

CURRICULUM VITAE

NAME

Andales, Allan A

ADDRESS

Soil and Crop Sciences
College of Agricultural Sciences

Plant Sciences

PHONE

(970) 491-6516

EDUCATION

1998 Ph D, Iowa State Univ

1995 MS, Iowa State Univ

1990 BS, Univ of the Philippines, Los BANos

SABBATICALS

(2014) Northwest Agriculture & Forestry University; University of the Philippines, China (Aug.-Nov.): Dr. Andales served as a visiting Professor at Northwest A&F University, with funding from the China 111 project for International Exchange. He co-taught a junior-level undergraduate course in Irrigation Engineering at the College of Water Resources. He gave a series of 7 lectures on agricultural water management and systems computer modeling at the Institute for Water Saving Agriculture. Guest lectures were also given to undergraduate and graduate students. Technical advice was given to several graduate students regarding their scientific papers. A crop modeling study was also initiated with the host Professor and his Masters student. Before leaving China, guest lectures were also given at China Agricultural University and China Academy of Agriculture in Beijing; and at Tian Jin Agriculture University, Tian Jin.

Philippines (Nov.-Dec.): Dr. Andales served as a "Balik-Scientist" (Returning Scientist) in the College of Engineering and Agro-Industrial Technology (CEAT), University of the Philippines at Los Banos. Funding was provided by the Philippine Department of Science and Technology. Dr. Andales contributed to on-going projects at CEAT by developing a prototype irrigation scheduler (spreadsheet model) for lowland rice; advising project staff on developing crop coefficient curves using lysimeters; and conducting/demonstrating the use of the USDA-ARS Root Zone Water Quality Model for developing irrigation strategies for corn using long-term weather records. Dr. Andales also visited with scientists at the International Rice Research Institute (IRRI) to learn about sustainable water management practices being developed for rice production, including ecological intensification.

OTHER POSITIONS

2013 - Present Associate Professor, Soil & Crop Sciences, Colorado State University.

2007 - 2013 Assistant Professor, Soil & Crop Sciences, Colorado State University.

2004 - 2007 Soil Scientist, USDA-Agricultural Research Service.

2003 Post Doc, New Mexico State University, Agronomy and Horticulture.

2002 - 2003 Research Associate, Rangeland Ecosystems Science, Colorado State University.

2001 - 2002 Visiting Scientist, USDA-Agricultural Research Service.

1999 - 2001 Assistant Professor (Agricultural Engineering), University of the Philippines at Los Banos.

1999 Post Doc (Agricultural Engineering), Iowa State University.

1990 - 1993 Instructor (Physics; Agricultural Engineering), University of the Philippines.

Director

PUBLISHED WORKS

Refereed Journal Articles

A model of pecan tree growth for the management of pruning and irrigation. *Agricultural Water Management*, 84, 77-88.

Alfalfa ET from a weighing lysimeter in the Arkansas Valley of Colorado. *Transactions of the ASABE*.

Crop coefficients of open-canopy pecan orchards. *Agr Water Manage*, 88, 253-262.

Anapalli, S. S., Ahuja, L. R., Ma, L., Trout, T. J., McMaster, G. S., Nielsen, D. C., Andales, A. A., Halvorson, A. A., Chavez, J. L., Ham, J. M., Fang, Q. X. Developing and generalizing average corn crop water production functions across years and locations using a system model. *Agricultural Water Management*.

Energy balance measurements and a simple model for estimating pecan water use efficiency. *Agr Water Manage*, 91, 92-101.

Evaluating GPFARM crop growth, soil water, and soil nitrogen components for Colorado dryland locations. *TASABE*, 50, 1565-1578.

Evaluation of GPFARM for dryland cropping systems in eastern Colorado. *Agron J*, 95, 1510-1524.

Evaluation of GPFARM for simulation of forage production and cow-calf weights. *Rangeland Ecol Manag*, 58, 247-255.

Global sensitivity and uncertainty analysis of a dynamic agroecosystem model under different irrigation treatments. *Ecological Modelling*, 231, 113-125.

GPFARM plant model parameters: Complications of varieties and the Genotype x Environment interaction in wheat. *Transactions of the ASAE*, 46(5), 1337-1346.

Improving evapotranspiration simulations in the CERES-Maize model under limited irrigation. *Agricultural Water Management*, 115(2012), 92-103.

Incorporating tillage effects into a soybean model. *Agricultural Systems*, 66(2000), 69-98.

Modeling of full and limited irrigation scenarios for corn in a semi-arid environment. *Transactions of the ASABE*, 54(2), 481-492.

- Modification of a soybean model to improve soil temperature and emergence date prediction. *Transactions of the ASAE*, 43(1), 121- 129.
- Scaling parameters of the Lewis-Kostiakov water infiltration equation across soil textural classes and extension to rain infiltration. *TransASABE*, 50, 1525-1541.
- Simulating landscape catenaeffects in no-till dryland agroecosystems using GPFARM. *Agricultural Systems*, 103, 569-584.
- Simulation of Sand sage-Bluestem Forage Growth Under Varying Stocking Rates. *Rangeland Ecology & Management*, 63, 546-552.
- Strategic and tactical prediction of forage production in northern mixed-grass prairie. *Rangeland Ecol Manag*, 59, 576-584.
- Temporally stable patterns in grain yield and soil water on a dryland catena. *Agr Syst*, 94, 119-127.
- Whole system integration and modeling essential to agricultural science and technology for the twenty-first century. *Journal of Crop Improvement*, 19(2-Jan), 73-103.
- Mkhwanazi, M., Chavez, J. L., Andales, A. A. (2015). SEBAL-A: A remote sensing ET algorithm that accounts for advection with limited data. Part I: Development and validation. *Remote Sensing*, 7, 15046-15067.
- Mkhwanazi, M., Chavez, J. L., Andales, A. A., DeJonge, K. C. (2015). SEBAL-A: A remote sensing ET algorithm that accounts for advection with limited data. Part II: Test for Transferability. *Remote Sensing*, 7, 15068-15081.
- Saseendran, Ahuja, L. R., Ma, L., Trout, T. J., McMaster, G. S., Nielsen, D. C., Ham, J. M., Andales, A. A., Halvorson, A. A., Chavez, J. L., Fang, Q. (2015). Developing and normalizing average corn crop water production functions across years and locations using a system model. *Agricultural Water Management*, 157, 65-77.
- Saseendran, Trout, T. J., Ahuja, L. R., Ma, L., McMaster, G. S., Nielsen, D. C., Andales, A. A., Chavez, J. L., Ham, J. M. (2015). Quantifying crop water stress factors from soil water measurements in a limited irrigation experiment. *Agricultural Systems*, 137, 191-205.
- Bartlett, A. C., Andales, A. A., Arabi, M., Bauder, T. A. (2015). An iPhone App to Extend Use of a Cloud-based Irrigation Scheduling Tool. *Computers and Electronics in Agriculture*(111), 127-130. [dx.doi.org/10.1016/j.compag.2014.12.021](https://doi.org/10.1016/j.compag.2014.12.021)
- Saseendran, Ahuja, L. R., Ma, L., Nielsen, D. C., Trout, T. J., Andales, A. A., Chavez, J. L., Ham, J. M. (2014). Enhancing the water stress factors for simulation of corn in RZWQM2. *Agronomy Journal*, 106(1), 81-94.
- Saseendran, Ahuja, L. R., Ma, L., Trout, T. J., McMaster, G. S., Nielsen, D. C., Ham, J. M., Andales, A. A., Halvorson, A. D., Chavez, J. L., Fang, Q.-X. (in press). Developing and normalizing average corn crop water production functions across years and locations using a system model. *Agricultural Water Management*.
- Fang, Q. X., Andales, A. A., Derner, J. D., Ahuja, L. R., Ma, L., Bartling, P. N.S., Reeves, J. L., Qi, Z. (2014). Modeling weather and stocking rate effects on forage and steer production in northern mixed-grass prairie. *Agricultural Systems*, 129, 103-114. [dx.doi.org/10.1016/j.agry.2014.05.011](https://doi.org/10.1016/j.agry.2014.05.011)
- Reyes-Fox, M., Steltzer, H., Trlica, M. J., McMaster, G. S., Andales, A. A., LeCain, D. R., Morgan, J. (2014). Elevated CO₂ further lengthens growing season under warming conditions. *Nature*, 510, 259-262.

Gleason, D. J., Andales, A. A., Bauder, T. A., Chavez, J. L. (2013). Performance of atmometers in estimating reference evapotranspiration in a semi-arid environment. *Agricultural Water Management*, 130, 27-35. dx.doi.org/10.1016/j.agwat.2013.08.008

Anapalli, S. S., Ahuja, L. R., Ma, L., Nielsen, D. C., Trout, T. J., Andales, A. A., Chavez, J. L., Ham, J. M. (2013). Enhancing the water stress factors for simulation of corn in RZWQM2. *Agronomy Journal*, 106(1), 81-94.

Alhassan, M., Loomis, J. B., Frasier, W. M., Davies, S. P., Andales, A. A. (2013). Estimating farmers' willingness to pay for improved irrigation: An economic study of the Bontanga irrigation scheme in northern Ghana. *Journal of Agricultural Sciences*, 5(4), 31-42. dx.doi.org/10.5539/jas.v5n4p31

Refereed Chapters in Books

Andales, A. A., Bauder, T. A., Arabi, M. (2014). A Mobile Irrigation Water Management System Using a Collaborative GIS and Weather Station Networks. In Ahuja, Lajpat R.; Ma, Liwang; Lascano, Robert J. (Ed.), *Practical Applications of Agricultural System Models to Optimize the Use of Limited Water. Advances in Agricultural Systems Modeling book series*. ASA-SSSA-CSSA. dx.doi.org/10.2134/advagricysystmodel5.c3

Fang, Q.-X., Ahuja, L. R., Andales, A. A., Derner, J. D. (2014). Using a Model and Forecasted Weather to Predict Forage and Livestock Production for Making Stocking Decisions in the Coming Growing Season. In Ahuja, L.R., Ma, L., Lascano, R. (Ed.), *Practical Applications of Agricultural System Models to Optimize the Use of Limited Water* (vol. Advances in Agricultural Systems Modeling, Volume 5, pp. 161-182). ASA-CSSA-SSSA.

Non-Refereed Journal Articles

Bartlett, A. C., Andales, A. A., Bauder, T. A., Wardle, E. M. Modifying a Sugar Beet Crop Coefficient Curve for a Semi-Arid Climate in Northeastern Colorado. *Agricultural Water Management*.

Non-Refereed Chapters in Books

Andales, A. A. (2015). Irrigation Management. In Schwartz, H.F. and Brick, M.A. (Ed.), *Dry Bean Pest Management & Production, 3rd Edition* (3rd ed., pp. 35-42). Colorado State University.

Non-Refereed Proceedings or Transactions

Subedi, A., Chavez, J. L., Andales, A. A. *Preliminary Performance Evaluation of the Penman-Monteith Evapotranspiration Equation in Southeastern Colorado*. Fort Collins, Colorado: Hydrology Days 2013 (American Geophysical Union). hydrologydays.colostate.edu/

Andales, A. A. (2014). Colorado Irrigation Scheduler. In Lamm, F. (Ed.), *Proceedings of the 26th Annual Central Plains Irrigation Conference* (vol. 26, pp. 26-33). Central Plains Irrigation Association. www.ksre.ksu.edu/pr_irrigate/OOW/P14/Andales2014.pdf

Mkhwanazi, M. M., Chavez, J. L., Andales, A. A. (2013). *Evaluating the performance of SEBAL ET algorithm under advective conditions*. Denver, Colorado: U.S. Committee on Irrigation and Drainage (USCID) Conference.

Agricultural system models in field research and technology transfer (pp. 226-233). P Singh, IPS Ahlawat and R C Gautam (eds) Proceedings of Second International Agronomy Congress on Balancing Food and

Environmental Security A Continuing Challenge, Indian Society of Agronomy, IARI, New Delhi- 110 012, India.

Alfalfa crop coefficients developed using a weighing lysimeter in Southeast Colorado. Proceedings of the 2010 US Committee on Irrigation and Drainage Conference Fort Collins, CO 28-30 September USCID, Denver, CO.

Alfalfa ET and crop coefficients from a weighing lysimeter in the Arkansas Valley of Colorado. ASA, CSSA, and SSSA International Annual Meetings 21-24 October, Cincinnati, OH.

Alfalfa ET from a weighing lysimeter in the Arkansas Valley of Colorado. Proceedings of the 5th National Decennial Irrigation Conference Phoenix, AZ 5-8 December American Society of Agricultural and Biological Engineers, St Joseph, MI.

Alfalfa reference ET from a weighing lysimeter and estimates from the ASCE Standardized Reference ET Equation in the Arkansas Valley of Colorado (pp. 4093-4101). S Starrett (ed) Proceedings of the World Environmental and Water Resources Congress: Great Rivers Kansas City, Missouri May 17-21 American Society of Civil Engineers, Reston, VA.

Atometer use in evapotranspiration based irrigation scheduling. ASA, CSSA, and SSSA International Annual Meetings 21-24 October, Cincinnati, OH.

Calibration and Evaluation of CERES-Maize in Full and Limited Irrigation Scenarios for Corn in a Semiarid Environment. International Annual Meetings of ASA-CSSA-SSSA 1- 5 November 2009, Pittsburgh, PA.

Comparison of Neutron Moisture Meter and Watermark Sensor Readings in a Field Experiment of Full and Limited Irrigation of Corn. US Committee on Irrigation and Drainage Conference Fort Collins, CO 28-30 September.

Comparison of Reference Evapotranspiration from the American Society of Civil Engineers (ASCE) Standardized Penman Monteith and Kimberly-Penman Equations in Northeast Colorado. ASA, CSSA, and SSSA International Annual Meetings 21-24 October 2012, Cincinnati, OH (Poster).

Diagnosing saline and sodic soil problems. Fact Sheet no 0521, Colorado State University Extension, Fort Collins, CO, 2 p(<http://wwwextcolostateedu/pubs/crops/00521html>).

Direct Determination of Crop Evapotranspiration in the Arkansas Valley with a Weighing Lysimeter. Completion Report No 220 Colorado Water Institute, Fort Collins, Colorado 32 p(<http://wwwwicolostateedu/publications/CR/220pdf>).

Effects of Weather on Dry Bean Irrigation Requirements (2nd ed., vol. 22, pp. 6-Apr). Colorado Bean News.

Effects of Weather on Dry Bean Irrigation Requirements (pp. 14-19). TR09- 06: Making Better Decisions 2009 Dry Bean Variety Performance Trials, Colorado Agricultural Experiment Station, Fort Collins, Colorado.

Effects of Weather on Irrigation Requirements. CSU Extension Fact Sheet no 4721, Fort Collins, Colorado.

ET-based irrigation scheduling (pp. 39-46). Proceedings of the 23rd Annual Central Plains Irrigation Conference, Burlington, CO February 22-23, Central Plains Irrigation Association.

Evapotranspiration and Irrigation Requirements of Dry Beans (pp. 17-22). TR08-12: Making Better Decisions 2008 Dry Bean Variety Performance Trials, Colorado Agricultural Experiment Station, Fort Collins, Colorado.

- Growing Crops with Less Water: Field Studies in the South Platte.* The High Plains No- Till Conference 5-6 February, Greeley, CO.
- Interactive effects of elevated CO₂, warming, and water additions on the timing and rate of plant development in a mixed-grass prairie ecosystem.* 93rd Ecological Society of America Annual Meeting 3-8 August, Milwaukee, WI.
- Irrigation Scheduling: The Water Balance Approach.* CSU Extension Fact Sheet no 4707.
- Mapping ET in Southeastern Colorado using a surface aerodynamic temperature model.* Proceedings of the 2010 US Committee on Irrigation and Drainage Conference Fort Collins, CO 28-30 September USCID, Denver, CO.
- Mobile irrigation water management system using eRAMS/CSIP.* USDA-NIFA National Water Conference, 20-24 May, Portland, Oregon.
- Modeling and Evaluation of Maize under Full and Limited Irrigation.* ASA-CSSA-SSSA 2010 International Annual Meetings, 31 Oct- 3 Nov Long Beach, CA.
- Modeling of Full and Limited Irrigation of Corn in a Semiarid Environment.* ASABE Annual International Meeting June 20- 23, Pittsburgh, PA.
- Multi- Crop Plant Growth Modeling for Agricultural Models and Decision Support Systems* (pp. 2138-2144). Zerger, A and Argent, RM (eds) MODSIM 2005 International Congress on Modelling and Simulation Modelling and Simulation Society of Australia and New Zealand, December 2005, ISBN: 0-9758400-2-9 [http://www.mssanz.org.au/modsim05/papers/ascough_1 .pdf](http://www.mssanz.org.au/modsim05/papers/ascough_1.pdf).
- Nitrogen and Irrigation Management.* CSU Extension Fact Sheet no 0514, Fort Collins, Colorado.
- Parameterizing GPFARM: An Agricultural Decision Support System for Integrating Science, Economics, Resource Use, and Environmental Impacts* (vol. 1, pp. 72-77). A E Rizzoli and A J Jakeman (eds) Integrated Assessment and Decision Support, Proceedings of the First Biennial Meeting of the International Environmental Modeling and Software Society iEMSs, June.
- Performance evaluation of selected soil moisture sensors* (pp. 29-38). Proceedings of the 23rd Annual Central Plains Irrigation Conference, Burlington, CO February 22-23, Central Plains Irrigation Association.
- Performance of the ASCE Standardized Reference ET Equation in the Arkansas Valley of Colorado.* Joint meeting of GSA, ASA-CSSA-SSSA, and GCAGS 5- 9 October, Houston, TX.
- Performance evaluation of TDT soil water content and Watermark soil water potential sensors.* Proceedings of USCID Conference: Emerging Challenges and Opportunities for Irrigation Managers Albuquerque, New Mexico, 26-29 April.
- Plot-Scale Modeling of Full and Limited Irrigation of Corn in Northern Colorado.* Joint meeting of the Western Society of Crop Science and the Western Society of Soil Science 22-24 June, Fort Collins, CO.
- Producers, Decision Support Systems and GPFARM: Lessons Learned From a Decade of Development* (pp. 170-176). Zerger, A and Argent, RM (eds) MODSIM 2005 International Congress on Modelling and Simulation Modelling and Simulation Society of Australia and New Zealand, December 2005, ISBN: 0-9758400-2-9 [http://www.mssanz.org.au/modsim05/papers/ascough_1 .pdf](http://www.mssanz.org.au/modsim05/papers/ascough_1.pdf).
- Progress on the Lysimeter Project at Rocky Ford* (3rd ed., vol. 26, pp. 13-Oct). Colorado Water, (May/June

2009), Colorado Water Institute, Colorado State University, Fort Collins, CO.

Remote Sensing ET of Alfalfa using a Surface Aerodynamic Temperature Model. Proceedings of the 5th National Decennial Irrigation Conference Phoenix, AZ 5-8 December American Society of Agricultural and Biological Engineers, St. Joseph, MI.

Seasonal Water Needs and Opportunities for Limited Irrigation for Colorado Crops. CSU Extension Fact Sheet no 4718, Fort Collins, Colorado.

Simulation of Drought and Grazing Effects on Forage Growth in the Northern Mixed Grass Zone of the USA Using the GPFarm-Range Model. Society for Range Management 62nd Annual Meeting 8-12 February, Albuquerque, NM.

Surface Aerodynamic Temperature Derived from Wind/Temperature Profile Measurements over Cotton and Alfalfa in a Semi-Arid Environment. World Environmental and Water Resources Congress, May 16-20, Providence, Rhode Island.

The Colorado Agricultural Meteorological Network (CoAgMet) and Crop ET Reports. CSU Extension Fact Sheet no 4723, Fort Collins, Colorado.

The Lysimeter Project at Rocky Ford (2nd ed., vol. 27). From the Ground Up: Agronomy News, (July 2008), CSU Department of Soil and Crop Sciences, Fort Collins, CO.

The lysimeter project in the Arkansas River Basin. Fact sheet distributed at the Lower Arkansas River Valley.

Use of a Cropping System Model for Soil-Specific Optimization of Limited Water. 9th International Conference on Precision Agriculture 20-23 July, Denver, CO.

Johnson, J. J., Brick, M. A., Schwartz, H. F., McMillan, M. S., Sauer, S. M., Bartolo, M. E., Davidson, J. W., Hain, J. P., Jewell, K. S., Ogg, J. B., Andales, A. A., Otto, K. (2012). *Making Better Decisions –2012 Colorado Dry Bean Variety Performance Trials*. Colorado State University Agric Exp Stn Technical Report TR 12-12, 14 pp.

Johnson, J. J., Brick, M. A., Schwartz, H. F., Andales, A. A., Bartolo, M. E., Hain, J. P., Jewell, K. S., Sauer, S. M., McMillan, M. S., Ogg, J. B., Otto, K. (2011). *Making Better Decisions – 2011 Dry Bean Variety Performance Trials*. Colorado State University Agric Exp Stn Technical Report TR11-10, 12 pp.

AES Report/Bulletin

Johnson, J. J., Brick, M. A., Schwartz, H. F., McMillan, M. S., Sauer, S. M., Bartolo, M. E., Davidson, J. W., Hain, J. P., Jewell, K. S., Ogg, J. B., Andales, A. A., Otto, K. (2013). *Making Better Decisions – 2013 Colorado Dry Bean Variety Performance Trials* (13-5 ed., pp. 14). Fort Collins, Colorado: CSU Agr. Exp. Station.

Book Review

Agriculture Models (vol. 1, pp. 85- 95). Jorgensen, SE and Fath, BD (Eds) Encyclopedia of Ecology, Oxford: Elsevier.

Parameterization of the GPFARM-Range model for simulating rangeland productivity (pp. 209-228). Methods of Introducing System Models into Agricultural Research (Ahuja, LR and Ma, L; Eds), Advances in Agricultural Systems Modeling ASA-CSSA-SSSA, Madison, Wisconsin.

CE Report/Bulletin/Factsheet

Andales, A. A., Chavez, J. L., Bauder, T. A. (2011). *Irrigation Scheduling: The Water Balance Approach* (Fact Sheet 4.707 ed.). CSU Extension.

Andales, A. A., Bauder, T. A. (2010). *The Colorado Agricultural Meteorological Network (CoAgMet) and Crop ET Reports* (Fact Sheet No 4.723 ed.). Colo. State Univ. Extension. www.ext.colostate.edu/pubs/crops/04723.pdf

Newsletter

Andales, A. A., Arabi, M., Bauder, T. A. (2013). *A Mobile Irrigation Scheduling Tool for Colorado* (4th ed., vol. 30, pp. 10-13). Fort Collins, CO: Colorado Water Institute. wsnet.colostate.edu/cwis31/ColoradoWater/Images/Newsletters/2013/CW_30_4.pdf

Software

Andales, A. A., Arabi, M., Bartlett, A. C., Bauder, T. A., Wardle, E. M., Traff, K. A. (2015). *Water Irrigation Scheduler for Efficient Application (WISE)*. Colorado State University. wise.colostate.edu/

Bartlett, A. C., Andales, A. A., Bauder, T. A., Arabi, M. (2014). *Water Irrigation for Efficient Scheduling (WISE) iPhone App*. Colorado State University via Apple. itunes.apple.com/us/app/w.i.s.e./id928128681?mt=8

Andales, A. A., Arabi, M. (2013). *Mobile Irrigation Water Management System on eRAMS/CSIP*. CSU. <https://erams.com/>

Web Publication

Andales, A. A. (2013). *The CSU Lysimeter Project: Measuring Crop Water Use to Comply with the Arkansas River Compact*. Fort Collins, CO: Colorado Agricultural Experiment Station. webdoc.agsci.colostate.edu/aes/AES/News/LysimeterInfo.pdf

PAPERS PRESENTED/SYMPOSIA/INVITED LECTURES/PROFESSIONAL MEETINGS/WORKSHOPS

September 3, 2015, "Web and mobile apps for ET-based Irrigation Scheduling in Colorado", WERA-1022 Annual Meeting (Meteorological and Climate Data to Support ET-Based Irrigation Scheduling), Agricultural Experiment Stations, CSU.

July 28, 2015, "Mobile Irrigation Water Management System using eRAMS Cloud Computing Infrastructure", USDA-NIFA NIWQP and AFRI Annual Project Directors' Meeting, USDA-National Institute of Food and Agriculture/Soil and Water Conservation Society.

June 2, 2015, "The Water Irrigation Scheduler for Efficiency (WISE) online tool for Colorado", Water and Food Security under Changing Environments, Center for Agricultural Water Research in China, China Agricultural University.

April 30, 2015, "Improving Irrigation Application Efficiency: Examples from China and the Philippines", Department Seminar Series, Department of Soil and Crop Sciences, (Presenter) Andales, A. A.

December 11, 2014, "Experiences in developing decision support tools and promoting adoption", Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development, Los Banos, Laguna, Philippines.

- December 3, 2014, "Irrigation scheduling and the Root Zone Water Quality Model (RZWQM2)", Land and Water Resources Division, University of the Philippines, Los Banos, Laguna, Philippines.
- November 24, 2014, "Evapotranspiration-based approaches for estimating irrigation water requirements", College of Engineering and Agro-industrial Technology, University of the Philippines, Los Banos, Laguna, Philippines.
- November 2, 2014, "Theory and Application of a Residual Energy Balance Method to Estimate Evapotranspiration of Irrigated Corn (Maize)", ASA, CSSA, and SSSA International Annual Meetings, Tri-Societies, (Presenter) Green, T. R., Long Beach, California.
- April 21, 2014, "Colorado Irrigation Scheduler", Water Management and Agriculture Development Workshop, Borlaug Fellowship Program, USDA-Foreign Agriculture Service, Islamabad, Pakistan.
- November 4, 2013, "Evapotranspiration Measurements Using Weighing Lysimeters: The Rocky Ford Experience", ASA, CSSA, and SSSA International Annual Meetings, Tampa, Florida.
- July 22, 2013, "Prototype Mobile Irrigation Water Management System", Soil and Water Conservation Society 68th International Annual Conference, Soil and Water Conservation Society/USDA-NIFA, Reno, Nevada.
- 2012, "Aljrbi, A., Andales, A.A., Hansen, N.C., Davis, J.G. Comparison of Reference Evapotranspiration from the American Society of Civil Engineers (ASCE) Standardized Penman Monteith and Kimberly-Penman Equations in Northeast Colorado. ASA, CSSA, and SSSA International Annual Meetings. 21-24 October 2012, Cincinnati, OH. (Poster)".
- 2012, "Andales, A.A. 2012. Alfalfa ET and crop coefficients from a weighing lysimeter in the Arkansas Valley of Colorado. ASA, CSSA, and SSSA International Annual Meetings. 21-24 October 2012, Cincinnati, OH."
- 2012, "Andales, A.A., Arabi, M., David, O. Mobile irrigation water management system using eRAMS/CSIP, USDA-NIFA National Water Conference, 20-24 May 2012, Portland, Oregon. (Poster)".
- 2012, "DeJonge, K.C., Andales, A.A., Hansen, N.C. Addressing Water Scarcity through Limited Irrigation Cropping: Field Experiments and Modeling. Interdisciplinary Water Resources Seminar (GRAD 592), CSU. 15 October 2012, Fort Collins, CO. (Invited)".
- 2012, "Estimating crop consumptive water use in the Lower Arkansas Valley.

Department of Civil and Environmental Engineering Seminar, Colorado School of Mines. 13 September 2012, Golden, CO. (Invited; ~25 students/faculty attended)".

2012, "Gleason, D.J., Bauder, T., Andales, A.A., Chavez, J.L. Atmometer use in evapotranspiration based irrigation scheduling. ASA, CSSA, and SSSA International Annual Meetings. 21-24 October 2012, Cincinnati, OH."

2012, "Irrigation management tools. Department of Soil and Crop Sciences Seminar, CSU. 4 October 2012, Fort Collins, CO. (Invited)".

2012, "Lysimeter studies in the Arkansas River Valley. Arkansas Basin Roundtable, 11 January 2012, Pueblo, CO. (Invited; 35 attendees)".

2012, "Lysimeter Studies in the Arkansas River Valley. Lower Arkansas Valley Water Conservancy District Board Meeting, 21 November 2012, Rocky Ford, CO. (Invited)".

2012, "Measurement of crop evapotranspiration using precision weighing lysimeters. Colorado Bar Association – Continuing Legal Education class. 12 October 2012, Denver, CO. (Invited; 25 on-site and 35 on-line attendees)".

October 23, 2012, "Performance of Atmometers in Estimating Reference Evapotranspiration in a Semi-Arid Environment", (Presenter) Gleason, D., Cincinnati, OH.

2011, "ET-based irrigation scheduling. Trilateral (Afghanistan, Pakistan, U.S.) study tour. 21 September 2011, Fort Collins, CO."

2011, "ET-based irrigation scheduling. 23rd Annual Central Plains Irrigation Conference, Burlington, CO., February 22-23, 2011."

2011, "Requirements for ET Research in the Arkansas River Valley. Lower Arkansas Valley Water Conservancy District Board Meeting, 20 April 2011, Rocky Ford, CO".

2010, "Andales, A.A. 2010. Determination of

Crop Consumptive Water Use in Eastern Colorado. Invited presentations to Agricultural Soil and Water Engineering faculty and students at Northwest Agriculture and Forestry University, Yangling, Shaanxi Province (25 May 2010), Shiyanghe Experiment Station, Gansu Province (31 May 2010), and China Agriculture University, Beijing (4 June 2010), P.R.China."

2010, "Andales, A.A. 2010. Making every drop count: Irrigation management in China. International Colloquium on China. 8-10 September 2010. CSU, Fort Collins, CO."

2010, "Andales, A.A. Estimating Consumptive Water Use of Plants. CSU Department of Horticulture and Landscape Architecture graduate-faculty seminar series. 24 March 2010, Fort Collins, CO."

2010, "Andales, A.A., Straw, D., Simmons, L., Bartolo, M., Ley, T., Berrada, A., Sommers, L., Waskom, R., Johnson, F., Al Wahaibi, H., Chávez, J., and Trout, T. 2010. Evaluating crop coefficients using massive weighing lysimeters. 29 January 2010. 52nd Annual Convention of the Colorado Water Congress, Hyatt Regency Denver Tech Center, Denver, CO".

OTHER ACTIVITIES/ACCOMPLISHMENTS – PUBLICATIONS/SCHOLARLY RECORD

"Colorado Irrigation Scheduler (CIS): As a product of my 2 complementary grant projects, my team developed and is currently testing an online field-by-field irrigation scheduling tool for Colorado that calculates irrigation water requirements based on location-specific weather, crop, and soils data; and a daily soil profile water balance. A Microsoft Excel® version of the tool and user's manual for annual crops was delivered to the Colorado USDA-NRCS on 19 December 2012. The spreadsheet version can use soils data from the NRCS Web Soil Survey and can automatically download daily weather data from any of the 60+ automatic weather stations in the state-wide Colorado Agricultural Meteorological (CoAgMet) Network.." (Submitted: 2012, Application: 2012, Approved: 2012, Licensed: 2012).

(October 20, 2015). Forum, "Open Educational Resources," CSU Library, Fort Collins, CO, United States. Approximate Number of Hours Spent Per Year: 1.5.

(January 14, 2015). Tutorial, "Begin the Journey with Canvas: A tour of CSU's new Learning Management System," The Institute for Learning and Teaching (TILT), CSU, Fort Collins, Colorado, United States. Approximate Number of Hours Spent Per Year: 2.

(January 12, 2015). Continuing Education Program, "Supporting students AFTER your course is over," The Institute for Learning and Teaching (TILT), CSU, Fort Collins, CO, United States. Approximate Number of Hours Spent Per Year: 1.

(1993). Professional Engineer.

TEACHING:

<u>Year</u>	<u>Semester</u>	<u>Course No./Title</u>	<u>Cr. Hrs.</u>	<u>Enrollment</u>
2016	Spring	SOCR370 - Irrigation Principles	2	34
2016	Spring	SOCR792 - Seminar	1	6
2015	Fall	SOCR371 - Irrigation of Field Crops	1	16
2015	Fall	SOCR792 - Seminar	1	4
2015	Fall	SOCR384 - Supervised College Teaching	5	1
2015	Spring	SOCR370 - Irrigation Principles	2	56
2014	Fall	SOCR371 - Irrigation of Field Crops	1	18
2014	Fall	SOCR699 - Thesis	18	9
2014	Spring	SOCR370 - Irrigation Principles	2	70
2014	Spring	SOCR699 - Thesis	18	10
2013	Fall	SOCR371 - Irrigation of Field Crops	1	16
2013	Spring	SOCR795 - Independent Study	18	1
2013	Spring	SOCR370 - Irrigation Principles	2	70
2012	Fall	SOCR799 - Dissertation	18	17
2012	Fall	SOCR371 - Irrigation of Field Crops	1	11
2012	Spring	SOCR799 - Dissertation	18	15
2012	Spring	SOCR370 - Irrigation Principles	2	63
2012	Spring	SOCR699 - Thesis	18	11
2011	Fall	SOCR799 - Dissertation	18	12
2011	Fall	SOCR371 - Irrigation of Field Crops	1	5
2011	Spring	SOCR799 - Dissertation	18	9
2011	Spring	SOCR370 - Irrigation Principles	2	64
2011	Spring	SOCR792 - Seminar	1	6
2010	Fall	SOCR799 - Dissertation	18	12
2010	Fall	SOCR371 - Irrigation of Field Crops	1	11
2010	Fall	SOCR784 - Supervised College Teaching	18	5
2010	Summer	SOCR799 - Dissertation	18	2
2010	Spring	SOCR799 - Dissertation	18	7
2010	Spring	SOCR370 - Irrigation Principles	2	64
2009	Fall	SOCR799 - Dissertation	18	9
2009	Fall	SOCR371 - Irrigation of Field Crops	1	9
2009	Summer	SOCR799 - Dissertation	18	1
2009	Spring	SOCR799 - Dissertation	18	10
2009	Spring	SOCR380A1 - Irrigation Principles	2	45
2008	Fall	SOCR381A1 - Irrigation of Field Crops	1	6
2008	Fall	SOCR792 - Seminar	1	4
2008	Fall	SOCR699 - Thesis	18	3
2008	Spring	SOCR380A1 - Irrigation Principles	2	58

Guest Lectures:

<u>Year</u>	<u>Semester</u>	<u>Course No./Title</u>	<u># of Guest Lectures</u>	<u>Delivery Mode</u>
2015	Fall	AGRI510 - Sustainable Agriculture	2	Face to Face
2014	Fall	Irrigation Engineering (Northwest A&F, China)	8	Face to Face
2014	Fall	Water Management and Systems Modeling Lecture Series	8	Face to Face

EXTENSION/ENGAGEMENT ACTIVITIES/ACCOMPLISHMENTS**Field Day**

Irrigation Scheduling. Adult, Center, Colorado. Number of times program was made: 1. Total number of participants: 33. Percent Responsible: 100%. 3rd Quarter 2015.

Water Irrigation Scheduler for Efficient Application (WISE) Online tool. Adult, Greeley, Colorado. Number of times program was made: 1. Total number of participants: 42. Percent Responsible: 100%. 3rd Quarter 2015.

Dry Bean Field Day: Progress on the Mobile Irrigation Scheduler and Variable Rate Irrigation research. Lucerne, CO. Number of times program was made: 1. Total number of participants: 12. Percent Responsible: 20%. 2013.

Limited Irrigation and Crop Field Day: Computerized irrigation scheduling apps. Iliff, CO. Number of times program was made: 1. Total number of participants: 20. Percent Responsible: 20%. 2013.

Field visits and discussions

Summer Tour: Extension Water Resources Team. Adult, Colorado. Number of times program was made: 1. Total number of participants: 12. Percent Responsible: 10%. 3rd Quarter 2015.

Presentation

Soil moisture monitoring: sensor- and water balance-based approaches. Adult, Fort Morgan, Colorado. Number of times program was made: 1. Total number of participants: 45. Percent Responsible: 100%. 4th Quarter 2015.

Colorado Irrigation Scheduler. Adult, Burlington, Colorado. Number of times program was made: 1. Total number of participants: 20. Percent Responsible: 100%. 1st Quarter 2014.

CoAgMet and Online Irrigation Scheduler. Adult, Salida, Colorado. Number of times program was made: 1. Total number of participants: 14. Percent Responsible: 50%. 2nd Quarter 2014.

Alfalfa and corn ET and crop coefficients from weighing lysimeters in the Arkansas Valley of Colorado. Denver, CO. Number of times program was made: 1. Total number of participants: 12. Percent Responsible: 100%. 2013.

Evapotranspiration studies in the Arkansas Valley of Colorado. Fort Collins, CO. Number of times program was made: 1. Total number of participants: 6. Percent Responsible: 100%. 2013.

Mobile Irrigation Scheduler. Colorado Springs, CO. Number of times program was made: 1. Total number of participants: 15. Percent Responsible: 100%. 2013.

Advanced Irrigation Scheduling (Online Irrigation Scheduler demo). Denver, CO. Number of times program was made: 1. Total number of participants: 50. Percent Responsible: 35%. 2012.

Workshop

Mobile Irrigation Scheduler Stakeholder Workshop. Adult, Fort Collins, Colorado. Number of times program was made: 1. Total number of participants: 14. Percent Responsible: 50%. 1st Quarter 2014.

Tour of CSU and USDA-ARS agricultural water research projects in Colorado. Fort Collins, CO. Number of times program was made: 1. Total number of participants: 5. Percent Responsible: 80%. 2013.

CoAgMet and Irrigation Scheduling Workshop. Salida, CO. Number of times program was made: 1. Total number of participants: 10. Percent Responsible: 60%. 2012.

Irrigation Scheduler on eRAMS (Stakeholders Workshop). Fort Collins, CO. Number of times program was made: 1. Total number of participants: 11. Percent Responsible: 50%. 2012.

COMMITTEES

Co-leader, Extension Water Resources Management Work Team.

CSU Water Center Executive Committee, (August 15, 2015 - Present).

Faculty Council, (January 2015 - May 2015).

Co-leader, Extension Water Resources Management Work Team.

Departmental Seminars, (August 2015 - Present).

Graduate Panel, Soil and Crop Sciences Department, (August 15, 2013 - Present).

Radiation Safety, (May 10, 2013 - Present).

Remote Sensing of Evapotranspiration Community, ASA, (January 1, 2012 - December 31, 2012).

Extension Water Resources Management Work Team, (January 1, 2009 - December 31, 2011).

PROFESSIONAL AFFILIATIONS AND ACTIVITIES

American Society of Agricultural and Biological Engineers.

ASA-SSSA.

Member, American Society of Agricultural and Biological Engineers.

Co-leader, Extension Water Resources Management Work Team.

CSU College of Agricultural Sciences, Fort Collins, CO.

CSU Extension Water Resources Management Team, Dillon, CO.

CSU Extension Water Resources Management Team, Fort Collins, CO.

CSU Extension Water Resources Team, Steamboat Springs, CO.

CSU Extension Water Resources Team, Denver Metro/Pueblo, CO.

CSU Extension/USDA-NRCS, Delta, CO.

CSU, USDA-ARS, Colorado Div. Water Resources, Fort Collins, CO.

CSU, USDA-ARS, Colorado Div. Water Resources, Fort Collins, CO.

Member, Curriculum Task Force (Contaminant Fate & Transport; Applied Info. Tech.).

Environmental Modelling and Software.

Irrigation scheduling (Poster and Software Demo). Arkansas Valley Research Center Field Day. 6 September 2012, Rocky Ford, CO.

Journal of Soil and Water Conservation.

Journal of Soil and Water Conservation.

Reviewer, Ad Hoc Reviewer, National Institutes for Water Resources.

Reviewer, Ad Hoc Reviewer, NSF-BREAD.

Reviewer, Ad Hoc Reviewer, Oklahoma Water Resources Research Institute.

Requirements for ET Research in the Arkansas River Valley. Radio Interview (McGee, P.), KBLJ 1400 AM, 20 April 2011, La Junta, CO.

Responded to Extension emails/phone calls related to irrigation (5 incidents).

Responded to Extension emails/phone calls related to irrigation and water quality (6 incidents).

Member, Search committee for Soil & Crop Sciences Head.

Short talk on dry bean irrigation management, Bean Field Days, 24 August 2010. Greeley and Yuma, CO. (34 producers/industry professionals in attendance).

Short talks on dry bean irrigation best management practices, Bean Field Days, 22, 24 August 2012. Yuma and Lucerne, CO. (20 producers/industry professionals in attendance).

Transactions of the ASABE.

University of Pretoria.

USDA-Ag. Research Service.

USDA-ARS.

USDA-ARS-Agricultural Systems Research Unit, Fort Collins, CO.

Reviewer, Journal Article, Soil Science Society of America Journal. (August 2015 - Present).

Reviewer, Journal Article, Irrigation Science. (January 2015 - Present).

Reviewer, Journal Article, Agricultural Systems. (February 2012 - Present).

Reviewer, Journal Article, Transactions of the ASABE. (July 2009 - Present).

Reviewer, Journal Article, Hydrology and Earth System Sciences. (December 2015).

Reviewer, Journal Article, Irrigation and Drainage. (January 2015).

Reviewer, Journal Article, The Philippine Agricultural Scientist. (January 2011).

OTHER ACTIVITIES/ACCOMPLISHMENTS – SERVICE/OUTREACH

Community Leader, Evapotranspiration Measurement and Modeling, American Society of Agronomy. (January 1, 2013 - December 31, 2013).

Northeast Colorado High Schools.

Preston Middle School, Fort Collins.
