Food and Agriculture Organization of the United Nations

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Regional Initiative on Water Scarcity

inter-Regional Technical Platform Water Scarcity

WEBINARS SERIES ON RAINWATER HARVESTING

31st May 2022 – 7th June 2022

Module n°2:

Rainwater harvesting processes

Module 2: Rainwater harvesting processes

Session 1: Soil, Water and Landscape Modelling

Date: Tuesday, 21st June, 2022 **Time:** 01:00 PM - 02:30 PM (GMT +2)

***Register**: Soil, water and landscape modelling*

BACKGROUND

Water scarcity is a critical challenge in countries and regions with arid and semi-arid conditions and fast-growing water demands. This is mostly the case in all of the countries across the NENA Region, where food demand and food insecurity continue to grow, widening the water supply-demand gap in most countries. Furthermore, the anticipated impact of climate change in the NENA region is indicative towards an increased intensity of rainstorms and flash floods, while the total amount of annual precipitation rates shows declining trends. During the last 20 years, interest has been renewed in Rainwater Harvesting (RWH) as one of the most effective climate adaptation strategies to cope with water scarcity, thus reducing the pressure on the limited freshwater resources and increasing rainfed crop productivity.

This webinar series on Rainwater Harvesting aims to provide an overview of RWH applications and illustrates, with country examples, the diversity of approaches. It will try to unlock the potential of rainwater harvesting applications in the NENA region by highlighting the role of rainwater management in overcoming the current challenges in achieving water security. It will also shed the light on the need for innovations in economics, social consensus and supportive laws and regulations to ensure a widespread uptake of RWH technologies in the NENA region.

Main Conveners:

FAO/WEPS-NENA project & Water Scarcity Initiative (WSI) with: ICARDA, ICID and FAO *inter*-Regional Technical Platform on Water Scarcity (*i*RTP-WS)

Contributing Partners:

ICARDA Egypt and WOCAT

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Languages:

English and French with live translation

Recording:
https://dgroups.org/fao/waterproductivity/rwh

ABOUT THE MODULE 2

This module will examine the use of RWH practices and modelling for determining the land and soil suitability of surface runoff harvesting and understanding the nature and dynamics of water balance at a landscape level. It will also explore how local RWH interventions can impact soil and water processes and transform landscapes.

EXPECTED OUTCOMES FOR THE PARTICIPANTS

Participants will achieve the following outcomes:

1. Identify the main physical and biological processes and factors involved in rainwater harvesting and storage;
2. Understand the nature and dynamics of water balance of a landscape;
3. Comprehend the impacts of local RWH interventions at catchment level, in terms of hydrology, nutrient and sediment transport, crop yield or land management.

SUGGESTED READINGS RELATED TO HYDRO-ECOLOGICAL MODELLING

- **Govind, J.M. Chen, H. Margolis, W.M. Ju, O. Sonnentag, M.A. Giasson.** A spatially explicit hydro-ecological modeling framework (BEPS-TerrainLab V2.0): Model description and test in a boreal ecosystem in Eastern North America J. Hydrol., 367 (3) (2009), pp. 200-216. https://www.sciencedirect.com/science/article/abs/pii/S0022169409000109

SUGGESTED READINGS RELATED TO WATER HARVESTING

- **Mekdaschi Studer, R. and H.P. Liniger.2013.** *Water Harvesting – Guidelines to Good Practice.* CDE, Bern; RAIN, Amsterdam; MetaMeta, Wageningen; IFAD, Rome. ISBN 978-3-905835-35-9 (French edition: ISBN 978-3-905835-36-6). https://www.wocat.net/documents/85/WaterHarvesting_lowresolution.pdf
- **On- and offsite policy briefs and videos:** *Productive and protective land management – reducing disastrous floods and saving springs in Haiti* (Author: Eichenberger J, Liniger HP, Year: 2020). Spring Revival through Sustainable Land Management (SLM) in the Himalayan Foothills: Uttarakhand, North India (Liniger HP, Bandy J, Year: 2020) https://www.wocat.net/en/projects-and-countries/projects/onsite-and-offsite-benefits-sustainable-land-management:

SUGGESTED READINGS RELATED TO WATER AND LAND MANAGEMENT

- **Liniger, H.P. and R. Mekdaschi Studer.2019.** *Sustainable rangeland management in sub-Saharan Africa Guidelines to good practice.* Centre for Development and Environment (CDE), University of Bern, Switzerland and World Bank, Washington D.C., USA. https://www.wocat.net/library/media/174/
- **Liniger, H.P., Mekdaschi Studer, R., Moll, P., Zander, U. 2017.** *Making sense of research for sustainable land management. Centre for Development and Environment (CDE),* University of Bern, Switzerland and Helmholtz-Centre for Environmental Research GmbH – UFZ, Leipzig, Germany. https://www.wocat.net/library/media/31/
- **Claudio Zucca, Nick Middleton, Utchang Kang, Hanspeter Liniger. 2021.** *Shrinking water bodies as hotspots of sand and dust storms: The role of land degradation and sustainable soil and water management.* Catena 207 (2021) 105669 https://www.sciencedirect.com/science/article/abs/pii/S0341816221005270

Speakers and moderator

Dr Ajit Govind

is a broadly trained Environmental Physicist. His academic training consists of a Bachelor's degree in Agricultural Sciences (TNAU, India, 1998), Master's degree in Agricultural Physics (IARI, India, 2001) and Doctoral degree in ecohydrological-biogeochemical modeling (University of Toronto, Canada, 2008). Currently, he is working as ICARDA Climatologist based in Egypt. He is also a senior scientist at the French National Institute of Agricultural Research (INRA). At ICARDA, he is responsible for all climate research initiatives in the dryland contexts in MENA, Central Asia, India and China. He is responsible for the OneCGIAR Climate Initiative in MENA region. He works closely with FAO to establish the Evapotranspiration monitoring Network and mapping of the regional RWH potential in the MENA region under the Regional Water Scarcity Initiative.

Dr Hanspeter Liniger

retired from the University of Bern, is the former Director and founding member of the World Overview of Conservation Approaches and Technologies (WOCAT). He has a continued engagement in capacity building, watershed/ landscape management and assessing the benefits of Sustainable Land Management (SLM) both on- and offsite (related to floods and droughts). He has extensive field experience in Africa, especially Kenya, in the Mediterranean, Central Asia, Mongolia, Himalaya and Latin America regions. He is co-author of several WOCAT books and scientific articles including "sustainable land management in sub-Saharan Africa", "making sense of research", "water harvesting".

Dr Pasquale Steduto

holds an MSc in Water Science and a PhD in Soil-Plant-Water Relationships from the University of California in Davis. He has been working for more than 25 years on agricultural water use efficiency and water productivity, with a focus on crops water requirements, crop yield response to water and associate modeling development under water scarcity. During his career, Mr Steduto has served as: head of the Ecophysiology Laboratory at the CIHEAM; Chief of the Water Service and Regional Programmes Coordinator for the NENA Region at FAO; Chair of UN-Water; member of advisory committees for several International Institutions. He is presently an independent Senior Water Advisor. Authors of over 100 publications in scientific journals and books, Mr Steduto has been ranked in the top 1% of world's highly cited researcher in the 'Web of Science' for the year 2020.

Module 2: RWH Processes

Session: Soil, Water and Landscape Modelling

Date: Tuesday, 21st June, 2022

Time: 01:00 PM - 02:30 PM (GMT +2)

Time	Activity
01:00 – 01:05	**Welcoming Remarks** Introduction to the session objectives and speakers **Moderator: Pasquale Steduto**, Senior Water Resources Management Expert, FAO
01:05 – 01:30	Presentation on **"A Primer on Biophysical Modelling of the Land Surface Processes to Design Bespoke RWH Options"** By **Ajit Govind**, ICARDA-Egypt
01:30 – 01:55	Presentation on **"Linking Watershed Management with Local Water Harvesting and Sustainable Land Management".** By **Hanspeter Liniger**, former Director and founding member of the World Overview of Conservation Approaches and Technologies (WOCAT)
01:55 – 02:25	Open Discussions – (Q&A's)
02:25 – 02:30	Conclusion & Wrap-up

This activity is implemented within the regional project "Implementing the 2030 Agenda for water efficiency/productivity and water sustainability in NENA countries" under the umbrella of the Water Scarcity Initiative. This regional project is implemented by the Food and Agriculture Organization of the United Nations and funded by the Swedish International Development Cooperation Agency (SIDA).

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WATER
Efficiency, Productivity, and Sustainability
in the Near East and North Africa countries