

<b>Part A. Personal Details</b>		<b>Date</b>	4-12-2023
First and Last names	Pedro Antonio Casquero Luelmo		
Identification number	11947192 A	Age	56
Codes for investigator identification	Researcher ID	L-6553-2014	
	Orcid Code	0000-0002-4432-9794	

**A.1. Situación profesional actual**

Institution	University of León (Spain)		
Department/ Host institution	Engineering and Agricultural Sciences		
Postal address	Avda. Portugal 41, 24071 León, Spain		
Phone	34 987291833	Email:	<a href="mailto:pedro-casquero@unileon.es">pedro-casquero@unileon.es</a>
Current position	Professor of Crop Production	Starting date	28-12-2017
UNESCO codes	3103 and 3107		
Keywords	<i>Crop Production, Landraces, Sustainable Agriculture, Biocontrol, Crop protection</i>		

**A.2. Education**

PhD, Licensed, Graduate	University/Country	Año
Graduate in Agronomist Engineer	University of Valladolid (Spain)	1988
Post-Graduate in Agronomist Engineer	University of Santiago de Compostela (Spain)	1992
Ph.D. in Agronomist Engineer	The Biological Mission of Galicia-Spanish National Research Council (CSIC)- University of Santiago de Compostela (Spain)	1997

**A.3. JCR articles, h Index, thesis supervised...**

- Four-year research period evaluated positively: **4** (the latest 2012 to 2017)
- One six-year transfer period evaluated positively: **1** (years 2000 to 2006)
- Patents: **5**
- Direction of Ph.D. Thesis (in the last ten years):**11**
- Total citations: 1,168
- Average citations / year (5 years): 82,2
- Publications in the 1<sup>st</sup> Quartil (Q1):45 Publications in SCI journals: 102
- H-index: **18** (source: Web of Science- Thomson Reuters)

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

Former positions

- 2001-2017 Associate Professor of Crop Production tenured position (León, University of León)
- 2007 Postdoctoral stay (MEC fellowship) at the Plant Sciences Division, (Nottingham, United Kingdom) 3 months.
- 1997-2001 Associate Professor of Crop Production tenured position (Ponferrada, University of León)
- 1996-1997 Associate Professor of Crop Production (Ponferrada, University of León)
- 1994-1996 Ph.D. fellowship at Service of Agrarian Research, Junta de Castilla y León (Valladolid, Spain)
- 1995 USC Short Term fellowship at International Center for Tropical Agriculture, Consultative Group for International Agricultural Research (Cali, Colombia) 3 months.
- 1993 FPU Short Term fellowship at Plant Science Division, Institute of Grassland and Environmental Research (Aberystwith, United Kingdom) 3 months.
- 1991-1994 Ph.D. FPU fellowship The Biological Mission of Galicia-Spanish National Research Council (CSIC) & Department of Crop Production (University of Santiago de Compostela)

I have studied in two Universities (Valladolid and Santiago de Compostela). I have worked in different institutions (Spanish National Research Council and Service of Agrarian Research, Junta de Castilla y León). In 1997, I got the position of Associate Professor of Crop Production in the university of León (tenured position).

I have focused my research in sustainable agriculture. We collaborate with the farmers in crop production and protection using microorganism and natural products. Very remarkable for the current proposal has been the study of the application of *Trichoderma strains* to bean plants and its effect on induction of bean defense-related genes as well as in the plant metabolome.

Currently, I am the leader of a multidisciplinary group composed by biotechnologist, microbiologists and agronomists that has been recognized as the Research Consolidated Unit number 264 by the Regional Government of "Castilla y Leon (Spain)"

In my career as agronomists I have published in some of the most prestigious journals of Agriculture. I authored **100** articles in SCI journals and **5** patents. I have directed **13** Ph.D. Thesis works. Author of **130** Congress communications. I have been principal investigator of **20** research & development projects financed in public announcements and in **27** research & development contracts.

### Parte C. MÉRITOS MÁS RELEVANTES (last 10 years)

70 SCI articles, H index = 13

Author of **2** book chapters and 9 non-SCI journal articles

- Communications to **Scientific Congress: 75(45 International and 30 National)**
- **Research Projects IP: 1 internacional, 3 nationals, 4 regionals**
- **Research Contracts IP: 21**
- **Leader of the Consolidated Research Unit (UIC) number 264 (2018-today)**

#### C.1. Publications (\*= corresponding author) (Q1= first quartile; D1= first decile)

1. Mayo, S., Gutierrez, S., Malmierca, M. G., Lorenzana, A., Campelo, M. P., Hermosa, R., Gutiérrez, S., **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. *Front. Plant Sci.* 6, 685. Q1-D1-Plant Sciences.
2. Malmierca, M. G., Izquierdo-Bueno, I., McCormick, S. P., Cardoza, R. E., Alexander, N. J., Barua, J., Lindo, L., **Casquero, P.A.**, Collado, I. G., Monte, E., Gutiérrez, S. (2016). Trichothecenes and aspinolides produced by *Trichoderma arundinaceum* regulate expression of *Botrytis cinerea* genes involved in virulence and growth. *Environ. Microbiol.* 18, 3991-4004. Q1- Microbiology
3. Mayo, S., Cominelli, E., Sparvoli, F., González-López, O., Rodríguez-González, A., Gutiérrez, S., **Casquero, P.A. \*** (2016). Development of a qPCR strategy to select bean genes involved in plant defense response and regulated by the *Trichoderma velutinum* – *Rhizoctonia solani* interaction. *Front. Plant Sci.* 7, 1109. Q1-D1-Plant Sciences.
4. Rodríguez-González, A., **Casquero, P.A.**, Suarez-Villanueva, V., Carro-Huerta G., Alvarez-Garcia, S., Mayo-Prieto, S., Lorenzana, A. Cardoza, R.E, Gutierrez, S. (2018). Effect of trichodiene production by *Trichoderma harzianum* on *Acanthoscelides obtectus*. *Journal of Stored Products and Research* **77**, 231-239. Q1-Entomology.
5. Mayo-Prieto, S., Rodríguez-González, A., Lorenzana, A., Gutiérrez, S., **Casquero, P.A.** (2020). Influence of substrates in the development of bean and in pathogenicity of *Rhizoctonia solani*. *Agronomy*. Volumen: 10: 107. Q1 Agronomy.
6. Carro-Huerta, G., Compant, S., Gorfer, M., Cardoza, R.E., Schmoll, M., Gutiérrez, S., **Casquero, P.A.\*** (2020). Colonization of *Vitis vinifera* L. by the endophyte *Trichoderma* sp. strain T154: biocontrol activity against *Phaeoacremonium minimum*. *Frontiers in Plant Science*. Volumen: 11: 1170. Q1-D1-Plant Sciences.

7. Lindo, L., Cardoza, R.E., Lorenzana, A., **Casquero, P.A.** Gutiérrez, S. (2020). Identification of plant genes putatively involved in the perception of fungal ergosterol-squalene. *Journal of Integrative Plant Biology* 62(7), pp. 927-947. Q1- Plant Sciences.
8. Gutiérrez S, McCormick SP, Cardoza RE, Kim H-S, Yugueros LL, Vaughan MM, Carro-Huerga G, Busman M, Sáenz de Miera LE, Jaklitsch WM, Zhuang W-Y, Wang C, **Casquero PA** and Proctor RH (2021) Distribution, Function, and Evolution of a Gene Essential for Trichothecene Toxin Biosynthesis in *Trichoderma*. *Front. Microbiol.* 12:791641. Q1- Microbiology.
9. Álvarez-García, S., Manga-Robles, A. Encina, A., Gutiérrez, S., **Casquero, PA** (2022) Novel culture chamber to evaluate in vitro plant-microbe volatile interactions: Effects of *Trichoderma harzianum* volatiles on wheat plantlets, *Plant Science*, 2022, Volume 320,111286. Q1- Plant Sciences.
10. Cardoza RE, Mayo-Prieto S, Martínez-Reyes N, McCormick SP, Carro-Huerga G, Campelo MP, Rodríguez-González A', Lorenzana A, Proctor RH, **Casquero PA** and Gutierrez S (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*). *Front. Plant Sci.* 13:1005906 Q1-D1-Plant Sciences.

## C.2. Research Projects

1. PID2021-123874OB-I00 Isolation of bacterial strains able to de-epoxidate trichothecenes from bean and hop fields colonized by *Trichoderma* strains able to produce these mycotoxins. TRICHODETOX. PI: Santiago Gutiérrez/Pedro A. Casquero/. Universidad de León. 2022-2025. 123.937 €.
2. IDI-20210391 "Application of *Trichoderma* strains in sustainable vine production: effects on pH regulation and improvement of wine quality "as part of the CDTI-CIEN project". Study of new factors related to the soil, the plant and the oenological microbiota that influence the acidity balance of wines and their guarantee of quality and stability in hot climates LOWPH-WINE 2020. ". Funding Institution: Center for the Industrial-technological development (CDTI-Spain). PR: Pedro A. Casquero, Universidad de León. 2020 - 2024. 166.980 €. **Role:** Principal Investigator.
3. LE251P18. "Application of *Trichoderma* strains in the sustainable production of high quality beans". Funding Institution: "Junta de Castilla y León" (Spain). PR: Pedro A. Casquero. Universidad de León. 2019-2021., 120.000 €. **Role:** Principal Investigator.
4. RTI2018-099600-B-I00. "TRICHOBAN: Isolation of *Trichoderma*-trichothecene-producer strains from bean crops and assessment of their effect in the plant defense against fungal diseases". Funding Institution: MCINN (Spain). Principal Researcher (PR): Santiago Gutiérrez. Universidad de León. 2019-2021. 84.000 €. **Role:** Member of the research team.
5. 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 (GLOBALVITI)". **Financing Institution:** Center for the Industrial-technological development (CDTI-Spain). PI: **Pedro. A. Casquero**. Universidad de León. 2016-2020. **Role:** Principal Investigator.
6. AGL2015-70671-C2-2-R "Importance of membrane sterols of *Trichoderma* in the nitrogen use efficiency (NUE) of plants. Cloning of genes encoding for ergosterol and squalene receptors in tomato plants". **Financing Institution:** MINECO (Spain). PI: Santiago Gutiérrez. Universidad de León. 2016-2018. **Role:** Member of the research team.
7. 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:** "Junta de Castilla y León". PI: **Pedro. A. Casquero**. Universidad de León. 2015-2017. **Role:** Principal Investigator.
8. AGL2012-40041-C02-02 "TRICHOCLOCK: farnesol as an auto-regulated molecule: signaling of tyrosol and farnesol in the interaction *Trichoderma*-bean". **Funding Institution:** MINECO (Spain). PI: Santiago Gutiérrez, Universidad de León, 2013-2015. **Role:** Member of the research team.
9. LE125A12-2 "Role of trichothecenes and pyrones in the interaction *Trichoderma*-plant using as a model for the study *Trichoderma harzianum*- tomato". **Funding Institution:** "Junta de Castilla y León". PI: Santiago Gutiérrez. Universidad de León, 2012-2014. **Role:** Member of the research

team.

10. PHBT14/01067 “Biotechnological potential of plant species and microorganisms”. **Funding Institution:** “Ministerio de Educación, Cultura y Deporte, Proyectos de Cooperación Interuniversitaria con Brasil”. PI: **Pedro A. Casquero** Universidad de León. 2015. **Role:** Principal Investigator.

### C.3. Patents and utility models

**Registered industrial property title:** “Device for capture, retention and control of insects pest on woody species”. **Patent number:** ES2895411.

**Registered industrial property title:** “Volatile compounds for use in the control of pests of *Oxythyrea funesta*, *Tropinota hirta* And *Tropinota squalida*”. Patent number: ES2875230.

**Registered industrial property title:** “Seed coating containing an agent from biocontrol *Sargassum muticum*”. **Patent number:** ES2872648.

**Registered industrial property title:** “Seed coating that includes a biocontrol agent and hops cones”. **Patent number:** ES2872599.

**Registered industrial property title:** “Culture chamber for competition microbiological tests by volatile compounds”. **Patent number:** ES2708899.

### C.5. Direction os Scientific works

2013 - today Director of 9 Ph.D. Thesis in this period in the University of León.

### C.6. Participation in Evaluation of articles and grants proposals

2010 - today Plan Gallego de Investigación, Desarrollo e Innovación tecnológica (Xunta de Galicia),

2005 - today Reviewer of scientific journals (Field Crops Research, Industrial Crops and Products, Hortscience, Scientia Horticulturae, Journal of the Science of Food and Agriculture, Crop and Pasture Science...)

### C.8. Organization of scientific meetings

2010 Member of the Organizing Committee of Seminar on Plant Biodiversity in the Atlantic Agroforestry System, organized by the CSIC, the Biological Mission of Galicia, the Society of Sciences of Galicia and held in Pontevedra from October 27 to 28, 2010.

2012 Member of the Organizing Committee of IV Conference of the Spanish Legume Association (V Jewish Seminar of the Iberian Peninsula), organized by the Spanish Legume Association and held from June 6 to 7, 2012.

2014 Member of the Scientific Committee VII Congress of Genetic Improvement of Plants organized by the Center for Research and Agrifood Technology of Aragon (CITA), together with the Sections of Plant Genetic Improvement of the Spanish Society of Horticultural Sciences (SECH) and the Spanish Society of Genetics (SEG, at the IAMZ (Mediterranean Agronomic Institute of Zaragoza - CIHEAM) located on the Aula Dei Campus in Montañana (Zaragoza) from 16 to 18 September 2014.

### C.9. Awards

2016 Research award of the Economic and Social Council of “Castilla y León” and the Public Universities of Burgos, León and Valladolid, which integrate the “Triangular E<sup>3</sup>” Campus of International Excellence, 2016 edition, with the project entitled “**Biological control of diseases of vine wood: a challenge for the sustainability of the wine sector in Castilla y León**”.

2017. Research award INNOVA **Biological control of diseases of vine wood**. Diario de León.

2019. Research award project of ‘**University-Business Knowledge Transfer of Castilla y León (TCUE) entitled BIOENVID: Diseases of vine wood:**

2020. Research award project of ‘**University-Business Knowledge Transfer of Castilla y León (TCUE) entitled "VOC chamber. Culture chamber for microbiological competition tests using volatile compounds**