SESSION I.
Diagnosis and Challenges of Agricultural Water Management in smallholders' traditional irrigation systems in Africa

Insight into the AquaCrop and MASSCOTTE approach and its application to improve Agricultural Water Management in small-scale irrigation schemes in Africa

Introducing the diagnostic approaches of assessing Agricultural Water Management in small-scale irrigation schemes in Africa

Fathi Lebdi

Agriculture Water for Africa/ Food and Agricultural Organization

Objective of the presentation

To represent:

Aquacrop as a tool to increase Crop Water Productivity (CWP)

Masscote as a tool to improve Water Use Efficiency (WUE)

Link between Crop Water Productivity and Water Use Efficiencyq

CROP WATER PRODUCTIVITY AT FARM LEVEL

- Examine possible changes in crop water management practices to improve crop water productivity
- Diagnosis and benchmarking of current agricultural productivity levels and of irrigation practices at farm level for the major crops in the pilot areas: maize, onion, rice. Surveys and involvement of farmers to capitalize on their experience
- Evaluation of potential and attainable yields simulated with AquaCrop
- Implementation of management scenarios in Demonstration farms established by farmers

PREDICTS YIELD IN RESPONSE TO WATER

AQUACROP

CROP WATER PRODUCTIVITY AT FARM LEVEL

Why?

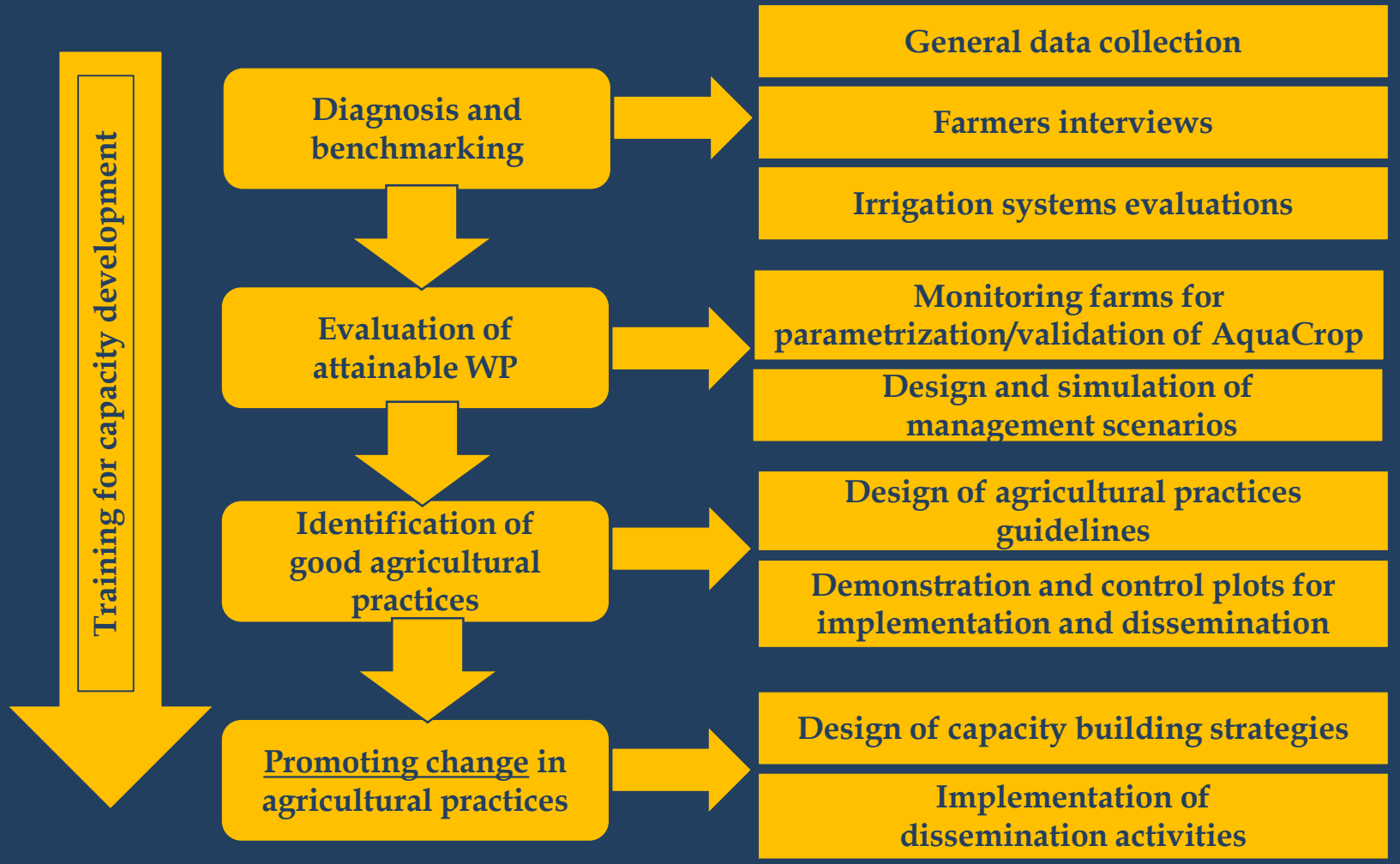
- To understand crop responses to environmental changes (plant, water, soil, atmosphere continuum)
- To compare actual yields against attainable yields (yield gap analysis)
- To design optimum crop and field management practices
- To develop irrigation strategies at farm level

How?

Establishing guidelines to develop irrigation strategies at farm level :

- link with the service at the gate of farm level and the end of the irrigation scheme
- link with water use efficiency at the scheme level

CROP WATER PRODUCTIVITY - MECHANISM



CROP WATER PRODUCTIVITY - MECHANISM

I.

Diagnosis and benchmarking

Irrigation systems evaluation

General data collection:
(What is really happening out there?)

Farmers interviews

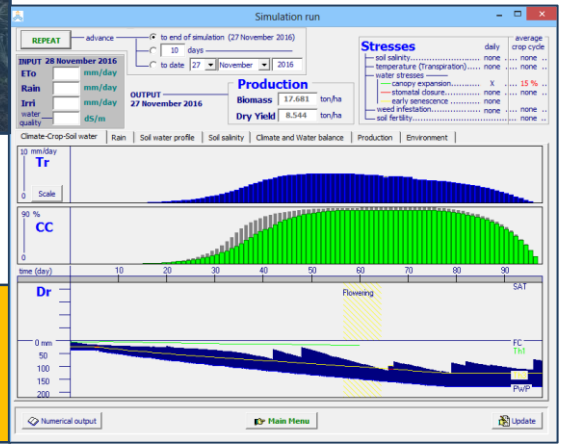
CROP WATER PRODUCTIVITY - MECHANISM

II. Evaluation of attainable WP

(what is the maximum possible WP?)

Monitoring farms for parametrization/validation of AquaCrop

Design and simulation of management scenarios



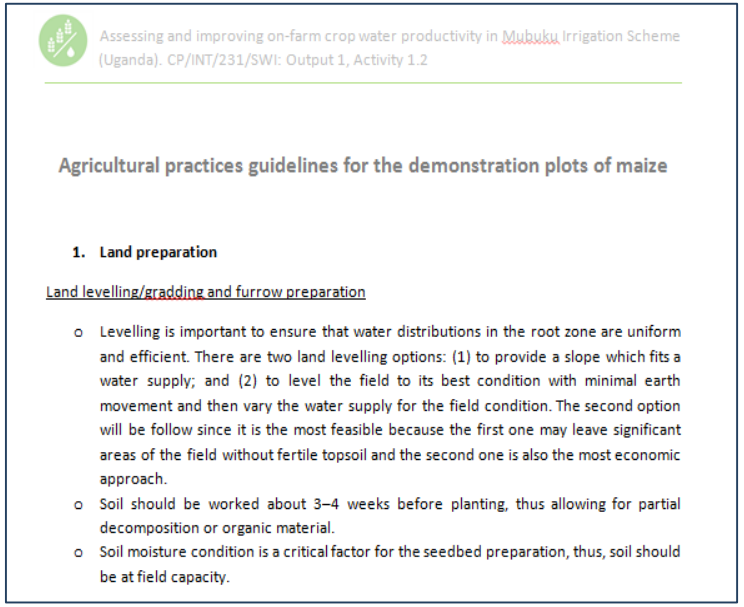
CROP WATER PRODUCTIVITY - MECHANISM

III.

Identification of good agricultural practices

Design of agricultural practices guidelines

Demonstration and control plots for implementation and dissemination



Assessing and improving on-farm crop water productivity in Mubuku Irrigation Scheme (Uganda). CP/INT/231/SWI: Output 1, Activity 1.2

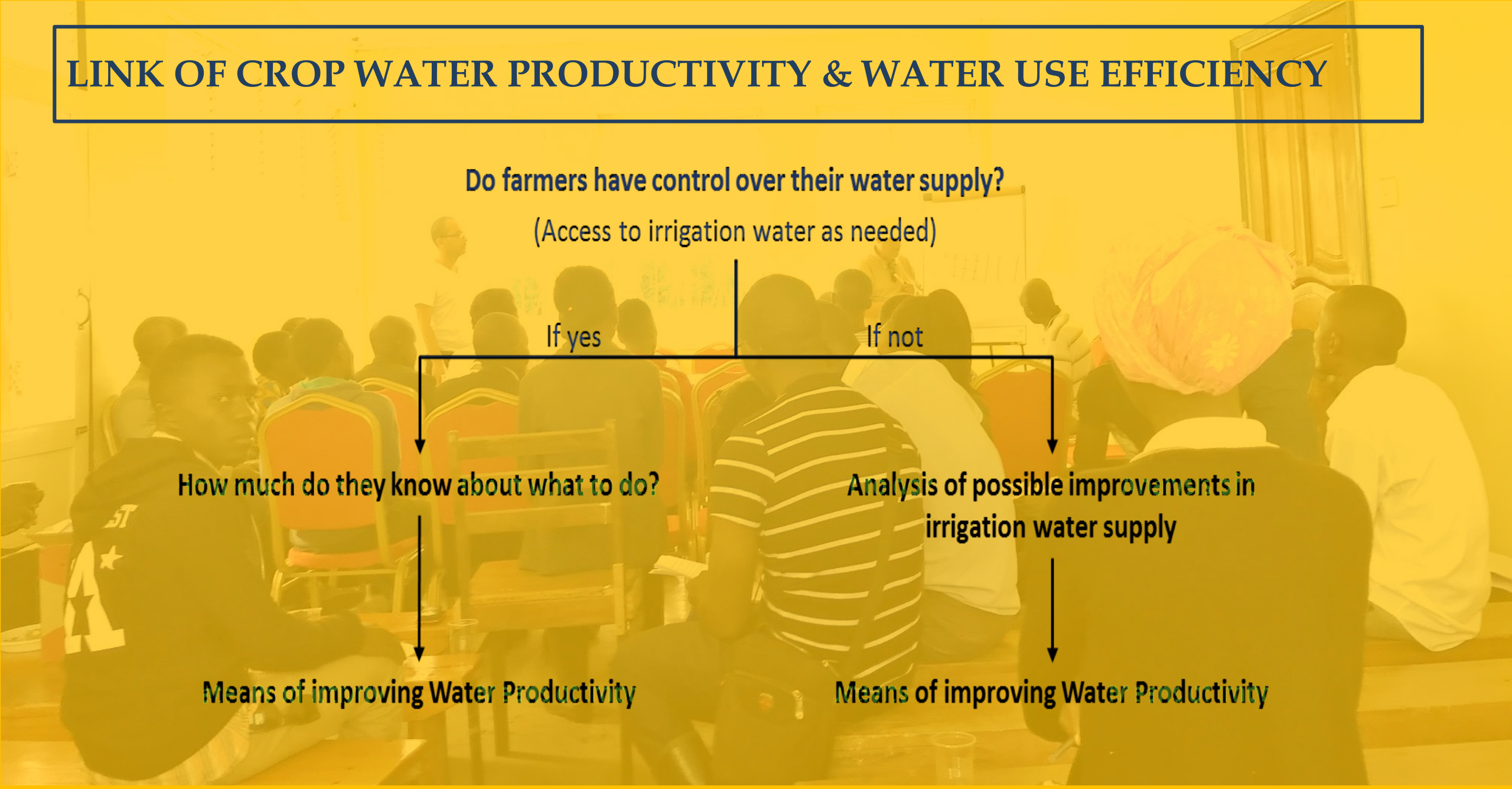
Agricultural practices guidelines for the demonstration plots of maize

1. **Land preparation**

Land levelling/gradding and furrow preparation

- Levelling is important to ensure that water distributions in the root zone are uniform and efficient. There are two land levelling options: (1) to provide a slope which fits a water supply; and (2) to level the field to its best condition with minimal earth movement and then vary the water supply for the field condition. The second option will be follow since it is the most feasible because the first one may leave significant areas of the field without fertile topsoil and the second one is also the most economic approach.
- Soil should be worked about 3–4 weeks before planting, thus allowing for partial decomposition or organic material.
- Soil moisture condition is a critical factor for the seedbed preparation, thus, soil should be at field capacity.

LINK OF CROP WATER PRODUCTIVITY & WATER USE EFFICIENCY



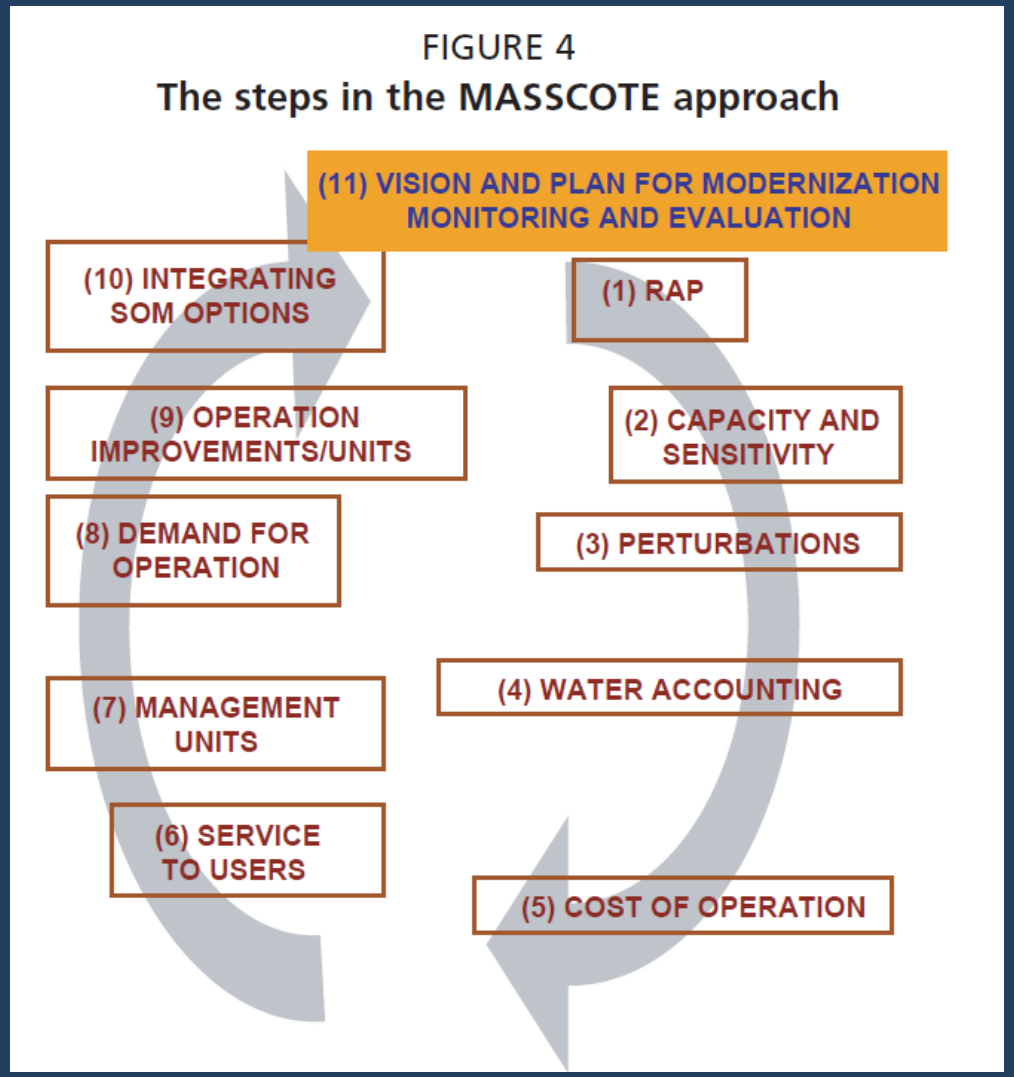
WATER USE EFFICIENCY - MASSCOTE APPROACH

Why MASSCOTE?

Evidence-base diagnosis showed:

- the farmer-oriented new management bodies have been inadequately prepared/trained/resourced, or just inexperienced;
- these bodies have inherited dilapidated systems and have had to operate under severe financial constraints

WATER USE EFFICIENCY - MASSCOTTE APPROACH



- Masscote has 10 steps, from initial assessment of what and where the problems are, how they should be prioritized, to mapping the system characteristics, to Mapping the service, the cost for operation and the demand per sub-area
- To design of service and operation;
- The Rapid Appraisal Process (RAP) helps to organize perceptions and facts, with the combination of data from desk to the field, Technical, management, socio-economic and institutional: physical system (hardware) and organizational (Software)
- It is rapid because it is a holistic review of performances, Systematic and standardized
- It allows
  - facilitating informed decisions regarding The potential for water conservation (quantity/quality) within a project
  - Identifying specific weakness in project operation, management, resources, and infrastructure/hardware
- To elaborate specific improvement/ rehabilitation/modernization actions that can be taken

THANK YOU AND LET'S SEE THE APPLICATION