

STEVEN J. GULDAN

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EDUCATION

Ph.D., Agronomy, 1986, University of Minnesota
M.S., Agronomy, 1984, University of Minnesota
B.S., Geography, 1981, Mankato State University

EXPERIENCE

Professor, 2003-present, Associate Professor, 1998-2003, Assistant Professor, 1992-1998, Department of Plant and Environmental Sciences, and Superintendent, 1992-present, Alcalde Sustainable Agriculture Science Center, New Mexico State University. Research on various horticultural and agronomic crops. Cooperate with other researchers on additional projects: grazing systems, *acequia* (irrigation ditch) hydrology, turfgrasses.

Agronomist, Michael Fields Agricultural Institute, East Troy, Wisconsin. Cooperative project with, and located at, North Dakota State University's Carrington Research Extension Center, Carrington, North Dakota, 1988-1992. Headed project investigating, both on-farm and on-station, the potential for greater use of legumes in crop and crop-livestock systems in the Northern Great Plains.

Postdoctoral Fellow, International Maize and Wheat Improvement Center (CIMMYT). El Batan, Mexico, 1986-1988. Maize Training Program. Instructed in field and classroom several groups of maize trainees in on-farm and experiment station research procedures.

Research Assistant, University of Minnesota, St. Paul, MN, 1982-1986. Soybean Physiology Research Project.

Farmhand, Sleepy Eye, MN, childhood-1982.

PUBLICATIONS (Please see attached list)

SECOND LANGUAGE

Spanish

HONORS/AWARDS

Mobley Family Endowed Distinguished Research Award, 2016
Jose Fernandez Memorial Chair, 2016-2019

PUBLICATIONS

Journal Articles

- Gutiérrez-Jurado, K.Y., A.G. Fernald, S.J. Guldán, and C.G. Ochoa. 2017. Surface water and groundwater interactions in traditionally irrigated fields in northern New Mexico. *Water* 9(2), 102; doi:[10.3390/w9020102](https://doi.org/10.3390/w9020102)
- Turner, B.L., V. Tidwell, A. Fernald, J.A. Rivera, S. Rodríguez, S. Guldán, C. Ochoa, B. Hurd, K. Boykin, and A. Cibils. 2016. Modeling acequia irrigation systems using system dynamics: model development, evaluation, and sensitivity analyses to investigate effects of socio-economic and biophysical feedbacks. *Sustainability* 8(10), 1019; doi:[10.3390/su8101019](https://doi.org/10.3390/su8101019)
- Raheem, N., S. Archambault, E. Arellano, M. Gonzales, D. Kopp, J. Rivera, S. Guldán, K. Boykin, C. Oldham, A. Valdez, S. Colt, E. Lamadrid, J. Wang, J. Price, J. Goldstein, P. Arnold, S. Martin, E. Dingwell. 2015. A framework for assessing ecosystem services in acequia irrigation communities of the Upper Río Grande watershed. *WIREs Water* 2(5):559–575. doi:10.1002/wat2.1091.
- Yao, S., S. Guldán, R. Flynn, and C. Ochoa. 2015. Challenges of strawberry production in high-pH soil at high elevation in the southwestern United States. *HortScience* 50(2):254-258.
- Fernald, A., S. Guldán, K. Boykin, A. Cibils, M. Gonzales, B. Hurd, S. Lopez, C. Ochoa, M. Ortiz, J. Rivera, S. Rodríguez, and C. Steele. 2015. Linked hydrologic and social systems that support resilience of traditional irrigation communities. *Hydrol. Earth Syst. Sci.* 19:293–307 (www.hydrol-earth-syst-sci.net/19/293/2015/doi:10.5194/hess-19-293-2015).
- Hecher, E.A., C.L. Falk, J. Enfield, S.J. Guldán, and M.E. Uchanski. 2014. The economics of low-cost high tunnels for winter vegetable production in the southwestern United States. *HortTechnology* 24:7-15.
- Guldán, S.J., A.G. Fernald, C.G. Ochoa, and V.C. Tidwell. 2013. Collaborative community hydrology research in northern New Mexico. *Journal of Contemporary Water Research & Education* 152:49-54.
- Ochoa, C.G., S.J. Guldán, A.F. Cibils, S.C. Lopez, K.G. Boykin, V.C. Tidwell, and A.G. Fernald. 2013. Hydrologic connectivity of head waters and floodplains in a semiarid watershed. *Journal of Contemporary Water Research & Education* 152:69-78.
- Ochoa, C.G., A.G. Fernald, S.J. Guldán, V.C. Tidwell, and M.K. Shukla. 2013. Shallow aquifer recharge from irrigation in a semiarid agricultural valley in New Mexico. *J. Hydrologic Engineering* 18:1219-1230.
- El-Sadek, A., M. Shukla, M. Bleiweiss, A. Fernald, and S. Guldán. 2012. Evaluating sensitivity analysis and auto-calibration of a semi-distributed hydrological model for two semiarid watersheds of New Mexico. *New Mexico J. Science* 46:65-88.
- Ochoa, C.G., A.G. Fernald, S.J. Guldán, M.K. Shukla, and V.C. Tidwell. 2012. Deep percolation and water table fluctuations in response to irrigation inputs: Field observations. *New Mexico J. Science* 46:89-104.
- Fernald, A., V. Tidwell, J. Rivera, S. Rodríguez, S. Guldán, C. Steele, C. Ochoa, B. Hurd, M. Ortiz, K. Boykin, and A. Cibils. 2012. Modeling sustainability of water,

- environment, livelihood, and culture in traditional irrigation communities and their linked watersheds. *Sustainability* 4:2998-3022; doi:10.3390/su4112998
- Mayagoitia, L., B. Hurd, J. Rivera, and S. Guldan. 2012. Rural community perspectives on preparedness and adaptation to climate-change and demographic pressure. *Journal of Contemporary Water Research & Education* 147:49-62.
- El-Sadek, A., M. Bleiweiss, M. Shukla, S. Guldan, A. Fernald. 2010. Alternative climate data sources for distributed hydrological modelling on a daily time step. *Hydrol. Processes* DOI: 10.1002/hyp.7917.
- Fernald, A.G., S.Y. Cevik, C.G. Ochoa, V.C. Tidwell, J.P. King, and S.J. Guldan. 2010. River hydrograph retransmission functions of irrigated valley surface water-groundwater interactions. *J. Irrigation and Drainage Eng.* 136:823-835.
- Lauriault, L.M., S.J. Guldan, C.A. Martin, and D.M. VanLeeuwen. 2009. Using forage brassicas under irrigation in mid-latitude, high-elevation steppe/desert biomes. Online. *Forage and Grazinglands* DOI: 10.1094/FG-2009-0508-01-RS.
- Ochoa, C.G., A.G. Fernald, S.J. Guldan, and M.K. Shukla. 2009. Water movement through a shallow vadose zone: A field irrigation experiment. *Vadose Zone Journal* 8:414-425.
- Kleitzi, K.M., M.M. Wall, C.L. Falk, C.A. Martin, M.D. Remmenga, and S.J. Guldan. 2008. Stand establishment and yield potential of organically grown seeded and transplanted medicinal herbs. *HortTechnology* 18(1):116-121.
- Ortiz, M., C. Brown, A. Fernald, T.T. Baker, B. Creel, and S. Guldan. 2007. Land use change impacts on *Acequia* water resources in northern New Mexico. *Journal of Contemporary Water Research & Education* 137:47-54.
- Ochoa, C.G., A.G. Fernald, S.J. Guldan, and M.K. Shukla. 2007. Deep percolation and its effects on shallow groundwater level rise following flood irrigation. *Transactions of the ASABE* 50(1):73-81.
- Fernald, A.G., T.T. Baker, and S.J. Guldan. 2007. Hydrologic, riparian, and agroecosystem functions of traditional *acequia* irrigation systems. *Journal of Sustainable Agriculture* 30(2):147-171.
- Fernald, A.G., and S.J. Guldan. 2006. Surface water-groundwater interactions between irrigation ditches, alluvial aquifers, and streams. *Reviews in Fisheries Science* 14:79-89.
- Lauriault, L.M., S.J. Guldan, C.A. Martin, and D.M. VanLeeuwen. 2006. Performance of irrigated tall fescue-legume communities under two grazing frequencies in the southern Rocky Mountains, USA. *Crop Science* 46:330-336.
- Lauriault, L.M., S.J. Guldan, and C.A. Martin. 2003. Irrigated tall fescue-legume communities in the southern Rocky Mountains: Years five to eight. *Agronomy Journal* 95:1497-1503.
- Kleitzi, K.M., M.M. Wall, C.L. Falk, C.A. Martin, M.D. Remmenga, and S.J. Guldan. 2003. Yield potential of selected medicinal herbs grown at three plant spacings in New Mexico. *HortTechnology* 13(4):631-636.
- Guldan, S.J., and C.A. Martin. 2003. Hairy vetch biomass yield as affected by fall planting date in the irrigated steppe of the southern Rocky Mountains. *J. Sustainable Agric.* 22(3):17-23.
- Cueto-Wong, J.A., S.J. Guldan, W.C. Lindemann, and M.D. Remmenga. 2001.

- Nitrogen recovery from ¹⁵N-labeled green manures: I. Recovery by forage sorghum and soil one season after green manure incorporation. *J. Sustainable Agric.* 17(4):27-42.
- Cueto-Wong, J.A., S.J. Guldan, W.C. Lindemann, and M.D. Remmenga. 2001. Nitrogen recovery from ¹⁵N-labeled green manures: II. Recovery by oat and soil two seasons after green manure incorporation. *J. Sustainable Agric.* 17(4):43-55.
- Falk, C.L., H. van Voorthuizen, M.M. Wall, S.J. Guldan, C.A. Martin, and K.M. Kleitz. 2000. An economic analysis of transplanting versus direct seeding of selected medicinal herbs in New Mexico. *Journal of Herbs, Spices & Medicinal Plants* 7(4):15-29.
- Guldan, S.J., L.M. Lauriault, and C.A. Martin. 2000. Evaluation of irrigated tall fescue-legume communities in the steppe of the southern Rocky Mountains. *Agron. J.* 92:1189-1195.
- Falk, C.L., H. Van Voorthuizen, M.M. Wall, S.J. Guldan, C.A. Martin, and K.M. Kleitz. 1999. Costs and returns of growing selected medicinal herbs in New Mexico indicate positive return to land and risk likely. *HortTechnology* 9(4):681-686.
- Guldan, S.J., and R.E. Gomez. 1999. Small farm and ranch sustainability. *New Mexico J. Science* 39:288-297.
- Guldan, S.J., C.A. Martin, and C.L. Falk. 1998. Interseeding snap pea into stands of chile pepper reduces yield of pea more than that of chile. *HortScience* 33:660-662.
- Guldan, S.J., C.A. Martin, and R.L. Steiner. 1998. Interseeding forage brassicas into chile: forage productivity and effect on chile yield. *J. Sustainable Agric.* 11(2/3):41-49.
- Guldan, S.J., C.A. Martin, and D.L. Daniel. 1998. Interseeding forage brassicas into sweet corn: forage productivity and effect on sweet corn yield. *J. Sustainable Agric.* 11(2/3):51-58.
- Martin, C.A., and S.J. Guldan. 1998. Sagebrush as a short-term arthropod repellent. *J. Sustainable Agric.* 11(4):77-85.
- Guldan, S.J., T. May, C.A. Martin, and R.L. Steiner. 1998. Yield and forage quality of interseeded legumes in a high-desert environment. *J. Sustainable Agric.* 12(2/3):85-97.
- Guldan, S.J., C.A. Martin, W.C. Lindemann, J. Cueto-Wong, and R.L. Steiner. 1997. Yield and green-manure benefits of interseeded legumes in a high-desert environment. *Agron. J.* 89:757-762.
- Guldan, S.J., C.A. Martin, W.C. Lindemann, J. Cueto-Wong, and R.L. Steiner. 1997. Interseeding legumes into chile: legume benefits to a following crop of forage sorghum. *HortTechnology* 7:146-149.
- Guldan, S.J., C.A. Martin, J. Cueto-Wong, and R.L. Steiner. 1996. Interseeding legumes into chile: legume productivity and effect on chile yield. *HortScience* 31:1126-1128.
- Guldan, S.J., C.A. Martin, J. Cueto-Wong, and R.L. Steiner. 1996. Dry-matter and nitrogen yields of legumes interseeded into sweet corn. *HortScience* 31:206-208.

- Carr, P.M., J.C. Gardner, B.G. Schatz, S.W. Zwinger, and S.J. Guldan. 1995. Grain yield and weed biomass of a wheat-lentil intercrop. *Agron. J.* 87:574-579.
- Guldan, S.J., and W.A. Brun. 1987. Effect of abscisic acid on amino acid uptake and efflux in developing soybean seeds. *Crop Sci.* 27:716-719.
- Guldan, S.J., and W.A. Brun. 1987. Relationship of tissue water relations to asparagine uptake in developing soybean seeds. *Crop Sci.* 27:720-725.
- Guldan, S.J., and W.A. Brun. 1985. Relationship of cotyledon cell number and seed respiration to soybean seed growth. *Crop Sci.* 25:815-819.

Book Chapter

- Ochoa, C.G., A.G. Fernald, and S.J. Guldan. 2011. Application of RZWQM for hydrological modeling in Alcalde Basin of Northern New Mexico. *In* M.K. Shukla (ed.) *Soil Hydrology, Land Use and Agriculture: Measurement and Modelling*. CABI, Wallingford, UK.

Extension Publications

- Baker, B., S. Swezey, D. Granatstein, S. Guldan, and D. Chaney. 2005. Organic farming compliance handbook: A resource guide for Western Region agricultural professionals. Available on-line at:
<http://www.sarep.ucdavis.edu/organic/complianceguide/>
- Cooperative Extension Service and Dept. of Agricultural Communications. 2005. Contributor (one of presenters) to DVD: "Optimizing Irrigation in New Mexico."
- Guldan, S.J., S.T. Ball, and C.A. Martin. 1999. Relay intercropping Brassicas into chile and sweet corn. *New Mexico State Univ. Coop. Ext. Serv. Guide A-609*.

Peer-reviewed Conference Proceedings

- Ochoa, C.G., A.G. Fernald, and S.J. Guldan. 2011. Caracterización del balance hídrico y la recarga por retorno de riego en un valle agrícola de una región semiárida de los Estados Unidos de América. *Estudios en la Zona no Saturada del Suelo*. Vol. 10.

Proceedings

- Guldan, S.J., A. Fernald, C.G. Ochoa. 2014. Documenting hydrological benefits of traditional acequia irrigation systems: collaborative research in New Mexico, USA. (pp. 13). Polytechnic Univ. of Valencia/Assut Fundacio/Univ. of Valencia. <http://tglick-irrigation-2014.org/wp-content/uploads/2013/06/Guldan-Fernald-Ochoa.pdf>
- Fernald, A., J. Rivera, S. Rodriguez, V. Tidwell, C. Ochoa, Q. Ortiz, S.J. Guldan. 2014. Connectivity of coupled hydrologic and human systems as the basis of resilience in traditional irrigation communities in New Mexico. (pp. 11). Polytechnic Univ. of Valencia/Assut Fundacio/Univ. of Valencia. <http://tglick-irrigation-2014.org/wp-content/uploads/2013/07/Fernald-et-al.pdf>
- Guldan, S.J., C.A. Martin, and R.H. Walser. 2003. Research for small farms and ranches in north-central New Mexico. p. 143. *Proceedings of the Third National Small Farm Conference, September 17-20, 2002, Albuquerque, NM. USDA, Washington, D.C.*

- Martin, C.A., and S.J. Guldan. 2003. *Anemopsis californica*, a potential new medicinal crop. p. 144. Proceedings of the Third National Small Farm Conference, September 17-20, 2002, Albuquerque, NM. USDA, Washington, D.C.
- Dickerson, G., S. Guldan, L.M. English, and P. Torres. 2003. Effects of woven, black plastic mulch and row cover on winter squash and pepper production. p. 63-67. Proceedings of the 31st National Agricultural Plastics Congress, August 16-19, 2003, Grand Rapids, MI. American Society for Plastics, State College, PA.
- Walser, R., and S.J. Guldan. 2003. Organic tree fruit research at New Mexico State University. p. 63. Proceedings of 2nd National Organic Tree Fruit Symposium, May 28-30, 2003, Grand Junction, CO.
- Guldan, S.J. 2002. Brassicas and other annual forages. p. 95-100. *In* J.E. Brummer and C.H. Pearson (ed.) Proceedings of the Intermountain Forage Symposium. Colorado State University Technical Bulletin LTB 02-1.
- Guldan, S., E. Herrera, and C. Martin. 1996. Apple variety trial at the Alcalde Sustainable Agriculture Science Center. p. 141. *In* New Mexico Apple Growers Conference Proceedings. Published by NMSU.
- Gardner, J.C., V.L. Anderson, B.G. Schatz, P.M. Carr, and S.J. Guldan. 1991. Overview of current sustainable agriculture research. p. 77-91. *In* B.J. Rice (ed.) Sustainable agriculture research and education in the field: a proceedings. Proc. Workshop USDA and NRC, Washington, D.C. April 3-4, 1990. National Academy Press, Washington, D.C.
- Gardner, J.C., P.M. Carr, B.G. Schatz, and S.J. Guldan. 1990. Multiple cropping in the Northern Great Plains. p. 31-35. *In* Conservation tillage--Great Plains Agricultural Council bulletin No. 131. Proc. Symposium Great Plains Agricultural Council, Bismarck, ND. August 21-23, 1990.

Published Abstracts

- Ochoa, C.G., S. Guldan, V. Tidwell, and T. Deboodt. 2016. Ecohydrological and socioeconomic relationships in disturbed woodland ecosystems of the western U.S. American Geophysical Union, Abstract H23G-1654.
- Ochoa, C.G., S. Guldan, T. Deboodt, A. Fernald, and G. Ray. 2015. Ecohydrologic relationships in two juniper woodlands with different precipitation regimes. American Geophysical Union Fall Meeting, Abstract H13B-1511. December 14-18, San Francisco, CA.
- Yao, S., R. Heyduck, and S.J. Guldan. 2015. Blackberry cultivar evaluation in high tunnel and field in northern New Mexico. HortScience 50:S250.
- Ochoa, C.G., S.J. Guldan, A.G. Fernald, and V.C. Tidwell. 2013. Hydrologic interactions in snow-melt runoff driven semiarid watersheds. American Geophysical Union Fall Meeting, Abstract H41F-1236. December 9-13, San Francisco, CA.
- Gutierrez, K., A.G. Fernald, C.G. Ochoa, and S.J. Guldan. 2013. Farm water budgets for semiarid irrigated floodplains of northern New Mexico: characterizing the surface water-groundwater interactions. American Geophysical Union Fall Meeting, Abstract H34A-1429. December 9-13, San Francisco, CA.
- Fernald, A., V.C. Tidwell, J. Rivera, S. Rodriguez, S.J. Guldan, C.M. Steele, C. Ochoa, B.H. Hurd, M. Ortiz, K.G. Boykin, and A.F. Cibils. 2012. Modeling water, ecosystems, economics and culture in traditional acequia irrigation communities

- of New Mexico and their linked watersheds. American Geophysical Union. Abstract H14F-03.
- Guldan, S.J., Fernald, A., V.C. Tidwell, J. Rivera, S. Rodriguez, C.M. Steele, C. Ochoa, B.H. Hurd, M. Ortiz, K.G. Boykin, and A.F. Cibils. 2012. Multiperspective analysis of community resilience to changing water supplies for traditional irrigation systems in northern New Mexico. University Council on Water Resources Annual Conference, Abstract, Session #20.2. <http://ucowr.org/conferences/past-conferences/item/6-2012-conference>
- Yao, S., and S.J. Guldan. 2012. Jujube- Chinese date, a potential fruit crop in New Mexico. *HortScience* 47:S130.
- Ochoa, C.G., K. Gutierrez, A. Fernald, S. Guldan, and S.Yao. 2012. Surface water and groundwater interactions in semiarid irrigated floodplains of northern New Mexico. 57th Annual New Mexico Water Conference: Hard choices, adapting policy and management to water scarcity. New Mexico Water Resources Research Institute. Abstract # 23.
- Flynn, R. P., J. Mexal, M.K. O'Neill, L.M. Lauriault, J.T. Harrington, S.J. Guldan, S. Angadi, T. Carrillo. 2011. Agricultural Science Centers In New Mexico: Challenges and Successes. *In Annual Meetings Abstracts*. ASA, CSSA, SSSA, Madison, WI. <http://a-c-s.confex.com/crops/2011am/webprogram/Paper67392.html>.
- Ochoa, C.G., A.G. Fernald, and S.J. Guldan. 2011. Caracterización del balance hídrico y la recarga por retorno de riego en un valle agrícola de una región semiárida de los Estados Unidos de América. *Jornadas de Investigación en la Zona no Saturada del Suelo*, Abstract # 10.
- El-Sadek, A., M. Shukla, M. Bleiweiss, A. Fernald, and S. Guldan. 2010. Evaluating sensitivity analysis and autocalibration of a semi-distributed hydrologic model for a semi-arid watershed. New Mexico Water Resources Research Institute, Annual Meetings. Presentation Abstract #15.
- Ochoa C.G., A.G. Fernald, S.J. Guldan, and V.C. Tidwell. 2010. Temporal and spatial variability of surface water and groundwater interactions in a semi-arid agricultural valley. *Eos Trans. AGU*, 91(52), Fall Meet. Suppl., Abstract H21B-1038.
- Ochoa, C., A. Fernald, S. Guldan, M. K. Shukla. 2010. Field studies and modeling of water movement through the shallow vadose zone in a floodplain irrigated valley. American Society of Agronomy (ASA), Crop Science Society of America (CSSA), and Soil Science Society of America (SSSA) International Annual Meeting. Abstract # 300-9.
- Ochoa, C., A. Fernald, S. Guldan, and V. Tidwell. 2010. Characterizing Surface Water and Groundwater Flows in Traditionally Irrigated Agriculture Systems. 2010 New Mexico Water Research Symposium: Resource Interdependence, Abstract 28.
- Ochoa, C., A. Fernald, S. Guldan, and V. Tidwell. 2010. Surface Water and Groundwater Interactions in Irrigated Lands, Alcalde, NM. 9th Annual Española Basin Workshop.
- Ochoa, C.G., A. Fernald, S. Guldan, and V.C. Tidwell. 2009. Characterizing water flows in irrigated valleys of northern New Mexico. *Eos Trans. AGU* 90(52), Fall Meeting.
- Ochoa, C., A. Fernald, S. Guldan, and M.K. Shukla. 2009. Field data analysis and simulation of water transport through a shallow vadose zone. American Society of Agronomy (ASA), Crop Science Society of America (CSSA), and Soil Science

- Society of America (SSSA) International Annual Meeting. Abstract # 201-6.
- Ochoa, C., A. Fernald, S. Guldan, and M.K. Shukla. 2009. Field measurements and simulation of deep percolation in two different soils. American Society of Agronomy (ASA), Crop Science Society of America (CSSA), and Soil Science Society of America (SSSA) International Annual Meeting. Abstract # 203-5.
- Ochoa, C., A. Fernald, S. Guldan, V. Tidwell, P. King, Y. Cevik, and C. Cusack. 2009. Hydrologic functions of a valley-scale rangeland riparian area. Society for Range Management. Annual Conference. Paper No. 160-1.
- El-Sadek, A., M. Bleiweiss, M. Shukla, S. Guldan, and S.(A.) Fernald. 2009. Hydrologic modeling of semi-arid watersheds using enhanced climate data within the Soil and Water Assessment Tool (SWAT). 2009 CSREES National Water Conference.
- El-Sadek, A., M. Bleiweiss, S.(A.) Fernald, M. Shukla, and S. Guldan. 2009. Hydrologic modeling of the Mimbres Watershed using precipitation data from several different sources. New Mexico Water Resources Research Institute, Annual Meeting, Poster Abstract #20.
- Ochoa, C., A. Fernald, S. Guldan, V. Tidwell, P. King, Y. Cevik, and C. Cusack. 2008. Surface water and ground water interactions in an irrigated valley in northern New Mexico. Eos Trans. AGU, 89(53), Fall Meet. Suppl., Abstract # pending.
- Cusack, C., A. Fernald, and S. Guldan. 2008. Effects of acequias and groundwater levels on riparian vegetation, evapotranspiration, and restoration. American Water Resources Association. Proceedings of the 2008 Summer Specialty Conference: Riparian Ecosystems and Buffers - Working at the Water's Edge.
- Fernald, A., S. Guldan, V. Tidwell, P. King, C. Ochoa, Y. Sevinc, A. Helmus, C. Brown, M. Ortiz, and J. Hawley. 2008. Irrigation system seepage effects on river floodplain hydrology. Proceedings of the 2008 USDA-CSREES National Water Conference, National Research Initiative Projects section.
- Ochoa, C., A. Fernald, S. Guldan, and M. Shukla. 2008. Characterization of water movement through the unsaturated zone and groundwater response following flood irrigation: A field study. ASA-CSSA-SSSA. Abstract #577-17.
- El-Sadek, A.N., M.P. Bleiweiss, M. Shukla, S. Guldan and S. Fernald. 2008. "Hydrologic modeling on the Rio Grande using the automated geospatial watershed analysis (AGWA) tool." New Mexico Water Resources Research Institute, Annual Meeting, Poster Abstract #10.
- Ochoa, C., A. Fernald, S. Guldan, V. Tidwell, J.P. King, Y. Cevik, A. Helmus. 2007. Surface water and shallow groundwater interactions in an irrigated valley in northern New Mexico. American Water Resources Association, Annual Meeting, Abstract # pending.
- Ochoa, C.G., A.G. Fernald, S.J. Guldan. 2007. Water transport through the unsaturated zone and shallow groundwater response following flood irrigation in three different soils of northern New Mexico. Eos Trans. AGU 88(52), Fall Meet. Suppl., Abstract # pending.
- Ortiz, Q., C. Brown, B. Creel, A. Fernald, S. Guldan, T. Baker. 2007. The impacts of land use change on water quality in Alcalde, New Mexico. New Mexico Water Resources Research Institute, Annual Meeting, Poster Abstract #1.
- Fernald, A., S. Guldan, V. Tidwell, J.P. King, C. Ochoa, Y. Cevik, A. Helmus, C. Brown, Q. Ortiz, and J. Hawley. 2007. Ditch and field seepage effects on floodplain water budgets and river flow. New Mexico Water Resources Research

- Institute, Annual Meeting, Poster Abstract #19.
- Ochoa, C., A. Fernald, and S. Guldan. 2007. Water transport through the vadose zone and shallow groundwater response following flood irrigation. New Mexico Water Resources Research Institute, Annual Meeting, Presentation Abstract #16.
- Fernald, A., S. Guldan, P. King, V. Tidwell, and C. Ochoa. 2006. Interactions between surface water and groundwater along irrigated agriculture floodplain corridors in northern New Mexico. U.S. Geological Survey. Geologic and Hydrogeologic Framework of the Española Basin – Proceedings of the 5th Annual Española Basin Workshop. USGS Open-File Report 2006-1134.
- Ochoa, C., A. Fernald, and S. Guldan. 2006. Movement of flood irrigation seepage into soil and shallow groundwater in an alfalfa-grass crop field. U.S. Geological Survey. Geologic and Hydrogeologic Framework of the Española Basin – Proceedings of the 5th Annual Española Basin Workshop. USGS Open-File Report 2006-1134.
- Ochoa, C.G., M. Shukla, A. Fernald, and S. Guldan. 2006. Time domain reflectometry: laboratory and field calibration for soil moisture content and salinity. *In Annual Meetings Abstracts*. ASA, CSSA, SSSA, Madison, WI.
- Ochoa, C., A. Fernald, and S. Guldan. 2006. Vadose zone transport and shallow groundwater response following flood irrigation. *Eos Trans. AGU*, 87(52), Fall Meeting Suppl., Abstract H11A–1236.
- Ochoa, C.G., A.G. Fernald, and S.J. Guldan. 2004. Irrigation ditch seepage effects on shallow groundwater flow along the Rio Grande in New Mexico. *In meeting abstracts from American Water Resources Association's 2004 Summer Specialty Conference*; AWRA, Middleburg, VA.
- Fernald, A., S. Guldan, and C. Ochoa. 2004. Surface Water Interactions with Shallow Groundwater Flow in an Irrigated Agricultural Corridor. *In meeting abstracts from New Mexico Water Resources Research Institute's 2004 Technical Water Research Symposium*; WRRRI, Las Cruces, NM.
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