

Part A. PERSONAL INFORMATION

CV date	08/06/2023
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Firstname	ANTONIO		
Family name	RODRÍGUEZ LIZANA		
Gender (*)		Birth date (dd/mm/yyyy)	
Social Security, Passport, ID number			
e-mail	arodriguez2@us.es	URL Web: -	
Open Research and Contributor ID (ORCID)(*)		0000-0003-1436-465X	

(*) Mandatory

A.1. Current position

Position	ASSOCIATE PROFESSOR (Profesor Titular)		
Initial date	19/12/2018		
Institution	UNIVERSIDAD DE SEVILLA		
Department/Center	INGENIERÍA AEROESPACIAL Y MECÁNICA DE FLUIDOS (Área: Ingeniería Agroforestal)/ ETS Ingeniería Agronómica (School of Agricultural Engineering)		
Country	Spain	Teleph. number	954 48 67 96
Key words	Agricultural mechanization, precision farming, airblast sprayers, geostatistics and uncertainty, crop protection, conservation agriculture		

A.2. Previous positions (research activity interruptions, art.45.2.b))

Period	Position/Institution/Country/Interruption cause
29/10/07 - 24/05/12	Profesor Ayudante. School of Agricultural Engineering (US)
October 2010/11	Birth of a child
25/05/20 - 23/02/14	Profesor Ayudante Doctor. School of Agricultural Engineering (US)
July 2013/14	Birth of a child
24/02/14 - 18/12/18	Profesor Contratado Doctor. School of Agricultural Engineering (US)

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Agricultural engineer	University of Córdoba/Spain	2001
PhD thesis (Agricultural Eng.)	University of Córdoba/Spain	2011

PartB. CV SUMMARY (max. 5000 characters, including spaces)

Prof Dr Rodríguez-Lizana is Associate Professor of the School of Agricultural Engineering (ETSIA) at the University of Seville (2007-). He lectures the topics of agricultural mechanization and engineering projects. Prof Dr Rodríguez-Lizana is also a lecturer in the master's degree in digital agriculture (US). He is researcher of the *Mechanization and Rural Technology* group (UCO) from 2008 to the present, and defended his doctoral thesis in 2011. Previously he worked in the Spanish Association for Conservation Agriculture (AEAC/SV) as Project manager (2001–2007), specializing in mechanization and soil protection. This activity involved working on research projects and technology transfer actions to farmers, such as field days.

Prof Dr Rodríguez-Lizana main research lines from 2008 onwards concern agricultural mechanization (from precision agriculture to airblast sprayers, mainly in olive groves) as well as soil protection. He regularly publishes in both lines. Prof Dr Rodríguez-Lizana research is supported by 32 peer-reviewed articles in journals indexed in the JCR database, published with 11 different research groups. Likewise, he has published more than 25 technical publications. He has also coordinated two books and is author of 8 book chapters, and three patents and utility models about spraying. Additionally, he has participated in 28 regional, national and european research projects and contracts. He was principal investigator of a coordinated research project with two subprojects (finished) and two ongoing research projects (2021/22 and

2020/2024). Currently, 4 young researchers are being trained on the research projects directed by Prof. Dr. Rodríguez-Lizana, and a doctoral thesis will be presented in the near future (2023).

Prof Dr Rodríguez-Lizana has taken part in the Pre-commercial Procurement MECAOLIVAR Project, awarded with the National Design and Innovation Prize in 2015 (Ministerio de Economía y Competitividad, Spanish Government). Likewise, he participated as researcher in the project “Advanced technologies for the mechanization of a sustainable agriculture in Andalusia”, awarded by the University of Córdoba in the “Knowledge transfer to the society” modality. He was coordinator of the Line 3 of the Pre-commercial Procurement INNOLIVAR Project (2017/21), which is related to the development of air-assisted sprayers with variable application systems and real-time mixture preparation for olive groves.

The researcher has completed 12 months as postdoctoral researcher in the research center CERENA (Instituto Superior Técnico, Technical University of Lisbon) in the period 2013-2018 & 2022, acquiring knowledge about geostatistical models, stochastic simulation techniques, classification and probability maps. This enables the mapping of agricultural fields to be successfully accomplished, both in mechanization and in soil studies.

Currently, the researcher collaborates with the groups AGR-244, AGR-127 and Cerena Group (Instituto Superior Técnico, Portugal) along with AGR-126 (main research group). We consider that this relationship with research groups of agricultural machinery & data analysis & soil is a noticeable plus, since it allows to provide a multidisciplinary approach to any research Project.

In the medium term, Prof Dr Rodríguez-Lizana would like to integrate the geostatistical techniques and the use of sensors in order to improve airblast spraying, taking into account the spatial variability of agricultural farms. This knowledge, in conjunction with the use of electronic devices in airblast sprayers, would enable farmers to reduce the amounts of plant protection products applied in the crops and a cost saving, thus improving farm sustainability.

Part C. RELEVANT MERITS

C.1. Most important publications in books and journals with "peer review" and in conferences (see instructions). Selected period: 2015-2021.

1. Rodríguez-Lizana A, Pereira MJ, Ribeiro MC, Soares A, Azevedo L, Miranda-Fuentes A, Llorens J. 2021. *Spatially variable pesticide application in olive groves: evaluation of potential pesticide-savings through stochastic spatial simulation algorithms*. Sci. Total Environ. 778, 146111. doi:10.1016/j.scitotenv.2021.146111. **IF=10.754**. Rank: **26/279** (Environmental Sciences).

2. Méndez V, Pérez-Romero A, Solá-Guirado R, Miranda-Fuentes A, Manzano-Agugliaro F, Zapata-Sierra A, Rodríguez-Lizana A. 2019. *In-field estimation of orange number and size by 3D laser scanning*. Agronomy 9. doi: 10.3390/agronomy9120885. **IF=2.603**. Rank: **18/91** (Agronomy).

3. Solá-Guirado RR, Bayano S, Rodríguez Lizana A, Gil-Ribes J, Miranda-Fuentes A. 2018. *Assessment of the accuracy of a multi-beam led scanner sensor for measuring olive canopies*. Sensors 18(12). DOI: 10.3390/s18124406. **IF=3.031**. Rank: **15/61** (Instruments & Instrumentation)

4. Pérez-Ruiz M, Brenes R, Urbano JM, Slaughter DC, Forcella F, Rodríguez-Lizana A. 2018. *Agricultural residues are efficient abrasive tools for weed control*. Agronomy for Sustainable Development, 38: 1–8. **IF=4.263**. Rank: **2/87** (Agronomy)

5. Rodríguez-Lizana A, Pereira MJ, Ribeiro MC, Soares A, Márquez-García F, Ramos A, Gil-Ribes J. 2017. *Assessing local uncertainty of soil protection in an olive grove area with pruning residues cover: a geostatistical cosimulation approach*. Land Degradation & Development, 28: 2086–2097. **IF=7.270**. Rank: **1/34** (SoilScience) & **3/225** (Environmental Sciences).

6. Miranda-Fuentes A, Rodríguez-Lizana A, Cuenca A, González-Sánchez EJ, Blanco-Roldán GL, Gil-Ribes JA. 2017. *Improving plant protection product applications in traditional and intensive olive orchards through the development of new prototype air-assisted sprayers*. Crop Prot. 94, 44–58. **IF=1.920**. Rank: **20/83** (Agronomy).

7. Miranda-Fuentes A, Llorens J, Rodríguez-Lizana A, Cuenca A, Gil E, Blanco-Roldán GL, Gil-Ribes JA. 2016. *Assessing the optimal liquid volume to be sprayed on isolated olive trees according to their canopy volumes*. Sci. Total Environ. 568: 296–305. **IF=4.90**. Rank: **22/229**.

8. Gamarra-Diezma JL, Miranda-Fuentes A, Llorens J, Cuenca A, Blanco-Roldán GL, Rodríguez-Lizana A. 2015. *Testing accuracy of long-range ultrasonic sensors for olive tree canopy measurements*. SENSORS, 15: 2902-2919. **IF=2.03**. Rank: **12/56** (Instruments & Instrumentation).

9. Quebrajo L, Pérez M, Rodríguez-Lizana A, Agüera-Vega J. 2015. *An approach to precise nitrogen management using hand-held crop sensor measurements and winter wheat yield mapping in a mediterranean environment*. Sensors, 15(3): 5504-5517. **IF=2.03**. Rank: **12/56**.

10. Miranda-Fuentes A, Rodríguez-Lizana A, Gil-Moya E, Agüera-Vega J, Gil-Ribes, J. 2015. *Influence of liquid-volume and airflow rates on spray application quality and homogeneity in super-intensive olive tree canopies*. Sci. Total Environ., 537: 250-259. **IF=3.98**. Rank: **32/225**.

C.2. Congress.

1. Moreno M, Ordóñez R, Carbonell R, Pérez F, Rodríguez-Lizana A. 2022. *Spatial biodiversity of epigeal arthropods in an olive grove in Southern Iberia*. 22nd International Multidisciplinary Scientific GeoConference SGEM 2022. Viena, Austria. 6/12/22-8/12/22. pp 415-421. Oral presentation.
2. Rodríguez-Lizana A, Pereira M, Ramos A, Moreno M, Ribeiro M. 2022. *Study of the uncertainty of the amount of pruning in the olive grove using geostatistical algorithms*. 22nd International Multidisciplinary Scientific GeoConference SGEM 2022. Viena, Austria. 6/12/22-8/12/22. pp 431-438. Oral presentation.
3. Miranda A, Godoy A, Rodríguez-Lizana A, Gamarra JL, Blanco -Roldán GL, Gil-Ribes J. 2018. *Adapting the PPP spraying machinery to the european environmental guidelines: field testing of newly-developed air-assisted sprayers for traditional olive canopies*. EURAGENG 2018. Wageningen, The Netherlands, 8-11 july. Oral presentation.
4. Miranda A, Rodríguez-Lizana A, Cuenca A, González EJ, Márquez F, Blanco G, Gil-Ribes J. 2017. *Adapting the spraying machinery to increase the environmental safety in PPP applications in traditional and intensive olive orchards*. Osijek, Croatia. 19-21 june. Oral presentation.
5. Rodríguez Lizana A, Ribeiro M, Soares A, Márquez F, Ramos A, Pereira M. 2016. *Joint implementation of stochastic simulations and a residue decomposition model to evaluate soil protection: a case study in a traditional olive grove*. 11TH International Conference On Geostatistics For Environmental Applications. Lisbon, Portugal. 5-8 july. Oral presentation

C.3. Projects or research lines in which you have participated.

1. Project reference: PID2019-104289RB-C42.
Title: SMART SPRAYING FOR SUSTAINABLE VINEYARDS AND OLIVE GROVE (PIVOS-MAPS). Principal investigator: GREGORIO BLANCO ROLDÁN (UCO) & ANTONIO RODRÍGUEZ LIZANA (US). Rol: Principal Investigator
Funder: Ministerio de Ciencia, Innovación y Universidades (Gobierno de España)
Period: 01/06/2020-31/05/2024. Funding: 93,170.00 €
2. Project reference: 2021/00001587 (Int: US-1380979). Title: Avance multidisciplinar en la gestión y conocimiento de las cubiertas de restos de poda en olivar a escala árbol, parcela y explotación. Principal investigator: ANTONIO RODRÍGUEZ LIZANA & RAFAELA ORDÓÑEZ FERNÁNDEZ (Ifapa). Rol: Principal Investigator. Funder: Programa Operativo Feder andalucía 2014-2020. Period: 01/01/2021-31/12/2022. Funding: 79,987.60 €
3. Proyecto INNOLIVAR MEIC-UCO: Innovación y tecnología para un olivar sostenible. FINANCIADOR: Ministerio de Economía y Competitividad. DURACIÓN: 2017-2021. COORDINATOR OF LINE 3 OF THE PROJECT (AIR-ASSISTED SPRAYERS), 835,000 €): ANTONIO RODRÍGUEZ LIZANA (“Equipo de aplicación para pulverización a copa de olivar intensivo y tradicional, con sistema de aplicación variable y preparación-mezcla de caldo en tiempo real sin generación de residuos”). CoordinaTor: Jesús A. Gil Ribes. Proyecto completo 13,098,734.00 €.
4. Project reference: PP.AVA.AVA2019.007. Title: GESTIÓN DE SUELO Y TECNOLOGÍAS DE LA FERTILIZACIÓN NITROGENADA PARA LA MEJORA AGRONÓMICA Y AMBIENTAL (TECNOFER). Principal investigator: RAFAELA ORDÓÑEZ FERNÁNDEZ (Ifapa). Rol: researcher. Funder: Consejería de Agricultura, Pesca y Desarrollo Rural. Junta de Andalucía. Period: 01/01/2019-31/12/2021. Funding: 161,135.70 €
5. Project reference: GOP31-CO-16-007. Title: DOSAOLIVAR: Dosificación de productos fitosanitarios en el olivar. Principal investigator: JESÚS GIL RIBES. Universidad de Córdoba. Rol: researcher. Funder: CONSEJERÍA DE AGRIC., PESCA Y DESARROLLO RURAL,

COFINANCIADA POR EL MINISTERIO DE AGRICULT. Y PESCA, ALIMENTACIÓN Y MEDIO AMBIENTE. Period: 29/12/2017-29/12/2019. Funding: 175,554.00 €

6. Project reference: LIFE17 CCM/ES/000140 (LIFE AGROMITIGA). Title: DEVELOPMENT OF CLIMATE CHANGE MITIGATION STRATEGIES THROUGH CARBON-SMART AGRICULTURE. Coordinating beneficiary Asociación Española Agricultura de Conservación/SV.Rol: researcher. Funder: LIFE Programme. European Union. Period: 15/09/2018-31/12/2022. Funding: 2,782,957.00 € (total project budget)
7. Project reference: UNSE-CE-3313. Title: OLIVICULTURA DE PRECISIÓN: OPTIMIZACIÓN DEL MONITOREO EN OPERACIONES AGRÍCOLAS Y EVALUACIÓN DE LA CALIDAD DEL ACEITE Y DE LA ACEITUNA DE MESA. Principal investigator: JOSÉ M. QUINTERO ARIZA. Universidad de Sevilla.Rol: researcher. Funder: Ministerio de Economía y Competitividad. Period: 01/01/2016-31/12/2017. Funding: 168,486.75 €
8. Project reference: AGL2013-46343-R. Title: CONTROL DE LAS MALAS HIERBAS MEDIANTE EROSIÓN CON GRÁNULOS IMPULSADOS POR AIRE, PROCEDENTES DERESIDUOS AGRÍCOLAS. Principal investigator: MANUEL PÉREZ RUIZ. Universidad de Sevilla. Rol: researcher. Funder: MINISTERIO DE ECONOMÍA Y COMPETITIVIDAD. Period: 01/01/2014-31/12/2017. Funding: 66,550.00 €
9. Project reference: RTA2010-026-C02-02. Title: ANÁLISIS Y OPTIMIZACIÓN DE LOS SISTEMAS DE MECANIZACIÓN DE CUBIERTAS VEGETALES DE LEGUMINOSAS EN AGRICULTURA ECOLÓGICA. Principal investigator: JESÚS GIL RIBES. Universidad de Córdoba. Rol: researcher. Funder: MINISTERIO DE CIENCIA E INNOVACIÓN (INIA). Period: 01/01/2010-30/11/2014. Funding: 66,003.00 €
10. Project reference: RTA2010-026-C02-01. Title: EMPLEO DE CUBIERTAS VEGETALES DE LEGUMINOSAS COMO SOLUCIÓN A LOS PROBLEMAS DE EROSIÓN Y FALTA DE FERTILIDAD EN OLIVAR ECOLÓGICO. Principal investigator: RAFAELA ORDÓÑEZ FERNÁNDEZ. Ifapa. Rol: researcher. Funder: MINISTERIO DE CIENCIA E INNOVACIÓN (INIA). Period: 01/01/2010-30/11/2014. Funding: 110,040.00 €

C.4. Participation in technology/knowledge transfer activities and exploitation of results.

1. *Mejora de la mecanización y la recolección de la aceituna de mesa.* FINANCIADOR: Interprofesional de Aceituna de Mesa. DURACIÓN: 2018/2021. IP: Jesús Gil Ribes & Gregorio Blanco Roldán. Funding: 529,012.0 €

2. *Diseño, desarrollo y evaluación de un equipo de aplicación optimizada de herbicida en remolacha azucarera.* IP: MANUEL PÉREZ RUIZ. 2012/2013. Funder: AIMCRA. 4,872.00 €.

Patent. Pérez F, Godoy A, Blanco-Roldán G, Gil-Ribes JA, Rodríguez-Lizana A, González-Sánchez EJ. P202130134. Dispositivo de pulverización de inyección directa para vehículo agrícola. UCO y FEDE. Under exploitation. Spain.

Patent. Pérez M, Rodríguez-Lizana A. 2015. Equipo de aplicación por pulverización portátil controlado por GPS para uso docente e investigador. P 201300493. País: España.

Utility model. Lozano E, Gil JA, Blanco Roldán GL, Godoy A, Rodríguez Lizana A, Miranda A. Agricultural Treatment Machine. U202130392. UCO & Mañez y Lozano. Under exploitation. Spain.

C.5. University teaching (2007-present)

More than 3,500 hours imparted at theETSI Agronómica (US) from 2007 to the present in Ingeniería Técnica Agrícola & Grado en Ingeniería Agrícola (especialidades: Explotaciones Agropecuarias; Hortofruticultura y Jardinería) and Máster en Ingeniería Agronómica por la US. Courses taught: 1) Proyectos; 2) Ingeniería del Riego y Maquinaria en Hortofruticultura y Jardinería; 3) Mecanización Agrícola e Ingeniería del Riego en Explotaciones Agropecuarias; 4) Diseño y Cálculo de Infraestructuras Agrarias; 5) Cálculo y Representación Gráfica en Ingeniería Rural; 6) Ingeniería Rural I; 7) Motores y Máquinas Agrícolas; 8) Instalaciones Agroindustriales y Electrificación Rural; 9) Electrotecnia y Construcciones Rurales.