**Mª Inés Santín-Montanyá**

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**Summary**

Dra. Mª Inés Santín-Montanyá (female) obtained her Graduate in Biological Science in Universidad Complutense de Madrid and received a grant to complete her postgraduate studies in the Plant Protection Department of The Institute of Agricultural Sciences (CSIC). In 2001, she achieved her PhD degree in Biological Science in the Escuela Técnica Superior de Ingenieros Agrónomos de Madrid (Universidad Politécnica de Madrid), with a thesis related to relationships between two arvenses species and crops. From 2002 she worked, as pot-doctoral, in Crop Protection Department of The National Institute for Agricultural and Food Research and Technology from Madrid (INIA) participating in projects related with the strategies that optimize the use of herbicides for sustainable crop management. She is currently a researcher working in the Environment and Agronomy Department from INIA-CSIC, where she coordinates and participates in researching projects involves in finding ways to increase crop resilience to climate change and improve the management of arable weeds while maintaining agroecosystems biodiversity.

Her principal lines of work are: 1) The study of the biology and ecology of weed population dynamics, 2) Weed control for sustainable crop production, the improvement of conventional techniques, the study of alternative strategies to chemical control and other inputs and innovative practices for biodiversity conservation, and 3) The study of arvenses dynamics with different land uses, and innovative practices in a changing climate.

Her most relevant scientific publications highlight the influence of land-use, soil properties and climate change on weed community (weed emergence in the field and weed seedbank data). She promotes the study of these factors to facilitate the redefinition of crop production and protection strategies. The capacity for food production is dependent on the quality of the soil and I collaborate with soil science experts in response to problems identified in Mediterranean agro-systems, where climate change is altering environmental conditions and significantly influencing crop production (biodiversity loss, soil degradation and gas emissions). Some agriculture techniques have proven to be effective in preventing erosion, increasing fertility, and enhancing soil biodiversity. Her studies regarding change of land-use and associated biodiversity aim to enhance conservation and organic agriculture techniques to facilitate sustainability and preservation of the rural environment. In her publications is analysed how the floristic richness in agro-ecosystems can be improved looking for the benefits of the introduction of new production techniques and the modification of current techniques. To provide data, which can help farmers to minimize collateral damage generated by plough-tillage in organic and conventional farming, and reduce herbicide use and other inputs is a major goal.

In the last ten years she has been first or last authored of scientific articles in in high-impact journals (Q1 and Q2) and international conferences, regarding the influence of agronomic practices in the soil-plant-environment matrix. She is currently the researcher responsible for a long-term trial, established in 1994, in the centre of Spain (INIA-CSIC). Her publications and projects reflect her experience in studies on dryland agroecosystems. She has participated in numerous International and National Congress. She has directed a Doctoral Thesis related with the impact of climatic conditions and agronomic practices on Mediterranean agroecosystems; and other is currently go on about the effect of an Invasive species on Mediterranean agroecosystems. Also, she has been reviewer’s coordinator in the last two calls for Grupos Operativos from Ministry of Agriculture. She has been recently nominated as Board Member of the European Weed Research Society for a period of four years (2022-2025).

Her last activities, as Research coordinator are described in the following projects:

- SoilCompaC (2021-2024): Mapping and alleviating soil compaction in a climate change context. Funding by EU Horizon 2020 (EJP-Soil Programme). Researcher coordinator (IP INIA Sub-project).

- FARS4CLIMATE (2021-2025): Smart governance and operational models for agroecological carbon farming. Funding by EU Horizon 2020 (PRIMA Programme). Researcher participant.

- RTA2017-00006-C03-01. (2018-2020) Fertilization and weed control strategies regarding optimization of production and quality of cereal in conservation and organic agriculture. Funding by MICINN. Researcher coordinator.

- AT2017-003 (2017-2020) Effect of climate change on the production and quality of wheat in different semi-arid areas of the Iberian Peninsula. Funding by MICINN-INIA. Researcher coordinator.

- PRCV00590 (2018-2019). The role of resilience in the weed community’s composition of cereal agro-ecosystem. Adaptive responses of arvensis flora to climate change. Funding by Biodiversity Foundation-INIA. Researcher coordinator.

**Selected Publications**

* Raúl Allende-Montalban, José Luis Gabriel, Eusebio Francisco de Andrés, Miguel Ángel Porcel, **Maria Inés Santín-Montanya**, Maria Luisa Gandía, Diana Martín-Lammerding, Maria teresa Nieto, Maria del Mar Delgado, Raúl San-Juan-Heras, José Luis Tenorio. 2024. Nitrogen fertilization and sowing date as wheat climate change adaptation tools under -mediterranean conditions. European Journal of Agronomy 161: 127346. https://doi.org/10.1016/j.eja.2024.127346
* Costa, A., Bommarco, R., Smith, M., E., Bowles, T., Gaudin, A. C. M., Watson, C. A., Alarcón, R., Berti, A., Blecharczyk, A., Calderon, F. J., Culman, S., Deen, W., Drury, C. F., Garcia y Garcia, A., García-Díaz, A., Hernández Plaza, E., Jonczyk, K., Jäck, O., Navarrete Martínez, L., Montemurro F., Morari F., Onofri A., Osborne S.L., Tenorio Pasamón J.L., Sandström B., **Santín-Montanyá I.**, …, Vico, G. 2024. Crop rotational diversity can mitigate climate-induced grain yield losses. Global Change Biology, 30, e17298. https://doi.org/10.1111/gcb.17298
* Smith M, …, **Santín-Montanyá MI**, ..., Bonmarco R. 2023. Increasing crop rotational diversity can enhance cereal yields. Communications Earth & Environment 4: 89 https://doi.org/10.1038/s43247-023-00746-0.
* María Luisa Gandía; Juan Pablo Del Monte; Maria Inés Santín. 2021. Efficiency of Methodologies Used in the Evaluation of the Weed Seed Bank under Mediterranean Conditions. *Agronomy*. 12, 138. https://doi.org/10.3390/agronomy12010138.
* María Luisa Gandía; Juan Pablo Del Monte; José Luis Tenorio; Maria Inés Santín. 2021. The influence of rainfall and tillage on wheat yield parameters and weed population in monoculture versus rotation systems. *Scientific Reports*. Springer Nature. DOI: 10.1038/s41598-021-00934-y. 11-22138.
* Martin-Lammerding D.; Gabriel J. L.; Zambrana El; Santín-Montanyá M.I.; Tenorio J. L.2021. Organic Amendment vs. Mineral Fertilization under Minimum Tillage: Changes in Soil Nutrients, Soil Organic Matter, Biological Properties and Yield after 10 Years *Agriculture*. 10.3390/agriculture11080700. 11-700.
* M.L. Gandía Toledano; C. Casanova; F.J. Sánchez Jiménez; J. L. Tenorio Pasamón; M. I. Santín Montanyá. 2020. Arable Weed Patterns According to Temperature and Latitude Gradient in Central and Southern Spain. *Atmosphere*. 11-853.
* María Inés Santín-Montanyá, María Luisa Gandía-Toledano, Encarnación Zambrana and José Luis Tenorio. (2020) Effects of tillage systems on wheat and weed water relationships over time when growing together, in semiarid conditions. *Annals of Applied Biol*ogy 177: 256–265.
* María Inés Santín-Montanyá, María Luisa Gandía, Carlos Casanova, Francisco Javier Sánchez-Jiménez and José Luis Tenorio. (2020) The influence of soil tillage system on Salsola kali L. emergence during the fallow period within cereal fields. *Soil Use Management* 36 (4): 594-603.
* M.I. Santín Montanyá and A. Sombrero Sacristán. (2020) The effects of soil tillage techniques on weed flora in high input barley systems in northern Spain. *Can. J. Plant Sci.* 100(3): 245-252.
* Santín-Montanyá, MI., Casanova Pena, C., Zambrana Quesada, E., Sánchez Jiménez, FJ., Tenorio Pasamón, JL. (2018) Arable weed species associated with soil tillage systems under Mediterranean conditions. *Land Degrad Dev.* 29, 865-874.
* Santín-Montanyá, MI., Zambrana-Quesada, E., Tenorio-Pasamón, JL. (2018) Weed abundance and soil seedbank responses to tillage systems in continuous maize crops. *Archives of Agronomy and Soil Science* 64, 1705-1713.

**Research projects**

* LILAS4SOILS. Fostering Carbon Farming Practices through Living Labs in the Mediterranean and Southern EU for the healthy future of European Soils. (INIA-CSIC). HORIZON-MISS-2023-SOIL-01-09: Carbon farming in living labs. Approved in January 2024. Researcher participant: M. I. Santín Montanyá
* SoilX. Soil management to mitigate climate change-related precipitation eXtremes. EJPSoil European Joint Programme. (INIA-CSIC). 19/09/2022-2024. Researcher participant: M. I. Santín Montanyá
* SoilCompaC (2021-2024): Mapping and alleviating soil compaction in a climate change context. Funding by EU Horizon 2020 (EJP-Soil Programme). Researcher coordinator (IP INIA Sub-project): M. I. Santín Montanyá
* FARS4CLIMATE (2021-2025): Smart governance and operational models for agroecological carbon farming. Funding by EU Horizon 2020 (PRIMA Programme). Researcher participant: M. I. Santín Montanyá
* RTA2017-00006-C03-01. (2018-2020) Fertilization and weed control strategies regarding optimization of production and quality of cereal in conservation and organic agriculture. Funding: MICINN. IP: M. I. Santín Montanyá
* AT2017-003 (2017-2020) Effect of climate change on the production and quality of wheat in different semi-arid areas of the Iberian Peninsula. Funding: MICINN-INIA. IP: M. I. Santín Montanyá and J.L. Tenorio Pasamón
* PRCV00590 (2018-2019) The role of resilience in the weed community’s composition of cereal agro-ecosystem. Adaptative responses of arvenses flora to climate change. Funding: Biodiversity Foundation-INIA. IP: M. I. Santín Montanyá
* CCA2016 (2017-2018) Divergent responses to global warming in the agro-ecosystem biodiversity. Looking for weed species indicators of climate change. Funding: Biodiversity Foundation-INIA. IP: M. I. Santín Montanyá