Dear Members of the Kaua‘i Council,

We represent Biology Fortified, Inc., a non-profit organization made up of volunteer scientists who are experts in agriculture, including pesticides and biotechnology. We have no ties to the biotech industry, and work to provide science-based information to the public. We are writing to you to provide background information and guidance about the potential consequences of Bill #2491 from a science-based perspective. Unfortunately, this bill does not have a strong grounding in science. We will demonstrate this below.

First, it is important to understand that genetically modified plants are among the most highly studied foods that humans eat. There are literally hundreds of published, peer-reviewed scientific studies that have been conducted on them. Biology Fortified, Inc. is assembling a publicly accessible database of these studies, called the GENetic Engineering Risk Atlas, or GENERA. This is accessible at www.biofortified.org/genera/, and on the whole, these studies support the safety of these crops for human health and the environment. Approximately one third of these studies are independent of industry funding, and the conclusions of these independent studies are in agreement and do not contradict those with industry ties. Reports commissioned by the National Academy of Sciences, along with a compendium of research from the EU, conclude that genetic engineering is not per se more risky than other breeding methods.

http://www.nap.edu/openbook.php?record_id=12804
http://www.nap.edu/openbook.php?isbn=0309092094

Genetic engineering does not introduce any new classes of risk that are not already present with traditional plant breeding. It is a process by which a new trait is introduced, such as pest resistance, disease resistance, and tolerance to drought and other stresses. It differs from other methods used in plant breeding to alter the genetics of crops in that it widens the range of genetic diversity that can be used in breeding to include genes from species outside those that can be crossed through previous plant breeding techniques. This can bring in needed traits that would otherwise be extremely difficult to achieve through other methods.

For instance, scientists at the University of Hawai‘i developed papaya trees that are resistant to the papaya ringspot virus, which has had a devastating impact on the papaya industry in the state of Hawai‘i. By using a piece of one the virus’s own genes, the trees were effectively immunized against infection, and today, most of the papaya plantations in Hawai‘i are planted with these genetically engineered trees. This is a great example of a local Hawai‘ian success story with this technology, which should be kept in mind when regulating this technology at a local level.
A trial of genetically engineered virus-resistant trees on the right, compared to susceptible trees on the left.

In sum, there is no reason to think that living near field trials of experimental genetically modified plants poses any additional risk to the residents of Kaua’i, and indeed, there are benefits to the local farming economy from such trials.

We will now address some of the issues in specific sections of the bill.

**Section 22-22.1 Findings**

The findings argue that development of genetically modified organisms has been unregulated. While Kaua’i may not have specific regulations related to genetically modified organisms, the United States federal government has a system of regulations under the Coordinated Framework, set up in 1994 by the White House Office of Science and Technology Policy. Under the Framework, the Food and Drug Administration is responsible for the food and feed safety of genetically modified organisms. The Environmental Protection Agency is responsible for the safety and proper use and labeling of pesticides, including pesticidal substances produced by genetically modified plants. The United States Department of Agriculture is responsible for safety of US agriculture, including protecting the environment from plant pests and noxious weeds, as well as consideration for human and animal health. A field test of a genetically modified organism must be reviewed and approved by the USDA. The state of Hawai’i, as with any other state, has the right to further review and approve or disapprove the field trial. The Environmental Protection Agency is also responsible for the regulation of pesticides. A field test of an experimental pesticide must be reviewed and approved by the EPA. These agencies have the authority to impose additional safety conditions if the organization applying to conduct a field test has not set safety conditions that are stringent enough. These safety conditions include safeguards for the environment, including any threatened or endangered species or species proposed for listing, of
which Kaua‘i has many.

Section 22-22.2 Purpose and Section 22-22.4 Mandatory Disclosure of Pesticides and Genetically Modified Organisms.

The stated purpose of the Bill is to inform the public of field trials happening in Kaua‘i. The exact locations of field tests may be kept private from the general public for a variety of reasons, including ensuring that the scientific integrity of the tests is not disturbed, to keep members of the public from going onto the field at times that they might be harmed by the activities in the field, to protect workers in the field, and to reduce the potential for sabotage or destruction of the trial. Considering the thorough science-based regulation of both pesticides and genetically engineered plants, the potential harm of notifying the public of exact locations of field tests outweighs any potential benefits.

Indeed, it seems that the risk of vandalism and sabotage by individuals and organizations opposed to genetically engineered crops is particularly high in the state of Hawai‘i. While these cases subsided in recent years around the US, In Hawai‘i, papaya farmers have had their trees slashed in both 2011 and 2012, in protest against genetically engineered papayas. (http://www.biofortified.org/2013/06/gmo-crops-vandalized-in-oregon/) Providing a means to mandate disclosure of field trials in the local area may encourage activists to engage in similar acts. By the wording of section 22-22.4, it indicates that mandatory disclosure will involve posting the locations of field trials 60 days after the end of the calendar year. While annual crops will have been harvested, perennial crops such as trees will still be present at these locations, leaving them vulnerable to destruction. If a new virus-resistant papaya was being developed for Hawai‘ian farmers, this section may enable individuals and organizations to seek out and chop down such trees, destroying years of research and putting Hawai‘ian farmers at risk of losing their crops to disease.

In 2012, genetically engineered papaya trees were vandalized
Much of the requested data for genetically modified organisms is already available. Anyone can visit the public website http://www.isb.vt.edu/data.aspx to search for data provided by the USDA about field trials. Specifically, one can obtain information about field trials that includes the organization running the trial, the number of acres, the type of plant, the dates during which the trial will be conducted, the state in which the trial will be conducted, and the phenotypes or traits being tested. Because the State of Hawai‘i reviews all applications for field tests, Kaua‘i could potentially request from the State some more specific information for tests conducted in Kaua‘i.

Section 22-22.5 Pesticide Buffer Zones and Section 22-22.6 Prohibition of Open Air Testing of Experimental Pesticides

As stated above, pesticides are extensively regulated by the Environmental Protection Agency. When a pesticide is approved beyond the experimental stage, conditions are set for its safe use. Depending on the toxicity of the pesticide, conditions may include a requirement for it to be applied only by certified pesticide applicators, with certain equipment at certain application rates, under certain weather conditions, with buffer zones, prohibit use of the pesticide in certain environments, and so on. This is what is means for a pesticide to be “restricted use”. These application conditions are science-based, and designed to protect both humans and the environment. Similarly, applications for field tests of experimental pesticides are evaluated for safety to humans and to the environment, with specific considerations for the plants, animals, and other organisms in the location where the field test will be conducted.

Section 22-22.7 Moratorium

As stated above, the USDA conducts an evaluation of each field test application for genetically modified organisms, including consideration of safety for humans and the environment. Genetically modified organisms undergo much additional evaluation in the petition for deregulation process. Setting a moratorium for planting of genetically modified plants overrides the entire science-based federal regulatory process. This section sets an exception for persons who were growing experimental genetically modified organisms before this ordinance was introduced. If the Council of Kaua‘i truly believes there is a risk to its people or environment from these organisms, it is inconsistent to grant such an exception.

Section 22-22.8 Environmental Impact Statement: Administration

This section requires Kaua‘i to conduct an Environmental Impact Statement for genetically modified organisms and for any pesticides that might be used with genetically modified organisms. Since the specific effects of any single genetically modified organism or any single pesticide can vary widely, this means that an EIS must be conducted for every individual genetically modified organism or pesticide that an applicant may wish to grow or use. EIS are complex documents that require an experienced staff with a variety of expertise in plant biology, genetics, agronomy, toxicology, soil biology, wildlife biology, pest control, and so on. These documents may take months or even years to complete. This process has a cost that is greater
than zero, and it can be quite costly to have all of these experts on staff. This section states that funding for the EIS may come from property taxes or from permit application fees. To cover the costs, these taxes and fees would have to be quite high, and considering that this entire process is a duplication of federal regulatory efforts, applicants wishing to use any pesticide or grow any genetically modified plants in Kaua‘i would have a high incentive to consider legal action against Kaua‘i for this additional regulation. We recommend that the Council consider the burden this might place on the residents of Kaua‘i. Further, this section seems to require an EIS for any pesticide used with genetically modified organisms but does not require an EIS for the same pesticides used with the non-genetically modified counterparts. If the Council of Kaua‘i truly believes there is a risk to its people or environment from these pesticides, it is inconsistent to grant such an exception.

Section 22-22.9 Permitting

As stated above, the USDA issues permits for the cultivation of genetically modified plants, which take into account the issues of flowering, cross-pollination, and environmental impact of field trials. This section would duplicate this process which is already conducted by the Federal government. While the states can set additional requirements, such powers are not granted to individual counties at the federal level. We suggest that the State of Hawai‘i be consulted about any changes to the regulation of field trials of genetically modified crops within the State.

In addition, the provision about human testing does not meet ethical and scientific standards. No statements are made about the requirements of consent, privacy, and ethical use of human testing, except only the redaction of names. This section is vague about what an individual would be volunteering for, or whether a human volunteer would be required before a permit is issued. In addition, without a clear scientific goal, human testing is not considered ethical. We recommend seriously reviewing this section in accordance with the guidelines for human test subjects by the National Research Act of 1974 and the EPA,

Setting up an administration at the county level that would oversee a permit process, as stated for the above sections, would present a significant financial burden to the county of Kaua‘i.

Section 22-22.10 Prohibition of Open Air Testing of Experimental Genetically Modified Organisms

As stated above, field tests of genetically modified organisms are extensively regulated by the USDA. Applications for field tests are evaluated for safety to humans and to the environment, with specific considerations for the plants, animals, and other organisms in the location where the field test will be conducted.

Conclusion
In conclusion, we ask that the Council of Kaua’i consider the science-based regulation that is already conducted at the federal and state levels, and the impact that this bill would have on the citizens of Kaua’i.

Sincerely,

Biology Fortified, Inc.

To contact us about this letter, and for answers to any questions that you may have, please contact:
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