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Curriculum Vitae (abbreviated)

Assistant Professor, Oregon State University, Corvallis, Oregon

EDUCATION

- **Postdoctoral Research Fellow**, University of California, Davis, Davis, California.
Supervisor: Bradley D. Hanson
- **Ph.D.**, Horticulture and Agronomy, University of California, Davis.
Dissertation: Physiological, biochemical and molecular characterization of multiple herbicide-resistant populations of *Lolium perenne* L. *spp. multiflorum* from California and Oregon.
Advisor: Bradley D. Hanson
- **Master of Science**, Crop Science, University of São Paulo, Piracicaba, Brazil.
Thesis: Resistance of tall windmill grass (*Chloris polydactyla*) to glyphosate.
Advisor: Pedro J. Christoffoleti
- **Bachelor of Science**, Agronomy Engineering, University of São Paulo, Piracicaba, Brazil.
Dissertation: Characterization of glyphosate-resistant *Digitaria insularis* from Brazil and management of *Myriophyllum spicatum* (Eurasian watermilfoil) from Colorado.
Advisor: Pedro J. Christoffoleti

PEER-REVIEWED PUBLICATIONS (last 5 years)

2019

Brunharo, C. A. C. G.; Takano, H.; Mallory-Smith, C.; Dayan, F.; Hanson, B.D. (2019) Role of glutamine synthetase isogenes and herbicide metabolism in the mechanism of resistance to glufosinate in *Lolium perenne* L. *spp multiflorum* biotypes from Oregon. *Journal of Agricultural and Food Chemistry (in press)*. 10.1021/acs.jafc.9b01392. [Open access](#).

Matzrafi, M; **Brunharo, C. A. C. G.**; Tehranchian, P; Hanson, B. D.; Jasieniuk, M. (2019) Increased temperatures and elevated CO2 levels reduce sensitivity of *Conyza canadensis* and *Chenopodium album* to glyphosate. *Nature Scientific Reports* 9: e2228. [Open access](#).

Brunharo, C. A. C. G.; Morran, S.; Martin, K.; Moretti, M. L.; Hanson, B. (2019) EPSPS duplication and mutation involved in glyphosate resistance in the allotetraploid weed species *Poa annua* L. *Pest Management Science (In press)*.

Melo, M. S. C.; Rocha, L. J. F. N.; **Brunharo, C. A. C. G.**; Nicolai, M.; Tornisielo, V. L.; Nissen, S. J.; Christoffoleti, P. J. (2019) Glyphosate-resistant *Digitaria insularis*: analysis of the resistance mechanism. *Brazilian Journal of Weed Science*: e019185746. [Open access](#).

2018

Morran, S.; Moretti, M. L.; **Brunharo, C. A. C. G.**; Fischer, A. J.; Hanson, B. D. (2018) Multiple target site resistance to glyphosate in *Echinochloa colona* lines from California orchards. *Pest Management Science* 74: 2747.

Brunharo, C. A. C. G.; Hanson, B. (2018) Multiple-resistant Italian ryegrass (*Lolium perenne* L. *spp. multiflorum*) in California perennial crops: characterization and chemical management. *Weed Science* 66: 696. *Featured article and cover of Volume 66, issue 6*.

2017

Brunharo, C. A. C. G.; Hanson, B. D. (2017) Vacuolar sequestration of paraquat is involved in the resistance mechanism in *Lolium perenne* L. *spp. multiflorum*. *Frontiers in Plant Science* 8, e1485. [Open access](#).

Melo, M. S. C.; Frinhani, L. J.; Rocha, L. J. F. N.; **Brunharo, C. A. C. G.**; Silva, D. C. P.; Nicolai, M.; Christoffoleti, P. J. (2017) Chemical control alternatives for glyphosate-resistant sourgrass with corn and cotton herbicides. *Brazilian Journal of Herbicides* 16: 206. [Open access](#).

Sousa Junior, P. R.; **Brunharo, C. A. C. G.**; Furlani, C. E. A.; Prado, R. M.; Maldonado Júnior, W.; Zerbato, C. (2017) Phosphorus fertilization in sugarcane cultivation under different soil managements. *Agriambi* 21: 665. [Open access](#).

2016

Brunharo, C. A. C. G.; Patterson, E. L.; Carrijo, D. R.; Melo, M. S. C.; Nicolai, M.; Gaines, T. A.; Nissen, S. J.; Christoffoleti, P. J. (2016) Confirmation and mechanism of glyphosate resistance in tall windmill grass (*Chloris elata*) from Brazil. *Pest Management Science* 72: 1758.

Christoffoleti, P. J.; Nicolai, M.; Melo, M. S. C.; Silva, D. C. P.; **Brunharo, C. A. C. G.** *Resistance to EPSPS inhibitors*. In: Christoffoleti, P. J.; Nicolai, M. *Aspects of the mechanism of herbicide resistance in weeds*. HRAC Brazil. pp.177-191, 2016.

Oliveira, T.; **Brunharo, C. A. C. G.** *Glufosinate: a glutamine synthetase inhibitor*. In: Christoffoleti, P. J.; Nicolai, M. *Aspects of the mechanism of herbicide resistance in weeds*. HRAC Brazil. pp.193-206, 2016.

2015

Pavani, A. A.; Guimaraes, A. C. R.; **Brunharo, C. A. C. G.**; Christoffoleti, P. J. (2015) Physiological characterization of sugarcane varieties under oxidative stress caused by the herbicide paraquat. *Cientifica* 43: 43.

Obara, F. E. B.; **Brunharo, C. A. C. G.**; Melo, M. S. C.; Nicolai, M.; Christoffoleti, P. J. (2015) Selectivity of imazapic and imazapyr associations applied in different sugarcane growth stages. *Nucleos* 12: 15.

Brunharo, C. A. C. G.; Christoffoleti, P. J.; Nicolai, M. *Management of Amaranthus spp. in sugarcane*. In: Inoue, M.; Oliveira Jr, R. S.; Mendes, K. F.; Constantin, J. *Management of Amaranthus spp.* pp. 129 – 142, 2015.

Christoffoleti, P. J.; **Brunharo, C. A. C. G.** *Management of herbicide-resistant weeds in cotton*. In: Costa, A. G. F.; Sofiatti, V. *Weed management in cotton*. pp. 189 – 204, 2015.

2014

Brunharo, C. A. C. G.; Christoffoleti, P. J.; Nicolai, M. (2014) Aspects of the mechanism of action of ammonium glufosinate: resistant crops and weed resistance. *Brazilian Journal of Herbicides* 13: 163.

ORAL AND POSTER PRESENTATIONS IN SCIENTIFIC MEETINGS (last 5 years)

2019

Brunharo, C. A. C. G.; Takano, H.; Mallory-Smith, C.; Dayan, F.; Hanson, B.D. (2019) Glufosinate-resistant Italian ryegrass from Oregon: role of glutamine synthetase isoforms and herbicide metabolism in the resistance mechanism. Oral presentation at the 59th Weed Science Society of America annual meeting. New Orleans, Louisiana.

Brunharo, C. A. C. G.; Hanson, B.D. (2019) Photooxidative stress conditions elicit contrasting responses in paraquat-resistant and -susceptible Italian ryegrass biotypes. Oral presentation at the 59th Weed Science Society of America annual meeting. New Orleans, Louisiana.

Driver, K.; **Brunharo, C. A. C. G.**; Godar, A.; Al-Khatib, K. (2019) *Leptochloa acuminata* clomazone metabolism in California rice. Co-authored oral presentation at the 59th Weed Science Society of America annual meeting. New Orleans, Louisiana.

Matzrafi, M; **Brunharo, C. A. C. G.**; Tehranchian, P.; Hanson, B. D.; Jasieniuk, M. (2019) Increased temperatures and elevated CO₂ levels reduce the sensitivity of *Coryza canadensis* and *Chenopodium album* to glyphosate. Co-authored oral presentation at the 59th Weed Science Society of America annual meeting. New Orleans, Louisiana.

Morran, S.; **Brunharo, C. A. C. G.**; Jasieniuk, M.; Hanson, B. D. (2019) Investigating the role of allelic contribution to glyphosate resistance in polyploid weed species. Co-authored oral presentation at the 59th Weed Science Society of America annual meeting. New Orleans, Louisiana.

Brunharo, C. A. C. G.; Takano, H.; Mallory-Smith, C.; Dayan, F.; Hanson, B.D. (2019) Role of glutamine synthetase isogenes and herbicide metabolism in the mechanism of resistance to glufosinate in *Lolium perenne* L. *spp multiflorum* biotypes from Oregon. Oral presentation at the 59th Weed Science Society of America annual meeting. New Orleans, Louisiana.

Brunharo, C. A. C. G.; Takano, H.; Mallory-Smith, C.; Dayan, F.; Hanson, B.D. (2019) Role of glutamine synthetase isoforms and herbicide metabolism in the mechanism of resistance to glufosinate in Italian ryegrass biotypes from Oregon. Oral presentation at the 72nd Western Society of Weed Science annual meeting. Denver, Colorado.

2018

Brunharo, C. A. C. G.; Morran, S.; Hanson, B. D. (2018) Mechanism of resistance to glyphosate in annual bluegrass from California perennial crops. Oral presentation at the 71st Western Society of Weed Science annual meeting. Orange Grove, California.

Brunharo, C. A. C. G.; Mallory-Smith, C.; Hanson, B. D. (2018) Glufosinate-resistant Italian ryegrass: involvement of herbicide metabolism and mobility in the mechanism of resistance. Oral presentation at the 58th Weed Science Society of America annual meeting. Arlington, Virginia.

Hanson, B. D.; **Brunharo, C. A. C. G.**; Sosnoskie, L. M.; Moretti, M. (2018) Opportunities for tank mix and sequential herbicide programs for season-long management of weed in Western tree and vine cropping systems. Co-authored oral presentation at the 58th Weed Science Society of America annual meeting. Arlington, Virginia.

Brunharo, C. A. C. G.; Hanson, B. D. (2018) Optimizing strategies for season-long control of tough weed species in California walnuts. Oral presentation at the 50th Annual Walnut Research Conference, Bodega Bay, California.

2017

Hanson, B. D.; Sosnoskie, L. M.; Morran, S.; **Brunharo, C. A. C. G.**; Shrestha, A. (2017) Herbicide resistance in California orchard and vineyard cropping systems. Co-authored oral presentation at the 2nd Global Herbicide Resistance Challenge. Denver, Colorado.

Morran, S.; Hanson, B. D.; **Brunharo, C. A. C. G.** (2017) Allelic contribution to target site mediated glyphosate resistance in *Echinochloa colona*. Co-authored poster presentation at the 2nd Global Herbicide Resistance Challenge. Denver, Colorado.

Brunharo, C. A. C. G.; Morran, S.; Hanson, B. D. (2017) Characterization of a multiple-resistant population of Italian ryegrass from California. Poster presentation at the 2nd Global Herbicide Resistance Challenge. Denver, Colorado.

Brunharo, C. A. C. G.; Hanson, B. D. (2017) Evidences for vacuolar sequestration as mechanism of resistance to paraquat in a population of Italian ryegrass from California. Oral presentation at the 70th Western Society of Weed Science annual meeting. Coeur d'Alene, Idaho.

Brunharo, C. A. C. G.; Roncoroni, J.; Hanson, B. D. (2017) A population of Italian ryegrass from Sonoma County exhibits resistance to glyphosate and fluzifop-P-butyl. Poster presentation at the 69th Annual California Weed Science Society Meeting. Monterey, California.

Brunharo, C. A. C. G.; Hanson, B. D. (2017) Evidences for vacuolar sequestration as mechanism of resistance to paraquat in a population of Italian ryegrass from California. UC Davis Weed Science Seminar Series. Davis, California.

Brunharo, C. A. C. G.; Tjandra, R.; Morran, S.; Hanson, B. D. (2017) Glyphosate-resistant annual bluegrass in California: detection, mechanism of resistance and chemical management. Oral presentation at the 61st Annual Weed Day. Davis, California.

Brunharo, C. A. C. G.; Hanson, B. D. (2017) Paraquat-resistant Italian ryegrass management options in orchards in California. Oral presentation in the general session at the 69th Annual California Weed Science Society Meeting. Monterey, California.

2016

Brunharo, C. A. C. G.; Patterson, E.; Carrijo, D.; Melo, M. S. C.; Nicolai, M.; Gaines, T.; Nissen, S.; Christoffoleti, P. (2016) Confirmation and mechanism of glyphosate resistance in tall windmill grass (*Chloris elata*) from Brazil. Poster presentation at the 7th International Weed Science Congress. Prague, Czech Republic.

Brunharo, C. A. C. G.; Hanson, B. D. (2016) Susceptibility of Italian ryegrass to orchard herbicides in California. Poster presentation at the 69th Western Society of Weed Science annual meeting. Portland, Oregon.

Brunharo, C. A. C. G.; Hanson, B. D. (2016) Preliminary evaluation of suspected paraquat-resistant Italian ryegrass in a California orchard. Poster presentation at the 68th Annual California Weed Science Society Meeting. Sacramento, California.

Brunharo, C. A. C. G.; Hanson, B. D. (2016) Characterization of paraquat resistant Italian ryegrass in California. Oral presentation at the 60th Annual Weed Day. Davis, California.

2015

Brunharo, C. A. C. G.; Hanson, B. D. (2015) Performance of mesotrione tankmixes in orchards. Oral presentation at the 59th Annual Weed Day. Davis, California.

Brunharo, C. A. C. G.; Hanson, B. D. (2015) Tankmix options for weed control in almonds. Oral presentation at the Nickels Field Day. Arbuckle, California.