Session 3: Farming Systems
Information from Baseline Survey

Outline of Presentation

- Farming Practices
  - Crop Rotation practices
  - Tillage
  - 'Carbon Footprint'
    - Energy Efficiency
    - Waste Disposal
- Conclusions and recommendations

Crop Rotation (1 of 4)

- ‘Textbook’ crop rotations in several cases with choices reflecting:
  - different nutrient uptake regimes
  - differing feeding depths and dissimilar pest profiles
- Soil measurably improved due to fertility increases, lowered pest loads and improved friability (looseness of soil)

Crop rotation (2 of 4)

CROPS/SEQUENCE in St. Vincent & Grenadines

- Melons → Peanuts → Ochroes
- Carrots → String Beans → Cabbage
- Tomatoes → Sweet Potatoes →Yams
- Cucumbers → Tomatoes →Lettuce
- Cucumbers→ Carrots → Eddoes → Cabbage

Crop rotation (3 of 4)

CROPS/SEQUENCE in St. Vincent & Grenadines

- Sweet Potatoes → Yams → Eddoes
- Sweet Potatoes → Tomatoes → Yams
- Yams & Eddoes → Tomatoes → Ginger
- Tomatoes & Cabbage → Eddoes → Yams → Tannias
- Sweet Potatoes → Yams → Eddoes

Crop Rotation (4 of 4)

- St. Kitts/Nevis and St. Lucia
  - Significant evidence that rotations based more on economic factors than on crop husbandry
  - Same family rotations as a means to cash in on high value crops ("rotated" crops had similar pest/ disease and nutrient profiles)
  - Expected agronomic /soil improvement gains not obtained

Tillage (1 of 2)

- Varied from minimum to sub-soil
- Often used with other operations such as deep planting, fallow and manual land clearing
- Antigua and Barbuda:
  - Two farms (sandy loam soils) used ploughing every 3 years

Tillage (2 of 2)

- Barbados:
  - Most ‘organic’ farmers routinely minimize tillage/ compaction by using small hand-push tillers
- St Kitts/Nevis, St Lucia, Grenada, St Vincent and Grenadines:
  - Direct planting, limiting soil disturbance & reduced tillage in cucurbits, papaya, roots and tubers, plantain, and banana

Energy efficiency (1 of 3)

- Post-Kyoto: sustainability of production is globally linked to climate-neutral technologies
  - Fair-trade exports require use of environment-friendly techniques, particularly with regard to use of agrichemicals derived from petroleum products
- All farmers interviewed used fossil fuels for pumps, tractors, engines etc.

Energy efficiency (2 of 3)

- Energy efficiency/renewable systems appear to be 'off-radar' among Regional producers
- One farm with integrated aquaculture and hydroponic system used electricity to pump recycled water from tilapia fishpond to vegetable beds and back to fishpond
  - Owner reported that government policy did not allow use of co-generated solar powered equipment

Energy efficiency (3 of 3)

- Grenada: solar/wind powered generators used for honey extraction, water pumping, refrigeration, lighting & produce grinding/processing
- Barbados: solar water heating commonplace with minimal use of alternative energy on farms, mainly due to high cost of initial investment required

Waste Disposal (1 of 4)

- Crop farmers: waste is not a major issue
  - Crop residue ploughed back in or used to feed pigs on farm, or by other pig producers
  - Crop wastes (including carrot tops) used as mulch
  - Crop residues heaped, dried and burnt to reduce pest problems in sweet potato, when the material could have been composted

Waste Disposal (2 of 4)

- Findings on waste disposal reinforce the observation that composting is one of the most misunderstood operations on Caribbean farms
  - Appropriate composting process must be used to ensure that harmful pests and pathogens are destroyed
  - Process depends on composting conditions (temperature, aeration) and duration of survival of pathogens and pests

Waste Disposal (3 of 4)

- In one organoponics farm, fish waste used to fertilize on land crops as part of overall system of growing plants in composted organic material
- Daily-generated livestock waste viewed as manure – often collected (gratis) and taken off-farm by crop farmers
- Increasingly farmers sell manure if they are not growing any crops themselves

Organoponic System (Antigua)

Waste Disposal (4 of 4)

- Farmers recognize threats posed by leaching from plastic containers and packaging, that impacts soil/water quality and poses health risk
- Inorganic waste disposal: more of a challenge in the absence of plastic recycling facilities
- Outside of Grenada there were no documented cases of the current reuse of spent oils/fuel.

Conclusions and recommendations

Conclusions: Land Preparation

- Land clearing is approached with knowledge of consequences of soil loss
- Soil protection is understood
- The requisite soil cover, avoidance of steep exposed slopes, minimum tillage, and the direct planting of appropriate crops are well-understood practices

Recommendations – Land Prep.

- Site preparation should be conducted with minimum soil disturbance/loss
- Cut vegetation should be windrowed and/or composted
- Properly constructed terraces: slopes 15% or less
- Direct planting of fruit trees on sloping land
- Contour drainage
- Maintain appropriate green cover during fallow

Conclusions – Carbon Footprint

- Only Grenada had a comprehensive planned approach to a green economy that included legislation and stated commitment to a reduced carbon footprint
- Few records of the nature isle of Dominica having farm-based alternative energy systems
- Waste reduction and consequent relief on landfills was not a feature identified during the study

Recommendations - CF

- Ministries of Agriculture should promote and incentivize climate-smart agriculture via sustainable practices
- Refocus on Good Agricultural Practices (GAP) as a mechanism for livelihood protection and nutrition security as opposed to an imposition for international trade

Thank You