

Summary Summer School "Ecosystem Services of Mediterranean permanent grasslands", H2020 project Developing sustainable permanent grassland systems and policies, 12-14 May 2022, University of Cordoba, Spain.

The Summer School of the Super-G H2020 project entitled "*Ecosystem services of Mediterranean permanent grasslands*" took place between Thursday 12 May and Saturday 14 May, organized in 1 day of in-person classes and 2 days of field visits. This course aimed to train young technicians, researchers and PhD students in the most innovative techniques for the sustainable management of permanent grasslands in the Mediterranean environment. 25 Students participated, including 3 international participants coming from respectively Italy, Portugal and Germany.

12th May: theoretical classes

The first day consisted of 7 seminars, chaired by leading experts from the scientific community. Each seminar lasted 1 hour and included 45 minutes of oral presentations and 15 minutes of discussion and questions. As scheduled, the opening seminar started at 9.00 am. The seminar, entitled 'Rangeland management as a tool for sustainability', was given by the researcher Valentín Maya Blanco, (Senior Researcher at CICYTEX. Centro de investigaciones científicas y tecnológicas de Extremadura, Junta de Extremadura, Spain <http://cicytex.juntaex.es/es/personal/23/maya-blanco-valentin>). The second seminar was by the researcher Daniel Real (Senior Research Officer at the Department of Primary Industries and Regional Development, Government of Western Australia, Australia <https://www.agric.wa.gov.au/daniel-real>), by videoconference from Australia. His seminar was entitled "New grassland species for new challenges: increasing aridity in Mediterranean permanent grasslands", and he presented the results on the domestication of the new drought-resistant perennial forage legume Tедера, with results from the last decade of research.

At 12.30 p.m., Oscar Pérez Priego (Professor of the Department of Forestry Engineering of the University of Cordoba, Spain), discussed the "Effect of fertilisation strategies in Mediterranean permanent grasslands: from the plant to the ecosystem", giving an important overview on the energy fluxes and their environmental impact.

To finish the morning program, the students were taken on the first field visit at the UCO Experimental field, where Jesús Fernández-Habas and Filippo Milazzo, research fellows from the Department of Forestry Engineering and Agronomy of the University of Cordoba, explained the preliminary results of the rainfall exclusion experiment of the response of climate change on grassland production, that has been set up within the Super-G project.

At 16.00, researcher Jesús Barrena González (Research Associate at the Institute for Sustainable Soil Development, University of Extremadura https://www.unex.es/conoce-la-uex/centros/fyl/centro/profesores/info/profesor?id_pro=jesusbarrena), illustrated the importance of soil conservation and soil quality assessment “Mediterranean permanent grassland: soil conservation and soil quality assessment” . Finally, at 17.00, the fellow researcher Ana Andreu Méndez (Postdoctoral Researcher at the Department of Agronomy University of Cordoba <https://www.uco.es/agronomia/es/ana-andreu-mendez>) presented an overview of the remote sensing practices for the monitoring of Mediterranean permanent pastures.

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Visit to the rainfall exclusion experiment at the University of Cordoba experimental farm





Talks by Oscar Pérez Priego (top) and participants (bottom).

13-14th May: Field trip

This field trip included different field visits, giving the opportunity to students to enlarge their knowledge on grassland breeding and sustainable management of the typical permanent grassland system of Southern Spain.

The first stop took place at Viamonte, Portugal, at the breeding field of the Fertiprado company (<http://www.fertiprado.pt/es/>), one of the major companies in the Iberian peninsula that produces seed mixtures for pastures. In this occasion, the breeding process and outcomes were shown by the field manager of the company. Students had the opportunity to learn more on the newest grassland species available on the market.

The second field visit stop was in Aliseda, Spain, where the CICYTEX field researchers, explained the different aspects of pasture management and grazing.

The last field visit day took place in Sierra de Gata (north of the province of Cáceres). This site is suffering of different problems, such as wildfires and depopulation. Here, the accompanying professor from Extremadura University explained how the wildfires affect the pasture system and the entire surrounding ecosystem.



