



# Emerging practices from Agricultural Water Management in Africa and the Near East



## Thematic Workshop



Country experiences

# Water Use Efficiency

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## Theme 2: Water Use Efficiency

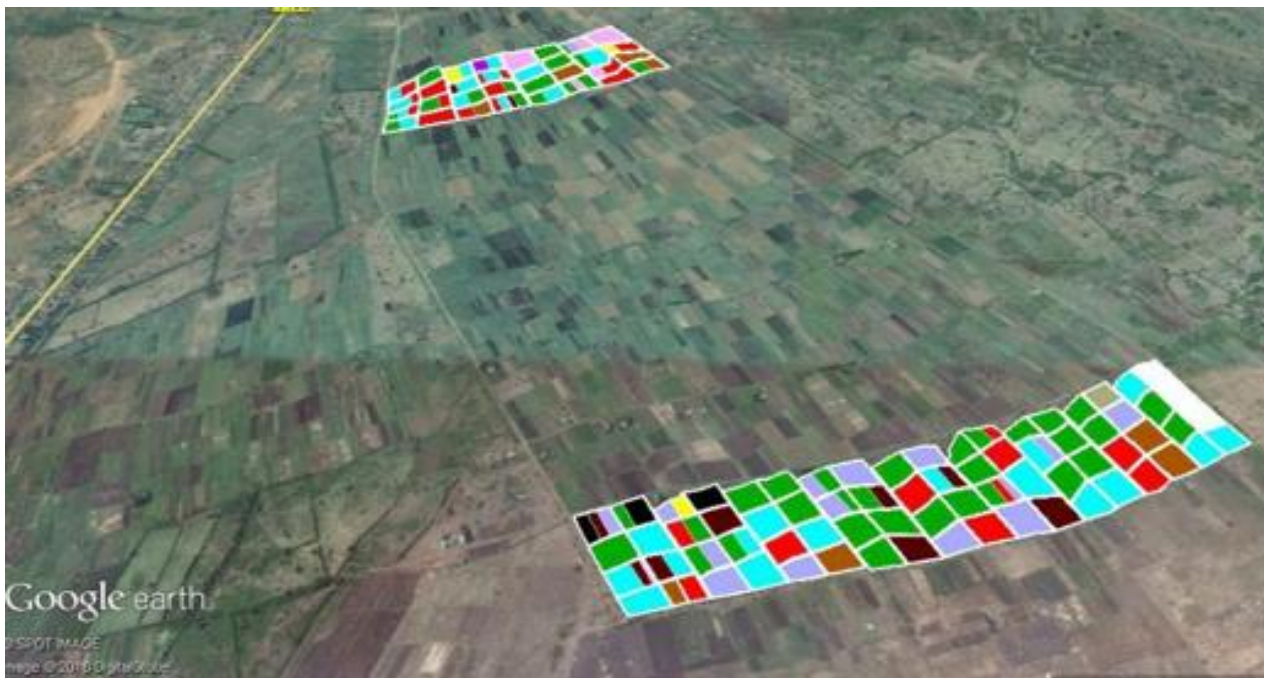
### PRESENTATION OUTLINE

- ❖ Pilot area location
- ❖ Objectives
- ❖ Project Components
- ❖ Results
- ❖ Experience and lessons learned
- ❖ Challenges and the way to improve



## Theme 2: Water Use Efficiency

### PILOT AREA LOCATION



**Mubuku**

A map of Uganda showing its regional boundaries. A red dot marks the location of Mubuku in the western part of the country. A blue arrow points from this dot towards the Google Earth image on the left.

Location in Uganda

Coordinates:  $00^{\circ}15'41''\text{N } 30^{\circ}07'27''\text{E}$

Country	Uganda
Region	Western Uganda
Sub-region	Rwenzururu sub-region



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### OBJECTIVES – PILOT RELATED

#### **Output 2. Enhanced capacity for increased water use efficiency in small scale irrigation in Burkina Faso, Morocco and Uganda**

Improving the performance of irrigation systems for small scale irrigation and the use of water saving techniques – case of Mubuku Irrigation Settlement Scheme



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### PROJECT COMPONENTS – PILOT RELATED

**Activity 2.1.** Organize training programmes at national levels targeting agricultural water extension agents and water professionals, including those responsible for the management of irrigation schemes, in the use of tools to analyze and evaluate the performance of small scale irrigation systems.

**Activity 2.2.** Apply practical tools to analyze and evaluate the performance of small scale irrigation systems and examine possible improvements in operation and management of irrigation systems.

**Activity 2.3.** Develop a modernization plan for small scale irrigation for Mubuku Irrigation Settlement Scheme.



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### RESULTS IN FIGURES/FACTS

#### Distribution efficiency within the tertiary canals improvement

- 15 tertiary canals reconstructed using masonry works
- Distribution efficiency improved between 60~75% raising the overall irrigation efficiency from 35% ~40%





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### RESULTS IN FIGURES/FACTS

**Measurement structures installed on all the secondary canals in phase 2 (hosting the monitoring plots)**

- 6 flumes (broad crested weirs) constructed along the main and 5 secondary canals;
- All 6 flow measuring stations are equipped with a staff gauge and iMoMo data capture site respectively.





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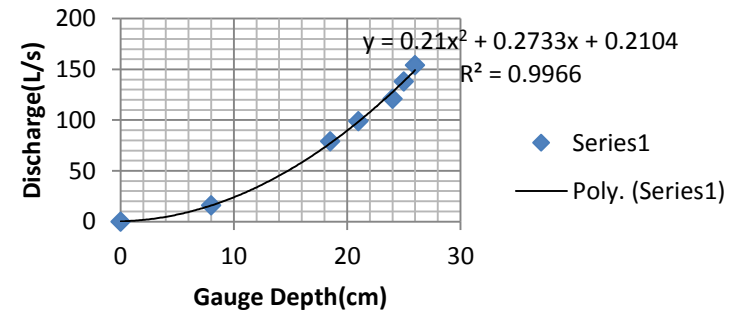
### RESULTS IN FIGURES/FACTS

#### All measurement structures calibrated

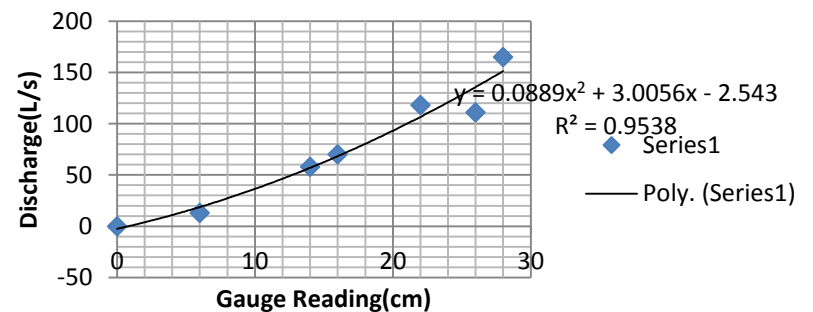
- Rating curves generated for each flow measuring structure



#### DIVISION 8 RATING CURVE



#### DIVISION 11 RATING CURVE







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### RESULTS IN FIGURES/FACTS

#### Photos of field canals-before and after reconstruction

6 eroded field canal bed raised and reshaped for improved distribution efficiency





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### RESULTS IN FIGURES/FACTS

- On-farm water application improved for 15 blocks by selecting the right no. of furrows irrigated at a time at given service level;
- Furrow layout improved:
  - 1) Shape, length and slope;
  - 2) Application of soft-wares like surdev is evident and inevitable;



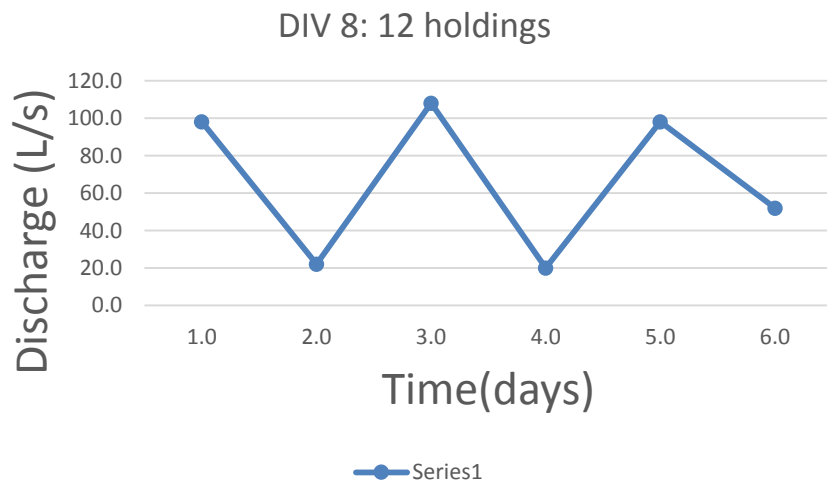


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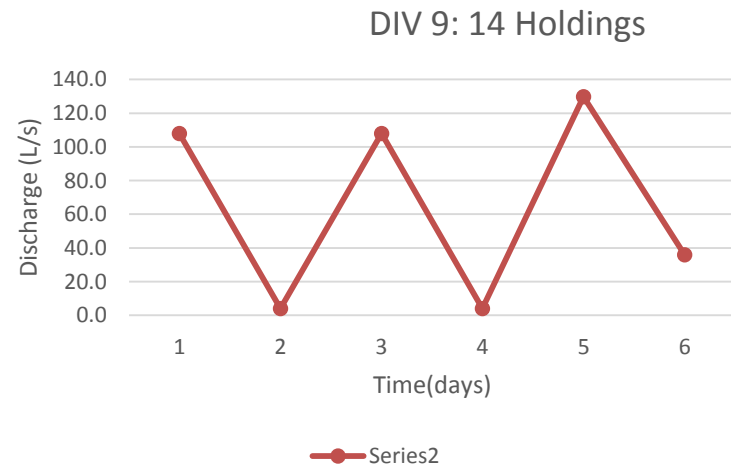
### RESULTS IN FIGURES/FACTS

Continuous daily monitoring of flows in the main, secondary canals done;

- Confirmation of daily flows in the canals



Seasonal variations of canal flows

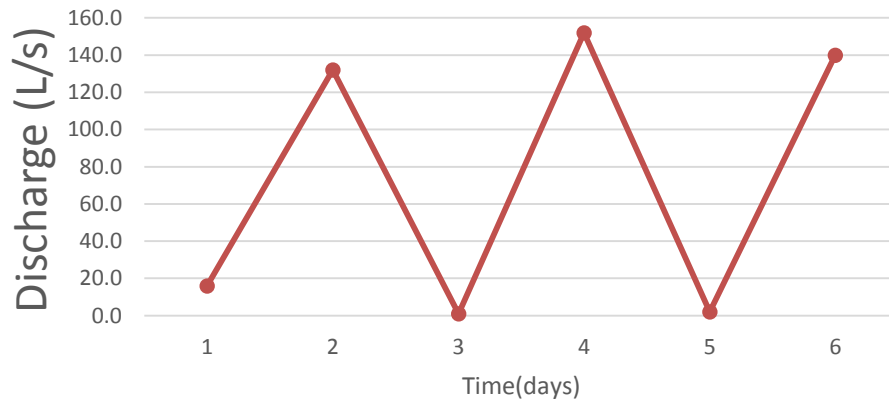




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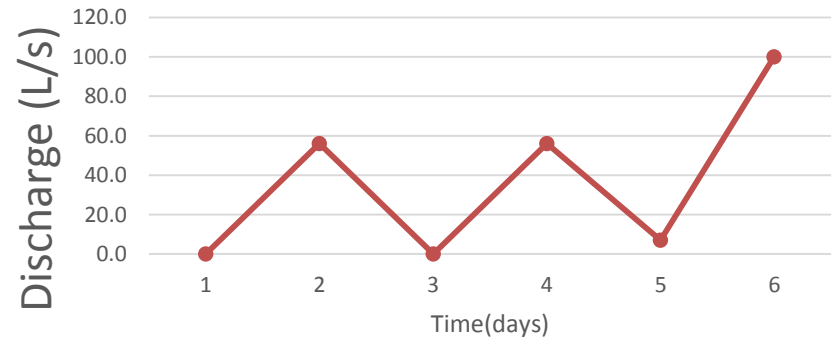
### RESULTS IN FIGURES/FACTS

DIV10: 10 Holdings



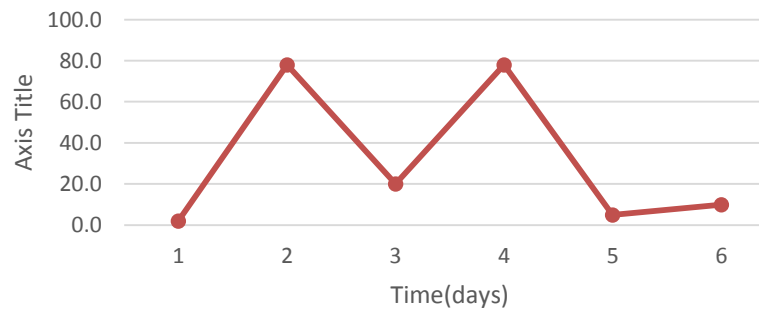
Series2

DIV11:9 Holdings



Series2

DIV12: 8 Holdings



Series2



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### EXPERIENCES AND LESSONS LEARNED

- Equity-sufficiency, transparency can be embraced and practiced where there is good and reliable flow measurements;
- Evidence based exposure of gaps and injustices in the existing irrigation schedule builds confidence for on-going interventions;
- Enhancement of water productivity is intertwined to improvements in water use efficiency;



## Theme 2: Water Use Efficiency

### CHALLENGES AND THE WAY TO IMPROVE

#### CHALLENGES

- Failure to complete irrigation of a holding within allocated time
- Substantial water losses in the tertiary canals;
- Continued lowering of field canal bed levels;
- Theft of water and gates;

#### SCOPE FOR IMPROVEMENT

- Re-introduce use of siphons
- Lining of the tertiary canals.
- Adapt optimal irrigation water service levels.
- Installation of lockable gates;



## Theme 2: Water Use Efficiency

### CHALLENGES AND THE WAY TO IMPROVE

#### CHALLENGES

- Ensuring accurate flow measurements in small canals;
- Erroneous and data omissions;
- Expired irrigation schedule compromising flexibility and use efficiency;

#### SCOPE FOR IMPROVEMENT

- Secure specialised equipment (micro flow meter to monitor flow at demonstration plots)
- Run parallel data collection techniques (e.g iMoMo)
- Modify irrigation schedule to match current irrigation and environmental needs.