Testimony Presented before the
House Committee on Agriculture
March 19, 2008
9:00 a.m.

By Charles Kinoshita

SB 958, SD1, HD1

A Bill for An Act *Relating to Genetically Modified Organisms*

Chair Tsuji, Vice Chair Brower, and Members of the Committee:

My name is Charles Kinoshita and I am presenting testimony in strong opposition to SB 958, SD1, HD1. I presently serve as the Associate Dean for Academic and Student Affairs of the University of Hawaii's College of Tropical Agriculture and Human Resources (CTAHR), and previously headed the Sugar Technology and Engineering Department of the Hawaiian Sugar Planters' Association (now, the Hawaii Agriculture Research Center, "HARC"). My testimony is being presented as a private citizen and does not represent an official position of the University of Hawaii, CTAHR, or HARC.

The proposed ten-year moratorium on R&D on genetically engineered taro (1) is unwarranted and could threaten commercial taro production in Hawaii; (2) violates the freedom to conduct important, peer-evaluated R&D in Hawaii; and (3) sends a negative message to technology-based companies that might be contemplating doing business in Hawaii.

The research community in Hawaii already is in dialog with taro farmers, the Office of Hawaiian Affairs, state agencies, and others in the community to establish priorities in taro R&D. Out of recognition and respect for the significance of Hawaiian taro in native Hawaiian culture, CTAHR already has agreed not to pursue research on genetic engineering of Hawaiian taro without first seeking community input. SB 958, SD1, HD1 is not limited to Hawaiian taro, but applies to all taro varieties. As such, the proposed legislation would leave the taro industry in Hawaii highly vulnerable to pests and diseases very much like Hawaii's papaya industry prior to the development of the genetically-engineered, virus-resistant papaya, Rainbow, which was introduced in Hawaii years ago with considerable publicity and openness, and which today is consumed by the majority of Hawaii's consumers. If the proposed moratorium is passed, what will stop the legislature from supporting the unscientific opinions of other small groups who want to ban research on other local crops or other areas of science and technology?

The University of Hawaii at Manoa already is having considerable difficulty attracting the best scientists to our state because we cannot offer high enough salaries to cope with the high cost of living in Hawaii. If, with no scientific basis, the state passes legislation that interferes with academic freedom, the University of Hawaii will have even more difficulty attracting the best research and teaching faculty to our State.

Perhaps undeservedly, the State of Hawaii has a reputation for being unfriendly to businesses. For more than a decade, the State of Hawaii has been struggling to attract technology-based companies and new industries that can support high-paying, skilled jobs, into our state. The proposed bill sends a negative message that will only serve to discourage technology-driven companies from doing business in Hawaii.

Historically, university research has been successful and sound because it is open to peer review and validation by the best scientists from universities and private research institutions, worldwide. What scientific basis does this bill offer? If Hawaii's legislature bans scientifically valid, peer-reviewed taro research, what will be next? I respectfully ask your committee to stop this bill now.

Thank you for the opportunity to present my views in opposition to SB 958, SD1, HD1.

#31

Personal Testimony Presented Before the
Committee on Agriculture
March 19, 2008
9:00 AM
by
Wayne Nishijima

SB958

GENETICALLY MODIFIED ORGANISMS; TARO; MORATORIUM

Chair Clift Tsuji, Vice Chair Tom Brower, and Members of the Committee:

My name is Wayne Nishijima, and I am the Associate Dean and Associate Director for Cooperative Extension, University of Hawai'i at Mānoa, College of Tropical Agriculture and Human Resources (CTAHR). I am pleased to provide testimony on SB958. This testimony does not represent the position of the University of Hawai'i nor CTAHR.

With due respect to the supporters of this bill, I cannot support this legislation as written and urge the committee to not pass this bill because of the following reasons:

1. If the cultural reasons are the major argument for this legislation, it goes unacceptably beyond this argument by including all taro regardless of whether they are of Hawaiian origin or not. Chinese taro is an important crop in Hawai'i for table use and for chipping and has no direct "lineage" to any Hawaiian varieties of taro.
2. There is a lot of misinformation, intentional or not, that is dividing all those concerned with taro. CTAHR especially has taken the undeserved brunt of criticisms. We must stick to the facts and facts only. For example, CTAHR has not, and has no intention of genetically engineering any Hawaiian varieties of taro.
3. The concerns of the proponents of the bill are exaggerated and not supported by scientific evidence. They often give examples that GMO crops are banned by countries such as the European Union and Japan. The fact is that the EU imports over 40

million tons of GMO soybeans, and their farmers grew over 110,000 ha of GMO corn in 2007. Japan does the same. Japan does not ban GMO foods but they are required to undergo stricter scrutiny and require labeling as being GMO to allow for consumer choice.

4. The fear of the danger of transferring genes from one species to another is also unsubstantiated. The mule is a "man-made" interspecies hybrid that has served and continues to serve as an important beast of burden for hundreds of years. Triticale, an "unnatural" interspecies cross between wheat and rye has 28% higher protein than wheat and contains all the essential amino acids thus making it a more complete food; its flour can be found in most health food and organic food stores.
5. Genetic engineering is much more precise and controlled as compared to induced mutation by irradiation or chemicals that have provided many of the cultivars of the different crops we consume today.
6. As written, SB958 will have no jurisdiction over any foreign taro, genetically engineered or not, from entering into trade in Hawai'i. A genetically engineered taro developed outside of Hawai'i could easily be shipped to Hawai'i for trade or even planting. Currently, about 800,000 pounds of taro is imported into Hawai'i annually.
7. I believe in academic freedom, however, I also believe, in being sensitive to cultural concerns and in coexistence and compromise. If the supporters of this bill truly believe in the cultural basis of this bill, then the bill should be amended to focus the legislation to target only Hawaiian varieties of taro and not all taro. If this is not acceptable than the bill should not be passed.

Thank you for the opportunity to testify on this bill.

#32

Kegal Joe Tancayo

Position: Oppose

Date: March 17, 2008

Rep. Clift Tsuji
House Agriculture Chair
House of Representatives
Hawaii State Capitol
Honolulu, Hawaii

Re: SB 958hd1, March 19, 2008 Hearing

Dear Rep. Tsuji and Members of the House Agriculture Committee:

My name is Kegal Joe Tancayo. I am a Molokai resident with deep roots and connection to Molokai. My wife is from the Molokai Meyer family and my mother's family, the Chong's of Molokai, operate the only poi factory on Molokai, celebrating its 100 years of operations in 1998. My mom's Hawaiian side family name is Uahinui, which was the first family to settle in the Kalamaula Homestead area. Kalamaula Molokai is the first Homestead community in Hawaii created after the passage of the Hawaiian Homes Act in 1920. In addition, I am the lead mechanic for Dow AgroScience on Molokai. I am voluntarily testifying as a private citizen of Molokai.

I do not support SB 958hd1 which calls for the moratorium of genetically engineering research for taro. I work with my family's poi business, which until recently produced about 800 – 1,000 pounds of poi 2 day per week under the brand, Molokai Poi. We recently have gone down to producing poi 1 day a week. There was a time when I worked full-time at producing poi, and was able to support my wife and four children. Things changed in the mid-90's when taro production declined so much that poi production dropped from 7 days a week to 3 days, and now to 2 days per week. Nowadays, we get about 1,500 pounds of taro from Kauai, about 800 pounds from Maui per week and limited amounts from Molokai. There definitely is a decline in the number of taro farmers who can provide the quantity and quality of taro like before. In the mid-70's up until the mid-90's, we could produce twice and sometimes three times the amount of poi that is produced today.

I support, and encourage legislators to support pro-active legislation that benefits taro growers and producers (HB3425, apple snails) and support continued discussions amongst the Native Hawaiian community and taro stakeholders about research (SB 2915). We do not need focus on legislation like SB 958hd1, which adds nothing to the preservation and protection of taro.

Please do not support SB 958hd1. Thank you for the opportunity to testify.

#33

Andrew Arce

Position: Oppose

Date: March 17, 2008

Rep. Clift Tsuji
House Agriculture Chair
House of Representatives
Hawaii State Capitol
Honolulu, Hawaii

Re: SB 958hd1, March 19, 2008 Hearing

Dear Rep. Tsuji and Members of the House Agriculture Committee:

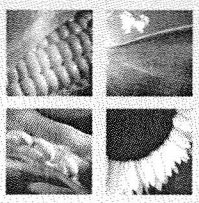
I am Andrew Arce, a 4th generation Hoolehua Homesteader married to a Duvauchelle girl from Molokai. My wife and I have 4 children---two boys and girls and two grandchildren, and we live in the Hoolehua Homestead area. I am of Filipino and Hawaiian ancestry, with my mother's family coming from the Naeole line who was among the early families to settle in the Hoolehua Homestead area. My father planted tomatoes and onions on the Homestead farm that we grew up on. My mom is a well-respected Kupuna on Molokai.

I have been employed by Monsanto-Molokai as a field research technician, and Dow AgroScience as a part-time equipment operator. I am testifying as a concerned citizen of Molokai.

Please do not support SB 958hd1 which would ban genetic engineering research on taro. I have worked for 20 years as an UH-College of Tropical Agriculture and Human Resources (CTAHR) research technician, and have worked with Alton Arakaki, UH-CTAHR Molokai extension agent on many projects including the taro preservation collection project. In addition, I also grow sweet corn on the 40 acre Homestead lot that I live on with my family.

My family and I fully support the work of the seed companies in Hawaii, and certainly have seen the value that it brings to Molokai community and economy. Further, we support and understand the contributions of agriculture biotechnology. As I understand it, those who oppose the use of genetic engineering of taro do not need SB 958hd1---the UH-CTAHR has already agreed that no genetic engineering of research will occur until further discussion with the Hawaiian community, and no one is conducting such research. It is better to support SB 2915, which seeks to create and fund a taro security and purity task force that will continue taro stakeholder discussions about developing a plan, as well as implementing a plan to preserve and protect taro in Hawaii.

Please do not support SB 958hd1. Thank you for the opportunity to testify.



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Hawaii Crop Improvement Association

Growing the Future of Worldwide Agriculture in Hawaii

#34

Position: Oppose
SB 958hd1, GMO Taro Bill
Wednesday, March 19, 2008
Capital Auditorium - 9:00 am
Testimony: Adolph Helm

Chair Tsuji and Members of the Agriculture Committee:

My name is Adolph Helm. I am a Molokai resident and Project Manger at Dow Agro-Science, a seed corn research and production company on Molokai. I ask for your patience and indulgence to first allow me to share my personal connection to my ohana, my culture, Molokai and agriculture because it is from this foundation that I speak against the passage of SB 958hd1, which would ban genetic engineering research of taro.

My mom of the Koko line is a full-blooded Hawaiian originally from Hana, Maui. Her ancestors cultivated Kalo on Kings Lands on an ahupua'a that is still intact. My 'ohana today are caretakers of these crown lands. My father George Helm Sr. is of Hawaiian, German and Portuguese ancestry from Punene Maui. His skills were many, from cultivating vineyards in Makawao to the Hawaiian Homelands on Molokai. They moved to Molokai in 1932, raising five boys and two girls on the Hawaiian Homestead of Kalamaula.

My wife is a DOE teacher for 25 years, and while she is from Kaneohe, she has deep connection to Molokai by way of her great great great relative who was konohiki (chief) for an ahupua'a, 22 acres mauka to makai on Molokai. This ahupua'a is intact and still owned by my wife and her siblings. My wife and I have two sons, and 3 grandchildren with one more on the way.

My parents passed on to us the spirit of aloha, of unconditional giving, of hospitality, and malama. This was a natural part of my home upbringing. This is the culture, and the environment that I was raised in. We didn't have much but whatever we did have was shared unconditionally. My wife and I continue to raise our 'ohana in the same manner. My sons are practitioners of the culture and share their skills with the community and the keiki of our homeland – Hawaii nei. Our mo'opunas are perpetuating the language, music and hula and learning new and different skills to survive in today's ever-changing environment.

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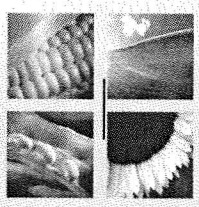
In 1977, I felt a calling to the aina, and started to resurrect the family Kalamaula homestead farm, attending agriculture classes at nights and working the land during the day. I farmed for three years selling my melons on the local market and winning a blue ribbon in the Hawaii State farm fair for best in show. In the early eighties I taught instructional hands on agriculture to Native Hawaiian youths who had excellent aptitude and hands



on skills but could not quite assimilate in the mainstream educational system. These kids were exposed to all kinds of different farm practices including the marketing and research side. As part of the learning experience we helped to restore a significant amount of lo'i both on the north and south side of the island. The intent was to encourage and perpetuate the art of taro cultivation at the same time engage the kuleana land owners to malama the taro lands they owned.

I also grew taro on land owned by my wife's family (Ka'amola Ahupua'a on Molokai) developing an area overgrown with shrubs and trees into several wetland loi's the water to irrigate the loi's came from a puna-wai (fresh water spring) I discovered on the property. My brother in law who lives on the aina continues to grow taro and provides our family with poi and taro. Today I grow 17 different varieties of taro (from Alton Arakaki's taro field day workshop) on my Homestead in Hoolehua.

From the mid-80 till now, my work history continues in agriculture. I helped develop the MCC agriculture school's 35-acre farm, and worked for 14 years as operations manager for a 6000-acre agriculture development. I farmed and owned an organic seed production company developing edamame (edible soybeans) hybrid seeds for the mainland organic market and also owned and operated a landscaping business.

My exposure to agriculture biotechnology started 11 years a go when I was hired as a project and farm manager for a seed corn research and production company on Molokai. The seed corn companies have been an integral part of this community since 1966.

HCIA does not support legislating a moratorium on taro or any other agricultural crop grown in Hawaii. We stand firmly on the 1,000's 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.

We 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. Continued discussions under the auspices of SCR 206 (2007 Session) and support for SB 2915sd2 of the 2008 Session supports the Hawaiian

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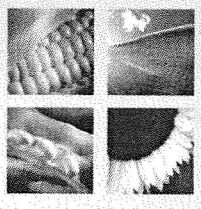

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community's discussion and decisions about the future of Hawaiian taro, and its research and education program. We believe all farmers should be able to freely choose their preferred growing methods, which could include using the tools of modern biotechnology as one way of improving plant varieties.

Passage of legislation SB 958hd1 sends a strong policy message that Hawaii is not in support of science and technology. It undermines future investments and growth potential for the seed crop industry in Hawaii, and further growth and responsible use of agricultural biotechnology as a 21st Century tool for farmers. We believe that this is exactly what lies at the heart of SB 958hd1. In a Feb. 14, 2007 Honolulu Weekly article, Nancy Redfeather, a Kona coffee grower and long time opponent of genetic engineering, is quoted as saying that, "This session is shaping up to be historic" because they anticipate Hawaii may be the first state in the nation to ban a genetically engineered crop. More recently, in routed emails about the January 16, 2008 Opening Day Rally, it is clear that protesters cloaked under the guise of preserving and protecting taro have a larger agenda of stopping federally approved and federally and state regulated commercial genetically engineered crops. Yet, these same protesters did not support SCR 206, a vehicle that seeks to bring together researchers, taro farmers and others to begin discussions about the preservation and protection of taro in Hawaii.

On March 12 at the Kauai County Council hearing about the resolution to support SB958hd1, the Kauai Taro Growers Association publicly stated their opposition to the moratorium. We respectfully ask policy makers to question the motive behind SB 958hd1, and question what is accomplished and for whom since it is our understanding that taro growers have an agreement with the UH-CTAHR that genetic engineering research will not go forward until further discussions with the taro growers.

I hope as legislators that the decision you make and the legacy you leave behind is both positive and beneficial for the future of taro in Hawaii.

I can be reached at (808) 567-9421 if there are any questions. Mahalo and thank you for the opportunity to present testimony.

#35

COOPERATIVE EXTENSION SERVICE

College of Tropical Agriculture and Human Resources
University of Hawai'i at Mānoa
United States Department of Agriculture Cooperating

March 15, 2008

MEMO TO: **The Hawaii State Legislature**

FROM: Roy M. Yamakawa
County Administrator, Kauai

Subject: Opposition to SB 958 to impose a ten-year moratorium on genetically modified taro.

I request that you not support this resolution, which calls for a 10-year moratorium on conducting genetic engineering (GE) on taro.

A 10-year moratorium against all varieties of taro will have a chilling effect on research and development in Hawaii, which may very well contribute to the demise of the taro industry, as well as other industries.

Had research started 10-years ago, it is highly probable that we would have not seen the devastation and demise of the banana industry today by the Banana Bunchy Top Virus.

Had CTAHR not have the foresight to successfully conduct the research and development of a genetically engineered papaya which is resistant to the Papaya Ringspot Virus (PRV), there would not be a papaya industry on the Big Island today.

The probability of a lethal virus complex, Alomae-Bobone--which has already devastated 80% of taro production in the Solomon Islands--is a real and serious threat to Hawaii. Fortunately, there is a high probability of imparting resistance to this virus complex in current taro varieties. However, if this 10-year moratorium is imposed, it will specifically prevent this from happening.

University of Hawaii, Kauai CES Office, 3060 Eiwa Street, Lihue, Hawaii 96766
Telephone: (808) 274-3471, Facsimile: (808) 274=3474, E-Mail: Lihue@ctahr.hawaii.edu, Web: www2.ctahr.hawaii.edu

The Kauai Taro Growers Association (KTGA), which represents the taro industry on this island, and collectively represents 70% of the taro production in the State of Hawaii, recognizes the serious threats of diseases and pests to their livelihood and lifestyle, and has consequently gone on record to oppose SB 958.

Instead of being against GE taro research and development, the KTGA has also gone on record to unanimously support the following pro-taro bills:

- SB 2915: Taro Security and Purity Task Force
- HB 2451: Taro Farming Education and Training Program
- HB 2452: Agribusiness Incubator Program for Taro Farmers
- HB 2453: Taro Farming Grant Program.

We kindly request that you to do the same.

We realize that this is a very emotionally charged issue, and we need to defuse it by providing science-based information and facts, instead of fear. This is certainly not a black and white issue, and while we respect the concept of Haloa, we also need to accept the fact that the origin of taro, *Colocasiae esculenta*, is Southeast Asia.

Therefore, we ask you oppose this resolution, and instead, trust in the self-imposed CTAHR moratorium, which protects the legacy of Haloa, while allowing the tools of science to assure the survival of the Haloa's progenitor.

Thank you for this opportunity to voice my opposition to imposing a moratorium on the specific science and technology which is available to save our taro industry.

#36

From: FOSTER, RAY
Sent: Monday, March 17, 2008 5:53 PM
To: sb958inpersontaro
Subject: Testimony in Person to OPPOSE SB958

Testimony in Person

Date: March 19, 2008

To: Committee on Agriculture

Representative Clift Tsuji, Chairman
Representative Tom Brower, Vice-Chairman

From: Raymond J. Foster

Hearing: Wednesday, March 19, 2008, 9:00 a.m., State Capitol Auditorium, 415 S. Beretania St.

Re: **Oppose SB958**, Relating to Genetically Modified Organisms

Honorable Chair Tsuji, Vice-Chair Brower and Committee Members, I oppose this bill because it is wrong to prohibit scientific advancement for religious idealism.

Would you ban pork consumption at the request of the Moslem community?

Would you ban meat on Friday at the request of the Catholic Community?

Who stands to lose if you pass this legislation along?

The farmers, people who live by farming taro, and the consumers, that's who will lose.

I ask that you support SB2915, instead. It calls for taro growers, Native Hawaiian groups, farmers and other stakeholders to find solutions without slamming the door on science and technology.

Please vote "no" on SB958.

Thank you very much for your consideration.

#37

From: Adrienn&Paul Olson
Sent: Monday, March 17, 2008 6:22 PM
To: sb958inpersontaro
Subject: SB 958, Relating to Genetically Modified Organisms - Taro - OPPOSED

SB 958, Relating to Genetically Modified Organisms - Taro

House Agriculture Committee

Wed., March 19, 2008

Auditorium 9:00 a.m.

Position: Oppose

Representative Tsuji and members of the House Agriculture Committee:

My name is Paul D. Olson and I am a resident of Kalaheo on the island of Kauai. I was born on the Big Island in Honoka'a more than forty years ago and grew up eating poi. My family on both sides were farmers, and my childhood idol was the agricultural innovator and humanitarian, George Washington Carver.
After finishing my undergrad degree in Botany with an emphasis in Anthropology, I worked in the Philippines as a Peace Corps volunteer with the Department of Natural Resources. Later on I completed a Ph.D. in biology. Presently I am employeed at Pioneer in Waimea, where I have to chance to serve humanity doing corn research.

From all these experiences I believe that plant research, including biotech approaches, could help preserve taro. Insect and disease pressures change over time and it seems counter productive to exclude any approaches. At the same time I also believe the Hawaii community should have a leading voice in preserving taro - given taro's significant role in Hawaiian history. I am concerned that antiGMO activists are hitchhiking their anti-science agenda onto a culturally sensitive issue. I also believe the ali'i were exemplary innovators and would have had a balanced view on genetic modification - that it is just another tool in the plant breeders tool box.

I oppose the bill because it sets a bad precedent for our state. The bill sends an anti-science message that would likely scare other businesses from investing in Hawaii. And if Hawaii is perceived as anti-science, it will become more difficult for my three children to find meaningful employment in the Islands.

I prefer Hawaii to be known as a technology leader and center for creativity. Biotech has aided papaya, and has potential to help anthirium production and other small crops. I would be ashamed to see Hawaii place a moratorium on any crop. I think Hawaii is a state that can model healthy coexistence of a variety of agriculture. I would prefer to see the legislature focus their precious time on devising ways to preserve and protect taro, for taro farming education and training programs, to promote funding to evaluate ways to control major pests like apple snails, and a Senate bill for continued discussions between taro farmers, OHA, Hawaii Dept of Agriculture and University of Hawaii.

Let's show aloha, not alienation, to science and humanity. Please oppose SB958.

Mahalo for the opportunity to present testimony.

Paul D. Olson

#38

Florante U. Molina

Position: Oppose
SB 958hd1, GMO Taro Bill
Wednesday, March 19, 2008
Capital Auditorium - 9:00 am

email: SB958InPersonTaro@Capitol.hawaii.gov (If you will be present)

Rep. Clift Tsuji
House Agriculture Chair

Dear Rep. Tsuji and Members of the House Agriculture Committee:

My name is Florante Molina. I oppose this bill because I am a farmer who have seen how disease has wiped out my crop. I have been a papaya farmer for 24 years in Hawaii. I have grown papaya in Kalapana, Keaau and Kapoho.

In 1991, I bought a 5 acre field of papaya. At the time, I did not know that it was infected with ring spot virus. The DOA came to inspect the field and told me that the field was infected! I had to cut down the infected trees. I was proud that I could manage the virus and could make a profit on that field.

I then found another 5 acre field and leased it, with the confidence that I could control the virus. I planted papaya, and just before flowering the virus came. I began cutting the infected trees but it spread like a fire---out of control.

Since the virus was in Keaau, Pahoa, I leased 20 acres of land in Opihikao from Bishop Estate in 1994. The virus came but I managed it again. At that time, papaya price was good so I made some money. The virus was getting worse so I thought if I moved my papaya field to a higher elevation I could outrun the virus. I went to Leilani and even Curtis Town in 1995. The virus came to all these places---I was broke.

I had to go to the DOA for an ag loan. I decided to grow transgenic papaya in Opihikao on the same 20 acres that was infested. I cleared the field and planted transgenic papaya. It was good--so nice, no virus and green. Today, I plant 70 acres of papaya---all transgenic papaya for Hawaii and Canada markets.

Thank you for the opportunity to testify.

Florante U Molina

#39

Orlando Manuel

Position: Oppose
SB 958hd1, GMO Taro Bill
Wednesday, March 19, 2008
Capital Auditorium - 9:00 am

email: SB958InPersonTaro@Capitol.hawaii.gov (If you will be present)

Rep. Clift Tsuji
House Agriculture Chair

Dear Rep. Tsuji and Members of the House Agriculture Committee:

My name is Orlando Manuel. I oppose this bill because research and development should be based on facts. I can tell you my experience with ring spot virus and papaya. I have lived in Hawaii for 35 year and have been a part of Hawaii's agriculture community for that time. I have worked for the Puna sugar plantation and supplemented my family income with growing papayas. When the plantation shut down in 1986, I went to growing papaya full time.

In Puna, I maintained 25 acres of papayas. Then in 1995, I put in my last 10 acre crop of Kapoho Solo papaya. The ring spot virus had come to Puna in 1991. I thought if I moved my field farther away from the virus infected field, I could grow my papayas. But, six months later, the virus came to that papaya field.

I then moved my fields to Hamakua---about the same 25 acres, but lived in Keaau, traveling 45 miles each way. It was okay for survival---I could pay my mortgage and bills. But, the virus followed to Hamakua and it would just be a matter of time before my Hamakua fields would be infested.

In 1998, the transgenic papaya seeds became available. I learned about it from working with DOA, HARC and USDA. I decided to plant again in Keaau and became the first farmer to plant transgenic papaya.

It was better than okay! I now plant 30 acres of papaya, of which about 1.5 acre of Kapoho Solo papaya is conventionally grown for the European market. The rest of the field is in transgenic Sunup and Rainbow papaya because of the demand. It is delicious, nutritious and safe to eat!

Thank you for the opportunity to testify.

Orlando V. Manuel

#40

Matthew Rose
Manager, Kamiya Gold, Inc.

Position: **OPPOSE**

March 17, 2008

ATTN: Rep. Clift Tsuji, House Agriculture Chair, House of Representatives /
House Agriculture Committee
Hawaii State Capitol
Honolulu, Hawaii

RE: GMO Taro SB 958hd1, March 19, 2008 9am Hearing

Dear Representative Tsuji and Members of the House Agriculture Committee:

My name is Matthew Rose. I live in Kaneohe, Oahu. I have lived here for 2 years. My wife was born on Oahu and has lived here most of her life, as has my father-in-law, Ken Kamiya, who I work with on our papaya farm.

Ken has been farming papaya most of his life and experienced directly how genetic engineering saved the demise of the local papaya industry with the development of varieties resistant to the papaya ringspot virus. He, I, and the majority of local papaya farmers in Hawaii are most grateful for what biotech and genetic engineering has done to preserve our livelihood.

I do not support SB 958sd1 because such a bill will not help, but can only harm local farmers and consumers of local agriculture products. While a small vocal minority has raised this as a cultural issue, there is absolutely no basis for the argument that GMO taro should be banned for the sake of the protection of native values or because of some "danger" which has not even been substantiated or proven. I find it puzzling that the same group that is backing this bill has very little to do with farming and production of the taro products consumed in Hawaii. Furthermore, taro's historical origins have been traced back to China, and has been consumed throughout Asia and Pacific Island cultures for thousands of years, so it is not culturally unique to Hawaii or Hawaiins, but a common globally-consumed food.

This bill does not provide a solution for a sustainable and viable taro industry in Hawaii. In fact, it puts limits on grower's options and endangers the preservation of what varieties we have left. It is much better to support resolution SB 2915 which would fund the effort for Hawaiians, taro farmers, the DOA, OHA, and UH to collaborate on solutions for taro's future.

Please do not support SB 958hd1. Thank you very much for the opportunity to present testimony.

M. Rose

Matthew Rose
KAMIYA GOLD, INC.

#41

Cindy Goldstein, Ph. D
Aiea, Hawaii 96701

SB 958, Relating to Genetically Modified Organisms – Taro
House Agriculture Committee
Weds., March 19, 2008

Position: Oppose

Representative Tsuji, and members of the House Agriculture Committee.

My name is Dr. Cindy Goldstein and I am a resident of Aiea on the Island of Oahu. I have carried out plant biology research for over 25 years, and for the past 13 years, have worked in agriculture research and agriculture businesses in Hawaii.

This bill calling for a moratorium on taro genetic engineering research is a step in the wrong direction for Hawaii agriculture. Instead of doing something positive, that would benefit taro farmers and processors in Hawaii, it takes away options that could be of benefit to improve taro disease and pest resistance. There were several other bills related to taro heard by the legislature this year, these bills would support research on pests of taro such as the apple snail, support the needs of taro farmers and businesses, and would have positive impacts. SCR 206 from the 2007 legislative session was a step in the right direction to address the challenges taro growers face, with researchers, taro farmers, the university and Hawaiian groups coming together to discuss needs and steps to help ensure taro can be grown in Hawaii for generations to come. I do support these efforts and types of bills, which take positive steps to help ensure taro can be grown in Hawaii for generations to come.

I respect the spiritual and cultural significance of taro in Hawaiian culture, but cannot support this bill. If this bill were to pass, it would send a very negative message to individuals thinking of coming to Hawaii as faculty at our universities, as researchers at public and private institutions, and it sends a negative message to the science and technology business community. If a bill calling for a moratorium on a type of research passes, it will serve as a warning that Hawaii may not be the best place to locate a business because your technology may be targeted next. Some supporters of this taro genetic engineering moratorium bill have other goals in mind, banning all biotech crop research, and banning commercial biotech crops from growing in Hawaii as well. This is a first step of a much broader agenda. Which biotech crop grown in Hawaii will be next?

I oppose this bill because it will have a negative impact on agriculture research that could benefit Hawaii's farmers, and a negative impact on science and technology business and research in our state.

Mahalo for the opportunity to present testimony.

#42

Testimony Presented before the

House Committee on Agriculture
Rep. Clift Tsuji, Chairman

March 19, 2008
9:00 AM
State Capitol - Auditorium

by

Richard M. Manshardt, Professor
Department of Tropical Plant & Soil Sciences
College of Tropical Agriculture and Human Resources
University of Hawai'i at Mānoa

Relating to S.B. 958 S.D.1 H.D.1 TO IMPOSE A TEN-YEAR MORATORIUM ON DEVELOPING, TESTING, PROPAGATING, CULTIVATING, GROWING, AND RAISING OF GENETICALLY MODIFIED TARO IN THE STATE OF HAWAI'I

My name is Richard Manshardt. I am a professor and plant geneticist in CTAHR at UH Manoa. I have 25 years of research and teaching experience in crop sciences at UH, including work in conventional crop breeding and the development of genetically engineered virus-resistant papaya varieties for Hawaii growers. I am providing testimony on my own behalf, not officially presenting the position of CTAHR or UH on this bill.

I respectfully oppose SB958.

Most of the text of this bill tells of the spiritual significance of taro in the Hawaiian culture. The drafters of the bill hold the taro plant in special regard, connecting it with the origin of Hawaiian culture, much as others in our multicultural society place the body and blood of Jesus Christ in the central role of the Christian community. We are guaranteed our freedom of belief by the first amendment to the US Constitution, and this is good and right.

But if one group's beliefs are used to justify restricting the actions of others, that may not be good or right. SB958 makes no attempt to present a reasoned argument for a moratorium on genetic engineering research in taro. The stated objective of the bill is to promote recognition of the importance of kalo in the heritage of the State, but there is no logical development of ideas to show why a moratorium is an appropriate way to accomplish this. The bill doesn't explain the connection between taro's spiritual importance and genetic engineering, but the reader is left to conclude that the drafters of the bill want the moratorium because genetically engineered taro violates their concept of a genealogical relationship to taro. The bill basically says, "You can't use genetic engineering to improve taro, because we don't like that idea, and no other justification is needed." The legislature has a clear role here to support the concept that technical problems need to be addressed and resolved in a scientific context, where logical thinking is foremost, rather than religious, cultural, or political considerations.

Because agriculture is dynamic, with crop varieties, weather conditions, and pests that influence production changing from year to year, researchers need all the tools they can get to protect and improve farm production. In my experience, genetic engineering is a useful, effective, and safe methodology for crop improvement. It is not appropriate for all breeding objectives and is not going to replace conventional breeding methodologies based on cross-pollination, but a moratorium on its application to taro or any other crop is not going to serve the long term interests of growers or consumers in Hawaii. At a minimum, we need to be able to do genetic engineering research to properly evaluate the risk/benefit ratio of this approach in improving taro. Please remember that new variety development, whether by conventional means or genetic engineering, is a decade-long process and cannot be turned on and off arbitrarily.

Thank you for this opportunity to testify, and I ask you to please vote against SB958.

#43

Personal Testimony Presented before the
Committee on Agriculture
March 19, 2008
09:00
By Dr. Mark G. Wright

SB 958 SD1 HD1 RELATING TO GENETICALLY MODIFIED ORGANISMS

Chair Rep. Clift Tsuji, Vice Chair Rep. Tom Brower, and Members of the Committee:

My name is Mark G. Wright, and I am an entomologist 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 Number SB 958 SD1 HD1. This testimony does not represent the position of the University of Hawai'i or CTAHR.

I speak neither as a supporter or opponent of genetic modification of organisms, but as a concerned agricultural researcher, actively involved in the management of agricultural and environmental problems arising from the effects of invasive species in Hawaii. Having grown up and lived in Africa for many years, I am sensitive to issues related to the exploitation of indigenous resources, particularly those of cultural value, and I am well aware that many of these issues have significant cultural impacts on societies. I can therefore understand and identify with the concerns that this Bill aims to address, but I have serious reservations regarding the long-term implications of the Bill.

As an entomologist dealing with invasive insect species, I work in the area of biological control of these damaging species, and this work is often severely constrained by overly restrictive regulation in Hawaii. The example of the indigenous wiliwili tree (*Erythrina sandwicensis*) which is currently being severely attacked by an invasive insect seems germane here; this is an indigenous species with cultural value; the only sustainable approach for controlling the severe gall wasp infestations that threaten this tree is biological control. If, hypothetically, we were to be prevented completely from conducting research on introducing biological control agents, this endemic species would be faced with almost certain extinction. It is significant to add here that this pest arrived suddenly in Hawaii and had immediate devastating impacts. New and devastating species that attack crops can arrive in an equally unpredictable fashion.

Placing a moratorium on all genetic modification research on taro in Hawaii is not advisable, in my opinion. I suggest that options should be maintained to allow researchers to explore all options for the protection of taro, including genetic modification. Genetic modification research could be conducted on varieties that are not of Hawaiian origin, and should the urgent need and desire on the part of the Hawaiian Community ever arise to utilize such technology, there will be basic research in place that could be transferred to other varieties of taro.

Thank you for the opportunity to testify on this bill.

#44

Sarah Styan, Ph. D.
Hanapepe, Hawaii 96716

SB 958, Relating to Genetically Modified Organisms – Taro
House Agriculture Committee
Weds. March 19, 2008

Position: Oppose

Representative Tsuji, and members of the House Agriculture Committee.

My name is Sarah Styan I am a Kauai resident and I strongly oppose SB958.

Because of my upbringing, education and work experience I am a passionate supporter of Agriculture and Agricultural research.

I completed my Ph. D. in plant breeding from the Department of Tropical Plant and Soil Science at the University of Hawaii Manoa and I have enjoyed working and living in Hawaii for more than 10 years now. I currently live with my husband and daughter in Hanapepe.

Previous to coming to Hawaii I grew up on my family's small fruits nursery in Massachusetts, completed my BS at Cornell University, worked for three years in the vegetable seed industry in California and completed my MS in crop breeding at Wageningen Agricultural University in the Netherlands. Through direct experience with my family and my work I have seen the impacts that Agricultural research has had on many different facets of Agricultural production and I strongly support scientific inquiry and the use of all tools and technology that researcher have available to develop solutions to real issues that farmers face.

Although I did not have the privilege of growing up in Hawaii, my husband did and I am both humbled and proud that our daughter is part Hawaiian. Through my extended family I have learned about the significance of taro to Hawaiians and I am also happy that my daughter has a very healthy appetite for poi.

As a result it is both through my personal and professional experience that I do not support SB958 that calls for a moratorium on genetic engineering of taro. Genetic engineering may not be the tool that is needed in the future, but that should be decided by the taro stakeholders. The path of SCR206 seeking protection and preservation of taro by engaging all taro stakeholders is the best way to work towards securing taro's future for us all.

I also want to see Hawaii as the leader in tropical Agriculture production and research to serve not only Hawaii but farmers throughout the tropics and legislation that targets technology does not send a message that we are truly prepared for that role.

I strongly urge the committee to reject SB958. Thank you for this opportunity to testify.

#45

From: Kevin Kaipo Namahoe-Carvalho, Ha`ikū and Wailuanui, Maui
Student, Maui Community College Mu`o A`e program for Native Hawaiians
To: House Committee on Agriculture
Date of Hearing: March 19, 2008, 9:00 a.m.
Re: SB958—Ten-year moratorium on the Genetic Modification of Taro

Aloha mai Representative Tsuji and Committee Members—

My name is Kevin Kaipo Namahoe-Carvalho. I am speaking on behalf of myself and the haumāna and kumu of Maui Community College's Mu'o A`e English 100 class. In February, our class attended our first county council meeting, to hear testimony on Senate Bill 958. We were surprised and saddened to see Hawaiians opposing Hawaiians on the issue of our brother Hāloa. Some of us spoke that day. Because we are of a younger generation of Hawaiians and speak in a unified voice, we feel that it is important to speak again. The following is a compilation of the individual written testimonies of our class and represents our combined mana`o. We mahalo you for giving me the opportunity to share this with you.

The kalo has been part of our Hawai`i community before any of us, before you. Kalo is what brought us life. We feel that if something is not broken, then don't fix it. Taro is not broken.

We're living in Hawai`i, not a science lab. Kalo isn't just a Hawaiian plant for research purposes—it's Hāloa. By genetically modifying the kalo, it won't be Hāloa anymore. It will just be a plant. Kalo has been around since the beginning. It was the staple food of Hawai`i. Who are we to take this precious plant and destroy it? What is the purpose—what will injecting foreign DNA really do? Who will benefit from it? Is it the farmers or consumers? Hawaiians? Or corporate America?

Our words will not speak as loudly as money or the person with the degree. But we can say that all things have a consequence. It might not be clear at first, or

even in ten years, but who's to say that what they do to the kalo will not affect us? We *do* know that over the centuries, kalo hasn't caused us any harm. It is the most versatile, adaptable, healthy food we have and it has sustained the Hawaiian people for centuries. We just don't see why anyone thinks they can make it better.

We have each had opportunities to help cultivate lo`i kalo, to experience a small part of the thousands of man-hours it takes to maintain such farms. We have seen Hāloa smile when the sun touches the leaves after the weeds have been pulled. So many things we have done to take care of our older brother, Hāloa. And yet here we sit, discussing ways to change the one thing that has always been Hawaiian.

It is impossible for us to stand by and watch them torture our elder brother Hāloa! So much has already been taken away from us. Our `āina has been paved, native plants and people pulled from their roots, and now they threaten kalo. If our ancestors came back and saw what Hāloa is experiencing, they would be devastated. Poor soil, bacteria, fungi, lack of kalo land, diversion of our water, and now…genetic engineering! Instead of spending millions on genetically modifying kalo, put the money to use in a positive way and help the kalo farmers. Give them back their water!

The kalo is intertwined into Hawai`i's roots. Now you vote to change it? Put poison in its roots and the entire organism becomes contaminated. Its children become contaminated. Generations of future Hawaiians won't be able to eat kalo…REAL kalo that's been passed down generation to generation from our ancestors.

How would you feel if someone took your child and did an experiment on him or her without knowing the short- or long-term effects? And if for some reason something went wrong—your child getting sick or spreading the disease to other

children—and no one knew how to take care of it, how would you feel? Would you let someone do that to your child who is healthy and strong already? Ask yourself this question.

Kalo was here long before us, and we hope that it is here long after us. Genetically modifying any variety of taro is disrespectful to our culture and a danger to our food and environment. Please don't risk destroying another precious Hawaiian resource!

Give Hawaiians time to find natural remedies for any problems today's kalo is experiencing. Give us time to call on the wisdom of our ancestors, rather than relying on a community of foreign scientists.

Please support Senate Bill 958! Then revert the streams, replant the ancient lo`i, and give Hāloa life, not death.

I thank you for taking the time to listen to our testimony.

NO TO GMO KALO! Mālama Hāloa, mālama pono,

Kevin Kaipo Namahoe-Carvalho
Ciera Eaton
Shennie Ignacio
Kahiau Kaya
Star Kemfort
Tiana Lewis
Elyce Schnitzer
Kalei Nauka
Chase Koa Texeira
Kathryn Wilder

#46

Personal Testimony Presented before the
Committee on AGRICULTURE
March 19, 2008
9:00 AM
by
Stephen A. Ferreira

SB 958, SD1, HD1

Chair Tsuji, Vice Chair Brower and Members of the Committee:

My name is Stephen Ferreira and I am a Professor at the University of Hawaii at Manoa's College of Tropical Agriculture and Human Resources (CTAHR). I am pleased to provide personal testimony on SB958, SD1, HD1. This testimony does not represent the position of the University of Hawai'i or CTAHR.

I am speaking in opposition to SB958 which would place a 10-yr moratorium on genetically modified taro research and cultivation. I oppose this bill simply because it is anti-logic and anti-common sense. All technologies should be considered when addressing agricultural crops. It would be a mistake and inappropriate to place limits on which technologies should be available. It would be comparable to seeking help from a doctor for cancer, but asking the doctor to not use chemo-therapy as an option. While this might be arguably appropriate for an individual, it would be wrong to impose that limit for all people seeking help from the doctor.

Similarly, biotechnology is a powerful technology because it can address problems that are difficult to solve. Virus resistance in papaya is a wonderful example of biotechnology's success. There was and remains no practical alternative solution to Papaya ringspot virus resistance in Hawaii without utilizing genetically engineered resistance that we commercialized a little more than 9 years ago.

Biotechnology while powerful is also a very emotionally charged technology for some. Opponents of biotechnology use this emotional playing field quite well. This emotion suggests that the issue is complex, and perhaps goes further than the technology itself. If this is true, let's address those issues, and not the issues regarding the safety of genetically engineered products or environmental concerns.

Moving away from emotion, what are the facts? The scientific and objective data is clear. Food safety is a done deal. The vast majority of scientists, based on the available, verifiable data suggests clearly that GE foods are safe to consume. No other foods are safer to consume, including organic.

It is true that long term feeding studies to demonstrate or prove the safety of GE foods have not been conducted. In practice, these kinds of studies are not usually conducted unless there is reason to believe that a problem might exist. As an alternative, shorter term studies using model animal systems have addressed the issue of safety. The data from hundreds of trials is overwhelmingly clear that GE foods are safe to eat. The few studies suggesting problems turn out to be flawed in experimental design, and therefore inconclusive regarding safety....both ways....safe or unsafe.

The practical experience in the US supports the same conclusion. We have now been consuming GE foods (mainly corn, soybeans and canola oil) for nearly 15 years and papayas for about 9 years. In that time, not a single person has been confirmed to have been made ill or suffered from consumption of genetically modified foods. This track record is impeccable, and better even than the record for organic foods.

The issue of food safety is pretty much a done deal. There is simply to data to support the notion that GE foods are not safe to eat.

With respect to environmental safety, largely the same conclusion can be drawn. There is a concern about preserving genetic purity of different varieties. All growers are concerned about this issue whether or not they grow GE crops. It is true that pollen can be blown large distances, but it is simply not true that genetic contamination is occurring rampantly. And in papaya, our data suggests that genetic contamination or gene flow if it occurs is very small. It is not rampant, and in practice, it is not a problem. In most, if not all cases of GE crops, relatively simple measures can be taken to assure variety purity and to assure that problems do not occur.

The final point I'd like to make concerns the importance of not restricting research on GE taro or coffee or any other crop for that matter. It would be a grave mistake to do so. At this time, there is no data to support the notion that problems exist with the use of GE. This does not mean that problems won't be identified in the future. Everyone benefits when we identify problems as early as possible. An atmosphere of free and open inquiry is thus essential to everyone. Only when problems are identified, can solutions be developed.

We must also remember that farming, organic or conventional, really comes down to giving growers choices and options in dealing with all the different problems and challenges in getting a crop to market. There is no single approach to solving problems. The more irons in the fire, the more effective a grower is likely to be. In turn, successful farmers mean that consumers benefit. There would be few papayas available today and prices would be sky high, if RAINBOW and SUNUP papayas had not been developed.

By curtailing the research climate, SB 958 reduces growers' options, thus constraining the future for all of us. This bill should not be passed.

Thank you for the opportunity to testify on this bill.

#47

Testifier: Byrna Storch / Na Kahu O Haloa

She will be presenting and explaining the form letters, petitions and other testimony stacks on the Members' table.

#48

Hawaii Papaya Industry Association

Testimony by Delan Perry, Vice President
House Committee on Agriculture
Wednesday, March 19, 2008
9:00 a.m.

Opposed to SB958, SD1,HD1

For the last 30 years I have been active in many aspects of agriculture. We truly believe that supplying food for Hawaii's people is a very important task and we must not rely on imports. Going into the future, there will be increased challenges that must be addressed with hard work and increased knowledge from research.

I am here today because we deeply believe we need a strong and sustainable agricultural foundation to take into the future**. I am here today because SB958 puts the future of taro at risk by denying use of some of the most important tools agriculture has today to solve disease problems such as the fatal Solomon Islands Taro Virus (alomae-bobone) as well as fungal diseases.**

The diseases that could severely impact taro are only a plane ride or a ship voyage away. What we need is dedicated researchers and quarantine officers finding solutions to the potential new invasive species before they can get to Hawaii.

We accomplish this by looking at taro, and each important crop, to find ways to stop new pests' introduction **and develop ways to defeat them should these pests still make it to Hawaii.**

There are a number of tools that can be developed. Learning from the origin of new invasive species is essential. Chemicals, identification of predators, cultural practices, traditional plant breeding for resistance are all ways to control new pests, **but must be perfected before a new invasive species becomes established**. Biotechnology is one of the tools that may be successful. Probably,

like in the case of papaya, biotechnology will be a last resort because it is complex, expensive, and often slow to develop. But **we don't have the luxury to ignore what can sometimes be a very sharp and effective tool. It took over 10 years to develop, test and deregulate the papaya transgenic papaya. Luckily the process was half completed when the Papaya Ringspot virus invaded Puna. Research is not an overnight thing, and must occur before there is a critical need**

While Taro farmers are beset with a number of production and economic problems, a moratorium will leave Taro with limited defenses. Taro is far too important to the diet and culture of Hawaii to abandon to future invasive species.

If you want an example of what can happen when new pest come in, there are many. Look at the effect of over 1000 invasive species since 1943, including the **little fire ant**, nettle caterpillar, leafminers, **papaya mealybug**, pink hibiscus mealybug, silverleaf whitefly, spiraling whitefly, giant whitefly, citrus blackfly, Asian citrus psyllid, oriental fruit fly, western flower thrips, banana rust thrips, **erythirna (Wiliwili) gall wasp,** hibiscus erineum mite, crab spider, African snail, **golden apple snail**, brown slug, in addition to numerous vertebrates (**coqui frogs**, giant day gecko, veiled chameleon) and weeds (Salvinia molesta, fireweed, gorse).

Look at the example of the Papaya Industry. Even since Papaya Ringspot Virus (an invasive species) nearly destroyed the industry in the early 1990's, three new damaging insects and one voracious fungus have come in the last 7 years. While many crops have not been so unlucky, **it should be obvious that all Hawaii agriculture is at risk and needs all the research and port of entry barriers we can develop.** We know there are **over 30 papaya pests that could be even worse** if the got here from various parts of the world. Every Hawaii crop is at similar risk.

Now is definitely not the time to take a nap and forgo the possible benefits of any effective tool.

I bought some poi this week for $6.00 a pound. If the Soloman Island Taro Virus got established here, over 80% of Hawaiian taro

could be affected. **We don't want to see a future where only the rich can afford poi.**

The committee authorized by last year's SCR206 has been making progress. SB2915 establishing the taro Security and purity task force might be far more appropriate legislation. We need to work together to prevent new pests from coming to Hawaii and putting our food supply at risk. And we need all the dedicated Hawaii researchers and carefully used tools that are available. Let us prepare for the future, not have moratoriums.

Thank you very much,

Sincerely,

Delan Perry
Vice President

#49

To: Representative Clift Tsuji, Chair
Representative Tom Brower, Vice Chair
Committee on Agriculture, House of Representatives

From: Ralph C. Boyea
Legislative Advocate, Hawai'i County Council

Subject: Testimony **in FAVOR of** SB 958, SD1, HD1–RELATING TO GENETICALLY MODIFIED ORGANISMS

For: Hearing on March 19, 2008, 9:00 a.m., Capitol Auditorium

Chair Tsuji, Vice Chair Brower and Honored Representatives,

Senate Bill 958, SD1, HD1 imposes a ten year moratorium on developing, testing, propagating, cultivating, growing and raising genetically engineered taro in the State of Hawai'i.

Section 1 of SB 958, SD1, HD1 does an excellent job of documenting the cultural significance of Taro to the people of Hawai'i. To the indigenous peoples of Hawai'i, genetic experimentation on Kalo is the equivalent of doing genetic experimentation on humans. There is no other plant with this distinction, and for this reason, if no other, SB 958 needs to be passed. Those who oppose SB 958 are missing this very important point.

There are other legal and scientific reasons to urge extreme caution when considering genetic experimentation on Taro.

1. Genetically modified crops and Environmental Impact Studies

   Judge Charles Breyer is assigned to the Federal District Court in San Francisco. According to a recent newspaper article Judge Breyer ruled that the Department of Agriculture was "cavalier" in deciding that an EIS was not needed before approving the planting of Genetically Modified crops. In his decision, Judge Breyer wrote:

   - That the agency had not adequately considered the possibility that the gene could be transferred by pollen to organic or conventional alfalfa hurting sales of organic farmers or exports to countries like Japan that did not want the genetically engineered variety

   and,

   - "An action which potentially eliminates or at least greatly reduces the availability of a particular plant – here, non-engineered alfalfa – has a significant effect on the human environment."

   GM Taro could contaminate non-engineered Kalo. Clearly, an argument can be made for the need for an EIS prior to testing GM Taro.

   How likely is this contamination to occur? The next three articles speak to that.

2. In an article by University of CA and University of Manatoba researchers it is reported that once GE/GM [genetically engineered or genetically modified] genes are released into the

environment – they cannot be controlled. They call these genes "transgenes". The researchers reported:

- movement of transgenes beyond their intended destinations is a virtual certainty; and,

- it is unlikely that transgenes can be retracted once they have escaped.

The "escape" of GE/GM genes can be via pollen, seeds, replanting, etc.
They cite many examples of unwanted and unintended movement of the transgenes.

3. Another article, by Elizabeth Larson speaks to the unintended release of GE rice. The GE rice contaminated rice crops that were commercially grown rice for human consumption. The GE rice was not approved for human consumption.

   A few points from this article:

   - the release of the GM rice was due to errors in field testing under the supervision of the United States Department of Agriculture in Louisiana;
   - the USDA was unable or unwilling to find out how this release occurred;
   - the release happened in South East but still adversely affected the California rice market;
   - CA rice growers were required by their export markets to test for GM genes, a costly and time consuming requirement;
   - even though the genes were not found in the California crops, the release still closed down CA's growing market for sushi rice in Russia;
   - the release paralyzed the US long grain rice industry and cost farmers millions of dollars;
   - there was no mechanism for these farmers to recover their losses;
   - Greg Massa, co-chair of the Rice Producers of CA concluded:
     "until they improve their track record, it is incumbent upon CA rice producers to protect themselves and their markets by disallowing the production of any GMO rice in the state." Mr. Massa was referring to the USDA and APHIS track record.

   Even the "experts" are unable to control the unintended release of genetically modified crops. Such unintended release can be culturally and financially devastating to farmers of non-genetically modified crops.

   There aren't any mechanisms in place to protect the Kalo farmers should genetic modification be allowed and contamination subsequently occur.

4. A research paper published by The Center for Food Safety, an organization located in Washington, DC. documents contamination of other crops by GE crops. I quote:

   > "The following are just a few of the dozens of episodes in which pollen or seeds from genetically engineered (GE) crops have contaminated conventional crops, often causing seed or product recalls, and other problems for farmers and consumers."

   The paper goes on to document those episodes of cross contamination.

Some of our concerns are:

Genetic modification of Taro and the subsequent field plantings of the GM taro will result in the cross contamination of Kalo.

The genetic modification of Kalo is unacceptable to our indigenous population and to those of us who respect their culture and values.

Once cross contamination starts, we will not be able to stop it.

Even the appearance of possible cross contamination will put Kalo growers in the same situation as California rice growers, they will have to enlist in costly, time consuming testing to prove that their crop isn't contaminated. Otherwise that crop will not be acceptable to many who are currently buying the unadulterated product.

There is no system in place to compensate growers for market losses due to such contamination; a system for just compensation must be in place before any field testing of GM Taro is allowed. In fact, without such a system in place, cross contamination actually benefits the GE/GM crop producers. Once the cross contamination takes place they can actually charge the farmers for growing their patented crops.

There is legal precedence for requiring an EIS before the field testing of GM/GE crops. So far, even the most professional, and theoretically most responsible, researchers, have not been able to stop the unintended release of GM/GE genes into the environment when doing field testing.

With issues such as those listed above in mind, the Hawai'i County Council passed Resolution #462-08 in support of SB 958, SD 1, HD1. Resolution #462-08 passed on January 24, 2008 without a single "no" vote. A copy of the Resolution is attached.

The Hawai'i County Council urges the State Legislature to "impose a ten-year moratorium on developing, testing, propagating, cultivating, growing, and raising of genetically modified taro in the State of Hawai'i."

Thank you for this opportunity to testify. Please pass SB 958 SD1, HD1.

COUNTY OF HAWAI'I STATE OF HAWAI'I

RESOLUTION NO. 462 08

A RESOLUTION SUPPORTING S.B.958 S.D.1 H.D.1 TO IMPOSE A TEN-YEAR MORATORIUM ON DEVELOPING, TESTING, PROPAGATING, CULTIVATING, GROWING, AND RAISING OF GENETICALLY MODIFIED TARO IN THE STATE OF HAWAI'I.

WHEREAS, kalo (Colocasia esculenta), the Hawaiian word for taro, is a culturally significant plant to the kanaka maoli, Hawai'i's indigenous peoples; and

WHEREAS, today, there remain approximately 85 varieties of taro from the hundreds that were known in Hawai'i and, of these, the majority (69) are unique to the Hawaiian Islands due to the horticultural skills of native Hawaiian farmers; and

WHEREAS, the important cultural relationship between kalo and the kanaka maoli 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 of Hawai'i; and

WHEREAS, cross pollination of genetically modified taro would place an immeasurable threat on traditional varieties; and

WHEREAS, experimenting with the genetic engineering of this crop without thoroughly examining and evaluating the adverse effects of that process is careless and could very well have far-reaching, irreversible, and unintended consequences; and

WHEREAS, the purpose of S.B.958 S.D.1 H.D.1 is to recognize the importance of kalo in the heritage of the State by creating a ten-year moratorium on developing, testing, propagating, cultivating, growing, and raising of genetically modified taro in the State of Hawai'i; now, therefore,

BE IT RESOLVED BY THE COUNCIL OF THE COUNTY OF HAWAI'I that the Hawai'i State Legislature pass S.B.958 S.D.1 H.D.1 to impose a ten-year moratorium on developing, testing, propagating, cultivating, growing, and raising of genetically modified taro in the State of Hawai'i, and

BE IT FINALLY RESOLVED, that the County Clerk shall forward copies of this resolution to Mayor Harry Kim; Governor Linda Lingle; Sandra Kunimoto, Director, State Department of Agriculture; Andrew Hashimoto, Dean, U.H. Manoa C.T.A.H.R.; Dr. William Steiner, Dean, U.H. Hilo C.A.F.R.M.; and all members of the Hawai'i State Legislature.

Dated at Hilo, Hawai'i, this 24th day of January, 2008.

INTRODUCED BY:

COUNCIL MEMBER, COUNTY OF HAWAI'I

COUNTY COUNCIL
County of Hawai'i
Hilo, Hawai'i

I hereby certify that the foregoing RESOLUTION was by the vote indicated to the right hereof adopted by the COUNCIL of the County of Hawai'i on January 24, 2008.

ATTEST:

ROLL CALL VOTE

	AYES	NOES	ABS	EX
FORD	X			
HIGA	X			
HOFFMANN	X			
IKEDA			X	
JACOBSON	X			
NAEOLE	X			
PILAGO	X			
YAGONG	X			
YOSHIMOTO	X			
	8	0	1	0

Reference: C-882/EMC-11
RESOLUTION NO. 462 08

Casey Jarman
COUNTY CLERK

CHAIRMAN & PRESIDING OFFICER

#50

Jessica Wooley
Kaalaea, 96744
Telephone: 864-0400
Email:

TESTIMONY- IN SUPPORT

SB958 - 10 Year Moratorium on the Genetic Modification of Taro

Aloha Legislators:

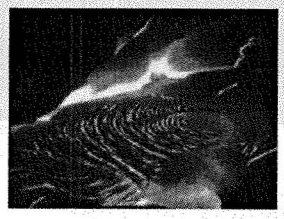
I ask you to support the 10 year moratorium on all forms of genetic modification and patenting of kalo (taro). Many people will testify about the historical, cultural, and spiritual reasons not to allow genetic modification of kalo. Many people will testify about the environmental and economic reasons not to allow genetic modification of kalo. These are all important reasons to support SB958. I have another very personal reason to urge you to pass this bill.

My daughter has an autoimmune disease that requires she avoid all wheat gluten. This means no wheat, no barley, no rye, and oats must be avoided due to cross contamination concerns. Fortunately kalo, especially poi, has been a safe, nutritious, yummy, and comforting food for my daughter. Genetically modifying kalo could jeopardize my daughter's health, and limit her options even further.

I ask you to pass this bill, and please do not weaken it in any way. The only modification you should consider is making the moratorium permanent. This would not preclude future genetic modification, but it would require those seeking the profits from genetic engineering experiments to bear the burden of showing it is safe before they move forward. This precautionary approach to scientific research on kalo would help minimize the multiple risks we face from genetic experiments. In addition, we will all likely be here in 10 year to again go through all the reasons we should not mess with kalo.

Mahalo for your consideration.

Jessica Wooley



Lo'ihi
Communications

#51

Strategic Communications * Community and Government Relations * Public Relations
Event Marketing * Community Building * Public Affairs * Grassroots Advocacy

Testimony to the House Agriculture Committee

in Strong Opposition to SB 958 - Relating to Genetically Modified Organisms

Wednesday, March 19, 9 a.m., Auditorium

Aloha Chair Tsuji, Vice Chair Brower, and members of the committee,

My name is Alicia Maluafiti and on behalf of my Hawaiian and Samoan ohana, I am writing in strong opposition to Senate Bill 958.

Hawaiians Just Want Poi

Once upon a time - living on Hawaiian Homestead in Papakolea with my grandparents, we ate poi every day. Sometimes - the best poi was day-old. But rest assured - when we wanted it, we could get it at an affordable price. And for the big luau, having poi was expected. That is not the case today.

Today - we are lucky if we can buy taro or poi on two days a week. At $5 for a one-pound bag, it's a lot cheaper to just buy a 20-pound bag of rice. We no longer expect to have poi at our luau. Now - we have discussions about 1) can we even get it, and 2) can we even afford it?

I would suggest to you that most Hawaiians that are not here today or who don't have time to even submit testimony - really - all they care about is getting poi when they want it at an affordable price. If you pass SB 958, you will guarantee that we suffer the same fate as other island nations - Samoa, Papa New Guinea, the Solomon Islands, Puerto Rico, the Dominican Republic.

Samoan Taro Crops Decimated

Married to a Samoan with family in Samoa, we have seen the impact on the people when their taro crops were decimated by taro leaf blight. Samoans eat taro every day, but when they lost 95 percent of their crop is just 10 months, a generation of Samoan children - for almost 10 years - were not raised on taro. They were raised on rice. They don't even have the pallet for taro now that it has become more available.

But the Samoans still must adjust to the taro that's available - the taro that has been crossbred with other taro varieties. They now see opportunity in working with the University of Hawaii to bring back their Samoan varieties that were lost and with the help of genetic engineering to create disease, pest, and drought resistant plants. For Samoans who have lost their taro and who are only now seeing it's return - after 10 years - **the choice is not about purity, it is about sustainability.**

Are Hawaiians willing to risk losing taro for the sake of purity - for the sake of culture - for the sake of a misguided national Anti-GMO agenda? And the activists have said: **"Hopefully this moratorium will lead to not only a BAN on GMO taro, but ALL GMOs in Hawaii and elsewhere."**

I would challenge all supporters of this bill: If your child was sick, wouldn't you do everything in your power to make sure your child got well? By saying "no" to science and technology, you risk the future of taro - and the ability of future generations of Hawaiians to get their poi - on any day of the week - at an affordable price.

If taro is a "life giving sustenance" - then I choose LIFE for our taro. Do not let us suffer the same fate as Samoa. Please - say "no" to SB 958.

Alicia Maluafiti

#52

Rodolfo Sibucao

Position: Oppose
SB 958hd1, GMO Taro Bill
Wednesday, March 19, 2008
Capital Auditorium - 9:00 am

email: SB958InPersonTaro@Capitol.hawaii.gov (If you will be present)

Rep. Clift Tsuji
House Agriculture Chair

Dear Rep. Tsuji and Members of the House Agriculture Committee:

My name is Rodolfo Sibucao. I oppose this bill because I am a farmer who has experienced how biotechnology has helped save the papaya crop and given me a livelihood. I worked for Puna Sugar for ten years as a truck driver, until it shut down in 1984. My family and I were farmers in the Philippines, growing tobacco, rice, and corn. I decided to return to farming.

For 20 years now, I have struggled to survive as a small farmer in Hawaii. In addition to the high cost of land, water, and supplies, papaya farmers struggle with the ring spot virus, phytophthora fungus which rots the roots, trunk and fruit, powdery mildew, white peach scale and other pests and diseases.

My first planting was a 5 acre field of Kapoho Solo (conventional) papaya in Pahoa 1982 to prepare for the Puna Sugar layoff. In my fifth year of planting, the virus hit. It was in Panaewa first, and then came to Puna. I started to worry about my future in papaya farming. That's when I heard about the research for Rainbow papaya but it wasn't ready for commercial use.

I managed to control the virus by cutting the infected trees down. But, I could not plant new trees because the virus would get to them. So like other papaya growers, I tried to outrun the virus---I planted Kapoho solo papaya field in Opihikao, and then Hamakua. Eventually the virus found its way to my fields.

Rainbow papaya seeds (transgenic papaya) became available while I was in Hamakua. I believed in the research and technology, and experienced the security of not having to worry about the virus or constantly trying to outrun the virus by moving locations.

I now grow about 4 acres of Solo papaya and sell to markets in Japan and Europe. I have 4 acres of Rainbow papaya which is sold to Canadian markets. The transgenic papaya suppresses the presence of the virus and allows me to grow conventional papayas.

Thank you for the opportunity to testify.

Rodolfo Sibucao

H 53

From: Kathryn Wilder, Ha`ikū, Maui
To: House Committee on Agriculture
Date of Hearing: March 19, 2008, 9:00 a.m.
Re: SB958—Ten-year moratorium on the Genetic Modification of Taro

Aloha mai kākou, Chair Tsuji and Committee Members—

Mahalo for allowing all these voices to be heard. My name is Kathryn Wilder. I'm a freelance writer and a writing instructor from Ha`ikū, Maui. The following is a brief timeline of post-contact Hawaiian history. While this is not new information for any of us, perhaps it will serve as a reminder, as well as a premonition.

In 1778, Cook came, introducing weapons of mass destruction.

In the early 1800s, whalers came, introducing syphilis.

In 1820, missionaries came, introducing Christianity.

In the 1840s, other foreigners came, introducing measles.

Then came sugar cane, introducing theft of water.

Later, Chinese workers came, introducing leprosy.

And Kalaupapa came to many, introducing alienation, despair, and a lonely death.

By 1880, nearly one million Hawaiians had died—from weapons, disease, and heartsickness as they watched their religion and culture being destroyed.

But Hāloa did not die.

In 1893, American businessmen and military came to the Palace, introducing illegal action in the name of government.

In 1941, war came, introducing, over the next fifty years, every kind of ordnance known to man short of nuclear to the island of Kaho`olawe.

And then, statehood came.

Still Hāloa flourished.

In the 18- and 1900s, uncountable alien and invasive species came, introducing extinction to hundreds of indigenous and endemic plants and animals.

Hāloa had to fight, and Hāloa survived.

Then the scientists came, introducing GMO.

They introduced the western ideas of genetically engineering and patenting kalo.

Those scientists who came introduced foreign DNA into kalo.

In 230 years, outsiders—Cook, whalers, missionaries, other foreigners, and now, American scientists—have worked hard to destroy most everything Hawaiian.

Hāloa has survived.

But this final onslaught—this last introduction of foreign substance and concept into what is the most Hawaiian being of all—will alter and therefore destroy Hāloa.

I say NO! No more! No GMO! No messing with Hāloa!

Mālama Hāloa. Mālama `āina. Support SB958.

Mahalo for letting me speak.

Sincerely, Kathryn Wilder

#54

Michelle Tancayo

Position: Oppose

March 17, 2008

Rep. Clift Tsuji
House Agriculture Chair
House of Representatives
Hawaii State Capitol
Honolulu, Hawaii

Re: SB958hd1, March 19, 2008 Hearing

Dear Rep. Tsuji and Members of the House Agriculture Committee:

My name is Michelle Tancayo. I am a resident of Molokai; I was born and raised on Molokai. I am a descendent of Rudolph Meyer and Kalama Waha our family roots began on Molokai in 1851. Great –great grandfather Rudolph served under King Kamehameha IV & V as their Ranch Manager on Molokai, he served under royalty up to the overthrow of the monarchy. I serve as secretary on our Meyer family corporation and work as a substitute teacher in the Hawaiian Immersion and English speaking classes of Kualapu'u School. I am voluntarily testifying to you today as a private citizen of Molokai. Because of knowledge that I have gained in the Poi manufacturing business of which I was directly involved with during 1989-1998.

I do not support SB958sd1 which imposes a 10 year moratorium on developing, testing, propagating, cultivating, growing, and raising genetically engineered taro in the State. I married my husband Kegal-Joe Tancayo in 1989 as was immediately thrust into the poi manufacturing business. I worked side by side with my husband manufacturing poi as our main source of income for 9 years. The apple snails then were a huge problem, they ate away at the taro corms. Then pocket rot was also taking hold, I witnessed a decline in the quality and quantity of taro that we were buying from Keanae and Waialua, Maui. Our Chong family had always purchased our main supply of taro from Maui since the tidal wave of 1946 destroyed the taro patches in Halawa Valley on Molokai.

By 1994 we had to look elsewhere in the state to supply our need for more taro. A family friend on Kauai let us start buying taro from Hanalei to help us in addition to what we were still buying out of Maui. By 1996 prices paid for taro had increased drastically because supply could not keep up with demand. The older generation was passing on and the younger generation of taro farmers who we had bought from could not meet our

needs. 1997 found us completely dependent on our Kauai source of taro. It took longer and it was more costly to bring it in from so far but we were determined to see that Chong's Poi Shop would continue its family tradition of being the poi manufacturer on Molokai.

Till this day the family still gets taro for Kauai. All of our taro supply needs still can't be met. The family is down to manufacturing poi just once a week down from 5, 3, and twice weekly. Thankfully, everyone has other employment so the manufacturing of poi is done solely out of love.

I recently spoke with some taro farmers past and present. The problems with taro and their yields still exist. Although we want to be culturally sensitive we strongly feel that we need to be prepared for the future. I support, and encourage legislators to support pro-active legislation that would benefit taro growers and poi producers. I understand that SB 2915 opens up dialogue and an avenue that all stakeholders can work together to help preserve taro for the future.

Please do not support SB 958sd1. Thank you for the opportunity to testify.

#55

Alberto Belmes

Position: Oppose
SB 958hd1, GMO Taro Bill
Wednesday, March 19, 2008
Capital Auditorium - 9:00 am

email: SB958InPersonTaro@Capitol.hawaii.gov

Rep. Clift Tsuji
House Agriculture Chair

Chairman Tsuji and Members of the House Agriculture Committee:

My name is Alberto Belmes. I oppose this bill because without the tool of biotechnology, I would not be farming today. Gambling on a crop that has so much risk to virus is not a good way to live. I know because I did that.

I began papaya farming in 1983 in Pahoa, planting the conventionally grown Kapoho Solo variety. I started with 3 acres, 10 acres and then 15 acres. I've also grown papaya in Pahoa, Puiiki and Kalapana. In 1995 I moved to Keaau and have been there since then. At that time, I had to get a federal loan of $45,000 to help with the crop loss because of ring spot virus. By the time I had 30 acres, my fields became infected with the ring spot virus again, and I had to get another loan, this time $100,000. I lost most of my crop that time.

I wanted to quit many times but heard about the new seeds that were virus free. I was among the first to plant the transgenic Rainbow papaya. Other growers were not sure about it, and waited and watched to see how I did. I now have about 100 acres of Rainbow papaya and about 3 acres of Solo papaya, which is almost gone.

I'm able to do grow so much Rainbow papaya because of the demand in Honolulu and mainland markets. People like the Rainbow fruit's appearance and it is sweet and juicy. According to Dr. Dennis Gonsalves, about 85% of the Hawaii papaya market is transgenic Rainbow or SunUp papaya.

Thank you for the opportunity to testify.

Alberto Belmes

#56

From: cheng li [jlz1126@yahoo.com]
Sent: Tuesday, March 18, 2008 9:54 AM
To: sb958inpersontaro; AGRtestimony
Subject: please vote against SB958

Dear Representatives Clifton Tsuji, Tom Brower, Lyla B. Berg, Jerry L. Chang, Faye P. Hanohano, Robert N.
Herkes, Joey Manahan, Glenn Wakai, Ryan I. Yamane, Kyle T. Yamashita, Corinne W.L. Ching, anc Colleen Rose Meyer,

My name is Xiaoling He. I am working in Hawaii Agriculture Research Center as a research associate. I am against SB 958.

First, it would unnecessarily restrict research on Chinese taro cultivar Bun long to improve disease resistance. There are deadly diseases in the South Pacific that could kill all Hawaiian taro varieties in Hawaii if it reaches here. Genetic engineering research may be needed in the future to save the taro industry in Hawaii similar to the way it saved the papaya industry in Hawaii.

Second, there is no conflict between cultural respect for Hawaiian taro varieties and genetic engineering
(GE) research on Chinese taro Bun long. There is little risk of accidental movement of transgenes from GE Chinese taro to Hawaiian taro varieties, because:
a) Bun long rarely flowers under the environmental conditions in Hawaii, b)Hawaiian taro varieties flower but rarely set seed capable of growing into whole plants in Hawaii; and c) the insect pollinator needed to cross-pollinate taro flowers is not found in Hawaii.

Third, the cultural/ religious beliefs of one group should not be made into a law. This would be similar to the state Legislature passing a bill against birth control based on the religious beliefs of Catholics.
Or similar to the state Legislature passing a bill against blood transfusions based on the religious beliefs of Seventh Day Adventists.

Please vote against SB 958.

Best wishes,
Xiaoling He

TROPICAL
HAWAIIAN PRODUCTS

#57

TESTIMONY BEFORE THE HOUSE COMMITTEE ON AGRICULTURE

SENATE BILL 958
SD1

RELATING TO GENETICALL MODIFIED ORGANISMS

MARCH 2008

Dear Chairman Tsuji & Members of the Committee:

VERY STRONGLY OPPOSE.

Tropical Hawaiian Products (THP) opposes SB#958, SD1 providing a 10-year moratorium on testing, propagating, cultivating, growing,, and raising genetically engineered taro in the State of Hawaii and urges your committee to vote against it.

My name is Loren Mochida, General Manager of THP in Keaau, Hawaii. THP is a processor and exporter of Hawaiian Premium papayas to CONUS and Japan.

Research and approvals of all biotechnology crops takes years to complete. This is done to ensure the integrity of the crop and insure that it is safe to the environment and consumers. Should a virus or disease devastate a crop in Hawaii, a resistant variety could be standing by to continue the production.

Common sense will show that stopping all research and testing of biotech crops can be injurious to those particular commodities. It would not be practical for research and testing to be done when devastation of a crop takes place. It is not a smart business decision.

Should research and test plantings show the positive results of the new variety, then growers will then have a choice whether to grow these GMO variety or not. Papaya Growers in the state have already chosen whether they want to produce by biotechnology, conventional, or organic. They have a choice.

Agencies, Legislators, and specialty groups are sometimes pressed to "pick sides" among Biotech, conventional, and organic production methods, but I do believe all three production systems are critical to the economic viability and sustainability of Hawaii. Instead of more Bills in the legislature to ban GE crops, I believe that attention should now be focused on how farmers oppose to the technology and those in favor of it can step back from the controversy and successfully produce and market their crops as they see fit.

We urge the committee to seriously consider the consequences of prohibiting advancement of any crops in the State of Hawaii.

Thank you for the opportunity to testify on SB#958, SD1.

#58

From: Joan Craft

Sent: Tuesday, March 18, 2008 9:08 AM

To: sb958inpersontaro

Honorable Committee Members,

Native people have the right to keep their culture in tack. The adulteration of the taro plant is unacceptable, disrespectful and degrading. We the people of Hawaii must stand firm to support the Hawaiian Culture. Take a moment and think of the phenomenal blessings bestowed on you and your families due to the good fortune to live amongst the treasure of Hawaiian Culture. Please look into your hearts and remember the goodness and the greatness in your lives because you live in Hawaii. Support the culture. Pass this bill. Put a moratorium on genetic engineering taro.

In ever growing awareness

Kyno Ravelo

HPACH

#59

919 4th Street
Pearl City, Hawaii 96782

March 19, 2008

Represenative Clift Tsuji, Chair
Represenative Tom Brower, Vice Chair
And Committee Members On Agriculture
House of Representatives, The Twenty-Fourth Legislature
Regular Session of 2008, State of Hawaii

Subject: SB 958 SD1, HD1, Relating To Genetically Modified Organisms, "SUPPORT"

ALOHA Kakou,

My name is Richard Pomaikaiokalani Kinney. As Sovereign of the Hawaiian Political Action Council of Hawaii, I SUPPORT the intent and passage of SB 958 SD1, HD1.

Taro is the most nutritious vegetable known to mankind. Taro has been cultivated in Hawaii from the beginning of time with the arrival of the native indigenous Kanaka Maoli people when they first arrived in Hawaii. Taro continues to be cultivated by the Kanaka Maoli Hawaii of today's Hawaii as it was in the past.

Taro should be Hawaii's Number One Cultivated Agriculture Crop. As a Health Food Taro should be added to all of Hawaii's produced products. Not only to Pan Cake Mix.

Once more HPACH strongly Supports the passage of SB 958 SD1, HD1.

Mahalo nui for the opportunity to present my testimony on this Bill.

ALOHA KUU AINA HAWAII

Pomaikaiokalani Kinney

Richard Pomaikaiokalani Kinney, SOVEREIGN
Hawaiian Political Action Council of Hawaii

#60

TO: Representative Clift Tsuji, Co-Chair
House Agriculture Committee

FROM: Penny Levin

DATE: 19 February 2008

RE: SB958 10-Year MORATORIUM ON GENETIC MODIFICATION OF TARO

Aloha mai Honorable Council Members;

My name is Penny Levin. I am a conservation planner, the executive director of E kupaku ka 'aina – The Hawaii Land Restoration Institute, a member of 'Onipa'a Na Hui Kalo, and grow taro in Ke'anae, Maui. I am testifying solely as an individual today. I strongly urge you to pass SB958, the 10-Year Moratorium on Genetically Modified Taro.

My experience includes 30 years in the field of conservation; including international and regional policy related to biodiversity conservation and sustainable agriculture and on the ground research and resource management, the protection and recovery of traditional food and medicine plants, crop practices and land management strategies. I have also grown taro and worked lo'i kalo for 20 years. I currently grow the traditional Hawaiian cultivars. I travel 70 miles roundtrip each time I work in the lo'i. Kalo is far more than just a crop or just a plant.

In the newspapers and from researchers you will hear that genetic engineering of food will "save the world from hunger" and "save farmers crops from the threat of disease."

I have heard this same story for decades, when this reasoning was applied to the "new" hybrid crops developed in the 1970s and 80s. It wasn't true then and it is not true now.

What you won't hear from the agencies, institutions and industrial giants that support biotech food, is this:

- Traditional cross-breeding can and does continue to solve the problems of drought, disease, and pest resistance, productivity and enhanced flavor, every day; and GE crops can and do fail every year;

- The problem of "feeding the world" isn't about productivity but about who owns and controls distribution of resources. It is also about the question of whether food is actually being grown. The USDA crop subsidy programs are propping up large mainland farmers and farm companies who are growing GE corn, soybeans and rapeseed (canola) not permitted for human consumption. We will have a food shortage because we no longer grow food. Hawaii is a perfect example of this. Organic farming with traditional food crops/seeds can meet those needs but only if we have the support of agencies and legislative leaders.

- When the industry says that "we know of no negative impacts" it is true – they don't know because they have never done the studies. The USDA is so heavily conflicted by its relationship with the biotech industry that it can not be trusted to rule on protection of farmer and consumer well-being; and

- One of the most negative impacts that occurs as a direct result of bio-engineered food crops/seeds is the economic poverty that is visited upon farmers – both those that buy the seed and those organic farmers whose crops become contaminated by nearby GE crop pollen. This is never mentioned by the champions of genetic engineering. Instead, the rhetoric remains "we saved them."

These things are well documented. You will find this information in the packets that each legislator was provided as supporting information for this Bill.

You also won't hear from UH researchers the truth about the taro diseases they raise such a scare about (ie. the Alomae-Bobone virus and phytopthera leaf blight) as a means to justify genetic engineering of taro:

- The Alomae-Bobone virus can only get into Hawai'i in two ways; through the importation of uninspected raw taro (unprotected borders) – something taro farmers are working with the Hawai'i Department of Agriculture to correct; and
- Through researchers themselves – and only then through a special DOA permit application. *No other individuals are allowed to bring in contaminated plant material or the pests/organisms that cause the disease.*
- UH CTAHR researchers have been studying phytopthera leaf blight in Hawaii for 96 years (published research and records) and still have not found a means to control it, nor have they ever recorded what triggers an outbreak (the ecological factors; not the fungal organism) because they don't spend time in the field – yet, this is something every taro farmer knows. We also know that in order to reduce disease in the field, we need more and cooler water, better soils (not just nutrient additions which is the CTAHR approach), more fallow time, reduced apple snail populations and increased cultivar diversity. Pure and simple – no genetic manipulation necessary.

But this is not what I really want to talk about. Protection of taro is important to Hawai'i, for so many other reasons.

Throughout the world, places that are noted as "centers of highest biodiversity" for food crops are given the highest level for protection by farmers, conservationists, and scientists because these regions represent "the bank." It is where our most treasured resources are located. By example, more than 4,000 ancient potato cultivars are located within the heart of Peru. The government of Cusco there has banned the introduction of genetically engineered potatoes to the area to protect this rich food resource.

A sound economic policy does not raid or risk the principle in the bank account to tinker with the unknown.

In the 1980's, *because of its isolation*, the endemic Hawaiian cotton plant still had the hardy, disease resistant genes that were able to save the cotton industry. During that same era, the wild precursor to corn in Central America, a plant that looked like nothing more than a heavy-seeded short grass, saved corn crops in the U.S. from widespread disease. Two decades later, in a horrible reversal of fortune *because of a lack of protectio*n, ancient corn varieties in the same region are now contaminated with genetically engineered traits through pollen exchange.

Hawaiians were masters at cross-pollination and plant selection, developing taro varieties specific to the climate, soil, elevation, rainfall conditions and water quality of each district. Estimates of the number of cultivars that were created here range from 150 to as high as 300 or 400. The Papapueo, Mana 'ula'ula, and Mana 'opelu; the Apu; the rare Kumu 'ele'ele known to Olowalu; the Piko 'uli'uli of Ka'anapali; the Hekili, a favorite of a chief of Maui of the same name and unknown today; the Hapu'u, important to Hana; and the Moi, famous to Maui and Moloka'i were the taro varieties famous to the islands of Maui County.

Many of these varieties began to disappear in the 1800s, long before the publication of Bulletin 84 (Whitney et al; 1939) at a time when Hawaiians were disappearing from the land due to disease, the loss of water and the taking of lands and the subsequent replacement of taro with rice. Of the 84 varieties still known to Hawai'i in the 1930s and present today, 69 are Hawaiian cultivars and 15 came from the Pacific. In the 1960s-70s additional varieties were brought from the Pacific region. No where else in the Pacific is this unique condition of limited genetic diversity yet extreme cultivar diversity found. Hawai'i represents one of the "centers of highest biodiversity" for taro cultivars in the world. And yet, **we have no protections in place**.

Today, in Maui County alone, there are more taro farmers, agriculture stations, botanical gardens and plant enthusiasts gathering, growing, recovering and expanding the traditional Hawaiian taro varieties than on any other island in the state. The most complete collection in Hawai'i is located in Moloka'i. And recovery continues – but not under UH.

The truth – *UH has held portions of the Whitney collection for decades. With the exception of one man, on his own dime (because he received no funding from his own institution), no effort has been made by UH CTAHR to assist taro farmers in multiplying and making these ancient cultivars more accessible.*

What is the value of these ancient cultivars in Hawaii?

Each ancient cultivar retains a library full of information for us to learn from. Some Hawaiian taro varieties were selected specifically to feed fishing ko'a in the ocean so that people could easily gather fish to eat; others were sacred to the gods or important in medicines. In the story of Hi'iaka and Pele, the young taro leaves are the first medicine used by Hi'iaka as a healer. The kalo remains an important medicine in traditional Hawaiian healing practice, today. It is considered a pure, whole food that those with wheat or rice allergies or life-threatening digestive diseases depend on for their staple nutrition.

The GMO research initiated in 2000-2001 by the University of Hawai'i successfully inserted portions of the genes of rice, wheat and grapevine into the BunLong taro, a variety grown by Hawaiians, Chinese and Japanese farmers with over 150 years of history in the islands; research that continued until the end of 2007 despite the fact that taro farmers did not want to pursue this as a means of "improving taro."

Undeniably, kalo, as Haloa, elder brother to the Hawaiians sits at the heart of the culture that hosts us and holds in its image all that is sacred and all that describes the relationship that Hawaiians have to the land, to the heavens and to each other.

What are the risks of GMO Taro to these collections?

Sufficient documentation exists from earliest records to indicate that the taro plant flowers and seeds by natural pollination and traditional hand cross-pollination readily; as such genetically modified taro, which also flowers and seeds, places an immeasurable threat on the recovery and protection of these ancient cultivars.

If there is any doubt that UH CTAHR, PBARC, HARC and its researchers (all co-owners in the gmo taro) intend to create a taro that will produce viable seed; one only need look as far as the HARC 2003 Annual Report, which states:

""*HARC, UH and USDA are collaborating to develop a taro transformation system. The specific objectives are: a) to develop a regeneration system for transformed [transgenic] taro to produce fertile plants*" (pg.27 Par.2). The picture on the front cover includes an image of the taro plantlets.

A taro plant with that capability will hybridize and colonize other taro plants in its proximity. Since you can not distinguish between a genetically engineered taro and a pure taro plant in the field – there will be no way to know if the plants have been compromised. There will also be no way to estimate the mutations that may form or the instability of the genetic intrusions. This is a liability to a farmer.

A single allergic reaction to GE taro would destroy the reputation that this plant garners in the world as a high quality hypoallergenic food; one that also benefits the health and wellness, and visitor industry in the state.

If GMO taro were to deliberately or inadvertently find its way into a farmers' taro patches, it would threaten the livelihood of every taro farmer in the state. First, we would have to stop the exchange of huli (taro tops) to protect our crop. Second, millers would refuse our taro because consumers have already made it clear they would refuse to purchase poi made from GMO taro. We have already seen firsthand the impact of such contamination in the papaya and rice industry. Protests from UH aside, organic farmers are still paying the price for that "accident" in the loss of markets and threats to their organic certification.

Food security is also a concern for the state. Most of the corn grown here is GMO seed and not labeled for human consumption; the acreage in sweet potato is less than taro. **Kalo is the only staple food crop we have that we don't need a refrigerator for** – the refrigerator is the land. It is imperative that we protect to the highest degree, the food we can actually eat.

There are too many unanswered questions and huge gaps in our ability to protect farmers. Taro farmers no longer trust the words and empty promises of the university. It is not the right of a researcher or a university to place so many people at risk when they have no obligation to the liability it creates.

For all these reasons, a kapu to the entire state - a sacred cape of protection that recognizes the agricultural, cultural, social and economic importance of taro to all aspects of our lives is needed. A living buffer of safety against genetic engineering of taro is a must.

I urge you to pass SB958, the 10-Year GMO Taro Moratorium.

Mahalo for this opportunity to testify.

Penny Levin

#61

March 18, 2008

TO: Rep. Tom Brower
Vice Chair, AGR

Fr: Rick Klemm

I am faxing my testimony because it apparently is being rejected by the e-mail address assigned for the SB 958 testimony.

Reporting-MTA: dns;relay2.capitol.hawaii.gov
Received-From-MTA: dns;relay2.capitol.hawaii.gov
Arrival-Date: Tue, 18 Mar 2008 09:38:19 -1000

Final-Recipient: rfc822;sb958inperson@capitol.hawaii.gov
Action: failed
Status: 5.1.1

From: Richard Klemm
Date: March 18, 2008 8:53:06 AM HST
To: sb958inperson@capitol.hawaii.gov
Subject: Testimony on SB 958 SD1
Below is Testimony on SB 958 SD1, HD1 for a hearing at 9 a.m. on Wednesday, March 19, 2008 scheduled by AGR. The hearing notice does not indicate but I believe 30 copies are requested.

Name: Rick Klemm, private citizen
Committee: AGR
Date & time of Hearing: 9 a.m., Wednesday, March 19
Bill #: SB 958 SD1, HD1
Number of copies: 30

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Testimony before the Committee on Agriculture
on SB 958 SD1, HD1
Relating to genetically modified organisms

March 19, 2008

Chair Tsuji and members of the committee:

Position: Strong opposition in the bill's current form

My name is Rick Klemm and I am testifying as a private citizen. (As a matter of

disclosure, I am a contract consultant for Monsanto Corp.; my testimony does not necessarily represent the views of my client, and my client has not seen my testimony, nor has it contributed to its content or presentation in any way. The following is solely my words and thought.)

I **oppose SB 958 SD1, HD1** which proposes a moratorium on the use of biotechnology in taro research. The passage of this measure as written would serve as a monument to the victory of ignorance over knowledge and truth.

The bill begs the question, "Where's the beef"? **There has been a de facto moratorium on taro for sometime now**. No entity in Hawaii -- public or private -- is conducting any biotech research at this time that I am aware of. And so far as I know, no one has the least interest in starting up such research. The reply to this fact by the activists that have stirred up some in the Native Hawaiian community is that the moratorium is needed because the "evil university, the evil government, and the evil corporations" will surely begin to pounce on biotech taro research once the coast is clear. This is shibai.

More important, **this bill seeks to support one religious view over all others**. I honor the religious beliefs of Native Hawaiians, as I do all other religious belief systems. However, as a spiritually active person, I cannot support the placing of one religious system (even if that one is the one I ascribe to) above all others. In effect, this bill would hold a million people in Hawaii, including Native Hawaii farmers who do not support a moratorium, hostage to the beliefs of a miniscule minority. In this great nation of ours, people of conflicting religious beliefs, especially with respect to food, have long learned to accomodate each other's beliefs. Thus, the denial of the application of science to preserve their ancestral heritage -- and their ancestors -- is a personal, communal choice. This should not, however, be a rationale for withholding knowledge and truth gained through science to others who see values in taro as a food crop, and more. And science strongly indicates that genetically enhanced taro can benefit many farmers and consumers while being produced coexistently with unenhanced varieties.

Ironically, **the irrationality of this moratorium flies in the face of centuries of scientific and technological achievements by the kanaka maoli and their Polynesian ancestors**. It was science that helped them learn about their physical environment and technology applied based on that knowledge that lead them to Hawaii many centuries ago. Today, many Native Hawaiian men and women afflicted with diabetes are kept alive and maintained in good health with medicines made from genetically modified organisms, which activists scornfully identify as GMOs. The dichotomy this bill establishes between culture and science is a patently false dichotomy: Each one of us within whatever cultural context we live in rely, in great measure, on our ability to improve our lot on this earth through the acquisition of knowledge and truth, in which science plays a vital role.

The lack of necessity for the moratorium proposed in this bill gives rise to the reasonable speculation that the Native Hawaiian community has been co-opted by well-financed outsider activist groups who's real agenda is not protecting sacred kalo but rather the destroying yet another technology that could be of enormous benefit to us humans and the environment. The co-opting of "victim" groups, who are later cast aside, is a well-established strategy of activists to create a "face" to front their agendas.

Finally, this bill, if passed, will ring the anti-business bell loudly around the world that progress and innovation are not wanted in Hawaii. And **more kids, including Native Hawaiian kids, will be forced to leave Hawaii to carve out good lives for themselves and their families elsewhere -- this is the real tragedy of bills like this**.

For these reasons and more, **I urge this committee to hold this measure**.

Thank you for the opportunity to testify on this measure.

Sincerely,
Rick Klemm

#62

Alfred Balauro

Testimony in Person

Testimony in Opposition to SB 958hd1
Wednesday, March 19, 2008
Capital Auditorium

Rep. Clift Tsuji
House Agriculture Chair

Chair Tsuji and Members of the House Agriculture Committee:

My name is Alfred Balauro. I manage a 2 acre taro farm for a friend and oppose SB 958hd1 because it will stop research on taro. We need this research as a tool to prepare us in the event that the viral and other diseases become established in Hawaii. Our taro varieties do not have resistance to these new diseases.

It would be a mistake to not have these tools and techniques in place. For the sake of culture and preservation of taro we need this technology.

Thank you for the opportunity to testify.

#63

L. Pauahi & Steve Hookano
TARO FARMERS
Wailuanui 'Ahupua'a, Ko'olau district, Maui

Aloha,

I am submitting testimony in SUPPORT of senate bill 958 and the 10 year moratorium on the genetic modification of taro.

My husband and I are taro farmers in the Wailuanui 'Ahupua'a in the Ko'olau district of Maui. We have a relationship with the taro that we malama everyday. The Kanaka Maoli people have used this plant as our staple crop, and as medicine since time immemorial. It continues to be used as la'au to this day. My husband gives poi to his 'ohana who are ill. People in his family who are ill with cancer, his aunty in particular, are not able to hold down just any kind of food. If she doesnt eat poi, she will not be able to eat at all, it will just come up. The poi, however, stays downs and this is her main source of sustenance. Without the poi that my husband provides, his aunty would face other issues as a result of being a cancer patient who is also malnourished.

I am diabetic, a lupus patient, and am facing kidney failure. As a result of this, I need the taro and poi that we farm as a replacement for the other staple that is popular in Hawai'i...white rice. It is because of taro and poi's nutritional value that I have been able to control my blood sugar and begin to see the improvements as a result.

How can I be sure that genetically modified taro has the same benefits as the taro that I use and work with everyday? How will the insertion of rice genes affect the way in which the taro currently beneficially affects my blood sugar? We all say that if we malama Haloa, Haloa will malama us. This is true in so many ways. Haloa is not just a staple crop for us as Kanaka Maoli, it is also an important source of la'au lapa'au, or traditional medicines. We see taro and poi and its benefits as a medicinal thing because of the way our diets are today. Traditional foods are being pushed further and further towards the periphery because of this thing we call "progress". Progress is supposed to be something that improves our lives, yet the outcome that I see for my people as a result of "progress" is discouraging: a decrease in literacy, an increase in early mortality (my own father passed when he was 49), a degradation of our resources (look at Waikiki...where did all the taro go? Waikiki was a major center for taro cultivation, until the Ala Wai Canal was dredged), a disproportionate

amount of Kanakas in prison, and an underrepresentation of Kanaka Maoli in institutions of higher learning, among other things. With all of these things as a result of "progress", how can I trust this latest innovation? I cannot and I will not.

Finally, I would like to put this whole dilemma of genetically modifying taro into a bit of a metaphor, because I like to personalize things.

I was raised by my grandparents in their house in Makakilo. Although my grandparents are elderly, they are very wise and have helped and guided me throughout my life.

All of a sudden, a team of strangers bust into the home that I was raised in, in the middle of the night, without the knowledge of my grandparents, myself, or anyone else in my family. These strangers then begin to poke and prod my gramma and grampa because they say its "going to save them". My grandparents dont want this, my family doesnt want this and I do not want this to happen. What is to become of the team of strangers that broke in unannounced and unwanted into my family home? My family and I will do everything necessary in order for them to stop hurting my grandparents and to get the hell out of my house.

This is how I feel about the taro. Haloanakalaukapalili is my kupuna, and I will do everything necessary to prevent him from getting harmed.

Mahalo,

L. Pauahi Hookano

#64

George Kahumoku Jr.
Maui

Oral Testimony

#65

KAUA'I TARO GROWERS ASSOCIATION

Testimony of Rodney Haraguchi
President
Kauai Taro Growers Association

House of Representatives
Committee on Agriculture
Rep. Clift Tsuji, Chair
Rep. Tom Brower, Vice Chair

Wednesday, March 19, 2008
9:00 A.M. House Conference Room
State Capitol Auditorium

Opposition of SB 958
Relating to Taro

Rep. Clift Tsuji, Chair, Rep. Tom Brower, Vice Chair and members of Committee on Agriculture:

On behalf of the members of the Kauai Taro Growers Association, mahalo for the opportunity to voice our opposition to SB 958, SD1, HD1. The most recent vote by KTGA members present and the reexamination of qualified votes by the Executive Board, find that the majority of KTGA taro farmers oppose SB958, SD1 HD1. In preparation of this testimony many taro farmers that didn't vote were called to get their opinion and standing if they had voted. Of these 16 taro farmers with a total of approximately 251 acres of taro, they are opposed to this moratorium,

All the taro farmers understand and are sensitive to the cultural significance of taro to the Hawaiian community, and also have reservations about GMO taro, however, they are opposed to have a law passed for 10 years restricting research in Hawaii. A moratorium in Hawaii will not prevent another state or country from doing GMO research on taro and local taro farmers who have developed a close relationship with researchers at the University of Hawaii, College of Tropical Agriculture and Human Resources (CTAHR), will have better cooperation and communication than from another state or country.

The Kauai County Council (KCC) deferred their Resolution to support SB958. KTGA was not informed of this resolution, and the KCC were quite surprised as they thought that this was unanimously supported and asked for by KTGA. The KCC are now considering supporting SB2915 Taro Security and Purity Task Force and HB3425 to eradicate the Apple Snail.

No one knows what the future brings, such as the gall wasp that has decimated all the Wiliwili trees throughout the state. We also ask for non farmers to support the taro farmers by understanding the many hardships and vulnerabilities of the weather, pests, diseases, and irrigation problems, increased costs of supplies and fuel prices and labor shortages. The taro farmers are the ones that bring the taro and poi to the table and it's their livelihood. We support on going research in case taro is subjected to disease or pests that will require rapid response when necessary.

The taro farmers have cooperated with CTAHR for many, many years and have received a letter signed by the Dean of CTAHR, Andrew Hashimoto, stating that they will not do any

GMO research on Hawaiian taro and that CTAHR will continue to conduct non-GMO research on Hawaiian taro. A quote from Dean Hashimoto, "I want to assure the KTGA that CTAHR will keep its word on discussing with taro growers any proposed GMO research on taro. KTGA has worked with CTAHR for many years and it has been a productive relationship build on mutual respect and trust. We may not always have communicated as effectively as we should, but we have always worked to help the taro growers succeed."

Susan Miyasaka, who was doing GMO research with the Chinese variety, has disbanded her research project and will not continue the GMO research, she has apologized to the farmers at a KTGA meeting for not consulting with the farmers prior to applying for the GMO research grant and to keep the farmers informed of her research. She has now taken over John Cho's cross breeding of taro research since he has retired, and is seeking a better quality poi from the cross breeding that he has accomplished. As quoted from Susan, "Kauai CTAHR is not conducting any transgenic (GMO) taro research. The only transgenic taro plants are located in the laboratory on Oahu; (Susan also explained that these were kept until the papers were reviewed and published), we have no plans to conduct field trials due to lack of funding and the current controversy."

There has been some misinformation, that because the taro farmers are now opposed to the moratorium, that they are doing it only for financial gain or submitting to the large corporations. This is untrue and we question these remarks made by non farmers who have no idea what it takes to farm taro. The taro farmers that exist today do so by the lifestyle choice and the desire to keep the taro industry alive, it's their livelihood and their legacy. It's not about making money; many taro farmers would be better off seeking other better paying jobs with benefits than staying in taro farming. And that's what they want to do, just farm taro. This issue has consumed every KTGA meeting that many farmers don't want to attend anymore and has now jeopardized this year's Kauai Taro Festival planning which should have started this past December. At this time, the Kauai Taro Festival 2008 has been cancelled.

Although KTGA at one time supported the moratorium back in 2005, since then, the legislature has enacted Senate Concurrent Resolution 206 through the Department of Agriculture to bring respective entities together to dialog and seek ways to keep taro secure and pure. In October, 2007, a forum was held in Honolulu where DOA, taro farmers, legislators, CTAHR, Hawaii Farm Bureau, OHA, Department of Health, Lyon Arboretum (where rare taro varieties are being preserved) and other interested parties gathered to brainstorm for SCR 206 and the result of this conference was formalized into SB2915 Taro Security and Purity Task Force and appropriation with widespread support.

KTGA members reviewed this bill along with HB3425, HD2 to assist farmers with the eradication of the Apple Snail that is devastating taro throughout the state and voted unanimously to support these two bills. To have a moratorium imposed right now because some distrust CTAHR, is putting the cart before the horse. We need to have this task force to give direction for the taro industry statewide.

According to the 2006 USDA Hawaii Taro statistics, Kauai taro farmers provide 75% of the state processed taro supply. The amount of farms statewide has declined from 190 in 1999 to 105 in 2006 and even less now in 2008. The cultural significance of taro to Hawaii and its people is of upmost importance and to the sustainability of the taro industry. Without sustainability for the taro farmers to pass their farms to the next generation, there will continue to have a decline in the number of farms and acreages.

And most important, taro needs tremendous amount of water to survive and taro farmers throughout the state need repairs to their irrigations systems. This task force should also address these issues so that there's a comprehensive plan to help the industry survive. The first step is to prevent additional pests or diseases from entering the state through the biosecurity program with Department of Agriculture and this task force. Having the support from OHA will also provide the cultural direction and the assistance that may be needed to make an impact and to be proactive and implement the plans.

The legislature should instead support SB2915 Taro Security and Purity Task Force and HB3425 HD2 to eradicate the Apple Snail. Help the taro farmers' deal with the immediate problems and the long term viability of taro farming. It's ironic that the very meaning of taro, the ohana, the family unit that sits around their poi bowl, where all conflicts stop and everything is pono, is the very essence of division amongst the people. The surviving taro farmers today are hanging on by a thread, help them to continue so that taro and poi will be available in the future.

March 17, 2008

Committee on Agriculture
Rep. Clift Tsuji, Chairman, Rep. Tom Brower, Vice Chair

Testimony on SB 958.SD1.HD1 Relating to Genetically Modified Organisms
By Individual Taro Growers from Kauai

Chairman Rep. Clift Tsuji, Vice Chair Rep. Tom Brower and Members of the Committee:

We are Taro Growers in Kauai and collectively represent a large amount of the total 380+ acreage presently being grown in the State of Hawaii. By the attached signatures and acreages indicated with our signatures, we are major contributing members of our industry and many of our growers and their families have been farming taro in Hawaii for over 50 years.

Our group is OPPOSED to SB 958, which imposes a 10-year moratorium on developing, testing, propagating, cultivating, growing, and raising genetically engineered taro in the State.

For more than twenty years, our Hawaiian taro industry has not been able to produce a sufficient supply of high quality taro to meet the demands of our market. The shortages are confirmed in the Agriculture Statistics compiled by our State of Hawaii, Department of Agriculture.

While some of the long-term shortages are directly related to the declining number of wet-land acres being cultivated, despite the introduction of new growing techniques and technical knowledge, our growers have been encountering reduced crop yields due to problems with new pests and plant diseases that current research has not been able to resolve.

While all of our growers are aware of the sensitivity of GMO research and have some reservations about this matter, we also recognize the vulnerability of our fragile taro industry, especially from the introduction of new pests and plant diseases and the disease resistant capabilities of the new plant diseases. Based on the problems already being encountered with current unresolved diseases, we are concerned that our industry will continually face additional drop in crop yields. Because of higher costs and lower profit margins, we are concerned that many farmers will be forced out of business and our industry will die.

In the event a 10-year moratorium is passed by the legislature, we are concerned that the taro industry will be defenseless for 10 or more years. Even with known threats of new pests and plant diseases occurring, under this moratorium, our agriculture support

industry, such as the College of Tropical Agriculture and State Department of Agriculture, will not able to help and save our industry.

We respectfully request that SB 958 be defeated and not allowed to pass.

Thank you,

Independent Kauai Taro Farmers.

Farmers Name	Farm Acreage
[illegible]	25

#66

TESTIMONY

IN STRONG SUPPORT
of
SB 958 SD1 HD1
FOR A 10 YEAR MORATORIUM ON GMO KALO

March 19, 2008 9:00 am
Hawaii State Capitol Auditorium

To Chair Tsuji, Vice Chair Brower and members of the House Agriculture Committee

I am a third generation taro farmer in Wai`oli, Hanalei, island of Kaua`i. Our family has grown taro here for over 60 years. I have many concerns with this technology on taro. I ask that you be open to my testimony, my experience with taro.

First, even though I am not Kanaka Maoli, I believe that Haloa is the elder brother of man. I believe that we humans are not god and therefore should not play god. I believe that we are dependent on the `aina and our plants for food and they in turn depend on us to malama and take care of them, not abuse them. This relationship needs to continue in order for man and our planet to survive. This is apparent and imperative that we abide as global warming and the shortage of petroleum is imminent. Our island's ability to sustain its people is more important than ever.

At the heart of this matter is the GMO of Kalo, the invasive insertion of foreign genes into taro. Taro has survived thousands of years without this technology. It has survived in our Hawaii with thanks to the caretakers and mahiai (farmers) who patiently observed, selected, and bred varieties of different colors, smells, tastes, adaptability to different environmental conditions, medicine and other uses. We have our host culture to thank for the taro we plant today.

As a farmer, my concerns are many:

- Taro produces flowers, even the Chinese Bun Long, and cross pollination can occur by wind, insects or man. Yes.

- Contamination of our Hawaiian cultivars will happen if GMO taro is released into the fields.
- One cannot tell the difference between a GMO and a non GMO plant. NO.
- Contamination can happen when huli is traded, shared, stolen or by natural disasters such as flooding or high winds, like a hurricane.
- As a farmer, I would lose my right to choose to plant what I desire.
- There will be the loss of our biodiversity as contamination will likely happen. Once something has the GMO DNA, that is permanent. We would not be able to get the original un-GMOd plant back. There will be irreversible and permanent damage done forever.
- Studies are showing that toxins from GMO plants enter and thereby pollute and contaminate the soil and streams. Other species are taking in these toxins. This is called horizontal gene transfer. These GMO toxins are alive and able to replicate, mutate and contaminate.
- This replication and mutation of lifeforms could turn out to be irreversible damage and contamination of our environment that could not be recalled or cleaned up. Just look at the past at DDT and agent orange which was thought to be safe to humans and environment. It took years before it was proven to be dangerous besides being persistent in the soil.
- If GMO kalo is found to be a bad science experiment, who will be responsible for the cleanup of our environment?
- Who will accept full responsibility and liability if there is economic loss for farmers?
- UH CTAHR has said they have a self imposed moratorium on the GMO of Hawaiian varieties of taro. Their moratorium does not apply to any other entity in the state.
- Let us not forget that initially, UH CTAHR did attempt to also genetically engineer a Hawaiian variety as well as a Samoan variety.
- UH and HARC cry for academic freedom. Do they have Academic Responsibility and Liability if something goes wrong?
- I keep hearing the rhetoric that "if the farmers don't want this technology, it isn't going anywhere". So after they introduce it into the fields, and everyone realizes that GMO taro is not wanted nor safe nor good, then what. What happens to the farmer now that everything is contaminated? Who cares?
- An EIS should be done prior to any research or experimentation of GMO kalo.
- GE foods do pose risks to people.

- Susan Miyasaka herself has said there is no guarantee that the experiments can stay securely in the lab. Remember the two legged animals that can transport material to the fields for field testing. Look at what happened to the apple snails. As bad as they are, at least you can see where they are.
- GMO kalo would be the direct opposite of sustainability in our communities. Sustainability has been defined as a balance between taking care of our environment as well as building healthy communities and having economic stability.
    - Huli is shared and traded in communities for labor, fish, Hawaiian Salt, wild pig and because someone needs it. With GMO kalo, farmers will be distrustful of others and will not want to share huli.
    - Luaus and parties would not be the same as people will wonder if the poi is GMO.
    - Farmers lose income because of contaminated GMO kalo or just being suspected of growing GMO kalo.
    - Taro which was used as a hypoallergenic food for babies and adults will no longer have that distinction.
    - There is no human data saying that GMOs are safe for human consumption.
    - Our land and water would become polluted with these GMO toxins that cannot be recalled.
    - GMOs lead to Patenting and ownership of the genetic plant material. Farmers would have to pay licensing fees and have to buy their huli from corporations or research institutions who now own the plant, which was always in the public commons before. At the same time, farmers would lose their right to save and replant their own huli. They could even be sued for growing GMO kalo without knowing it.
    - Farmers lose their independence and become dependent on the patent holder. The plantation mentality is not sustainable.
    - Patenting will raise farmers cost to produce kalo.
    - Hawaii Tourism will likely suffer due to the perception of GMO in a native cultural food.

Let us move forward, not backwards, for true sustainability.

We have the ability to grow healthy taro by using healthy organic practices like fallowing, rotation of crops, increase biodiversity by planting different

crops or different varieties. But first, let us make sure our farmers, old and new, have the appropriate land and adequate fresh water to farm kalo.

Please do not allow this research to continue for the next 10 years. 10 years goes by quickly. Let us not rush ahead with GMO kalo just because science, technology and academia say that we should. Please respect those of us farmers who understand the value of keeping taro pure and recognize that taro is a true model of sustainability in our communities. Please respect the Hawaiian culture and people and their relationship to kalo and Haloa. They were the ones who originally cultivated kalo in these islands. Not us. **And their voices must be heard**.

Please support SB 958.

Mahalo for hearing SB 958 and for the opportunity to testify in strong strong support.

Chris Kobayashi

#67

From: Liu, Weiguo
Sent: Tuesday, March 18, 2008 12:55 PM
To: sb958inpersontaro
Subject: Taro Bill

Aloha Chair Tsuji and Members of the House Agriculture Committee:

My name is Weiguo Liu and I strongly oppose SB958. I live in Ewa Beach, Hawaii and I have worked on plant improvement (both conventional and transgenic plants) for over 20 years in several countries. Taro is a wonderful crop and I like eating it.

The bill undermines ongoing talks with the Native Hawaiian Community on how to preserve and protect taro. The bill is a fear-based reaction to genetic engineering. There is no hard evidence that genetically engineered organisms are dangerous. On the contrary, there are hundreds, if not thousands of peer reviewed scientific studies that prove that genetically engineered foods and crops are safe. The bill restricts development of potentially effective tools for farmers to combat existing and unforeseen biological threats to taro production.
Legislating research is a slippery slope and is completely unnecessary because the University of Hawaii is not conducting any genetic engineering on taro. Science and technology hold the key to the future
of our state. Not only will careers in these areas provide our
children with living wage jobs, science and technology hold the solutions for preserving our environment and for improving healthcare.
The passage of this bill sends a very clear message that Hawaii is an anti-science state at a time when it is critical for us to support the rich potential for innovation that is the key for sustaining our future.

I respect the cultural meaning of taro and firmly believe that the Hawaiian Community must lead the discussion about how to preserve and protect taro. Therefore, SCR 206 is the more effective alternative because it will ensure that a dialogue with stakeholders will continue to address the need for real solutions.

I urge the committee to reject this bill. Thank you for the opportunity to testify.

Weiguo Liu

#68

From:

Sent: Tuesday, March 18, 2008 1:28 PM

To: sb958inpersontaro

Cc:

Subject: GMO Free Kaua`i in support of SB 958

Aloha Committee Chair and committee members;
My name is Jeri Di Pietro, I reside in Koloa Town on Kaua`i. Today I represent the 2500 supporters of GMO Free Kaua`i, a citizens group, active since 2002.
We support SB 958, we have been patiently waiting a year since our last hearing and urge you to vote in favor of this bill today.

SB 958 asks for a temporary moratorium, a time out. It is a moment to evaluate and use precaution in a new situation. If only a second look had been given before the DOA allowed the importation of apple snail and let it rage out of control into pest status. Let's seize this opportunity before we release another unwanted and uncontrollable life form, such as genetically engineered kalo.

Let's take this opportunity to concentrate on stopping the importation of kalo without quarantine. Let's avoid getting plant diseases that we do not currently have anywhere in our state. There are no measures or testing in place to quarantine imported kalo.
I would think that before getting under a microscope and patenting genes, we would use some manpower to put up the physical roadblocks to stop these plant diseases of other countries taro, from coming into our state. Why haven't we done this? A moratorium would allow time for these and other measures, to be put into place.

Right now, Kaua`i produces the most Kalo in the state. As we embrace the importance of food security, let's protect this valuable, niche market.

Already we are seeing that just the rumor that someone on Kaua`i is growing genetically modified kalo, taints the perception of the entire market. You cannot tell by looking. What if one is a GMO? No agency is able to answer that question. No one is offering to perform the PCR tests to tell us which huli is and which huli is not.

Until better regulations can be designed, demonstrated and enforced - until the system is transparent and acceptable to the public, the principle of precaution justifies a moratorium.

You cannot approve of GE kalo as being safe to eat. Ask UH to show us the human data on consuming GE kalo, there is none. You cannot say it is safe, you cannot say it is unsafe-no one knows, no one has done the research. This is a fact.

Consumers want labeling. Which kalo is traditional and which is GE? GE Kalo has genes from wheat, rice and grapevine. What if someone in your family is allergic to one of those things. Allergic reactions are really hard to determine when people are brought to the ER. Especially if no one is aware of what that person came in contact with. And then what is next, round up Ready Kalo? Biotech researchers would love nothing more than to alter the genetics of the Hawaiians ancestor and then be able to douse it with round up weed killer.

Introducing GE kalo would contaminate all our kalo. In ten years time, we would not know what was what. Things get mixed up! Who is going to pay the costs for testing farmers huli? Contamination from genetically modified taro would place an immeasurable threat on traditional varieties. Kalo farmers would be paying for huli every single time they plant.

Experimenting with the genetic engineering of this crop, without thoroughly examining and evaluating the adverse effects of that process, is careless and could very well have far-reaching, irreversible, and unintended consequences.

Miles O'Brien from CNN started his show on sustainability by saying
It seems unbelievable that we would have to debate over whether or not we should protect the earth. Whether we should keep our food pure and our seed a free common resource for mankind to share.

But in this age of corporate lobbying and politics-here we are,
Farmers, consumers and health officials begging you, our community leaders, to please protect our food, our sustenance our soil, air and water
Patenting the common resources is not right. How many chemical companies would be working on genetically engineering food crops if there were no patents?

I applaud the UH for dropping the patents it previously held on kalo. They realized that it was not right to patent kalo. We need this moratorium so that private companies will not come into our state and try to own the ancestor of the Hawaiian people. Last year this kalo bill passed through several committees, once legislators listen to both sides, they get it. We need this moratorium before any more time passes. We need a moratorium so

We beg you to acknowledge that we should consider 7 generations ahead of us. We beg you to protect our most important crop in Hawaii, on Kauai, -the Kalo.
We beg you to lead Hawaii to be #1 in something, lead us to be #1 in more than just leading the world in crazy ag experiments that farmers didn't ask for and consumers go out of their way to avoid.
Do not pledge allegiance to a science that crosses natural barriers and violates the sacred kalo plant.
I come to you with sincerity on this matter. I know you all don't have time to do research on this everyday like me, but trust me when I say you should be very alarmed by what our state has allowed and subsidized under the cloak of Agriculture.

I want to protect kalo and the kalo farmers and I want you to insure our ability to eat organically grown food and avoid ingesting pesticide.

Do you really want Round up Ready Kalo?
If we do not put this on pause and take a closer look, it will be too late.

Heaven help us if you do not wake up in time.

Mahalo nui loa for your careful consideration,
Jeri DiPietro

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#69

From:

Sent: Tuesday, March 18, 2008 1:43 PM

To: sb958inpersontaro

Subject: IN PERSON- Dr Scot Charles Nelson testimony SB 958

Dr. Scot Charles Nelson will be testifying in person, he will be bringing copies of his testimony in hand as he is still working on the final draft.

Call with any questions.

#70

3/11/08

To: Kauai County Council
State House of Representatives
State Senate
Re: SB958
From: John K. Aana
Taro Farmer- 30 yrs.
Owner- Makaweli Poi Mill- 15 yrs.
KTGA- Vice President
Kanaka Maoli

I think the time has come to stand up and say what I feel in my heart, and to speak the truth. I am a descendant of the Makuaole family, from Makaweli Valley, formerly known as Olokele Valley. Our family has a history of growing kalo in Makaweli Valley that can be traced back to pre-western contact. Unlike many Kanaka Maoli families who were dispossessed from their kuleana lands, we have managed to hold onto our land, and continue to this day, to plant kalo, and to care for the very same aina that our ancestors cared for. We, as Kanaka Maoli, are direct descendants of Haloa, and kalo .

We, as the indigenous people of this land, have had our lands stolen illegally, have been made to be second-class citizens in our own land, and now are being attacked at the very essence of our spirit. This is our culture. This defines who we are as a people. Would we even think of going to Japan, or China, or any other country, and tell the people that we want to Genetically Modify their ancestors. Would the people of their countries allow that? I don,t think so. But that is exactly what they are trying to do to us. This is no longer just a taro farmer issue. This is a Hawaiian issue, a Kanaka Maoli issue.

The Kanaka Maoli people were conservationists. They practiced sustainability. They understood that what we do today will directly affect the generations to come. That is why they put kapu on resources to guarantee the sustainability of that resource. They took only what they needed to sustain themselves, and left the rest to restore and replenish that resource. By doing that they guaranteed their own survival and existence into the future.

Now here we are today, struggling with the issue of GMO. As Vice-President of the Kauai Taro Growers Assoc., I would like to clarify a few issues. We as members of KTGA voted to support SCR206 which seeks to bring all the different entities involved in the taro industry together, to work toward solutions to our problems. We voted to support SB2915 which seeks to create a Taro Security Task Force. We voted to support HB3425, which deals with Apple snail eradication research. In regards to SB958, which seeks to establish a 10 yr. moratorium on GMO taro research, KTGA members voted on this issue. After a re-examination of qualified voters by the Executive Board members, it was found that there was no majority in favor or opposed to SB958. Out of approximately 25 active members, only 10 qualified members voted. The vote was 5 to 5. To say that a majority of KTGA members oppose the SB958 is incorrect. But this is not just a taro

farmer issue anymore. Those that oppose SB958 are coming from a strictly financial point of view. They want to guarantee their financial well being at the expense our Hawaiian culture. This issue should be decided by Hawaiians. There would be no taro farmers today, if it were not for the existence of Kanaka Maoli and their culture.

No one knows what the future brings, but we Hawaiians, farmers and non-farmers, know what is pono in our hearts. It is not a future based on GMO. It is a future based on conservationism and sustainability. We need to put a kapu on GMO. Just ask the papaya farmers what GMO did for them. It ruined their industry and their markets. We humbly ask you, as the indigenous people of this land, that have welcomed and embraced so many people from so many places, please do not genetically modify us.

With a heavy heart and much Aloha,

John Keikiala Aana

#71

From:
Sent: Tuesday, March 18, 2008 1:44 PM
To: sb958inpersontaro
Subject: In PERSON- Waiahole Poi Factory- Paul & Charles Reppun

Testifying in person will be Waiahole Poi Factory represented by Paul & Charles Reppun.

They will bring copies of their written testimony with them to the hearing.

Call if need.

From: Adam ASquith
Sent: Tuesday, March 18, 2008 1:28 PM
To: sb958inpersontaro
Subject: in person testimony

#72

adam-taro.wps (17 KB)

In Person Testimony

Testimony: Adam Asquith, Taro Grower, Kauai
To: Committee on Agriculture

Date: Wednesday, March 19, 2008. 9 AM

Bill: SB 958.SD1.HD1 Relating to Genetically Modified Organisms

I will present my full testimony in person but I will provide key points below:

- I am not in support of GMO taro. I do not grow GMO taro. I would never grow GMO taro. None of the farmers that I know would ever grow GMO taro. I believe it would be offensive to my friends and family. But I find it equally offensive that this issue might be dictated by legislation. I am opposed to this bill and the proposed moratorium because this is a family issue, not a legislative one. Let me illustrate my concern with discussions of how it effects my family.

- I have only been farming taro for 10 years, but I am deeply indebted to the taro farming community that has let me into their family. The way this issue is being handled is breaking this family apart, and breaking my heart. The taro farming community has always embodied the Hawaiian values of laulima and kokua in the common needs such as cleaning auwai and harvesting labor. At the same time they never question another's practices because each farm has different needs and each farmer different experience and belief. The proposed legislation of this GMO taro issue has caused behavior never before seen in our community: name-calling, finger-pointing etc. If differing opinions within our community are viewed as dirty laundry, then it should be cleaned at home, not aired to the public.

- I have a daughter with special needs. Every day I learn what new tools and skills I need and she needs, for her to achieve her full development. I could not tell you what tools I will need tomorrow to help her. But I want access to everything that might be available. Me and my family will make the decision as to what she needs and what is appropriate. Someone outside our family could not possibly know what is best for our daughter. We view our farming responsibility similarly. We want to learn how to do the best job we can in growing taro to feed our community. Ultimately, however, we know our farm better than anyone else, and we do not want someone else dictating how we farm.

- I am not Hawaiian, but my children are. My son may be one of the few living Hawaiians who truly believes that his brother is Haloa, the kalo plant. Not in a metaphorical sense. If you ask him who his sister is he will tell you it is Nihi. If you ask him who is brother is he will tell you it is the kalo. This is his reality. He also believes, that his kuleana, the single most important responsibility in his life, is taking care of his family, including kalo. He will do anything that is possible and appropriate to fulfill his kuleana. Do not change his cultural reality by intruding into his family life.

- I try and live by the Hawaiian and community values that I have adopted from my friends and kupuna. I believe it is an embarrassment to my teachers for this issue to have been dragged into this process and this setting. I know it is an embarrassment for me and my family. I think all those involved in exposing the soul of our community to a King Solomon-like decision should hang their heads in shame.

- I reiterate: I am not in support of GMO taro. I do not grow GMO taro. I would never grow GMO taro. None of the farmers that I know would ever grow GMO taro. I believe it would be offensive to my friends and family. But I find it equally offensive that this issue might be dictated by legislation. I am opposed to this bill and the proposed moratorium because this is a family issue, not a legislative one

#73

Ka Papa Lo'i o Kānewai

UNIVERSITY of HAWAI'I MĀNOA

Director Edward Makahiapo Cashman
Ka Papa Lo'i o Kanewai, University of Hawai'i at Manoa
Manoa
349-9247

Testimony-In Support
SB958-10 Year Moratorium on Genetic Modification of Taro

Aloha Legislators,

We write to ask that you support the 10 year moratorium on all forms of genetic modification and patenting of the taro (kalo) plant species. Ka Papa Lo'i o Kanewai has been working with native Hawaiian taro varieties and taro varieties from all over the world for over 25 years. During these years we have worked with schools, community groups, business, and hundreds of groups from around the world. It is safe to say that we have worked with well over a hundred thousand people over the last 25 years. We teach them the value of our Hawaiian varieties, other varieties of kalo, and other native plants we have at Kanewai. Currently we have over 40 different Hawaiian varieties and 5 non-native varieties. As any mahi'ai will tell you, this is no easy task, especially with a minimal amount of staff and no money.

Kalo is the oldest food plant. We know this because our geneology the Kumulipo refers to Haloa and his parents, Papa and Wakea.

We share with our visitors a chance to work closely with Haloa, to see Haloa in his many forms and the importance of each variety. Each variety has its own name, its own distinguishing characteristics, its own lesson to teach us, and its own mo'oleleo (story). Kalo has its own language. Language is culture, culture is language!

When one genetically modifies kalo, it's not kalo anymore! It's something else. The geneology is broken, the 'oleleo (language) we use is different; it's the GMO language and not the Hawaiian language. The mo'oleleo now changes to GMO stories. I could go on for days. If I can be of any help to clear the air, I am always available. Please don't hesitate to call and leave a message. If I don't answer, I am probably in the lo'i with a group of students listening for instructions from Haloa.

Me ka ha'aha'a,

Ed Makahiapo Cashman

Kamakakūokalani Building 2645 Dole Street, Room 110 Honolulu, Hawai'i 96822
Telephone: (808) 945-1562 Fax: (808) 956-4893 Email: kanewai@hawaii.edu

#74

From:
Sent: Tuesday, March 18, 2008 2:21 PM
To: sb958inpersontaro
Subject: IN PERSON- Jerry Konanui

Testifying in person will be Jerry Konanui

he will bring copies of his testimony to deliver at the hearing

call

#75

Eric Enos
TESTIMONY

IN SUPPORT
SB958 – 10 year Moratorium on the Genetic Modification of Taro

Eric Enos
Educator, Co-Founder and Executive Director Cultural Learning Center in
Wai`anae, O`ahu
Wai`anae
Hawai`i, 96792

Aloha Legislators,

For the past 30 years I have been actively involved in the restoration of kalo lo`i both dry land and wetland in the back of Wai`anae Valley. Unknown to most people there were over 100 acres of ancient lo`i kalo terraces in Waianae Kai, once the poi bowl of the entire Wai`anae Coast.

Today these lo`i kalo lands serve over 4,000 school children every year. Children spend a day in these restored lo`i, learning about our environment, the watershed, practicing constructive, meaningful ways to be a good steward of the land and water.

Kalo is our mainstay, it is both a symbol and a practical connection to healthy people, healthy land and water, and healthy communities.

We also work with men and women in substance abuse programs. These men and women are fathers, mothers, grandfathers and grandmothers. Most are Native Hawaiians and all have been disconnected from their culture, from their ancestral ties to the aina and to their traditional foods. All of them are unhealthy in many ways - physically, mentally and spiritually. Their "treatment" to work towards "wellness" is time spent getting re-connected again with their cultural roots. Working in the lo`i kalo and learning how to harvest and process their sweat into healthy food is like waking up from a deep coma for most of our people.

Drugs and addiction is a fact of everyday life. We can be addicted to "ice", alcohol, soda, processed foods and the consequence of bad health is that it is a billion dollar industry. Untold resources are spent in treating just the symptoms of the addiction to bad health. Our mission, our goal in the work we do in the community is to reverse this priority of just treating symptoms as opposed to addressing the root causes. Institutional will, energy, people, programs, research dollars need to be reallocated.

The political will and vast complex of bio-tech funds channeled primarily towards GMO solutions takes away from research strategies that focus on alternative, community-based solutions to feeding a hungry planet. Helping to create healthy communities both locally and globally is not a billion dollar industry. We need to change that paradigm.

The 10-year moratorium on kalo genetic research is a symbol of a commitment to work towards healthy, sustainable alternatives to help communities feed themselves.

Please have the will to help us stand up against the vast corporate network that feeds addiction and dependency on bad health. Help us to help ourselves. Aloha `aina.

Mahalo for your support.

Eric Enos

#76

Butch Limahana DeTroye

TESTIMONY

IN SUPPORT

SB958 – 10 year Moratorium on the Genetic Modification of Taro

Butch Limahana DeTroye

Wai`anae
Hawai`i, 96792

Aloha Legislators,

My name is Butch Limahana DeTroye and I am the Farm Manager at the Ka`ala Farm, Inc. Cultural Learning Center located in the ahupua`a of Wai`anae Kai. Within the center are ancient lo`i kalo that have been restored over the past 30 years. It is an educational center but the bottom line is that it is a place for all to heal.

Our Kupuna, Anakala Eddie Ka`anana, use to say the children are walking in the footsteps of their ancestors when they enter the lo`i kalo. All of the aloha that was put into the essence of the aloha is helping us all to heal even until today.

The kalo and Haloa were the "heartbeat" for the Po`e Kahiko (people of old). Their physical, mental, spiritual and cultural well being were integrally connected to their relationship with Papa (mother earth), the kalo and Haloa.

The Po`e Kahiko impacted these islands. Western contact devastated these islands. Colonization, militarization, sandalwood, cattle, sugar and urbanization have desecrated Hawai`i. Although there are major players in the desecration of these lands we are all responsible no matter what our genealogy is to malama Papa (mother earth).

In order t find direction for the future we need to look to the past. The industrial technological age has provided many comforts and conveniences for us human beings, but what price has Papa (mother earth) had to pay?

Pesticides, herbicides, fungicides and chemical fertilizers were supposed to save the earth from famine, has it? Now these multi billion dollar chemical companies, who deny any negative from the use of chemicals, are supporting the "new savior", GMO's and they are not even responsible enough to label the foods that are being genetically modified.

Have we not learned from the chemical age that there is no "magical bullet"? Papa has cancer, we have cancer. What Papa adsorbs, we absorb. Our health depends on Papa's health. Haloa maybe sick, but Haloa doesn't need a "fix", there are enough addicts in the world.

Progress has brought us to where we stay today, but remember cancer is also progressive. What farming methods did the Po`e Kahiko use to support their population? Most accounts say that they had the abundance to feed between 500,000 – 800,000 people at one time.

Some where along the way Haloa became a purple bag on the store shelf and now there is not even enough of that to feed the people who can still afford to buy it.

Of course we are in a different day and age. Technology has its benefits. Chemicals and GMO's may have a role to play if used properly and not just for big time profits but the bottom line is that kalo farmers need good water, healthy soil (fallowing, organic composting and crop rotation) and strong huli. In order to progress, we need to get back to the basics.

I support SB958 and I urge you all to do the same. When I share the story of Haloa with the children I don't want to say that he is now undergoing "chemotherapy" or genetic modification.

Mahalo for your time,
Butch Limahana DeTroye

#77

Danny Bishop
TARO FARMER
'Onipa`a Na Hui Kalo
Ko'olaupoko, Ka'alaea, Waiahole, 96744

Re: SB958- 10 Year Moratorium on the Genetic Modification of Taro- IN SUPPORT

Aloha Legislators,

I strongly support a 10 year moratorium on all forms of genetic modification and patenting of kalo (taro) because it is culturally inappropriate and poses potentially dangerous and irreversible long-term risks to our food, health, environment and economy. The kalo plant species in Hawai'i is our local culture, ecological tradition, a unique hypoallergenic food and medicine, as well as an example of sustainable agriculture & business.

I support farming & precautionary scientific research that does not expose the kalo species to the disrespect and risks of genetic engineering. I hope that you will help to protect kalo farming in Hawaii by supporting rehabilitative research into pests and disease, as well as addressing current land and water issues.

Kalo is an incomparably valuable part of our island life and culture. I join my mahi'ai (farmers) in calling on all legislators to protect Hawaii's residents, as well as our unique culture and resources, by enacting a 10 year moratorium on the genetic modification and patenting of kalo.

Mahalo,

Danny Bishop

Waiahole Farmer

#78

Vince Kana`i Dodge
Coordinator, `Ai Pohaku Workshop

IN Support of SB958

Aloha kakou. O wau o Kana`i Dodge. Noho wau ma Wai`anae O`ahu. O Fred and Aiko Dodge ko`u ma makua. He makua wau me elua keiki nui a me ekolu mo`opuna. I'm Vince Dodge and I live in Wai`anae, O`ahu. My parents are Fred and Aiko Dodge. I have two grown children and three granddaughters. I've been a part-time kalo farmer for about eight years. I am a poi maker and cultural practioner. I am known as kumu to 1000 youth in Wai`anae.

I understand that you will be lobbied by the very powerful biotech industry and I remind you that you have been elected to represent us- the people, who are busy with all the responsibilities and necessities of daily living. We are not paid to lobby. We have entrusted you, our elected officials to protect us and to make wise and practical decisions on our behalf.

Voting yes to support the Taro Bill, SB 958 is a wise and practical decision. It is wise because it honors and respects traditional Hawaiian culture. Taro or kalo is by genealogy the elder brother of the Hawaiian people. Whether one believes this or not, it is so. As Hawaiians and as people who respect our host culture we demand that kalo, Haloanakalaukapalili the elder brother be protected from genetic modification and all its implications. It is also a wise decision because in light of the cultural significance of kalo SB 958 asks for only a 10 year moratorium.

Voting yes to support the Taro Bill, SB 958 is a practical decision. It buys us 10 years time to deal with the serious issues surrounding GMO and the state of kalo growing here in Hawaii. Ten years will go by in the blink of an eye. We need this 10 year pause to work things out.

These serious issues include: the safety and labeling of GMO foods, patenting and ownership, lawsuits against farmers whose crops are contaminated by GMO, public education about GMO and Haloanakalaukapalili, real and imagined threats to kalo growing and the industry, etc.

Let's visit some of these issues.

Scientists advocating GMO technology claim that they are saving kalo from diseases, and kalo has some diseases. When kalo is grown organically or with care to nourish the `aina the diseases are greatly mitigated. The biggest threat to kalo in Hawaii is the apple snails, the lack of stream water, the lack of lo`i, and the lack of people who will farm kalo, not the diseases.

The greatest threats to kalo cultivation are not diseases. The greatest threat to kalo is the apple snail epidemic. Kaua`i taro farmer and friend Rodney Haraguchi reported at a Hui Kalo meeting about a year and a half ago that the apple snail problem was unbelievable in its magnitude. Their recent assessment of apple snail infestation in Hanalei, Kaua`i determined that the snail population was at least 1.5 million apple snails per acre of lo`i.

Other threats are unsustainable farming practices such as overuse of the `aina and reliance on petroleum based fertilizers and poisons. In Hanalei,

Kaua`i commercial taro farmer Chris Kobayashi has demonstrated that letting fields fallow or rest, cover cropping to naturally restore nitrogen and organic matter in the fields, thereby restoring the health of the `aina and increased crop spacing results in larger, better quality and disease resistant taro.

Kalo does not need to be genetically modified to address the disease problem.

Public education about GMO and Haloanakalaukapalili. In the united States we live in a virtually blackout of information about GMO. It's as if the GMO industry wants to go about its business in secret. This is about food, food - one of the primary ingredients in every culture. Food -that will build our health and wellbeing or degrade it. How can we as consumers make informed decisions about food when we don't have full information? How can you as our elected representatives make wise and practical decisions regarding food without full information?

Voting yes to support the Taro Bill, SB 958 buys us all time to become fully informed.

Taro or kalo is by genealogy the elder brother of the Hawaiian people. Whether one believes this or not, it is so. This is explained very eloquently in the Bill, SB 958. There is a reciprocal relationship between Haloa, the kalo, the elder brother and the people, the younger sibling, us. Haloa nourishes us with the very best food, a food so nutritious that a new born infant can be raised on poi alone. A food that does not rot without refrigeration. We have eaten poi 30 days old, 60 days old, 180 days old (we found this bag of poi when the car got cleaned).

The people, us in return must care for the kalo providing rich soil and clean cold stream water to grow it. Kalo is more than a plant, more than an amazing food. It is one of the foundation stones of our native Hawaiian culture. It is family. Kalo is not alone in this way. For many native people in America and around the world some plant or place retains the same significance. We must become educated about this before we make irreversible decisions that will affect them.

Voting yes to support the Taro Bill, SB 958 buys us all time to become fully informed.

Lawsuits against farmers whose crops are contaminated by GMO. Across America and Canada hundreds of farmers have been sued and/or threatened with lawsuits for growing crops that were contaminated with GMO crops. Many of them lost their livelihood due to GMO contamination. They were sued for "stealing" GMO seeds because they are patented. Would you believe the courts found the farmers guilty and ordered them to pay damages? This would be ridiculous, except that it is true! Watch the "Future of Food " DVD. This is like my child who has a cold, going over to your house and infecting your child with the cold, and then I sue you for stealing the cold, and win, because I own the cold. Would you not be outraged at such a situation? The patenting and ownership issues of GMO need to be worked out before kalo is subject to GMO technology.

The GMO industry cannot guarantee that GMO kalo will not cross pollinate with a non-GMO kalo.

Voting yes to support the Taro Bill, SB 958 buys us all time to work out these issues.

Let's visit the GMO food safety and labeling issues.

The GMO industry says that it's food is safe. They can say that it has been approved by the FDA. Other voices say that there haven't been adequate independent studies, or peer review of the industries' testing. But let's get down to the nitty-gritty. The GMO industry has demonstrated beyond a doubt that their products are not safe-let me repeat that. The GMO industry has demonstrated beyond a doubt that their products are not safe by fighting every attempt by citizens and government to have GMO products labeled. The industry has spent millions of dollars doing this. Think about that. If their GMO products were safe then why wouldn't they be proud to have them labeled? Much of Europe and Japan has banned GMO foods because of the safety question. In parts of Europe where GMO foods are allowed they are required to be fully labeled. Some of these same food products are sold in the US where they are not labeled.

Over half the food in our grocery stores contain GMO ingredients. Deliberately unlabed GMO foods.

Why is this so?

Voting yes to support the Taro Bill, SB 958 will give us time to investigate this and force the GMO industry to label "their" foods here in America.

Voting yes to support the Taro Bill, SB 958 is a wise and practical decision. It is wise because it honors and respects traditional Hawaiian culture, where taro or kalo is by genealogy the elder brother of the Hawaiian people, and one of the foundation stones of our culture.

Voting yes to support the Taro Bill, SB 958 is a practical decision. It buys us 10 years time to deal with the serious issues surrounding GMO and the state of kalo growing here in Hawaii.

These serious issues include: the safety and labeling of GMO foods, patenting and ownership, lawsuits against farmers whose crops are contaminated by GMO, public education about GMO and native cultures, real threats to kalo growing and the industry, etc.

Dear legislators I remind you that you have been elected to represent us-the people, who are busy with all the responsibilities and necessities of daily living. We are not paid to lobby. We have entrusted you, our elected officials to protect us and to make wise and practical decisions on our behalf.

Voting yes to support the Taro Bill, SB 958 is a wise and practical decision.

Ho`opiha kau `eke poi ika manawa apau,
May your poi bowl be always full,

Vince Kana`i Dodge
Coordinator, `Ai Pohaku Workshop

Association of Hawaiian Civic Clubs
P. O. Box 1135
Honolulu, Hawai`i 96807

#79

TESTIMONY OF LEIMOMI KHAN, PRESIDENT
IN SUPPORT OF TARO FARMERS REGARDING

SB 958, SD1, HD1, RELATING TO GENETICALLY MODIFIED ORGANISMS

Hearing date and time: Wednesday, March 19, 2008 9:00 a.m.

Aloha Chairperson Tsuji, Vice-Chair Brower and Members of the House Committee on Agriculture. Thank you for this opportunity to testify on Senate Bill 958, Senate Draft 1, House Draft 1, which recognizes the importance of the kalo, or taro, in the heritage of the State by creating a ten-year moratorium on developing, testing, propagating, cultivating, raising, and growing of genetically modified taro in Hawai`i.

The Association is a growing national confederation of fifty-three Hawaiian Civic Clubs, located throughout the State of Hawai`i and in the States of Alaska, California, Colorado, Illinois, Nevada, Utah, Virgnia and Washington State. It initiates and works to support actions that enhance the civic, economic, educational, health and social welfare of our communities, and in particular, the culture and welfare of the Native Hawaiian community.

The Association supports taro farmers in their efforts to protect and preserve Native Hawaiian traditional cultural practices as it relates to kalo.

This position is supported by several resolutions passed by delegates at annual conventions that express concerns relating to genetic modification of native natural resources.

On November 2, 2002, the Association passed a Resolution which urged the State of Hawai`i to place a moratorium on all bioprospecting expeditions currently being undertaken on public lands, submerged lands, and natural resources under the State's jurisdiction until such time as an appropriate legislation can be enacted.

On November 15, 2003, the Association passed three Resolutions. Resolution 2003-38, expressed concern that multinational corporations were misappropriating Hawaiian natural resources such as Hawaiian healing plants for commercial purposes with no compensation to the State of Hawai`i or to the Hawaiian people;

Resolution 2003-14, urged the University of Hawai`i to cease development of the Hawaiian Genome Project or other patenting or licensing of Native Hawaiian genetic material until such time as the Native Hawaiian people have been consulted and given their full, prior and informed consent to such project; and

Resolution 2003-13 urged the State legislature to enact legislation, in consultation with Native Hawaiians, that recognizes and protects the Native Hawaiian peoples' collective traditional knowledge, cultural expressions, art forms and intellectual property rights, including requiring that all cultural content that has been acquired under free prior informed consent; reserving the right to refuse to participate or authorize use of intellectual property rights; requiring that all cultural content has been reviewed for accuracy and appropriateness; retaining copyright authority over all indigenous knowledge that is shared with others for documentation purposes; insuring controlled access for sensitive cultural information that has not been explicitly authorized for general distribution, as determined by members of the local community; and arranging for benefit sharing agreements.

On October 5, 2005, the Association passed Resolution 2005-23, which resolved that the legislature of the State of Hawai`i and the University of Hawai`i be asked to impose policies to safeguard and protect Hawai`i's public trust resources from genetically engineered and bioprospecting threats, in consultation with Native Hawaiian organizations.

On November 30, 2007, the Association passed Resolution 2007-091, which urged the State of Hawai`i to require labeling of all products containing GMO substances.

Thank you for this opportunity to testify in support of taro farmers in their efforts to protect and preserve Native Hawaiian traditional cultural practices as it relates to kalo.

#80

TESTIMONY OF EDWARD WENDT
IN SUPPORT OF SENATE BILL 958, SENATE DRAFT 1, HOUSE DRAFT 1
RELATING TO GENETICALLY MODIFIED ORGANISMS

March 19, 2008

In-Person Testimony

Good morning Chairperson Tsuji, Vice-Chairperson Brower, and members of the House Committee on Agriculture.

My name is Edward Wendt and I love Haloa. I am a full-time traditional taro farmer, a keeper of Haloa, and I come from the ahupua`a of Wailuanui in East Maui.

I testify in strong support of Senate Bill 958, Senate Draft 1, House Draft 1, which imposes a 10-year moratorium on developing, testing, propagating, cultivating, growing, and raising genetically engineered taro in the state.

To me, Haloa is everything to us as Kanaka. Haloa is our older brother. He takes care of us. He is our food source. As a person who practices a traditional way of life that has been passed on to me, and still farming kalo Haloa, it is an insult to genetically modify our Hawaiian species of Haloa.

Altering the genetics of our Hawaiian species, and as a Kanaka, it seems like it will wipe us off the map. Being that the government has not properly received public knowledge about how the public feel about GMO farming in Hawai`i, it is not pono. Government's lack of scientific evidence about how GMO is going to affect native plants is of great concern.

On the market, GMO is not labeled. Other products require proper labeling, but not GMO, and government allows this. We don't know what impact GMO products are going to have on our health and on our well-being.

Please pass Senate Bill 958, Senate Draft 1, House Draft 1. Thank you for this opportunity to testify.

Edward Wendt

#81

ATTORNEYS AT LAW

Stubenberg & Durrett LLP

Jonathan S. Durrett
jdurrett@stubenbergdurrett.com

TESTIMONY BEFORE THE SENATE COMMITTEE ON WATER, LAND, AGRICULTURE AND HAWAIIAN AFFAIRS

SENATE BILL 958

RELATING TO GENETICALLY MODIFIED ORGANISMS

March 18, 2008

Chair Tsuji and Honorable Members of the Committee on Agriculture:

My name is Jonathan Durrett. I am a local resident and attorney who has represented numerous agricultural interests in Hawaii over my 25 year career. Besides representing the watercress and sugar planters' association, I also helped form the Hawaii Crop Improvement Association in 2003. I recently assisted in coordinating infrastructure design of a 150 acre agricultural park donated to the State of Hawaii as part of a Land Use Commission obligation from a housing developer, and am presently assisting Hawaii Agriculture Research Association preserve valuable agricultural lands and supporting facilities and farm worker housing at Kunia.

I recently completed 8 years of service as a member of the board of directors of the Native Hawaiian Legal Corporation in 2007.

As a long time observer and (sometimes testifier) on legislation impacting agriculture in Hawaii, I wish to register my categorical opposition to Senate Bill 958.

This is the worst kind of legislation government can impose: attempted regulation of pure scientific research based on unsubstantiated assertions. Moreover, because opponents use culture as a pretext in furtherance of these objectives, Bill 958 is political pandering at the taxpayers' expense. My opposition is based on three arguments.

First, there has not been one *iota* of evidence adduced that genetic research has done anything other than benefit Hawaiian taro. Indeed, the overwhelming body of evidence demonstrates the magnificent promise this technology holds to stabilize the native Hawaiian taro crop and fortify it from pests and diseases. As a board member of the Native Hawaiian Legal Corporation, I visited in 2005 beautiful cultivated *loi* in East Maui (Keanae) and listened intently as a new generation of Hawaiian taro growers made their case for replenishment of fresh water streams diverted by sugar to other parts of the Island. In doing so, however, I also noted their grave concerns about the pervasive snail infestation which was decimating their harvests. Genetic technology (commonly referred to as crop breeding in ancient times) may be the only hope in some cases of preserving existing taro varieties into the future. Do we really want to extinguish such research at this time?

Second, the claim of "spiritual desecration" as a basis for opposition to genetic research otherwise designed to strengthen and stabilize Hawaiian taro is disingenuous. You

cannot tell me that Hawaiian taro farmers who work their *loi* would not welcome technological advances that support traditional native Hawaiian taro farming and irrigation practices. Similarly, it is not credible to suggest that these same farmers would not embrace a forthcoming genetic process which might have the effect of making taro leaves resistant to insidious snail infestations or perhaps some virus introduced by an alien species of which we presently know nothing about. Are we willing to take this research tool out of our arsenal at this time; or will the legislature need to reconvene to authorize an exemption upon such an eventuality?

Remember, the genetic research industry did not create the problems brought about by invasive species; but it is the only industry earnestly trying to support farmers to find problem specific remedies.

Finally, those who purport to speak for Hawaiian taro farmers by using an understandably sensitive cultural belief to promote a wider political agenda (abolition of all genetic research) do these farmers a great disservice. The suggestion that traditional Hawaiian farmers were unwilling to embrace technological advances in their stewardship of *ahupua'a'* portray Hawaiians as unwilling to implement innovation and forever frozen in time. We know that this is not an accurate portrayal of pre-contact Hawaiians. From animal husbandry, to ocean voyaging to design and construction of fishing ponds and complex irrigation systems ancient Hawaiians not only embraced innovation, but were frequently at the forefront of innovation themselves.

Auwe, on those who recklessly invoke *Haloa* in seeking to impose a ten (10) year moratorium on taro research without any thought of the practical consequences to Hawaiian taro farmers or the long term welfare of their crops. Please vote in opposition to Senate Bill 958.

#82

NATIVE HAWAIIAN BAR ASSOCIATION

P.O. Box 1170 Honolulu Hawaii 96807

March 18, 2008

The Honorable Clift Tsuji
Chair, House Committee on Agriculture
Hawaii State Capitol, Room 403
415 South Beretania Street
Honolulu, Hawaii 96813

RE: S.B. No. 958 SD1 HD1
Relating to Genetically Modified Organisms
Hearing: House Committee on Agriculture/March 19, 2008@9:00 a.m.

Dear Chair Tsuji and Members of the State House Committee on Agriculture:

On behalf of the Board of Directors of the Native Hawaiian Bar Association, I respectfully submit this letter in **support** of S.B. No. 958 SD1 HD1 relating to genetically modified organisms.

Formed in 1992, the Native Hawaiian Bar Association ("NHBA") is an association of lawyers, judges and other legal professionals of Hawaiian ancestry which, among other things, seeks to promote unity, cooperation and the exchange of ideas among its members. The NHBA also seeks to provide advocacy, programs, and scholarship for the Native Hawaiian community.

The Board of Directors of the Native Hawaiian Bar Association recently discussed the matter of providing our support on the issue of a moratorium on genetically modified taro. The Board expressed its overwhelming support of the measure, recognizing the importance of the kalo in the heritage, history and culture of our people. The NHBA Board supports the current bill and respectfully requests your favorable consideration of this measure.

Mahalo nui loa.

Very truly yours,

Richard Naiwieha Wurdeman
President, Native Hawaiian Bar Association

KAHEA
THE HAWAIIAN-ENVIRONMENTAL ALLIANCE

Protecting Native Hawaiian Traditional and Customary Rights
and Our Fragile Environment

www.KAHEA.org, kahea-alliance@hawaii.rr.com
ph/fx 1-888-528-6288 P.O. BOX 270112 HONOLULU, HAWAI`I 96827

#83

S.B. 958
March 19, 2008 9:00 am Auditorium
House Committee on Agriculture

Aloha Chairman Tsuji and Members of the Agriculture Committee,

We write in strongest possible support of SB958, calling for a ten-year moratorium on the genetic modification and patenting of kalo (taro).

KAHEA: The Hawaiian-Environmental Alliance is a local non-profit organization of Native Hawaiian cultural practitioners, kupuna, conservationists, scientists, and concerned residents working to protect Hawai'i's unique natural and cultural resources. We firmly believe that because "the land and the people are one," protecting Hawai'i's unique cultural heritage means defending our natural environment, and the public trust resources upon which our cultural practices depend.

Traditional taro farming is cultural practice. From working together to build auwai and lo'i to helping each other "pull" taro to trading huli for the next season, taro cultivation affirms traditional Native Hawaiian principles, identity, and beliefs. It is where the land and the people literally become one. Like the rights afforded to cultural practice for gathering and accessing the shoreline, the traditions of taro farming in Hawai'i are deserving of our highest protections.

Genetic modification and patenting of kalo is culturally inappropriate. Kalo is both a fundamental and also sacred food source to Hawaiians, who understand that their shared ancestry began with Haloa the Kalo. Haloanakalaukapalili was the first kalo plant born to Hawaii's gods. He fed his younger brother, Haloa the Human - the first human ancestor of Hawaiians. Haloa the Human was given the kuleana (responsibility) to take care of his older brother, Haloa the Kalo, who would in turn provide food for all humans.

The environmental and health risks of genetically modifying taro are not well understood. In a social context, the consequences of patenting taro, including excising a price for trading huli, are far-reaching and detrimental to the tradition of taro farming in Hawai'i. When the risks of a particular decision are not well-understood, yet potentially severe and far-reaching, decision-makers should abide by the precautionary principle and proceed with extreme caution.

There is much about the environmental implications of GMO that is not known. What we do know, is that GMO kalo can cross-pollinate with native kalo varieties. We also know that the unknown longterm and potentially dangerous effects to the species, our environment and our local agricultural economy may be irreversibly permanent! There is no complete research to

understand the long term threats to native ecosystems or to human health from genetically modified kalo.

Nor has it been proven that genetic modification of kalo is even necessary. Genetic modification is an imprecise and short-sighted attempt at a solution to stresses that Hawaiian kalo agriculture faces when clean abundant water is no longer made available to farms. Hawaiians have been successfully breeding and farming many varieties of kalo for thousands of years- time & experience have proven that species diversity & access to clean water is what is needed for a sustainable agriculture industry that can feed our islands. That it will be profitable for some few, does not and cannot justify the threats and risks posed to the great many.

Where the risks are unknown and the consequences likely irreversible, we are called upon to proceed with greatest caution. We strongly urge this Legislature to fulfill its obligation to the people of Hawai'i by embracing a precautionary approach to the genetic modification and patenting of taro by passing SB958 unamended. Mahalo for the opportunity to submit this testimony in strongest support of SB958.

Mahalo,

Marti Townsend
Program Director

Miwa Tamanaha
Executive Director

#84

From: Trent Hata
Sent: Tuesday, March 18, 2008 4:28 PM
To: sb958inpersontaro
Subject: Against SB 958 (10-year moratorium against genetically modified taro)

My name is Trent Hata and I work for the University of Hawaii at Manoa, College of Tropical Agriculture and Human Resources. First of all, I would like to make it very clear that this is my opinion and not that of the College or University of Hawaii. Once again I ask that you vote against the 10 year moratorium on GM Taro. Although I respect the opinion of those who oppose genetic engineering I personally believe that it is the only way growers would be able to meet the world's ever increasing demand for food. There are many examples of successful use of genetic engineering in agriculture throughout the world and right here in Hawaii. As you probably know, our local Papaya Industry would not exist today if it wasn't for the GMO papaya. The key is to do it safely and responsibly. As a manager of the UH CTAHR experiment stations, I want to assure you that we take GMO testing and its security very seriously. Protocols regarding natural mechanisms of release and contingency are considered before a testing site is even approved. Taro is not at that stage of testing yet; however, the bills that are currently being proposed would ban such research completely. People by nature are afraid of the unknown but great achievements cannot be made without our scientist conducting such research. GMO and non-GMO supporters must coexist to find the right balance and supply world needs. Just imagine the possibilities - elimination of famine, reduced pollution to our environment, fossil fuel replacement, or reduced human suffering due to the use of this technology.

Waiting for the problem to occur will be too late. Thank you.

Trent Y. Hata

#85

UNITE HERE!
LOCAL 5 HAWAII

Eric Gill, Financial Secretary-Treasurer *Hernando Ramos Tan, President* *Godfrey Maeshiro, Senior Vice-President*

Tuesday, March 18, 2008

Representative Clift Tsuji, Chair
Representative Tom Brower, Vice-Chair
House Committee on Agriculture

Supporting the intent SB 958 SD1, HD1; relating to genetically modified organisms.

Chair Tsuji, members of the House Committee on Agriculture, I submit this testimony on behalf of UNITE HERE! Local 5.

UNITE HERE! Local 5 wishes to express our support for the intent of Senate Bill 958 SD 1, HD 1.

If enacted, SB 958 would recognize the cultural significance and importance of the kalo, or taro, in the heritage of our State.

We share in the concerns already articulated in the overwhelming testimony from farmers, and other interested groups and individuals all against genetically modified taro. Questions regarding possible health, environmental, economic and cultural impacts of genetically modified taro have led us to believe that more discussion on this subject and answers to these concerns must first be addressed. As such, we support the intent of SB 958 that calls for a ten-year moratorium on cultivating, and growing genetically modified taro in Hawaii.

I thank this Committee for providing me the opportunity to submit this testimony.

Sincerely,

Eric Gill
Financial Secretary-Treasurer

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#86

Testimony: Against SB 958 (10-year moratorium against genetically modified taro)

Committee: The House Agriculture Committee
Representative Clifton Tsuji, Chair
Representative Tom Brower, Vice-Chair

Date: Wednesday, March 19, 2008
Time: 9:00 AM

Name: Dr. Maureen Fitch. I am an independent contractor at the Hawaii Agriculture Research Center where I used to work as a USDA scientist and a University of Hawaii graduate student on papaya transformation for virus resistance. I am continuing to work in the areas of plant tissue culture and genetic transformation after having seen the good that has arisen from my graduate work moving genes from a devastating virus into Hawaiian papayas doomed for destruction by the virus. The genetically engineered Rainbow, SunUp, and Laie Gold (sold under various brand labels, e.g., Kamiya Farms, Song Special, Kahuku Farms, Kapoho Grown) papayas have enabled Hawaii's papaya farmers to sustain livelihoods nearly destroyed by widespread infections of *Papaya ringspot virus*. The genetically engineered papayas continue to provide the means to send their children to college, build their homes, finance their vacations, and supply Hawaii's citizens with a nutritious, locally grown fruit product that competes very well with mainland- and foreign-grown produce. I am delighted to see that the science to which I contributed continues to grow in value as I personally work to develop new, improved papayas by breeding with the virus resistance trait into useful, popular papayas that enhance the health, well-being, and economy of Hawaii's citizens.

Therefore, I am in full support of the following testimony presented by my friend and colleague, Dr. Susan Miyasaka. I was one of the members of her two graduate students' committees and oversaw the work that they conducted taro leaf blight/fungal resistance genes into Chinese taro (Bun Long). In fact, I now employ Dr. Xiaoling (Linda) He as my postdoctoral fellow to assist me in my work with genetically engineered anthuriums and papayas. The work that Dr. He initiated with Bun Long is important because it is intended to demonstrate that the genes protect against the destructive leaf blight, Sclerotium root rot, and even pocket rot, if we test for resistance to the latter new disease.

Dr. Miyasaka's testimony is as follows:
My name is Dr. Susan C. Miyasaka. I am an Agronomist and Interim County Administrator, College of Tropical Agriculture & Human Resources, University of Hawaii – Manoa, but I am testifying today as a private citizen. I was the lead scientist in a now-completed research project to genetically engineer Chinese taro Bun long for improved disease resistance. I was born and raised in Hawaii. I grew up eating laulau and poi, and I respect all the diverse cultures found in Hawaii.

Reasons to vote against SB 958:
1. Research to improve disease resistance of taro using all available technologies is needed:

Senate Bill 958 would unnecessarily restrict research to improve disease resistance of taro in Hawaii. This bill states "Over 300 kalo varieties may have existed at the time of the arrival of European explorers. Today, there are approximately 70 varieties of taro..." *Why* did this loss of taro varieties occur?

One major factor was probably invasive pests and diseases, such as Taro Leaf Blight that was introduced into Hawaii during the 1910s. This disease can result in crop losses up to 50% in Hawaii due to loss of leaf area. During the 1990s, when Taro Leaf Blight was introduced accidentally into Samoa, it decimated production of susceptible Samoan taro varieties, causing a 95% loss of yield.

My research team has found that insertion of an oxalate oxidase gene from wheat into Chinese taro Bun long resulted in genetically engineered (GE) lines that completely stopped the spread of Taro Leaf Blight under tissue-culture conditions. These are very promising results; however Senate Bill 958 would require that these promising transgenic lines be destroyed without allowing further testing. More information on this now-completed research project is attached.

In addition, new pests and diseases enter Hawaii all the time. It may just be a matter of time before the Alomae-Bobone viral complex found in the Solomon Islands reaches Hawaii. Hawaiian taro varieties were tested in the Solomon Islands and all were killed by this viral complex. The insect vector required to transmit this viral complex is found in Hawaii. Imagine what it would do to our taro production if it reaches Hawaii. It would be foolish to throw away any potential tools that could help to sustain taro production in Hawaii.

2. <u>There is little risk that traditional Hawaiian taro varieties will lose their genetic purity due to GE Chinese taro</u>.

Traditional Hawaiian taro varieties are grown by vegetative propagation ('hulis'). They are not grown from seed. It would be easy to maintain traditional taro varieties without a high risk of accidental transfer of disease-resistance genes from GE Chinese taro.

In order for transgenes to move from GE Chinese taro to Hawaiian taro varieties, Chinese taro Bun long would need to flower and produce healthy pollen (rare event in Hawaii), then the pollen would need to move via wind or insects to a female flower in a Hawaiian taro variety, then seed capable of growing into whole plants would need to develop (rare event – I have read or heard of only 3 incidences in 70 years in Hawaii). These two rare events would need to happen simultaneously with plants in close proximity, resulting in a risk that is almost nil. In order to produce conventional crosses of taro, breeders must hand-pollinate Hawaiian taro varieties to produce seed capable of growing into whole plants.

3. <u>There is little risk of food safety problems or increased allergic reactions *if* GE Chinese taro is commercialized</u>.

The federal government requires extensive testing that would identify and eliminate problems prior to commercialization. I am not an expert in food safety of GE crops; I defer to the experts. "It is the position of the American Dietetic Association that agricultural and food biotechnology techniques can enhance the quality, safety, nutritional value, and variety of food available for human consumption and increase the efficiency of food production, food processing, food distribution, and environmental and waste management. The American Dietetic Association encourages the government, food manufacturers, food commodity groups, and qualified food and nutrition experts to work together to inform consumers about this new technology and encourage the availability of these products in the marketplace."

Based on scientific evidence, I believe that it is possible to have a win-win situation here. Allow pro-active research using all available technologies including biotechnology on Chinese taro Bun long to ensure the sustainability of taro production in Hawaii. As a compromise, place a 10-year moratorium against genetic engineering of Hawaiian taro varieties (but not all taro varieties).

Update on Genetic Engineering of Chinese Taro (variety Bun long) for Increased Disease Resistance

Susan C. Miyasaka

Dec. 14, 2006

Why utilize genetic engineering (GE) of taro to increase disease resistance?

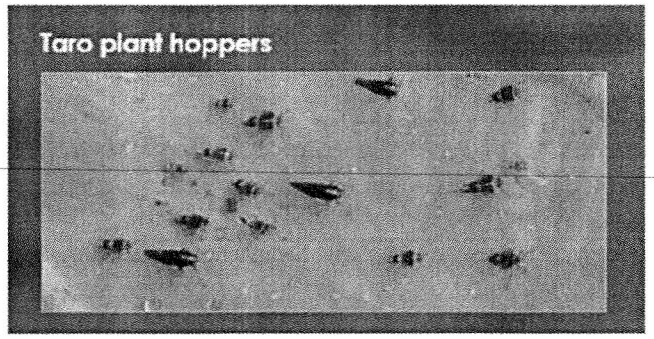
Conventional breeding of taro is being conducted at the University of Hawaii, and new hybrids have been developed with increased resistance to *Phytophthora* leaf blight. However, under weather conditions suitable for this disease organism, this resistance can break down. The taro variety shown above with leaf blight is one of the new hybrids conventionally bred for greater disease resistance.

Genetic engineering offers the possibility of increased disease resistance beyond the level found within the taro germplasm. And, the taro variety remains the same genetically except for the few new genes engineered into it.

The greatest success of genetic engineering of crops for increased disease resistance has been to improve viral disease resistance in plant species without any known natural resistance. For example, genetic engineering of papaya for resistance to *Papaya ringspot virus* has helped to save the papaya industry in Hawaii.

The Alomae-Bobone viral complex is found in the Solomon Islands today, where it has wiped out 96% of the native taro varieties there and decreased taro production by 95%. Hawaiian taro varieties were tested in the Solomon Islands and all were found to be susceptible to this virus complex[1].The insect vector required to transmit this virus complex is found in Hawaii. Imagine if that virus reaches Hawaii - what would it do to our taro production?

Alomae, a lethal viral disease of taro, is spread by taro planthoppers.



[1] S. Pacific Commission., 1978, Advisory Leaflet.

In the Solomon Islands, "it is by no means certain that the crop [taro] can be reinstated to its former abundance and usage. Its day may have gone forever, as has happened in many parts of coastal Melanesia."[2] Could this viral disease decimate taro production in Hawaii in the future?

Is the movement of genes across species unnatural?

No. Conventional breeding of plants and animals have moved genes across species for specific purposes, such as increased hardiness. For example, mules are the offspring of a female horse and a male donkey. And triticale is a hybrid of wheat and rye. In addition, all organisms, including humans, carry genes inserted from different species. For example, all humans carry genes that have been incorporated from viral infections.

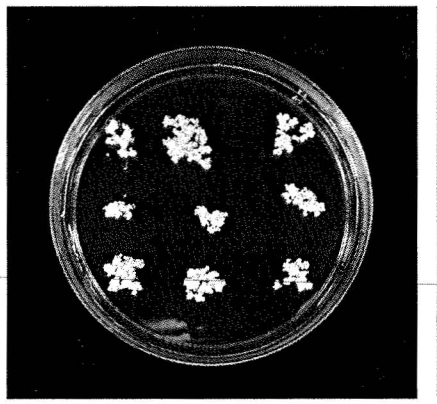
The bacterium *Agrobacterium tumefasciens* transfers its DNA (genetic material) into woody or herbaceous plants and causes crown gall disease. In our project, we are utilizing this naturally occurring bacterium to transfer disease resistance genes into Chinese taro.

What is the progress of our project on genetic engineering of Chinese taro to increase disease resistance?

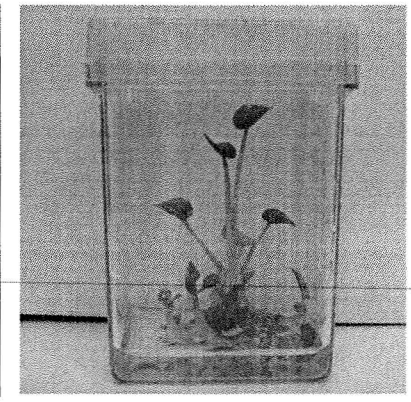
Three disease resistance genes have been transferred into Chinese taro variety Bun long:

1. Oxalate oxidase gene from wheat;
2. Chitinase gene from rice; and
3. Stilbene synthase gene from grapevine.

Each disease-resistance gene was transferred separately into callus (undifferentiated tissue) of variety Bun long in tissue-culture. Then, we manipulated plant hormones to produce shoots and then whole plants from the callus.



Taro calli (undifferentiated tissue)

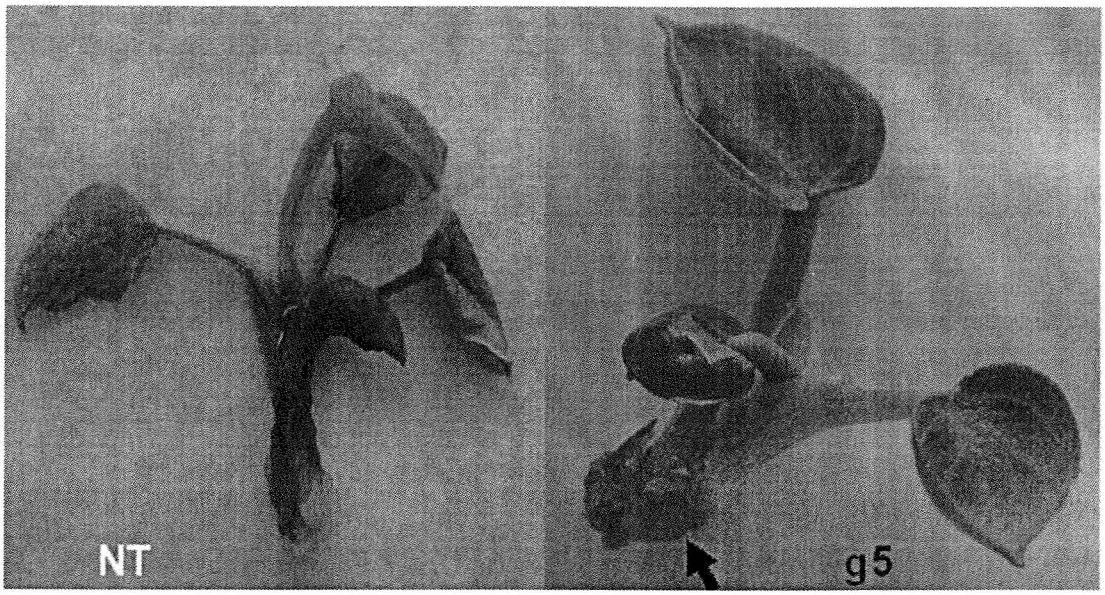


Taro plantlets in tissue-culture

[2] Kastom Gaden Association, Solomon Islands, 2005., People on the Edge, www.terracircle.org.au.

Do these disease resistance genes help Chinese taro resist pathogens?

Yes, in preliminary tests using small, tissue-cultured plants.



Untransformed Chinese taro (NT) infected with *Phytophthora colocasiae* at 12 days after inoculation. Note plant is almost dead.

Chinese taro transformed with oxalate oxidase gene (g5) shows complete arrest of *Phytophthora colocasiae* without any diseased lesions spreading to the leaves.

Chinese taro transformed with an oxalate oxidase gene completely arrested the spread of the pathogen *Phytophthora colocasiae* which is the organism responsible for leaf blight. In comparison, untransformed Chinese taro was almost dead at 12 days after inoculation with the pathogen. Other preliminary tests showed that Chinese taro transformed with an oxalate oxidase gene or a chitinase gene slowed the spread of the fungal pathogen *Sclerotium rolfsii* but the disease eventually killed the plants.

How do the products of these disease resistance genes work?

Oxalate oxidase catalyzes the breakdown of oxalate to produce hydrogen peroxide which inhibits growth of pathogens. Remember the hydrogen peroxide your mother used to cleanse your skinned knees?

Chitin is a hard, semitransparent material that's found in the cell walls of some fungi and molds. Chitinases degrade the chitin found in the cell wall of fungal pathogens, causing the fungi to die.

Stilbene synthase catalyzes the production of resveratrol, a compound that is found naturally in grapes and peanuts. Resveratrol stops the growth of fungal pathogens.

Could these disease-resistance genes accidentally move from GE Chinese taro?

Not likely. First, Chinese taro variety Bun long rarely flowers under the environmental conditions of Hawaii. Second, traditional Hawaiian taro varieties rarely

produce viable seed in Hawaii without human intervention. Taro breeders must manually move the pollen from one taro flower to another flower when its female part is ready because the insect that naturally pollinates taro flowers is not found here. Also, since taro is vegetatively propagated, it would be easy to maintain traditional taro varieties without a high risk of accidental transfer of disease-resistance genes from GE Chinese taro.

How might these disease-resistance genes affect the nutrition of taro?

The health risk of GE food is so low that after more than 10 years of experience, GE crops have been grown on more than a billion acres and been consumed by millions of humans without a single negative health issue[3]. The federal government requires intensive testing of genetically engineered crops for possible health and environmental hazards prior to approval.

The official position of the American Dietetic Association is that "Agricultural and food biotechnology can enhance the quality, safety, nutritional value, and variety of food available for human consumption and increase the efficiency of food production, food processing, and food distribution, and environmental and waste management"[4]. Did you know that if you eat cheese made in the United States, almost certainly you are eating the product of a genetically modified organism?

The anti-microbial compounds produced in GE Bun long should have little negative effect on its nutrition. For example, oxalate oxidase possibly might improve the digestibility of taro, because it breaks down oxalate, a known anti-nutritive compound that contributes to the 'itchiness' of taro. Chitinases should have little effect on humans when consumed, because chitins are found in true fungi and insects but not in plants or mammals. Resveratrol is found in the skin of red grapes and it might *improve* the nutrition of GE Chinese taro due to its anti-cancer, anti-viral, and anti-inflammatory effects. Of course, prior to any potential commercialization of GE Chinese taro, federal government regulations require intensive food safety tests.

What are the plans for GE Chinese taro when this project terminates?

The early results for increased disease resistance of GE Chinese taro appear promising, but much more research is needed. Obviously, researchers cannot state that GE Chinese taro is more disease resistant without testing plants in the greenhouse and ultimately in the field. In addition, the federal government would require tests of GE Chinese taro for food safety and environmental concerns prior to commercialization.

This federally funded project on genetic engineering of Chinese taro for increased hardiness will run out of funds in early 2007. As a result of the current controversy about genetic engineering and taro, it isn't likely that future funding will be available without support from the taro industry and/or consumers in Hawaii. Without further funding, the GE Chinese taro lines either must be discarded or sent to other cooperators in the world who are willing to conduct further tests. We will lose the opportunity in Hawaii to test these promising lines for increased disease resistance.

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[3] International Service for the Acquisition of Agri-Biotech Applications, 2006, Brief No. 34-2005.
[4] Journal of the American Dietetic Association, Feb. 2006, p. 285-293.

This brief summary presents the scientific facts about potential benefits such as increased hardiness of GE Chinese taro and an evaluation of possible risks. You, as taro consumers, need to weigh the possible risks against potential benefits of GE Chinese taro. Ask yourselves what risks are acceptable to ensure that taro is here for future generations to enjoy?

#87

From: Ikaika Hussey
Sent: Tuesday, March 18, 2008 6:32 PM
To: sb958inpersontaro
Subject: In Support

Aloha Chair Tsuji, and members of the committee:

Thank you for the opportunity to testify on this bill. I am testifying in strong support of this bill, and urge its immediate passage out of this committee, unamended, so that it can become the law that our community needs.

The University of Hawaii, of which I am an alum, has argued that academic freedom should be the basis for this bill's death. I disagree wholeheartedly. Academic freedom should not be used as a shill for special interests, including transnational biotech corporations.

Moreover, the profit-driven movement for genetic modification poses a threat to world biodiversity, as recognized by the United Nations Commission on Biological Diversity.

Kalo and our broader diversity requires this legislative measure to address these critical issues, not the weaker SCR which the University is proposing.

Please pass this measure out, today, in its current form.

Mahalo,
Ikaika Hussey

#88

Date: 03/14/08

To: Representative Clift Tsuji, Chair
Representative Tom Brower, Vice-Chair
House Committee on Agriculture

From: Sheri Hinds
Kihei, Maui, Hawaii

Hearing: Wednesday, March 19, 2008, 9:00 a.m.

Re: Opposition to SB958, Relating to Genetically Modified Organisms

Dear Agriculture Committee Chair Tsuji, Vice-Chair Brower, and Committee Members:

I would like to testify in opposition to SB958.

Biotech research on food crops is often an emotionally charged issue, often fueled by limited knowledge about the science behind the research, and a great deal of misinformation that continues to be circulated without any evidence to back up non-factual claims.

But data from the International Food Information Council show that when people make the effort to learn more about biotechnology, its purpose and benefits, there is a significant increase in understanding and acceptance.

Policy decisions must be based on science and facts, not emotions and fear. This bill should not be considered until after stakeholders have engaged in a thorough and honest dialogue about how to preserve taro, taking into careful consideration cultural as well as economic and practical issues.

Passing this bill without such a discussion would be tremendously unfair to those taro growers who need and want research to help them overcome their biggest problems: pests and diseases.

Please do not vote for this bill.

Respectfully submitted,

Sheri Hinds