

Online Advanced Course

RECENT TRENDS IN CONSERVATION AGRICULTURE IN MEDITERRANEAN ENVIRONMENTS

14-23 February 2022

1. Objective of the course

Conservation Agriculture (CA) is a sustainable and profitable system of agricultural production and land management based on three interlinked principles: no or minimum mechanical soil disturbance, maintenance of soil organic cover, and crop diversification. CA has developed substantially worldwide over recent decades. Although the potential benefits of CA in Mediterranean conditions are high for farmers, society and the environment, the system and its adoption and spread should be further optimized. With CA, production costs and negative environmental impacts can be minimized, while improving productivity and resilience, including climate change adaptation and mitigation.

In this context, a Research and Innovation Action has been selected by PRIMA Foundation –“Research-based participatory approaches for adopting Conservation Agriculture in the Mediterranean Area, CAMA, Grant Agreement No. 1912”, with the aims to identify the major barriers to CA implementation by smallholders of Mediterranean countries; to establish a network of experiments and farmers associations adopting CA; to improve legume-based rotations in rainfed cropping systems; to quantify the effects of CA application and developing agronomic innovation to increase soil fertility and physical status, nitrogen and water use efficiencies; and to disseminate the CA concept and techniques in Mediterranean countries, also by means of advanced training courses.

This interactive course will address recent trends, advances and innovations in CA research and practice, and the major concerns that farmers face in the adoption of CA, including the limited knowledge sharing and technical assistance.

At the end of the course participants will be in a position to:

- Better understand the concepts and principles of CA and its benefits.
- Evaluate the challenges and solutions for better management of CA systems.
- Better manage the transition process from conventional agriculture to CA.
- Integrate theory and practical experiences to provide support for effective adoption of CA.

- Develop a framework for economic, social and environmental evaluation of CA.
- Be aware of the possibilities offered by the institutional framework supporting the development of CA.
- Strengthen cooperation between the main stakeholders for promoting and improving CA.

2. Organization

The course will be jointly organized by the International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM), through the Mediterranean Agronomic Institute of Zaragoza (CIHEAM Zaragoza), the Project “Research-based participatory approaches for adopting Conservation Agriculture in the Mediterranean Area, CAMA, GA No. 1912” funded by the PRIMA programme supported by the EU’s Horizon 2020 research and innovation programme, and the International Center for Agricultural Research in the Dry Areas (ICARDA). The course will be given by well qualified lecturers from international organizations and from universities, research centres, associations and private firms in different countries.

The course will be held online from 14 to 23 February 2022, 8 days, 4 hours per day, scheduled from 9:15 h to 13:45 h (Central European Time).

3. Admission

The course is designed for 30 professionals with a university degree. It is intended for technical specialists, researchers and decision-makers involved in or concerned with the development and application of Conservation Agriculture.

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.



4. Registration

Candidates must 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 January 2022**. The deadline may be extended if there are places available.

Applications from those candidates requiring authorization to attend the course, may be accepted provisionally.

There are no registration fees for this course.

Participants will receive technical and methodological assistance to ensure efficient online participation and favour interactivity.

5. Teaching organization

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.

Lectures are complemented with applied examples, real case studies and discussions. A virtual visit to farms under CA will be carried out and interviews with farmers will provide participants with the opportunity to become aware of the practical management issues involved in different CA systems under rainfed and irrigated conditions.

Participants will be invited to provide a brief document about CA in their respective countries as well as their professional experiences, if any. These documents will be distributed to all participants and lecturers.

6. Programme

1. Introduction and overview (2 hours)

- 1.1. Principles and concepts of CA and its role in sustainable agriculture in dry areas
- 1.2. Overview of CA farming systems in Mediterranean environments and current status

2. Bases of CA under Mediterranean environments (4 hours)

- 2.1. Soil properties and functions change under CA
 - 2.1.1. Soil biodiversity
 - 2.1.2. Soil erosion
 - 2.1.3. Soil organic matter dynamics and its role in CA
- 2.2. Water use efficiency and water productivity

3. Technical challenges and advances in crop management under CA (11 hours)

- 3.1. Crop residues
- 3.2. Crop fertilization
- 3.3. Cropping systems
 - 3.3.1. New breeding approaches for CA adapted plant material
 - 3.3.2. The importance of legumes in cropping systems
 - 3.3.3. Rotation, associations, sequences and cover crops
 - 3.3.4. Integration of CA in organic farming systems
- 3.4. Crop-livestock integration under CA
- 3.5. Crop protection under CA: weeds, herbicide resistance, pests and diseases
- 3.6. Equipment and machinery in different CA systems
- 3.7. Discussion: transition from conventional to CA systems

4. Socioeconomic and environmental implications (4 hours)

- 4.1. Farmer benefits at short and long term (productivity, efficiency, output benefit, income, resilience)
- 4.2. Environmental benefits
- 4.3. Social, cultural and economic barriers for CA adoption

5. Policy and institutional options (2 hours)

- 5.1. Need for knowledge integration in education, research and extension services
- 5.2. Strategies to promote CA adoptions in Mediterranean environments
- 5.3. The role of the main stakeholders (farmer organizations, policy-makers, extension services, private sector, NGOs, etc.)

6. Case studies (7 hours)

- 6.1. ICARDA's experiences in promoting CA farming in CWANA region
- 6.2. Reasons for adopting conservation agriculture in a specific irrigated and rainfed cereal farm in Alentejo, Portugal
- 6.3. Practical case on integration of crops and livestock under CA in Tunisia
- 6.4. Fixing CA based on living covers with and without irrigation in southern France
- 6.5. Cereal-legume rotation in rainfed cropping systems in southern Italy
- 6.6. Cereal-legume intercropping in a rainfed cropping system in Algeria
- 6.7. Effects of CA on soil properties and productivity under a dryland cereal-based system in Morocco
- 6.8. Irrigated and rainfed crop rotations in Greece
- 6.9. Case study discussion

7. Virtual technical visit

GUEST LECTURERS

S. ABIDI, INRAT, Tunis (Tunisia)
J. ÁLVARO-FUENTES, CSIC-EEAD, Zaragoza (Spain)
P. ANNICCHIARICO, CREA, Lodi (Italy)
M. BENETTI, Univ. Padova (Italy)
V. BODAS, AgriSat Iberia SL, Albacete (Spain)
C. CANTERO-MARTÍNEZ, UdL, Lleida (Spain)
H. CICEK, FiBL, Frick (Switzerland)
G. CRUZ, APOSOLO, Évora (Portugal)
M. DEVKOTA, ICARDA, Rabat (Morocco)

G. D'ALESSANDRO, Agromnia, Bisceglie (Italy)
T. GITSOPOULOS, HAO-Demeter, Thessaloniki (Greece)
M. LATATI, ENSA, Alger (Algeria)
D. MARANDOLA, CREA, Roma (Italy)
M. MARGUERIE, ARVALIS, Gréoux (France)
R. MOUSSADEK, INRA, Rabat (Morocco)
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