



# Horticulture Innovation Lab Activities in Central America

Dr. Beth Mitcham  
Director



**USAID**  
FROM THE AMERICAN PEOPLE

HORTICULTURE  
INNOVATION LAB

**UC DAVIS**  
UNIVERSITY OF CALIFORNIA

# Horticulture Innovation Lab

- } Funded by US Agency for International Development (USAID)
- } Harness the expertise in research within the US Public Universities for agricultural development in the poorest regions of the world
- } Collaborations between US Universities and Developing Country partners

# Why Horticulture?



- } High value crop – income generation and diversification
- } Intensive farming on small plots possible
- } Nutritional benefits of diet diversification
- } Women are heavily engaged in horticulture crop production and marketing
  - Use income for benefit of children
  - Diversify household diet

# Horticulture Innovation Lab: Activities in Central America



- } 7 ongoing projects in Central America
- } 7 projects completed
- } Recently completed report: *Advancing Horticulture: Assessment of constraints to horticultural sector growth* by Dr. L. George Wilson, Dr. Alonso Gonzalez, and Dr. Tito Zuniga.
- } Successful first year at the Regional Center of Innovation at Zamorano

# Regional Center at Zamorano



- All trainings conducted by the Center have a marketing component, ensuring that production will be profitable for small farmers.
- January 2014 1<sup>st</sup> Steering Committee meeting
- USAID/Honduras trainings on climate change adaption with small farmers
- Community based research with Manny Reyes, water harvesting and irrigation.
- May 2013 postharvest training course, a 2<sup>nd</sup> course is offered in June 2014
- Constructed 4 protective net structures used to train farmers on covered production.



# Current Central American Projects



# Developing training materials to improve postharvest practices

- } PI: Dr. Jeff Brecht, University of Florida
- } Collaborators:
  - Mark Ritenour, University of Florida
  - Luis Cisneros-Zevallos, Texas A&M
- } Countries: Honduras and Guatemala



# Delivering vegetable safety education through established social networks in Latin America

- } PI: Dr. Jeff LeJeune, The Ohio State University
- } Collaborators:
  - Julio Lopez, Zamorano;
  - Eduardo Pretzanzin, Universidad de San Carlos
  - Yordana Valenzuela, extension specialist
- } Countries: Guatemala, Honduras, Nicaragua

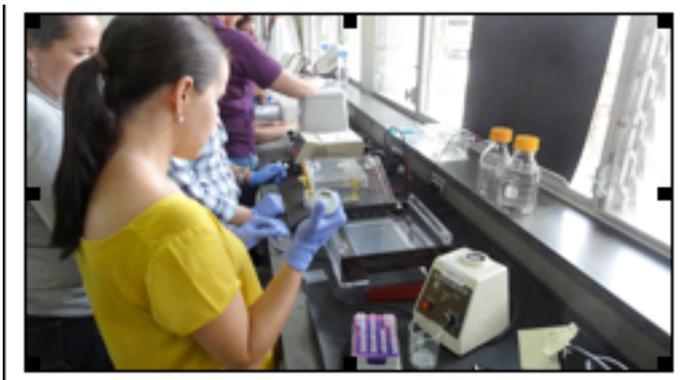


# Producing local, disease-resistant vegetable seed

- } PI: Dr. Jim Nienhuis, University of Wisconsin-Madison
- } Collaborators:
  - UW Madison
  - AVRDC
  - CARE
  - Universidad Nacional Agraria
  - FHIA
- } Countries: Guatemala, Honduras, Nicaragua, El Salvador

# Regional capacity building in *Phytophthora* diagnostics in Latin America

- } PI: Dr. Jean Ristaino, North Carolina State University
- } Collaborators: Kelly Ivors, NC State; Monica Blanco, Universidad de Costa Rica; Jose Melgar, Earth University; Dinie Espinal Rueda, Zamorano
- } Countries: Guatemala, Honduras, El Salvador, Costa Rica, Mexico, Nicaragua, Panama



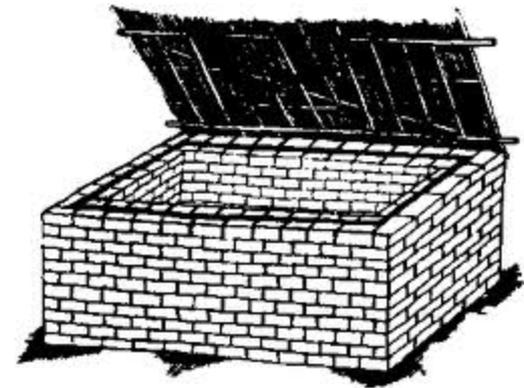
# Rainwater harvest and drip irrigation for vegetable smallholders

- } PI: Dr. Manny Reyes,  
North Carolina A&T
- } Collaborators: Julio Lopez,  
Zamorano University;  
Carlos Urmeneta, iDE.
- } Countries: Honduras and  
Guatemala



# Evaluating small-scale postharvest cooling and drying technologies

- } PI: Dr. Lizanne Wheeler
- } Collaborators from the Regional Center of Innovation at Zamorano
- } Countries: Honduras, Guatemala, worldwide



# Trellis Fund – Seed saving for farmer seed security and biodiversity conservation

- } Organizational partner: Instituto Mesoamericano de Permacultura (IMAP)
- } Graduate student: Jay Bost, University of Hawaii at Manoa
- } Country: Guatemala



# Completed Projects



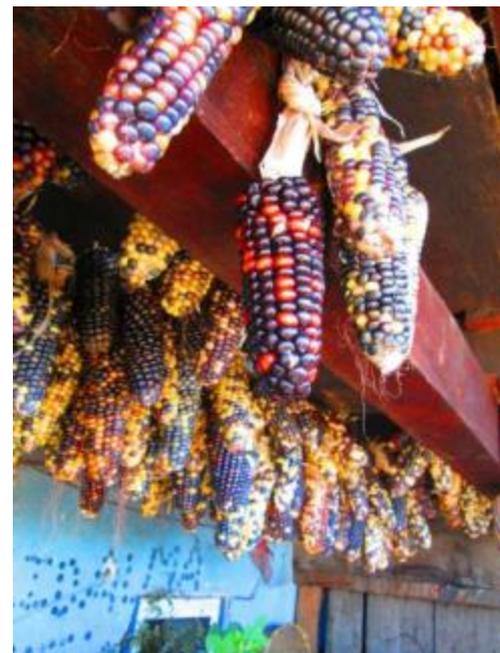
- } Expanding the floral industry in Honduras
  - Led by Dr. Alan Bennett, University of California, Davis
- } Demonstrating low-cost cooling and storage technology
  - Dr. Michael Reid, University of California, Davis
- } Improving bell pepper production in passively ventilated protected structures
  - Dr. Bielinski Santos, University of Florida
- } Delivering food safety education through social networks
  - Led by Dr. Jeff LeJeune, The Ohio State University
- } Sustainable production and marketing of vegetables and vegetable seed
  - Led by Dr. Jim Nienhuis, University of Wisconsin-Madison
- } Trellis Fund projects in Honduras and Nicaragua

# Other Central America Activities



# Postharvest training for smallholder horticulturalists

- } In 2012, the Horticulture Innovation Lab received an award from USDA Foreign Agricultural Service to adapt the UC Davis postharvest short course for Central America
- } Held at Zamorano in May 2013 with 45 attendees
- } Another course is planned for 2014



Coordinated by Victor Figueroa and Julio Lopez, Zamorano, with assistance from Michael Reid and Marita Cantwell, UC Davis.



# Horticulture Assessment

- } Funded by an associate award from the USAID Latin America and the Caribbean Bureau to the Horticulture Innovation Lab (formerly HortCRSP)
- } Team members
  - Alonso González M (leader)
  - Tito Livio Zúniga
  - L. George Wilson (liaison to UC Davis)

# Charge



# *Advancing Horticulture: Assessment of constraints to horticultural sector growth*

## } Major constraints identified:

- Lack of access to affordable credit and insurance
- Lack of an adequate extension system
- Weather, climate volatility
- Pests, diseases, weeds
- Lack of research on issues in the horticultural sector
- Postharvest losses and food safety



# *Advancing Horticulture: Assessment of constraints to horticultural sector growth*

## } Regional approaches:

- Promote initiatives to adapt horticulture to climate volatility
- Establish regional research programs to address cross-cutting constraints affecting the region
- Promote regional and national training programs on appropriate technologies to reduce postharvest losses
- Promote regional initiatives to conserve, characterize, and facilitate access to diverse and improved germplasm

# *Advancing Horticulture: Assessment of constraints to horticultural sector growth*

## } National approaches:

- Reduce the economic risks to horticulture farmers through effective crop insurance programs
- Design and test interlinked microcredit-index insurance product
- Improve national extension systems
- Develop trusts or other microfinance means
- Develop national policies to support well-funded research systems, including training of graduate students
- Develop mechanisms to coordinate and enhance marketing of horticultural crops
- Create incentives and enabling environment to develop horticulture business services
- Facilitate participation of indigenous peoples and women in value chains



**USAID**  
FROM THE AMERICAN PEOPLE

Published December 2013



# ADVANCING HORTICULTURE

ASSESSMENT OF CONSTRAINTS TO HORTICULTURAL  
SECTOR GROWTH IN CENTRAL AMERICA

<http://horticulture.ucdavis.edu/lac/>

# Thank you

