

WASTEWATER REUSE FOR AGRICULTURE
Online, 17-25 May 2021

PROGRAMME

- 1. Water reuse in perspective (3 hours)**
 - 1.1. Role of wastewater resources in water-scarce conditions (1.1 to 1.4: 2 h) (A. Battilani)
 - 1.1.1. Historical review of the treated wastewater reuse in the agricultural sector
 - 1.1.2. Opportunities and challenges associated with the use of reclaimed water
 - 1.2. The water reuse concept (A. Battilani)
 - 1.2.1. Wastewater sources
 - 1.2.2. Direct and indirect use of wastewater
 - 1.2.3. Treated, partially treated and untreated wastewater
 - 1.3. Integration of wastewater resources in an IWRM scheme (A. Battilani)
 - 1.4. Water reuse in the circular economy context (A. Battilani)
 - 1.5. Debate: experiences in participants' countries (1 h) (D. Isidoro, N. Lamaddalena, O. Mohie El Din, J.J. Alarcón, A. Battilani)
- 2. Water quality parameters for assessing wastewater suitability for irrigation (2 hours) (To be confirmed)**
 - 2.1. Pathogens, heavy metals, organic compounds, emergent contaminants, nutrients, salts
 - 2.2. Relationship of these parameters with the wastewater effects on the environment and the plant production quality and safety
 - 2.3. Establishment of monitoring systems
- 3. Regulations and standards at national and international level (2 hours) (S. Koo-Oshima)**
 - 3.1. Water reuse and food and hygiene standards
 - 3.2. The philosophy behind the new European legislation
 - 3.3. Differences between Mediterranean countries
- 4. Water reclamation systems and implementation of treatment technologies (4 hours) (P. Simón)**
 - 4.1. Wastewater collection, treatment, storage and distribution
 - 4.2. Fit-for-purpose water treatment technologies
 - 4.3. Low-cost treatments
 - 4.4. Primary, secondary and tertiary wastewater treatments
 - 4.5. Advanced treatments
 - 4.6. Other products from the wastewater treatment (sludge, biogas, phosphorus, etc.)
 - 4.7. Operation and maintenance of water reclamation systems
 - 4.8. Continuous production vs seasonal uses
 - 4.9. Decentralisation vs large treatment plants
 - 4.10. Costs and technological efficiency
- 5. Irrigation with wastewater in arid and semi-arid zones (4 hours)**
 - 5.1. Quality of the effluent and choice of the irrigation system and devices (1 h) (O. Mohie El Din)
 - 5.2. Effects in the short and long term on crops and soil (1 h) (J.J. Alarcón)
 - 5.2.1. Salinity effects
 - 5.2.2. Nutrient management
 - 5.2.3. Crop yield and quality
 - 5.3. Innovative models and adaptation of irrigation techniques and practices (1 h)
 - 5.3.1. Irrigation district level (J.J. Alarcón)
 - 5.3.2. Farm level (O. Mohie El Din)
 - 5.4. Risk assessment (1 h) (A. Allende)
- 6. Institutional framework and socioeconomic aspects (2 hours)**

- 6.1. Economic analysis (6.1 and 6.2: 1 h) (A. Scardigno)
 - 6.1.1. Cost-benefit analysis to assess the economic feasibility
 - 6.1.2. Innovative financing and cost recovery
- 6.2. Social aspects (A. Scardigno, N. Lamaddalena)
 - 6.2.1. Stakeholder and consumer acceptance
 - 6.2.2. Strategies to promote irrigation with treated wastewater in Europe and throughout the Mediterranean region
- 6.3. Institutional framework (B. Dessalegn)
 - 6.3.1. Inter-sectoral coordination requirements and policy coherence
 - 6.3.2. Development of scenarios for institutional set up/establishment of wastewater reuse management
 - 6.3.3. Public/private partnership
- 7. Experiences in reclaimed water use (10 hours)**
 - 7.1. Real case studies of reclaimed water use at orchard, district irrigation and watershed scales
 - 7.1.1. Murcia region (Spain) (0.5 h) (P. Simón)
 - 7.1.2. ReWater-MENA project (0.5 h) (J. Mateo-Sagasta)
 - 7.1.3. Samra project (Jordan) (0.5 h) (Jordan expert to be appointed)
 - 7.1.4. Debate (1.5 h) (M. Al-Hamdi, P. Simón, J. Mateo-Sagasta, Jordan expert to be appointed)
 - 7.2. Practical work – Play to learn exercise: participatory processes for wastewater reuse projects (4 h) (A. Barbe, A. Scardigno, B. Dessalegn)
 - 7.3. Virtual technical visit to wastewater treatment plants and an irrigation area using wastewater and Online debate with stakeholders on the use of treated wastewater, safety and socioeconomic aspects (3 h) (J.J. Alarcón)