

Curriculum Vitae

Judit Barroso Perez

Post Doctorate Research Associate in Weed Science

Department of Land Resources and Environmental Sciences
Montana State University
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EDUCATION (In Spain)

PhD, Agronomist Engineer, Polytechnic University of Madrid, 2004 (*Summa Cum Laude*)
Agronomist Engineer, Polytechnic University of Madrid, 1991-1999.

RESEARCH AREA

Weed Science of extensive crops
Ecology of Weeds: population dynamics, spatial distribution, integrated control
Precision farming (Site-Specific Weed Management)
Development of spatial and temporal dispersal weed models
Improve sustainability in agro-ecosystems

PROFESSIONAL EXPERIENCE

2012- Present	Postdoctoral Research Assistant	Montana State University	Bozeman, MT
2010-2012	Fulbright Post-doc scholar	Montana State University	Bozeman, MT
2009-2010	Postdoctoral Research Assistant	Institute of Agrarian Science (ICA-CSIC)	Spain
2006-2009	Postdoctoral Research Assistant	National Institution of Agrarian and Food Technology (SGIT-INIA)	Spain
2004-2005	Postdoctoral Research Assistant	Institute of Agrarian Science (ICA-CSIC)	Spain
2000-2004	PhD	Institute of Agrarian Science (ICA-CSIC)	Spain
1999-2000	Scholarship	Institute of Agrarian Science (ICA-CSIC)	Spain
1998-1999	Scholarship	Institute of Agrarian Science (ICA-CSIC)	Spain

RESEARCH GRANTS AND CONTRACTS FUNDED SINCE 1998

2012-present	\$36,000	Post-doctoral contract (part time) associated to an USDA project titled: Integrating sheep grazing, biocontrol and cover crops to manage field bindweed (<i>Convolvulus arvensis</i>) and Canada thistle (<i>Cirsium arvense</i>). And post-doctoral contract (part time) funded by the Fertilizer Advisory Committee and Dean Jacobsen titles: <i>Profitability of site-specific nitrogen optimization under different environmental and economic conditions.</i>
2010- 2012	61,600€	Fulbright grant by the Polytechnic University of Madrid. <i>Optimizing weed management through the use of spatial-temporal models.</i>
2009-2010	84,000€	JAEDoc grant by CSIC (Superior Council of Scientific investigations). <i>Site-specific management of Sorghum halepense.</i>
2006-2009	75,000€	Juan de la Cierva grant by the Spanish government. <i>Study of potential capacity of weeds to develop resistance. Establishment of sensitivity baselines.</i>
2004-2005	9,250€	Postdoctoral contract associated to the research project titled: <i>Precision farming in cereals crops: Introduction of equipment and</i>

2000-2004	84,000€	<i>methodologies to minimize the use of agrochemicals.</i> PhD grant by the Autonomous Community of Madrid. <i>Site-specific management of <u>Avena sterilis</u> L. populations present in cereal crops in central Spain.</i>
2000	3,000€	Grant by the Spanish Agency of International Cooperation. <i>Developing of infestation maps in the Agrarian Sciences Faculty of the Rosario National University.</i>
2000	6,000€	Research contract associated to the research Project titled: <i>Generation of risk maps for the control of Avena steilis in cereals crops.</i>
2000	3,000€	Grant by the Spanish Weed Society grant. <i>Population dynamics of Avena sterilis under annual herbicide treatments.</i>
1998-1999	3,000€	Grant of introduction to scientific investigations by CSIC. <i>Demography of Lolium rigidum in winter barley crops.</i>

Total 358,850€ ≈ \$466,505

PARTICIPATION IN RESEARCH PROJECTS

2012-present	<i>Targeted grazing to reduce tillage in organic dryland systems: Environmental, ecological, and economic assessment of reintegrating animal and crop production.</i> Principal Investigator: Dr. F.D. Menalled. \$1.400.000.
2012-present	<i>Profitability of site-specific nitrogen optimization under different environmental and economic conditions.</i> Principal Investigator: Dr. B.D. Maxwell. \$19,500.
2011-2012	<i>Spatial optimization of nitrogen application for dryland wheat yield and protein.</i> Principal Investigator: Dr. B.D. Maxwell. \$23,940.
2009-2011	<i>Detection and site-specific weed management: Development and evaluation of technologies and processes.</i> Principal Investigator: Dr. C. Fernández-Quintanilla. 108,900€
2004-2007	<i>Grass weeds resistant to herbicides in wheat: Effect of the use of new herbicides and tolerant cultivars.</i> Principal Investigator: Dr. M.C. Chueca Castedo. 111,000€
2003-2006	<i>Precision farming in cereals crops: Introduction of equipment and methodologies to minimize the use of agrochemicals.</i> Principal Investigator: Dr. C. Fernández-Quintanilla 37,023€
2002-2005	<i>Weed management in precision agriculture: Ecological basis, detection systems and development of site-specific treatments.</i> Principal Investigator: Dr. C. Fernández-Quintanilla. 110,000€.
2001-2004	<i>Non-native vascular plant inventory in the northern range of Yellowstone Park.</i> Principal Investigators: Dr. L. Rew and Dr. B. Maxwell. \$168,355.
1999-2002	<i>Generation of risk maps for the control of Avena steilis in cereals crops.</i> Principal Investigator: Dr. C. Fernández-Quintanilla. 103,500€.

PUBLICATIONS

Articles in Peer-Reviewed Journals

Times that my articles are cited (TC) according to the ISI Web of Knowledge.

Total: 14. First author: 9. H index > 6.

- © **Barroso J**, Maxwell B.D., Andujar D., San Martin C., Dorado J., and Fernandez-Quintanilla C. (2013). Response of *Sorghum halepense* demographic processes to plant density and rimsulfuron dose. **Weed Research** (Submitted).

- ⊙ Andujar D., **Barroso J.**, Fernández-Quintanilla C., and Dorado J. (2012). Spatial and temporal dynamics of *Sorghum halepense* patches in maize crops. **Weed Research** 52, 411-420. (TC:1)
- ⊙ **Barroso J.** Andujar D., San Martin C., Fernandez-Quintanilla C. and Dorado C. (2012). Johnsongrass (*Sorghum halepense*) seed dispersal in corn crops under Mediterranean conditions. **Weed Science** 60, 34-41.
- ⊙ **Barroso J.**, Alcantara C. and Saavedra M.M. (2011) Competition between *Avena sterilis ssp. sterilis* and wheat in South Western Spain. **Spanish Journal of Agricultural Research** 9, 862-872.
- ⊙ **Barroso J.**, Loureiro I., Escorial M.C. and Chueca M.C. (2010) The response of *Bromus diandrus* and *Lolium rigidum* to dalapon and glyphosate: I. Baseline sensitivity. **Weed Research**, 50, 312-319.
- ⊙ **Barroso J.**, Ruiz D., Hernaiz P., and Fernández-Quintanilla C. (2009) Comparison of three chemical control strategies for *Avena sterilis ssp. ludoviciana*. **Crop Protection**, 28, 393-400. (TC:1)
- ⊙ Ruiz D., **Barroso J.**, Hernaiz P., and Fernández-Quintanilla C. (2008) The competitive interactions between winter barley and *Avena sterilis* L. are site-specific. **Weed Research**, 48, 38-47. (TC: 3)
- ⊙ **Barroso J.**, Navarrete L., Sánchez del arco M.J., Fernández-Quintanilla C., Hull RI., Perry N.H., and Lutman P.J.W. (2006) Dispersal of *Avena fatua* and *A. sterilis* patches by natural dissemination, soil tillage and combine harvesters. **Weed Research**, 46, 118-128. (TC: 13)
- ⊙ Díaz B., Ribeiro A., Bueno R., Guinea D., **Barroso J.** Ruiz D., and Fernández-Quintanilla C. (2005) Modelling wild-oat density in terms of soil factors: A machine learning approach. **Precision Agriculture**, 6, 213-228. (TC: 2)
- ⊙ **Barroso J.**, Ruiz D., Fernández-Quintanilla C., Leguizamón E.S., Hernáiz P., Ribeiro A., Díaz B., Maxwell B.D., and Rew L.J. (2005). Comparison of sampling methodologies for site specific management of *Avena sterilis*. **Weed Research** 45, 165-174. (TC: 7)
- ⊙ Leguizamón E.S., Fernández-Quintanilla C., **Barroso J.**, and González-Andujar J.L.(2005) Using thermal and hydrothermal time to model seedling emergence of *Avena sterilis ssp. ludoviciana* in Spain. **Weed Research**, 45, 149-156. (TC: 15)
- ⊙ **Barroso J.**, Fernández-Quintanilla C., Maxwell B.D., and Rew L.J. (2004) Simulating the effects of weed spatial pattern and resolution of mapping and spraying on economics of site specific management. **Weed Research**, 44, 460-468. (TC: 14)
- ⊙ **Barroso J.**, Fernández-Quintanilla C., Ruiz D., Hernaiz P., and Rew L.J. (2004) Spatial stability of *Avena sterilis ssp. ludoviciana* populations under annual applications of low rates of imazamethabenz. **Weed Research**, 44, 178-186. (TC: 27)
- ⊙ Fernández-Quintanilla C., **Barroso J.**, Recasens J., Sans X., Torner C., and Sánchez del Arco MJ. (2000) Demography of *Lolium rigidum* in winter barley crops: Analysis of recruitment, survivorship and reproduction. **Weed Research**, 40, 281-291. (TC: 13)

In preparation

- ⊙ **Barroso J.**, Brummer T. and Maxwell BD. (2013). Optimizing *Sorghum halepense* management through the use of spatial-temporal models. In prep. for Ecological Modelling.
- ⊙ **Barroso J.**, Miller Z, and Menalled F.D. (2013). Variation in weed communities in perennial and annual crops. In prep. For Agroecology and Sustainable Food Systems (previously Journal of Sustainable Agronomy).

Extension articles

- **Barroso J.**, Fernandez-Quintanilla C. & Dorado J. (2013). Es posible controlar la cañota en maíz con dosis reducidas de herbicida?. **Tierras** (In press)
- Alcantara C., **Barroso J.** & M.M. Saavedra. (2012). Perdidas de trigo ocasionadas por avena en Andalucía. **Phytoma** 244, 25-29.
- Dorado J., Andujar D., **Barroso J.** & Fernandez-Quintanilla C. (2012). La cañota: Una especie problematica en cultivos de maiz. **Tierras** 190, 80-85.
- Fernández-Quintanilla C., Ruiz D., **Barroso J.**, Escribano C. & Ribeiro A. (2006). El manejo de la Avena loca mediante técnicas de agricultura de precisión. **Vida Rural** 233, 36-38.
- Fernández-Quintanilla C. & **Barroso J.** (2001). La evaluación de malezas dentro de la agricultura de precisión. **Revista de Investigaciones de la Facultad de Ciencias Agrarias** 1, 1-14.

Book Chapters

- Book title: **Plantas Invasoras, Resistencias a Herbicidas y Detección de Malas Hierbas**
Chapter: Competencia entre la cañota (*Sorghum halepense*) y el maíz grano. Authors: **Barroso J.**, San Martín C., Andújar D., Hernaiz P., Campos D., Martín J.M. y Dorado J. (2011). Editors: J.R. Arévalo, S. Fernández, F. López, J. Recasens, E. Sobrino. Publisher: Servicio de Publicaciones de la Universidad de La Laguna
- Book title: **Precision Agriculture '05**. Chapter: Development of an image analysis system for estimation of weed cover and weed pressure. 169-174. Authors: Ribeiro A., Fernández-Quintanilla C, **Barroso J.** & García-Alegre MC. (2005). Editors: Stafford J. Publisher: Wageningen Academy Publishers
- Book title: **Malherbología Ibérica y Magrebí: Soluciones Comunes a Problemas Comunes**
Chapter: Comparación de métodos para el muestreo de malas hierbas. 449-453. Authors: Fernández-Quintanilla C., **Barroso J.**, Ruiz D., Ribeiro A. and García-Alegre MC (2005). Editors: Menéndez J, Bastida, F, Fernández-Quintanilla C, González JL, Royuela M, Verdú A & Zaragoza C. Publisher: Universidad de Huelva
- Book title: **Precision Agriculture**. Chapter: A genetic algorithm approach to discover complex associations between wild-oat density and soil properties. 149-155. Authors: Díaz B., Ribeiro A., Ruiz D., **Barroso J.**, and Fernández-Quintanilla C. (2003). Editors: Stafford J and Werner A. Publisher: Wageningen Academy Publishers

PRESENTATIONS IN CONFERENCES

Total: 23. Oral presentations: 17, Posters: 6. *Denotes international conferences

- **Barroso J.**, Maxwell B.D., Andujar D, San Martin C., Fernandez-Quintanilla C, & Dorado J. (2013). Efecto de la dosis de rimsulfuron y la densidad de infestación sobre poblaciones de *Sorghum halepense* en maíz. XIV Conference of the Spanish Weed Society. Pending of celebration. Valencia (Spain). Poster.
- **Barroso J.**, Lawrence P., & Maxwell B.D. (2012). Improving agroecosystem input management with on-farm experimentation. 97th Annual Meeting of Ecological Society of America. Abstract. Portland (OR), USA. Poster.
- Lawrence P., **Barroso J.**, Maxwell B.D., Bekkerman A., Clain J., and Rew L. (2012). Effects of agroecological optimization and decision-making on threshold behavior. 97th Annual Meeting of Ecological Society of America. Abstract. Portland (OR), USA. **Oral presentation**

- Lawrence P., **Barroso J.**, Rew L., and Maxwell B. (2011). Empowering farmers by understanding uncertainty. Food and Agriculture under the Big Sky Conference. Abstract. Missoula, MT. **Oral presentation**
- **Barroso J.**, San Martin C., Andujar D., Hernaiz P., Campos D., Martin J.M., and Dorado J. (2011) Competencia entre Canota (*Sorghum halepense*) y cultivo de maiz grano. XIII Conference of the Spanish Weed Society. Proceedings, 183-186. Tenerife Island (Spain). Poster
- **Barroso J.**, Escorial M.C., and Chueca M.C (2007). Estudio para establecer la línea base de sensibilidad de poblaciones de *Bromus diandrus* a glifosato. XI Congress of the Spanish Weed Society. Proceedings, 161-164. Albacete (Spain). **Oral presentation.**
- Fernández-Quintanilla C., **Barroso J.**, Ruiz D., Ribeiro A., and García-Alegre MC. (2005). Comparación de métodos para el muestreo de malas hierbas. X Congress of the Spanish Weed Society. Proceedings, 449-453. Huelva (Spain). **Oral presentation.**
- *Dorado, J., Fernández-Quintanilla, C., **Barroso J.**, Ruiz, D., Ribeiro, A., and Martín, M.P. (2005). Detection of wild oats in cereal crops. Workshop on Precision Crop Protection. Publication on workshop Proceedings. Uppsala (Sweden). **Oral presentation.**
- *Fernández-Quintanilla, C., **Barroso J.**, Ruiz, D., Ribeiro, A., and García-Alegre M. (2004). Ground based weed mapping for site specific management of wild oats (*Avena sterilis* L.). XIIth Internacional Conference on Weed Biology. Proceedings, 471-478. Dijon (France). **Oral presentation.**
- ***Barroso J.**, Fernández-Quintanilla C., Maxwell B.D., and Rew L.J. (2003). Using site-specific weed management for control of winter wild oats in Spain: An economic evaluation. 4th European Conference of Precision Agriculture. Proceedings, 47-52. Berlin (Germany). **Oral presentation.**
- *Díaz B., Ribeiro A., Ruiz D., **Barroso J.** y Fernández-Quintanilla C. (2003). An artificial intelligent approach to identify complex associations among soil properties and weed density. 4th European Conference of Precision Agriculture. Proceedings, 71-76. Berlin (Germany). Poster.
- **Barroso J.**, Fernández-Quintanilla C. ,and Ruiz D. (2003). Comparación entre tres estrategias de control químico de la avena loca. IX Congress of the Spanish Weed Society. Proceeding, 44-47. Barcelona (Spain). **Oral presentation.**
- Fernández-Quintanilla C., Ruiz D., and **Barroso J.**(2003). ¿Es rentable realizar tratamientos localizados contra avena loca?. IX Congress of the Spanish Weed Society. Proceedings, 40-43. Barcelona (Spain). **Oral presentation.**
- *Ruiz D., **Barroso J.**, Fernández-Quintanilla C. (2002). Associations among soil properties and winter wild oat (*Avena sterilis* L.) abundance in cereal fields. EWRS 12th symposium, Proceedings, 346-347. Wageningen (The Netherlands). Poster
- ***Barroso J.**, Ruiz D. y Fernández-Quintanilla C. (2002). Spatial stability of wild oat populations under annual use of low rates of herbicides. VII Congress of European Society for Agronomy. Proceedings, 615-616. Córdoba (Spain). **Oral presentation.**
- *Ribeiro A., Díaz B., García Alegre MC, Guinea D, Fernández-Quintanilla C, **Barroso J.** y Ruiz D. (2001). A GPS/GIS based system for the acquisitions of spatially structured field properties. 3rd European Conference on Precision Agriculture. Proceedings, 97-102. Montpellier (France). **Oral Presentation.**
- ***Barroso J.**, Ruiz D., Fernández-Quintanilla C., Ribeiro A. y Díaz B. (2001). Comparison of various sampling methodologies for site specific sterile wild oat (*Avena sterile*) management. 3rd European Conference on Precision Agriculture. Proceedings, 575-580. Montpellier (France). **Oral Presentation.**
- Ruiz D., **Barroso J.**, Fernández-Quintanilla C., Ribeiro A., and Díaz B.(2001). Dependencia de los factores edáficos en la distribución espacial de la avena loca (*Avena sterilis*) en los

campos de cultivo. VIII Congress of the Spanish Weed Society. Proceeding, 261-267. León (Spain). **Oral presentation.**

- Fernández-Quintanilla C., **Barroso J.**, Ruiz D., Ribeiro A., and Díaz B.(2001). Diseño de un programa de tratamientos de precisión para el control de *Avena sterilis* en cereales. VIII Congress of the Spanish Weed Society. Proceedings, 183-188. León (Spain). Poster.
- **Barroso J.**, Ruiz D., Fernández-Quintanilla C., Ribeiro A., and Díaz B. (2001). Comparación de varios métodos de muestreo de avena loca (*Avena sterilis ssp. ludoviciana*) en agricultura de precisión. VIII Congress of the Spanish Weed Society Proceedings, 175-181. León (Spain). **Oral presentation.**
- **Barroso J.**, Ruiz D., and Fernández-Quintanilla C. (2000). Dinámica de las poblaciones de *Avena sterilis* sometidas a tratamientos anuales con herbicidas. First conference on weed management in precision farming. Proceedings, abstract, 17. Madrid (Spain). **Oral presentation.**
- Ruiz D., **Barroso J.**, González-Ponce R., and Fernández-Quintanilla C. (2000). Causas de la heterogeneidad espacial de *Avena sterilis*. First conference on weed management in precision farming. Proceedings, abstract, 13. Madrid (Spain). **Oral presentation.**
- **Barroso J.**, and Fernández-Quintanilla C. (1999). Estimación de la reducción potencial del uso de herbicidas mediante la realización de tratamientos localizados. VII Congress of the Spanish Weed Society. Proceedings, 295-300. Logroño (Spain). **Oral presentation.**

HIGHLIGHTED AWARDS

FULBRIGHT 2010. Funded by the Ministry of Education (Government of Spain)

EXTRAORDINARY AWARD OF DOCTORATE 2005 by the Polytechnic University of Madrid

Award 2000 of The Spanish Agency of International Cooperation to spend two months in the Agrarian Sciences Faculty at Rosario National University (Argentina)

ADVISING STUDENTS

- Committee member of Patrick Lawrence, Ph.D. student. “Spatial Optimization of Nitrogen Application for Dryland Wheat Yield and Protein”. In progress.
- Co-advisor of MS of Carolina San Martin Hernandez. “Study of some aspects of *Sorghum halepense* demography in maize crops”. 2010.

TEACHING ACTIVITIES

Teaching Assistant in:

Weed Ecology & Management 423 (Fall semester 2012) (Professor: Dr. B.D. Maxwell)

Agroecology 543 (Fall semester 2011) (Professor: Dr. B.D. Maxwell)

Biodiversity Survey and Monitoring 510 (Spring semester 2011) (Professor: Dr. L.J. Rew).

PARTICIPATION/ORGANIZATION OF OUTREACH/EXTENSION ACTIVITIES

- Member of the Scientific Committee of XIV Conference of the Spanish Weed Society titled: “Weeds in Mediterranean climate: their management with limited resources”. Pending of celebration. Valencia (Spain).
- Ag fair in Montana State University (2012)
- Field days in an experimental farm (2012 & 2011)
- Week of Science (5 days) in CSIC (Spanish Council for Scientific Research) (2009)
- VIII Fair of Madrid by the Science (10.000 attendants – 5 days) (2007)
- IV Fair of Madrid by the Science (10.000 attendants – 5 days) (2003)
- Moderator in the session “New Technologies and Management” in the IX Conference of the Spanish Weed Society (2003).

STAYS IN INTERNATIONAL RESEARCH CENTERS

Montana State University (MSU)	(2 years and a half)	USA
Institute of Agrarian Science (ICA-CSIC)	(1.5 years)	Spain
National Institution of Agrarian Investigations and Food Technology (SGIT-INIA)	(3 years)	Spain
Rothamsted Research	(2 months)	UK
Montana State University (MSU)	(5 months)	USA
National University of Rosario (UNR)	(2 months)	Argentina
Center for the Environmental Sciences (ICA-CSIC)	(5 years)	Spain

PANEL REVIEW MEMBER

Weed Research, since 2007

Crop Protection, since 2009

OTHER ACHIEVEMENTS

Participation in international committee: **Expert Consultation on Weed Risk Assessment**
Event: Meeting for development of preventive measures for the introduction of exotic flora in different countries dependent on FAO. Organized by F.A.O. in Madrid. 2002.

Received Courses:

- 2009. **Geographic Information System. Applications to Engineering Projects.** Organized by the University of Extremadura. (60h).
- 2003. **Management of Science and Technology.** Organized by the Carlos III University of Madrid. (60h).
- 2002. **Recognition of Winter Weed Seedlings.** Organized by the Spanish Weed Society (SEMh). (32h)
- 2001. **Decision Support Systems in Agronomy: Modelling.** Organized by the Internacional Centre for Advanced Mediterranean Agronomic Studies (CIHEAM). (80h).
- 2000. **Greenhouse Technology.** Organized by the Escuela Técnica Superior de Ingenieros Agrónomos and INEM. (215h).
- 1999. **Integrated Pest Management in Garden Plants.** Organized by the Escuela Universitaria de Ingenieros Técnicos Agrícolas and INEM . (150h).

Languages:

TOEFL (Test of English as a Foreign Language) with a score of 597 (89%) (June 2012)

First Certificate by Cambridge University (June 2003)

TOEIC (Test of English for International Communication) with a score of 780 (82%) (March 2003)

Member of the Spanish Weed Society since 2000 and the Ecological Society of America since 2012.