

Curriculum Vitae

Gorka ERICE

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Personal Information: Date of Birth: October the 23rd, 1979; Place of Birth: Irun, Spain.

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In order to get more information you may also contact Prof. Jean-Christophe Avice (UMR INRA-UCBN 950 EVA Ecophysiologie Végétale, Agronomie et Nutrition N.C.S., Université de Caen; jean-christophe.avice@unicaen.fr), Prof Rafael Martínez-Carrasco (Instituto de Recursos Naturales y Agrobiología en Salamanca; IRNASA-CSIC; rafael.mc@csic.es) and Dr. Juan José Irigoyen (Departamento de Biología Vegetal, Universidad de Navarra; jirigo@unav.es).

Education:

- Licensed in Biology, Environment and Agronomy speciality, at the University of Navarra, Pamplona, Spain (2001).
- PhD student in Plant Biology Department, University of Navarra with the thesis focused on "Effect of the interaction between elevated CO₂, temperature and drought during the regrowth of nodulated alfalfa plants" (2006).

Teaching Experience:

- Teacher of practices in Plant Physiology (2001-2006) at the University of Navarra.
- Teacher of practices in Applied Plant Physiology (2001-2006) at the University of Navarra.
- Teacher of practices in Plant Biotechnology (2001-2006) at the University of Navarra.
- Teacher of practices in Phytopathology (2001-2006) at the University of Navarra.

Participation in research projects:

2001-2004 **Effect of the interaction between CO₂ enhancement, temperature increase and drought on the physiology of nodulated alfalfa plants (BFI-2000-0154)**

Financial Support: Spanish Science and Technology Ministry

Supervisor: Juan José Irigoyen

- 2004-2007 **Study of the interaction between CO₂ enhancement, temperature increase and drought on the regrowth physiology of nodulated alfalfa (PIUNA-2004)**
Financial support: Fundación Universitaria de Navarra
Supervisor: Juan José Irigoyen
- 2004-2007 **Study of the interaction between CO₂ enhancement, temperature increase and drought on the regrowth physiology of nodulated alfalfa (BFU2004-05096/BFI)**
Financial support: Spanish Education and Science Ministry
Supervisor: Juan José Irigoyen
- 2008-2011 **Effect of climate change in alfalfa and grapevine: interaction between CO₂, temperature and water availability (PIUNA 2008)**
Financial support: Fundación Universitaria de Navarra
Supervisor: Juan José Irigoyen
- 2008-2011 **Effect of climate change in alfalfa and grapevine: interaction between CO₂, temperature and water availability (BFU2008-01405/BFI)**
Financial support: Spanish Education and Science Ministry
Supervisor: Juan José Irigoyen
- 2012-2014 **Photosynthetic acclimation, production and quality of alfalfa, grapevine and lettuce cultivated in different climate change scenarios (BFU2011-26989)**
Financial support: Spanish Science and Innovation Ministry
Supervisor: Juan José Irigoyen
- 2013-2017 **Genetic and genomic approaches to understand and improve maize responses to ozone**
Financial support: US National Science Foundation
Supervisor: Andrew D.B. Leakey

Stays in other research centers:

July-September 2002: Natural Resources and Agrobiological Institute (IRNA-CSIC), Salamanca, Spain

Supervisor: Dr. Rafael Martínez-Carrasco

Subject: Effect of elevated CO₂, temperature and water availability on nodulated alfalfa plants grown at temperature gradient greenhouses.

July-September 2003: Natural Resources and Agrobiological Institute (IRNA-CSIC), Salamanca, Spain

Supervisor: Dr. Rafael Martínez-Carrasco

Subject: Effect of elevated CO₂, temperature and water availability on nodulated alfalfa plants grown at temperature gradient greenhouses.

April-June 2004: UMR INRA-UCBN 950 EVA Ecophysiologie Végétale, Agronomie & Nutrition N.C.S., Caen, FRANCE

Supervisor: Prof. Jean Christophe Avice

Subject: Analysis of Vegetative Storage Proteins (VSP) on alfalfa taproots.

2007-2008: UMR INRA-UCBN 950 EVA Ecophysiologie Végétale, Agronomie & Nutrition N.C.S., Caen, FRANCE

Supervisor: Prof. Jean Christophe Avice

Subject: Analysis of taproot reserves on alfalfa submitted to drought, elevated CO₂ and temperature during the cutting-regrowth cycle.

May-June 2009: Department of Soil Microbiology and Symbiotic Systems. Estación Experimental del Zaidín (EEZ-CSIC), Granada, Spain.

Supervisor: Dr. Ricardo Aroca

Subject: Analysis of gene expression by qPCR corresponding to Rubisco and three aquaporins.

May-June 2010: Department of Soil Microbiology and Symbiotic Systems. Estación Experimental del Zaidín (EEZ-CSIC), Granada, Spain.

Supervisor: Dr. Ricardo Aroca

Subject: Analysis of gene expression by qPCR corresponding to Rubisco large and small subunits and leaf protein polyacrylamide two-dimensional gels.

March 2011: Department of Soil Microbiology and Symbiotic Systems. Estación Experimental del Zaidín (EEZ-CSIC), Granada, Spain.

Supervisor: Dr. Ricardo Aroca

Subject: Analysis of protein polyacrylamide two-dimensional gels.

May 2012: Department of Soil Microbiology and Symbiotic Systems. Estación Experimental del Zaidín (EEZ-CSIC), Granada, Spain.

Supervisor: Dr. Ricardo Aroca

Subject: Analysis of gene expression by qPCR corresponding to Rubisco large and small subunits and leaf protein polyacrylamide two-dimensional gels.

Publications

Publications in Science Citation Index Journals

Erice G, Irigoyen JJ, Pérez P, Martínez-Carrasco R, Sánchez-Díaz M. 2006. Effect of elevated CO₂, temperature and drought on dry matter partitioning and photosynthesis before and after cutting of nodulated alfalfa. *Plant Science* 170:1059-1067.

Erice G, Irigoyen JJ, Pérez P, Martínez-Carrasco R, Sánchez-Díaz M. 2006. Effect of elevated CO₂, temperature and drought on photosynthesis of nodulated alfalfa during a cutting regrowth cycle. *Physiologia plantarum* 126:458-468.

Erice G, Irigoyen JJ, Sánchez-Díaz M, Avice J-C, Ourry A. 2007. Effect of drought, elevated CO₂ and temperature on accumulation of N and vegetative storage proteins (VSP) in taproot of nodulated alfalfa before and after cutting. *Plant Science* 172:903-912.

Erice G, Aranjuelo I, Irigoyen JJ, Sánchez-Díaz M. 2007. Effect of elevated CO₂, temperature and drought on antioxidant status during regrowth of nodulated alfalfa. *Physiologia Plantarum*. 130:33-45.

Aranjuelo I, **Eric G**, Nogués S, Morales F, Irigoyen JJ, Sánchez-Díaz M. 2008. The mechanism(s) involved in the photoprotection of PSII at elevated CO₂ in nodulated alfalfa plants. *Environmental and Experimental Botany* 64:295-306.

Eric G, Louahlia S, Irigoyen JJ, R, Sánchez-Díaz M, Avice J-C. 2010. Biomass partitioning, morphology and water status of four alfalfa genotypes submitted to progressive drought and subsequent recovery. *Journal of Plant Physiology* 167:114-120.

Sanz-Sáez A, **Eric G**, Aranjuelo I, Nogués S, Irigoyen JJ, Sánchez-Díaz M. 2010. Photosynthetic down-regulation under elevated CO₂ exposure can be prevented by nitrogen supply in nodulated alfalfa. *Journal of Plant Physiology* 167:1558-1565.

Aranjuelo I, Molero G, **Eric G**, Avice J-C, Nogués S. 2011. Plant physiology and proteomics reveals the events of leaf response to drought in alfalfa (*Medicago sativa* L.). *Journal of Experimental Botany* 62:111-123.

Eric G, Louahlia S, Irigoyen JJ, R, Sánchez-Díaz M, Avice J-C. 2011. Water use efficiency, transpiration and net CO₂ exchange of four alfalfa genotypes submitted to progressive drought and subsequent recovery. *Environmental and Experimental Botany* 72:123-130.

Eric G, Sanz-Sáez A, Aranjuelo I, Irigoyen JJ, Aguirreolea J, Avice J-C, Sánchez-Díaz M. 2011. Photosynthesis, N₂ fixation and taproot reserves during the cutting regrowth cycle of alfalfa under elevated CO₂ and temperature. *Journal of Plant Physiology* 168: 2007-2014.

Sanz-Sáez A, **Eric G**, Aguirreolea J, Irigoyen JJ, Sánchez-Díaz M. 2012. Alfalfa yield under elevated CO₂ and temperature depends on *Sinorhizobium* strain and growth season. *Environmental and Experimental Botany* 77: 267-273.

Sanz-Sáez A, **Eric G**, Aguirreolea J, Muñoz F, Sánchez-Díaz M, Irigoyen JJ. 2012. Alfalfa forage digestibility, quality and yield under future climate change scenarios vary with *Sinorhizobium meliloti* strain. *Journal of Plant Physiology* 169:782-788.

Baslam M, **Eric G**, Goicoechea N. 2012. Impact of arbuscular mycorrhizal fungi (AMF) and atmospheric CO₂ concentration on the biomass production and partitioning in the forage legume alfalfa. *Symbiosis* 58:171-181.

Sanz-Sáez A, **Eric G**, Aranjuelo I, Aroca R, Ruíz-Lozano JM, Aguirreolea J, Irigoyen JJ, Sánchez-Díaz M,. 2013. Photosynthetic and molecular markers of CO₂-mediated photosynthetic down-regulation in nodulated alfalfa. *Journal of Integrative Plant Biology* 55 (8): 721-734.

Aranjuelo I, Sanz-Sáez A, Jauregui I, Irigoyen JJ, Araus JL, Sánchez-Díaz M, **Eric G**. 2013. Harvest index, a parameter conditioning responsiveness of wheat plants to elevated CO₂. *Journal of Experimental Botany*, 64 (7): 1879-1892.

Aranjuelo Iker, Molero G, **Eric G**, Aldasoro J, Arrese-Igor C, Nogués S. 2014. Effect of shoot removal on remobilization of carbon and nitrogen during regrowth of nitrogen-fixing alfalfa. *Physiologia Plantarum* DOI:10.1111/ppl.12222.

Book chapters

Eric G, Irigoyen JJ, Sánchez-Díaz M, Avice J-C, Ourry A. 2008. Effect of the interaction between elevated CO₂, temperature and drought during regrowth of nodulated alfalfa plants. In: *Options Méditerranéennes*. C. Porqueddu, M.M. Tavares de Sousa (editors). CIHEAM, FAO, ENMP and SPPF, ISBN: 2-85352-378-0.

Eric G, Irigoyen JJ, Sánchez-Díaz M. 2011. Alfalfa biomass production and quality during cutting regrowth cycle under elevated CO₂. In: *Biomass crops: production, energy and the environment*. Alfred P. Haggerty (editor). Nova Science Publishers, Inc. ISBN: 978-1-61209-398-7.

Eric G, Sanz-Sáez A, Aranjuelo I, Irigoyen JJ, Aguirreolea J, Sánchez-Díaz M. 2011. Cambio climático, fijación biológica de nitrógeno y leguminosas forrajeras. In: *Fundamentos y aplicaciones agroambientales de las interacciones beneficiosas plantas-microorganismos*. SEFIN: Spanish Nitrogen Fixation Society. ISBN: 978-84-614-7364-9.

Erice G, Sanz-Sáez A, Aranjuelo I, Irigoyen JJ, Sánchez-Díaz M. 2012. Future environmental conditions will limit yield in N₂ fixing alfalfa. In: Plant responses to drought stress: from morphological to molecular features. Ricardo Aroca (editor). Springer. ISBN 978-3-642-32652-3.

Participation on scientific meetings

Aranjuelo I, **Erice G**, Irigoyen JJ, Sánchez-Díaz M. El efecto de la interacción entre CO₂ temperatura y sequía en la actividad nodular de plantas de alfalfa. X Reunión Nacional de Fijación de Nitrógeno. 2004. Oral communication. Granada (Spain).

Erice G, Irigoyen JJ, Sánchez-Díaz M, Avice J-C, Ourry A. Effect of drought, elevated CO₂ and temperature on vegetative storage proteins (VSP) and N partitioning before and after cutting of nodulated alfalfa. Workshop: Propagation of Uncertainties in the Representation of Processes Underlying Net Ecosystem Exchange (NEE) in Grassland Ecosystems Models. 2004. Oral communication. Aberdeen (United Kingdom).

Erice G, Irigoyen JJ, Sánchez-Díaz M. Estudio de la interacción entre aumento de CO₂ temperatura y sequía en la fisiología del rebrote de plantas de alfalfa noduladas. VI Red Temática sobre "Biotecnología de las Interacciones Beneficiosas entre Plantas y Microorganismos" Sesión 2 "Fisiología y Bioquímica". 2005. Oral communication. Jaca (Spain).

Erice G, Irigoyen JJ, Pérez P, Martínez-Carrasco R, Sánchez-Díaz M. Efecto del CO₂ elevado, temperatura y sequía en la aclimatación fotosintética de plantas de alfalfa noduladas durante un ciclo de corte y rebrote. IX Congreso Luso-Espanhol de Fisiología Vegetal. XVI Reunión de la Sociedad Española de Fisiología Vegetal. 2005. Poster. Évora (Portugal).

Erice G, Irigoyen JJ, Sánchez-Díaz M, Avice J-C, Ourry A. Drought modifies vegetative storage proteins (VSP) during regrowth of alfalfa exposed to elevated CO₂ and temperature. Society of Experimental Biology Annual Meeting. John Boyer Symposium. 2005. Oral communication. Barcelona (Spain).

Erice G, Irigoyen JJ, Pérez P, Martínez-Carrasco R, Sánchez-Díaz M. Efecto del CO₂ elevado, temperatura y sequía en el reparto de materia seca y fotosíntesis antes y después del rebrote. Congreso sobre la Fijación de Nitrógeno Atmosférico y otras Interacciones Beneficiosas Planta-Microorganismos. XI Reunión Nacional de la Sociedad Española de Fijación de Nitrógeno. 2006. Poster. San Lorenzo de El Escorial (Spain).

Erice G, Irigoyen JJ, Sánchez-Díaz M, Avice J-C, Ourry A. Proteínas de almacenamiento vegetativo (VSP) en raíces de alfalfa bajo el efecto combinado de CO₂ elevado, temperatura y sequía. VIII Reunión de Biología Molecular de Plantas. 2006. Poster. Pamplona (Spain).

Aranjuelo I, **Erice G**, Morales F, Irigoyen JJ, Sánchez-Díaz M. Efecto fotoprotector del CO₂ elevado sobre plantas de alfalfa fijadoras de nitrógeno: relevancia de los pigmentos fotosintéticos. XI Simposio Ibérico sobre Nutrición Mineral de Plantas. 2006. Poster. Pamplona (Spain).

Erice G, Irigoyen JJ, Pérez P, Martínez-Carrasco R, Sánchez-Díaz M. Efecto del CO₂ elevado, temperatura y sequía en la producción de plantas de alfalfa noduladas: reparto de materia seca, estado hídrico y eficiencia en el uso de agua. VIII Simposium Hispano Portugués de Relaciones Hídricas en las Plantas. 2006. Oral communication. Tenerife (Spain).

Erice G, Aranjuelo I, Irigoyen JJ, Sánchez-Díaz M. Actividad antioxidante foliar de alfalfa durante el rebrote en condiciones de CO₂ elevado. XVII Reunión de la Sociedad Española de Fisiología Vegetal. X Congreso Hispano-Luso de Fisiología Vegetal. 2007. Oral communication. Alcalá de Henares (Spain).

Erice G, Louahli S, Irigoyen JJ, Sánchez-Díaz M, Avice J-C. Producción, morfología y estado hídrico de cuatro genotipos de alfalfa sometida a sequía progresiva y posterior recuperación. IX Simposium Hispano Portugués de Relaciones Hídricas en Plantas. 2008. Oral Communication. Lloret de Mar (Spain).

Avicé J-C, Louahli S, **Erice G**, Kim TH, Meuriot F, Volenec JJ, Ourry A. Diversité de réponses de la luzerne à la coupe : contribution de l'azote endogène et des protéines de réserves (VSP) à la croissance aérienne. V^{èmes} Journées Nationales sur la Biodiversité. 2008. Oral communication. Fès (Morocco).

Hamouch O, **Erice G**, Meuriot F, Avicé J-C, Irigoyen JJ, Sánchez-Díaz M, Thami Alami I, Ourry A, Louahli S. Diversité de l'adaptation morphologique de la luzerne (*Medicago sativa* L.) au stress hydrique:

production de biomasse et paramètres morphologiques. V^{èmes} Journées Nationales sur la Biodiversité. 2008. Poster. Fès (Morocco).

Hamouch O, **Erice G**, Louahlia S, Meuriot F, Irigoyen JJ, Sánchez-Díaz M, Thami Alami I, Ourry A, Avice J-C. Variabilité génotypique de la réponse physiologique de la luzerne (*Medicago sativa* L.) au stress hydrique: capacité photosynthétique et gestion de l'azote. V^{èmes} Journées Nationales sur la Biodiversité. 2008. Oral communication. Fès (Morocco).

Erice G, Sanz-Sáez A, Aranjuelo I, Irigoyen JJ, Avice J-C, Sánchez-Díaz M. Climatic change affects taproot reserves of nodulated alfalfa. Colloque INRA-UCBN "Les Réserves Végétales et leur Importance Agronomique et Sylvicole". 2009. Poster. Caen (France).

Hamouch O, Chentoufi S, **Erice G**, Louahlia S, Meuriot F, Thami Alami I, Avice J-C. Contribution of N reserves to water stress tolerance in four alfalfa genotypes submitted to progressive drought and subsequent recovery. Colloque INRA-UCBN "Les Réserves Végétales et leur Importance Agronomique et Sylvicole". 2009. Poster. Caen (France).

Hamouch O, Chentoufi S, **Erice G**, Louahlia S, Meuriot F, Thami Alami I, Avice J-C. Contribution of N reserves to water stress tolerance in four alfalfa genotypes submitted to progressive drought and subsequent recovery. XVIII Reunión de la Sociedad Española de Fisiología Vegetal (SEFV) y XI Congreso Hispano-Luso de Fisiología Vegetal. 2009. Poster. Zaragoza (Spain).

Erice G, Louahlia S, Irigoyen JJ, Sánchez-Díaz M, Thami Alami I, Avice J-C. Water use efficiency, transpiration and photosynthesis in four alfalfa genotypes subjected to progressive drought and subsequent recovery. XVIII Reunión de la Sociedad Española de Fisiología Vegetal (SEFV) y XI Congreso Hispano-Luso de Fisiología Vegetal. 2009. Oral communication. Zaragoza (Spain).

Sanz-Sáez A, **Erice G**, Aranjuelo I, Irigoyen JJ, Sánchez-Díaz M. Photosynthetic down-regulation at elevated CO₂ can be prevented by NH₄NO₃ in nodulated alfalfa. XVIII Reunión de la Sociedad Española de Fisiología Vegetal (SEFV) y XI Congreso Hispano-Luso de Fisiología Vegetal. 2009. Poster. Zaragoza (Spain).

Sanz-Sáez A, **Erice G**, Irigoyen JJ, Aguirreolea J, Sánchez-Díaz M. Aclimatación fotosintética en alfalfa nodulada en condiciones de alto CO₂ y temperatura elevada. Efecto de la cepa de *Sinorhizobium meliloti* inoculada. XVIII Reunión de la Sociedad Española de Fisiología Vegetal (SEFV) y XI Congreso Hispano-Luso de Fisiología Vegetal. 2009. Oral communication. Zaragoza (Spain).

Sanz-Sáez A, **Erice G**, Irigoyen JJ, Aguirreolea J, Sánchez-Díaz M. Symbiosis with different *Sinorhizobium meliloti* strains may alter the response of alfalfa to climate change. NJF Seminar 432. The Potential of Forage Legumes to Sustain a High Agricultural Productivity. 2010. Poster. Hvanneyri (Iceland).

Erice G, Sanz-Sáez A, Aranjuelo I, Irigoyen JJ, Aguirreolea J, Avice J-C, Sánchez-Díaz M. Climate change affects taproot reserves of nodulated alfalfa. XIII Reunión Nacional de la Sociedad Española de Fijación de Nitrógeno y II Congreso Luso-Español de Fijación de Nitrógeno. 2010. Oral communication. Zaragoza (Spain).

Sanz-Sáez A, **Erice G**, Irigoyen JJ, Aguirreolea J, Sánchez-Díaz M. Alfalfa nitrogen fixation under climate change depends on *Sinorhizobium* strain and growth season. XIII Reunión Nacional de la Sociedad Española de Fijación de Nitrógeno y II Congreso Luso-Español de Fijación de Nitrógeno. 2010. Poster. Zaragoza (Spain).

Sanz-Sáez A, **Erice G**, Irigoyen JJ, Aguirreolea J, Sánchez-Díaz M. Photosynthetic acclimation in alfalfa at elevated CO₂ depends on growth season and *Sinorhizobium* strain. XVII Congress of the Federation of European Societies of Plant Biology (FESPB). 2010. Poster. Valencia (Spain).

Sanz-Sáez A, **Erice G**, Aranjuelo I, Aroca R, Ruíz-Lozano JM, Aguirreolea J, Irigoyen JJ, Sánchez-Díaz M. Daily variations in photosynthesis, rubisco content and gene expression in alfalfa at ambient and elevated CO₂. Gordon's Research Conference, CO₂ Assimilation: Genome to Biome. 2011. Poster. Les Diablerets (Switzerland).

Erice G, Sanz-Sáez A, Aranjuelo I, Aroca R, Ruíz-Lozano JM, Avice J-C, Irigoyen JJ, Sánchez-Díaz M. Photosynthetic down-regulation of N₂ fixation in alfalfa under elevated CO₂ alters rubisco content and decreases nodule metabolism via nitrogenase and tricarboxylic acid cycle. XIX Reunión de la Sociedad

Española de Fisiología Vegetal (SEFV) y XII Congreso Hispano Luso. 2011. Oral Communication. Castelló de la Plana (Spain).

Sanz-Sáez A, **Erice G**, Aranjuelo I, Aroca R, Ruíz-Lozano JM, Aguirreolea J, Irigoyen JJ, Sánchez-Díaz M. Photosynthetic and biochemical indicators of CO₂ mediated down-regulation in nodulated alfalfa. XIX Reunión de la Sociedad Española de Fisiología Vegetal (SEFV) y XII Congreso Hispano Luso. 2011. Poster. Castelló de la Plana (Spain).

Erice G, Ruíz-Lozano JM, Sánchez-Díaz, Irigoyen JJ, Aroca R. Gene expression, proteomics and functional responses of *Arabidopsis* to salt stress and to plant promoting *Rhizobacteria* (PGPR). International Conference Plant Abiotic Stress Tolerance II. 2012. Poster. Viena (Austria).

Erice G, Sanz-Sáez A, Araus JL, Irigoyen JJ, Sánchez-Díaz M, Aranjuelo I. Relevancia del índice de cosecha de las plantas de trigo en su capacidad de respuesta al CO₂ elevado. XI Simposio Hispano-Portugués de Relaciones Hídricas en las Plantas. 2012. Oral Communication. Sevilla (Spain).

Erice G, Haus MJ, Kendzior M, Leakey ADB. Rapid phenotyping platform for stomatal patterning research in grasses. Donald Danforth Plant Science Center Fall Symposium. PhenoDays: Imaging & Robotics for 21st Century Science. 2013. Poster. Saint Louis (USA).

Ainsworth EA, Brown PJ, Leakey ADB, McIntyre LM, Barrios-Perez I, Dalsing B, **Erice G**, Leisner C, Montes C, Morse A, Rios-Acosta L, Shim S, Sorgini CA, Yendrek C. Sites of ozone sensitivity in diverse maize inbred lines. Plant and Animal Genome XXII. 2014. Poster. San Diego (USA).

Co-directed PhD

Title: Interaction between elevated CO₂, temperature and different *Sinorhizobium meliloti* strains on productivity and quality of alfalfa (*Medicago sativa* L. cv. Aragón).

PhD student: Álvaro Sanz Sáez de Jaúregui

University or Research Center: Universidad de Navarra

Year: 2011

Honors and Awards:

2001-2002: Pre-doctoral Research Grant from the Friends of the **University of Navarra**.

2002-2006: Pre-doctoral Research Grant from the **Basque Government**.

2007-2009: Post-doctoral Research Grant from the **Basque Government**.

2011-2012: Post-doctoral Research Contract from the **Government of Navarra**.

Facilities I work with

Mass spectrometry: GS-IRMS; EA-IRMS, Delta C

Protein and Rubisco quantification: One (1D) and two dimension gels(2D)

Rubisco gene expression analysis: qPCR

Gas exchange analyzers: HCM-1000, Waltz

GFS-3000, Waltz

CIRAS-2, PP Systems

Li Cor 6400

Chlorophyll fluorescence: PAM, Waltz

Spectrophotometers: Spectronic 2000 (Bausch & Lomb)

Pressure chambers: PMS Scholander

Temperature Gradient Greenhouses: TGG

Growth chambers: Conviron PGV-36

Other merits

Referee of the following research papers:

- *Journal of Plant Physiology*
- *Physiologia Plantarum*
- *Plant Biology*
- *Biologia Plantarum*
- *Acta Physiologia Plantarum*

Member of jury in PhD. Thesis defense:

Title: Characterization of the adaptation of mycorrhizal fungi to environments affected by drought and salinity and their implications in the improvement of plant tolerance to such environments.

PhD student: Beatriz Estrada Velasco

University or Research Center: Estación Experimental del Zaidín (EEZ-CSIC)

Year: 2012