



CIHEAM

International Centre for Advanced  
Mediterranean Agronomic Studies  
Mediterranean Agronomic Institute of Zaragoza



REFRESH Project - European Union



Science for resilient livelihoods in dry areas

## Advanced Course

# FOOD LOSS AND WASTE REDUCTION AND MANAGEMENT

Zaragoza (Spain), 21-25 January 2019

### 1. Objective of the course

Despite the growing attention from the academic world, civil society and policy makers, the debate on food losses and waste (FLW) is still affected by a lack of a consensus over its definition and scope boundaries, the conditions that lead to their creation and the quantification along the food supply chain. Moreover, as policies and policy proposals are emerging, there is a greater need for quantification and analysis of policy interventions.

This course follows a comprehensive approach, highlighting the importance of food loss and waste in current food systems, identifying main actors and critical points along the food supply chain and reviewing quantitative and qualitative approaches to assess food waste. Special attention is paid to ongoing and expected public and private initiatives to reduce food waste. The course combines theoretical considerations with case studies to review the landscape of food losses and waste in Mediterranean and other European countries.

At the end of the course participants will be able to:

- Better appreciate the magnitude of the problem and differentiate the diverse types of losses and their implications.
- Identify the main actors and hot spots for food loss and waste in different food systems/chains.
- Recognize the causes of loss and waste, involving the stakeholders in their identification and in the problem solving process.
- Understand alternative measures of food loss and waste.
- Better assess the economic, social and environmental impacts of food loss and waste under different scenarios.
- Propose ideas to valorize food loss/waste.
- Raise public awareness about the importance of reducing loss and communicate issues and solutions to a target audience.

### 2. Organization

The course is jointly organized by the **International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM)**, through the **Mediterranean Agronomic Institute of Zaragoza (IAMZ)**, the EU H2020 funded project **REFRESH (Resource Efficient Food and dRink for the Entire Supply cHain)** and the **International Center for Agricultural Research in the Dry Areas (ICARDA)**. The course will take place at the Mediterranean Agronomic Institute of Zaragoza and will be given by well qualified lecturers from international institutions,

and universities, NPOs, research centres, government departments and private companies in different countries.

The course will be held over a period of one week, from 21 to 25 January 2019, in morning and afternoon sessions.

### 3. Admission

The course is designed for 25 professionals with a university degree and is addressed to decision makers, administration officers, food producers, managers and marketers, technical advisors, researchers and NGO and NPO professionals working on or concerned with the implementation of programmes to reduce food loss and waste and in the alternatives for waste valorization.

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 **6 November 2018**.

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

Registration fees for the course amount to 500 euro. This sum covers tuition fees only.

### 5. Scholarships

Candidates from CIHEAM member countries (Albania, Algeria, Egypt, France, Greece, Italy, Lebanon, Malta, Morocco, Portugal, Spain, Tunisia and Turkey) and from ICARDA Middle East and North Africa (MENA) partners may apply for scholarships covering registration fees, and for scholarships covering the cost of travel and full board accommodation.

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

Please display on a notice board if possible



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[www.iamz.ciheam.org](http://www.iamz.ciheam.org)

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## 6. Insurance

It is compulsory for participants 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.

## 7. Teaching organization

The course has an applied approach. Formal lectures are complemented with international examples and case studies on successful actions and innovative approaches, practical work and discussions.

During the course participants will carry out exercises on FLW impact assessment and a group work to map supply food chains in order to identify critical points for resource uses and food losses, as well as to build strategies to reduce FLW.

Participants will be invited to provide before the beginning of the course: (1) a completed questionnaire on personal perceptions about FLW; and (2) a brief document about food loss and waste reduction initiatives in their respective countries/regions. These exercises will be the basis for discussion among participants and lecturers.

## 8. Programme

### 1. Introduction (1 hour)

- 1.1. Food waste within sustainable food systems and healthy diets. What is the future of global food systems?
- 1.2. Some introductory figures
- 1.3. The problem of defining Food Loss and Food Waste
- 1.4. The causes of Food Loss and Waste (FLW). Differences between developed and developing countries
- 1.5. The main actors and their initiatives (FAO, WRI, EU, voluntary agreements, etc.)
- 1.6. FLW hierarchies

### 2. FLW: a complex issue (3 hours)

- 2.1. Mapping flows of food and resources
- 2.2. Key case studies from different actors in the food chain
- 2.3. Participants' brainstorming on FLW perceptions and solutions

### 3. FLW assessment (8 hours)

- 3.1. Quantitative assessment
  - 3.1.1. Measurements and standards
    - 3.1.1.1. FAO FLW analysis and measurement approaches, and actions
    - 3.1.1.2. World Resource Institute Food Loss and Waste Protocol
    - 3.1.1.3. The EU FUSIONS Quantification Manual
    - 3.1.1.4. Discussion on quantitative measurements: what to measure and where
  - 3.1.2. Methods and impact analysis
    - 3.1.2.1. Life Cycle Assessment (LCA) and Life Cycle Costing (LCC)
    - 3.1.2.2. Hydric print

3.1.2.3. Carbon-foot print

3.1.2.4. Social impact

### 3.2. Qualitative assessment

- 3.2.1. Participatory tools
- 3.2.2. Collaborative multi-actor approach
- 3.2.3. Behavioural analysis

### 4. Public and private interventions to reduce FLW (12 hours)

#### 4.1. Prevention

- 4.1.1. Regulatory approaches: international and national strategies, laws and regulations
- 4.1.2. Market-based instruments and other socioeconomic incentives
- 4.1.3. Private initiatives and voluntary agreements
- 4.1.4. Persuasive approaches: public campaigns
- 4.1.5. Technological and logistic innovations (e.g. postharvest improvements, packaging, extending shelf-life, etc.)

#### 4.2. Redistribution

- 4.2.1. Critical issues related to food redistribution: food bank infrastructure and logistics, food safety, market regulations, consumer rights, etc.
- 4.2.2. The role of food banks and other social institutions
- 4.2.3. EU guidelines on food donation
- 4.2.4. Alternative approaches to food donation and redistribution. Countries comparison and open discussion

#### 4.3. Valorization of food waste

- 4.3.1. Waste to resources: legislative barriers, technical options and sustainability considerations
- 4.3.2. End uses
  - 4.3.2.1. Feed
  - 4.3.2.2. Food consumption
  - 4.3.2.3. Non-food products
  - 4.3.2.4. Bio-energy

#### 4.4. Case studies

- 4.4.1. The Spanish national strategy "More food, less waste" as an example of voluntary agreement based approach
- 4.4.2. Sustainable product design through innovation
- 4.4.3. Waste reduction and circular economy
- 4.4.4. Second opportunities for discarded food through redistribution and valorization including social components
- 4.4.5. Collaborative network using IoT to redistribute food
- 4.4.6. Open discussion on FLW solutions

### 5. Practical work (11 hours)

- 5.1. Homework on FLW perception
- 5.2. Group work on FLW analysis in diverse food sectors
  - 5.2.1. Introduction to the practical
  - 5.2.2. Mapping out the food supply chain
  - 5.2.3. Identifying throughout the supply chain resources needed to grow, process and distribute food
  - 5.2.4. Identifying where and why food gets lost in the system
  - 5.2.5. Building strategies to reduce FLW
- 5.3. LCA and LCC analysis of food waste

## GUEST LECTURERS

N. BARAGAÑO, COOMIDA, Asturias (Spain)  
M. BARBA, Espigoladors, Barcelona (Spain)  
B. CSEH, Hungarian Food Bank Association, Budapest (Hungary)  
F. DE MENNA, Univ. Bologna (Italy)  
R. DÍAZ RUIZ, CREDA-UPC-IRTA, Barcelona (Spain)  
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