Climate ready root crop conservation, sharing and utilization

CARDI CTA CLIMATE CHANGE PGR POLICY
WORKSHOP: October 2012
Cost = US$73.4mn
Climate change and climate variability

Large increase in incidence of extremely hot days and warm nights
Widespread increase in number of heavy rain days
Increases in evapo-transpiration
Sea level rise?
WHY LOOK AT CROP DIVERSITY TO HELP WITH MANAGING CLIMATE VARIABILITY

- Stern review: identifies “more climate-resilient crops”
- Hague Conference on Agriculture, Food Security & Climate Change
- The example given by TLB in Samoa
- Increasing the options available to farmers
- Basic concept” diversity of kingdoms, species and genepools can increase the productivity of farming systems in a range of growing conditions”
- Not about maximizing yield in a single year but over years that are both good and bad
DIFFERENT APPROACHES IN USING CROP DIVERSITY FOR ADAPTATION

- **Reactive**: in response to an existing or predicted problem, eg TLB tolerance, drought tolerance
- **Proactive**: enhancing the diversity within the genepool used by farmers; enriching farmers’ portfolios provides some insurance for the future
USING CROP DIVERSITY TO ADDRESS THE CHALLENGES OF CLIMATE CHANGE IN THE REGION: THE CLIMATE READY COLLECTION

• A collection of crops and varieties that have demonstrated tolerance to climate variability and extremes
• Over 100 varieties
• Local and imported
AROIDS
YAMS/ CASSAVA/ BANANA/ SWEET POTATO
CRC: HOW IT WORKS

IARCS

CEPACT

PAPGREN
FARMER SELECTION/ AWARENESS
Screening for water-logging Cook Islands

Using traditional systems for screening
Using plots abandoned because of saltwater intrusion problems
Pelileu, atoll island

August 22, 2011
January 20, 2012
BREEDING PROGRAMMES: DIVERSITY IN, DIVERSITY OUT

- Researcher-led farmer breeding programme
- Diversity provided by CePaCT
- Screening for drought tolerance in farmers’ fields in different locations
- Selections used in breeding programmes; lines will be evaluated by farmers
- DT lines will be sent to CePaCT
• Six crops distributed
• Total of 7,104 plants
• Distributed to 15 Pacific Island countries
• Cook Islands, Fiji, FSM, Guam, Kiribati, Nauru, Norfolk Islands, Palau, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu (FAO proj), Vanuatu, Wallis & Futuna
• Total of **7,104 plants**
REACTIVE APPROACH:
TARGETING TLB USING A PARTICIPATORY APPROACH

- Countries within and outside the region provided the diversity via CePaCT
- Breeding programme had reached a genetic ceiling at Cycle 4
- Diversity imported through CePaCT from Asia
- Selected lines go to CePaCT for wider distribution to region and globally
PROACTIVE APPROACH: GENEPOOL ENHANCEMENT

- Enriching farmer portfolios with diversity
- Propagules generated from polycross fields; best selections
- VARTC: 73,000 propagules of taro, yam, sweet potato, cassava to 10 villages on 10 islands
WHAT THE PROJECT SHOWED

• Farmers are interested in new root crop varieties
• Maintained new varieties as well as traditional material
• 87% gain in diversity for yam villages, 61% gain for taro villages (2 years)
• The varieties introduced under the pilot project have spread to other communities
• Distribution of planting materials was a challenge
• High costs – infrastructure constraint
• Farmers are driving and maintaining this programme
COST- BENEFIT ANALYSIS

- No CBA possible as yet with the CRC but a CBA of TLB shows the benefits from having a system in place that allows the exchange of diversity across borders
  - **TLB**: crop conservation utilising regional genebank coupled with an in-country breeding and distribution program provides a basis for an effective response to a biological disaster
  - **CRC**: crop conservation utilising regional genebank coupled with in-country distribution programmes and in some cases, breeding programmes provides a basis for an effective response to specific climate constraints
  - **Vanuatu**: crop conservation, (ex situ linked to in situ) is used to enhance the diversity of the gene pool - providing the farmers a form of genetic insurance to manage climatic variability and future biological disasters
MEASURING THE BENEFITS

• TLB:
  - Fugalei Market Surveys: 500 tonnes of taro sold annually
  - Taking into account subsistence-grown taro = 9,000 tonnes
  - Value = US$9.5mn
  - Projected value by 2030 = US$11.2mn

• Vanuatu:
  - Looked at the cost of importing more grain should there be a root crop failure
  - 25% increase = US$2.7mn

Does not take into account nutritional and cultural benefits
CONCLUSIONS

• Access to diversity provides farmers with a range of options to deal with climate variability.

• Reactive and proactive approaches manages risk on several levels.

• Regional and national mechanisms required to ensure farmer access and use.

• Providing diversity is not a one-off solution – as the climate changes so will the diversity required to meet that change.

• Reinforces the need for a stable regional mechanism.
KEY POINTS/THOUGHTS: WHAT WAS REQUIRED TO ESTABLISH THE REGIONAL EXCHANGE SYSTEM

• Recognition of the importance of diversity and its role in food security
• Communicating that message to the policy makers
• Support from the policy makers – your message was successful!
• Donor support
• Regional agency commitment
• Committed and enthusiastic individuals
• Continuously promoting and proving what diversity can do – nothing wrong in repetition!
• Maintaining awareness
• Global recognition and support
Thank you for your attention