College of Tropical Agriculture and Human Resources
University of Hawai'i at Manoa

Evolution of Screenhouses in Hawai'i Agriculture

Using EcoSystem Enhancement to Manage a Broad Spectrum of Crop Pests for Sustainable Farming Operations

The Situation

Hawai'i agriculture must enlist technology to increase production levels of various crops and commodities and in turn, increase the profitability for producers.

Extension's Response

CTAHR's Cooperative Extension Service (CES) has been designing and testing screenhouses best adapted for managing insect pests, especially those that develop resistance to common crop protection insecticides. Screenhouses serve as a non-chemical, physical barrier which puts the pest at a disadvantage.

Short-Term Impacts

Growers can see a 50% reduction in insecticide use for management of small insect pests, such as fruit flies, caterpillar aphids, whiteflies, and thrips. With the use of screenhouse systems, CES research trials have documented *up to a five-fold increase in marketable yields* in the production of (non-pollinated) cucumber, kale, and zucchini. The addition of the "Ecosystem Enhanced Screenhouse" method, which integrates insectary plants that attract beneficial insects inside the screenhouse, can generate even higher crop yields.

Note: In some trials, cucumber marketable ***yields increased seven-fold*** compared to cucumbers grown outside of the screenhouse.

Long-Term Impacts

Since 2014, CES has been evaluating different prototypes of screenhouses (DIY vs commercial systems), and has placed roughly 24 screenhouses on a wide range of farming systems in Hawai'i. Applied research findings have been shared statewide and in partnership with external agencies.

CES has also collaborated closely with the USDA and NRCS to showcase the advantages of integrating screen with high-tunnel systems for environmental conservation.

To date, NRCS has contracted for the installation of 187 commercial high tunnels in Hawai'i through federal cost share programs. The adoption of this technology has resulted in a magnified footprint of food production across the state.

For more information, please contact:

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