



CROP PHYSIOLOGY

POST-GRADUATE COURSE – SPECIAL VERSION IN ENGLISH

DIRECTORS: MARÍA E. OTEGUI, Ph. D.; DANIEL J. MIRALLES, Ph. D.

OBJECTIVES

The course is aimed to the analysis of current knowledge on the main processes that control crop physiology, predominantly crop responses to the environment. We focus on the identification, assessment, and application of adequate conceptual frameworks for the correct evaluation in time and space of extensive field crops. One of the main objectives of the course is to reach a good analytical capacity and correct interpretation of research published in well-known journals, by means of discussions sessions. It is also our goal to train these abilities by means of seminars presented and discussed by students.

CONTENTS

Environmental control of development and its quantitative description. Phases of development. Morphological development. Juvenile phase. Responses to temperature (including vernalization) and photoperiod. Growth and senescence of the shoot and root systems, and their effect on resource capture. Environmental control of these processes. Carbon economy, from leaf to crop photosynthesis. Light interception and radiation use efficiency. Water use by crops. Soil evaporation and plant transpiration, their environmental control. Water use efficiency at different levels (leaf, crop) and time frames. Nitrogen use by crops. Nitrogen effects on photosynthesis, leaf expansion, shoot/root ratio, and leaf senescence. Other controls of leaf senescence. Yield determination and its components. Intraspecific variation in the characteristics of all described processes. Tolerance to drought



and extreme temperatures. The study of interactions among environmental factors. Crop simulation models as integrative tools for the analysis of crops responses to the environment.

ACTIVITIES (4 WEEKS)

Lectures, Readings, Seminars. Credits: 8

ADMISSION REQUIREMENTS

Students should be graduated from a 4-year university program or longer. Graduate Students admitted to a Master's or Doctoral program are strongly welcome.

- **María Elena Otegui** is a Full Professor at the University of Buenos Aires and a Senior Researcher at CONICET, the Argentine Research Council. She obtained her Doctor Degree at the University of Paris and had a Post-Doctoral Stay at USSA-ARS, Mn.. Her research is documented in more than 50 high profile scientific publications (h-index 27; Scopus, 2015).
- **Daniel Julio Miralles** is an Associate Professor at the University of Buenos Aires and a Senior Researcher at CONICET, the Argentine Research Council. He obtained his Doctor degree at University of Buenos Aires and had a Post-Doctoral Stay at CSIRO, Australia. His research is documented in more than 60 high profile scientific publications (h-index 21; Scopus, 2015).