



**Sustainable Agricultural and
Natural Resources Management
Collaborative Research Support Program**



Agroforestry and Sustainable Vegetable Production in Southeast Asian Watersheds

**Presentation at USAID-EGAT
Ronald Reagan Building
August 31, 2009**



**North Carolina Agricultural
and Technical State University**



USAID
FROM THE AMERICAN PEOPLE



Strong Partnership

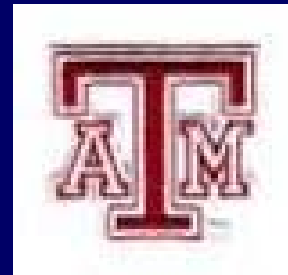


North Carolina Agricultural
and Technical State University





Strong Partnership



North Carolina Agricultural and Technical State University





Outline

- 1. Problem Statement**
- 2. Objectives**
- 3. Promising Results**
- 4. Questions and Discussions**





Outline

- 1. Problem Statement**
- 2. Objectives**
- 3. Promising Results**
- 4. Questions and Discussions**





Problem Statement

Communities in many forest and vegetable producing watersheds in Southeast Asia are suffering from poverty, and forest, soil and water resources degradation



Lantapan, Philippines

May 2007



North Carolina Agricultural
and Technical State University



USAID
FROM THE AMERICAN PEOPLE



Outline

1. Problem Statement

2. Objectives

- Physical and Biological Sciences (first one)
- Social Sciences (five others)





IMPEGS

T echnology *'complementarity'*



North Carolina Agricultural
and Technical State University



USAID
FROM THE AMERICAN PEOPLE



TMPEGS

Marketing *'value chain'*



North Carolina Agricultural
and Technical State University



USAID
FROM THE AMERICAN PEOPLE



TMPEGS

Policy

'incentives'



North Carolina Agricultural
and Technical State University



USAID
FROM THE AMERICAN PEOPLE



TMPEGS

E

nvironmental &
conomic-social impact

'it works'



North Carolina Agricultural
and Technical State University



USAID
FROM THE AMERICAN PEOPLE



TMPEGS

Gender *'equity'*



North Carolina Agricultural
and Technical State University



USAID
FROM THE AMERICAN PEOPLE



TMPEGS

Scaling-up *'contagiousness'*



North Carolina Agricultural
and Technical State University



USAID
FROM THE AMERICAN PEOPLE



Outline

1. Problem Statement
2. Objectives
3. Promising Results
4. Questions and Discussions





Outline

1. Problem Statement
2. Objectives
3. Promising Results
4. Questions and Discussions





Vietnam



North Carolina Agricultural
and Technical State University



USAID
FROM THE AMERICAN PEOPLE



Cacao can be grown under Cashew



North Carolina Agricultural
and Technical State University

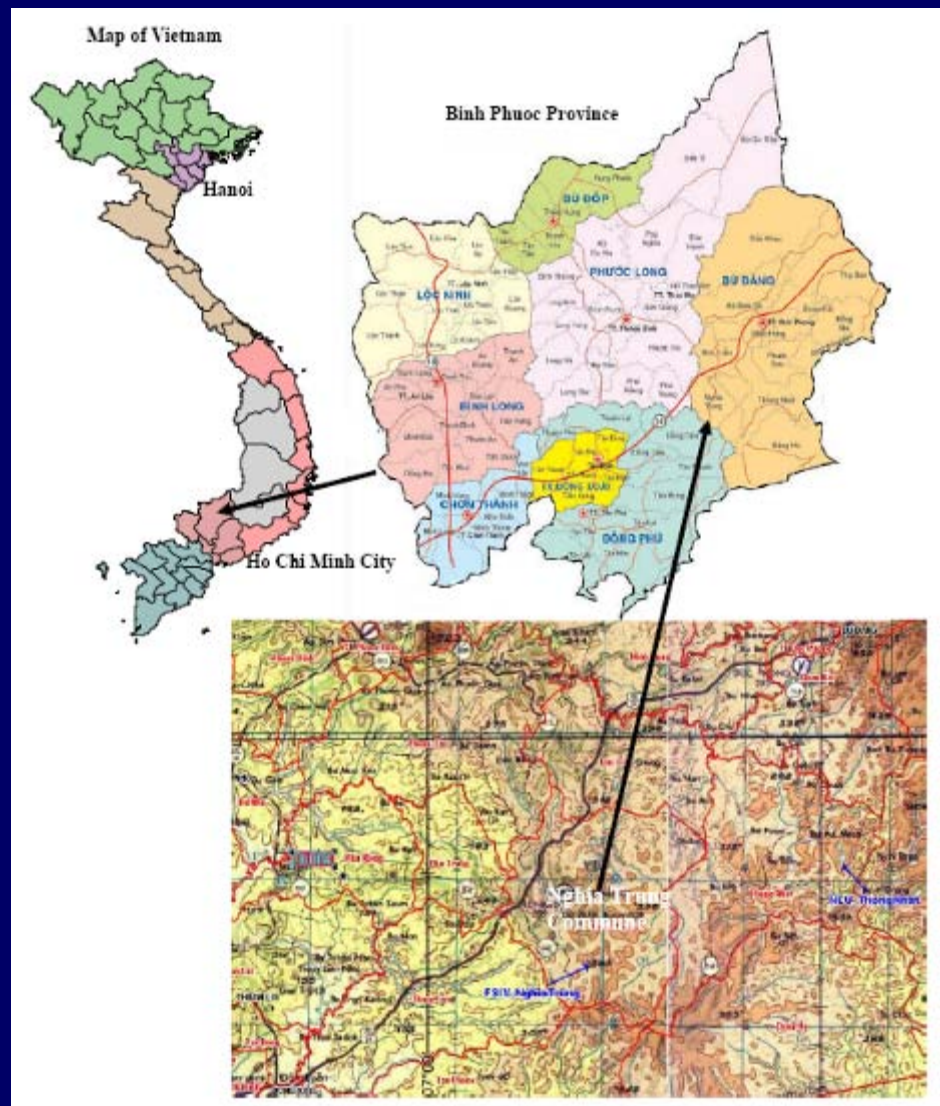


USAID
FROM THE AMERICAN PEOPLE



Vietnam

- Binh Phouc Province
- Watershed drains in Ho Chi Minh City (Saigon)





Vietnam Top Cashew Exporter

Nation holds spot as top cashew exporter

(31-01-2008)

HA NOI — Viet Nam last year led the world in cashew export sales for the second time, according to the Viet Nam Cashew Association (Vinacas).

In 2007, Vinacas reported the cashew industry exported 153,000 tonnes of nuts, up 20.6 per cent over the previous year.

Vietnamese cashews for export were last year priced 7 per cent higher than the previous year due to the high quality of the product, Vinacas also reported, helping the industry earn US\$650 million.



Farmers harvest cashews in the southern province of Binh Phuoc's Tan Phuoc commune. The province leads the country in cashew production, producing 120,000 tonnes per year. — VNA/VNS Photo Pham Do

120,000 tonnes per year





Vietnam



Cashew-Cashew-Cashew In Bin Phouc Province



North Carolina Agricultural
and Technical State University



USAID
FROM THE AMERICAN PEOPLE



Cashew Fruit



North Carolina Agricultural
and Technical State University



USAID
FROM THE AMERICAN PEOPLE



Harvesting Cashew



North Carolina Agricultural
and Technical State University



USAID
FROM THE AMERICAN PEOPLE



Cracked manually



Crack and get the seeds





Separate the Whole from Cracked



North Carolina Agricultural
and Technical State University



USAID
FROM THE AMERICAN PEOPLE



Cooked and then Canned



North Carolina Agricultural
and Technical State University



USAID
FROM THE AMERICAN PEOPLE



Promising Result Vietnam



North Carolina Agricultural
and Technical State University



USAID
FROM THE AMERICAN PEOPLE



TMPEGS has proof that Cacao grows well under Cashew



Dr. Ronald Cantrell
Director General International
Rice Research Institute
(1999 to 2005) progress reviewer
assigned to this project





Proof that Cacao grows well under Cashew



To see is to believe



To see is to believe



To see is to believe



To see is to believe



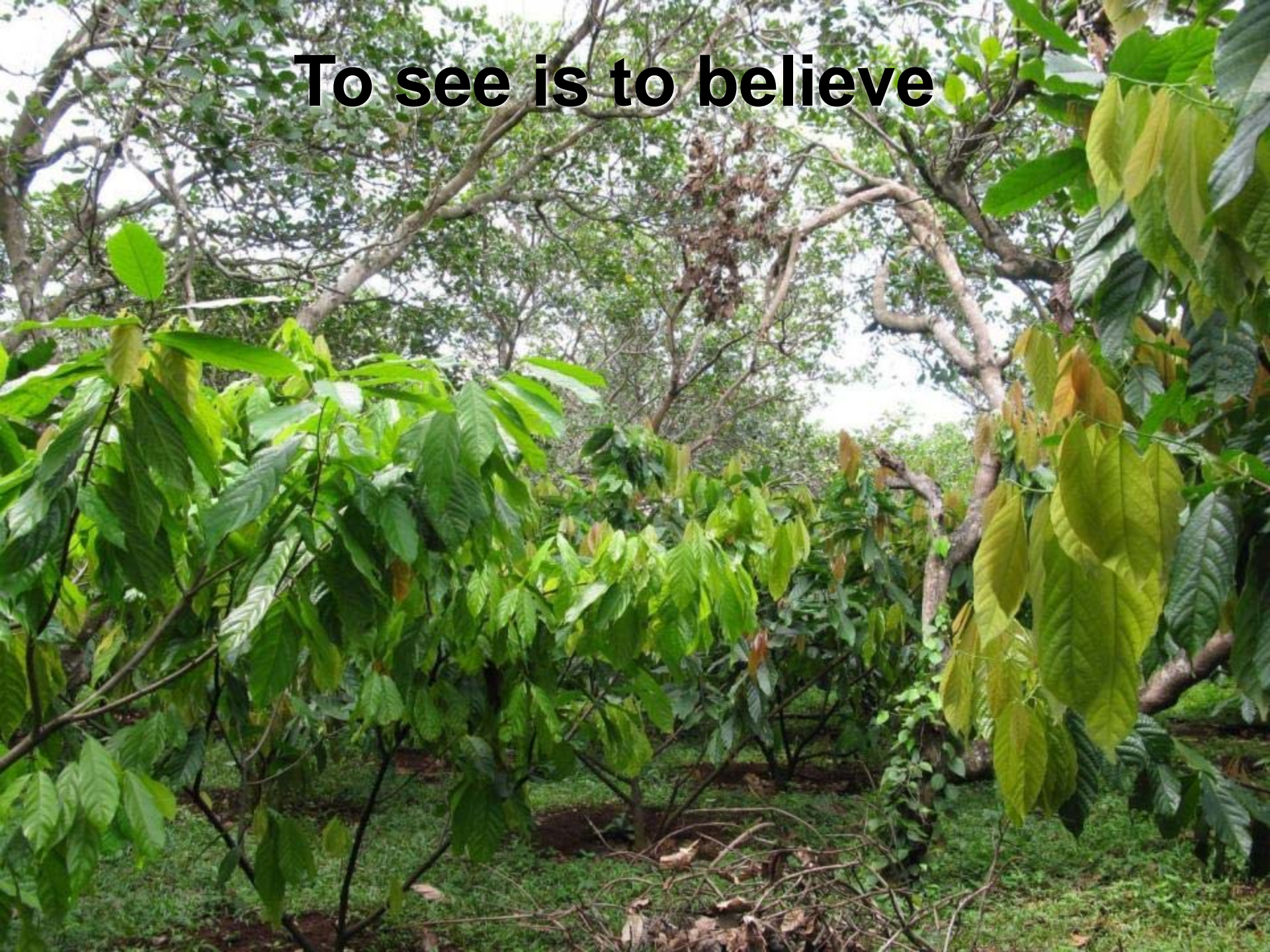
To see is to believe



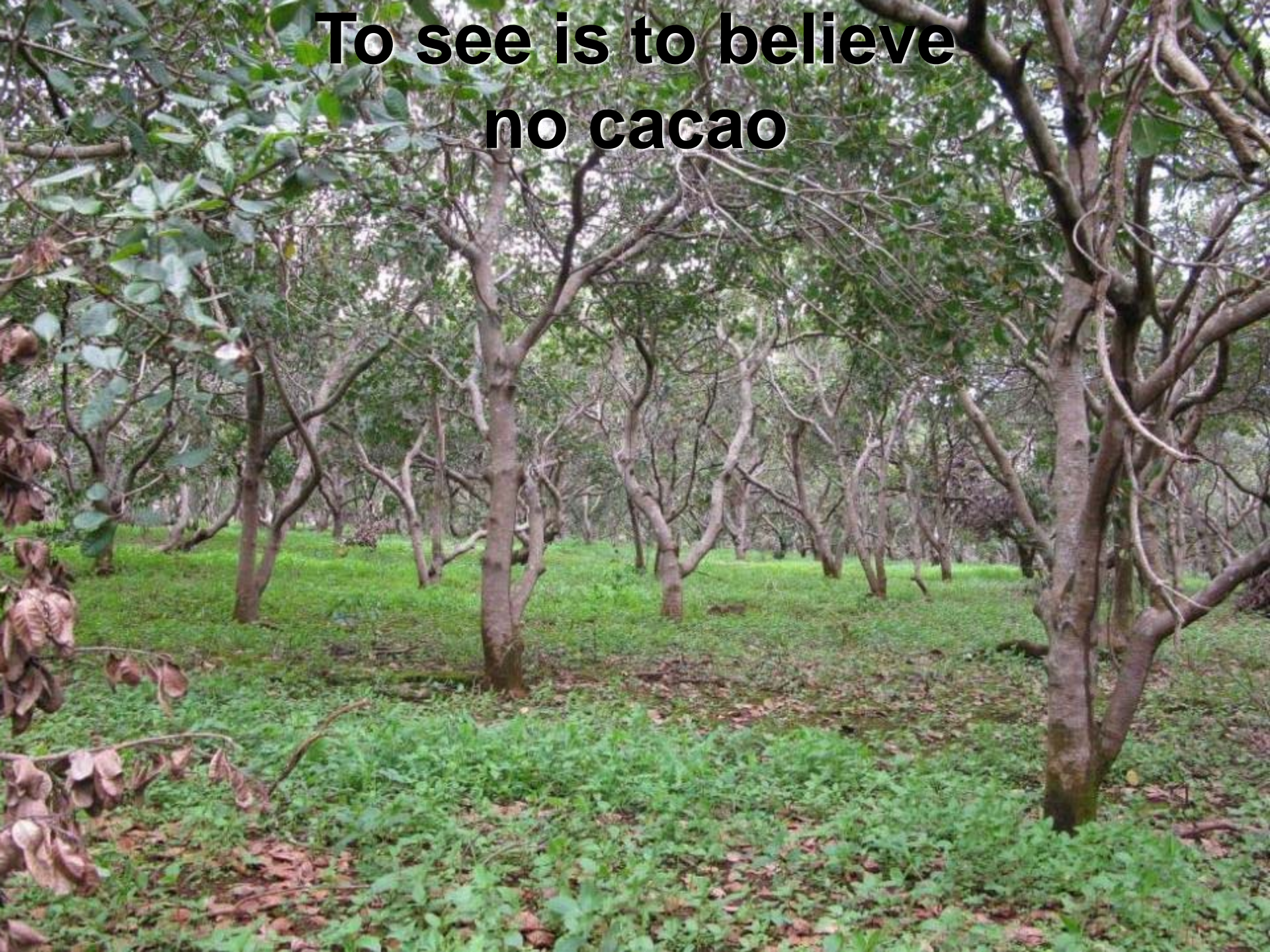
To see is to believe



To see is to believe



**To see is to believe
no cacao**



To see is to believe





Promising Result Vietnam

*Cacao Seedlings are
Being Killed by
Termites*



North Carolina Agricultural
and Technical State University



USAID
FROM THE AMERICAN PEOPLE



Biocontrol of Termite in Cacao Trees



Termite damage on cacao tree



Vetiver grass





TMPEGS has Proof that Vetiver Grass can control termites in young cacao seedlings



North Carolina Agricultural
and Technical State University



USAID
FROM THE AMERICAN PEOPLE

Soil Quality study

A photograph of a coffee plantation. In the foreground, several coffee bushes with dark green, glossy leaves are visible. Some leaves show signs of aging or damage, appearing brownish-orange. The ground is covered with a thick layer of fallen coffee leaves and twigs, representing organic residue. In the background, there are taller trees and more coffee bushes, creating a dense canopy. The overall scene is a typical coffee farm setting.

Residue



Cacao and beans



North Carolina Agricultural
and Technical State University



USAID
FROM THE AMERICAN PEOPLE



North Carolina
and Technical S



USAID
FROM THE AMERICAN PEOPLE



Cacao beans are dried



North Carolina Agricultural
and Technical State University



USAID
FROM THE AMERICAN PEOPLE



Huge Cashew small farm enterprise in Vietnam

There is a high potential for expanding cacao-cashew system in Binh Phuoc province (172,000 ha existing cashew area) and to other cashew planting regions in Vietnam.





Vietnam Policy

The expansion of cacao-cashew system is expected to contribute significantly to the achievement of Vietnam policy to expand cacao area from 10.000 ha in 2008 to 80,000 ha by 2020,





Economics - Profit

The assessment of cacao-cashew system indicates that by integrating cacao into existing cashew plantation, farmers' income as measured by increased by **136 %**.





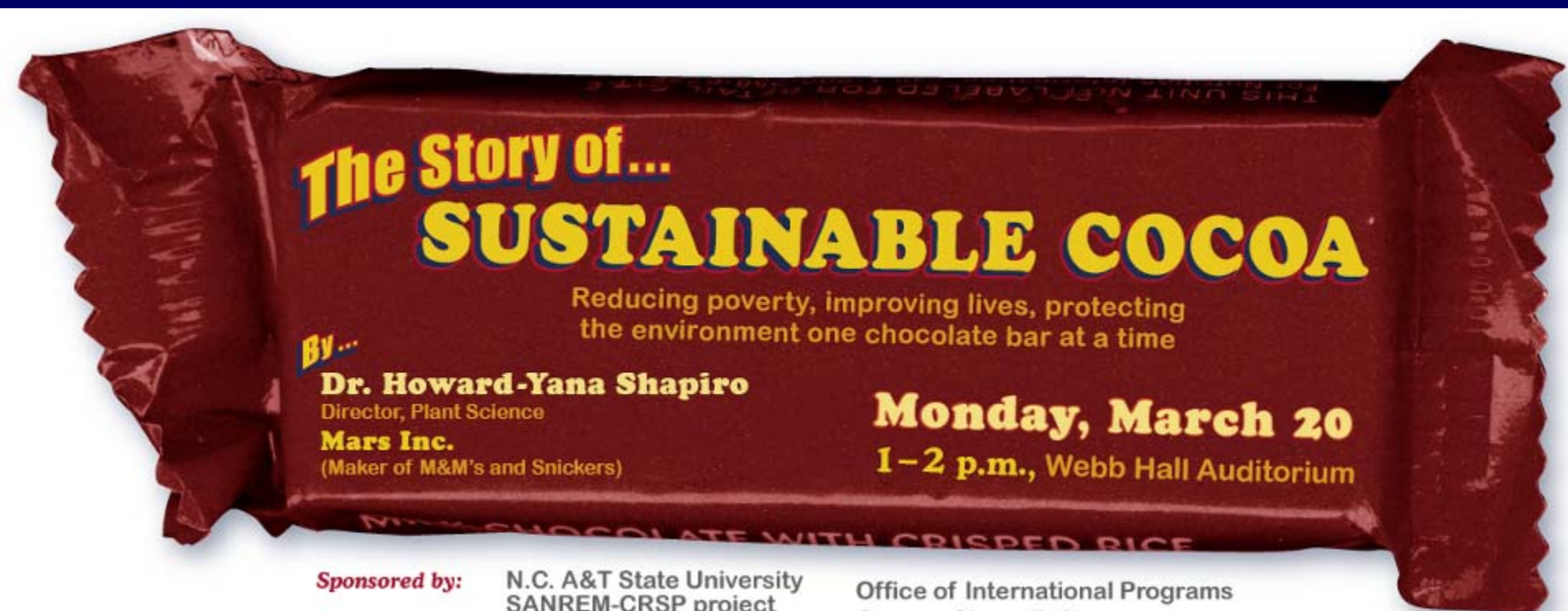
North Carolina Agricultural
and Technical State University



USAID
FROM THE AMERICAN PEOPLE



Excellent SANREM story



Sponsored by: N.C. A&T State University
SANREM-CRSP project
NRED-SAES

Office of International Programs
Gamma Sigma Delta



North Carolina Agricultural
and Technical State University



USAID
FROM THE AMERICAN PEOPLE



Promising Results for Indonesia



North Carolina Agricultural
and Technical State University



USAID
FROM THE AMERICAN PEOPLE



Indonesia



North Carolina Agricultural
and Technical State University

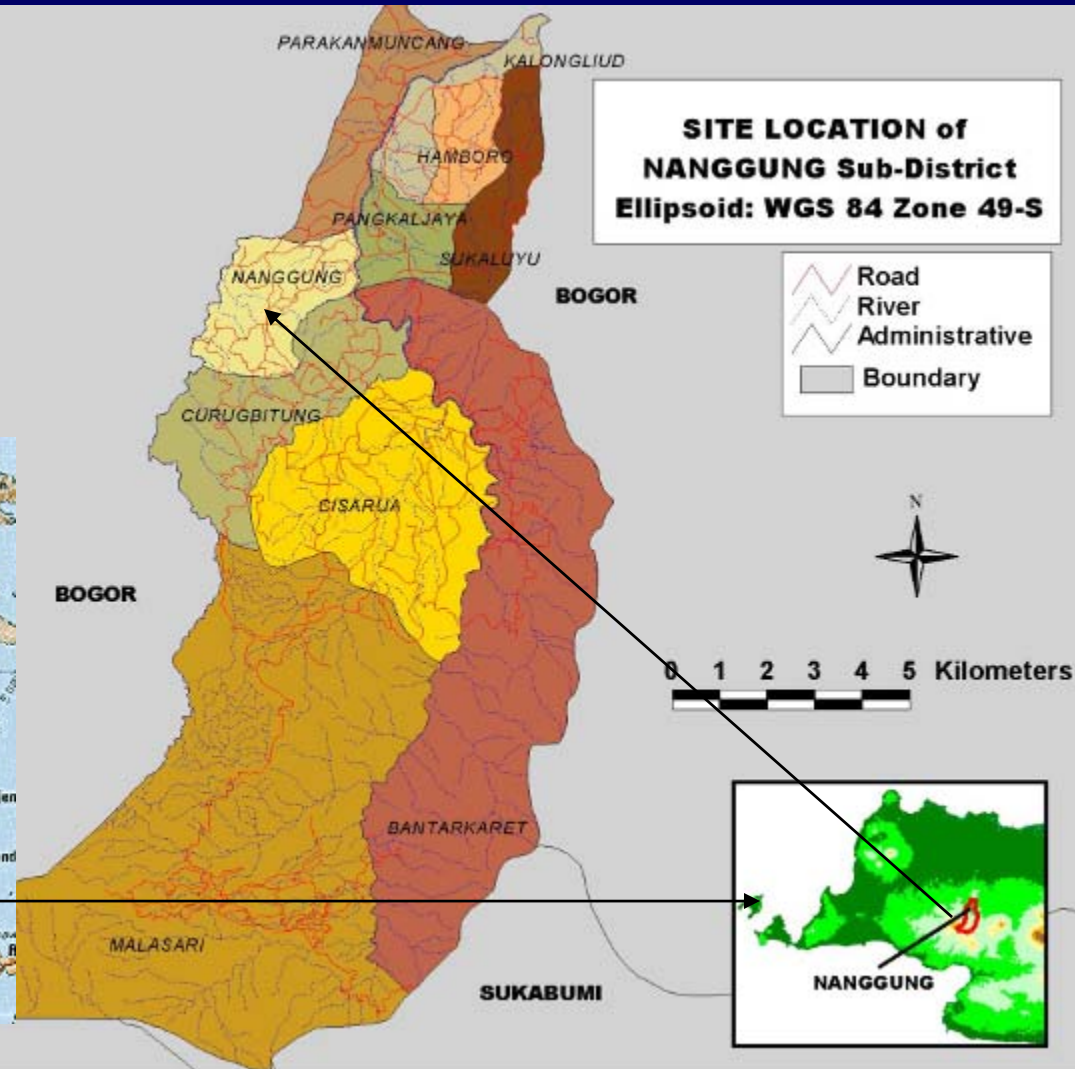


USAID
FROM THE AMERICAN PEOPLE



Indonesia

- Nanggung
- Watershed drains in Jakarta





Tree system here is mixed

Inside the forest



North Carolina Agricultural
and Technical State University



USAID
FROM THE AMERICAN PEOPLE



From SANREM research Vegetable recommendation book and brochures



North Carolina Agricultural
and Technical State University



USAID
FROM THE AMERICAN PEOPLE



Encountered a bump!!

Fertilizer is subsidized for Rice but not for vegetables

- Solution: farmer cooperative – on-going

Proposal in SANREM IV:

Development of organic fertilizer technology



To see is to believe



No
an



USAID
FROM THE AMERICAN PEOPLE

TMPEGS INDONESIA CELEBRATION

Agroforestry and Sustainable Vegetable Production in Southeast Asian Watersheds, SANREM-CRSP

Agroforestry Centre
SHAPING LIVES AND LANDSCAPES

AVRDC
CENTRAL RURAL ARCH & DEVELOPMENT CENTER
1973

Virginia Tech
Invert the Future

Nanggung sub-district, Bogor county, West Java province, Indonesia, June 10-12, 2009

To see is to believe



USAID
FROM THE AMERICAN PEOPLE

TMPEGS INDONESIA CELEBRATION

Agroforestry and Sustainable Vegetable Production in Southeast Asian Watersheds, SANREM-CRSP

sub-district, Bogor county, West Java province, Indonesia, June 10-12, 2009

Agroforestry Centre
LIVES AND LANDSCAPES

AVRD

PELAKSANA

SAWIL/CRP

VirginiaTech
Invert the Future

To see is to believe



SAN

What do you notice?

To see is to believe

Indonesian farmers May 4, 2006





USAID
FROM THE AMERICAN PEOPLE

TMPEO



World Agroforestry Centre
TRANSFORMING LIVES AND LANDSCAPES



AVRDC

Agrofores

n South



ub-dist

To see is to believe



TMPEGS INDONESIA CELEBRATION

Agroforestry and Sustainable Vegetable Production in Southeast Asian Watersheds, SANREM-CRSP



... district, Bogor county, West Java province, Indonesia, June 10-12, 2009



To see is to believe



To see is to believe

... DATE 10-12, 2009



To see is to believe



To see is to believe



**To see is to believe
Men are listening 😊**

How did this come about?



Katuk? (means crazy in Filipino)

Katuk under guava

A photograph of a guava orchard. The trees are young and have a distinct branching pattern. Several people are visible in the background, some wearing head coverings, engaged in agricultural work. The ground is covered with low-lying vegetation and fallen leaves. A white text box is overlaid at the bottom of the image.

To see is to believe

A group of women wearing hijabs are gathered around a table outdoors. They are smiling and looking at a large green plant on the table. One woman in a yellow hijab and plaid shirt is in the foreground, smiling broadly. Another woman in a yellow shirt and black hijab is holding the plant. In the background, there are other women in various colored hijabs. The setting appears to be a community gathering or a workshop. A window with a wooden frame is visible in the background.

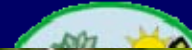
To see is to believe

Get and share

Hi five!!



To see is to believe



TMPEGS INDONESIA CELEBRATION

Agroforestry and Sustainable Vegetable Production
in Southeast Asian Watersheds, SANREM-CRSP

Nanggung sub-district, Bogor county, West Java province, Indonesia, June 10-13, 2009

USAID
FROM THE AMERICAN PEOPLE

World Agroforestry Centre
ICRAF

AVRDC
CENTRE FOR TROPICAL AND SUBTROPICAL AGRICULTURE
FOUNDED 1971



Virginia Tech
Support the Future

To see is to believe



Philippines



North Carolina Agricultural
and Technical State University

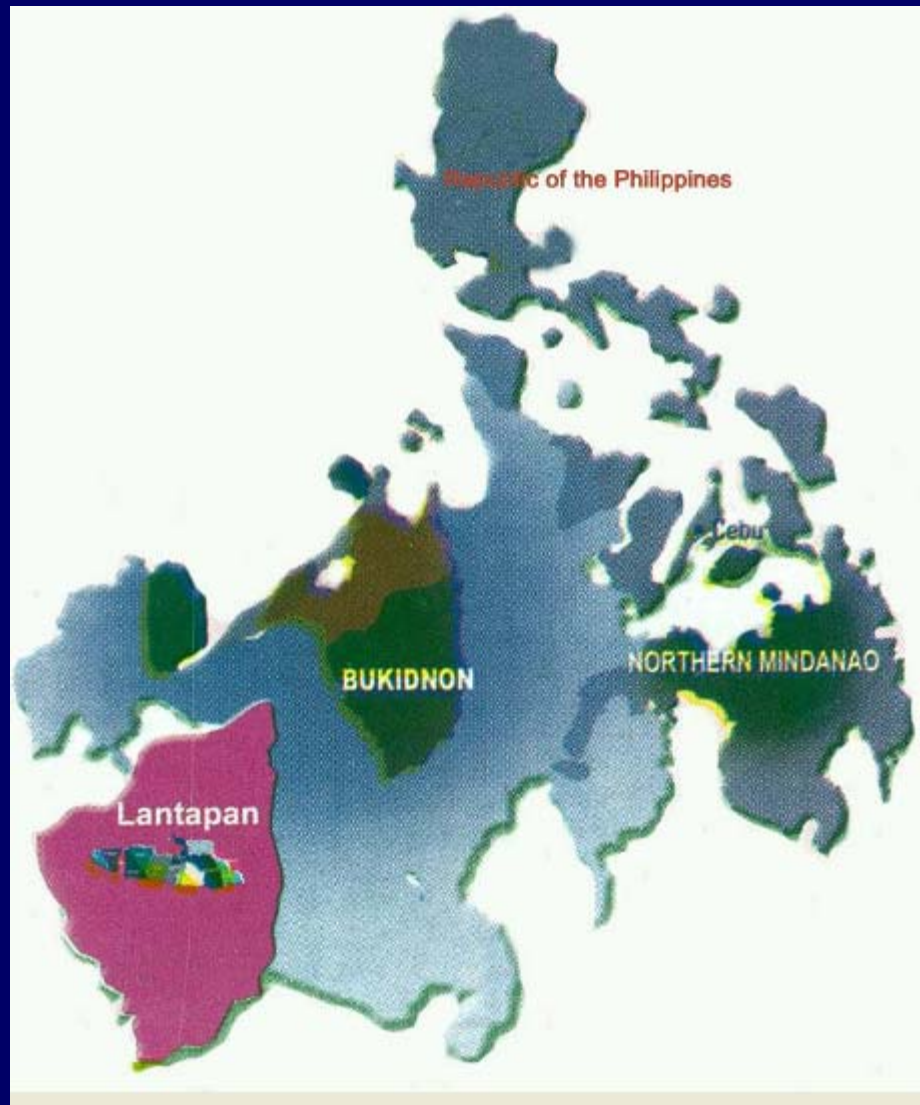


USAID
FROM THE AMERICAN PEOPLE



Philippines

- Lantapan, Bukidnon, Island of Mindanao
- Mindanao is a major conflict region in the Philippines





Philippines



North Carolina Agricultural
and Technical State University



USAID
FROM THE AMERICAN PEOPLE



Can vegetables be more productive under tree-based systems?



Philippines



To see is to believe

Local Name Carrots
Scientific Name: *Daucus carota*

Philippines



To see is to believe

Indigenous Vegetables

Scientific Name: *Amorpha fruticosa* L.
Local Name: *Amorpha*
Variety: TSP 54N (Tobacco)

Scientific Name: *Amorpha fruticosa* L.
Local Name: *Amorpha*
Variety: TSP 54N (Tobacco)

To see is to believe





Medicinal Vegetable Trees



Link Name: Malunggay
Lamb's ears: Mungo 2018

To see is to believe





*Can vegetables be more
productive under tree-
based systems?*

Yes *for unique
vegetable tree combinations*



North Carolina Agricultural
and Technical State University



USAID
FROM THE AMERICAN PEOPLE

Municipality had passed an Incentive based policy on conservation agriculture



Clamoring for organic fertilizer technology





Binahon Agroforestry Farm

Refer to handout



North Carolina Agricultural
and Technical State University



USAID
FROM THE AMERICAN PEOPLE



Questions



North Carolina Agricultural
and Technical State University



USAID
FROM THE AMERICAN PEOPLE