

STATE OF HAWAII  
GREENHOUSE GAS SEQUESTRATION TASK FORCE  
Honolulu, Hawai'i

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**Agriculture Permitted Interaction Group Report**

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**Investigative Scope Item 1, from HRS §225P-4(a)(3) and HRS §225P-4(e)(1)(A):** *To identify and make recommendations on types of agricultural practices, agricultural policies, public land policies, and on-farm/on-ranch management practices that provide greenhouse gas (GHG) sequestration, build healthy soils, and tangible economic benefits to agricultural operations in Hawai'i.*

**Proposal:** The Greenhouse Gas Sequestration Task Force's identification and recommendations for agriculture-related practices and policies to achieve a baseline and/or benchmarks of GHG to be sequestered, and healthy soils to be created should also provide data/information on the cost to implement the best practices and the annual benefit to agricultural operations as measured by product yield and net profit.

The Agriculture Permitted Interaction Group (PIG) suggests that the public and private costs associated with GHG sequestration and healthy soils practices should be proportionate to the practical amount of GHG sequestration and healthy soils that can be reasonably expected from the agricultural or other land use activity.

With respect to public costs, the PIG finds there is a strong argument in support of recommending cash incentives to underwrite the initial upfront costs of GHG sequestration- and healthy soils-related capital improvements, management education, risk assessment, and so forth. This cash incentive will allow for equitable access to implementation of desired practices. Management education and risk assessment will be key in garnering buy-in from producers to invest in the recommended practices.

Work on Scope Item 1 should await the development of data resources required to generate a baseline and short- and long-term benchmarks to measure the impact of practices and policies established to increase greenhouse gas sequestration, soil health, and yields in natural (assumed to be forestry and grazing land) and working (crop and non-edible production) lands.

The *Final Report on Hawai'i Natural and Working Lands Baseline and Benchmarks, 2021*, (Office of Planning and Sustainable Development; prepared by Dr. Susan E. Crow, Dr. Johanie Rivera-Zayas, Christine Tallamy-Glazer, Elaine Vizka, and Joshua Silva; Soil Ecology and Biogeochemistry Laboratory, Department of Natural Resources and Environmental Management, University of Hawai'i

Mānoa) discusses the known and studied sources of soil GHG flux and carbon storage and sequestration of Hawai‘i’s natural and working lands.

The discussion is based on available data from online research, journal articles, agency reports, and unpublished scientific data from reputable sources. This report also discusses the soil health data collected as part of this project in comparison to the current state of knowledge of soil health across the natural and working lands of Hawai‘i. Additional assessments are provided that summarize the currently available data and highlight unique aspects of Hawai‘i’s soils and ecosystems; as well as knowledge gaps that persist and are barriers to an accurate GHG emission benchmark and baseline assessment for Hawai‘i’s natural and working lands that comprise the agricultural, forestry, and other land uses (AFOLU) sector.

**Investigative Scope Item 2, from HRS §225P-4(a)(1) and §225P-4(a)(2):** *To identify and make recommendations to establish short-term and long-term greenhouse gas sequestration benchmarks for agricultural activities to assist the state in meeting the Zero Emission Clean Economy Target by 2045, established by HRS§225P-5, and identify the appropriate criteria to measure baseline levels and increases in greenhouse gas sequestration, improvements in soil health, and product yield.*

**Proposal:** The Agriculture PIG recommends that the both short- and long-term GHG sequestration baselines and/or benchmarks for agricultural activities be developed simultaneously with benchmarks for forestry and grazing lands so that the government (legislative and executive branches) effort placed on the dynamic land uses of crop and non-edible agricultural production (which comprise 14% of the total acreage in agricultural production) *does not exceed what is reasonable or practicable*. The measurement of additional GHG sequestration for forests, conservation lands, and grazing lands are presumed to be predictable as these are largely static land uses.

Two Senate Bills are enrolled to the Governor and pending a decision on whether they will become law. SB 2989<sup>1</sup> would establish a Healthy Soils Program to issue awards and financial incentives. SB 3325<sup>2</sup> would create a framework for a Carbon Smart Land Management Assistance Pilot Program within the Department of Land and Natural Resources. However, SB 3325 does not include funds or positions to start the program.

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<sup>1</sup> SB2989 (Healthy Soils Program, Department of Agriculture):  
[http://www.capitol.hawaii.gov/measure\\_indiv.aspx?billtype=SB&billnumber=2989&year=2022](http://www.capitol.hawaii.gov/measure_indiv.aspx?billtype=SB&billnumber=2989&year=2022)

<sup>2</sup> SB3325 (Carbon Sequestration Incentives, Department of Land and Natural Resources):  
[http://www.capitol.hawaii.gov/measure\\_indiv.aspx?billtype=SB&billnumber=3325&year=2022](http://www.capitol.hawaii.gov/measure_indiv.aspx?billtype=SB&billnumber=3325&year=2022)

**Investigative Scope Item 3, from HRS §225P-4(a)(4):** *To identify and make recommendations to increase the generation and use of compost within agricultural areas, practices, and operations.*

**Proposal:** There are three legislative bills on composting that directly address Scope Item 3 and have been enrolled to the Governor for his consideration.

HB 1992 permits limited composting and co-composting operations on agricultural lands that process their own green waste, do not require Department of Health permits, and limit the use of the compost to the operators' own premises. The purpose of the bill is to allow farms to compost their own green waste for use on their own premises without increasing the potential spread of invasive species by non-compliant composting operations.

SB 3004 establishes a permanent compost reimbursement program (the first program was established in 2018) within the Department of Agriculture (DOA). There is an \$945,000 appropriation for the coming fiscal year to provide for the reimbursements and \$55,000 for a program manager. Funding for subsequent years will require new appropriations. The reimbursement limit per farm or landscaping operation is \$50,000 per year.

SB 2990 (Cover Crop Reimbursement Pilot Program) establishes a three-year pilot program to reimburse Hawai'i farming operations for the costs of acquiring cover crop seeds, green manure, or compost. The reimbursement is up to 75% of the qualified costs incurred by an applicant and submitted at any time during the pilot program's operation. Distribution of the reimbursement funds will be based on a ranking scale after a review panel assesses the quality and appropriate use of an applicant's composting practices. The structure of this program is better defined than SB 3004, but does not proactively screen and select the preferred types of cover crops to reduce or eliminate the likelihood that there may be unintended adverse consequences. For instance, some cover crops require good field management practices to prevent the cover crop from becoming a pest.

Although not required, there is an opportunity for the DOA to gather data about the compost suppliers, type of economic crops grown by applicants, amount of application (in cubic yards) on the acreage (in square feet) of soil being improved, and farmers' informal notes on change in crop yield and soil moisture. This data could be compared to similar situations on the mainland where there is partial cost offset for compost purchases.

The following example is an informal back-of-the-napkin estimate of the land area that the two reimbursement programs may cover:

- One cubic yard covers 200 sq. ft. with 6" of compost.
- One cubic yard at 40% moisture is about 1,000 pounds.
- So, one acre covered with 6" of compost will require about 218 cubic yards (c.y.) or 109 tons.

- One c.y. of the least expensive finished compost from a major supplier on O‘ahu is \$40, so one acre (assuming depleted soil) covered with 6” and tilled in will cost \$8,712.

This is an enormous cost; however, additional applications would be less, and if cover crops are used then that may negate the need for additional compost. Expect 7-9 years of no-till combined with cover cropping before crop yields fully recover to those possible with conventional tillage practices. After a crop harvest is completed, the soils undergo another cover crop cycle. The question is, what is the net financial impact that improving soil health will have on a farm operator during this time period?

This concern about the impact of implementing GHG sequestration and healthy soils practices requires forward analysis to avoid possible unintended consequences. Imposing requirements to meet these public goals could substantially increase the cost of reaching another public goal—increasing local food production—at a cost that local families could still afford.

**Investigative Scope Item 4, from HRS §225P-4(b):** *To identify and make recommendations on financial incentives and funding mechanisms to encourage greenhouse gas sequestration for the agricultural sector in Hawai‘i; and other relevant agricultural measures for the preliminary report as indicated in HRS Sections 225P-4(a), 225P-4(b), and 225P-4(e)(1).*

**Proposal:** SB 2989 (Healthy Soils, Department of Agriculture) and SB 3325 (Carbon Sequestration Incentives, Department of Land and Natural Resources) both require developing the standards to identify effective practices, and the merit awards and incentives for participants to implement them, and, in the case of SB 3325, provision of funds and staff to do so.

If these bills become law, the Agriculture PIG suggests that the Greenhouse Gas Sequestration Task Force should work to determine how to support them. If signed into law, SB 2989 requires a report to the 2023 Legislature and SB 3325 has a comprehensive list of tasks to accomplish.