

Testimony Presented Before the  
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By

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RELATING TO PROMOTING A RESILIENT ECONOMY FOR HAWAI'I FARM  
BUSINESSES

Chairman Cardin, Senator Hirono, and members of the Committee :

Thank you for the opportunity to provide testimony in support of ways to improve and expand federal programs that support Hawai'i small businesses in the agriculture sector.

As the founding College of the University of Hawai'i in 1907, the College of Tropical Agriculture and Human Resources (CTAHR) is central to the land-grant mission of the University of Hawai'i at Mānoa (UH Mānoa). CTAHR provides exceptional transdisciplinary education, research, and extension in tropical agriculture, natural resources, and human well-being to local and global communities. CTAHR is committed to an educated community, a healthy population, and a sustainable food system and environment that strengthens the well-being and economic development of the people of Hawai'i and beyond. The college is an integral part of UH Mānoa's Carnegie "RU/VH" designation and distinguishes itself in areas of resilient and thriving community health, vibrant tropical and Pacific island agriculture and food security, ecosystem health, and workforce and economic development. CTAHR's uniqueness also comes from the fact that we are the only state in the union located in the tropics.

CTAHR initiated a strategic positioning effort in the middle of a pandemic (College of Tropical Agriculture and Human Resources University of Hawai'i at Mānoa Strategic Positioning and Visioning 2022-2027). Ten listening sessions were led by an external facilitator both on campus and across the state and resulted in the collection of 5,226 data points (2,395 faculty; 2049 public; and 782 staff). The result was a strategic document that outlined four main initiatives and enhancing economic development for an adaptable and resilient community and well-trained workforce and Economic Development was one of the main initiatives.

Small agricultural operations need access to free resources for education and training to strengthen the well-being and economic development of the people of Hawai'i. Hawai'i needs to be proactive in making locally produced food widely available to our population and vibrant tropical agricultural value-added products to global communities. Hawai'i is especially vulnerable to natural and human disasters that may have a negative impact on our own food security and economy.

CTAHR requests resources for small agricultural businesses to strengthen the midstream of its agricultural supply chain and five areas of focus.

Examples of CTAHR impacts and ongoing contributions are summarized below.

Biosecurity in food-crop pests and diseases,

Insect pests can cause 20-50%, with a further 10-20% yield loss from plant diseases in the Hawai'i vegetable industry. Our entomology and plant pathology programs develop methods for reducing these losses that can exceed \$40 million per year. Entomologists in the Department of Plant and Environmental Protection Sciences (PEPS) had been working on designing more effective pest control measures to cope with pesticide resistant diamondback moth population on brassica leafy greens (\$3.5 mil farm gate value now suffering 20-100% yield loss). PEPS hosts the Western Plant Diagnostic Network that diagnoses under-studied pathogens of tropical crops, critical for the state interest to promote small business of specialty or culturally significant crops. PEPS also has a research team that works on protecting the Hawai'i cattle (\$48 million in 2021) from a new invasive pest, two-lined spittlebug, through developing management practices. The integrated pest management developed by PEPS faculty in collaboration with other organizations has resulted in a \$132 million economic benefit to the Hawai'i coffee industry. Similar benefits are expected with new efforts to manage coffee and macadamia but pests. PEPS also has a Turf and Landscape Pest Management team that serves the \$515 mil landscape industries in the state. We also host the state IR-4 program to gain emergency registration of pesticides for minor crops such as fungicides to control coffee leaf rust which poses a major threat to Hawai'i's coffee industry. On the other extreme, tourism represents a quarter of Hawai'i's economy, yielded nearly \$17.8 billion in visitor spending, and \$2 billion in tax revenue (2019). Imagine a tourism industry without coconut trees due to the threat from coconut rhinoceros beetles (CRB). PEPS faculty, in collaboration with HNFAS faculty, manage the largest agrosecurity response effort in Hawai'i's history, targeting the CRB by monitoring and immediately sanitizing CRB breeding sites, helping the state effectively inspect outgoing cargo, developing diverse management tools.

Food safety training

Many farmers are challenged in complying with certain regulations such as food safety. Since 2017, the CTAHR Farm Food Safety program has trained 556 farmers and agricultural professionals statewide in the mandatory FSMA-Produce Safety Rule, aiding farmers in taking a step towards food safety compliance. They are also currently developing Good Agricultural Practice (GAP) audit training to assist farmers in successfully acquiring third party food safety audits which are being more commonly required by certain buyers. GAP certification for farmers provides opportunities for growth in revenue and product diversification such as value-add products that generate a higher price point and export markets.

Culturally important staple foods and specialty crops such as taro, ulu, floriculture

The CTAHR Indigenous Cropping Systems Laboratory has become a world leader in breadfruit agronomic research, strongly supporting the emergence of an entirely new industry here in Hawai'i by providing new knowledge, services, and technical assistance that support the entire value chain - from production, aggregation, processing, marketing, and consumption. This program has also played a supporting role in the development of the Food Hub Hui, a consortium of local food hubs that are impacting the local food economies through the aggregation of local products for local markets, allowing for the growth and development of local agricultural industries while providing a significantly higher share of the food dollar back to farmers compared to traditional food distribution companies.

The Sustainable and Organic Agriculture Program (SOAP) is a CTAHR-led multi-agency, trans-disciplinary collaboration that for the last 15 years has been committed to increasing awareness and adoption of sustainable and organic agriculture practices across the State of Hawai'i. Educational programs are estimated to reach over 25,000 agricultural professionals and the public annually. Through statewide collaborations, we have worked to increase adoption and acreage of Hawai'i's organic fruit and vegetable operations. The most recent USDA statistics indicate these sectors in Hawai'i are currently valued over \$15 million dollars compared to \$7.6 million in 2008. SOAP's impact extends beyond organic growers and includes all Hawai'i producers, including strong collaboration with conventional operations and the seed industry. For example, SOAP efforts to support turmeric growers with new varieties has directly contributed to turmeric becoming Hawai'i's second highest valued specialty crop, second only to banana with a market value of over \$1.2 million in 2018. SOAP also collaborates closely with the UH office of Public Health, the John A Burns School of Medicine and local non-profits to deliver food security programs to Native Hawaiians and others in our community, using CTAHR Agricultural Experiment Stations as "Centers of Learning". Recent results have shown these programs to positively impact determinants of health, suggesting that these community-based food programs are effective interventions to reduce diet related diseases estimated to cost Hawai'i over \$1.5 billion annually.

The CTAHR floriculture program has an annual economic impact of \$754,505, including releases of new crop varieties.

Invasive species pose a risk to native and traditional cropping systems. For example, a new invasive insect pest, the ramie moth, attacks and causes severe damage on mamaki, a native tea crop. Our entomology program has ongoing work that contributes to reducing damage from this insect, not only in cultivated mamaki, but also wild mamaki and its relatives, several which are threatened species.

In the field of aquaponics, CTAHR's Department of Molecular Biosciences and Bioengineering (MBBE) is developing application of nanobubble technology aims to improve crop and fish yield while simultaneously treating aquaculture effluent. This work aligns with Hawai'i's goals for sustainable agriculture, reducing reliance on imported fertilizers, and enhancing food security. Our findings have demonstrated the potential to increase crop yield by 20-30%, strengthening the state's farming communities.

#### Work force development

The newly developed "Hawai'i-One-Ag 2023: Focusing on the Student Experience in Agricultural Education at the University of Hawai'i" promotes and redefines agriculture while focusing on improving the student experience at community colleges and facilitating their transferring process to a 4-year program. This grant also provides Native Hawaiian students access to educational opportunities at community colleges and universities within the UH System in agriculture-related degrees and to inform prospective students how agriculture offers valuable and rewarding career opportunities.

GoFarm Hawai'i (GFH) is an extramurally funded UH CTAHR extension program whose mission is to enhance Hawai'i's food security and economy by increasing the number of viable, sustainable commercial farmers and its supporting workforce. Launched in 2003 to provide business technical assistance for local producers, the program added workforce development training in 2013 and has since graduated over 530 individuals from its farmer training program statewide. Many graduates of the program start businesses and are often sought after to fill management roles at agricultural businesses statewide. Over the last three years, 59% of graduates reported starting a farm business and 20% reported working for others in the industry. Forty-seven graduates participated in the AgIncubator phase of the program, starting businesses directly on program-managed land. These new producers reported \$930k worth of revenues during the period. According to the 2017 Census of Agriculture, 78% of Hawai'i's farms earn less than \$25k per year. With the support of this CTAHR program, AgIncubator program participants have averaged \$15,000 in Year 1 and \$39,000 in Year 2 revenues.

UH Mānoa is proud to be the administrator of the [Hawai'i 4-H](#) program. Who, for over a century, has served youth ages 5-18 with positive youth development programming that is helping turn their spark into Mastery. Youth participate in Agriculture, STEM, Healthy Living, and Civic Engagement project work. Youth sparks drive youth to achieve personal and professional achievement. Hawai'i 4-H serves 3,497 youth across all islands.

Based upon research conducted at CTAHR, a corporation was created to implement supercooling technology. Jun Innovations' Supercooling Technology changes the way people purchase, store, and enjoy their food., using electric and magnetic fields to prevent ice crystallization at subzero temperatures. One of the merits of using fish for the validation of this process is Hawai'i's centralized location in the Pacific, as well consumption preferences among the diverse local cultures. We see the Hawai'i fish industry as a first pilot to validate the process and increase awareness for our supercooling technology. Jun Innovations plans on extending beyond Hawai'i to include distribution channels to the US mainland, and later, the world with completion of 'proof of concept' and production of 'commercially viable unit'. The company has been able to create many job opportunities to hire local young engineers who were born and raised in the State.

#### Natural resource conservation and management

The CTAHR Department of Natural Resources and Environmental Management's (NREM) vision is to discover and extend innovative solutions for sustainable natural resource use and environmental management for the State as well as other Pacific islands for the benefit of residents, communities, farmers, and the tourism industry which is one of major drivers to the economic growth of the State. NREM faculty helps farmers enhance soil health, and develop and adopt climate-smart agriculture practices, and, in collaboration with UH Mānoa's Hawai'i Natural Energy Institute (HNEI), the economics of alternative energy sources to reduce the State's highest energy costs in the U.S. NREM continues to graduate the next-generation workforce who actively work in federal/state/county government agencies, NGOs/NPOs, or the private sector, and contribute to the State's prosperity. NREM's extension faculty engage residents, communities, farmers, and other stakeholders in the effective management of natural resources and ecosystems for the improvement of the State's natural capital.

Family and Consumer Sciences (FCS) programs in Hawai'i encompass a diverse range of initiatives, each yielding significant cost-benefit advantages for the state. For instance, the Kid Savings Program, an FCS-driven initiative aimed at promoting financial literacy among children, offers profound long-term benefits. Early financial education not only empowers young individuals with essential money management skills but also results in improved financial decision-making later in life. As participants

develop responsible spending habits and savings behaviors, they are better equipped to navigate adulthood's financial challenges, ultimately reducing the burden on social assistance programs, and contributing to overall economic stability. Grandparents raising grandchildren (GrandCares) is a unique concern in Hawai'i's cultural, multigenerational context, and FCS programs designed to support these families can yield substantial societal benefits. Providing assistance and resources to grandparents who have taken on the role of primary caregivers reduces the strain on the foster care system and related social services.

And during this incredibly challenging time with both the ongoing stresses that farm producers experience, and the Maui Fires, the Seeds of Wellbeing (SOW) program has been deploying trained hundreds of peer-coaches to support mental health wellbeing of our agricultural producers.

In summary, agriculture in Hawai'i needs adequate resources to contribute as an economic driver to the State's economic growth and stability. The recent wildfire disaster on Maui is an example of Hawai'i's vulnerability to climate change and natural disasters that have negative, potentially catastrophic, impacts on our economic security because of our geographic isolation. CTAHR is committed to be a quality higher education resource, providing applied, vocational, and academic training to solve complex and interrelated problems in food systems, food security, natural resources management, community resiliency, and human well-being in Hawai'i and the Pacific-Asia region.

Thank for the opportunity to provide testimony before the committee.