



Efficient water use in olive groves in a context of climate change

Zaragoza (Spain) • 18-23 September 2023



CIHEAM
ZARAGOZA



Objective

Olive-growing countries have adopted new policies and decisions on water management that will have a significant impact on the future of our communities and our sector. These policies will put a high pressure on irrigation, as water becomes an increasingly scarce commodity.

Climate change is affecting the supply of water for agricultural irrigation, and Mediterranean countries are suffering the consequences of rising temperatures and the lack of water. However, new olive plantations are being created, and most are in intensive and super high-density plantation systems that need more water. This may have an impact on traditional olive-growing countries where water resources are falling.

The course will address how to use water efficiently in olive growing, adopt recommended management strategies to prevent water losses in the field, and introduce innovative technologies to optimize the use of water and other resources.

At the end of the course, participants will have gained:

- an overview of the current water limitations to olive productivity in the Mediterranean region and the future perspectives under climate change;
- a better understanding of the soil-water balance, its components and the soil-plant-atmosphere continuum;
- knowledge of olive ecophysiological response to water availability and climate;
- the ability to identify the main points for efficient water use and adopt adequate solutions to support informed decision-making;
- know-how about the pros and cons of the use of low-quality water as an alternative or integrating water sources for olive irrigation;
- updated knowledge and ability to appraise critically the new technologies for monitoring water status.

Organization

The course is jointly organized by the International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM), through the Mediterranean Agronomic Institute of Zaragoza (CIHEAM Zaragoza), and the International Olive Council (IOC). The course will be given by well qualified lecturers from research centres and universities in different countries.

The course requires personal work and interaction among participants and with lecturers. The international characteristics of the course favour the exchange of experiences and points of view.

The programme has an applied approach. Lectures are complemented by applied examples, case studies and a round table discussion.

Participants will be invited to present a case study about the efficient water use in olive groves in a context of climate change in his/her country of origin.

The course will be held at the CIHEAM Zaragoza headquarters over a period of 1 week, from 18 to 23 September 2023, in morning and afternoon sessions. The course can be also followed on line.



Programme

1. Current situation and perspectives of olive growing (0.5 hours)
2. Impacts of climate change on olive cultivation in the Mediterranean (2 hours)
 - 2.1. Climate change impacts on olive orchards in southern Europe (1 hour)
 - 2.2. Projection of climate change impact on olive cultivation and water requirements in the Mediterranean region (1 hour)
3. Soil water balance in olive growing: concepts and components (3 hours)
 - 3.1. Soil water balance equation
 - 3.2. Precipitation
 - 3.3. Runoff
 - 3.4. Deep percolation and capillary rise
 - 3.5. Evapotranspiration
 - 3.6. Irrigation
 - 3.7. Practical session on estimation of soil water balance (1 hour)
4. Evapotranspiration (2 hours)
 - 4.1. Measurements
 - 4.2. Components
 - 4.2.1. Soil evaporation
 - 4.2.2. Tree transpiration
 - 4.3. Practical session on evapotranspiration (0.5 hours)
5. Plant water relations (2 hours)
 - 5.1. Water potential
 - 5.2. Soil-plant-atmosphere continuum
 - 5.3. Effects of water deficit
6. Irrigation requirement (4 hours)
 - 6.1. Reference evapotranspiration
 - 6.2. Crop coefficients
 - 6.3. Irrigation requirements and scheduling
 - 6.4. Strategies. Use of soil
 - 6.5. Practical session on irrigation requirement (2 hours)
7. Deficit irrigation (2 hours)
 - 7.1. Production function (crop response to water)
 - 7.2. Regulated deficit irrigation
8. Improving irrigation management (4 hours)
 - 8.1. Aspects related to the design of the irrigation system (1 hour, 8.1 to 8.2)
 - 8.2. Aspects related to the management of the irrigation system
 - 8.3. Application of sensors for monitoring soil-plant-atmosphere continuum (0.5 hours)
 - 8.4. Use of remote sensing for monitoring crop water requirements and plant water status (1.5 hours) (8.3 to 8.4)
 - 8.5. Case study on modelling and design (1 hour)
9. Use of low-quality water for irrigation of olive orchards (1 hour)
10. Soil management and fertigation (2 hours)
 - 10.1. Soil management (1 hour)
 - 10.2. Fertigation (1 hour)
11. Crop water productivity and eco-efficiency concepts (2 hours)
 - 11.1. Crop water productivity: definitions and application
 - 11.2. Concept of eco-efficiency: definition, approaches and use
 - 11.3. Economic aspects of water use in olive growing
 - 11.4. Environmental aspects of water use in olive growing
 - 11.5. Management practices to improve crop water productivity and eco-efficiency of water use in olive growing (discussion session)
12. Case studies (3 hours)
 - 12.1. Modelling irrigation requirements under climate change: study case of Alentejo (1 hour)
 - 12.2. Participants' experience on the efficient water use in olive in their country of origin (2 hours)
13. Round table discussion (2 hours)
14. Technical visit (6 hours)

Guest lecturers

Bairrao Balula, Catarina - IOC, Madrid (Spain)
Ben-Gal, Alon - The Volcani Center, ARO, Bet-Dagan (Israel)
Camposo, Salvatore - Università degli Studi di Bari, Aldo Moro (Italy)
Chartzoulakis, Kostas - Institute for Olive Tree & Subtropical Plants, Chania (Greece)
Fraga, Helder - UTAD, Vila Real (Portugal)
Gargouri, Kamel, IO Sfax (Tunisia)
González, María Victoria - CSIC, IAS, Córdoba (Spain)
López-Bernal, Álvaro - Univ. Córdoba (Spain)
Lorite, Ignacio - IFAPA, Córdoba (Spain)
Mehmeti, Andi - CIHEAM Bari (Italy)
Scardigno, Alessandra - CIHEAM Bari (Italy)
Sikaoui, Lhassane - IOC, Madrid (Spain)
Testi, Luca - CSIC, IAS, Córdoba (Spain)
Todorovic, Mladen - CIHEAM Bari (Italy)



Admission

The course is designed for 35 participants in face-to-face and 30 participants online and is aimed at public and private managers and decision makers, agronomists, environmentalists, technical advisors and experts from R&D institutions, with a university degree, involved in water management and olive growing in the Mediterranean and other regions.

Given the diverse nationalities of the lecturers, knowledge of English, French or Spanish will be valued in the selection of candidates, since they will be the working languages of the course. The Organization will provide simultaneous interpretation of the lectures in these three languages.

Registration

- Candidates may apply online at the following address: <http://www.admission.iamz.ciheam.org/en/>
- Applications must include the curriculum vitae and copy of the supporting documents most related to the subject of the course.
- The deadline for the submission of applications is 15 April 2023. The deadline may be extended for candidates not applying for a scholarship if there are free places available.
- Applications from those candidates requiring authorization to attend the course may be accepted provisionally.
- Registration fees for the course amount to 500 euro for face-to-face participation and 350 euro for online participation. IOC scholarship holders are exempt from the payment of registration fees.

Scholarships

The IOC will award 25 scholarships to participants in face-to-face and 30 scholarships for participants online. Candidates from IOC member countries (Albania, Algeria, Argentina, Egypt, European Union, Georgia, Iran, Israel, Jordan, Lebanon, Libya, Montenegro, Morocco, Palestine, Tunisia, Türkiye, Uruguay and Uzbekistan), who wish to apply for scholarships covering registration fees, and for scholarships covering the cost of travel, full board accommodation and medical insurance must contact the IOC representative in their country expressing their interest and providing their *curriculum vitae* and supporting certifications.

Candidates from other countries who require financial support should apply directly to other national or international institutions.

All applications are subject to a selection process based on the profiles submitted.

Insurance

It is compulsory for participants in face-to-face modality to have medical insurance valid for Spain. Proof of insurance cover must be given at the beginning of the course. Those who so wish may participate in a collective insurance policy taken out by the Organization, upon payment of the stipulated sum.

Contact:

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More info:

