The response of taxonomic and functional diversity of the seed bank to agriculture intensifi cation and soil properties in two Mediterranean cereal areas (70)

Yesica Pallavicini *(Instituto De Agricultura Sostenible (Csic), Crdoba, Spain),* ***Eva Hernandez Plaza*** *(Instituto De Agricultura Sostenible (Csic), Cordoba, Spain),* ***Fernando Bastida*** *(University Of Huelva, Palos De La Frontera, Spain),* ***Jordi Izquierdo*** *(Universitat Politècnica De Catalunya, Castelldefels, Spain),* ***Montserrat L. Gallart*** *(Universitat Politècnica De Catalunya, Castelldefels, Spain),* ***Jose L. Gonzalez-Andujar*** *(Instituto De Agricultura Sostenible (Csic), Cordoba, Spain)*

Weed seed bank diversity has been severely impacted by agriculture intensifi cation. However, the functional consequences have been poorly studied in highly intensifi ed agro-ecosystems. This study evaluated the importance of soil properties and agriculture intensifi cation at local and at landscape scale on taxonomic and functional diversity and in the distribution of functional traits of plants represented in the soil seed bank in conventionally managed cereal fi elds in two Mediterranean regions of Spain, Andalusia and Catalonia. Local intensifi cation was measured by means of position in the fi eld (margin, edge and centre) which refl ects diff erent intensities of management practices. Intensifi cation at the landscape scale was measured with percentage arable land cover within circular sectors of 1 km radius around the focus fi eld. Functional diversity index and the distribution of functional traits were based on eight traits related to the whole plant life-cycle. In total, 175 and 116 species were recorded in the seed bank in Andalusia and Catalonia, respectively. We found that taxonomic and functional diversity, and the distribution of functional traits in the weed seed bank were unaff ected by soil properties, position in the fi eld or landscape structure in any of the two studied regions. The results suggest that intensity of management practices is a similar thorough the entire fi eld and fi eld margins fl ora is highly aff ected by adjacent crop management. The negligible impact of landscape structure may be due to arable land cover was high and the presence of (semi)natural habitats were scarce, therefore the availability of alternative habitats acting as a source of propagules is limited. This long-term intensifi cation at local and landscape scale has led to the actual communities which are characterized by an extremely low functional diversity with functional traits adapted to recurrent disturbance and with a high reproduction capacity.

Keywords: Functional traits, arable weeds, Landscape, Field margin