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*“Weed Science and Management
to Feed the Planet”*

Proceedings



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The cover crop kill date: key for the weed control (622)

María Alonso-Ayuso (Technical University of Madrid (UPM), Madrid, Spain), **José Luis Gabriel** (Rennes, France), **Juan P DelMonte** (Technical University of Madrid (UPM), Madrid, Spain), **François Tizon** (Université de Rennes, France), **Miguel Quemada** (Technical University of Madrid (UPM), Madrid, Spain)

Cover cropping is considered a strategy of integrated weed management in agricultural systems. However, the weed suppression effect can vary depending on the species used and the management performed. A field experiment was conducted in Central Spain to study the effect of grass and legume mulches coming from winter cover crops (CC) killed in different dates on weed community (density, richness and diversity of species, and flora composition). Treatments were fallow and two CC species, barley (*Hordeum vulgare* L.) and vetch (*Vicia sativa* L.), sown in October and killed in two different dates in spring with a contact herbicide. Cover crop biomass and chemical composition were determined at the killing date. Soil inorganic Nitrogen was measured before cash crop planting in late April and humidity below the mulch was measured throughout the season. Weed community was studied in different dates. Cover crop species and the kill date affected the weed community in spring. When the commercial plot was sown in late April, the barley and vetch mulches reduced the weed density compared to the fallow in a 68% and 26%, respectively. Richness and diversity of species were reduced for CC treatments as well. The kill date affected the mulch properties and consequently physicochemical parameters in the soil surface were different. A later-killed CC had a better weed control in the early growth stages of the cash crop compared to an early kill date; but it might enhance pre-emptive competition with the cash crop for water and nutrients. The weed flora composition was greatly affected by the CC and the kill date. Therefore, the CC species and the kill date must be considered in order to plan proper and specific weed management strategies, without being in competition with the cash crop.

Keywords: Cover crop mulch, *Hordeum vulgare* L., *Vicia sativa* L., weed suppression, pre-emptive competition

[The poster in a PDF version is available here.](#)

Effect of crop rotation on weed seed bank (432)

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Knowledge of weed soil seed bank is of great importance for forecasting weediness for next years. Crop rotation and tillage are two primary practices that have an impact on soil seed bank. In our study, soil samples were taken in order to evaluate the size and species composition of the soil weed seed bank on plots under different growing systems: monoculture of corn of about 40 years, rotation of corn, wheat and soybeans with different fertilization treatments. Samples were collected during October, using probe (diameter 5 cm) to 15 cm depth. Four soil samples collected from 10 sampling points were taken from each of 7 plots. Seeds were extracted from the soil by washing and were determined and counted. Next year (during August) weediness (abundance and species composition) was evaluated in the same plots. The weed seed bank was dominated by *Chenopodium album*, *Amaranthus retroflexus*, *Datura stramonium*, *Sorghum halepense* in all treatments. In the plots which were under wheat in the previous year, besides the listed species, seeds of species characteristic for grain crops were also dominant. The higher number of seeds was observed in treatments where manure was applied. In the unfertilized treatments the seed bank was higher and represented by a higher number of weed species than in other plots. Composition of weed species emerged in the next year were in accordance with results of seed bank analysis and the fact that the investigated plots were seeded to maize. In fact, the dominant species were those typical of row crops.

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Keywords: Crop rotation, seed bank, weed

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