Water Harvesting 3Rs
Retention-Recharge-Reuse

Tailor-made professional training programme

Third Workshop on Monitoring Water Harvesting Interventions: Approaches and Field Applications

Organised by INWRDAM, Acacia Water and IHE Delft

In integrated water resources management (IWRM), monitoring is a key component, as it provides the scientific evidence needed to assess the impact of interventions on the environment and water resources. Water harvesting measures can also influence soil physical and chemical properties as well as vegetation growth. Water harvesting interventions include:

- In stream:
  - Check dams
  - Reservoirs
  - Diversions
  - Gully plugs

- Upland:
  - Valleranis
  - Stone bunds
  - Ditches
  - Terracing
  - Water harvesting from impermeable surfaces
  - Managed aquifer recharge etc.

Workshop Focus

Water harvesting interventions can have multiple impacts, depending on the type of measure applied. Monitoring these impacts requires tailored approaches. This workshop will therefore focus on:

- Different types of water harvesting interventions
- Options and methods for monitoring their impacts

Field Session

As part of the program, participants will spend one full day in the field conducting selected measurements to gain hands-on experience with monitoring techniques.

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Water Harvesting	
5 Oct 2025, Sunday	
9:00 - 9:15	Registration
9:15 - 9:30	Welcome / Introduction
9:30 - 10:30	Importance of monitoring for IWRM (IHE Delft)
10:30 - 11:00	Coffee break
11:00 - 12:30	What are likely changes when applying different RWH techniques → simple group assignment? Each group to discuss 1 intervention (Acacia Water)
12:30 - 13:00	Coffee break
13:00 - 15:00	Introduction to monitoring techniques (Acacia Water) ○ Monitoring network development ○ Field sensor equipment technical aspects and possibilities ○ Remote sensing → simple assignment with copernicus browser?
15:00 - 16:00	Lunch
Note: short break (5 min) every 45 Min of lectures	
6 Oct 2025, Monday	
9:00- 10:30	-In stream monitoring activities and equipment (Acacia Water) -Determining of changes in reservoir size - volume using Google Earth (GIS assignment) → use ndwi calculation GEE script? (Acacia Water)
10:30 - 11:00	Coffee break
11:00 - 12:30	Creating reservoir level – volume relations → and estimating recharge with Muwaqqar data? (incl ET calculations) (Acacia Water) -How to establish changes in erosion and sedimentation (Acacia Water)
12:30 - 13:00	Coffee break
13:00 - 14:00	Water quality monitoring – Introduction (IHE Delft)
14:00 - 15:00	Hydrochemistry data interpretation (IHE Delft)
15:00 - 16:00	Lunch
Note: short break (5 min) every 45 Min of lectures	

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7 Oct 2025, Tuesday	
9:00- 10:30	Upland monitoring activities (Acacia Water) ○ Soil moisture monitoring, where, how? ○ NDVI change detections (assignment GEE) ○ NDVI dependencies on precipitation ▪ Control sites ○ Water quality impacts → overlap with day 2 afternoon? ○ Roof and solar system water harvesting
10:30 - 11:00	Coffee break
11:00 - 12:30	Continued (Acacia Water)
12:30 - 13:00	Coffee break
13:00 - 14:00	MAR introduction and methods (IHE Delft)
14:00 - 15:00	Case studies with group exercises and mapping exercise (IHE Delft)
15:00 - 16:00	Lunch
8 Oct 2025, Wednesday	
9:00- 15:00	Field excursion to Al Muwaqqar (IHE Delft, Acacia Water) ○ Measurement of infiltration rate in reservoirs ○ Calculation of reservoir volume ○ Measurement of soil moisture impact with vallerani interventions ○ Measurements of reservoir siltation (erosion pins) ○ Measurement of reservoir evaporation loss ○ Measurement of outflow
9 Oct 2025, Thursday	
9:00- 10:30	Presentations by the participants of how they can apply monitoring in their daily activities and define monitoring needs (Acacia Water)
10:30 - 11:00	Coffee break
11:00 - 12:30	Continued presentations
12:30 - 13:00	Coffee break
13:00 - 13:30	Closure
13:30 – 14:30	Lunch

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