

CURRICULUM VITAE ABREVIADO (CVA)

Part A. PERSONAL INFORMATION

First name	MARÍA SONIA		
Family name	RODRÍGUEZ-CRUZ		
Gender (*)	FEMALE	Birth date (dd/mm/yyyy)	13/07/1972
ID number	07967254P	URL Web: www.irnasa.csic.es/rodriguezcruzms	
e-mail	msonia.rodriguez@irnasa.csic.es		
Open Researcher and Contributor ID (ORCID) (*)	0000-0001-6748-3391		

A.1. Current position

Position	SCIENTIFIC RESEARCHER		
Initial date	22/05/2023		
Institution	SPANISH NATIONAL RESEARCH COUNCIL (CSIC)		
Department / Center	Processes of Degradation of the Environment and its Remediation / Institute of Natural Resources and Agrobiology of Salamanca, IRNASA-CSIC		
Country	SPAIN	Teleph. number	+34 923 219606
Key words	Pesticide, Soil, Fate, Adsorption-desorption, Leaching, Immobilization, Biodegradation, Dissipation, Field trials, Organic amendments, Conservation agriculture, Soil microbiology, Contamination, Remediation		

A.2. Previous positions (research activity interruptions, indicate total months)

Period	Position/Institution/Country/Interruption cause
01/01/1998-31/12/2001	Predoctoral Fellowship FPI-MEC/IRNASA-CSIC/Spain
01/07/2002-30/09/2002	Postdoctoral Fellowship/IRNASA-CSIC/Spain
01/01/2003-01/04/2004	Postdoctoral Fellowship FPI-MEC/Warwick HRI/UK
16/03/2004-15/03/2007	Postdoctoral Researcher I3P-Doctor/IRNASA-CSIC/Spain
16/03/2007-31/08/2007	Postdoctoral Researcher/IRNASA-CSIC/Spain
01/09/2007-31/12/2007	Postdoctoral Researcher (project contract)/CSIC/Spain
01/01/2008-31/07/2008	Postdoctoral Researcher Ramón y Cajal-MEC/CSIC/Spain
01/08/2008-21/05/2023	Titular Scientist/CSIC/Spain

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Pharmacy Licensed	University of Salamanca, Spain	1995
MSc Master degree	University of Salamanca, Spain	1996
PhD Pharmacy (Inorganic Chemistry)	University of Salamanca, Spain	2002

Part B. CV SUMMARY

• **Scientific contributions:** Dr. M. Sonia Rodriguez-Cruz holds a PhD in Pharmacy (2002) by the University of Salamanca (Spain). She has done several Pre-doctoral and Post-doctoral stays (36 months) in different Research Centers at UK (Warwick-HRI), France (INRAe), Italy (Univ. Parma, IRSA-CNR) and Spain (University of Barcelona-IQAC-CSIC). She worked as postdoctoral researcher I3P-Doctor (CSIC) and “Ramon y Cajal” (MEC) at the Department of Processes of Degradation of the Environment and its Remediation (IRNASA-CSIC). From 2008-2023, she has worked as Titular Scientist and now she works as Scientific Researcher at IRNASA-CSIC, leading the CSIC Research group “Contamination of Soil and Water: Diagnosis, Prevention and/or Remediation” (from 2015-present).

She focuses her research on the study on the processes that control the fate of pesticides in the soil environment (sorption-desorption, leaching, degradation, dissipation and persistence), with special interest in the dissipation of pesticides in soils amended with organic wastes and their potential effects on the water environment and soil microbial communities. She has studied the development of physicochemical methods to prevent soil and water contamination by pesticides by immobilization in soils amended with modified inorganic materials or low-cost biomaterials. Studies on the occurrence of pesticides and organic contaminants and their

metabolites in soils and water have been performed. Her current research is focused in the study of the effect of agricultural conservation practices (organic amendments, rotational crops, cover crops, etc.) on the persistence and dissipation of pesticides in soil. This research contributes to prevent the contamination of soils and water and improve the environmental fate of these compounds.

The main scientific contributions are results from her participation as researcher or principal investigator in **33 research projects + 2 submitted (in 17 as PI)** (4 EU projects (in 3 as PI), 11 National projects (in 3 as PI), 6 Regional projects (in 2 as PI), 9 projects funded by CSIC, AECID, USAL (in 5 as PI) and 3 projects funded by DEFRA-UK. She is member of the **Excellence Unit** at IRNASA-CSIC funded by Junta de CyL from 2021 to 2024.

She has published **95 + 3 submitted articles in JCR journals (h index=36, 3581 citations, Scopus)**, being first or last author in 60% of them, more than 72% published in the first quartile and 31% in collaboration with different international co-authors. Furthermore, she has published 17 papers in other journals, 1 Handbook of Environmental Chemistry (Springer), 85 book chapters, Proceedings and reports. She has presented **159 communications in National (58 = 23 oral + 35 poster) and International (101 = 24 oral + 77 poster) Conferences**.

- **Contributions to society:** She has participated as researcher or PI in **6 research contracts** with private and public institutions. She has participated in **84 communication** (articles, video, TV) and **11 dissemination** activities.

- **Contributions to the formation of young researchers:** She has supervised **5 PhD theses** (2011-J.M. Marín-Benito, CT IRNASA-CSIC; 2016-A. Álvarez-Martín, Postdoc Univ. Antwerp, Belgium; 2019-V. Barba, Lab Technician; 2021-MJ. Carpio, Postdoc ICA-CSIC; 2023-M. Douibi, Postdoc IRNASA-CSIC) + **2 PhD theses (in progress)**. Supervision of 3 TFMs, 1 TFG, 3 contracted fellows, 3 postdoc contracts, 3 PhD contracts, 2 JAE-Intro postgraduate fellows, and practices of 23 Graduate and Master students and 8 FP students. She has presented conferences and seminars in doctorate courses (35 h), and she is member of the Doctorate Program in Agrobiotechnology-USAL from 2013.

- She is **Director** of the **Consolidated Research Unit** of Castile- Leon **UIC-275** (from 2019).

- She has been **Associate Editor**, **Editor** and **Executive Editor** of **Journal of Hazardous Materials** (Elsevier), and **Guest Editor** of **Environments** (MDPI), **Agronomy** (MDPI) and **The Handbook of Environmental Chemistry** (Springer) (from 2020-present).

- She has been **Evaluator** of projects, PhD and postdoctoral contracts for AEI-MICINN-Spain (2021-2023), and FONDECYT-Chile (2018-2020).

- She has participated in the **selection of temporal staff** (pre-doctoral, postdoctoral and technicians) and professional promotion of CSIC technicians (2009-2022). Member in the selection board for CSIC Titular Scientist positions (2023).

- **Other contributions:**

1. Member of the Interdisciplinary Thematic Platform **PTI-SOILBIO-CSIC** (from 2018).

2. Member of the National Scientific **Network of Soils** (RED2018-102624-T) (2019-2022).

3. Member of the **Spanish Society of Soil Science** (from 2016).

4. Head of the **Department Processes of Degradation of the Environment and its Remediation** at IRNASA-CSIC (2011-2015).

5. Member of **Scientific Committees** (2013-2022).

6. **Reviewer** of scientific papers in more than 50 JCR journals (2006-2024).

Part C. RELEVANT MERITS

C.1. Publications

1. Carpio M.J., Andrades M.S., Herrero Hernández E., Marín-Benito J.M., Sánchez-Martín M.J., **Rodríguez-Cruz M.S.** 2023. Changes in vineyard soil parameters after repeated application of organic-inorganic amendments based on spent mushroom substrate. Environ. Res. 221, 115339.

2. **Rodríguez Cruz M.S.**, Sánchez Martín M.J. 2022. Pesticides in soils. Occurrence, Fate, Control and Remediation. The Handbook of Environmental Chemistry. Series volume 113. Springer, Berlin, Heidelberg, Germany. 290 pp. ISBN: 978-3-030-90545-3 (1st edition).

3. Carpio M.J., Marín-Benito J.M., Sánchez-Martín M.J., **Rodríguez-Cruz M.S.** 2021. Accelerated dissipation of two herbicides after repeated application in field experiments with organically-amended soil. Agronomy 11, 1125.

4. Marín-Benito J.M., Herrero-Hernández E., Ordax J.M., Sánchez-Martín M.J., **Rodríguez-Cruz M.S.** 2021. The role of two organic amendments to modify the environmental fate of S-metolachlor in agricultural soils. *Environ. Res.* 195, 110871.
5. Carpio M.J., Marín-Benito J.M., García-Delgado C., Sánchez-Martín M.J., **Rodríguez-Cruz M.S.** 2020. Soil microbial community changes in a field treatment with chlorotoluron, flufenacet and diflufenican and two organic amendments. *Agronomy* 10, 1166.
6. Marín-Benito, J.M., Carpio, M.J., Mamy, L., Andrades, M.S., Sanchez-Martin, M.J., **Rodríguez-Cruz, M.S.** 2020. Field measurement and modelling of chlorotoluron and flufenacet persistence in unamended and amended soils. *Sci. Total Environ.* 725, 138374.
7. García-Delgado C., Marín-Benito J.M., Sánchez-Martín M.J., **Rodríguez-Cruz M.S.** 2020. Organic carbon nature determines the capacity of organic amendments to adsorb pesticides in soil. *J. Hazard. Mat.* 390, 122162.
8. Barba V., Marín-Benito J.M., García-Delgado C., Sánchez-Martín M.J., **Rodríguez-Cruz M.S.** 2019. Assessment of 14C-prosulfocarb dissipation mechanism in soil after amendment and its impact on the microbial community. *Ecotoxicol. Environ. Saf.* 182, 109395.
9. Marín-Benito J.M., Carpio M.J., Sánchez-Martín M.J., **Rodríguez-Cruz M.S.** 2019. Previous degradation study of two herbicides to simulate their fate in a sandy loam soil: Effect of the temperature and the organic amendments. *Sci. Total Environ.* 653, 1301-1310.
10. García-Delgado C., Barba-Vicente V., Marín-Benito J.M., Igual J.M., Sánchez-Martín M.J., **Rodríguez-Cruz M.S.** 2019. Influence of different agricultural management practices on soil microbial community over dissipation time of two herbicides. *Sci. Total Environ.* 646, 1478-1488.

C.2. Congress:

1. M.J. Carpio, S. Bárcena, J.M. Ordax, M.J. Sánchez-Martín, J.M. Marín-Benito, **M.S. Rodríguez-Cruz**. Disipación de iodosulfuron-metil aplicado en suelos agrícolas con cultivo de trigo bajo diferentes tratamientos agronómicos en condiciones de invernadero. Oral presentation. XVI Jornadas de Investigación en la Zona No Saturada 2023. Seville (Spain), 7-9 November 2023.
2. M. Douibi, M.J. Sánchez Martín, **M.S. Rodríguez Cruz**, J.M. Marín Benito. Impact of Temperature and Sustainable Agricultural Practices on the Degradation of Herbicides. Oral presentation. IX Congreso Ibérico de Ciencias del Suelo (CICS 2022): El suelo, un recurso estratégico para una sociedad sostenible. Oeiras, Lisbon (Portugal), 22-24 June 2022.
3. E. Herrero Hernández, M.S. Andrades Rodríguez, V. Barba, J.M. Marín Benito, M.J. Sánchez Martín, **M.S. Rodríguez Cruz**. Aplicación de enmiendas orgánicas en suelos: efecto en la recuperación de suelos de viñedo de La Rioja. Poster. IX Congreso Ibérico - Suelo y Desarrollo Sostenible: Desafíos y Soluciones. Porto (Portugal), 17-18 June 2021.
4. J.M. Marín Benito, E. Herrero Hernández, J.M. Ordax, M.J. Sánchez Martín, **M.S. Rodríguez Cruz**. Efecto de la aplicación de residuos orgánicos sobre el comportamiento de S-metolachloro en suelos agrícolas. Oral presentation. IX Simposio Nacional sobre Control de la Degradación y Recuperación de Suelos - CONDEGRES. Elche (Spain), 25-26 May 2021.
5. M.J. Carpio Espinosa, C. García Delgado, J.M. Marín Benito, M.J. Sánchez Martín, **M.S. Rodríguez Cruz**. Impact of a simultaneous application of three herbicides and two organic amendments on soil microbial community in a field experiment. Poster. 8th ISMOM - International Symposium on Interactions of Soil Minerals with Organic Components and Microorganisms. Seville (Spain), 24-28 June 2019.
6. M.J. Carpio, J.M. Marín Benito, M.J. Sánchez Martín, **M.S. Rodríguez Cruz**. Degradation of two herbicides on a sandy loam soil: Effect of the temperature and the organic amendments. Oral presentation. TERRA ENVISION. Barcelona (Spain), 29 January - 2 February 2018.
7. V. Barba, J.M. Marín Benito, J.M. Ordax, M.J. Sánchez Martín, **M.S. Rodríguez Cruz**. Effects of different agricultural management practices on the dissipation of two herbicides and on soil microbial communities. Oral presentation. 1st World Conference on Soil and Water Conservation under Global Change (CONSOWA). Sustainable Life on Earth through Soil and Water Conservation. Lleida (Spain), 12-16 June 2017.
8. V. Barba, J.M. Marín Benito, J.M. Ordax, M.J. Sánchez Martín, **M.S. Rodríguez Cruz**. Dissipation of two herbicides under field conditions and different agricultural management practices. Oral presentation. 9th European Conference on Pesticides and Related Organic

Micropollutants in the Environment and the 15th Symposium on Chemistry and Fate of Modern Pesticides. Santiago de Compostela (Spain), 4-7 October 2016.

9. A. Álvarez-Martín, S. Hilton, **M.S. Rodríguez Cruz**, M.J. Sánchez Martín, G.D. Bending. Impacto de pesticidas y una enmienda orgánica sobre las comunidades microbianas del suelo. Oral presentation. VII Simposio Nacional sobre Control de la Degradación y Restauración de Suelos. Bilbao (Spain), 22-24 June 2015.
10. A. Álvarez-Martín, J.M. Ordax, **M.S. Rodríguez Cruz**, M.J. Sánchez Martín. Effect of different factors on the mobility of cymoxanil in a vineyard soil. Oral presentation. 8th European Conference on Pesticides and Related Organic Micropollutants in the Environment and the 14th Symposium on Chemistry and Fate of Modern Pesticides. Ioannina (Greece), 18-21 September 2014.

C.3. Research projects

1. TITLE: Diagnosis and mitigation of soil and water contamination by pesticides applied in viticulture (TED2021-129962B-C41). 404,570.00 € (134,800 € IRNASA-CSIC). AEI-MICINN. 2022-2024. PI and Coordinator: **M.S. Rodríguez-Cruz** and **J.M. Marín-Benito**.
2. TITLE: External organic matters for climate mitigation and soil health (EOM4Soil). 2 M€ (420,307 € CSIC). H2020-EJP-SOIL-Towards climate-smart sustainable management of agricultural soils. 2021-2024. Responsible CSIC: **M.S. Rodríguez-Cruz**.
3. TITLE: Herbicide residues in soils: Factors influencing their formation and possible effects on rotational crops (PID2020-113379RB-I00). 125,840 €. AEI-MICINN. 2021-2023. PI: **M.S. Rodríguez-Cruz**.
4. TITLE: Innovative Soil Management Practices across Europe (i-SoMPE). 460,000 € (12,200 € - IRNASA). H2020- EJP-SOIL-Towards climate-smart sustainable management of agricultural soils. 2021- 2022. Responsible IRNASA-CSIC: **M.S. Rodríguez-Cruz**.
5. TITLE: Biostimulant alternative casing for a sustainable and profitable mushroom industry (Ref. No.: BIOSCHAMP-101000651). 4,2 M€ (172,562.50 € -IRNASA). H2020-SFS-2020-1; SFS-04-2019-2020. 2020-2024. Responsible IRNASA-CSIC: **M.S. Rodríguez-Cruz**.
6. TITLE: Development of regenerative viticulture techniques to improve the soil and grape quality of vineyards within the DOCa Rioja. VITIREG 2019/00128/064. 199,766.79€ (100,332.32 € - Univ. Rioja - IRNASA-CSIC). Rural development 2014-2020 for Operational Groups-EU-LEADER-MAPA-Gobierno de la Rioja. 2019-2023. Responsible: M^a Soledad Andrades Rodríguez (Univ. Rioja), **M.S. Rodríguez-Cruz** (IRNASA-CSIC).
7. TITLE: Use of certified organic farming practices as a method of landscape conservation and management in the “dehesa” ecosystem. Coordinated Project IRNASA-CSIC-USAL. 139,000 €. Diputación Salamanca. 2018-2021. PI: **M.S. Rodríguez-Cruz** (Sub-project 2).
8. TITLE: Dinámica de pesticidas en parcelas de campo experimentales enmendadas con residuos orgánicos: Simulación de su transporte en el suelo como herramienta para predecir la contaminación de aguas. AGL2015-69485-R. 78,650 €. MINECO. 2016-2018. PI: M. Jesús Sánchez-Martín. PARTICIPATION: Researcher.
9. TITLE: Aplicación de herbicidas y residuos orgánicos en cultivos de Castilla y León y su incidencia en la sostenibilidad de los suelos. CSI240U14. 28,891 €. Junta de Castilla y León. 2015-2017. PI: M. Jesús Sánchez-Martín. PARTICIPATION: Researcher.
10. TITLE: Evaluación del impacto de la aplicación simultánea de enmiendas orgánicas y pesticidas en las comunidades microbianas de suelos agrícolas de Castilla y León. CSI264A12-1. 30,000 €. Junta de Castilla y León. 2012-2014. PI: **M.S. Rodríguez-Cruz**.

C.4. Contracts, technological or transfer merits

1. TITLE: Collaboration agreement between the Provincial Council of Salamanca and the State Agency CSIC, M.P. to implement a grant for the analysis of the effects of the use of metolachlor in crops grown in the province of Salamanca. 10,000 €. Diputación de Salamanca. 2017-2018. PI: M^a **Sonia Rodríguez Cruz**.