



Daniel Plaza

Investigador "Ramón y Cajal"

Dades personals



Categoria: Investigador "Ramón y Cajal"

Àrea de coneixement: Agronomia

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Formació Acadèmica

- Enginyer Tècnic Agrícola esp. Explotacions Agropecuàries (UdL), 2006
- Enginyer agrònom (UdL), 2009
- Master de Recerca en Sistemes de Producció Agroalimentaria (UdL), 2011
- Doctorat en Agronomia (UdL), 2013

Experiència Professional

- 2020- actualitat, Investigador Ramón y Cajal, Universitat de Lleida
- 2018-2020, Investigador Juan de la Cierva, Universitat de Lleida
- 2016-2018, Investigador Juan de la Cierva, Estación Experimental de Aula Dei, CSIC (Zaragoza)
- 2014-2016, Investigador postdoctoral, Institut National de la Recherche Agronomique (INRA, Toulouse)
- 2009-2013, Estudiant de doctorat, Universitat de Lleida

Recerca



His research focuses on the design and assessment of innovative climate-smart cropping system alternatives based on lower environmental impact, and adequate productivity, for a sustainable use of natural resources. The approach is systemic based on empirical techniques and soil-crop modelling

Docència

· AGRONOMIA

<https://guiadocent.udl.cat/pdf/es/>

Doble Grau: Grau en Veterinària i Grau Producció Animal

MEASUREMENTS AND CONTROL IN ECOPHYSIOLOGY

Màster Mediterranean Forestry and Natur Management (MEDfOR)

Projectes I+D+i

ECOLOGICAL TRANSITION OF CEREAL PRODUCTION: MULTIDISCIPLINARY ASSESSMENT OF MITIGATION AND ADAPTATION STRATEGIES TO COPE WITH CLIMATE CHANGE AND REDUCE ENVIRONMENTAL IMPACTS (ECO-TRACE). Project PI: **Daniel Plaza-Bonilla**. Funding body: MCIN - Ministerio de Ciencia e Innovación. PTED - Transición Ecológica y Transición Digital. Ref: TED2021-131895A-I00. Duration: 01/12/2022 – 30/11/2024.

MEDITERRANEAN CEREAL GRAIN SYSTEMS FOR HEALTHIER SOILS AND ENHANCED SUSTAINABILITY (GRAIN-SYST). Project coordinator: IRTA. **UdL PI: Daniel Plaza-Bonilla**. Funding Body: MCIN - Ministerio de Ciencia e Innovación. Programa de Generación de Conocimiento. Ref: PID2021-127339OR-C44. Duration: 01/09/2022 – 31/08/2026.

ORGANIC INTERCROPPING: A RESILIENT STRATEGY FOR FUTURE CLIMATE? ASSOCIECO. Project PI: **Daniel Plaza-Bonilla**. Funding Body: Recerca Aplicada en matèria de producció agroalimentària ecològica. Departament d'Agricultura, Ramaderia, Pesca i Alimentació de la Generalitat de Catalunya. Duration: 01/02/2021 – 31/10/2022.

LEGSAPIENS. GENERANDO OPORTUNIDADES: SISTEMAS DE CULTIVO INNOVADORES BASADOS EN LAS LEGUMINOSAS GRANO. Project coordinator: UPA. **UdL PI: Daniel Plaza-Bonilla**. Funding body: Programa nacional de desarrollo rural 2014-2020 por el Fondo Europeo Agrícola de Desarrollo Rural-FEADER y el Ministerio de Agricultura, Pesca y Alimentación. Partners: UPA, UdL, IMIDRA, ITAGRA, OCT, ASG S.A., Explotaciones Agropecuarias San Miguel S.L. Duration: 15/03/2021-15/03/2023.

EFFECT OF COMMERCIAL CHICKEN MANURE AND MYCORRHIZAE INOCULANT ON THE ESTABLISHMENT, GROWTH AND PARTIAL DEVELOPMENT OF ROOIBOS PLANTS (ASPALATHUS LINEARIS) – AN OUTDOOR POT TRIAL. Project PI: Anélia Marais (Stellenbosch University, South Africa). Funding body: Research and Technology Development. Western Cape Government – Agriculture. Duration: 30/11/2020-31/03/2023.

ORGANIC SOYBEAN PRODUCTION IN CATALUNYA IS FEASIBLE: TECHNOLOGICAL INNOVATIONS TO ATTAIN IT. PROSOY. Project PI: **Daniel Plaza-Bonilla**. Funding Body: Recerca Aplicada en matèria de producció agroalimentària ecològica. Departament d'Agricultura, Ramaderia, Pesca i Alimentació de la Generalitat de Catalunya. Duration: 10/07/2020 – 01/11/2021.



Boost ecosystem services through high Biodiversity-based Mediterranean Farming sYstems. Biodiversify. Project coordinator: Eric Justes. Spanish partner PI: Jorge Lampurlanés Castel. Funding Body: Partnership for Research and Innovation in the Mediterranean Area (PRIMA). Section 2 Multi-topic 2020 Call. Acciones de Programación Conjunta Internacional. Duration: 01/10/2020-30/09/2023.

Increasing the productivity and sustainability of the European production plant protein by closing the grain legumes yield gap. Legume Gap. Project coordinator: Fred Stoddard. **Spanish partner PI: Daniel Plaza-Bonilla.** Funding Body: FACCI-JPI SUSCROP. Acciones de Programación Conjunta Internacional. Duration: 04/01/2019-03/31/2022.

Publicacions Recents

Lamichhane, J.R.; Alletto, L.; Cong, W.; Dayoub, E.; Maury, P.; **Plaza-Bonilla, D.**; Reckling, M.; Saia, S.; Soltani, E.; Tison, E.; Tison, G.; Debaeke, P. 2023. Relay cropping for sustainable intensification of agriculture across temperate regions: crop management challenges and future research priorities. *Field Crops Research* 291, 108795. DOI: doi.org/10.1016/j.fcr.2022.108795

Talukder, R.; **Plaza-Bonilla, D.**; Cantero-Martínez, C.; Wendroth, O.; Lampurlanés, J. 2023. Soil hydraulic properties and pore dynamics under different tillage irrigated crop sequences. *Geoderma* 430, 116293. DOI:10.1016/j.geoderma.2022.116293

Talukder, R.; **Plaza-Bonilla, D.**; Cantero-Martínez, C.; Di Prima, S.; Lampurlanés, J. 2022. Spatio-temporal variation of surface soil hydraulic properties under different tillage and maize-based crop sequences in a Mediterranean area. *Plant and Soil*. DOI: doi.org/10.1007/s11104-022-05758-x.

Alletto, L.; Celette, F.; Drexler, D.; **Plaza-Bonilla, D.**; Reckling, M. 2022. Editorial: crop diversification, a key pillar for the agroecological transition. *Frontiers in Agronomy*. 4:950822. DOI: 10.3389/fagro.2022.950822.

Talukder, R.; **Plaza-Bonilla, D.**; Cantero, C.; Wendroth, O.; Lampurlanés, J. 2022. Soil gas diffusivity and pore continuity dynamics under different tillage and crop sequences in an irrigated Mediterranean area. *Soil and Tillage Research* 221, 105409. DOI: 10.1016/j.still.2022.105409.

Liu, C.; **Plaza-Bonilla, D.**; Coulter, J.A.; Kutcher, H.R.; Beckie, H.J.; Wang, L.; Floc'h, J-B.; Hamel, C.; Siddique, K.H.M.; Li, L.; Gan, Y. 2022. Diversifying crop rotation enhances agroecosystem services and resilience. *Advances in Agronomy* 173, 299-335. DOI: 10.1016/bs.agron.2022.02.007

Kherif, O.; Seghouani, M.; Justes, E.; **Plaza-Bonilla, D.**; Bouhenache, A.; Zemmouri, B.; Dokukin, P.; Latati, M. 2022. The first calibration and evaluation of the STICS soil-crop model on chickpea-based intercropping system under Mediterranean conditions. *European Journal of Agronomy* 133, 126449.

Plaza-Bonilla, D.; Mary, B.; Valé, M.; Justes, E. 2022. The sensitivity of C and N mineralization to soil water potential varies with soil characteristics: experimental evidences to fine-tune models. *Geoderma* 409, 115644.

Plaza-Bonilla, D.; Lampurlanés, J.; Fernández, F.G.; Cantero-Martínez, C. 2021. Nitrogen fertilization strategies for improved Mediterranean rainfed wheat and barley performance and water and nitrogen use efficiency. *European Journal of Agronomy* 124, 126238.

Pareja-Sánchez, E.; Cantero-Martínez, C.; Álvaro-Fuentes, J.; **Plaza-Bonilla, D.** 2020. Soil organic carbon sequestration when converting a rainfed cropping system to irrigated corn under different tillage systems and N fertilizer rates. *Soil Science Society of America Journal* 84, 1219-1232. DOI: 10.1002/saj2.20116.



- Franco-Luesma, S.; Caverro, J.; **Plaza-Bonilla, D.**; Cantero Martínez, C.; Arrúe, J.L.; Álvaro-Fuentes, J. 2020. Tillage and irrigation system effects on soil carbon dioxide (CO₂) and methane (CH₄) emissions in a maize monoculture under Mediterranean conditions. *Soil and Tillage Research* 196, 104488. DOI: 10.1016/j.still.2019.104488.
- Pareja-Sánchez, E.; Cantero-Martínez, C.; Álvaro-Fuentes, J.; **Plaza-Bonilla, D.** 2020. Impact of tillage and N fertilization rate on soil N₂O emissions in irrigated maize in a Mediterranean agroecosystem. *Agriculture, Ecosystems and Environment*, 287, 106687.
- Franco-Luesma, S.; Caverro, J.; **Plaza-Bonilla, D.**; Cantero Martínez, C.; Tortosa, G.; Bedmar, E.J.; Álvaro-Fuentes, J. 2019. Irrigation system and tillage effects on soil nitrous oxide (N₂O) emissions in a maize (*Zea mays* L.) monoculture under Mediterranean conditions. *Agronomy Journal*. DOI: 10.2134/agronj2019.04.0315.
- Pareja-Sánchez, E.; **Plaza-Bonilla, D.**; Álvaro-Fuentes, J.; Cantero-Martínez, C. 2019. Is it feasible to reduce tillage and N use while improving maize yield in irrigated Mediterranean agroecosystems? *European Journal of Agronomy* 109, 125919. DOI: 10.1016/j.eja.2019.125919.
- Ramos, M.C.; Pareja-Sánchez, E.; **Plaza-Bonilla, D.**; Cantero-Martínez, C.; Lampurlanés, J. 2019. Soil sealing and soil water content under no-tillage and conventional tillage in irrigated corn: effects on grain yield. *Hydrological Processes* 33, 2095-2109. DOI: 10.1002/hyp.13457.
- Franco-Luesma, S.; Álvaro-Fuentes, J.; **Plaza-Bonilla, D.**; Arrúe, J.L.; Cantero Martínez, C.; Caverro, J. 2019. Influence of irrigation time and frequency on greenhouse gas emissions in a solid-set sprinkler-irrigated maize under Mediterranean conditions. *Agricultural Water Management* 221, 303-311. DOI: 10.1016/j.agwat.2019.03.042.
- Pareja-Sánchez, E.; Cantero-Martínez, C.; Álvaro-Fuentes, J.; **Plaza-Bonilla, D.** 2019. Tillage and nitrogen fertilization in irrigated maize: key practices to reduce soil CO₂ and CH₄ emissions. *Soil and Tillage Research* 191, 29-36. DOI: 10.1016/j.still.2019.03.007.
- Plaza-Bonilla, D.**; Nogué-Serra, I.; Raffaillac, D.; Cantero-Martínez, C.; Justes, E. 2018. Carbon footprint of cropping systems with grain legumes and cover crops: A case-study in SW France. *Agricultural Systems* 167, 92-102. DOI: 10.1016/j.agsy.2018.09.004.
- Plaza-Bonilla, D.**; Álvaro-Fuentes, J.; Bareche, J.; Pareja-Sánchez, E.; Justes, E.; Cantero-Martínez, C. 2018. No-tillage reduces long-term yield-scaled soil nitrous oxide emissions in rainfed Mediterranean agroecosystems: a field and modeling approach. *Agriculture, Ecosystems and Environment* 262, 36-47. DOI: 10.1016/j.agee.2018.04.007
- Álvaro-Fuentes, J.; **Plaza-Bonilla, D.**; Arrúe, J.L.; Cantero-Martínez, C. 2018. Pig slurry incorporation with tillage does not reduce short-term soil CO₂ fluxes. *Soil and Tillage Research* 179, 82-85. DOI: 10.1016/j.still.2018.02.002.
- Pareja-Sánchez, E.; **Plaza-Bonilla, D.**; Ramos, M.C.; Lampurlanés, J.; Álvaro-Fuentes, J.; Cantero-Martínez, C. 2017. Long-term no-till as a means to maintain soil surface structure in an agroecosystem transformed into irrigation. *Soil and Tillage Research* 174, 221-230. DOI: 10.1016/j.still.2017.07.012.
- Plaza-Bonilla, D.**; Álvaro-Fuentes, J.; Bareche, J.; Masgoret, J.; Cantero-Martínez, C.; 2017. Delayed sowing improved barley yield in a no-till rainfed Mediterranean agroecosystem. *Agronomy Journal* 109, 1249-1260. DOI: 10.2134/agronj2016.09.0537.



Plaza-Bonilla, D.; Cantero-Martínez, C.; Arrúe, J.L.; Lampurlanés, J.; Álvaro-Fuentes, J. 2017. Do no-till and pig slurry application improve barley yield and water and nitrogen use efficiencies in rainfed Mediterranean conditions? *Field Crops Research* 203, 74-85. DOI: 10.1016/j.fcr.2016.12.008.

Sanz-Cobena, A.; Lassaletta, L.; Aguilera, E.; del Prado, A.; Garnier, J.; Billen, G.; Iglesias, A.; Sánchez, B.; Guardia, G.; Abalos, D.; **Plaza-Bonilla, D.**; Puigdueta, I.; Moral, R.; Galán, E.; Arriaga, H.; Merino, P.; Infante-Amate, J.; Meijide, A.; Pardo, G.; Alvaro-Fuentes, J.; Gilsanz C.; Báez, D.; Doltra, J.; González-Ubierna, S.; Cayuela, M.L.; Menendez, S.; Diaz-Pines, E.; Le-Noe, J.C.; Quemada, M.; Estellés, F.; Calvet, S.; van Grinsven, H.; Westhoek, H.; Sanz, M.J.; Sánchez-Jimeno, B.; Vallejo, A.; Smith, P. 2017. Strategies for greenhouse gas emissions mitigation in Mediterranean agriculture: A review. *Agriculture, Ecosystems and Environment* 238, 5-24. DOI: 10.1016/j.agee.2016.09.038

Álvaro-Fuentes, J., Arrúe, J.L., Bielsa, A., Cantero-Martínez, C., **Plaza-Bonilla, D.**, Paustian, K. 2017. Simulating climate change and land use effects on soil nitrous oxide emissions in Mediterranean conditions using the Daycent model. *Agriculture, Ecosystems and Environment* 238, 78-88. DOI: 10.1016/j.agee.2016.07.017.

Plaza-Bonilla, D.; Léonard, J.; Peyrard, C.; Mary, B.; Justes, E. 2017. Precipitation gradient and crop management affect N₂O emissions: simulation of mitigation strategies in rainfed Mediterranean conditions. *Agriculture, Ecosystems and Environment* 238, 89-103. DOI: 10.1016/j.agee.2016.06.003.

Plaza-Bonilla, D.; Nolot, J.M.; Raffaillac, D.; Justes, E. 2017. Innovative cropping systems to reduce N inputs and maintain wheat yields by inserting grain legumes and cover crops in southwest France. *European Journal of Agronomy* 82, 331-341. DOI: 10.1016/j.eja.2016.05.010.

Cantero-Martínez, C.; **Plaza-Bonilla, D.**; Angás, P.; Álvaro-Fuentes, J. 2016. Best management practices of tillage and nitrogen fertilization in Mediterranean rainfed conditions: combining field and modelling approaches. *European Journal of Agronomy* 79, 119-130. DOI: 10.1016/j.eja.2016.06.010.

Álvaro-Fuentes, J.; Arrúe, J.L.; Cantero-Martínez, C.; Isla, D. **Plaza-Bonilla, D.**; Quílez, D. 2016. Fertilization scenarios in sprinkler irrigated corn under Mediterranean conditions: effects on greenhouse gas emissions. *Soil Science Society of America Journal* 80, 662-671. DOI:10.2136/sssaj2015.04.0156.

Lampurlanés, J.; **Plaza-Bonilla, D.**, Álvaro-Fuentes, J.; Cantero-Martínez, C. 2016. Long-term analysis of soil water conservation under different tillage systems in mediterranean rainfed conditions. *Field Crops Research* 189, 59-67. DOI: 10.1016/j.fcr.2016.02.010.

Plaza-Bonilla, D.; Nolot, J.M.; Passot, S.; Raffaillac, D.; Justes, E. 2016. Grain legume-based rotations managed under conventional tillage need cover crops to mitigate soil organic matter losses. *Soil and Tillage Research* 156, 33-43. DOI: 10.1016/j.still.2015.09.021.

Plaza-Bonilla, D.; Arrúe, J.L.; Cantero-Martínez, C.; Fanlo, R.; Iglesias, A.; Álvaro-Fuentes, J. 2015. Carbon management in dryland agricultural systems. A review. *Agronomy for Sustainable Development* 35, 1319-1334. DOI: 10.1007/s13593-015-0326-x

Plaza-Bonilla, D.; Nolot, J.M.; Raffaillac, D.; Justes, E. 2015. Cover crops mitigate nitrate leaching in cropping systems including grain legumes: Field evidence and model simulations. *Agriculture, Ecosystems and Environment* 212, 1-12. DOI:10.1016/j.agee.2015.06.014.

Plaza-Bonilla, D.; Cantero-Martínez, C.; Bareche, J.; Arrúe, J.L.; Álvaro-Fuentes, J. 2014. Soil carbon dioxide and methane fluxes as affected by tillage and N fertilization in dryland conditions. *Plant and Soil* 381, 111-130. DOI: 10.1007/s11104-014-2115-8.



Plaza-Bonilla, D.; Álvaro-Fuentes, J; Arrúe, J.L.; Cantero-Martínez, C. 2014. Tillage and nitrogen fertilization effects on nitrous oxide yield-scaled emissions in a rainfed Mediterranean area. *Agriculture, Ecosystems and Environment* 189, 43-52. DOI: 10.1016/j.agee.2014.03.023

Álvaro-Fuentes, J.; **Plaza-Bonilla, D.;** Arrúe, J. L.; Cantero-Martínez, C. 2014. Soil organic carbon storage in a no-tillage chronosequence under Mediterranean conditions. *Plant and Soil* 376, 31-41. DOI: 10.1007/s11104-012-1167-x

Plaza-Bonilla, D.; Álvaro-Fuentes, J; Cantero-Martínez, C. 2014. Identifying soil organic carbon fractions sensitive to agricultural management practices. *Soil and Tillage Research* 139, 19-22. DOI: 10.1016/j.still.2014.01.006

Plaza-Bonilla, D.; Álvaro-Fuentes, J.; Hansen, N.C., Lampurlanés, J., Cantero-Martínez, C. 2014. Winter cereal root growth and aboveground-belowground ratios as affected by site and tillage system in dryland Mediterranean conditions. *Plant and Soil*. 374, 925-939. DOI: 10.1007/s11104-013-1926-3.

Plaza-Bonilla, D.; Cantero-Martínez, C., Álvaro-Fuentes, J. 2014. Soil management effects on soil greenhouse gases production at the macroaggregate scale. *Soil Biology & Biochemistry* 68, 471-481. DOI: 10.1016/j.soilbio.2013.10.026

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Plaza-Bonilla, D.; Cantero-Martínez, C.; Viñas, P.; Álvaro-Fuentes, J. 2013. Soil aggregation and organic carbon protection in a no-tillage chronosequence under Mediterranean conditions. *Geoderma*. 193-194: 76-82. DOI:10.1016/j.geoderma. 2012.10.022 [<http://dx.doi.org/10.1016/j.geoderma.2012.10.022>].

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