
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:

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

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



1 The use of biomass-derived charcoal as a tropical soil
2 additive has been verified by modern science as a carbon
3 negative process and used for agricultural purposes since
4 ancient times by indigenous communities in other tropical
5 regions around the world. Activities, like charcoal formation,
6 are carbon negative in that carbon in the form of carbon dioxide
7 or methane gas (greenhouse gases) can be permanently sequestered
8 in the manufactured charcoal. This fact is significant because
9 the combustion of fossil fuels for activities like
10 transportation and electricity generation has led to unnaturally
11 elevated concentrations of carbon dioxide and other greenhouse
12 gases being released into the atmosphere. These gases persist
13 in the atmosphere, trapping heat in the atmosphere that would
14 otherwise have dispersed beyond the earth's atmosphere into
15 space, unfortunately causing human-induced global warming.
16 Formal economic models estimate that if we do not act now to
17 counter human-accelerated global warming, the negative cost to
18 global ecosystems, society, and our economy will likely be
19 substantial.

20 It is possible that through the production process of
21 biomass-derived charcoal for soil nutrient enhancement purposes,
22 positive net energy may be produced to satisfy community



1 electrical needs while at the same time reducing carbon dioxide
2 levels in the atmosphere. This process has the potential not
3 only to assist in reducing Hawaii's dependence on petroleum-
4 based products but also to decrease the absolute quantities of
5 fertilizer that need to be applied to agricultural lands for
6 crop production. This fact suggests that runoff from
7 agricultural lands may in turn contain lower levels of nutrients
8 that in high concentrations are known to have significant
9 adverse effects on freshwater and marine ecosystems.
10 Additionally, large quantities of carbon can potentially be
11 sequestered through the production of charcoal soil
12 enhancements, thereby permanently sequestering carbon-based
13 greenhouse gases, preventing their emission into the atmosphere
14 and contributing to human-induced global warming.

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



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

14 The purpose of this Act is to appropriate funds during
15 phase 1 to develop and demonstrate ecologically-sustainable
16 strategies to amend soil fertility for the production of clean
17 energy feedstocks and food crops and to create public engagement
18 mechanisms and tools to educate the public about sustainable
19 agriculture issues faced by the state and move towards
20 stakeholder consensus; and during phase 2 to secure funding and
21 coordinate the implementation of an ecologically-sustainable
22 dual-purpose soil enhancement/energy production pilot project.



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

11 The phase 1 integrated research of potential soil nutrients
12 enhancement strategies and mechanisms to bring together
13 stakeholders to work collaboratively shall include but not be
14 limited to:

- 15 (1) Physical, chemical, and biological soil
16 characteristics;
- 17 (2) Carbon sequestration in relation to global warming;
- 18 (3) Software and web-based stakeholder engagement tools;
- 19 (4) Existing and future agricultural land uses;
- 20 (5) Relevant community organizations and functions; and
- 21 (6) Relevant state and federal institutional functions.



1 During phase 2, the center for conservation research and
2 training shall identify and solicit federal and other funding
3 and shall coordinate the pilot-scale demonstration and
4 ecological monitoring of the dual-purpose soil additive/energy
5 production facility developed during the phase 1 research and
6 development.

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

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

19 SECTION 4. There is appropriated out of the general
20 revenues of the State of Hawaii the sum of \$ or so much
21 thereof as may be necessary for fiscal year 2008-2009 for the
22 University of Hawaii center for conservation research and



1 training to implement phase 2 and identify and solicit federal
2 and other funding to coordinate implementation and ecological
3 monitoring of a pilot demonstration of the dual-purpose soil
4 amendment/energy production facility developed during the phase
5 1 research and development.

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

9 SECTION 5. This Act shall take effect on July 1, 2020.



Report Title:

Integrated Strategies for Statewide Food and Energy Crop
Production

Description:

Appropriates funds for the Center for Conservation Research and Training at UH to develop best practices consistent with comprehensive agricultural management strategies to facilitate sustainable production of crops through long-term enhancement of soil quality using ecologically responsible means. Implements a pilot project demonstrating integrated strategies to enhance soil fertility for the production of clean energy feedstocks (agricultural crops used as the raw materials for biofuels or biomass-to-electricity production) and food crops. Establishes mechanisms by which stakeholders can work collaboratively in the development of best practices and to educate the public about sustainable agriculture issues faced by the state. (HB899 HD1)

