



Carlos Cantero-Martínez

Full Professor

Personal Information



Position: Full Professor

Area of expertise: Agronomy

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University degrees

- Master of Science (M.Sc.) in Agricultural Sciences, Polytechnic University of Catalonia (UPC) (1984)
- Ph.D. in Agricultural Sciences, Polytechnic University of Catalonia (UPC) (1989)

Professional experience

- 1983 - 1998. Assistant professor. Universitat de Lleida (UdL)
- 1998 - 2009. Associate Professor, UdL
- Since 2009. Full professor, UdL

Research

- Sustainable Agronomy for Mediterranean areas.
- Integrated application of agronomic techniques for the optimization of agricultural productivity in Mediterranean agricultural systems.
- Conservation agriculture.
- Crop diversification. Crop rotations and alternative crops.
- C and N dynamics and on crop productivity and environmental impact
- Maintenance and Development of Biodiversity.
- Assessment of agricultural practices for climate change mitigation and adaptation. GHG quantification.



Teaching

- **INTEGRATED PRACTICES: ENGINEERING MANAGEMENT OF AGRICULTURAL PRODUCTION** AND **Degree in Agricultural and Food Engineering**
<https://guiadocent.udl.cat/pdf/en/>
<http://www.geaa.udl.cat/en/>
- **INTEGRATED PRACTICES: ENGINEERING MANAGEMENT** AND **Degree in Agricultural and Food Engineering**
<https://guiadocent.udl.cat/pdf/en/>
<http://www.geaa.udl.cat/en/>
- **CROP PRODUCTION TECHNOLOGY** **Degree in Agricultural and Food Engineering**
<https://guiadocent.udl.cat/pdf/en/>
<http://www.geaa.udl.cat/en/>
- **INTEGRATED PEST MANAGEMENT PROGRAMS** **Master's Degree in Integrated Pest Management**
<https://guiadocent.udl.cat/pdf/en/>
<http://www.ipm.udl.cat/ca/index.f>
- **AGRONOMY: AGRICULTURAL SYSTEMS** **Master's Degree in Integrated Pest Management**
<https://guiadocent.udl.cat/pdf/en/>
<http://www.ipm.udl.cat/ca/index.f>

Recent Projects and Publications

Projects

Diversificación de Cultivos para la Sostenibilidad de Agrosistemas Mediterráneos (DISOSMED project). Proyecto PNI-CICYT num. AGL2017-84529-C3-3-R. Fechas 2018-2021. IP: Dr. Carlos Cantero Martínez.

Tecnologías innovadoras para diagnóstico, prevención y eliminación de contaminantes emergentes (antibióticos) de las aguas del territorio POCTEFA. (OUTBIOTICS). EU. Interreg EU España-Francia-Andorra. Fechas 2018-2020. Investigador responsable: Dr. Juan Ramón Castillo Suarez.

Proyecto: Increasing productivity and sustainability of European plant protein production by closing the grain legume yield gap (LegumeGap Project). SuSCrop – ERA-NET Cofund on Sustainable Crop Production. FACCEJPI. Fechas 2019-2021. IP en UdL: Dr. Daniel Plaza Bonilla.

Estudio y análisis de la biodiversidad de cultivos y del pago verde “Greening” en la provincia de Lleida en el Horizonte de la futura reforma de la PAC Pots 2020. Projectes competitivos de l’Institut de Desenvolupament Social i territorial de la Universitat de Lleida (INDEST) 2018CRINDESTANC. Fechas: Dic 2018-.Dic 2020. IPs en la UdL. Dr. Antoni Blanc y Dr. Carlos Cantero Martinez.

Proyecto: Research-based participatory approaches for adopting Conservation Agriculture in the Mediterranean Area (CAMA) . PRIMA 2019. Section 1 RIA – Farming Systems 2019. Conserving water and soil in Mediterranean dry-farming, smallholder agriculture. Fechas Abril 2020- Marzo 2023. IP en UdL: Dr. Carlos Cantero Martínez.

Publications

PAREJA-SANCHEZ E., CANTERO-MARTINEZ C., ALVARO-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. <https://doi.org/10.1016/j.still.2019.03.007> [<https://doi.org/10.1016/j.still.2019.03.007>]



FRANCO-LUESMA S., ALVARO-FUENTES A., PLAZA-BONILLA D., ARRUE JL. CANTERO-MARTINEZ C., CAVERO J. 2019. Influence of irrigation time and frequency on greenhouse gas emissions in a solid-set sprinkler-irrigated maize under Mediterranean conditions. *Agricultura Water Management*, 221: 303-311. <https://doi.org/10.1016/j.agwat.2019.03.042> [<https://doi.org/10.1016/j.agwat.2019.03.042>]

RAMOS CR., PAREJA-SANCHEZ E., PLAZA-BONILLA D., CANTERO-MARTINEZ C., LAMPURLANES. 2019 Soil sealing and soil water content under no tillage and conventional tillage in irrigated corn: Effects on grain yield. *Hydrological Processes*. DOI: 10.1002/hyp.13457.

PAREJA-SANCHEZ E., PLAZA-BONILLA D., ALVARO-FUENTES J., CANTERO-MARTINEZ 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 <https://doi.org/10.1016/j.eja.2019.125919> [<https://doi.org/10.1016/j.eja.2019.125919>]

O'LEARY G.J., NUTTALL J.G., REDEN R.J., CANTERO-MARTINEZ C., MINGUEZ M.I. 2019. Adaptation of Cropping Systems to Drought under Climate Change (Examples from Australia and Spain) Chapter 8. Pag. 71-94 . In Yadav SS., Redden RJ., Hatfield JL., Eberhart AW., Hunter D. *Food Security and Climate Change*. Wiley-Blackwell. 568 Pages Chichester UK. ISBN: 978-1-119-18064-7. DOI: 10.1002/9781119180661.ch4.

ARRUE JL., ALVARO-FUENTES J., PLAZA-BONILLA D., VILLEGAS D. CANTERO-MARTINEZ C. 2019. Managing Drylands for Sustainable Agriculture. Chapter 21. Pag. 529-556. In: M. Farooq and M. Pisante (Eds.) *Innovations in Sustainable Agriculture*. Springer Nature Switzerland AG 2019. 627 Pages. ISBN 978-3-030-23168-2 ISBN 978-3-030-23169-9 (eBook) https://doi.org/10.1007/978-3-030-23169-9_17 [https://doi.org/10.1007/978-3-030-23169-9_17]

ZHU C., FARRE G., ZANGA D., LLOVERAS J., MICHELENA A., FERRIO JP., VOLTAS J., SLAFER G., SAVIN R., ALBAJES R., EIZAGUIRRE M., LOPEZ C., CANTERO-MARTINEZ C., DIAZ-GOMEZ J. NOGAREDA C., MORENO JA. ANGULO E., ESTANY J., PENA RN., TOR M., PORTERO-OTIN M., ERITJA N., ARJO G., SERRANO JCE., MATIAS-GUIU X., TWYMAN RM., SANDMAN G., CAPELL T., CHRISTOU P. 2018. High-carotenoid maize: development of plant biotechnology prototypes for human and animal health and nutrition. *Phytochem Rev.* 17:195-209. <https://doi.org/10.1007/s11101-017-9506-4> [<https://doi.org/10.1007/s11101-017-9506-4>]

ALVARO-FUENTES J., PLAZA-BONILLA D., ARRUE JL., CANTERO-MARTINEZ C. 2018. Pig slurry incorporation with tillage does not reduce short-term soil CO₂ fluxes. *Soil & Tillage Research* 179: 82–8 <https://doi.org/10.1016/j.still.2018.02.002> [<https://doi.org/10.1016/j.still.2018.02.002>]

PLAZA-BONILLA D., ALVARO-FUENTES J., BARECHE J., PAREJA-SANCHEZ E., JUSTES E., CANTERO-MARTINEZ C. 2018 No-tillage reduces long-term yield-scaled soil nitrous oxide emissions in irrigated Mediterranean agroecosystems: A field and modelling approach. *Agriculture, Ecosystems and Environment*, 262: 36–47 <https://doi.org/10.1016/j.agee.2018.04.007> [<https://doi.org/10.1016/j.agee.2018.04.007>]

PLAZA-BONILLA D., NOGUE-SERRA I., RAFFAILLAC D., CANTERO-MARTINEZ 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. <https://doi.org/10.1016/j.agsy.2018.09.004> [<https://doi.org/10.1016/j.agsy.2018.09.004>]

ALVARO-FUENTES J., ARRUE JL.; BIELSA A.; CANTERO-MARTINEZ 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: <http://dx.doi.org/10.1016/j.agee.2016.07.017> [<http://dx.doi.org/10.1016/j.agee.2016.07.017>].



- PLAZA-BONILLA D., CANTERO-MARTINEZ C., BARECHE J., ARRUE JL., LAMPURLANES 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? 2017. *Field Crops Research*, 203:74-85. DOI: <http://dx.doi.org/10.1016/j.fcr.2016.12.008> [<http://dx.doi.org/10.1016/j.fcr.2016.12.008>]
- PLAZA-BONILLA D., ÁLVARO-FUENTES J., BARECHE J., MASGORET A., CANTERO-MARTINEZ C. 2017. Delayed Sowing Improved Barley Yield in a No-Till Rainfed Mediterranean Agroecosystem. *Agronomy Journal*, 109:1249-1260. <https://doi.org/0.2134/agronj2016.09.0537> [<https://doi.org/0.2134/agronj2016.09.0537>]
- PAREJA-SANCHEZ E., PLAZA-BONILLA D., RAMOS MC., LAMPURLANES J., ALVARO-FUENTES J., CANTERO-MARTINEZ 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. <https://doi.org/10.1016/j.still.2017.07.012> [<https://doi.org/10.1016/j.still.2017.07.012>]
- ALVARO-FUENTES J, PLAZA-BONILLA D., ARRUE JL., BIELSA A., CANTERO-MARTINEZ C. 2017. Soil Carbon Dynamics Under Different Land Uses in Dryland Mediterranean Conditions. Chapter 4, pp. 39-52. In: Muñoz, M. and Zornoza, R. (Eds.) "Soil Management and Climate Change: Effects on Organic Carbon, Nitrogen Dynamics, and Greenhouse Gas Emissions", Elsevier, Academic Press. London. UK. ISBN. 9780128121283. <http://dx.doi.org/10.1016/B978-0-12-812128-3.00004-5>.
- RECASENS J., GARCIA AL., CANTERO-MARTINEZ C., TORRA J., ROYO-ESNAL A. 2016. Long-term effect of different tillage systems on the emergence and demography of *Bromus diandrus* in rainfed cereal fields. *Weed research*, 56:31-40. DOI: 10.1111/wre.12185.
- LAMPURLANES J.; PLAZA-BONILLA D.; ÁLVARO-FUENTES J.; CANTERO-MARTINEZ C. 2016. Long-term analysis of soil water conservation and crop yield under different tillage systems in Mediterranean rainfed conditions. *Field Crops Research*, 189: 59-67 DOI:10.1016/j.fcr.2016.02.010.
- ALVARO-FUENTES J.; ARRUE JL.; CANTERO-MARTINEZ C.; ISLA R.; PLAZA-BONILLA D., QUILEZ 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
- CANTERO-MARTINEZ C.; PLAZA-BONILLA D.; ANGAS P.; ALVARO-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: <http://dx.doi.org/10.1016/j.eja.2016.06.010> [<http://dx.doi.org/10.1016/j.eja.2016.06.010>].
- CARDADOR L., DE CACERES M., GIRALT D., BOTA G., AQUILUÉ N., ARROYO B., MOUGEOT F., CANTERO-MARTINEZ C., VILADOMIU L, ROSELL J., CASAS F., ESTRADA A., ALVARO-FUENTES J., BROTONS L. 2015. Tools for exploring habitat suitability for steppe birds under land use change scenarios. *Agriculture, Ecosystems and Environment*, 200:119-125. DOI:10.1016/j.agee.2014.11.013.
- CASTAÑEDA-VERA A., LEFFELAAR PA., ALVARO-FUENTES J., CANTERO-MARTINEZ C., MINGUEZ I. 2015. Selecting crop models for decision making in wheat insurance. *European Journal for Agronomy*, 68: 97-116. DOI:10.1016/j.eja.2015.04.008.
- PLAZA-BONILLA D., ARRUE JL., CANTERO-MARTINEZ C., FANLO R., IGLESIAS A., ALVARO-FUENTES C. 2015. Carbon management in dryland agricultural systems. A review. *Agronomy for Sustainable Development*, 35:1319-1334. DOI: 10.1007/s13593-015-0326-x



ALVARO-FUENTES J., PLAZA-BONILLA D., ARRUE JL., LAMPURLANES J., CANTERO-MARTINEZ C., 2014. Soil organic carbon storage in a no-tillage chronosequence under Mediterranean conditions. *Plant and Soil*, 376:31-4. DOI 10.1007/s11104-012-1167-x.

PLAZA-BONILLA D., CANTERO-MARTINEZ C., ALVARO-FUENTES J. 2014. Soil management effects on soil greenhouse gases production at the macroaggregate scale. *Soil Biology & Biochemistry*. 68-471-481. <http://dx.doi.org/10.1016/j.soilbio.2013.10.026> [<http://dx.doi.org/10.1016/j.soilbio.2013.10.026>]

PLAZA BONILLA D., ÁLVARO-FUENTES J., HANSEN NC., LAMPURLANES J., CANTERO-MARTINEZ C. 2014. Winter cereal root growth and aboveground-belowground biomass ratios as affected by site and tillage system in dryland Mediterranean conditions. *Plant and Soil*, 374: 925-939. DOI10.1007/s11104-013-1926-3.

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PLAZA-BONILLA D., ÁLVARO-FUENTES J., ARRUE JL., CANTERO-MARTINEZ C. 2014. Tillage and nitrogen fertilization effects on nitrous oxide yield-scaled emissions in a rainfed Mediterranean área. *Agriculture, Ecosystems and Environment*, 189:43-52. <http://dx.doi.org/10.1016/j.agee.2014.03.023> [<http://dx.doi.org/10.1016/j.agee.2014.03.023>]

CARDADOR L., CACERES M., BPTA G., GIRALT D., CASAS F., ARROYO B., MOUGEOT F., CANTERO-MARTINEZ C., MONCUNILL J. BUTLERS S., BROTONS L. 2014. A Resource-Based Modelling Framework to Assess Habitat Suitability for Steppe Birds in Semiarid Mediterranean Agricultural Systems. *PLoS ONE* 9(3): e92790. DOI:10.1371/journal.pone.0092790

PLAZA-BONILLA D., CANTERO-MARTINEZ C., BARECHE J., ARRUE JL. 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

GARCIA AL., ROYO-ESNAL A., TORRA J., CANTERO-MARTINEZ C., RECASENS J. 2014. Integrated management of *Bromus Diandrus* in dryland cereal fields under no-til. *Weed Research*: 54- 408-417. DOI:10.1111/wre.12088

ARRÚE JL, ÁLVARO-FUENTES J, CANTERO-MARTINEZ C, PLAZA-BONILLA D. 2014. Beneficios agroambientales de la reducción del laboreo en los secanos semiáridos del valle del Ebro, pp. 373-382. En: J Arnáez, P González-Sampériz, T Lasanta y B L Valero Garcés (editores), *Geoecología, cambio ambiental y paisaje: homenaje al profesor José María García-Ruiz*. Instituto Pirenaico de Ecología (CSIC) y Universidad de La Rioja, Logroño 2014 (ISBN: 978-84-96487-83-3).

PLAZA-BONILLA D., CANTERO-MARTINEZ 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>]

PLAZA-BONILLA D., CANTERO-MARTINEZ C., ÁLVARO-FUENTES J. 2013. Soil aggregate stability as affected by fertilization type under semiarid no-tillage conditions. *Soil Science Society of America Journal*. 77:284-292.

ÁLVARO-FUENTES J., MORELL F.J., MADEJON E., LAMPURLANES J., ARRUE JL., CANTERO-MARTINEZ C. 2013. Soil biochemical properties in a semiarid Mediterranean agroecosystem as affected by long-term tillage and N fertilization *Soil and Tillage Res.*, 129: 69-74.



ALBAJES R., CANTERO-MARTINEZ C., CAPEL T., CHRISTOU P., GALCERAN J., LOPEZ-GATIUS F., MARIN S., MARTIN-BELLOSO O., MOTILVA MJ., NOGAREDA C., PEMAN J., PUY J., RECASENS J., ROMAGOSA I., ROMERO MP., VANCHIS V., SAVIN R., SLAFER G., SOLIVA-FORTUNY R., VIÑAS I., VOLTAS J. 2013. Building bridges: an integrated strategy for sustainable food production throughout the value chain. *Molecular Breeding*, 32:743-770. DOI 10.1007/s11032-013-9915-z.

MORELL FJ., WHITMORE AP., ÀLVARO-FUENTES J., LAMPURLANES J., CANTERO-MARTINEZ C. 2012. Root respiration of barley in a semiarid Mediterranean agroecosystem: field and modelling approaches. *Plant and Soil*, 351:135-143.

ALVARO-FUENTES J., MORELL FJ., PLAZA-BONILLA D., ARRUE JL., CANTERO-MARTINEZ C., 2012. Modelling tillage and nitrogen fertilization effects on soil organic carbon dynamics. *Soil and Tillage Res.*, 120: 32-39.

MORELL FJ., CANTERO-MARTINEZ C., ALVARO FUENTES J., LAMPURLANES J. 2011. Root growth of barley as affected by tillage systems and N fertilization in a semiarid Mediterranean agroecosystem. *Agronomy Journal*, 103:1270-1275.

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ÀLVARO-FUENTES J., EASTER M., CANTERO-MARTINEZ C., PAUSTIAN K. 2011. Modelling soil organic carbon stocks and their changes in the northeast of Spain. *European Journal of Soil Science*, 62:685-695.

MORELL FJ., LAMPURLANES J., ÀLVARO-FUENTES J., CANTERO-MARTINEZ C. 2011 Yield and water use efficiency of barley in a semiarid Mediterranean agroecosystem: Long-term effects of tillage and N fertilization. *Soil and Tillage Res.*, 117: 76-84.

PLAZA-BONILLA D., CANTERO-MARTINEZ C., ALVARO FUENTES J., 2010. Tillage effects on soil aggregation and soil organic carbon distribution under Mediterranean semiarid conditions. *Soil Use and Management*, 26:465-474.

MORELL FJ., ALVARO FUENTES J., LAMPURLANES J., CANTERO-MARTINEZ C. 2010. Soil CO₂ fluxes following tillage and rainfall events in a semiarid Mediterranean agroecosystem: effects of tillage systems and nitrogen fertilization. *Agriculture, Ecosystems and Environment*, 139: 167-173.

ALVARO-FUENTES J., CANTERO-MARTINEZ C. 2010. Potential to mitigate anthropogenic CO₂ emissions by tillage reduction in dryland soils of Spain. *Spanish Journal of Agricultural Research*, 8:1271-1276.

Per més informació (Consultes GREC [<http://webgrec.udl.cat/cgi-bin/DADREC/crgen.cgi?FONT=3&IDI=CAT&PID=367567&IDNC=201210161350170>])