

DR. MARJORIE REYES DÍAZ

AFFILIATIONS

Associated Professor Universidad de La Frontera

Facultad de Ingeniería y Ciencias, Departamento de Ciencias Químicas y Recursos Naturales

Center of Plant, Soil Interaction and Natural Resources Biotechnology BIOREN-UFRO

CONTACT

Av. Francisco Salazar 01145, PO Box 54-D, 4811230, Temuco, Chile

Telephone: +56 (45) 2325470 o +56 (45) 2325420

E-mail: marjorie.reyes@ufrontera.cl

ACADEMIC DEGREES AND PROFESSIONAL STUDIES

2006 Doctor in Biological Science, Universidad de Concepción, Chile.

2002 Biologist, Universidad de Concepción, Chile.

2001 Bachelor in Biology, Universidad de Concepción, Chile.

DOCTORAL THESIS

2006. Mecanismos de fotoprotección frente a las bajas temperaturas y alta intensidad lumínica en *Nothofagus dombeyi* y *Nothofagus nitida* (Fagaceae), dos especies siempreverdes de los bosques templados lluviosos del sur de Chile. Doctoral Program of Biological Science, Universidad de Concepción, Concepción, Chile. Tutor: Dr. Luis Corcuera Pérez. Departamento de Botánica, Universidad de Concepción, Chile.

POSTDOCTORAL RESEARCH

2006-2009. "Respuestas fisiológicas frente al efecto combinado de radiación UV-B y estrés por aluminio en *Ugni molinae* y *Vaccinium corymbosum* en los suelos ácidos del sur de Chile". Postdoctoral Project PSD-26 CONICYT-UFRO (Bicentenary Program of Science and Technology).

RESEARCH VISITS

2017. Estación Experimental del Zaidín (EEZ), Granada, España. Dr. Nuria Ferrol.

2010. Estación Experimental del Zaidín (EEZ), Granada, España. Dr. Nuria Ferrol.

2008. USDA/ARS, Genetic Improvement of Fruits and Vegetables Laboratory, Beltsville, Maryland, USA. Dr. Jeannie Rowland.

2006. Department of Biology and The Biotron, University of Western Ontario, London, Ontario, Canada. Dr. Norm Huner.

RESEARCH LINES

Plant Physiology and Biochemistry

Plant resistance mechanisms involved in environmental stresses

Molecular Plant Biology

Phytohormones

PUBLICATIONS

1. Calderón-Reyes C, Silva Pezoa R, Leal P, Ribera-Fonseca A, Cáceres C, Riquelme I, Zambrano T, Peña D, Alberdi M, **Reyes-Díaz M***. 2020. Anthocyanin-Rich Extracts of Calafate (*Berberis microphylla* G. Forst.) Fruits Decrease In Vitro Viability and Migration of Human Gastric and Gallbladder Cancer Cell Lines. *Journal of Soil Science and Plant Nutrition* (Accepted).
2. González-Villagra J, **Reyes-Díaz M**, Alberdi M, Mora ML, Ulloa-Inostroza EM, Ribera-Fonseca A*. 2020. Impact of cold-storage and UV-C irradiation postharvest treatments on quality and antioxidant properties of fruits from blueberry cultivars grown in Southern Chile. *Journal of Soil Science and Plant Nutrition* (Accepted).
3. Leiva A, Agurto M, Matus T, Hoppe G, Huidobro C, Inostroza-Blancheteau C, **Reyes-Díaz M**, Stange C, Canessa P, Vega A. 2020. Salinity impairs photosynthetic capacity and enhances carotenoid-related gene expression and biosynthesis in tomato (*Solanum lycopersicum* L. cv. Micro-Tom). *Peer J*_45254 (Accepted).
4. Millaleo R, Alvear M, Aguilera P, González-Villagra J, Mora ML, Alberdi M, **Reyes-Díaz M***. 2020. Mn Toxicity Differentially Affects Physiological and Biochemical Features in Highbush Blueberry (*Vaccinium corymbosum* L.) Cultivars. *Journal of Soil Science and Plant Nutrition* (Accepted).

5. Alarcón-Poblete E, González-Villagra J, Magnum de Oliveira Silva F, Nunes-Nesi A, Inostroza-Blancheteau C, Alberdi M, **Reyes-Díaz M***. 2020. Metabolic responses of *Vaccinium corymbosum* L. cultivars to Al³⁺ toxicity and gypsum amendment. *Environmental and Experimental Botany* 176: 104119.
6. Tighe-Neira R, **Reyes-Díaz M**, Nunes-Nesi A, Recio G, Carmona E, Corgne A, Rengel Z, Inostroza-Blancheteau C. 2020. Titanium dioxide nanoparticles provoke transient increase in photosynthetic performance and differential response in antioxidant system in *Raphanus sativus* L. *Scientia Horticulturae* 269: 109418.
7. Ribera-Fonseca A*, Jorquera-Fontena E, Castro M, Acevedo P, **Reyes-Díaz M**. 2020. Exploring VIS/NIR reflectance indices for the estimation of water status in highbush blueberry plants grown under full and deficit irrigation. *Scientia Horticulturae* 25615: 108557.
8. Ribera-Fonseca A, Jiménez D, Leal P, Riquelme I, Roa JC, Alberdi M, Peek RM, **Reyes-Díaz M***. 2020. The anti-proliferative and anti-invasive effect of leaf extracts of blueberry plants treated with methyl jasmonate on human gastric cancer in vitro is related to their antioxidant properties. *Antioxidants* 2020 9:45.
9. González-Villagra J, **Reyes-Díaz M**, Alberdi Miren, Acevedo P, Loyola R, Tighe-Neira R, Arce-Johnson P, Inostroza-Blancheteau C*. 2020. Solar UV irradiation effects on photosynthetic performance, biochemical markers, and gene expression in highbush blueberry (*Vaccinium corymbosum* L.) cultivars. *Scientia Horticulturae* 259:108816.
10. Romero-Romero JL, Inostroza-Blancheteau C, **Reyes-Díaz M**, Matte JP, Aquea F, Espinoza C, Gil P, Arce-Johnson P*. 2020. Increased drought and salinity tolerance in *Citrus aurantifolia* (Mexican lemon) plants overexpressing Arabidopsis CBF3 gene. *Journal of Soil Science and Plant Nutrition* 20: 244–252.
11. Berríos GA, Luengo Escobar A, Alberdi MR, Nunes-Nesi A, **Reyes-Díaz MM***. 2019. Manganese toxicity amelioration by phosphorus supply in contrasting Mn resistant genotypes of ryegrass. *Plant Physiology and Biochemistry* 144: 144–156.
12. Alarcón-Poblete E, Inostroza-Blancheteau C, Latsague M, Alberdi M, Magnum de Oliveira Silva F, Nunes-Nesi A, Poblete-Grant P, Meriño-Gergichevich C, **Reyes-Díaz M***. 2019. Gypsum application ameliorates morphological and photochemical damages provoked by Al toxicity in *Vaccinium corymbosum* L. cultivars. *Journal of Berry Research* 9:665–685.
13. Delgado M*, Valle S, Barra P, **Reyes-Díaz M**, Zúñiga-Feest A. 2019. New aluminum hyperaccumulator species of the Proteaceae family from southern South America. *Plant and Soil* 444:475–487.
14. Cárcamo MP, **Reyes-Díaz M**, Rengel Z, Alberdi M, Omena-García R, Nunes-Nesi A, Inostroza-Blancheteau C*. 2019. Short-term aluminum stress differentially affects physiological

- performance and metabolic compounds in cultivars of highbush blueberry plants (*Vaccinium corymbosum* L.). *Scientific Reports* 9:11275.
15. Ribera-Fonseca A*, Jorquera E, Castro M, Acevedo P, Parra JC, **Reyes-Díaz M**. 2019. Exploring VIS/NIR Reflectance Indices for the Estimation of Water Status in Highbush Blueberry Plants Grown Under Full and Deficit Irrigation. *Scientia Horticulturae* 256.
 16. Ulloa-Inostroza EM, Alberdi M, Ivanov AG, **Reyes-Díaz M***. 2019. Protective effect of methyl jasmonate on photosynthetic performance and its association with antioxidants in contrasting aluminum-resistant blueberry cultivars exposed to aluminum. *J Soil Sci Plant Nutr* 1: 203–216.
 17. González-Villagra J, Cohen JD, **Reyes-Díaz M***. 2019. Abscisic acid (ABA) is involved in phenolic compounds biosynthesis, mainly anthocyanins, in leaves of *Aristotelia chilensis* plants (Mol.) subjected to drought stress. *Physiologia Plantarum* 165:855-866.
 18. Delgado MF, Valle S, **Reyes-Díaz M**, Barra PJ, Zúñiga-Feest A. 2018. Nutrient Use Efficiency of Southern South America Proteaceae Species. Are there General Patterns in the Proteaceae Family? *Frontiers* 9(883).
 19. Romero-Romero JL, Inostroza-Blancheteau C, Orellana D, Aquea F, **Reyes-Díaz M**, Gil PM, Matte JP, Arce-Johnson P*. 2018. Stomata regulation by tissue-specific expression of the *Citrus sinensis* MYB61 transcription factor improves water-use efficiency in Arabidopsis. *Plant Physiology and Biochemistry* 130:54-60.
 20. Inostroza-Blancheteau C*, de Oliveira Silva FM, Durán F, Solano J, Obata T, Machado M, Fernie AR, **Reyes-Díaz M**, Nunes-Nesi A. 2018. Metabolic diversity in tuber tissues of native Chiloé potatoes and commercial cultivars of *Solanum tuberosum* ssp. *tuberosum* L. *Metabolomics* 14:138.
 21. Tighe-Neira R, Carmora E, Recio G, Nunes-Nesi A, **Reyes-Díaz M**, Alberdi M, Rengel Z, Inostroza-Blancheteau C*. 2018. Metallic nanoparticles influence the structure and function of the photosynthetic apparatus in plants. *Plant Physiology and Biochemistry* 130:408-417.
 22. Fallard A, Rabert C, **Reyes-Díaz M**, Alberdi Miren, Bravo LA*. 2018. Compatible solutes and metabolites accumulation does not explain partial desiccation tolerance in *Hymenoglossum cruentum* and *Hymenophyllum dentatum* (Hymenophyllaceae) two filmy ferns with contrasting vertical distribution. *Environmental and Experimental Botany* 150:272–279.
 23. González-Villagra J, Rodrigues-Salvador A, Nunes-Nesi A, Cohen JD, **Reyes-Díaz M***. 2018. Age-related mechanism and its relationship with secondary metabolism and abscisic acid in *Aristotelia chilensis* plants subjected to drought stress. *Plant Physiology and Biochemistry* 124:136-145.
 24. Alarcón E, Inostroza-Blancheteau C, Alberdi M, Zed R, **Reyes-Díaz M***. 2018. Molecular regulation of aluminum resistance and sulfur nutrition during root growth. *Planta* 247:27–39.

25. **Reyes-Díaz M**, Inostroza-Blancheteau C*, Berríos G, Deppe M, Demanet R, Alberdi M. 2017. Physiological traits and Mn transporter genes expression in ryegrass genotypes under increasing Mn at short-term. *Plant Physiology and Biochemistry* 118:218-227.
26. Luengo Escobar A, Magnum de Oliveira Silva F, Acevedo P, Nunes-Nesi A, Alberdi M, **Reyes-Díaz M***. 2017. Different levels of UV-B resistance in *Vaccinium corymbosum* cultivars reveal distinct backgrounds of phenylpropanoid metabolites. *Plant Physiology and Biochemistry* 118: 541-550.
27. Meriño-Gergichevich C, **Reyes-Díaz M**, Guerrero J, Ondrasek G. 2017. Physiological and nutritional responses in two highbush blueberry cultivars exposed to deficiency and excess of boron. *J. Soil Sci. Plant Nutr.* 17(2):307-318.
28. González-Villagra J, Kurepin LV, **Reyes-Díaz MM***. 2017. Evaluating the involvement and interaction of abscisic acid and miRNA 156 in the induction of anthocyanin biosynthesis in drought stressed plants. *Planta* 246:299–312.
29. Luengo Escobar A, Alberdi Miren, Acevedo P, Machad M, Nunes-Nesi A, Inostroza-Blanchetea C, **Reyes-Díaz M***. 2017. Distinct physiological and metabolic reprogramming undergoing long term UV-B radiation revealed in highbush blueberry cultivars (*Vaccinium corymbosum* L.). *Physiologia Plantarum* 160 (1): 46–64
30. Rabert C, **Reyes-Díaz M**, Corcuera LJ, Bravo LA, Alberdi M*. 2017. Contrasting nitrogen use efficiency of Antarctic vascular plants may explain their population expansion in Antarctica. *Polar Biology* 40:1569-1580.
31. Carmona ER*, **Reyes-Díaz M**, Parodi J, Inostroza-Blancheteau C. 2017. Antimutagenic evaluation of traditional medicinal plants from South America *Peumus boldus* and *Cryptocarya alba* using *Drosophila melanogaster*. *Journal of Toxicology and Environmental Health, Part A* 80(4):208-217
32. Inostroza-Blancheteau C, **Reyes-Díaz M***, Berríos G, Rodrigues-Salvador A, Nunes-Nesi A, Deppe M, Demanet R, Rengel Z, Alberdi M. 2017. Physiological and biochemical responses to manganese toxicity in ryegrass (*Lolium perenne* L.) genotypes. *Plant Physiology and Biochemistry* 113:89-97.
33. Ulloa-Inostroza EM, Alberdi M, Meriño-Gergichevich C, **Reyes-Díaz M***. 2017. Low doses of exogenous methyl jasmonate applied simultaneously with toxic aluminum improve the antioxidant performance of *Vaccinium corymbosum*. *Plant and Soil* 412:81-96.
34. Meriño-Gergichevich C*, Pacheco E, **Reyes-Díaz M**. 2016. The effect of foliar boron spraying on the fruit features of Brigitta and Legacy highbush blueberry (*Vaccinium corymbosum*) cultivars. *Cien. Inv. Agr.* 43(3):452-463.

35. Deppe M*, Pezo F, **Reyes-Díaz M**, Risopatrón J. 2016. Criopreservación de espermatozoides de canino con extracto de hojas de arándano (*Vaccinium corymbosum* L.). *Int. J. Morphol.* 34(2):653-659.
36. **Reyes-Díaz M***, Lobos T, Cardemil L, Nunes-Nesi A, Retamales J, Jaakola L, Alberdi M, Ribera-Fonseca A. 2016. Methyl Jasmonate: An Alternative for Improving the Quality and Health Properties of Fresh Fruits. *Molecules* 21:567.
37. Jorquera-Fontena E, Alberdi M, **Reyes-Díaz M**, Franck N*. 2016. Rearrangement of physiological and structural leaf traits with changing source-sink relationship in blueberry (*Vaccinium corymbosum* L.) leaves. *Photosynthetica* 54 (4): 508-516.
38. **Reyes-Díaz M***, Meriño-Gergichevich C, Inostroza-Blancheteau C, Latsague M, Acevedo P, Alberdi M. 2016. Anatomical, physiological and biochemical traits involved in the UV-B radiation response in highbush blueberry (*Vaccinium corymbosum* L.). *Biologia Plantarum* 60:355-366.
39. Meriño-Gergichevich C, Ondrasek G, Zovko M, Šamec D, Alberdi M, **Reyes-Díaz M***. 2015. Comparative study of methodologies to determine the antioxidant capacity of Al-toxified blueberry amended with calcium sulfate. *Journal of Soil Science and Plant Nutrition* 15:965-978.
40. Yañez-Mansilla E, Cartes P, **Reyes-Díaz M**, Ribera-Fonseca A, Rengel Z, Alberdi M*. 2015. Leaf nitrogen thresholds ensuring high antioxidant features of *Vaccinium corymbosum* cultivars. *Journal of Soil Science and Plant Nutrition* 15 (3): 574-586.
41. Inostroza-Blancheteau C*, **Reyes-Díaz M**, Arellano A, Latsague M, Acevedo P, Loyola Rodrigo, Arce-Johnson P, Alberdi M. 2014. Effects of UV-B radiation on anatomical characteristics, phenolic compounds and gene expression of the phenylpropanoid pathway in highbush blueberry leaves. *Plant Physiology and Biochemistry* 85: 85-95.
42. Yañez-Mansilla E, Cartes P, **Reyes-Díaz M**, Ribera-Fonseca A, Alberdi M*. 2014. Photosynthetic and antioxidant performance are differentially affected by short-term nitrogen supply in highbush blueberry cultivars. *Ciencia e Investigación Agraria* 41 (1): 61-70.
43. Rojas-Lillo Y, Alberdi M, Acevedo P, Inostroza-Blancheteau C, Rengel Z, Mora ML, **Reyes-Díaz M***. 2014. Manganese toxicity and UV-B radiation differentially influence the physiology and biochemistry of highbush blueberry (*Vaccinium corymbosum*) cultivars. *Functional Plant Biology*, 41(2) 156-167 doi.org/10.1071/FP12393.
44. Inostroza-Blancheteau C, Aquea F, Loyola R, Slovin J, Josway S, Rengel Z, **Reyes-Díaz M**, Alberdi M, Arce-Johnson P*. 2013. Molecular characterisation of a calmodulin gene, VcCaM1, that is differentially expressed under aluminium stress in highbush blueberry. *Plant Biology* 15(6):1013-8 doi:10.1111/j.1438-8677.2012.00722.x.

45. Ribera AE*, **Reyes-Díaz MM**, Alberdi MR, Alvarez-Cortez DA, Rengel Z, Mora ML. 2013. Photosynthetic impairment caused by manganese toxicity and associated antioxidative responses in perennial ryegrass. *Crop & Pasture Science* 64, 696–707.
46. Mariangel E, **Reyes-Díaz M**, Lobos W, Bensch E, Schalchli H, Ibarra P*. 2013. The antioxidant properties of calafate (*Berberis microphylla*) fruits from four different locations in southern Chile. *Ciencia e Investigación Agraria* 40(1):161-170.
47. Millaleo R, **Reyes-Díaz M**, Alberdi M*, Ivanov AG, Krol M, Hüner NPA. 2013. Excess manganese differentially inhibits photosystem I versus II in *Arabidopsis thaliana*. *Journal of Experimental Botany* 64(1): 343-354.
48. Inostroza-Blancheteau C, **Reyes-Díaz M**, Alberdi M, Godoy K, Rojas-Lillo Y, Cartes P, Mora ML*. 2013. Influence of selenite on selenium uptake, differential antioxidant performance and gene expression of sulfate transporters in wheat genotypes. *Plant and Soil* 369:47-59.
49. Inostroza-Blancheteau C, Rengel Zed, Alberdi M, Mora ML, Aquea F, Arce-Johnson P, **Reyes-Díaz M***. 2012. Molecular and physiological strategies to increase aluminum resistance in plants. *Molecular Biology Reports* 39:2069-2079.
50. **Reyes-Díaz M***, Meriño-Gergichevich C, Alarcón E, Alberdi M, Horst WJ (2011) Calcium sulfate ameliorates the effect of aluminum toxicity differentially in genotypes of highbush blueberry (*Vaccinium corymbosum* L.). *Journal of Soil Science and Plant Nutrition* 11 (4): 59-78.
51. Coopman R*, Briceño V, Corcuera, LJ, **Reyes-Díaz M**, Alvarez D, Saez K, Garcia-Plazaola J, Alberdi M, Bravo LA (2011) Tree size and light availability increase photochemical instead of non-photochemical capacities of *Nothofagus nitida* trees growing in an evergreen temperate rain forest. *Tree Physiology* 31 (10): 1128-1141.
52. Inostroza-Blancheteau C, **Reyes-Díaz M***, Aquea F, Nunes-Nesi A, Alberdi M, Arce-Johnson P (2011) Biochemical and molecular changes in response to aluminum-stress in highbush blueberry (*Vaccinium corymbosum* L.). *Plant Physiology and Biochemistry* 49:1005-1012.
53. Inostroza-Blancheteau C, Aquea F, **Reyes-Díaz M**, Alberdi M, Arce-Johnson P* (2011). Identification of aluminum-regulated genes by cDNA-AFLP analysis of roots in two contrasting genotypes of highbush blueberry (*Vaccinium corymbosum* L.). *Molecular Biotechnology* 49:32-41.
54. Millaleo R, **Reyes-Díaz M**, Ivanov AG, Mora ML, Alberdi M* (2010) Manganese as essential and toxic element for plants: Transport, accumulation and resistance mechanisms. *Journal of Soil Science and Plant Nutrition* 10 (4): 476-494.
55. Ribera AE*, **Reyes-Díaz M**, Alberdi M, Zuñiga GE, Mora ML (2010) Antioxidant compounds in skin and pulp of fruits change among genotypes and maturity stages in highbush blueberry

- (*Vaccinium corymbosum* L.) grown in southern Chile. *Journal of Soil Science and Plant Nutrition* 10 (4): 509 – 536.
56. Meriño-Gergichevich C, Alberdi M, Ivanov A, **Reyes-Díaz M*** (2010) Al³⁺- Ca²⁺ interaction in plants growing in acid soils: Al-phytotoxicity response to calcareous amendments. *Journal of Soil Science and Plant Nutrition* 10(3):217-243.
57. **Reyes-Díaz M**, Inostroza-Blancheteau C, Millaleo R, Cruces E, Wulff-Zottele C, Alberdi M, Mora ML* (2010) Long-term aluminium exposure effects on physiological and biochemical features of Highbush Blueberry cultivars. *Journal of the American Society for Horticultural Science* 135(3):1-11.
58. Inostroza-Blancheteau C, Soto B, Ibáñez C, Ulloa P, Aquea F, Arce-Johnson P, **Reyes-Díaz M*** (2010) Mapping aluminum tolerance loci in cereals: A tool available for crop breeding. *Electronic Journal of Biotechnology* 13 (4) DOI: 10.2225/vol13-issue4-fulltext-4.
59. **Reyes-Díaz M***, Ivanov AG, Huner NPA, Alberdi M, Corcuera LJ, Bravo LA (2009) Thermal energy dissipation and its components in two developmental stages of shade-tolerant species, *Nothofagus nitida*, and sun-tolerant species, *Nothofagus dombeyi*. *Tree Physiology* 29(5):651-662.
60. Piper FI*, **Reyes-Díaz M**, Corcuera LJ, Lusk CH (2009) Carbohydrate storage, survival and growth of two evergreen *Nothofagus* species in two contrasting light environments. *Ecological Research* 24 (6): 1233-1241.
61. **Reyes-Díaz M**, Alberdi M, Mora ML* (2009) Short-term aluminum stress differentially affects the photochemical efficiency of photosystem II in Highbush Blueberry genotypes. *Journal of the American Society for Horticultural Science* 134(1):1-8.
62. Zúñiga-Feest A*, Bascuñán-Godoy L, **Reyes-Díaz M**, Bravo LA, Corcuera LJ (2009) Is survival after ice encasement related with sugar distribution in organs of the Antarctic plants *Deschampsia antarctica* Desv. (Poaceae) and *Colobanthus quitensis* (Kunth) Bartl. (Caryophyllaceae)?. *Polar Biology* 32(4): 583-591.
63. Alberdi M*, **Reyes-Díaz M**, Zúñiga R, Hess S, Bravo LA, Corcuera LJ (2009) Photochemical efficiency of PSII and photoprotective pigments in seedlings and adults of two Proteaceae with different shade tolerance from the Chilean temperate rain forest. *Revista Chilena de Historia Natural* 82:387-402.
64. Coopman RE, **Reyes-Díaz M**, Briceño VF, Corcuera LJ, Cabrera HM, Bravo LA* (2008). Changes during early development in photosynthetic light acclimation capacity explain the shade to sun transition in *Nothofagus nitida*. *Tree Physiology* 28: 1561–1571.

65. Castro-Arévalo M, **Reyes-Díaz M***, Alberdi M, Jara-Rodríguez V, Sanhueza C, Corcuera LJ, Bravo LA. (2008). Effects of Low Temperature Acclimation on Photosynthesis in three Chilean Proteaceae. *Revista Chilena de Historia Natural* 81(3): 321-333.
66. Inostroza-Blancheteau C, Soto B, Ulloa P, Aquea F, **Reyes-Díaz M*** (2008) Resistance mechanisms of aluminum (Al³⁺) phytotoxicity in cereals: physiological, genetic and molecular bases. *Journal of Soil Science and Plant Nutrition* 8(4):57-71.
67. Motomura Y, **Reyes-Díaz M**, Mora ML* (2008) Effect of selenite on the total polyphenol content and antioxidative activity of aqueous and ethanolic extracts in sprouts of four agronomic species. *Journal of Soil Science and Plant Nutrition* 8 (1): 55-67.
68. **Reyes-Díaz M**, Ulloa N, Zúñiga-Feest A, Gutierrez A, Gidekel M, Alberdi M, Corcuera LJ, Bravo LA* (2006). *Arabidopsis thaliana* avoids freezing by supercooling. *Journal of Experimental Botany* 57 (14):3687-3696.
69. Piper FI, Cavieres LA*, **Reyes-Díaz M**, Corcuera LJ (2006). Carbon sink limitation and frost tolerance control performance of the tree *Kageneckia angustifolia* D. Don (Rosaceae) at the treeline in Central Chile. *Plant Ecology* 185:29-39.
70. Zúñiga R, Alberdi M*, **Reyes-Díaz M**, Olivares E, Hess S, Bravo LA, Corcuera LJ (2006). Seasonal changes in the photosynthetic performance of two evergreen *Nothofagus* species in south central Chile. *Revista Chilena de Historia Natural* 79:489-504.
71. **Reyes-Díaz M**, Alberdi M, Piper F, Bravo LA*, Corcuera LJ (2005). Low temperature responses of *Nothofagus dombeyi* and *Nothofagus nitida*, two evergreen species from south central Chile. *Tree Physiology* 25:1389-1398.
72. Gianoli E*, Inostroza P, Zúñiga-Feest A, **Reyes-Díaz M**, Cavieres LA, Bravo LA, Corcuera LJ. (2004). Ecotypic Differentiation in Morphology and Cold Resistance in Populations of *Colobanthus quitensis* (Cariophyllaceae) from the Andes of Central Chile and Maritime Antarctica. *Artic, Antarctic and Alpine Research* 36 (4): 484-489.

BOOKS AND CHAPTER BOOKS

1. Tighe-Neira R, Alberdi Miren, Arce-Johnson P, Romero J, **Reyes-Díaz M**, Rengel Z, Inostroza-Blancheteau C. 2018. Role of potassium in governing photosynthetic processes and plant yield. Chapter 8. In: *Plant Nutrients and Abiotic Stress Tolerance*. Hasanuzzaman M, Fujita M, Oku H, Nahar K, Hawrylak-Nowak B (Eds). Springer, DOI: 10.1007/978-981-10-9044-8_8.
2. Inostroza-Blancheteau C, **Reyes-Díaz M**, Ibañez C, Rengel Z, Moraga F, Aquea F. 2017. Genetic engineering for nutrient manipulation in plants. Chapter 17. In: *Plant Nutrients: Essentiality, Availability, Applications, Management and Control*. Ansari AA, Gill SS and Naeem M (Eds). Springer, DOI: 10.1007/978-3-319-58841-4_17. ISBN 978-3-319-58840.

3. Ulloa-Inostroza EM, Ulloa-Inostroza EG, Alberdi M, Peña-Sanhueza D, González-Villagra J, Jaakola L, **Reyes-Díaz M***. 2017. Native Chilean fruits and the use of their functional compounds in human health. In: Superfood and Functional Food - An Overview and its Utilization to Processed Foods. Viduranga Waisundara and Naofumi Shiomi (Eds.), InTech 99-130 pp.
4. Peña-Sanhueza D, Inostroza-Blancheteau C, Ribera-Fonseca A, **Reyes-Díaz M***. 2017. Anthocyanins in berries and their potential use in human health. In: Superfood and Functional Food - An Overview and its Utilization to Processed Foods. Viduranga Waisundara and Naofumi Shiomi (Eds.). InTech ISBN 978-953-51-5020-6, 155-172 pp.
5. Tighe-Neira R, Alberdi M, Arce-Johnson P, Romero-Romero JL, **Reyes-Díaz M**, Inostroza-Blancheteau C*. 2017. Foods with functional properties and their potential uses in human health. In: Superfood and Functional Food - An Overview and its Utilization to Processed Foods. Viduranga Waisundara and Naofumi Shiomi (Eds.). InTech ISBN 978-953-51-5020-6.
6. **Reyes-Díaz M***, Ulloa-Inostroza EM, Gonzalez-Villagra J, Ivanov AG, Kurepin LV. 2016. Phytohormonal responses to soil acidity in plants. In: Plant hormones under challenging environmental factors, Ahammed GJ (Ed.), Springer, 133-155 pp.
7. **Reyes-Díaz M***, Inostroza-Blancheteau C, Rengel Z. 2015. Physiological and molecular regulation of aluminum resistance in woody plant species. In: Aluminum Stress Adaptation in Plants, Panda SK and Baluška F (Eds.), Springer, 187-202 pp.

OTHER PUBLICATIONS (reports)

1. Inostroza-Blancheteau C, **Reyes-Díaz M**, Alberdi M. 2012. Physiological, biochemical and molecular aspects of aluminum toxicity (Al^{3+}) in blueberries cultivated in Southern Chile. *InnovAgro* 3:76-84.
2. Inostroza-Blancheteau C, **Reyes-Díaz M**, Alberdi M. 2013. Toxicidad por aluminio (Al^{3+}) y manganeso (Mn^{2+}) en arándanos cultivados en el Sur de Chile. *Berries and Cherries* Octubre-Noviembre 19-24.

RESEARCH PROJECTS

2018-2019: Effect of supplementation of incubation medium with *Berberis microphylla* extract on thawed bovine sperm functionality. **Co-Researcher** DIUFRO DI18-0071.

2018-2019: Quality and healthy postharvest features of highbush blueberry (*Vaccinium corymbosum* L.) fruits as affected by phosphorous and nitrogen fertilization in acid soils of southern Chile. **Co-Researcher** DIUFRO DI17-0160.

2018-2021: A study of the association of colonizing Proteaceae species with cushion plants as restoration models on recent volcanic deposits: The role of cluster root formation and carboxylates exudation on the rhizospheric microbiota and soil nutrient availability. **Co-Researcher** FONDECYT N°1180699.

2018-2021: The MeJA application effect on endogenous ABA and auxins of *V. corymbosum* plants and its role in the Al-resistance and WD-avoidance mechanisms under aluminum toxicity and WD episodes. **Sponsoring Researcher**. Proyecto Fondecyt posdoctoral 3180754.

2017-2026: Centro para la investigación e innovación en fruticultura para la zona sur. **Co-Researcher**. CORFO 16PTECF5-66647.

2017-2019: Extremofites: The new promising models for discovering stress tolerance mechanisms and bioactive compounds. **Deputy Director**. Proyecto: Network for Extreme Environment Research NEXER NXR17-002. Universidad de La Frontera.

2017-2021: Phytohormones and its association with resistance mechanisms to Al and Mn toxicity in highbush blueberry cultivars growing in acid soil: A strategy for improving yield and fruit quality of plants. **Main Researcher**. FONDECYT N° 1171286.

2017: Suelo ácido en el Sur de Chile y su efecto sobre el metabolismo primario de las plantas. **Main Researcher**. Proyecto PAI80160036, Atracción de capital humano avanzado del extranjero, modalidad estadías cortas (MEC).

2016: Generación de un servicio dirigido al productor de arándano, basado en la optimización de la utilización de enmienda calcárea para potenciar el contenido antioxidante del fruto. **Director**. Proyecto FONDEF VIU15P0055.

2016: Caracterización fenólica de extractos de frutos de calafate y su potencial uso como agente hipoglicemiante y anticancerígeno. **Main Researcher**. PIA-UFRO.

2016: Uso de espectroscopia VIS/NIR portátil para la estimación del balance hídrico y potencial bioenergético de residuos de poda en huertos de arándano alto: un estudio preliminar. **Co-Researcher**. PIA-UFRO.

2015-2018: Physiological, biochemical and molecular approaches to manganese toxicity and phosphorus supply in two *Lolium perenne* cultivars. **Sponsoring Researcher**. Proyecto Fondecyt posdoctoral 3160520.

2014-2016: Role of magnesium nutrition and manganese excess on productivity and quality of *Lolium perenne* L. grown in acid soils of southern Chile. **Co-Researcher**. FONDECYT N°1141250.

2014-2015: Effect of blueberry (*Vaccinium corymbosum*) leaves extracts on canine spermatozoa during cryopreservation. **Co-Researcher**. DIUFRO, DI14-0011.

2014-2017: Rol de la relación Ca/ B sobre la mitigación de aluminio fitotóxico en arándano alto (*Vaccinium corymbosum*): Respuestas fisiológicas y bioquímicas. **Sponsoring Researcher**. Proyecto Fondecyt posdoctoral 3140622.

2013-2015: Evaluation of a combined system: "*Lupinus-Embothrium coccineum*" for restoration of volcanic impacted areas in southern Chile. Cost and benefits of cluster roots formation, acid exudation and nitrogen fixation. **Co-Researcher**. FONDECYT N° 1130440.

2012-2016: Antarctic Plant Ecophysiology: Unraveling the biological consequences of climate change on plant populations of the Maritime Antarctic. Anillos de Investigación en Ciencia Antártica, Programa de Investigación Asociativa CONICYT-INACH, N°ART1102. **Associated Researcher**.

2012-2016: Improving the production of phenylpropanoids with antioxidant activity in Highbush blueberry (*Vaccinium corymbosum* L.) using Methyl Jasmonate and UV-B radiation and its effect on gastric cancer chemoprevention. **Main Researcher**. FONDECYT N°1120917.

2012-2015: Role of frond curling and tissues associated to the rachis and veins in desiccation tolerance of filmy ferns (Hymenophyllaceae). **Co-Researcher**. FONDECYT N°1120964.

2011-2014: Photoprotective and antioxidant compounds of highbush blueberry (*Vaccinium corymbosum* L) grown in southern Chile as affected by nitrogen fertilization and solar radiation. **Co-Researcher**. FONDECYT N°1110726.

2010-2014: Crop rhizosphere management in acid Andisols of Southern Chile for improving plant nutrition and food quality. **Co-Researcher**. FONDECYT N°1100625.

2008-2011: Molecular and physiological mechanisms involved in aluminium toxicity of *Vaccinium corymbosum* growing in volcanic soils of Southern Chile: Role of gypsum application of the improvement of this stress. **Main Researcher**. FONDECYT N°11080231.

2007-2010: La transición de tolerancia a la sombra a especie emergente del dosel en *Nothofagus nitida*: Cambios ontogenéticos y efecto de la calidad y/o cantidad de luz. **Co-Researcher** FONDECYT N°1070551. Renuncia en Marzo del 2007 debido a la posición Posdoctoral Bicentenario. Sin embargo, siguió como Investigador Colaborador.

2006-2009: Respuestas fisiológicas frente al efecto combinado de radiación UV-B y estrés por aluminio en *Ugni molinae* y *Vaccinium corymbosum* en los suelos ácidos del sur de Chile. **Main Researcher**. Proyecto Posdoctoral Bicentenario PSD-26. Sponsoring Researcher Dra. Maria de la Luz Mora.

PRESENTATION AT NATIONAL/INTERNATIONAL CONGRESSES

1. **Reyes-Díaz M**, Pino-Jaramillo R, Gonzalez-Villagra J, Ribera-Fonseca A, Cartes P, Inostroza-Blancheteau C, Luengo Escobar A. 2020. Jasmonato de metilo como una herramienta para mejorar la productividad y calidad de fruta de arándano alto (*Vaccinium corymbosum*) CV. LEGACY. LXX Congreso Agronómico, 7-9 Enero, Santiago, Chile.
2. Cárcamo-Fincheira P, **Reyes-Díaz M**, Nunes-Nesi A, Omena-Garcia RP, Inostroza-Blancheteau C. 2020. Ciclo de los ácidos tricarbóxicos y su relación con el desempeño fotosintético y el contenido de ascorbato en genotipos al-contrastante de Arándano alto. LXX Congreso Agronómico, 7-9 Enero, Santiago, Chile.
3. Tighe-Neira R, **Reyes-Díaz M**, Nunes-Nesi A, Recio G, Carmona E, Inostroza-Blancheteau C. 2020. Nanopartículas y micropartículas de dióxido de titanio (TiO₂) provocan disminución de la fotosíntesis e incremento del uso eficiente del agua en *Solanum lycopersicum* L. LXX Congreso Agronómico, 7-9 Enero, Santiago, Chile.
4. Delgado M, Zúñiga-Feest A, **Reyes-Díaz M**, Barra PJ, Jiménez J, Cáceres C, Valle S. 2019. Proteaceae species: Al hyperaccumulators and p solubilizing species what do we have to learn from them?. 7th International Workshop Advances in Science and Technology of Bioresources, 02-04 December, Pucón, Chile.
5. **Reyes-Díaz M**, Cáceres-Gómez C, Altaminaro-Sarabia K, Godoy C, Alberdi M, Ribera-Fonseca A, Inostroza-Blancheteau C, Gonzalez-Villagra J, Luengo Escobar A. 2019. Impact of exogenously applied MeJA on stomata density and photosynthetic performance in two *Vaccinium corymbosum* L. cultivars under aluminum and manganese toxicity. The Sixth International Horticulture Research Conference, Sep 30th - Oct 5th, Venice, Italy.
6. Cárcamo-Fincheira P, **Reyes-Díaz M**, Omena-Garcia R, Nunes-Nesi A, Inostroza-Blancheteau C. 2019. Impact of aluminum (Al³⁺) on tricarboxylic acids cycle and its relationship with resistance mechanisms in Al-contrast genotypes of highbush blueberry (*Vaccinium corymbosum* L.). The Sixth International Horticulture Research Conference, Sep 30th - Oct 5th, Venice, Italy.
7. Meriño-Gergichevich C, Alarcón D, Padilla D, **Reyes-Díaz M**. 2019. Boron and zinc spraying is associated to an improved performance in hazelnut (*Coryllus avellana*) planted in acid soils. 8th International Symposium on Interactions of Soil Minerals with Organic Components and Microorganisms, (ISMOM 2019). Sevilla, Spain. June 23-28.
8. Delgado M, **Reyes-Díaz M**, Ruiz S, Bertin A, Lambers H, Valle S, Zúñiga-Feest A. 2019. Evaluation of colonizing ability of five temperate rainforest proteaceae species growing in young volcanic substrate. Rhizosphere 5 conference. 7-11 July, Saskatoon, Saskatchewan, Canada.
9. Tighe-Neira R, **Reyes-Díaz M**, Carmona-Ortiz E, Recio-Sanchez G, Nunes-Nesi A, Inostroza-Blancheteau C. 2019. Titanium dioxide nanoparticles increase the photosynthetic performance,

but not the antioxidant system in *Solanum lycopersicum* L. XVIII National Congress of Biochemistry and Plant Molecular Biology XI Symposium México/USA & 1st ASPB México Section Meeting, October 28-31, Mérida Yucatán México.

10. Luengo-Escobar A, Cáceres-Gómez C, Calderón C, Godoy K, Alberdi M, **Reyes-Díaz M**. 2019. Differential response against Mn toxicity of highbush blueberry (*Vaccinium corymbosum* L.) cultivars. IV Congreso Chileno de Berries 2-4 Octubre, Valdivia, Chile.

11. Pino-Jaramillo R, Ribera-Fonseca A, Calderón C, **Reyes-Díaz M**, González-Villagra J. 2019. Methyl jasmonate as a tool to reduce Al³⁺ and Mn²⁺ toxicity in highbush blueberry cv. Legacy. IV Congreso Chileno de Berries 2-4 Octubre, Valdivia, Chile.

12. Cárcamo-Fincheira P, **Reyes-Díaz M**, Nunes-Nesi A, Omena-García R, Inostroza-Blancheteau C. 2019. Aluminum toxicity effect on photosynthetic performance in Al-contrasting resistance cultivars of highbush blueberry (*Vaccinium corymbosum* L.). IV Congreso Chileno de Berries 2-4 Octubre, Valdivia, Chile. 91 National and International congresses were held between 2000 and 2011.

More than 140 National and International Congresses during the last 10 years.

ACADEMIC ACTIVITIES

Undergraduate courses:

2016 to date. ICQ473 Advances in Plant Physiology (E/E)

2015. ICQ463 Advances in Physiology and Biochemistry of Plants (E/E)

2015-2017: ICQ465 Advances in Applied Biomedicine (E/E)

2015-2017: ICQ469 Biomedicine and Molecular Diagnostics (E/E)

2014 to date: ICQ353 Physiology

2014 to date: ICQ206 Biochemistry I

2014 to date: ICQ-363 Biochemistry II

2013 to date: ICQ-310 Molecular Biology.

2011, 2013 to date: ICQ-118 Fundamentals and Evolution of Biochemistry.

2007-2010: ICQ-128 Chemistry and Biology.

Postgraduate courses:

2019 to date: PBM010 Biología Celular y Molecular, Doctorado de Biología Celular y Molecular Aplicada. Participating professor.

2019 to date: PBM011 Biología Celular y Molecular Aplicada, Doctorado de Biología Celular y Molecular Aplicada. Participating professor.

2016: PCN105 Linking Biogeochemical cycles, Soil-plant interactions and Greenhouse emissions in Terrestrial Ecosystems. Participating professor.

2013: PCNE87 Soil, Plant and Microorganisms. Participating professor.

2009 (2): PCNE60 Research Unit. Responsible professor.

2008 to date: PCNE20 Methods and Molecular Biology Techniques. Responsible professor.

2007 - 2015: PCNG04 Advances in Plant Physiology. Participating professor.

2007-2008 (2)-2010: PCNE 40 Biochemistry and stress mechanisms in plants. Participating professor.

SUPERVISOR OF POSTGRADUATE AND UNDERGRADUATE THESIS**Postdoctoral Supervisor:**

2018-2020: Elizabeth Ulloa. Fondecyt postdoctoral 3180754. Title: The MeJA application effect on endogenous ABA and auxins of *V. corymbosum* plants and its role in the Al-resistance and WD-avoidance mechanisms under aluminum toxicity and WD episodes. Sponsoring researcher.

2015-2018: Graciela Berrios. Fondecyt postdoctoral 3160520. Title: Physiological, biochemical and molecular approaches to manganese toxicity and phosphorus supply in two *Lolium perenne* cultivars. Sponsoring researcher.

2014-2017: Cristian Meriño. Fondecyt postdoctoral 3140622. Title: Rol de la relación Ca/ B sobre la mitigación de aluminio fitotóxico en arándano alto (*Vaccinium corymbosum*): Respuestas fisiológicas y bioquímicas. Sponsoring researcher.

Doctoral Thesis Supervisor:

2014 to date: Jorge Gonzalez. Doctoral Thesis: Role of abscisic acid on anthocyanin synthesis under drought stress conditions in *Aristotelia chilensis* (Mol.). Doctorado en Ciencias de Recursos Naturales, Universidad de La Frontera, Temuco, Chile.

2013 to date: Daniela Peña. Doctoral Thesis: Expression of genes involved in anthocyanin pathway and characterization of antioxidant activity of extracts from *Berberis microphylla* G Forst and their potential use on gastric cancer cell lines. Doctorado en Ciencias de Recursos Naturales, Universidad de La Frontera, Temuco, Chile.

2011 to date: Maritza Durán. Doctoral Thesis: Combined effect of UV-B radiation and N stress on physiological and biochemical features and protein induction and gene expression involved to photosynthesis and antioxidant enzymes in leaves of *V. corymbosum* cultivars with different UV-B resistance. Doctorado en Ciencias de Recursos Naturales, Universidad de La Frontera, Temuco, Chile.

2010 to date: Edith Alarcón. Doctoral Thesis: Gypsum effects on photosynthetic performance and morphological features in *Vaccinium corymbosum* L. cultivars under aluminum toxicity in an Andisol. Doctorado en Ciencias de Recursos Naturales, Universidad de La Frontera, Temuco, Chile.

2009 to date: Dr. Reyes participates in several committees that evaluate Doctoral Thesis.

Undergraduate Thesis Supervisor:

2018: Thesis Advisor of “Estandarización de un método para la extracción y cuantificación de fitohormonas en arándano alto (*Vaccinium corymbosum*) sometido a estrés por manganeso (Mn)”. Student Cristina Cáceres Gómez, Biochemistry career.

2017: Thesis Advisor of “Toxicidad por manganeso: cambios fisiológicos y bioquímicos en cultivares de arándano (*Vaccinium corymbosum*)”. Student Cristóbal Calderón, Biochemistry career.

2015: Thesis Advisor of “Caracterización del extracto crudo y fracción rica en antocianinas de hojas *Vaccinium corymbosum* L. tratadas con MeJa y su efecto sobre la migración y viabilidad de línea celular de adenocarcinoma gástrico humano AGS”. Student Danae Jimenez, Biochemistry career.

2011-2013: Thesis Advisor of “Efecto de la aplicación de sulfato de calcio en cultivares de arándano creciendo en un Andisol”. Student Natalia Jara, Agronomy career.

2010-2012: Thesis Advisor of “Respuestas Fisiológicas de cultivares de arándano alto creciendo a diferentes dosis de sulfato de calcio bajo condiciones de invernadero”. Student Patricia Poblete, Agronomy career.

2008-2009: Thesis Advisor of “Influencia de la condición lumínica sobre la concentración de proteínas totales y la enzima Rubisco en la especie *Nothofagus nitida* (Phil.) Krasser, del bosque templado lluvioso del Sur de Chile”. Student Daniela Alvarez Cortéz, Forestry Engineering career.

Outreach activities

2019. Participation in “13° Feria Investigación UFRO (FIUFRO)”, Universidad de La Frontera, Temuco, Chile.

2018. Participation in “12° Feria Investigación UFRO (FIUFRO)”, Universidad de La Frontera, Temuco, Chile.

2017. Participation in “11° Feria de Investigación UFRO (FIUFRO)”, Universidad de La Frontera, Temuco, Chile.

2016. Participation in “10° Feria de Investigación UFRO (FIUFRO)”, Universidad de La Frontera, Temuco, Chile.

2015. Participation in 9º Feria de Investigación UFRO (FIUFRO). Universidad de La Frontera, Temuco, Chile.

2010. Participation in “4º Feria de Investigación UFRO” of DIUFRO, Universidad de La Frontera, Temuco, Chile.

2010. Collaboration in activity “Casa Abierta” of the EXPLORA-CONICYT Program. Universidad de La Frontera, Temuco, Chile.

2009. Collaboration in activity “Casa Abierta” of the EXPLORA-CONICYT Program. Universidad de La Frontera, Temuco, Chile.

2009. Seminar “Arándanos, 26-27 de Mayo”, Santiago, Chile.

Awards and Distinctions

2006: MECESUP UCO0214 Fellowship for intership in Dr. Norm Hüner’s lab, Department of Biology and The Biotron, University of Western Ontario, London, Ontario, N6A 5B7 Canada.

2002-2006: Doctoral CONICYT fellowship, Gobierno de Chile, Comisión Nacional de Investigación Científica y Tecnológica.

2002. Universidad de Concepción, Departamento de Botánica Award, Concepción, Chile. Description: To the Best Botany Student.