Climate resilient farming and forestry systems and water management

AGRI Innovation summit 2019

EIP AGRI Focus Group

Water and agriculture: adaptive strategies at farm level

Subject of the Focus Group

What farm level adaptation strategies exist or can be developed to deal with water scarcity?

Context for the Focus Group

The experts compiled farming management practices aimed at increasing the water availability for crops and livestock, the efficient use of water and the farm resilience under water scarcity.
Above all, in commercial farms many other factors than water may affect productivity and the causes of these factors must be first understood.

Key Questions

On the basis of their practical experience, experts provided a series of 5 suggestions for future actions:
- Manage soil and residues for improving water availability: increasing soil OM, conservation agriculture, soil mulching, controlled traffic, sporadic subsoiling.
- Choose improved well adapted cultivars, and introduce new drought tolerant crops.
- Use tools for improving crop/farm management (models and decision support systems).
- Use tools for improving irrigation scheduling: plant sensors; on line services for irrigation scheduling; regulated deficit irrigation; precision irrigation.
- Manage water quality and salinity.

Main Findings

To facilitate adoption of best practices:
- benefits in water conservation and in economic and/or environmental terms, in the short and long term, have to be clearly identified and described;
- knowledge exchange among all actors is necessary to identify and solve any technical and operational problem associated with the practice;
- practices should be shown in demonstration plots in farm conditions;
- clear use guides must be available when promoting complex techniques.

Ideas for Operational Groups

- Adapt locally conservation agriculture: permanent ground cover and proper tillage practices;
- Improve crop rotation and crop diversification: aromatic and medicinal plants; spring-summer crops tolerant to low temperatures for earlier sowing
- Local benchmarks and eferences for irrigation and crop performance
- Optimize irrigation with crop water balance: support by soil or plant sensors, supplemental irrigation and/or regulated deficit irrigation, precision irrigation aided by remote sensing
- Develop innovative solutions for using alternative water sources, maybe with poor water quality
- Explore impact of water governance, footprint and pricing flexibility on water used on farm.

Research needs from practice

- On-farm research to evaluate strategies in terms of water conservation: agronomic, economic and environmental terms
- Long-term studies to show benefits of strategies for increasing soil organic matter: conservation agriculture, mulching, cover crops, green manure, crop rotation
- Decision Support Systems for local conditions; make them friendlier in their use; and show clear benefits when using them
- Cost-effective, easy to use plant-based sensors for monitoring the actual crop water in different crop species
- Site-specific variable rate irrigation systems in local conditions, development of protocols and clear prescriptions for taking decisions.

All findings from the Focus Group and more ideas for Operational Groups and research needs are available in the final report on the EIP AGRI website: **https://ec.europa.eu/eip/agriculture/en.**