

Developing Agricultural and Agri- Business Innovation in Africa,

Dar es Salaam, Tanzania, May12-14, 2008

Tanzanian Case Studies

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Case 1: “Drip Irrigation and Fertigation of Tea”

Prepared by Dr. Julius Kigalu

Tea Research Institute of Tanzania (TRIT)

Date of project creation	July 2002 – preliminary field work started
Number of people involved (field work)	Over 200, majority of whom are women workers



Aerial view of Kibena Tea Limited during the early days of its establishment, June 2001

May08-Driplrrigation/MFPs

Emergence of the Initiative

- Stakeholders demand for low-cost irrigation systems, reduced electricity bills and pumping costs
- The need for more efficient irrigation systems which demand less water with view to minimizing depletion of water in reservoirs/dams in response to decreasing amounts of rainfall
- Stakeholders decision (through the Tea Association of Tanzania) to embark on research on crop water management, including drip irrigation and fertigation of tea



Picture showing the dried Lihogosa Dam at Kibena Tea Limited due to climate change, February 2008

A Case of Demand Driven Research

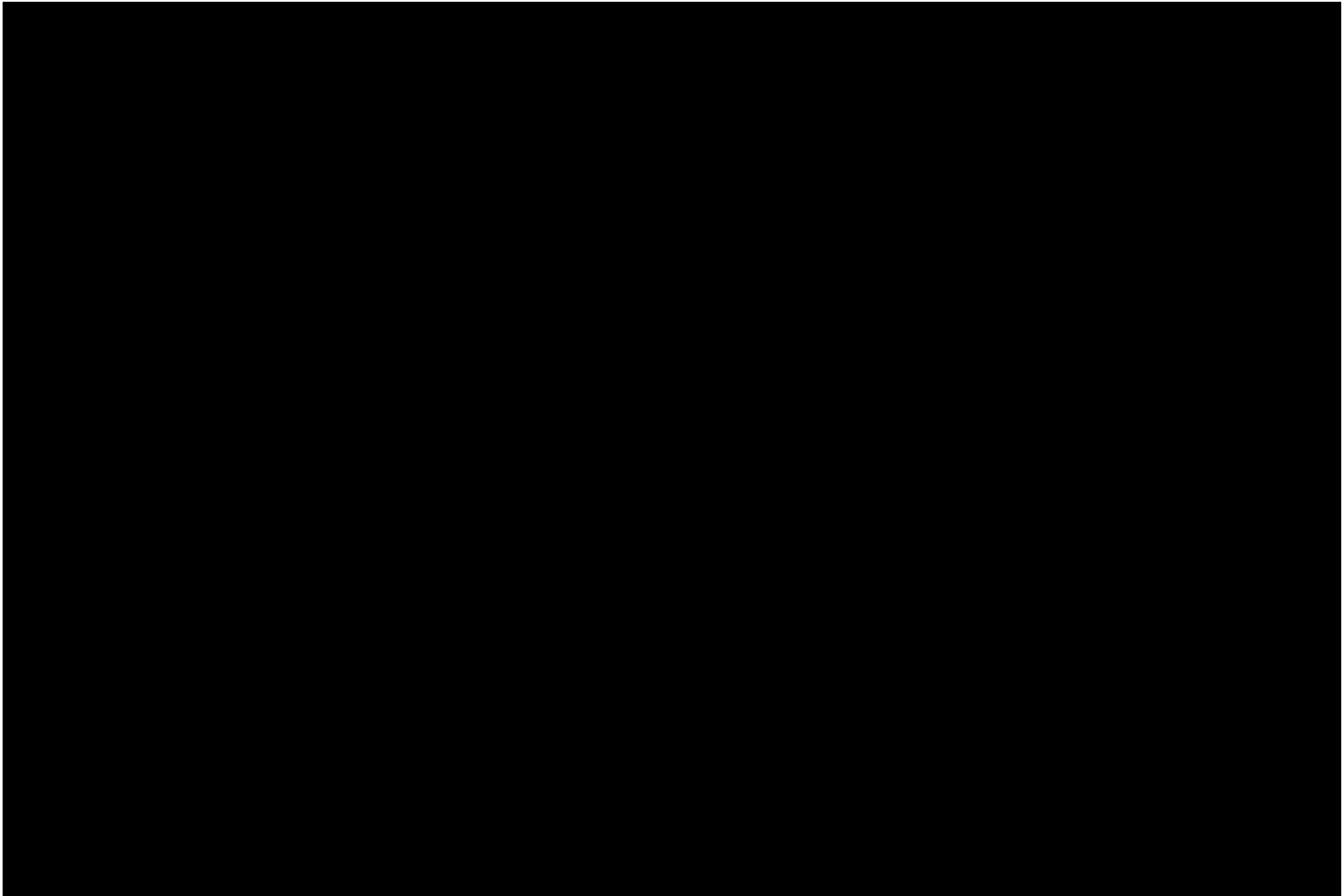
- The research theme was identified and defined by stakeholders
- Financing mechanism agreed upon by stakeholders – contributions to Tea Research Institute of Tanzania at 1.5% cess (tax) levied on tea sales
- The Crop Water Management Programme was tasked to prepare and submit research proposal

Project Implementation

- Kibena Tea Ltd was identified by stakeholders as research site/location and TRIT was charged to provide advice and guidance
- Principal Investigator identified by TRIT – worked out methodology of investigating six levels of drip irrigation (from 25% to 100% removal of cumulative Soil Water Deficit (SWD))
- On-site training, retraining and elaboration conducted on various levels of workers

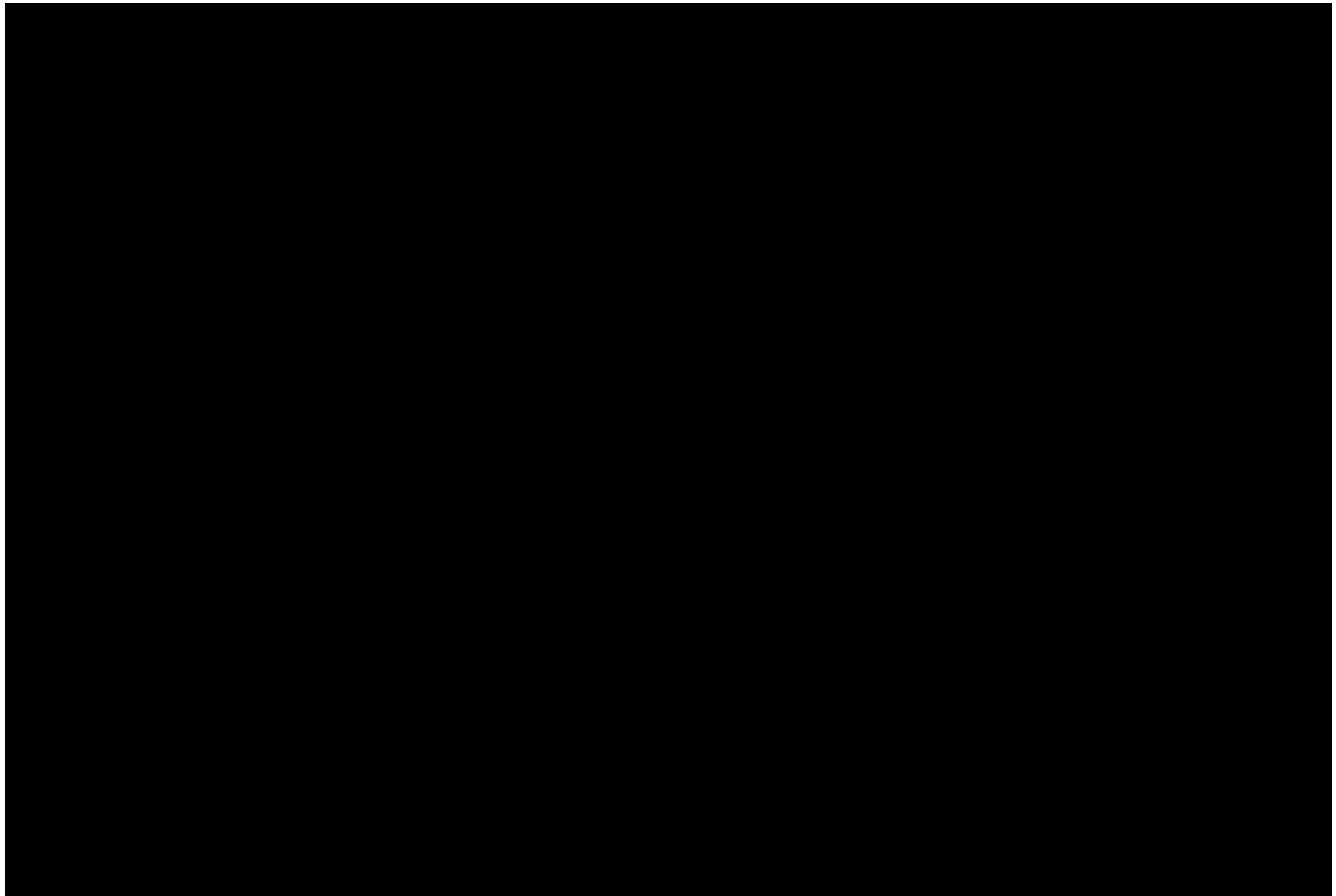
Obstacles and Factors of Success

- Vandalism of drip lines, at the beginning, and destruction by rodents – resolved through sensitization of people and use of rodenticides
- Low availability of water due to poor rainfall during 2003/04-2006/07
- Dedication and diligence of TRIT and KTL workers to the success of the project was very high
- Enactment of the 1.5% cess contribution was a big success factor, although negated by drought and high TANESCO electricity tariffs .



Picture of the experimental field showing some brown spots
in the least irrigated sub-plots

May08-DripIrrigation/MFPs



Drip irrigation of tea signboard showing the drip irrigation treatments

Impacts

- Determination of design for drip irrigation capable of water saving benefits of up to 50% without compromising high tea yield
- Quadratic yield response functions to water application were produced for determination of maximum yields at various levels of drip irrigation
- 85% labour saving with two people (person-days) per shift instead 13 for OHS (Overhead Sprinkler System)



Overhead sprinkler irrigation (Left) at Kibena Tea Limited, Njombe, before introduction of drip irrigation system (Right) showing the drip lines across the foot path

Impacts (contd)

- The Innovation has attracted:
 - 6 visits of scientists, tea growers and processors from Kenya, Malawi, Uganda
 - 17 scientists, field and factory managers from Tea Authority of Rwanda
- Unilever Tea Tanzania Ltd is to establish an even larger, 10 ha, experimental farm in Mufindi



Some of the 17 visitors from the Tea Authority of Rwanda at one of the new drip irrigation fields (see the laid drip lines) established based on the results of the drip research at KTL, Njombe, 2007.

Exemplarity of the Case Study

- Saving in water for irrigation by up to 50%
- Saving in labour for irrigation by 85%
- Producing the highest yield, up to 6,070 kg/ha.

The impact of the innovation – has already been taken up by Tea Growers in Southern Tanzania

Conclusions

Quantitative Impact of Innovation

Increase in yield	25-30% increased over Estate OHS irrigation
Increase in sales	Sales increased correspondingly
Increase in employment	Less labour for irrigation BUT 25-30% increased for plucking/harvesting the increased yield
Increase in employment	Proportionately increased exports as for yield

Case 2: “Multi-Functional Platforms for Productive Uses and Services”

Prepared by Shukuru Bartholomew

**Tanzania Traditional Energy Development and
Environment Organization (TaTEDO)**

Date of Project creation	June 2006
Number of people involved	More than 5,000 (access all services offered by MFP)

Emergence of the Initiative

- MFP provides electricity and other energy services for operating various small businesses in a rural setting
- TaTEDO promotes access and use of renewable energy technologies for poverty reduction and environmental conservation
- Through participatory appraisal, villagers identified electricity and mechanical power as their energy and developmental needs
- TaTEDO decided to test MFP technology and use of jatropha oil as main source of fuel

Project Implementation

- Preparation and conduct of knowledge exchange and training from Mali by 2 experts from Mali Folk Centre
- Conduct of village meetings for eventual village level implementation plan
- Design of required system, purchase of equipment and installation of the MFP in the village
- Setting up of management and operation systems
- Conduct of on-job training for village energy teams, technicians and operators
- Conduct of monitoring visits and phone contacts for learning, adaptation and replication

Obstacles and Success Factors

- Insufficient supply of jatropha seeds for its oil as an alternative to diesel
- Operational cost of the MFP when using diesel
- Illegal connection to minigrid electricity, and refusal to pay for installation costs and electricity bills – *resolved through education*
- Acceptance and collaboration from villagers
- Appropriate ownership and management of MFP – *by an entrepreneur*
- The global drive towards promoting renewable energy

Impacts

- Saving from using kerosine for lighting , and reduction of indoor pollution – *90,000 to 15,000 TShs per month*
- Extension of working hours, into after dark, for businesses – *closing at 10.00 pm instead of 7.30 pm*
- Establishment of new businesses – *saloons, TV/video shows, phone charging, etc*
- Requests from Uganda, Kenya and Zambia for technology dissemination
- Strengthened TaTEDO capacity to design, fabricate, install and train other people on MFPs

Conclusion

Quantitative impact of the innovation

Increase in yield	More than 25 tons of jatropha per annum
Increase in sales	20 businesses established
Increase in employment	2 operators per MFP
Increase in export	35 farmers trained and acquired skills on jatropha growing and MFP in Uganda

Thanks for the Attention