

American Water Resources Association
2017 International Conference: Cutting-Edge Solutions to Wicked Water Problems
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Tel Aviv University, Tel Aviv, Israel

Sunday, Sept. 10

10:30 AM – 12:00 Noon

SESSION 2: Improving Agricultural Practices

Alternative On-Farm Orchard Designs in Citrus Irrigation Management that Improve Water Savings for Flood and Drip Irrigation Systems - Shad Nelson, Texas A&M University-Kingsville, Kingsville, TX, USA
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The U.S. citrus producing region in Texas is concentrated in the three southern-most counties, where approximately 85% of all groves are flood irrigated. Adoption of more conservative alternative irrigation management strategies by citrus growers, such as drip, is slow due to very low water pricing and the overall dependence on a canal delivery system. A ten year survey of on-farm irrigation practices currently in use by citrus producers was evaluated and efforts have been made to incorporate these alternative irrigation methods to citrus growers with little adoption. One such irrigation alternative created utilizes a modified field design using wide berms constructed down citrus tree rows and has resulted in 35% water savings over traditional flood irrigation practices. This flood alternative design works well for mature groves, whereas for new grove plantings we have proposed another field design modified by some field planting observed during past visits to Israel and Morocco. This newly proposed grove design utilizes raised beds covered with permeable mesh tarp that has resulted in rapid adoption by many citrus producers. The raised bed design incorporates an integrated management approach to solving many field related challenges simultaneously. Early results from these studies show enhanced tree canopy and root growth, earlier fruit set and yield compared to conventional tree plantings, increased soil water holding capacity, with improved pest and soil borne pathogen control.

Bringing out the Best in Digital Farming with Precise Irrigation Management - Izhar Gilad, Netafim, Tel-Aviv, Israel

Water scarcity still remains one of our most critical global challenges. Overcoming this challenge will help us not only preserve one of the world's most precious yet dwindling resources, but also achieve global food security and sustainability. One traditional approach to addressing water scarcity has been the development of water-savings technologies, most prominently drip irrigation, for the agricultural sector. With the recent evolution of IoT, big data and other advanced digital technologies, addressing water scarcity in today's world involves much more than just reducing water usage. It involves smarter, more efficient and better monitoring and management of the farm's overall irrigation system. As the drip irrigation pioneer, Netafim maintains over 50 years of experience developing water-savings technologies that enable farmers to grow more produce with less resources. In light of the world's rapid technological changes, Netafim is leveraging its agronomic and engineering know-how to develop digital farming solutions that yet again are changing the face of agriculture. Netafim has collaborated with the provider of command-and-control (C2) systems used in one of Israel's most advanced air defense systems to develop automated irrigation solutions that are smarter, faster, and more precise than ever. Taking into account soil, weather, crop, environmental and hydraulic conditions of each growing area,

Netafim's cloud-based solutions present a real-time, infield situation picture along with comprehensive data that can be easily accessed by a farmer's mobile device or PC anytime, anywhere. This enables farmers to manage, control and optimize irrigation and fertigation according to the crop's specific needs. As a result, farmers enjoy steadier productivity, lower risk and higher efficiency, leading to greater profitability. Incorporating some of the world's most advanced technologies, Netafim's digital farming solutions are helping farmers grow more and healthier food with less water and fertilizer. These cutting-edge solutions are bringing us one step closer not only to overcoming water scarcity, but also to achieving sustainability across the globe.

Palestinian Wastewater: the Scramble for a New Resource - Jeanne Perrier, ART-Dev, Université Montpellier, France

The 2014 Initiative for the Palestinian Economy, drafted under the leadership of Quartet Representative Tony Blair, set up the priorities for Palestinian agricultural development: more land must be irrigated through the reuse of treated water. The Palestinian Authority plans the treatment and reuse of 55 millions cubic meter of water by 2022. In Nablus West, a study is under way to irrigate more than 2000 dunums. Projects of wastewater treatment plants and reuse schemes are flourishing in the West Bank. While it appears as a good solution for water scarcity issues and environmental sustainability, these projects are changing the way water flows. Changing trajectories involves a new territorialization process for agriculture in the West Bank, and modify considerably the institutions through which this new resource will flow. This presentation will address these questions through the study of Nablus wastewater treatment plants, in the Western and Eastern sides. Treated wastewater is a paracommon, the appropriation of which needs to be governed. The term paracommons designates the material gains potentially generated by the efficiency improvement within various systems. These gains are largely unmeasured and misunderstood but crucial to assess the real outcomes of reuse projects in agriculture. In Nablus West, presently, only rain-fed lands are targeted for the reuse of the treated wastewater. It implies a change of crops, the creation of an irrigation system for the whole area, and a substantial change for the owners of these lands. While most of them have full-time jobs outside the agricultural sectors, some may choose to rent their newly-irrigated lands. In the West Bank, land tenure is a complex issue : through time and heritage, land rights over a single plot are divided among members of a family. In Deir Sharaf area, West of Nablus, consultants for reuse projects encountered difficulties in dealing with land tenure. In Nablus East, three villages are strongly opposed to the construction of the wastewater treatment plants on their lands, as they already lost land to the nearby Israeli settlement of Elon More. Irrigating new land is a perilous strategy. While it will definitely not decrease pressure on groundwater in a direct way, it can potentially raise rivalries among farmers. In Al Aqrabaniya, full-time farmers cope with very scarce water resources, while donors are already planning to send the future treated water further downstream where investors are interested to go. This approach to treated wastewater involves a variety of actors: donors, engineers, farmers, municipalities, newly-created water user associations, and policy-makers from the Palestinian Authority. Exploring the trajectories water can follow makes visible previously ignored interactions and disregarded consequences of reuse projects.