

INCREASING RURAL FOOD SECURITY

USDA FOREST SERVICE
INSTITUTE OF PACIFIC ISLANDS FORESTRY

AGROFORESTRY
RESEARCH

Research to inform active management of
productive agroforests.



CACAO
A high value food product.
More productive when grown with
trees for wind protection and shade.

INTEGRATING AGRICULTURE AND FORESTRY
FOR MULTIPLE BENEFITS

Agroforestry – the intentional integration of agriculture and forestry – has tremendous potential to increase food production, wildfire mitigation, and recreation opportunities on America’s working lands. In Hawai‘i, 88% of food is imported and nearly 40% of agricultural lands are unmanaged fallow, primarily covered in invasive species. Returning productivity to these lands is an important strategy for increasing rural food security and reducing wildfire risk. The Forest Service, in collaboration with many dedicated partners, is at the forefront of developing solutions to increase the extent, productivity, and durability of agroforestry systems in Hawai‘i and the US Affiliated Pacific Islands.

ACCOMPLISHMENTS

In close collaboration with partners, the Forest Service has:

Built a long-term agroforest research site with the Hawai‘i Army National Guard and monitored production efficiency and ecosystem services for 14 years.

Documented the barriers to expanding productive agroforestry in Hawai‘i.

Developed an initiative to facilitate transitions of unmanaged, fallow agricultural land to productive, wildfire resistant agroforestry systems.

Engaged >100 land managers, who together steward >6,000 acres of private land, in 3-day workshops on best-practices in agroforestry.

Provided technical support to forestry managers in Hawai‘i and the US Affiliated Pacific Islands to increase local food production and support rural economies.

FOREST SERVICE EFFORTS INCREASE FOOD SECURITY AND
REDUCE WILDFIRE RISK.



BREADFRUIT
A staple tree crop critical to food security.
Grown with understory native plants to
reduce labor costs from weeding.



INCREASING THE EXTENT, PRODUCTIVITY, AND DURABILITY OF AGROFORESTS

The Institute of Pacific Islands Forestry is catalyzing, coordinating, and leading agroforestry research with partners to address barriers to effective agoforestry management. We produce tools and provide information needed to support decision-making. We deliver science-based agroforestry information to natural resource managers, farmers, ranchers, foresters, and communities through workshops, training, demonstration sites, and published research.

FOOD SECURITY

One advantage of producing food in agroforests is overyielding - when the mixture is more productive than the components managed in monoculture. For this and many other reasons, agroforests are an important strategy for increasing food security. Forest Service research is identifying the crop combinations and mechanisms that can lead to overyielding in agroforestry systems, which will lead to more efficient and productive agroforests. The best agroforestry management practices encompass food but also timber and other non-food products.

WILDIFRE RISK MITIGATION

Wildfires impact human health and safety and also farmers, ranchers, and foresters in Hawai‘i. Maintaining fuel breaks across working lands and communities is labor intensive and can be expensive. Incorporating agroforestry into fuel breaks can offset management costs and incentivize fuel management. Our research is examining the costs and benefits of implementing agroforestry as a wildfire risk mitigation strategy. We will use our findings to develop resources and tools for landowners to increase human health and safety and the productivity of working lands.

RECREATION

Managing agroforestry systems in Hawai‘i can be labor intensive. Many managers creatively engage volunteers in community workdays to help with all aspects of growing food, timber, and fiber. Our research is documenting the value of these volunteer workdays to participants. We have found that through this form of recreation, agroforestry volunteers build relationships with land managers and other participants, learn about agriculture and forestry, and build an appreciation for the importance of locally grown food, timber, and fiber to rural economic development.

COLLABORATIVE AGROFORESTRY RESEARCH
Increasing food security across Hawai‘i and the US Affiliated Pacific Islands through active management of agroforestry systems requires effective collaboration with dedicated partners. The Forest Service is fortunate to have an extensive network of partners spanning state and Federal agencies, universities, and other organizations committed to supporting research and taking management action.

PARTNERSHIPS AND SUPPORT



Financial support from Kamehameha Schools, Hawaii Army National Guard, National Science Foundation, University of Hawai‘i Sea Grant Program, and the USDA Forest Service has made our efforts possible.

Increasing the extent, productivity, and durability of agroforestry systems demands long-term investments. With the continued support of our current sponsors, we actively pursue new partnerships and funding streams. Our partnership approach ensures our research has an enduring impact on people and forest resources.

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FOR MORE INFORMATION ABOUT AGROFORESTRY, VISIT:
<https://www.fs.usda.gov/nac/>

USDA Forest Service photos by: Z. Hastings Silao
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MĀMAKI
Native shrub.
High value dried tea product.
Grown under tree crops to increase productivity.

GOALS OF THE AGROFORESTRY RESEARCH PROGRAM:

- To perpetuate and restore agroforestry systems across Hawai‘i, preserving the production services on which people depend.
- To increase food security in Hawai‘i and the US Affiliated Pacific Islands.
- To identify best management practices for cost-effective, productive agroforestry systems.
- To provide forest managers with information and tools for improved forest management.