Date	05-12-2023

Part A. Personal Details

First and Last names	Alicia Lorenzana de la Varga		
Identification number	09798181 C	Age	48
Codes for investigator identification	Researcher ID	P-7509-2017	
	Orcid Code	0000-0001-6293-7796	

A.1. Current Professional Position

Institution	University of León (Spain)			
Department/ Host institution	Agrarian Sciences and Engineering /School of Forestry and Agricultural Engineering (EIAF)			
Postal address	Avda. de Portugal, 41, 24071, León, Spain			
Phone	34 987291835	Email:	alorv@unileon.es	
Current position	Full University Professor		Starting date	25-02-2022
UNESCO codes	310802 - 310805			
Keywords	*Trichoderma*, *Xylotrechus*, Biocontrol, Integrated pest management, Fungi soil			

A.2. Education *(Degree, Host Institution, Year Completed)*

Degree	University	Year
Technical Agricultural Engineer	University of León (Spain)	1996
Agricultural Engineer	University of León (Spain)	1999
Ph.D. in Agricultural Engineering	University of León (Spain)	2006

A.3. Quality of the scientific production

- Six-year period evaluated positively: 2 (2005-2010) (2014-2019)
- Total citations: **179** (source: Web of Science)
- Average citations / year (last 5 years): 12.79
- Publications in the 1st Quartil (Q1): **8** Publications in SCI journals: **21**
- H-index: **7**

Parte B. Free summary of the *Curriculum vitae* (3.500 characters, including spaces)

Former positions

2022-present Full University Professor, Department of Agrarian Sciences and Engineering, University of León (Spain)

2010 Doctor Contracted Professor, Department of Agrarian Sciences and Engineering, University of León (Spain)

2007-2010 Doctor Assistant Professor, Department of Agrarian Sciences and Engineering, University of León

2005-2007 Autonomous Agricultural Engineer, Foundation Chicarro-Canseco-Banciella, under the auspices of the Ministry of Agriculture and Fisheries, Food and Environment

2004-2007 Associate Professor, Department of Agrarian Sciences and Engineering, University of León

1999-2004 Research fellow of the University of León, Diagnostic Laboratory of Vegetable Pests and Diseases. Foundation Chicarro-Canseco-Banciella – School of Forestry and Agricultural Engineering, University of León

1995-96 Learning stay at the Montford University, HND in Agriculture, in Lincoln, United Kingdom, 10 months

1995 Learning stay at the Agronomy Faculty of Santa Rosa, La Pampa, Argentina, 3 months

Professional career

I am a member of a multidisplinary group composed by agronomists (plant production) and microbiologists which has been recognized as a Consolidated Research Unit by the Regional Government of "Castilla y León" (Spain). I also belong to the Research Group "Sustainable Agriculture and Engineering" of the University of León (Spain) from 2009.

As an agricultural engineer working on phytopathology and entomology, I have published 21 SCI-journals in relevant scientific publications in this area, such as Journal of Fungi, European Journal of Plant Pathology, Agronomy, *Journal of Economic Entomology, Journal of Stored Products Research,*

Frontiers in Plant Science, Crop Protection and Plant Disease among others. Likewise, I have been the author of 20 chapters of books and 11 popular scientific articles. I have directed 17 end-of-career projects, end-of-degree and end-of-master works related to plant health. I am co-author of more than 100 communications to congresses and seminars, both national and international. I have participated in 53 research projects and contracts with different public entities and companies, mostly related to the protection of the crops and oriented to the integrated control of them, being the principal investigator in 3 of them.

In 1999 I launched the Laboratory of Vegetable Pests and Diseases in the School of Forestry and Agricultural Engineering of the University of León (Spain), financed by the Foundation Chicarro-Canseco-Banciella, whose objectives are the detection of health problems in crops and the search for integrated control methods. In this laboratory I developed my research activity for more than ten years, continuing with it from the position of doctor contracted professor, which today I occupy. As a result of this activity, important results have been transferred to my sector, maintaining a continuous relationship with other researchers, professionals and farmers. My current scientific challenge focuses on the biological control of soil fungi. The research team of which I am a part is a reference in the dialogue *Trichoderma*-plant, and our objective is to deepen the skills of *Trichoderma* as a beneficial fungus for agriculture and know its mechanisms of action in interaction with plants.

Parte C. MOST REMARKABLE MERITS (last 10 years)

Between **2013-2023**:
- **18** SCI articles
- Author of **2** books, **15** book chapters, and **6** non-SCI journal articles
- **28** communications to Scientific Congress (**19** international and **9** national)
- **36** projects and contracts (**1** international; **10** nationals)
- Member of the **Consolidated Research Unit** of the Regional Government of Castilla y León (Spain) number 264 (2018-today)

C.1. Publications (10 Selected in the last 10 years)

1. Rosa E. Cardoza, Sara Mayo-Prieto, Natalia Martínez-Reyes, Susan P. McCormick, Guzmán Carro-Huerga, M. Piedad Campelo, Álvaro Rodríguez-González, **Alicia Lorenzana**, Robert H. Proctor, Pedro A. Casquero and Santiago Gutiérrez (2022). Effects of trichothecene production by *Trichoderma arundinaceum* isolates from bean-field soils on the defense response, growth and development of bean plants (*Phaseolus vulgaris*). *Frontiers in Plant Science*, 13:1005906. https://doi.org/10.3389/fpls.2022.1005906. JCR: 6,627; Category: Plant Science (20/239), Q1.
2. Álvaro Rodríguez-González, Guzmán Carro-Huerga, Marcos Guerra, Sara Mayo-Prieto, Alejandra Juana Porteous-Álvarez, **Alicia Lorenzana**, María Piedad Campelo, Alexia Fernández-Marcos, Pedro Antonio Casquero and Santiago Gutiérrez (2022). Spores of Trichoderma strains over *P. vulgaris* beans: direct effect on insect attacks and indirect effect on agronomic parameters. *Insects.* https://doi.org/10.3390/insects13121086. JCR: 3,141; Category: Entomology (17/100), Q1.
3. Alejandra J. Porteus Álvarez, M. Mercedes Maldonado-González, Sara Mayo-Prieto, **Alicia Lorenzana**, Ana I. Paniagua-García y Pedro A. Casquero (2021). Green strategies of powdery mildew control in hop: from organic products to nanoscale carriers. *Journal of Fungi*, 7 (6), 490. https://doi.org/10.3390/jof7060490 . JCR (2020): 5,816; 2 citations; Category: Microbiology (24/137), Q1.
4. S. Mayo Prieto, M.P. Campelo, **A.Lorenzana**, A. Rodríguez-González, B. Reinoso, S. Gutiérrez, P.A. Casquero (2020). Antifungal activity and bean growth promotion of *Trichoderma* strains isolated from seeds *vs* soil. *European Journal of Plant Pathology*, 158 (4): 817-828. https://doi.org/10.1007/s10658-020-02069-8 . JCR: 1,907; 12 citations; Category: Agronomy (41/91), Q2.
5. Sara Mayo-Prieto, Álvaro Rodríguez-González, **Alicia Lorenzana**, Santiago Gutiérrez, Pedro A. Casquero (2020). Influence of substrates in the development of bean and in pathogenicity of *Rhizoctonia solani* JG Kühn. *Agronomy*, 10 (5), 707. https://doi:10.3390/agronomy10050707 . JCR: 3,417; 3 citations; Category: Agronomy (16/91), Q1.
6. Laura Lindo, Rosa E. Cardoza, **Alicia Lorenzana**, Pedro A. Casquero, Santiago Gutiérrez. Identification of plant genes putatively involved in the perception of fungal ergosterol-squalene. *Journal of Integrative Plant Biology*, 62 (7): 927-947. https://10.1111/jipb.12862 . JCR: 7,061; 9 citations; Category: Plant Sciences (12/235), Q1.

7. Álvaro Rodríguez-González, María Piedad Campelo, **Alicia Lorenzana**, Sara Mayo-prieto, Óscar González-López, Samuel Álvarez-García, Santiago Gutiérrez, Pedro Antonio Casquero (2020): Spores of *Trichoderma* strains sprayed over *Acanthoscelides obtectus* and *Phaseolus vulgaris* L. beans: effects in the biology of the bean weevil. Journal of Stored Product Research, 88, 101666. https://doi.org/10.1016/j.jspr.2020.101666. JCR: 2,643; 17 citations; Category: Entomology (20/102), Q1.
8. Álvaro Rodríguez González, Pedro A. Casquero Luelmo, Víctor Suárez Villanueva, Guzmán Carro Huerga, Samuel Álvarez García, Sara Mayo Prieto, **Alicia Lorenzana de la Varga**, Rosa Elena Cardoza, Santiago Gutiérrez Martín (2018): Effect of trichodiene production by *Trichoderma harzianum* on *Acanthoscelides obtectus*. *Journal of Stored Products Research* 77: 231-239. https://doi.org/10.1016/j.jspr.2018.05.001 . JCR: 1,954; 14 citations; Category: Entomology (22/98), Q1.
9. **Alicia Lorenzana**, Alfonso Hermoso de Mendoza, M. Victoria Seco, M. Piedad Campelo, Pedro A. Casquero (2017): Within-plant distribution of *Phorodon humuli* (Hemiptera: Aphididae) and natural enemies on hops with implications for sampling and management. *Entomological Science* 20(1): 443-450. https://doi.org/10.1111/ens.12273 . JCR: 1,069; 2 citations; Category: Entomology (45/96), Q2.
10. Mayo, S., Gutiérrez, S., Malmierca, M.G., **Lorenzana, A.**, Campelo, M.P., Hermosa, R., Casquero, P.A. (2015): Influence of *Rhizoctonia solani* and *Trichoderma* spp. in growth of bean (*Phaseolus vulgaris* L.) and in the induction of plant defense-related genes. *Frontiers in Plant Science*, 6 (685). https://doi.org/10.3389/fpls.2015.00685 . JCR: 4,495; 76 citations; Category: Plant Science (15/209), Q1.

C.2. Research projects (last 10 years)

1. **PID2021-123874OB-I00** "Isolation of bacterial strains capable of de-epoxidating trichotecenes from bean and hops cultures colonized by trichoderma strains producing these mycotoxins". Financing Institution: State Investigative Agency-Ministry of Science and Innovation (Spain). PI: Santiago Gutiérrez Martín and Pedro A. Casquero Luelmo. University of León. 2022-2025. Role: Member of the research team.
2. **2020/00216/001 (ULE)** "Application of *Trichoderma* strains in sustainable vine production: effects on pH regulation and improvement of wine quality " as part of the project CDTI-CIEN "Study of new factors related to soil, plant and oenological microbiota that influence the acidity balance of wines and their guarantee of quality and stability in hot climates" (LOWPH-WINE 2020). Financing Institution: Center for the Industrial-technological development (CDTI-Spain). University of León. 2020-2024. 166.980 €. Role: Member of the research team.
3. **2019/0020007/602 (ULE)** "Operative Group Quality Hops". Financing Institution: Ministry of Agriculture, Fishering and Food (Spain). 2019-2021. PI: Pedro A. Casquero Luelmo. University of León. 2016-2018, 30.428,75 €. Role: Member of the research team.
4. **RTI2018-099600-B-I00** "Isolation of *Trichoderma* strains producing trichotecenes from bean crops and study of their effect on the defense of the plant against fungal diseases". Financing Institution: State Investigative Agency-Ministry of Science and Innovation (Spain). PI: Santiago Gutiérrez Martín. University of León. 2019-2021, 84.700 €. Role: Member of the research team.
5. **2019/00004/001 (ULE)** "Operative Group Spanish Quality Hops". Financing Institution: Ministry of Agriculture, Fishering and Food (Spain). PI: Pedro A. Casquero Luelmo. University of León. 5.313,5 €. Role: Member of the research team.
6. **LE251P18** "Implementation of *Trichoderma* strains in the sustainable production of quality beans". Financing Institution: Castilla y León Regional Government (Spain). PI: Pedro A. Casquero Luelmo. University of León. 2018-2021. 120.000 €. Role: Member of the research team.
7. **IDI-20160750** "Global approach to improve wine production against the climate change based on robotics, IR technology and on biotechnological and wine-yard handling strategies. Effect of *Xylotrechus arvicola* in the transmission of vine-wood diseases: use of *Trichoderma* in biological control of the insect and the disease". Financing Institution: Center for the Industrial-technological development (CDTI-Spain). University of León (Spain). 2016-2020. 197.593 €. Role: Member of the research team.
8. **AGL2015-70671-C2-2-R** "Importance of membrane sterols of *Trichoderma* in the nitrogen use efficieny (NUE) of plants. Cloning of genes encoding for ergosterol and squalene receptors in tomato plants". Financing Institution: Ministry of Economy and Competitiveness (Spain). PI:

Santiago Gutiérrez. University of León. 2016-2018, 40.000 €. Role: Member of the research team.

9. **LE228014** "Effect of terpenes and physiologically related compounds produced by *Trichoderma parareesei* in the development of common bean (*Phaseolus vulgaris*, L.) and in the defense responses in bean plants". Financing Institution: Castilla y León Regional Government. PI: Pedro. A. Casquero. University of León. 2015-2017, 29.000 €. Role: Member of the research team.
10. **AGL2012-40041-C02-02** "TRICHOCLOCK: farnesol as an auto-regulated molecule: signaling of tyrosol and farnesol in the interaction *Trichoderma*-bean". Financing Institution: Ministry of Economy and Competitiveness (Spain). PI: Santiago Gutiérrez, University of León. 2013-2015, 76.500 €. Role: Member of the research team.
11. **PHBT14/01067** "Biotechnological potential of plant species and microorganisms". Financing Institution**:** Ministry of Education, Culture and Sports (Spain). PI: Pedro A. Casquero, University of León. 2015, 7.000 €. Role: Member of the research team.
12. **RF2010-00005-C05-03** "Regeneration and documentation of the national collections of bean for its conservation: Characterization of the Natural Collection of the CRF, design and implementation of web page for its diffusion". Financing Institution**:** Ministry of Science and Innovation (Spain). PI: Pedro A. Casquero, University of León. 2010-2013, 21.000 €. Role: Member of the research team.
13. **1999/00053/001(ULE)** "Creation and maintenance of a Laboratory for the diagnosis of diseases and pests". Financing Institution: Foundation Chicarro-Canseco-Banciella. PI: Eva Mª Gómez-Bernardo, University of León. 1999-2018, 377.989 €. Role: Member of the research team.

C.5. Direction of scientic works

2011 - today Director of **6** end-of-career/end-of-degree projects and **2** end-of-master, University of León (Spain).

C.6. Participation in evaluation of scientific articles

2011 - today Reviewer of **2** manuscripts for 1 scientific journals

C.7. Organization of scientific meetings

2015 Member of the Scientific Committee of the I International Workshop Biotechnological Potential of Plant Species and Microorganisms, organized by the Federal University Do Recôncavo De Bahia (Brasil)

2007-08 Member of the Scientific Committee for the Control of Agricultural Pests in Castilla y León (Spain) (Decree 11/2008, 14 February. BOCYL, 35: 2998-2999)

2006 Member of the Organizing Committee of the XII Meeting of the Working Group of Diagnostic and Phytosanitary Surveys Laboratories, organized by the Ministry of Agriculture, Fisheries and Food, which was held in Leon (Spain)

2001 Member of the Organizing Committee of the VII National Congress of the Spanish Society of Weed Science (SEMh), which was held in León (Spain)

C.8. Awards

2000 Extraordinary Degree Award: Award for best record in the Degree of Agricultural Engineer, edition 2000