

Prof. Dr. Ing. M Inés Mínguez
Full Professor of Crop Ecology and Agronomy

Address

Research Centre for the Management of Agricultural and Environmental Risks (CEIGRAM-UPM)
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Academic career

- Full Professor (1991-) Technical University of Madrid (UPM)
- Associate Professor (1985- 1991) Univ. of Córdoba, Spain
- Lecturer (1981-1985) Univ. of Córdoba, Spain
- Professional Appointments:
 - Deputy Director of CEIGRAM-UPM (2013-2014 and 2016-April 2018)
 - Director of CEIGRAM-UPM (2014-2016)
 - Deputy Vice-Rector for Research at UPM (2008-2012)
 - Seconded National Expert; European Commission (EC), DG-Research, Brussels (2005-2007)
 - Visiting Professor Joint Centre for Crop Innovation, The University of Melbourne, Australia (2004-2005)
 - Visiting Scientist, The Grassland Research Institute, Berks, UK (1982-1983)

Education

- Doctorate in Agriculture Engineering, UPM., 1981
- Agricultural Engineer, UPM, 1978
- French and English Language Certifications. French Baccalauréat (Bac C, 1972)

Consulting work

International Organisations

- Member of the Governing Board of FACCE-JPI (Jan-2015-Sept.2017). Agriculture, Food Security and Climate Change Joint Programme Initiative of the EU.
- Member of the Advisory Group Societal Challenge 2 and LEIT Biotechnology in H2020 DG-Research and Innovation, H20202 (2013- 2015)
- Expert for the Standing Committee on Agricultural Research (SCAR) European Commission DG-RTD (EU and Member States) Representing Spain (2009-11)
- Member at the Steering Committee for Human Resources and Mobility. (European Commission, DG-RTD) Spain (2008-10)
- Member of the Editorial Board of Australian Journal of Agricultural Sciences, CSIRO publishing, Australia (2005-09)
- Member of Scientific Committee for 10th ESA Congress European Society for Agronomy, 2008
- Member of the Panel of Experts for EU Energy Facility, DG-DEVCO, and Manager of INCO projects in Dg-Research, European Commission, 2005-07
- Evaluator for FP6, FP7, H2020 European Commission projects

National Governments and Institutions

- Member of the Evaluation Board for Selection of Post-doctoral positions in the Juan de la Cierva Programme (2016)
- Member of the Committee for Engineering and Architecture of the Andalusia Regional Agency for Evaluation and Certification for Bachelor, Master of Science and PhD Studies (2008-2015)
- Advisor to the Ministry of Science and Innovation for International Programmes and EU Programmes, 2008-2011, Spain
- Member of the Editorial Board of the Spanish Journal of Agriculture, INIA, Spain (2000-2004; 2014-2016)
- Co-Editor for the Special issue of the journal Agriculture on "Intercropping Systems for Sustainable Agriculture" from Nov.2019
- Evaluator for the National Research Agency (AEI) since 2019 for National and Regional projects

Research projects

- 18 competitive projects, incl. 4 international. Among those: Informational Assessment of Agricultural Risk Management Information Systems (IFAD) International Fund for Agricultural Development (IFAD). Duration: 2015-2016.

5 projects with private companies, among those: "Validation of the World Research Institute (WRI) classification of water deficit areas of interest to PepsiCo in the Iberian Peninsula". 2018. PI: Inés Mínguez and as researcher: Impacto de la nueva PAC 2014-2020 en el mercado agroquímico. BASF: June 2014-Feb-2015.- Environmental Risk and Impact Assessment of the PepsiCo Crop Sourcing Locations. 2014-2015. Currently involved in H2020 DIVERSify: Designing Innovative plant teams for Ecosystem Resilience and agricultural Sustainability April 2017-March 2021

- Has managed over ca. 1.6 M € / year as Director of CEIGRAM of grants, plus 150,000 € of operating budget

Supervision work

- 8 doctoral dissertations
- Various end-of-degree works and Master's thesis.

Publications and research areas

- 95 published references, including 43 refereed journals and 13 book chapters.
- 11 invited Conferences papers to European Soc. for Agronomy, NATO, and International Fed. Operational Res. Soc., among others.
- Research areas: water use, water use efficiency in crops, rainfed systems; grain legume crops, crop simulation, climate variability and change: impacts and adaptation, irrigation requirements, projection uncertainties; yield gap analysis.
- Translation of Loomis, J.R., and Connor, D.J. (1996) *Crop Ecology: Productivity and Management in Agricultural Systems*. Cambridge University Press. 538 p. into Spanish. Published by Mundi Prensa; Madrid, in 2002. Translated by Conde J.R., Mínguez, M.I. y Cantero, C. Coordinator and editor: M. I. Mínguez.

Some of the publications are the following:

Legume crops and rotations: field work and model building

- Sau, F. (*) and Mínguez, M.I. 1990. Response to water stress and recovery of nitrate-fed and nitrogen-fixing faba bean. *Journal of Experimental Botany*, 41, 1207-1211.
- Mínguez, M.I., Ruiz-Nogueira, B. and Sau, F. 1993. Faba bean productivity and optimum canopy management under a Mediterranean climate. *Field Crops Research*, 33, 435-447.
- Rídao, E. (*), Oliveira, C.F., Conde, J.R. and Mínguez, M.I. 1996. Radiation interception and use, and spectral reflectance of contrasting canopies of autumn sown faba beans and semi-leafless peas. *Agriculture and Forest Meteorology*, 79, 183-203.
- Rídao, E. (*), Conde, J.R. and Mínguez, M.I. 1998. Estimating fAPAR from nine vegetation indices for irrigated nonirrigated faba bean and semi-leafless pea canopies. *Remote Sensing of Environment*, 66, 87-100.
- Sau, F. (*) and Mínguez, M.I. 2000. Adaptation of indeterminate faba beans to weather and management under a Mediterranean climate. *Field Crops Research*, 66: 81-99.
- Díaz-Ambrona, C.H. (*) and Mínguez, M.I. 2001. Cereal-legume rotations in a Mediterranean environment: Biomass and Yield Production. *Field Crops Research*, 70: 139-151.
- Boote, J., Mínguez, M.I. and Sau, F. 2002. Adapting the CROPGRO-legume model to simulate growth of faba bean. *Agronomy Journal*, 94, 743-756.
- Ruiz-Ramos, M. (*) and Mínguez, M.I. 2006. ALAMEDA, A structural-functional model for faba-bean crops: morphological parameterisation and verification. *Annals of Botany*, 97, 377-388.

Crop models use and limitations, risk management, and yield gap analysis

- Castañeda-Vera, A. (*), Barrios, L., Garrido, A., Mínguez, M.I. 2014. Assessment of insurance coverage and claims in rainfall related risks in processing tomato in W Spain. *European J. of Agronomy*, 59: 39-48.
- Castañeda-Vera, A. (*), Leffelaar, P.A., Álvaro-Fuentes, J., Cantero-Martínez, C. and Mínguez, M.I. 2015. Selecting crop models for decision making in wheat insurance. *European J. of Agronomy*, 68: 98-116.
- Global Yield Gap Atlas: <http://www.yieldgap.org/web/guest/europe> Mínguez M.I and Castañeda-Vera A. responsible for Spain; European Coordinator R. Schils, Wageningen University.
- Castañeda-Vera, A. (*), Saa, A., Mínguez, M.I., Garrido, A. 2018. Crop insurance demand in wheat production: focusing on yield gaps and asymmetric information. *Spanish Journal of Agricultural Research*, 15:e0119, 12 pages. doi.org/10.5424/sjar/2017154-10716
- Schils, R. et al. (52 authors) 2018. Yield gaps across Europe. *European Journal of Agronomy* 101: 109-120. doi.org/10.1016/j.eja.2018.09.003

Plant and crop physiology

- Minchin, F.R., Sheehy, J.E., Mínguez, M.I. and Witty, J.F. 1985. Characterization of the resistance to oxygen diffusion in legume nodules. *Annals of Botany*, 55, 53-60.
- Minchin, F.R., Mínguez, M.I., Sheehy, J.E., Witty, J. F. and Skot, L. 1986. Relationships between nitrate and oxygen supply in symbiotic nitrogen fixation by white clover. *Journal of Experimental Botany*, 37, 1103-1113.
- Zheng, D., Yang, X., Mínguez, M.I., Mu, C., He, Q. and Wu, X. 2018. Effect of freezing temperature and duration on winter survival and grain yield of winter wheat. *Agricultural and Forest Meteorology* 260–261: 1–8.
- Mínguez, M.I. and Rubiales D. 2020 (in press). Faba Bean. In: Sadras, V. and Calderini, D. (Eds). *Crop Physiology: Case Histories for Major Crops*. Academic Press (Elsevier). ISBN: 9780128191941.

Discussion papers:

- Connor, D.J. and Mínguez, M.I. 2006. Looking at Biofuels and Bioenergy. Letter in *Science*, 23 June 2006 on Biofuels. Vol. 312 p1743; www.sciencemag.org
- Connor D.J. and Mínguez M.I. 2012. Evolution not revolution of farming systems will best feed and green the world. *Global Food Security* 1: 106-113.
- Fereres, E., Villalobos, F.J., Orgaz, F., Mínguez, M.I., van Halsema, G. and Perry, C.J. 2017. Commentary: On the water footprint as an indicator of water use in food production. *Irrigation Science*, 35:83–85.
- Sadras, V.O., Alston, J., Aphalo, P., Connor, D.J., Denison, D.R., Fischer, T., Gray, R., Hayman, P., Kirkegaard, J., Kirchmann, H., Kropff, M., Lafitte, R., Langridge, P., Lenne, J., Mínguez, M.I., Passioura, J.B., Porter, J.R., Reeves, T., Rodríguez, D., Ryan, M., Villalobos, F.J., Wood, D. 2020. Making science more effective for agriculture. *Advances in Agronomy*, 163: 153-177. doi:10.1016/bs.agron.2020.05.003.

Climate change and variability:

- Iglesias, A. (*) and Mínguez, M.I. 1997. Modelling crop-climate interactions in Spain: vulnerability and adaptations of different agricultural systems to climate change. *Mitigation and Adaptation Strategies for Global Change*, 1: 273-288.
- Guereña, A. (*), Ruiz-Ramos, M., Díaz-Ambrona, C.H., Conde, J.R. and Mínguez, M.I. 2001. Assessment of climate change and agriculture across geographical areas in Spain using a General and a Regional Climate Model. *Agronomy Journal*, 93: 237-49.
- Mínguez, M.I., Ruiz-Ramos, M., Díaz-Ambrona, C. H., Quemada M. and Sau, F. 2007. First-order impacts on winter and summer crops assessed with various high-resolution climate models in the Iberian Peninsula. *Climatic Change* 81: 343-355.
- Olesen, J. E., Carter T. R., Díaz-Ambrona, C. H., Fronzek, S., Heidmann, T., Hickler, T., Holt, T., Mínguez, M. I., Morales, P., Palutikof, J. P., Quemada, M., Ruiz-Ramos, M., Rubæk, G.H., Sau, F., Smith, B. and Sykes, M. T. 2007. Uncertainties in projected impacts of climate change on European agriculture and terrestrial ecosystems based on scenarios from regional climate models. *Climatic Change* 81:123-143
- Ruiz-Ramos, M. and Mínguez, M.I. 2010. Evaluating uncertainty in climate change impacts on crop productivity in the Iberian Peninsula. *Climate Research* 44: 69–82.
- Rey D., Garrido A., Mínguez M.I. and Ruiz-Ramos M. 2011. Impact of climate change on maize's water needs, yields, and profitability under various water prices in Spain. *Spanish Journal of Agricultural Research*, 9: 1047-1058. doi: 10.5424/sjar/20110904-026-11.
- Ruiz-Ramos M., Sánchez E., Gallardo C. and Mínguez M.I. 2011. Impacts of projected maximum temperature extremes for C21 by an ensemble of regional climate models on cereal cropping systems in the Iberian Peninsula. *Natural Hazards and Earth System Sciences* Vol 11: 3275–3291.
- Garrido A., Rey D., Ruiz-Ramos M. and Mínguez M.I. 2011. Climate change and crop adaptation in Spain: consistency of regional climate models. *Climate Research* 49: 211-227.
- Pirttioja, N., Carter, T., Fronzek, S. et al. 2015. Temperature and precipitation effects on wheat yield across a European transect: a crop model ensemble analysis using impact response surfaces. *Climate Research*, 65: 87–105.
- Ruiz-Ramos, M., Rodríguez, A., Dosio, A., Goodess, C. M., Harpham, C., Mínguez, M.I. and Sánchez, E. 2015. Comparing correction methods of RCM outputs for improving crop impact projections in the Iberian Peninsula for 21st century. *Climatic Change* 134, 283-297.
- Gabaldón-Leal, C., Lorite, I.J., Mínguez, M.I., Lizaso, J.I., Dosio, A., Sanchez, E. and Ruiz-Ramos, M. 2015. Strategies for adapting maize to climate change and extreme temperatures in Andalusia, Spain. *Climate Research*, 65: 159–173.
- Tao, F., Rötter, R. P., Palosuo, T., Díaz-Ambrona, C.G.H., Mínguez, M.I., Semenov, M., Kurt Christian Kersebaum, K.C., Nendel, K., Cammarano, D., Hoffmann, H., Ewert, F., Dambreville, A., Martre, P., Rodríguez, L., Ruiz-Ramos, M., Gaiser, T., Höhn, J.G., Salo, T., Ferrise, R., Bindu, M., Schulman, A. H. 2017. Designing future barley ideotypes using a crop model ensemble. *European Journal of Agronomy*, 82, Part A: 144–162.
- O'Leary, G.J., Nuttall, J.G., Redden, R.J., Cantero-Martínez, C., and Mínguez, M.I. 2019. Adaptation of Cropping Systems to Drought under Climate Change (Examples from Australia and Spain). Cap.4. Eds: Shyam Singh Yadav, Robert Redden. John Wiley & Sons, Inc, Oxford.
- Tao, F., Palosuo, T., P. Rötter, R., Hernández Díaz-Ambrona, C. G., Mínguez, M. I., Semenov, A., Christian Kersebaum, K., Cammarano, D., Specka, X., Nendel, C., Kumar Srivastava, A., Ewert, F., Padovan, G., Ferrise, R., Martre, P., Rodríguez, L., Ruiz-Ramos, M., Gaiser, T. and H. Schulman, A. 2019. Why do crop models diverge substantially in climate impact projections? A comprehensive analysis based on eight barley crop models. *Agricultural and Forest Meteorology*: 281. doi.org/10.1016/j.agrformet.2019.107851.

(*): PhD Students' work supervised by M.I. Mínguez. All PhD have tenure jobs, either in research, in the Ministry of Agriculture (MAPAMA), NGOs, or in their own company.