

Curriculum Vitae Raúl Silvio LAVADO

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Residence country: Argentina.

UNIVERSITY STUDIES

- 1968. Agricultural Engineer, College of Agronomy, University of Buenos Aires. Argentina.
- 1971. Graduate diploma, University of Granada. Granada. Spain.

MAIN TRAINING/POSTDOCTORAL EXPERIENCES

- 1979. Solonetzic Soil Research Substation. Vegreville, Alberta, Canada.
- 1980. U.S. Salinity Laboratory. Riverside, California, U.S.A.

EMPLOYMENT AND POSITIONS

1968-1974: Research Assistant, IDEVI Experimental Station. Viedma, Rio Negro.

1974-1978: Assistant Professor, University of La Pampa.

1978-1982: Researcher, University of La Plata.

1983-1988: Assistant Professor, University of Buenos Aires.

1995-2010: Full Professor, University of Buenos Aires.

2010- present: Distinguished Professor, University of Buenos Aires.

2009-2014: Director of the Research Institute of Agricultural and Environmental Biosciences (INBA).

Since 1975: Researcher of the National Research Council of Argentina (CONICET).

EXECUTIVE POSITIONS

- Ex Director of the Research Institute of Agricultural and Environmental Biosciences (INBA).
- Ex President of the Argentine Salinity Network.

COMMITTEE ACTIVITIES

- Member of several Committees of the National Research Council of Argentina.
- Member of the Executive Board in the College of Agronomy, University of Buenos Aires,
- Member of the Executive Board in the Research Institute of Plant Physiology and Ecology,
- Member of the Committee of Agricultural, Forest and Natural Resources Colleges Accreditation (MERCOSUR – Brazil, Uruguay, Paraguay and Argentina, plus Bolivia and Chile).
- Member of several Consulting Committees.

POSITIONS AS JOURNALS EDITOR

- Creator of the Journal *Ciencia del Suelo* and first Editor (1982-1989) and later reviewer.
- Associate Editor of the Journal of Soil and Water Conservation (Soil and Water Conservation Society), 2007-2014.

- Associate Editor of the Journal *Phyton*, 2011-2018.
- Associate Editor of the Journal *Agronomía y Ambiente*, 2012-2020.
- Member of Editorial Board of several journals, Conferences and Congresses.

PUBLICATIONS

In journals quoted in the Science Citation Index (Arranged by subjects)

Occurrence and effects of toxic elements (heavy metals and other) in soils, crops and microorganisms. Phytoremediation.

1. Spagnoletti F.N., M. Carmona, K. Balestrasse, V. Chiocchio, R. Giacometti, R.S. Lavado. 2021. Arbuscular mycorrhiza *Rhizophagus intraradices* can reduce root rot caused by *Fusarium pseudograminearum* in wheat. *Rhizosphere*. 19: doi.org/10.1016/j.rhisph.2021.100369
2. Ureta Suelgaray F.J., D.M. Aguilar Beltramo, R.S. Lavado, V.M. Chiocchio. 2021. Dark Septate Endophytes (DSE) fungi: potential promoters of bioremediation of oil derivatives. *International J. of Phytoremediation* 24: 255-262. DOI: 10.1080/15226514.2021.1932733
3. Ferreyroa, G. V., J. Gelma, M. D. Sosa, M.A. Orellana Benítez, M. B. Tudino, R.S. Lavado and F. V. Molina. 2018. *Brassica napus* growth in lead polluted soil: bioaccumulation in plant organs at different ontogenetic stages and speciation in soil. *Water, Air, and Soil Pollution*. 229: 213-224.
4. Bustingorri, C., G. Noriega, R. S. Lavado and K. Balestrasse. 2017. Protective effect exerted by soil phosphorus on soybean subjected to arsenic and fluoride. *Redox Report*, 22: 352-360
5. Ferreyroa, G.V., M.G. Lagorio, M.A. Trinelli, R.S. Lavado, F.V. Molina. 2017. Lead effects on *Brassica napus* photosynthetic organs. *Ecotoxicology and Environmental Safety*.140: 123–130
6. Spagnoletti, F., Carmona, M., Tobar Gómez, N.E., Chiocchio, V, Lavado, R.S. 2017. Arbuscular mycorrhiza reduces the negative effects of *M. phaseolina* on soybean plants in arsenic-contaminated soils. *Journal: Applied Soil Ecology* 121: 41-47.
7. Spagnoletti, F.N., K. Balestrasse, R.S. Lavado and R. Giacometti. 2016. Arbuscular mycorrhiza detoxifying response against arsenic and pathogenic fungus in soybean. *Ecotoxicology and Environmental Safety*. 133: 47-56
8. Bustingorri, C. and R.S. Lavado. 2015. Soybean as affected by high concentrations of arsenic and fluoride in irrigation water in controlled conditions. *Agricultural Water Management*. 144: 134-139
9. Ferreyroa, G.V., A. C. Montenegro, M.B. Tudino, R.S. Lavado and F.V. Molina. 2015, Time evolution of Pb (II) speciation in Pampa soil fractions. *Chemical Speciation and Bioavailability*. 26 (4): 210-218
10. Spagnoletti, F., Lavado, R.S. 2015. The arbuscular mycorrhiza *Rhizophagus intraradices* reduces the negative effects of arsenic on soybean plants. *Agronomy* 5: 188-199.
11. Montenegro, A. C, G.V. Ferreyroa, M.E. Parolo, M.B. Tudino, R.S. Lavado and F.V. Molina. 2015. Copper speciation in soil: time evolution and effect of clay amendment. *Water, Air, & Soil Pollution* 226: 293-303
12. Spagnoletti, F.; Tobar, N.; Chiocchio, V.; Lavado, R.S. 2015. Mycorrhizal

- inoculation and high arsenic concentrations in the soil increase the survival of soybean plants subjected to strong water stress. *Communication in Soil Science and Plant Analysis*. 46: 2837-2846
- 13 Bustingorri, C. K. Balestrasse and R.S. Lavado. 2015. Effects of high arsenic and fluoride soil concentrations on soybean plants. *Phyton*, 84: 407-415.
 - 14 Orroño, D.I., V. Schindler, R.S. Lavado. 2012. Heavy metal availability in *Pelargonium hortorum* rhizosphere: interactions, uptake and plant accumulation. *Journal of Plant Nutrition* 35: 1374-1386.
 - 15 Zubillaga, M.S., E. Bressan, and R. S. Lavado. 2012. Effects of phytoremediation and application of organic amendment on the mobility of heavy metals in a polluted soil profile. *International Journal of Phytoremediation* 14 (3), 212-220.
 - 16 Orroño D.I. and R. S. Lavado. 2011. Heavy metal accumulation in geranium (*Pelargonium hortorum*) and effects on growth and quality of plants. *Agrochimica LV* (2): 116-128
 - 17 Orroño D.I. y R. S. Lavado. 2009. Heavy metal accumulation in *Pelargonium hortorum*: effects on growth and development. *Phyton* 78: 4-11
 - 18 Orroño, D.; H. Benítez and R.S. Lavado. 2009. Effects of heavy metals in soils on biomass production and plant element accumulation of *Pelargonium* and *Chrysanthemum* species. *Agrochimica* 53: 168-176.
 - 19 Orroño, D.I. and R. S. Lavado. 2009. Distribution of extractable Heavy Metals in different Soil Fractions. *Chemical Speciation and Bioavailability*. 21: 193-198.
 - 20 Torri, S. I. and Lavado, R.S. 2008. Dynamics of Cd, Cu and Pb added to soil through different kinds of sewage sludge. *Journal of Waste Management* 28: 831-842.
 - 21 Zubillaga M. S. and R. S. Lavado. 2008. Accumulation and movement of four potentially toxic elements in soils throughout five years, during and after biosolid application. *American J. of Environmental Sciences* 4(6): 576-582.
 - 22 Zubillaga, M.S., E. Bressan and R.S. Lavado. 2008. Heavy metal mobility in polluted soils: effect of different treatments. *American Journal of Environmental Sciences* 4(6): 620-624.
 - 23 Lavado R.S., M. Rodríguez, R. Alvarez, M.A. Taboada and M.S. Zubillaga. 2007. Transfer of potentially toxic elements from biosolid-treated soils to maize and wheat crops. *Agriculture, Ecosystems & Environment* 118: 312-318.
 - 24 Lavado, R.S. 2006. Concentration of Potentially Toxic Elements in field crops grown near or far from cities of the Pampas (Argentina) *Journal of Environmental Management*. 80: 116-119.
 - 25 Lavado, R.S., M. B. Rodríguez and M. A. Taboada. 2005. Treatment with biosolids affects soil availability and plant uptake of potentially toxic elements. *Agriculture, Ecosystems & Environment* 109: 360-364
 - 26 Lavado, R.S., M.S. Zubillaga, R. Alvarez and M.A. Taboada. 2004. Baseline levels of potentially toxic elements in pampas soils. *Soil & Sediment Contamination : an International Journal*, 13 (5): 329-339.
 - 27 Zubillaga M.S. and R.S. Lavado. 2002. Heavy metal content in lettuce plants grown in biosolids compost. 2001. *Compost Sci. & Utilization* 10 (4): 363-367
 - 28 Lavado, R.S, C.A. Porcelli and R. Álvarez. 2001. Nutrient and heavy metal concentration and distribution in corn, soybean and wheat as affected by different tillage systems in the Argentine Pampas. *Soil & Tillage Res.* 62: 55-60.

- 29 Lavado R.S. and C.A. Porcelli. 2000. Contents and main fractions of trace elements in Typic Argiudolls of the Argentinean Pampas. *Chemical Speciation and Bioavailability*. 12(2): 67-70.
- 30 Lavado, R.S., M.B. Rodríguez, J.D. Scheiner, M.A. Taboada, G. Rubio, R. Alvarez, M. Alconada and M.S. Zubillaga. 1998. Heavy metals in soils of Argentina: Comparison between urban and agricultural soils. *Communications in Soil Science and Plant Analysis* 29: 1913-1917.
- 31 Troiani, R.M.; Sanchez, T.M. and Lavado, R.S. 1987. Soil response and alfalfa fluoride content as affected by irrigation water. *Fluoride* 20 (1): 14-17.
- 32 Lavado, R.S. and Reinaudi, N.B. 1986. Wind-blown dust from salty areas as a source of fluoride for plants. *Fluoride* 19(1): 14-18.
- 33 Lavado, R.S. and Reinaudi, N.B. 1985. "Fluoride distribution in two salt affected soils". *Fluoride* 18(1): 36-40.
- 34 Lavado, R.S. and Reinaudi, N.B. 1983. Fluoride retention and leach possibility in Argentina salt-affected soils. *Fluoride* 16(4): 247-251.
- 35 Lavado, R.S. and Reinaudi, N.B. 1979. Fluoride in salt-affected soils of La Pampa (Rep. Argentina). *Fluoride* 12(1): 28-32.
- 36 Lavado, R.S.; González Quintana, J.A. and Hevia, G. 1978. Content and distribution of lithium in La Pampa soils. *Communications in Soil Sci. and Plant Analysis* 9(4): 299-319.

Soil organic matter cycle. Uses of biosolids and other organic residues. Composting.

1. Rimski-Korsakov, H., C.A. Alvarez and R.S. Lavado. 2015. Cover crops in the agricultural systems of the Argentine Pampas. *Journal of Soil and Water Conservation*, 70 (6): 112A-118A
2. Pagani, A., Molinari, J., Lavado, R.S.; Di Benedetto, A. 2015. Behavior of *Impatiens wallerana* Hook. *F* in alternative pot substrates: mechanisms involved and research perspectives. *Journal of Plant Nutrition*, 38: 2185-2203.
3. Giubergia, J.P., E. Martellotto. R.S. Lavado. 2013. Complementary irrigation and direct drilling have little effect on soil organic carbon content in semiarid Argentina, *Soil and Tillage Research* 134: 147-152.
4. Thibaud J., T. Mc. Loughlin, A. Pagani, R.S. Lavado and A, Di Benedetto. 2012. Alternative substrates and fertilization routine relationships for bedding pot plants: *Impatiens wallerana*. *European Journal of Horticultural Science* 77: 182-191
5. Torri, S.I. and R. S. Lavado. 2009. Plant absorption of trace elements in sludge amended soils and correlation with soil chemical speciation. *Journal of Hazardous Materials* 166: 1469-1465.
6. Torri, S.I. and R. S. Lavado. 2008. Zinc distribution in soils amended with different kinds of sewage sludge. *Journal of Environmental Management*. 88: 1371-1379
7. Marchese, N., Di Benedetto, A., Lavado, R.S. 2006. The possibilities of river waste and Argentinean peat as a plug growing media for *Verbena x hybrida*. *International Journal of Agricultural Research* 1(2) 142-150.
8. Lavado, R.S. 2006. Effects of sewage sludge application on soils and sunflower yield: quality and toxic element accumulation. *Journal of Plant Nutrition* 29: 975-984.

9. Zubillaga M.S. and R S Lavado. 2006. Phytotoxicity of biosolid compost of different maturity degree compared with biosolids and animal manures. *Compost Sci. and Utilization*. 14 (4): 267-270.
10. Rodríguez, M.B. and R.S. Lavado. 2004. Uptake and distribution of trace elements by soybean from a physically degraded soil treated with biosolids. *Agrochimica*. 48: (1-2): 1-10.
11. Zubillaga M.S. and R. S. Lavado. 2003. Stability Indexes of Sewage Sludge Compost Obtained with Different Proportion of a Bulking Agent. *Comm. Soil Sci. And Plant Analysis* 34: 581-591.
12. Torri, S., R. Alvarez, R. Lavado. 2003. Mineralization of carbon from Sewage Sludge in three soils of the Argentine Pampas. *Comm. Soil Sci. and Plant Analysis*. 34: 2035-2043.
13. Zubillaga, M.S. and R.S. Lavado. 2001. Biosolids compost as component of potting media for bedding plants. *Gartenbauwissenschaft* 66(6): 304-309.
14. Álvarez, R., M. Alconada, R.S. Lavado. 1999. Sewage sludge effects on carbon dioxide-carbon production from a desurfaced soil. *Communications in Soil Science and Plant Analysis* 30: 1861-1866.
15. Álvarez, R. and R.S. Lavado. 1998. Climate, organic matter and clay content relationships in the Pampa and Chaco soils. *Geoderma* 83: 127-141.
16. Álvarez, C.R.; R. Álvarez; M.S. Grigera and R.S. Lavado. 1998. Associations between organic matter fractions and the active microbial biomass. *Soil Biology and Biochemistry* 30: 767-773.

Nitrogen dynamics, effects of fertilizers, ammonia losses and nitrates leaching.

1. Pescie, M.A., M. Fradkin, R.S. Lavado and V.M. Chiocchio. Endophytic fungi in blueberry varieties, in three production areas of Argentina. *Physiological and Molecular Plant Pathology* 115 101662
doi.org/10.1016/j.pmpp.2021.101662
2. Frusso, E.A., R.S. Lavado, P. Insausti, P.A. Cipriotti, F.M. Cavo. 2021. Effect of nitrogen, phosphorus and zinc fertilization on pecan yield in Argentina. *Acta Horticulturae* 1318: 215-220
1. Pescie, M.A., M.P. Borda, D.P. Ortiz, M.R. Landriscini, R.S. Lavado. 2018. Absorption, distribution and accumulation of nitrogen applied at different phenological stages in southern highbush blueberry (*Vaccinium corymbosum* interspecific hybrid). *Scientia Horticulturae* 230: 11-17
2. Rimski-Korsakov, H, M.S. Zubillaga, M.R. Landriscini and R.S. Lavado. 2016. Maize and cover crop sequence in the Pampas: effect of fertilization and water stress on the fate of nitrogen. *J. of Soil and Water Conservation*, 71:12-20
3. San Martino, L., San Martino, S., Lavado, R.S. 2014. Soil Nitrate Profiles and the Risk of Nitrate Leaching in Sweet Cherry Orchards Subjected to Different Management Schemes. *International Journal of Fruit Science*. 14 (4): 424-436
4. Rimski-Korsakov H, Rubio G, Lavado RS. 2012. Fate of the nitrogen from fertilizers in field-grown maize. *Nutrient Cycling in Agroecosystems* 93: 253-263.
5. San Martino, L., G. O. Sozzi, S. San Martino and R. S. Lavado. 2010. Isotopically labelled nitrogen uptake and partitioning in sweet cherry as influenced by timing of fertilizer application. *Scientia Horticulturae*. 126: 42-49.

6. Rubio, G, Gutiérrez Boem F.H. and Lavado, R.S. 2010. Responses of C3 and C4 grasses to application of nitrogen and phosphorus fertilizer at two dates in the spring. *Grass and Forage Science* 65: 102-109
7. Rimski-Korsakov, H., G. Rubio and R.S. Lavado. 2009. Effect of the water stress in the maize crop production and nitrogen fate. *Journal of Plant Nutrition* 32: 565- 578.
8. Delgado J.A., M. Shaffer, C. Hu, R. Lavado, J. Cueto-Wong, P. Joosse, D. Sotomayor, W. Colon, R. Follett, S. DelGrosso, S, X. Li and H. Rimski-Korsakov. 2008. An index approach to assess nitrogen losses to the environment. *Ecological Engineering* 32: 108-120.
9. Civeira, G. and R.S. Lavado. 2008. Nitrate losses, nutrients and heavy metal accumulation from substrates assembled for urban soils reconstruction. *Journal of Environmental Management* 88: 1619-1623
10. Rodriguez, M.B., A. Godeas and R.S. Lavado. 2008. Soil acidity changes in bulk soil and maize rhizosphere in response to nitrogen fertilization. *Communication in Soil Science and Plant Analysis* 39: 2597-2607
11. Chavez, W., A. Di Benedetto, G. Civeira and R.S. Lavado. 2008. Alternative soilless media for growing *Petunia x hybrida* and *Impatiens wallerana*: physical behavior, effect of fertilization and nitrate losses. *Bioresource Technology* 99: 8082-8087
12. Alvarez, C, H. Rimski-Korsakov, P. Prystupa and R. S. Lavado. 2007. Nitrogen dynamics and losses in direct drilled maize systems. *Communication in Soil Science and Plant Analysis* 38: 1-15.
13. Delgado, JA; Shaffer, M; Hu, CGS; Lavado, RS; Wong, JC; Joosse, P; Li, XX; Rimski-Korsakov, H; Follett, R; Colon, W; Sotomayor, D. 2006. A decade of change in nutrient management: A new nitrogen index. *Journal of Soil and Water Conservation*, 61 (2): 62-75.
14. Zubillaga, M.S., H. Rimski-Korsakov, G. Travería and R.S. Lavado. 2005. Ammonia volatilization from different organic amendments during storage and after land application. *Agrochimica* 49 (5-6) 169-174.
15. Gutiérrez-Boem, F.H., J.D. Scheiner, H. Rimski-Korsakov and R.S. Lavado. 2004. Late season nitrogen fertilization of soybeans: effects on leaf senescence, yield and environment. *Nutrient Cycling in Agroecosystems* 68:109-115.
16. Rimski-Korsakov, H., G. Rubio and R. S. Lavado. 2004. Potential losses of nitrate by leaching in soils of the Pampas Argentina. *Agricultural Water management* 65: 83-94.
17. Rodríguez, M.B.; L. Maggi; M. Etchepareborda, M.A. Taboada y R.S. Lavado. 2003. Nitrogen availability for maize from a Rolling Pampa soil after addition of biosolids. *Journal of Plant Nutrition* 26: 431-441.
18. Scheiner, J.D., F.H. Gutierrez Boem & R.S. Lavado. 2002. Sunflower nitrogen requirement and 15N fertilizer recovery in Western Pampas, Argentina. *European Journal of Agronomy* 17 (1): 73-79.
19. Zubillaga, M.S., M.M. Zubillaga, S. Urricariet, R.S. Lavado. 2002. Effect of nitrogen sources on ammonia volatilization, grain yield and soil nitrogen losses in no-till wheat in an Argentine soil. *Agrochimica*, 46 (3-4): 100-107
20. Chaneton, E.J., J.H. Lemcoff and R.S. Lavado. 1996. Nitrogen and phosphorus cycling in grazed and ungrazed plots of a temperate subhumid grassland in Argentina. *Journal of Applied Ecology* 33: 291-302.

21. Rubio, G. and R.S. Lavado. 1994. Non-exchangeable ammonium behavior of a grassland soil of the Flooding Pampa under water logging Communications in Soil Science and Plant Analysis 25(13-14): 2455-2465.
22. Cairns, R.R.; Lavado, R.S. and Webster, G.R. 1980. Calcium nitrate compared with ammonium nitrate as a fertilizer and amendment for solonchic soils. Canadian J. Soil Science. 60: 587-589.

**Use of fertilizers. Nutrients in agriculture and animal husbandry sustainability.
Use of microorganisms for sustainable agriculture.**

1. Lavado, R.S.; Chiochio, V.M. Symbiosis of Plants with Mycorrhizal and Endophytic Fungi. Plants 2023, 12, 1688. <https://doi.org/10.3390/plants12081688>
2. Pescie, M.A., M. Montecchia, R.S. Lavado and V.M. Chiochio. 2023. Inoculation with *Oidiodendron maius* BP Improves Nitrogen Absorption from Fertilizer and Growth of *Vaccinium corymbosum* during the Early Nursery Stage. Plants 12(4):792. DOI: [10.3390/plants12040792](https://doi.org/10.3390/plants12040792)
1. Barresi, O. Lavado, R.S., Chiochio, V.M. 2022. Can dark septate endophytic fungi (DSE) solubilize selectively inorganic soil phosphorus thereby promoting sorghum growth? RAM. doi.org/10.1016/j.ram.2022.02.003
1. Spagnoletti, F. N, Cornero, M., Chiochio, V., Lavado, R. S. and Roberts. I. N. 2019. Arbuscular mycorrhiza protects soybean plants against *Macrophomina phaseolina* even under nitrogen fertilization. European Journal of Plant Pathology. doi.org/10.1007/s10658-020-01934-w
2. Spagnoletti, F.N., M. Leiva, V. M. Chiochio and R.S. Lavado, 2018. Phosphorous fertilization reduces the severity of charcoal rot (*Macrophomina phaseolina*) and the arbuscular mycorrhizal protection in soybean. Journal of Plant Nutrition and Soil Science.
3. Barresi, O., Chiochio, V.M., Lavado, R.S. 2018. Changes in soil phosphorus fractions caused by cropping without nutrient reposition. A case study. Phytion 87 (2): 14-17
4. Spagnoletti, F.N., Tobar, N.E., Fernández Di Pardo, A., Chiochio, V.M., Lavado, R.S. 2017. Dark septate endophytes present different potential to solubilize calcium, iron and aluminum phosphates. Applied Soil Ecology.111: 26-32
5. Miretti, M.C.; Imhoff, S.; Pires da Silva, A.; Lavado, R.S. 2010. Soil structure degradation in patches of alfalfa fields in Santa Fe – Argentina. Scientia Agricola, 67: 604-610.
6. Lavado, R.S., M. A. Taboada. 2009. The Argentinean Pampas: A key region with a negative nutrient balance and soil degradation needs better nutrient management and conservation programs to sustain its future viability as a world agrosresource. J. of Soil and Water Conservation 64(5):150A-153A.
7. Urricariet, S.; R.S. Lavado and L. Martín. 2004. Corn Response to Fertilization and SR, DRIS and PASS Interpretation of Leaf and Grain Analysis. Communication in Soil Science and Plant Analysis 35 (3-4) 413-425.
8. Scheiner, J.D., F.H. Gutierrez Boem, R.S. Lavado. 2000. Root growth and phosphorus uptake in wide and narrow-row soybeans. Journal of Plant Nutrition, 23 (9): 1241-1249.
9. Rubio, G. and Lavado, R.S. 1999. Acquisition and allocation of resources in two water logging-tolerant grasses. New Phytologist. 143: 539-546.

10. Maddonni, G.A., S. Urricariet, C.M. Ghersa and R.S. Lavado. 1999. Assessing soil quality with soil properties and maize crop in the Rolling Pampa. *Agronomy Journal* 91: 280-287.
11. Lavado, R.S., C.A. Porcelli and R. Álvarez. 1999. Concentration and distribution of extractable elements in a soil as affected by tillage and fertilization. *The Science of the Total Environment* 232: 185-191.
12. Scheiner, J.D. and R.S. Lavado. 1999. Soil water content, absorption of nutrient elements, and responses to fertilization of sunflower: a case study. *Journal of Plant Nutrition* 22(2): 369-377.
13. Taboada, M.A.; R.S. Lavado; H. Svartz and A.M.I. Segat. 1999. Structural stability changes in a grazed grassland Natraquoll of the Flooding Pampa (Argentina). *Wetlands* 19: 50-55.
14. Taboada, M.A., F.G. Micucci, D.J. Cosentino and R. S. Lavado. 1998. Comparison of compaction induced by conventional and zero tillage in two soils of the Rolling Pampa of Argentina. *Soils and Tillage Research* 49: 57-63.
15. Taboada, M.A.; G. Rubio and R.S. Lavado. 1998. The deterioration of tall Wheatgrass pastures in saline sodic soils. *Journal of Range Management* 51(2): 241-246.
16. Rodriguez, D., M.M. Zubillaga, E.D. Ploschuk, W.G. Keltjens, J. Goudriaan and R.S. Lavado. 1998. Leaf area expansion and assimilate production in sunflower (*Heliantus annuus* L.) growing under low phosphorus conditions. *Plant and Soil* 202: 133-147.
17. Scheiner J.D. and R.S. Lavado. 1998. The role of fertilization on phosphorus stratification in non-tilled soils. *Communications in Soil Science and Plant Analysis* 29: 2705-2711.
18. Rubio, G.; Oesterheld, M., Alvarez, C.R. and Lavado, R.S. 1997. Mechanisms for increase in phosphorus uptake of waterlogged plants: soil phosphorus availability, root morphology and uptake kinetics. *Oecologia* 112 (2): 150-155.
19. Chaneton, E.J. and R.S. Lavado. 1996. Soil nutrients and salinity after long-term exclusion in a Flooding Pampa grassland. *Journal of Range Management* 49: 182-187.
20. Lavado, R.S.; J.O. Sierra and P.N. Hashimoto. 1996. Impact of grazing on soil nutrients in a pampean grassland. *J. of Range Management* 49: 452-457
21. Rubio, G.; Lavado, R.S.; Rendina, A.; Bargiela, M.; Porcelli, C.A. and de Iorio, A.F. 1995. Effect of water logging on organic phosphorus fractions in a toposequence of soils. *Wetlands* 15 (4): 386-391.
22. Scheiner, J.D.; R.S. Lavado and R. Alvarez. 1996. Difficulties in recommending P fertilizers for soybean in Argentina. *Communications in Soil Science and Plant Analysis* 27: 521-530.
23. Urricariet, S., M.S. Zubillaga, M.M. Zubillaga and Lavado, R.S. 1995. Nitrogen, phosphorus and potassium uptake for two rapeseed cultivars in an Argentinean soil. *Journal of Plant Nutrition* 18 (2): 305-315.
24. Rubio, G.; Casasola, G. and Lavado, R.S. 1995. Adaptations and biomass production of two grasses in response to water logging and soil nutrients enrichment *Oecologia* 102 (1): 102-105
25. Lavado, R.S. and Alconada, M. 1994. Soil properties behavior on grazed and ungrazed plots of a grassland sodic soil. *Soil Technology* 7(1): 75-81.
25. Alconada, M.; Ansin, O.E.; Lavado, R.S.; Deregibus V.A.; Rubio, G. and Gutiérrez, F.H. 1993. "Effect of run-off water retention and grazing on soil and

- vegetation characteristics of a temperate humid grassland. *Agricultural Water Management* 23(3): 233-246.
26. Taboada, M.A. and Lavado R.S. 1993. Influence of cattle trampling on soil porosity under alternate dry and ponded conditions. *Soil Use and Management* 9: 139-143.
 27. Dreccer, M.F. and Lavado, R.S. 1993. "Influence of cattle trampling on the preferential flow paths in alkaline soils" *Soil Use and Management* 9: 143-148.
 28. Lavado, R.S.; G. Rubio and M. Alconada. 1992. Grazing management and soil salinization in two pampean Natraqualfs. *Turrialba* 42(4): 500-508.
 29. Lavado, R.S. and Taboada, M.A. 1987. Soil salinization fluxes as an effect of grazing in a native grassland soil in the Flooding Pampa in Argentina. *Soil Use & Management* 4(3): 143-148.

Other anthropic effects on soil and crop: salinity

1. Barbosa O.A., Álvarez-Rogel J. and Raúl S. Lavado. 2023. Forage offer from a saline wetland of central Argentina (San Luis province), *Wetlands Ecology and Management*. <https://doi.org/10.1007/s11273-023-09945-0>
1. Hopmans, J.W., A. S. Qureshi, I. Kisekka, R. Munns, S.R. Grattan, P. Rengasamy, A. Ben-Gal, S. Assouline, M. Javaux, P.S. Minhas, P.A.C. Raats, T. Skaggs, G. Wang, Q. De Jong van Lier, H. Jiao, R.S. Lavado, N. Lazarovitch, B. Li, and E. Taleisnik. 2021. Critical Knowledge Gaps and Research Priorities in Global Soil Salinity. *Advances in Agronomy*. En prensa.
2. Bustingorri, C. and R.S. Lavado. 2013. Soybean response and ion accumulation under sprinkler irrigation with sodium-rich saline water. *J Plant Nutrition* 36 (11) 1743-1753.
3. Bustingorri, C. and R.S. Lavado. 2011. Soybean growth under stable salinity versus peak salinity. *Scientia Agricola*. 68: 102-108.
4. Taboada, M.A., R.S. Lavado, G. Rubio, D.J. Cosentino. 2001. Soil volumetric changes in natric soils caused by air entrapment following seasonal ponding and water table rises. *Geoderma* 101: 49-64.
5. Gutiérrez Boem, F.H.; C.A. Porcelli and Lavado, R.S. 1997. Effects of water logging followed by a salinity peak on rapeseed (*Brassica napus*). *Journal of Agronomy and Crop Science* 178: 135-140.
6. Gutiérrez Boem, F.H., R.S. Lavado and C.A. Porcelli. 1996. Note on the effects of winter and spring water logging on growth, chemical composition and yield of rapeseed. *Field Crop Research* 47: 175-179.
7. Lavado, R.S.; A.F. de Iorio; A.M.L. Segat and F.H. Gutiérrez Boem. 1996. Behavior of a tracer and native ions in saline soils. *Interciencia* 21 (5): 305-309.
8. Gutiérrez Boem, F.H. and R.S. Lavado. 1996. The effects of soil sodicity on emergence, growth, development and yield of rapeseed (*Brassica napus L.*) *Journal of Agricultural Sciences* 126: 169-173.
9. Taboada, M.A. and R.S. Lavado. 1996. Interactive effects of exchangeable sodium and water content on soil modulus of rupture. *Soil Technology* 8(4): 345-349.
10. Porcelli, C.A.; F. H. Gutiérrez Boem and R.S. Lavado. 1995. The K/Ca and Ca/Na ratios and rapeseed yield, under soil salinity and sodicity. *Plant and Soil* 175 (2): 251-255.

11. Gutiérrez Boem, F.H.; Scheiner, J.D. and Lavado, R.S. 1994. Effect of soil salinity on growth, development and yield of rape (*Brassica napus*). Journal of Agronomy and Crop Science 172: 182-187
12. Lavado, R.S.; A.F. de Iorio; A. Rendina and A. Iriarte. 1994. Simulation of salt leaching in grazed grassland soils using bromide as a tracer. Tropical Grassland 27: 114-120.
13. Lavado, R.S.; G. Rubio and M. Alconada. 1993. Grazing as a cause for lime precipitation in a Natraqualf. Communications in Soil Science and Plant Analysis 24(11-12): 1389-1396.
14. Lavado, R.S. and Segat A.M.L. 1989. Effects of surface water damming on hydromorphism and halomorphism of an Argentine Natraquoll. Wetlands 9(2): 317-325.
15. Lavado, R.S. and Taboada, M.A. 1988. Water, salt and sodium dynamics in a Natraquoll in Argentina. Catena 15(4): 577- 594.
16. Lavado, R.S. y Camilión, M.C. 1985. Clay minerals in Argentinean salt affected soils. Clay Research, 3(2): 68-74.
17. Suarez, D.L.; Rhoades, J.D.; Lavado, R.S. and Grieve, C.M. 1984. Effect of pH on saturated hydraulic conductivity and soil dispersion. Soil Sci. Society of America Journal 48(1): 50-55.
18. Lavado, R.S. 1983. Occurrence of magnesium-bearing calcites in pampean soils. Geoderma 29: 59-66.
19. Lavado, R.S. and Cairns, R.R. 1980. Solonetzic soil properties and yield of wheat, oats, and barley as affected by deep plowing and ripping. Soil & Tillage Research. 1(1): 69-79.

Papers published locally, in Spanish

Scientific papers: 47

Technical: 29

International books

1. Rubio, G., R. S. Lavado and F. X. Pereyra (Editors). 2018. Soils of Argentina. World Soils Book Series (Editor Alfred E. Hartemink). Springer International Publishing AG, New York. ISBN 978-3-319-76851-9.
1. Taleisnik, E. and R.S. Lavado. 2020. Saline and Alkaline Soils in Latin America - Natural Resources, management and Productive Alternatives. Springer Nature. 473 p. ISBN 978-3-030-52592-7

International book chapters

1. Ureta Suelgaray, F.J., D.M. Aguilar Beltramo, R.S. Lavado, V.M. Chiochio. 2022. Potencial de poáceas y hongos DSE para la fitorremediación de suelos contaminados con derivados de petróleo. Islas, A y Chávez, T. Coordinadores. Contaminación de suelos por hidrocarburos en América Latina: Contribuciones al conocimiento, diagnóstico y alternativas de solución. Universidad La Salle México. En prensa.
1. Rodríguez, D.M., Schulz, G.A., Tenti Vuegen, L.M., Angelini, M.E., Olmedo, G.F., Lavado, R.S. 2020. Salt-affected soils in Argentina. En: FAO Global Status of Salt-Affected Soils. FAO, Rome, 2021.
2. Imbellone, P.A., M. A. Taboada, F. Damiano, R.S. Lavado. 2020. Genesis, Properties and Management of Salt-affected Soils in the Flooding Pampas, Argentina. Taleisnik, E. and R.S. Lavado (Eds). Saline

and Alkaline Soils in Latin America - Natural Resources, management and Productive Alternatives. Springer Nature. In press. ISBN 978-3-030-52592-7

3. Taboada, M.A., F. Damiano, J.M. Cisneros and R.S. Lavado. 2020. Origin, Management and Reclamation Technologies of Salt-affected and Flooded Soils in the Inland Pampas of Argentina. Taleisnik, E. and R.S. Lavado (eds). Saline and Alkaline Soils in Latin America - Natural Resources, management and Productive Alternatives. Springer Nature. In press. ISBN 978-3-030-52592-7
4. Spagnoletti, F.N., R. S. Lavado, and R. Giacometti. 2018. Interaction of Plants and Arbuscular Mycorrhizal Fungi in Responses to Arsenic Stress: A Collaborative Tale Useful to Manage Contaminated Soils. M. Hasanuzzaman et al. (eds.), Mechanisms of Arsenic Toxicity and Tolerance in Plants. Springer Nature. Pp.239-255.
5. Lavado R.S. 2018. History. In Rubio, G., R. S. Lavado and F. X. Pereyra (Editors). 2018. Soils of Argentina. World Soils Book Series (Editor Alfred E. Hartemink). Pp 1-5. Springer International Publishing AG, New York.
6. Lavado R.S. and V. Aparicio. 2018. Contamination. In Rubio, G., R. S. Lavado and F. X. Pereyra (Editors). 2018. Soils of Argentina. World Soils Book Series (Editor Alfred E. Hartemink). Pp 251-259. Springer International Publishing AG, New York.
7. Rubio, G., R. S. Lavado, F. X. Pereyra, M. A. Taboada, L. M. Moretti, D. Rodríguez Hernán Echeverría, J. L. Panigatti. 2018. Future issues. In Rubio, G. F. X. Pereyra, R. S. Lavado (Editors). Soils of Argentina. World Soils Book Series (Editor Alfred E. Hartemink). Pp 261-263. Springer International Publishing AG, New York.
8. Spagnoletti, F. N., V. M. Chiochio, R. S. Lavado. 2017. Mycorrhizal Inoculation Improves the Performance of Soybean Subjected to Biotic and Abiotic Stresses. In "Soybeans: Cultivation, Nutritional Properties and Effects on Health". (Ed) Bruce Fletcher. Nova Science Publishers, Inc., Hauppauge, NY 11788. 85-118 pp. 276p.
9. Torri, S.I., S. Urricariet, R.S. Lavado. 2011. Micronutrient availability in crop soils of the Pampas region, Argentina. En "Soil nutrients" M. Miransari (Ed) pp. 1-19. Nova Science Publishers, Inc., Hauppauge, NY 11788.
10. Torri S I, Lavado R. S. 2011. Carbon sequestration through the use of biosolids in soils of the Pampas region, Argentina. In: Environmental Management: Systems, Sustainability and Current Issues. Editor: H. C. Dupont, Nova Science Publishers, Inc., Hauppauge, NY 11788., pp. 1-16
11. Lavado, R.S., de Paz, J.M., Delgado, J. and Rimski-Korsakov, H. 2010. Evaluation of Best Nitrogen Management Practices across Regions of Argentina and Spain. In J. Delgado and R. Follet (Eds). Advances in nitrogen management for water quality. SWCS, Ankeny IA, EE.UU. pp 314-343
12. Torri, S. and Lavado, R.S. 2009. Fate of cadmium, copper, lead and zinc in soils after application of different treated sewage sludge in soils of the Pampas region, Argentina. En A. Stephens and F. Fuller (Ed.) "Sludge Processes and Impact...". Nova Scientia Publishers. NY. USA. Pp 95-124.
14. Insausti, P., M. Taboada and R.S. Lavado, 2008. Floods recover the deterioration of grasslands and soils caused by cattle grazing in the Flooding Pampas Argentina. En H.G. Schröder (Ed.) "Grasslands: Ecology,

management and restoration". Nova Scientia Publishers, Inc. NY. USA. Pp 93-107.

15. Taboada, M.A., Lavado, R.S. 2006. Soil swelling in non vertisolic soils: its causes and importance. Chapter 5. En: A. A. Al-Rawas; M. F.A. Goosen (Eds.). Expansive Soils: Recent Advances in Characterization and Treatment. A.A. Balkema. Pp. 55-77
16. Bui, E., L. Krogh, R.S. Lavado, F. Nachtergaele, T. Tóth and R.W. Fitzpatrick. 1998. "Distribution of sodic soils: The world Scene". En M.E. Sumner and R. Naidu (Eds.). "Sodic Soils: Distribution, Processes, Management and Environmental Consequences. Oxford University Press. Pp. 19-34.
17. Soriano A, León RJC, Sala OE, Lavado RS, Deregibus VA, Cauhépé MA, Scaglia OA, Velázquez CA and Lemcoff JH. 1991. Rio de la Plata grasslands. In: Coupland RT (Ed) Temperate Subhumid Grasslands Ecosystems of the World. Elsevier Scientific Publishing Co, Amsterdam. pp: 367-406.

Books and book chapters published locally, in Spanish

Books: 11

Chapters: 37

RESEARCH PROJECT FUNDING

National Research Council (CONICET): 16 projects since 1979.

Science and technology of University of Buenos Aires (UBACyT): 16 projects since 1983.

National Agency for Science and Technological Promotion (ANPCyT): 3 projects since 2001

Scientific commission of Buenos Aires province (CIC): 8 projects since 1981

Other local organizations: 2 projects

TECHNOLOGICAL PROJECTS FUNDING FROM COMPANIES

NIDERA (2), MALTEUROP, AGUAS ARGENTINAS (2), ENRESS, AGUAS ANDINAS (Chile), PROINDER, BUNGE

The projects with Aguas Argentinas were the larger the College received for several years.

PARTICIPATION IN INTERNATIONAL PROJECTS

Project Raising the bio-based industrial feedstock capacity of Marginal Lands. Collaborative Project nro. 101082089. UE. 2023.

Research Project in Iquique Universities, Chile.

Member of the international network for the development of the NLEAP model, with headquarter in the University of Colorado and USDA.

Others.

CONSULTING WORK

Several written reports since 1990 decade, some presented also orally.

OTHER ACTIVITIES

Attendance of congresses and workshops

- Local Congress and workshops: 58
- International Congresses and workshops abroad: 35

Awards

- University of Buenos Aires for Scientific and Technological Research.
- Wilfrid Baron Award. Argentinean Academy of Agronomy and Veterinary.
- Program for Research Incentive of the Argentinean Department of Education.
- Honorary member of the Argentine Society of Soil Science
- Santelises Award. Soil Science Society of Latin America, for the book "Soils of Argentina"

ACADEMIC ACTIVITIES

Undergraduate and graduate teaching: I teach numerous undergraduate courses and lectures from 1973 to 2012 and graduate courses and lectures from 1986 to the present.

ADVISOR OF GRADUATE THESIS (M.Sc. and Ph.D.)

M. Sci.

1. Margarita Alconada (1991).
2. Miguel A. Taboada (1991).
3. Flavio H. Gutiérrez Boem (1995).
4. Carina R. Álvarez (1998).
5. Javier D. Scheiner (1999).
6. Alicia S. Urricariet (2000).
7. Silvana I. Torri (2001).
8. Gabriela Civeira (2006).
9. Enrique Alberto Frusso (2013).
10. Juan Pablo Giubergia (2013).
11. Osvaldo Barresi (2020).
12. Fernando J. Ureta Suelgaray (in progress).

Ph.D.

1. Gerardo Rubio (1997).
2. Mónica B. Rodríguez (2006).
3. Liliana San Martino (2010).
4. Daniela I. Orroño (2011).
5. Marta S. Zubillaga (2011).
6. Helena Rinski-Korsakov (2014).
7. Federico Spagnoletti (2016).
8. Gisele Ferreyroa (2016).
9. Maria Angeles Pescie (2020)
10. Marcos A. Orellana Benítez (in progress)
11. Carla Costamagna (staeted)
- 12.

Postdoctoral:

1. Andrea Montenegro (2011)