

ACT 266

H.B. NO. 899

A Bill for an Act Relating to Integrated Strategies for Statewide Food and Energy Crop Production.

Be It Enacted by the Legislature of the State of Hawaii:

SECTION 1. The legislature finds that with growing concerns over Hawaii's dependence on fossil fuels to satisfy its agriculture and energy needs, it is increasingly in the State's best interest to address these problems through integrated strategies that are cost competitive. One solution to Hawaii's dependence on fossil fuels for fertilizer and energy is the utilization of charcoal produced locally from biomass as a permanent soil additive.

The Hawaiian Islands, particularly the older islands such as Kauai, have heavily-leached soils with very low nutrient content and almost no potassium or phosphorus available for potential uptake by vegetation or agricultural crops. Agricultural crop yields for use as food and clean energy feedstocks are strongly dependent on sufficient levels of available nutrients for plant uptake. Thus, a major determinant of a successful and sustainable agricultural venture in Hawaii will be achieving an adequate, sustainable fertilizer regime.

The use of biomass-derived charcoal as a tropical soil additive has been verified by modern science as a carbon negative process and used for agricultural purposes since ancient times by indigenous communities in other tropical regions

around the world. Activities like charcoal formation are carbon negative in that carbon in the form of carbon dioxide or methane gas (greenhouse gases) can be permanently sequestered in the manufactured charcoal. This is significant because the combustion of fossil fuels for activities like transportation and electricity generation has led to unnaturally elevated concentrations of carbon dioxide and other greenhouse gases being released into the atmosphere. These gases persist in the atmosphere, trapping warm air that would otherwise have dispersed beyond the earth's atmosphere into space, unfortunately causing human-induced global warming. Formal economic models estimate that if we do not act now to counter human-accelerated global warming, the negative cost to global ecosystems, society, and our economy will likely be substantial.

It is possible that through the production process of biomass-derived charcoal for soil nutrient enhancement purposes, positive net energy may be produced to satisfy community electrical needs while at the same time reducing carbon dioxide levels in the atmosphere. This process has the potential to not only assist in reducing Hawaii's dependence on petroleum-based products, but also decrease the absolute quantities of fertilizer that need to be applied to agricultural lands for crop production. This suggests that runoff from agricultural lands may in turn contain lower levels of nutrients that in high concentrations are known to have significant negative impacts on freshwater and marine ecosystems. Additionally, large quantities of carbon can potentially be sequestered through the production of charcoal soil enhancements, thereby permanently sequestering carbon-based greenhouse gases being emitted into the atmosphere and contributing to human-induced global warming.

Therefore, comprehensive agricultural management strategies would not only lead to long-term economic stability of Hawaii's agrarian-based industries, but also facilitate positive stewardship of state lands by reducing levels of contaminated sediments in statewide waterways and surrounding ocean waters, as well as greenhouse gases building up in the atmosphere causing accelerated global warming.

Further, integrated agricultural management strategies build partnerships between local communities and state and federal agencies and strengthen the overall economy as well as statewide environmental protection efforts. State funds appropriated for the research and development of a pilot project and associated community outreach technologies have the potential to obtain matching federal funds from existing programs such as the Environmental Protection Agency, United States Department of Agriculture, United States Department of Energy, Farm Service Agency, and National Science Foundation. Investments from private industry may also be available due to the economic viability of taking these newly-emerging technologies quickly to market.

The purpose of this Act is to appropriate funds during phase 1 to develop and demonstrate ecologically-sustainable strategies to amend soil fertility for the production of clean energy feedstocks and food crops and to create public engagement mechanisms and tools to educate the public about sustainable agriculture issues faced by the state and move towards stakeholder consensus.

SECTION 2. During phase 1, scientists with the University of Hawaii center for conservation research and training shall conduct research and development, as well as monitor the ecological impact of strategies being researched and tested. This work shall identify and test charcoal additive strategies consistent with integrated watershed management practices to establish the best means to improve the nutrient levels in soils, lessen the State's dependence on imported fossil fuels, sequester carbon in the atmosphere, and mitigate existing problems, such as nutrient flows into waterways.

The phase 1 integrated research of potential soil nutrients enhancement strategies and mechanisms conducted by stakeholders shall include but not be limited to:

- (1) Physical, chemical, and biological soil characteristics;

- (2) Carbon sequestration in relation to global warming;
- (3) Software and web-based stakeholder engagement tools;
- (4) Existing and future agricultural land uses;
- (5) Relevant community organizations and functions; and
- (6) Relevant state and federal institutional functions.

SECTION 3. There is appropriated out of the general revenues of the State of Hawaii the sum of \$450,000 or so much thereof as may be necessary for fiscal year 2007-2008 for the University of Hawaii center for conservation research and training during phase 1 to develop the best strategies consistent with comprehensive agricultural management practices to facilitate sustainable production of crops through long-term enhancement of soil quality using ecologically-responsible means.

The sum appropriated shall be expended by the University of Hawaii center for conservation research and training for the purposes of this Act.

SECTION 4. This Act shall take effect on July 1, 2007.

(Became law on July 10, 2007, without the Governor's signature, pursuant to Art. III, §16, State Constitution.)