An Overview of Rainwater Harvesting Initiatives in Agriculture

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OUTLINE

• Introduction
• FAO’s work in Rainwater Harvesting
  – Feasibility Studies
  – Pilots and Demonstrations
  – Tools and Guidelines
  – Capacity Building
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• Lessons Learnt
• Conclusions and Recommendations
INTRODUCTION

RWH has been practised for a long time:

**Asia**
- **Jordan** (since 7000 BC)
- **Mesopotamia** (4500 BC)
- **Palestine** (2000 BC-1200 AD)
- **Yemen** (since 1000 BC)
- **Pakistan**
- **India**
- **Sri Lanka**
- **China**

**America**
- **Arizona and New Mexico** (1000 AD)

**Africa**
- **Tunisia**: `Meskats`, `M`goud` and `Jessours`
- **Somalia**: `Caag` and `Gawan` systems
- **Sudan**: `Haffire`, `Teras` etc.
- **Burkina Faso**: Pits
Where is water harvesting used at present in Africa?

Examples:
- Morocco
- Algeria
- Egypt
- Chad
- Mali
- Niger
- Sudan
- Ethiopia
- Somalia
- Kenya
- Tanzania
- Zambia

Legend:
- WH well documented
- WH most probably applied
- Other countries
Where is water harvesting used at present in Asia? (I)

- Yemen
- Saudi Arabia
- Iran
- India
- China
- Pakistan
- Afghanistan
- Syria
- Jordan
- Oman
- Other countries
Where is water harvesting used at present in Asia? (II)

- WH well documented
- WH most probably applied
- Other countries
FEASIBILITY STUDIES

• St Kitts and Nevis – *Brace Centre for Water Resources Management, Mc Gill University* (2007)

• Antigua and Barbuda, Barbados, Grenada, Jamaica, Dominica and Montserrat – *CDB/FAO/IICA/Gansu Research Institute for Water Conservancy, China* (2008)
Pilots and Demonstrations
Promoting Rainwater Harvesting in South St. Elizabeth

To improve the management of water and the overall productivity of small farmers in South St. Elizabeth
Promoting rainwater harvesting ...
(Cont’d)

- 12 demonstration sites established showcasing:
  - Small portable fuel pumps
  - Microcatchment
  - Roof catchment system and guttering
  - Concrete storage tanks
Promoting rainwater harvesting ... (Cont’d)

ALSO:

- Regular on-farm training and support agronomy, system operations and maintenance for beneficiaries
- 100+ farmers trained in RWH systems from South St. Elizabeth
Results Achieved

- increased crop yields,
- improved crop quality,
- improved land productivity,
- extended growing seasons,
- improved capacity to introduce new crops,
- reduced reliance on truck-borne water
Results Achieved

• Reduced cost of production,
• increased individual access to irrigation water,
• increased water use efficiency
• contribution to personal and national food security
• increased socio-economic well being of the farmer.
Other Rainwater Harvesting Systems
Other Rainwater Harvesting Systems
Other Initiatives

• Storm Drains – Antigua and Barbuda
• Micro dams – Antigua and Barbuda
Tools and Guidelines
GIS Water Deficit Maps
Limitations of GIS tool

- Does not give RWH Potential per crop type (crop type data unavailable)

- Data Coverage and Time Period
  - Landuse Data is from 1984
  - 8% Soils Data missing

- Some rainfall maps do not depict seasonal variations

- Agricultural Water Demand and Evaporation Maps are done per hydrologic basin, not per station (gives the impression of uniformity throughout the basin)
Tools and Guidelines

- RWH Methods for Agriculture in the Caribbean Sub-Region
- RWH Training CD – Training course in water harvesting (*Land and Water Digital Media Series 26*)
- RWH Manual prepared by RLC – Captacion y Almacenamiento de agua de lluvia
Capacity Building

- Workshop on RWH technologies - Antigua and Barbuda – 2009
- Training Workshops – Jamaica 2011
- Sustainable Crop Production Intensification Workshop – Barbados 2012
- National Workshop on Water Management Strategies for Climate Smart Agriculture – Antigua and Barbuda, 2013
Challenges

- Water for domestic use – a priority for the household
- Crops to be grown during extended growing season
- Farmers’ knowledge of new crops
- Climate risks
- Limited experience of Extension service
- Siltation of microdams
- Pollution
- Larger schemes and structure are difficult to implement
Lessons Learnt

• Farmer selection is important
• Site selection important including tenure
• Involve the farmer in all stages
• Rainfall, hydrological data
• Link markets to production
• Holistic approach to crop husbandry
• Support services important – extension, credit, etc
Conclusions

• Rainwater harvesting for agriculture is not new
• It is an important Climate Smart Technology
• Much work has been done in the Caribbean
• GIS mapping is a powerful planning tool
• There are many benefits, but it depends on other factors – e.g. markets, information, site, support
• Capacity building and partnerships are essential
Thank you!!
Thank You!