

FEED THE FUTURE INNOVATION LAB FOR
COLLABORATIVE RESEARCH ON HORTICULTURE

Horticulture Innovation Lab



Building international partnerships for
fruit and vegetable research that
improves livelihoods in
developing countries



USAID
FROM THE AMERICAN PEOPLE

**HORTICULTURE
INNOVATION LAB**

UC DAVIS
UNIVERSITY OF CALIFORNIA

Why growing fruits and vegetables matters



What horticulture can do

- *Enrich diets:*

Horticulture—growing fruits and vegetables—provides critical nutrients for a balanced diet. Diets low in fruits and vegetables contribute significantly to some of the world's most widespread and debilitating nutrient-related disorders.

- *Increase incomes:*

Farmers growing high-value crops, such as fruits, vegetables, flowers or herbs, consistently earn more than those growing other commodities. Horticulture can be an engine for agricultural and economic diversification.

Improving livelihoods—through higher profits and diversified, nutrient-rich diets—is a major goal of the Horticulture Innovation Lab's research efforts around the world.

What horticulture needs

- *Gender equity:*

Vegetables, fruits and cut flowers are often grown and marketed by women, but women often have less access to markets, land, inputs and education. Addressing these constraints places women growers on the path to increasing productivity and expanding horticultural markets.

- *Technological innovation:*

Given the complexity of horticulture, innovative “leapfrog” technologies can reduce constraints and input costs that limit the ability of smallholder farmers to achieve maximum profitability.

Gender equity, technological innovation, and information access are critical themes in all projects of the Horticulture Innovation Lab.

- *Access to information and research capacity:*

Commercial success in horticulture depends on improved cultivars, management tools, market knowledge and effective postharvest practices.

Sustained horticultural growth requires access to reliable information, a well trained workforce and local capacity to conduct both original and adaptive research.



The Horticulture Innovation Lab is managed by a team at the University of California, Davis, in the College of Agricultural and Environmental Sciences, under the Department of Plant Sciences and the International Programs Office.

The U.S. Agency for International Development provides funding for the Horticulture Innovation Lab as part of Feed the Future, the U.S. government's global hunger and food security initiative.



Elizabeth Mitcham,
Director

Dr. Elizabeth Mitcham is the director of the Horticulture Innovation Lab. She is also a postharvest specialist and pomologist at UC Davis, where she directs the UC Davis Postharvest Technology Center.

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History

In 2009, the Horticulture Collaborative Research Support Program (CRSP) was established at UC Davis by USAID, with the intent to help the world's poorest people break out of poverty through the production and marketing of high-value crops. Now called the Horticulture Innovation Lab, the program was funded for an additional five years beginning in 2014. The Horticulture Innovation Lab, more formally called the Feed the Future Innovation Lab for Collaborative Research on Horticulture, is one of five Feed the Future Innovation Labs currently funded by USAID and led by UC Davis.

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Our work

Collaborating across borders to strengthen horticultural value chains

The Horticulture Innovation Lab has supported collaborations with more than 200 organizations and universities on projects for smallholder farmers around the world. Each project includes partners from a U.S. university and from an organization in a developing country, particularly from those countries in Africa, Latin America and Asia prioritized by USAID.

In the program's first four years, these partnerships have improved how more than 9,800 farmers grow, process or sell horticultural crops—through adoption of new practices or technologies. Our projects have spanned the value chain:

Seeds and germplasm

- Introducing new technologies for seed drying and storage
- Strengthening indigenous seed systems
- Evaluating vegetable varieties for disease resistance
- Producing disease-resistant vegetable seeds locally



Sustainable production

- Developing protocols for use of nets and floating row covers for pest exclusion
- Improving production and marketing of indigenous African leafy vegetables
- Increasing smallholder use of grafting and tunnels for tomatoes and peppers
- Training diagnosticians in identifying plant diseases
- Engineering alternative energy solutions for horticulture
- Improving irrigation of vegetables with conservation agriculture principles

Postharvest practices

- Establishing a postharvest training and services center in Tanzania
- Training numerous postharvest trainers from seven African countries
- Developing an alternative fungicide to combat postharvest decay in tropical fruit
- Testing and adapting low-cost cooling and solar drying technologies in diverse climates
- Strengthening local institutional capacity and expertise in postharvest practices

Food safety

- Assessing food safety needs in developing countries
- Developing locally adapted good agricultural practices for tomato production
- Improving education in food safety through social networks
- Creating a market niche for “food-safe” vegetables

Regional Centers on three continents

Building local capacity and supporting innovation with horticultural hubs

The Horticulture Innovation Lab has established three Regional Centers—one in Thailand, one in Honduras and one in Kenya—to serve as hubs for horticultural development activities around the world.



The centers bring together key regional players to improve livelihoods of smallholder farmers in nearby countries. This network enables information exchange and activities focused on the region's horticulture.

Goals for each center are:

- Researching, developing and disseminating innovative technologies
- Training farmers, horticultural stakeholders, extension educators and researchers
- Building capacity among host institutions

The centers integrate into Horticulture Innovation Lab projects by connecting partners, stakeholders and institutions in each region.

Marketing

- Using a market-first approach to vegetable production
- Improving marketing capacity for high-value medicinal crops
- Expanding market opportunities for women flower growers by addressing barriers to trade
- Incorporating nutrient-rich sweet potatoes into local foods

Improving extension

- Strengthening farmer groups for fruit and vegetable production
- Testing the feasibility of mobile phone-based extension services
- Establishing GIS data infrastructure for horticulture development
- Developing a participatory extension model to enhance smallholder production and marketing
- Understanding how farmer savings groups influence adoption of new technologies



Trellis Fund grows new relationships

Engaging graduate students in development

In addition to major projects, the Horticulture Innovation Lab has funded dozens of smaller Trellis Fund projects, which pair a U.S. graduate student with an organization in a developing country.

In the first 23 completed Trellis Fund projects, 3,865 farmers participated in 116 field demonstration plots and 184 training meetings.

Though smallholder farmers are the focus of Trellis Fund projects, the program also builds new relationships with organizations and provides development experience to tomorrow's agricultural researchers.