

ACADEMIC PORTFOLIO

Daniel Smeal

College Professor

**New Mexico State University
Agricultural Science Center
Farmington, NM**

February 6, 2013

Section 1:

Resume (period from 2004 thru 2012)

1. General

a. Name

Daniel Smeal

b. Educational Background:

M.S., 1980, Biology, Eastern New Mexico University, Portales, NM

B.S., 1978, Biology/Wildlife Management/Geography, Eastern New Mexico University, Portales, NM (Summa Cum Laude)

c. Present Position:

College Professor

N.M.S.U. Agricultural Science Center
Farmington, New Mexico

Other professional titles:

Certified Landscape Irrigation Auditor (Irrigation Association)

Certified Sprinkler Irrigation Designer (Irrigation Association)

Certified Crop Advisor (American Society of Agronomy)

Instructor (Adjunct Faculty)

San Juan College
Farmington, NM

d. Previous Experience:

(1) Research Associate

**New Mexico State University, Agricultural Engineering Department
(stationed at Clovis, NM) April, 1980 – January 1983**

As project co-investigator with Dr. Theodore Sammis (NMSU Agricultural Engineering Department), I coordinated all field activities associated with an applied-research project designed to evaluate the growth and yield response of corn and winter small-grains to evapotranspiration (ET) and nitrogen fertilization in eastern New Mexico. Duties and responsibilities included: plot design and layout; soil preparation and planting; crop cultivation, fertilization, irrigation, and harvesting; development of plant-sampling techniques; collection, organization, and reduction of all data relative to the research goals. These data included: applied irrigation water; soil moisture (using a neutron probe); daily weather parameters; plant growth characteristics (cumulative height, biomass, leaf-area index, and yield); plant physiological responses (water tension using a pressure bomb and transpiration using a porometer) to water and fertilizer stress. I also operated and maintained a sprinkler irrigation system and associated engine-driven pumping plant. Other duties included data reduction, statistical analyses and formulation of mathematical functions, and preparation (in-part) of periodic progress reports. I also hired and supervised three student field hands during the summer months.

(2) Instructor in Biology (part-time)

**Eastern New Mexico University (Clovis campus)
1981-1982:**

Classes Taught:		Credit hrs.
BIOL 101:	General Biology I	3
BIOL 101L:	General Biology I Lab.	1
BIOL 102:	General Biology II	3
BIOL 102L:	General Biology II Lab.	1
MICR 131:	Introduction to Microbiology	2
MICR 131L:	Intro. to Microbiology Lab.	2

(3) Graduate Assistant (Research and Teaching)

**Eastern New Mexico University, Portales, NM
1978-1980**

Research:

Assisted in completing an aquatic biological baseline survey within the lower Pecos River drainage system in relation to the U.S. Department of Energy's Waste Isolation Pilot Plant near Carlsbad, NM. Duties included collection, identification, qualification and quantification of aquatic microorganisms, arthropods, plants and fish species.

Teaching:

Assisted in the preparation and instruction of freshman Biology laboratory sessions.

(4) Jet Aircraft Maintenance Specialist

**United States Air Force
1969-1973 (Honorably Discharged at Rank of E-4)**

Inspection and maintenance of jet aircraft (1-2 engine)..

2. Teaching

I do not have a teaching assignment at New Mexico State University but I am currently (2/10/2011) teaching an 'Irrigation Principles and Design' class at San Juan College, Farmington, NM. This 3 credit hour class is a requirement for completion of the Horticulture program at the college. The class is taught during the spring semester (Jan-May) and has been offered since 2009.

I taught biology classes at the Clovis campus of Eastern New Mexico University and, as a graduate assistant at E.N.M.U. (Portales), I prepared and assisted in instructing students in General Biology laboratory sessions. (see 'Previous Experience' section). I've also taught a community service class at San Juan College, Farmington, NM pertaining to irrigation system design and management. At the Agricultural Science Center, I've been actively involved in the USDA's Research Apprenticeship Program in which I've served as mentor to several local high school students interested in agricultural related careers. Additionally, I've lent information, guidance and/or assistance to graduate students (i.e. Daniel Asare and Mohammed Al-Jamal) advised by Dr. Theodore Sammis (Dept. of Agronomy and Horticulture). I've also participated in 'Career Day' activities at local secondary schools and have presented lectures at numerous educational seminars and workshops.

3. Research and other scholarly activity

a. *Research Responsibility and Load*

My research responsibilities as a College Associate Professor (formerly Agricultural Specialist and College Assistant Professor) at the Agricultural Science Center (ASC), Farmington are directed by the expressed needs of local, regional, national or international clientele through the Agricultural Science Center Advisory Committee and NMSU's College of Agriculture and Home Economics. Clientele

include the public (farmers, ranchers, gardeners, etc.), entities of local, state, tribal, and federal government, and private industry. My position is formally classified as 100% research and my specific mandate is to conduct research relevant to water management.

(1) Creative activity

My research focus to date has been to design and conduct research studies that identify irrigation and fertilization management strategies that contribute to best management practices in agricultural production and landscape quality in the arid southwestern U.S. Specific emphasis has been placed on optimization of water-use efficiencies and other techniques related to water conservation.

(2) List of research areas, titles and sources of funding:

Research Area	Title	Source of Funding
Irrigation Management and Water Conservation	Appropriate Water Conservation Technologies for Small Farms and Urban Landscapes	State – Hatch
Irrigation Management and Water Conservation	Low-Tech Micro-Irrigation for Improved Water-Use Efficiency	U.S. Bureau of Reclamation

(3) Nature and scope of research areas including responsibility in the above projects

Since employment at the Farmington ASC in 1983 I've been the principal investigator of several research projects designed to evaluate relationships between crop growth or quality, yield and evapotranspiration to irrigation and/or fertilization. These crops have included alfalfa, amaranth, barley, blue corn, buffalo gourd, canola, chile peppers, field corn, oats, onions, pasture grasses, pinto beans, potatoes, sweet corn, tomatoes, turfgrasses, and wheat. I've also studied planting-date requirements for canola and lettuce and winter survival capability of pyrethrum. Additionally, I've evaluated the effects of a soil-absorbing polymer on soil water retention and growth of corn and wheat. I also served as co-investigator with Dr. Ted Sammis on a study designed to evaluate the leaching rate of atrazine and nitrogen through the soil profile as affected by irrigation management. I've studied the effects of sulphur fertilizers on the growth, yield and quality of alfalfa, wheat and canola and of phosphoric acid fertilization on chile peppers. In collaboration with Dr. Hailin Zhang (former Plant and Soils Laboratory director at Navajo Agricultural Products Industry), I've studied the effects of cattle manure fertilization on corn and have evaluated the potential of using a chlorophyll meter for N fertilization management in corn, and protein estimation in alfalfa. I've also

assisted Rick Arnold (ASC) in pest-management and land reclamation studies, E.J. Gregory in crop variety evaluations, and Dr. Mick O'Neill in drip-irrigation research. These activities have contributed to best management practices and crop growth models designed to optimize irrigation, fertilization and pesticide management practices. In collaboration with Dr. James Dangler (former Agronomist at N.A.P.I.) and Keller-Bleisner Engineering, I've assisted in the evaluation of center-pivot sprinkler systems and validation and calibration of crop coefficients used in irrigation scheduling on the Navajo Indian Irrigation Project.

Currently, as the principle investigator on the projects listed above (item 2), my responsibilities are numerous and varied. I'm responsible for coordinating all activities necessary to evaluate the crop water requirements of various crops and drought-tolerant native plants for urban landscapes and for use in soil reclamation. This includes maintaining a xeric-plant demonstration/research garden in which the primary goal is to formulate crop-coefficients for development of irrigation scheduling guidelines for urban landscapes. I've also been demonstrating and evaluating a low-cost, low-tech micro-irrigation system designed for small farms in developing countries for possible relevance on small farms and gardens on the Navajo Nation, where water-resources are severely limited. This includes evaluation of vegetable crop yield/water relations and development of vegetable crop-coefficients for drip irrigation scheduling.

Activities related to accomplishing project objectives include; research plot design, establishment and maintenance; irrigation scheduling and collection of irrigation and soil water data; data reduction and statistical analysis; supply acquisition; employee supervision; literature reviews; project result dissemination through public presentations and web-sites, and preparation of manuscripts for journals, research reports; etc.

(a) *Scientific leadership roles*

I've been the principle investigator on all of the current projects listed above and many former projects listed under the Grants and Contracts Section below.

(b) *Administrative leadership roles*

I occasionally perform administrative duties (signing employee time sheets and purchase orders, etc., supervision, decision making) associated with the operation of the Farmington Agricultural Science Center when the superintendent is unavailable.

(4) Percent Research Time

100%

(5) Other

In addition to the field research responsibilities summarized above, a substantial amount of time is spent preparing new research proposals and communicating with industry and other funding agencies. I've also collaborated with other researchers and cooperative extension personnel within the College of Agricultural and Home Economics (including the Agricultural Experiment Station and the Plant and Environmental Science Department with project development and assistance.

(b) Professional Communications (2004-2006)

(1) List of Publications

Refereed Journal Articles

- Lombard, K., Forster-Cox, S.C., Huttlinger, K., **Smeal, D.**, Beresford, S.A.A. and O'Neill, M. 2011. Gardens for health: Development of a model diabetes intervention project among an indigenous tribe in northwest New Mexico. *Acta Hort. (ISHS)* 911:311-316 http://www.actahort.org/books/911/911_35.htm
- O'Neill, M.K., C.C. Shock, K.A. Lombard, R.F. Heyduck, E.B.G. Feibert, **D. Smeal**, and R.N. Arnold. 2010. Hybrid poplar (*Populus* spp.) selections for arid and semi-arid intermountain regions of the western United States. *Agroforestry Systems*,79:409-418. <http://www.springerlink.com/content/t746n6933u6u81lx/fulltext.pdf>.
- O'Neill, M.K., R.F. Heyduck, K.A. Lombard, **D. Smeal**, R.N. Arnold, and C. Owen. 2008. Bioenergy crop production in the Four Corners region. *New Mex. J. Sci.* 45: December 2008, pgs. 41-51. Available on-line at: <http://www.nmas.org/NMJoS-Volume-45.pdf> verified Dec. 15, 2009
- Arnold, Richard N., **Daniel Smeal**, Michael K. O'Neill and Margaret M. West. 2007. Broadleaf weed control in spring-seeded alfalfa, 1999-2003. *New Mexico State University Agricultural Experiment Station Research Bulletin-795*.
- Smeal, D.**, M.K. O'Neill, and R.N. Arnold. 2006. Forage production of cool season pasture grasses as related to irrigation. *Agric. Water Mgmt.* 76(3): 224-236.
- O'Neill, M.K., **D. Smeal**, R.N. Arnold, and K.A. Lombard. 2006. Growth and survival of drip-irrigated hybrid poplar in the semi-arid Four Corners region. *J. Sustainable Forestry*, 23(2), pp. 47-62.
- Lombard, K., Forster-Cox, S.C., **Smeal, D.**, and M.K. O'Neill. 2006. Diabetes on the Navajo Nation: What role can gardening and agriculture extension play to reduce it? *J. Rural and Remote Health* 6 (online), 2006: no. 640. Available from: <http://rrh.deakin.edu.au>

Arnold, R.N., **D. Smeal**, and M.K. O'Neill. 2005. Broadleaf weed control in field corn with postemergence herbicides. *J. Crop Mgmt. Plant Mgmt. Network*. doi:10.1094/CM-2005-0224-01-RS.

Dan Smeal and Mick O'Neill. 2004. How to grow lush green turfgrass lawns whilst using less water. *Inter. Water Irrig.* 24(1): 12-16.

Proceedings

Smeal, Dan., Richard N. Arnold, and Michael K. O'Neill. 2010. Tumble mustard control in Jagaline winter wheat. *Proceedings Western Society of Weed Science Vol: 63* p. 82. ISSN: 0091-4487.

Smeal, D., M.K. O'Neill, K.A. Lombard, and R.N. Arnold. 2010. Climate-based coefficients for scheduling irrigations in urban xeriscapes. December 5 - 8, 2010. Proc. 5th National Decennial Irrigation Conference. Sponsored jointly by ASABE and the Irrigation Association. Phoenix, AZ.

Smeal, D., A Grubbs, and R. Flynn. 2009. Alfalfa yield and nutrient uptake as related to FGD and agricultural gypsum. Proc. Agricultural & Industrial Uses of FGD Gypsum workshop. Nov. 17-19, 2009. Indianapolis, IN.

Smeal, D., M.K. O'Neill, K. Lombard, and R.N. Arnold. 2009. Crop coefficients for drip-irrigated xeriscapes and urban vegetable gardens. Proc. Irrig. Assoc. 2009 Irrig. Show and Tech. Conf. Dec. 2-4, 2009. San Antonio, TX.

Lombard, K., S.C. Forster-Cox, K. Huttlinger, **D. Smeal**, S.A.A. Beresford, and M. O'Neill. 2009. Gardens for Health: Development of a Model Diabetes Intervention Project among an Indigenous Tribe in Northwest New Mexico. Proc. 1st All Africa Horticulture Congress, Nairobi, Kenya, August 31-September 3, 2009. *Acta Horticulturae* (Submitted).

Arnold, Richard N., Michael K. O'Neill and **Dan Smeal**. 2009. Broadleaf weed control in tribenuron tolerant sunflower with preemergence followed by sequential postemergence herbicides. *Proc. Western Society of Weed Science, Vol. 62*, pg. 63. ISSN:0091-4487.

Smeal, D., M.W. West, Z.F. Williams, M.K. O'Neill, K. Lombard, and R.N. Arnold. 2008. Efficient irrigation of small plots using a simple, inexpensive micro-irrigation system. in Correa, A.C., Agnello, M.F., Todd, R. and Peterson, R. (ed.). 2008. *Water in Arid and Semiarid Lands: Innovative Approaches and Informed Decision-Making*. Proceedings of 2006 International Conference, November 15-17, 2006, Lubbock, Texas, USA. ICASALS Publ. 2008-1, xxxp.

Smeal, D., M.K. O'Neill, M.M. West, and R.N. Arnold. 2007. A differentially-irrigated, xeric plant demonstration garden in northwestern New Mexico. Proc. Irrig. Assoc. 28th Ann. Inter. Irrig. Show and Tech. Conf. Dec. 6-7, 2007. San Diego, CA. CD.

Arnold, Richard N., Mick K. O'Neill and **Dan Smeal**. 2007. Broadleaf weed control in roundup ready alfalfa. *Proceedings of the Western Society of Weed Science*, p. 70, ISSN:0091-4487.

- Smeal, D.**, M.K. O'Neill, and R.N. Arnold. 2006. Evaluation of a low-cost, low-tech microirrigation system designed for small plots. Proc. Irrig. Assoc. 27th Ann. Inter. Irrig. Show and Tech. Conf. Nov. 5-7, 2006, San Antonio, TX. CD. (not included in 2006 evaluation)
- Smeal, Dan**, Margaret M. West, Zach F. Williams, Michael K. O'Neill, Kevin Lombard and Richard N. Arnold. 2006. Efficient irrigation of small plots using a simple, inexpensive micro-irrigation system. Proc. ICASALS 2006 Conference: Water in Arid and Semiarid Lands: Innovative Approaches and Informed Decision-Making. Nov. 15-17, 2006. Lubbock, TX.
- Daniel Smeal**, Michael K. O'Neill, and Richard N. Arnold. 2006. Evaluation of a low-cost, low-tech micro-irrigation system designed for small plots. Proc. Irrigation Association's 27th Annual International Irrigation Show and Technical Conference. Nov. 5-7, 2006. San Antonio, TX.
- Arnold, Richard N., Michael K. O'Neill and **Dan Smeal**. 2006. Broadleaf weed control in dry beans with preemergence followed by sequential postemergence herbicides. Proc. Western Soc. Weed Sci. Vol. 59. pgs. 93-94.
- Lombard, K., M.K. O'Neill, **D. Smeal**, R.N. Arnold, and J.G. Mexal. 2005. Hybrid poplar establishment under harsh environmental and edaphic conditions. 9th N. Amer. Agroforestry Conf. Proc. Rochester, MN. June 12-15, 2005.
<http://cinram.umn.edu/afta2005/pdf/Lombard.PDF>
- Arnold, Richard N., Michael K. O'Neill, and **Dan Smeal**. 2004. Broadleaf weed control in field corn with postemergence herbicides. Proc. WSWS Vol. 57. p 61. (ISSN:0091-4487)
- Smeal, D.**, T.W. Sammis, M.K. O'Neill, and R.N. Arnold. 2003. Climate-based irrigation scheduling for warm season and cool season turfgrasses. Proc. 24th Ann. Inter. Irrig. Show and Tech. Conf., Nov. 18-20, 2003. San Diego, CA.

Experiment Station Publications

Bulletins

- Arnold, R. N., **Smeal, D.**, Lombard, K. A., O'Neill, M. K. (2012). Broadleaf weed control in dry beans (*Phaseolus vulgaris*) with preemergence applications of Valor alone or in combination from 2004-2008. (pp. 4). New Mexico State University Agricultural Experiment Station Research Bulletin-804.
- Arnold, Richard N., **Daniel Smeal**, Michael K. O'Neill and Margret M. West. 2007. Broadleaf weed control in spring-seeded alfalfa, 1999-2003. New Mexico State University Agricultural Experiment Station Research Bulletin-795.
- O'Neill, M.K., C.K. Owen, R.N. Arnold, and **D. Smeal**. 2004. Spring oats research in the Four Corners region: 1989-1998. N.M.S.U. Agric. Exper. Sta. Bulletin 787.
<http://www.cahe.nmsu.edu/pubs/research/horticulture/BL-787.pdf>

Research Reports

- Smeal, D., K. Lombard, M. West, M. O'Neill and R.N. Arnold. Low pressure drip irrigation for small plots and urban landscapes. NMSU AES CACE Research Report 773. 16 p.
- Arnold, R.N., **D. Smeal**, M.K. O'Neill, K.A. Lombard, R.F. Heyduck, S. Henke, D. Wirth, D. Mankiewicz, R. Wirtanen, S. Katirgis, M. Lepich, F. MacDonald, A. Sattler, and M. Johnson. 2010. Using coal bed methane produced water from well sites for native and non-native grass stand establishment. Research Report 771. Agricultural Experiment Station Variety Test Reports. New Mexico State University. Las Cruces, NM. http://aces.nmsu.edu/pubs/research/livestock_range/RR771.pdf.
- Arnold, R.N., **D. Smeal**, M.K. O'Neill, K. Lombard, R. Heyduck, S. Henke, D. Wirth, J. Zent, R. Wirtanen, D. Craddock, S. Katirgis, and M. Lepich. 2009. Revegetation of disturbed well sites with selected cool season native and non-native grasses for stand establishment in the intermountain region of northwest New Mexico. NMSU Agric. Exp. Sta. Res. Rep. 768. 4 pages.
- Smeal, D.**, M.K. O'Neill, C.K. Owen, Z.F. Williams, M.M. West, and R.N. Arnold. 2005. Thirty-five years (1969-2003) of climatological data: NMSU's Agricultural Science Center at Farmington, New Mexico. New Mex. State Univ. Exp. Sta. Research Report No. 756. 30 pages.

CAHE ACS/CES Special or Technical Reports

- Leinauer, B., **Smeal, D.** (2012). How to Water Your Lawn (ed.). aces.nmsu.edu/pubs/_h/H504.pdf,
- Leinauer, B., **Smeal, D.** (2012). Turfgrass Irrigation (660th ed.). Las Cruces, NM: New Mexico State University. aces.nmsu.edu/pubs/_circulars/cr660/welcome.html
- Hathorn, G., M. O'Neill, R. Arnold, **D. Smeal**, and C. Owen. 2006. Field crops variety and fertilizer recommendations (revision, March 2006). NMSU C.E.S./A.E.S. Publ. NMSU, Las Cruces, NM.
- Hathorn, G. M. O'Neill, R.N. Arnold, **D. Smeal**, C. Owen, and J. Tomko. 2005. Alfalfa production in the Four Corners. NMSU C.E.S./A.E.S. Publ. NMSU, Las Cruces, NM (update).
- Hathorn, G., M. O'Neill, R. Arnold, **D. Smeal**, and C. Owen. 2005. Field crops variety and fertilizer recommendations. NMSU C.E.S./A.E.S. Publ. NMSU, Las Cruces, NM.

Research Completion Reports

- O'Neill, M. K., Arnold, R. N., **Smeal, D.**, Lombard, K. A., Allen, S., Owen, C. (2012). In O'Neill, M. K. and M. M. West (Ed.), Forty-fifth Annual Progress Report: 2011 Cropping Season. Farmington, NM: NMSU Agricultural Science Center. farmingtonsc.nmsu.edu/documents/NMSU%20AnnRpt%202011.pdf

- Arnold, R. N., O'Neill, M. K., **Smeal, D.**, Lombard, K. A. (2012). Pest control in crops grown in northwestern New Mexico, 2010. NMSU Coop. Ext. Svc. Coll. Agric., Consumer and Environ. Sci. Ann. Data Rpt. 100-2010. 16 pages.
http://aces.nmsu.edu/pubs/annualdatareports/docs/ADR_100-2010.pdf
- Arnold, R. N., O'Neill, M. K., **Smeal, D.** (2012). Pest control in crops grown in northwestern New Mexico, 2009. NMSU Coop. Ext. Svc. Coll. Agric., Consumer and Environ. Sci. Ann. Data Rpt. 100-2009. 16 pages.
aces.nmsu.edu/pubs/annualdatareports/docs/ADR_2009.pdf
- Arnold, R. N., O'Neill, M. K., **Smeal, D.**, Lombard, K. A. (2012). Pest control in crops grown in northwestern New Mexico, 2008. NMSU Coop. Ext. Svc. Coll. Agric., Consumer and Environ. Sci. Ann. Data Rpt. 100-2008. 20 pages.
aces.nmsu.edu/pubs/annualdatareports/docs/ADR_2008.pdf,
- Arnold, R. N., O'Neill, M. K., **Smeal, D.** (2011). Pest Control in Crops Grown in Northwestern New Mexico, 2005. Las Cruces, NM: Cooperative Extension Service, College of Agricultural, Consumer and Environmental Sciences.
aces.nmsu.edu/pubs/annualdatareports/docs/ADR_100_2005.pdf
- Arnold, R. N., O'Neill, M. K., **Smeal, D.** (2011). Pest control in crops grown in Northwestern New Mexico, 2007. Las Cruces, NM: New Mexico State University.,
- Arnold, R. N., O'Neill, M. K., **Smeal, D.** (2011). Pest Control in Crops Grown in Northwestern New Mexico, 2004. Las Cruces, NM: Cooperative Extension Service, College of Agricultural, Consumer and Environmental Sciences.
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- Arnold, R. N., O'Neill, M. K., **Smeal, D.** (2011). Pest Control in Crops Grown in Northwestern New Mexico, 2006.
aces.nmsu.edu/pubs/annualdatareports/docs/ADR_2006.pdf,
- Arnold, R.N., M.K. O'Neill, and **D. Smeal.** 2010. Pest control in crops grown in Northwestern New Mexico, 2001. NMSU Coop. Ext. Svc. Coll. Agric., Consumer and Environ. Sci. Ann. Data Rpt. 100-2001. 16 pages.
- Arnold, Richard N., Michael K. O'Neill and **Daniel Smeal.** 2010. Pest control in crops grown in northwestern New Mexico, 2002. NMSU Annual Data Report 100-2002.
- Arnold, R.N., M.K. O'Neill, and **D. Smeal.** 2010. Pest control in crops grown in Northwestern New Mexico, 1999. NMSU Coop. Ext. Svc. Coll. Agric., Consumer and Environ. Sci. Ann. Data Rpt. 100-1999. 16 pages.
- Arnold, R.N., M.K. O'Neill, and **D. Smeal.** 2010. Pest control in crops grown in Northwestern New Mexico, 2000. NMSU Coop. Ext. Svc. Coll. Agric., Consumer and Environ. Sci. Ann. Data Rpt. 100-2000. 16 pages.
- Smeal, D.** 2009. Appropriate water conservation technologies for small farms and urban landscapes. *in* O'Neill, M.K. and M.M. West (eds.) **2009.** Forty-second Annual Progress Report for 2008. NMSU Agricultural Science Center at Farmington. Agricultural Experiment Station and Cooperative Extension Service. New Mexico State University. Las Cruces, NM. pp. 143-177.
<http://cahe.nmsu.edu/aes/farm/documents/nmsu-annrpt-2008-all.pdf>

- Smeal, D.** 2009. Low-Tech Microirrigation for Small-Scale Navajo Producers for Improved Water-Use Efficiency. Final Project Completion Report, U.S. Bureau of Reclamation Grant Agreement No. 05-FG-40-2276:
- Arnold, R.N., M.K. O'Neill, **D. Smeal**, and K. Lombard. 2009. Weeds industry report, 2008. Coll. Agric. Consumer and Environ. Sci. Agric. Exp. Sta. Misc. Rep. 38 pages. <http://aces.nmsu.edu/pubs/research/agronomy/WeedsIndRpt08%20.pdf>
- Kevin Lombard, Don Hyder, **Dan Smeal**, Mick O'Neill, Callie Vanderbilt, Linda Reeves, and Nancy McAnally. 2009. Horticulture at San Juan College. *In* Forty-second annual progress report for 2008. NMSU Agricultural Science Center at Farmington. NMSU Agricultural Experiment Station and Cooperative Service, Las Cruces, NM.
- Smeal, D.** 2008. Appropriate water conservation technologies for small farms and urban landscapes. in O'Neill, M.K. and M.M. West (eds.) 2008. Forty-first Annual Progress Report for 2007. NMSU Agricultural Science Center at Farmington. Agricultural Experiment Station and Cooperative Extension Service. New Mexico State University. Las Cruces, NM. <http://cahe.nmsu.edu/aes/farm/documents/nmsu-annrpt-2007-all.pdf>
- O'Neill, M.K. and M.M. West (eds.) 2007. Fortieth Annual Progress Report: 2006 Cropping Season. With contributions from R.N. Arnold, **D. Smeal**, R. Heyduck, C.K. Owen, Z. Williams, K.D. Kohler, and K. Lombard. NMSU Agricultural Science Center at Farmington. Agricultural Experiment Station and Cooperative Extension Service. New Mexico State University. Las Cruces, NM. <http://cahe.nmsu.edu/aes/farm/documents/nmsu-annrpt-2006-full.pdf>
- Arnold, R.N., Michael K. O'Neill and **Dan Smeal**. 2007. Control of downy brome in great basin wildrye. Western Society of Weed Science Research Progress Report p1, ISSN:0090-8142.
- Arnold, R.N., Michael K. O'Neill and **Dan Smeal**. 2007. Control of downy brome in great basin wildrye with chlorsulfuron combinations. Western Society of Weed Science Research Progress Report p2, ISSN:0090-8142.
- Arnold, R.N., Michael K. O'Neill and **Dan Smeal**. 2007. Control of Russian thistle in hybrid poplar. Western Society of Weed Science Research Progress Report p21, ISSN:0090-8142.
- Arnold, Richard N., Michael K. O'Neill and **Dan Smeal**. 2007. Broadleaf weed control in dry beans with preemergence herbicides followed by sequential postemergence herbicides. Western Society of Weed Science Research Progress Report p77, ISSN:0090-8142.
- Arnold, Richard N., Michael K. O'Neill and **Dan Smeal**. 2007. Broadleaf weed control in Roundup ready field corn with postemergence herbicides. Western Society of Weed Science Research Progress Report p93, ISSN:0090-8142.
- Arnold, Richard N., Michael K. O'Neill and **Dan Smeal**. 2007. Broadleaf weed control in field corn with preemergence followed by sequential postemergence herbicides. Western Society of Weed Science Research Progress Report p94, ISSN:0090-8142.
- O'Neill, M.K. and M.M. West (eds.) 2006. Thirty-ninth Annual Progress Report: 2005 Cropping Season. With contributions from R.N. Arnold, **D. Smeal**, R. Heyduck, C.K.

- Owen, Z. Williams, K.D. Kohler, K. Lombard, N. Pryor, and J. Tomko. NMSU Agricultural Science Center at Farmington. Agricultural Experiment Station and Cooperative Extension Service. New Mexico State University. Las Cruces, NM. <http://spectre.nmsu.edu/dept/docs/farm/2005prfarm.pdf>
- Arnold, Richard N., Michael K. O'Neill and **Dan Smeal**. 2006. Broadleaf weed control in dry beans with preemergence followed by sequential postemergence herbicides. Western Soc. Weed Sci. Res. Prog. Rep. pg. 101.
- Arnold, Richard N., Michael K. O'Neill and **Dan Smeal**. 2006. Seedling emergence of Roundup ready field corn following preemergence herbicides. Western Soc. Weed Sci. Res. Prog. Rep. pg. 132.
- Arnold, Richard N., Michael K. O'Neill and **Dan Smeal**. 2006. Broadleaf weed control in field corn with preemergence followed by sequential postemergence herbicides. Western Soc. Weed Sci. Res. Prog. Rep. pg. 133.
- Arnold, Richard N., Michael K. O'Neill and **Dan Smeal**. 2006. Broadleaf weed control in Roundup ready field corn with preemergence followed by postemergence herbicides. Western Soc. Weed Sci. Res. Prog. Rep. pg. 134.
- O'Neill, M.K., R.N. Arnold, **D. Smeal**, T. Jim, C.K. Owen, and K.D. Kohler. 2005. Thirty-eighth Annual Progress Report: 2004 Cropping Season. NMSU Agricultural Science Center at Farmington. Agricultural Experiment Station and Cooperative Extension Service. New Mexico State University. Las Cruces, New Mexico, USA. <http://spectre.nmsu.edu/dept/docs/farm/2004prfarm.pdf>
- Arnold, R.N., M.K. O'Neill, and **D. Smeal** 2005. Broadleaf weed control in dry beans with preemergence followed by sequential postemergence herbicides. WSWs Prog. Rep. pg. 94. ISSN:0090-8142.
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2005. A low-cost drip irrigation system for small plots. 10th Xeriscape Conference: Adapting to Our Changing Reality. Feb. 24-26, 2005. Albuquerque, NM.
2004. Xeric plants and drought-tolerant grasses. Plateau Sciences Society Meeting. Gallup, NM. January 18, 2004.
2003. Climate-based irrigation scheduling for warm season and cool season turfgrasses. Irrigation Association Annual Conference, San Diego, CA. Nov. 19, 2003.

(3) Other Speeches, Talks or Presentations

2012. Drip irrigation for gardens, small farms and landscapes. Navajo Dept. Ag. Agricultural Conference – Conservation. Window Rock, AZ. August 23, 2012.
2012. Sprinkler irrigation. Navajo Dept. Ag. Agricultural Conference – Conservation. Window Rock, AZ. August 23, 2012.
2012. Improving Irrigation Efficiency. Four Corners River Health Workshop. Farmington, NM, October 16, 2012.
2012. Evaluating Irrigation Efficiency. New Mexico Organic Farming Conference. Albuquerque, NM, Feb. 17, 2012.
- San Juan County Water Issues. Presentation to NMSU students. Farmington, NM. March 16, 2012.
2012. An Introduction to Irrigation Systems. Navajo Farm Board meeting. Fort Defiance, AZ. April 13, 2012.
2012. Soil Sampling for Chemical Analyses. Students at Aztec Museum. Aztec, NM. April 16, 2012.
2012. Tour and presentation – NMSU Farmington ASC. Bureau of Land Management representatives from Colorado and New Mexico. May 4, 2012.
2012. NMSU ASC at Farmington Field Day and Open House. Tour and presentation. Farmington, NM. July 20, 2012.
2011. Small Scale Drip Irrigation. New Mexico Organic Farming Conference. Albuquerque, NM. February 18 – 19, 2011. Presentation on the 19th.
2011. Urban landscape drip irrigation. San Juan Home Builders Assoc. Home Show. Farmington, NM. March 4th and 5th, 2011. Talk on 5th.
2011. Research Overview Presentation. NMSU ASC Farmington Advisory Board Meeting. April 13th, 2011, Farmington, NM.
2011. Introduction to Drip Irrigation. Efficient Irrigation Equipment Workshop. La Plata Electric Assoc., Inc. Durango, CO. November 10, 2011.
2011. Drip emitter evaluations at substandard head. D. Smeal and M. O’Neill. W2128 Annual Meeting, Las Cruces, NM Nov. 16-18, 2011.

2011. Water Outlook/ Current and Future Challenges. D. Smeal. December 1, 2011. Farmington, NM. Western SARE Conference. Innovations in Sustainability: Techniques for New Mexico Agriculture.
2011. Rainwater catchment and small scale drip irrigation demonstration. 16th Water Conservation/ Xeriscape Conference and Expo. Albuquerque, NM. February 24 thru 27th, 2011.
2011. Turfgrass Management. Master Gardener Program. Aztec, NM. March 11, 2011.
2011. Xeriscaping and Drip irrigation. Master gardener program. Farmington, NM. March 18, 2011.
2011. Xeriscape Garden Presentation and Tour. Trailblazers Garden Club. Farmington, NM. June 12, 2011.
2011. Irrigation research at the Farmington ASC. Rotary Club. July 28, 2011.
2010. Turf research and management. NMSU Coop. Ext. Svc. Pesticide Applicators Workshop. Farmington, NM. February 11, 2010.
2010. Drip Irrigation. Sustainable San Juan Meeting. Aztec, NM. May 10, 2010.
2010. Gravity drip systems. 2nd. Annual Native American Women in Agriculture Conference. Farmington, NM. June 23, 2010.
2009. Gravity pressure drip irrigation systems for rainwater catchment systems. Presentation and demonstration – Earth Day Event. Aztec Ruins National Monument. Aztec, NM. April 25, 2009.
2009. Xeriscaping™: The short story. Presentation to San Juan County Master Gardeners May 7, 2009. Farmington, NM. 1.5 hrs.
2009. Xeriscape Gardening. Presentation and garden tour for the Trailblazers Garden Club. Farmington, NM. May 8, 2009.
2009. Drip irrigation: Introduction to design and management. Small Acreage Management Workshop, May 9, 2009. San Juan Basin Research Center, Hesperus, CO. 1 hour.
2009. Presentation for Navajo Nation Council field tour. Agric. Sci. Ctr. Farmington, NM. July 9, 2009.
2009. Drip irrigation research: NMSU Agricultural Science Center, Farmington, NM. Presentation given at the W-2128 Annual Meeting. San Juan, Puerto Rico, Nov. 16, 2009.
2009. Alfalfa yield and nutrient uptake as related to FGD and agricultural gypsum. Poster presented at the Agricultural & Industrial Uses of FGD Gypsum workshop. Nov. 17-19, 2009. Indianapolis, IN.
2009. Crop coefficients for drip-irrigated xeriscapes and urban vegetable gardens. Irrigation Association's 2009 Irrigation Show and Technical Conference. Dec. 3, 2009. San Antonio, TX. 20 mins.
2007. Drip irrigation. New Mexico Organic Farming Conference. February 16-17, 2007. Albuquerque, NM.

2007. Turf Research and Management. Pesticide Applicators Workshop. Feb. 28, 2007. Farmington, NM.
2007. Irrigation water management. NAPI Irrigation Management Workshop. March 7, 2007. Farmington, NM.
2007. Drip irrigation for small plots: A low-tech, low-cost, gravity system. Shiprock Agricultural Days Workshop. Mar. 21, 2007. Shiprock, NM.
2007. Consumptive water use of crops. Four Corners Irrigation Workshop. May 2-3, 2007. Farmington, NM.
2007. Drip irrigation talk and demonstration. San Juan Basin Extension Small Acreage Workshop. May 5, 2007. Hesperus, CO.
2007. NMSU Xeriscape Demonstration Garden tour. Field trip; New Mexico Native Plant Society Annual Conference. Aug. 4, 2007. Farmington, NM.
2007. Drip irrigation for small plots: A low-tech, low-cost, gravity system. Water Management Workshop. Aug. 16, 2007. Cove, AZ.
2007. Irrigation of chile, tomato, and sweet corn using a simple, low pressure drip irrigation system. New Mexico Small Farm Conference and Trade Show. Nov. 2-4, 2007. Moriarty, NM. (poster)
2007. Planning and installing drip irrigation systems, Parts I and II. New Mexico Agricultural Small Farm Conference and Trade Show. Nov. 4, 2007. Moriarty, NM.
2007. Irrigation management for the water-wise landscape - turf. New Mexico Landscape Training: 'Saving Every Drop'. Nov. 5, 2007, Albuquerque, NM.
2007. Consumptive use of water. Fall Agricultural Days Workshop. Nov. 19, 2007. Shiprock, NM.
2007. A differentially-irrigated, xeric plant demonstration garden in northwestern New Mexico. Irrig. Assoc. 28th Ann. Inter. Irrig. Show and Tech. Conf. Dec. 10, 2007. San Diego, CA.
2006. Drought-Tolerant Plants for Urban Landscapes in Northern New Mexico. Santa Fe Garden Fair: The Joys and Challenges of Santa Fe Gardening. April 29, 2006. Santa Fe, NM. (Margaret West).
2006. Research Program Summary. Annual Farmington ASC Advisory Committee Meeting. April 4, 2006. Farmington, NM.
2006. Irrigation. Shiprock Agricultural Days Workshop. March 15, 2006. Shiprock, NM.
2006. Urban irrigation scheduling using the internet. Pesticide Applicators Workshop. March 9, 2005. Farmington, NM. (prepared by D. Smeal, presented by Margaret West)
2006. Drought tolerant plants for urban landscapes in northern New Mexico. Symposium on Efficient Water Use in the Urban Environment. February 23-24, 2006. Las Cruces, NM.

2006. Introduction to turfgrass. Master Gardener Program. NMSU CES. February 2, 2006. Farmington, NM.
2006. Introduction to botany. Master Gardener Program. NMSU CES. February 2, 2006. Farmington, NM.
2006. A low-cost, low-tech drip system designed for small plots. Navajo Farm Board Meeting. January 13, 2006. Window Rock, AZ.
2006. Conducted formal field trip of the ASC xeriscape garden for New Mexico Native Plant Society. August 19, 2006. Farmington, NM.
2006. Conducted formal field trip of ASC research plots for Congressman Tom Udall. August 7, 2006. Farmington, NM.
2005. Conserving water in northern New Mexico landscapes through appropriate plant selection and irrigation scheduling. Jemez y Sangre Water Resources Summit and Workshop: Managing Landscapes and Watersheds for Water Resources. Sept. 21-22, 2005. Santa Fe, NM.
2005. Xeriscape demonstration garden tour - NMSU ASC Farmington. May 7, 2005. Farmington, NM.
2005. Principles of Irrigation Management. Navajo Agricultural Products Industry Workshop. Mar. 28, 2005. Farmington, NM.
2005. Irrigation management for a changing environment: Research at the ASC-Farmington. Graduate Enrichment Seminar. NMSU Agronomy and Horticulture Department. March 11, 2005. Las Cruces, NM.
2005. Turfgrass irrigation study. Graduate Student Seminar. NMSU Extension Plant Sciences Department. March 9, 2005. Las Cruces, NM.
2005. IPM in turf. NMSU Cooperative Extension Service Pesticide Applicators Workshop. Feb. 22, 2005. Farmington, NM.
2005. Contributed to: Video – Optimizing Irrigation in New Mexico. Produced by Denise McWilliams (CAHE) and Jeanne Gleason (Ag. Comm.). 2005. Rio Grande Basin Initiative.
2004. Water conservation in the landscape. Four Corners Irrigation Workshop. July 15, 2004. Durango, CO.
2004. Low-tech, low-cost drip irrigation system for small plots. Navajo Nation Soil and Water Conservation Meeting. May 19, 2004. Shiprock, NM.
2004. Xeric plant demonstration garden. Community service presentation. Bloomfield Cultural Center, March 31, 2004. Bloomfield, NM.
2004. Turfgrass and Xeriscape garden. Farmington ASC Advisory Committee Meeting. March 30, 2004. Farmington, NM.
2004. Introduction to botany. NMSU Cooperative Extension Service Master Gardener Program. March 26, 2004. Farmington, NM.

2004. Principles of turfgrass. NMSU Cooperative Extension Service Master Gardener Program. Farmington, NM. March 26, 2004.
2004. Irrigation water management. Small Farms Workshop. Nenahnezad Chapter – Navajo Indian Reservation. March 10, 2004. Keynote Speaker.
2004. Calibration of pesticide equipment. NMSU Cooperative Extension Service Ornamental and Turf Workshop. Farmington, NM. March 3, 2004.
2004. Determining spray areas. NMSU Cooperative Extension Service Ornamental and Turf Workshop. Farmington, NM. March 3, 2004.
2004. Principles of efficient irrigation. Navajo Water Conservation Workshop. Shiprock, NM. July 23, 2004.
2004. A low-cost drip irrigation system for small plots. Community Water Conference: Water Conservation - Protecting our Most Valued Treasure. Albuquerque, NM. 8/31 – 9/2, 2004.
2004. Sustaining desirable landscapes with minimal irrigation. Community Water Conference: Water Conservation - Protecting our Most Valued Treasure. Albuquerque, NM. 8/31 – 9/2, 2004.

(4) Grants and Proposals (2004-2006)

Funded Projects (Successfully Completed)

Years of Performance	Project Title	Funding Source and Amount
2010-2012	Establishment of Mine Reclamation Plant Species as Related to Irrigation	\$4,000 BHP Billiton
2009-2012	Improved canola adaptation using deficit irrigation and cropping management in the Southern High Plains	Texas A & M \$5000
2009-2012	Xeriscape Demonstration Garden (Maintenance and Expansion)	Endowment \$15,393
2009-2011	Evaluating the effects of irrigation on the establishment of reclamation species.	\$3,500 BHP-Billiton
2007 - 2010	Research on Agricultural uses of gypsum and other FGD materials. Grant GR 0002463.	Ohio State Univ. and PNM \$31,500
2005-2010	Appropriate Water Conservation Technologies for Small Farms and Urban Landscapes	State – Hatch \$5-7,000 per year
2008	Irrigation infiltration in mine spoil.	Buchanan Consultants \$3,150
2007-2008	Irrigation infiltration in mine spoil.	Buchanan Consultants \$3,150
2006	Low-Tech Micro-Irrigation for Improved Water-Use	U.S. Bureau of

	Efficiency	Reclamation \$30,000
2005-2007 O'Neill & Smeal	Irrigaid Gold for Improved Soil Moisture and Nutrient Use Efficiency in Pinto Beans	Aquatrols, Inc. \$14,720
2005	Low-Tech Micro-Irrigation for Small-Scale Navajo Producers	U.S. Bureau of Reclamation \$31,320
2004 O'Neill & Smeal	Enhancing Irrigation Efficiency through Education: Establishment and maintenance of a xeric plant demonstration garden.	U.S. Bureau of Reclamation \$25,000 01-5-28441
2000-2004	Development and Evaluation of Crop Coefficients for Scheduling Irrigations on Crops and Turfgrass in Northwestern New Mexico	State – Hatch Project No. 1-5-27443.
2003 O'Neill & Smeal	Enhancing irrigation efficiency through education	U.S. Bureau of Reclamation \$10,000.00

Proposals Submitted (Not Funded)

2012. Lombard, K. A., S. Beresford, and **D. Smeal** (co-investigator). Where Health and Horticulture Intersect: A Navajo Wellness Collaboration. NIH/NCI Partnership for the Advancement of Cancer Research: NMSU-FHCRC U-54, \$359,839.00, Description: Design a cancer/diabetes/livelihoods intervention on the Navajo Nation. This is a resubmission from the full proposal submitted 06/15/2011. Still under review.
2011. Lombard, K. A. (Principal), St Hilaire, R. (Co-Principal), **Smeal, D.** (Co-Principal), Sponsored Research, "Enhancing the Center for Landscape Water Conservation", Sponsoring Organization: US Department of the Interior Bureau of Reclamation, Sponsoring Organization Is: Federal, Research Credit: \$9,374.92, PI Total Award: \$37,499.66, Current Status: Currently Under Review. (June 1, 2011 - May 31, 2012). Item applies to Promotion and Tenure criteria: Scholarship and Creative Activity.
2011. Lombard, K. A. (Principal), St Hilaire, R. (Co-Principal), **Smeal, D.** (Co-Principal), Sponsored Research, "Navajo Gardening, Nutrition and Community Wellness Surveys", Sponsoring Organization: Diná College, Sponsoring Organization Is: Other, Research Credit: \$1,112.39, PI Total Award: \$22,247.82.
2011. O'Neill, M. K. (Principal), Acharya, R. (Co-Principal), Arnold, R. N. (Co-Principal), Ulery, A. L. (Co-Principal), Gopalan, C. S. (Co-Principal), **Smeal, D.** (Co-Principal), Sponsored Research, "Sustainable production of hybrid poplar for biofuel feedstock using saline water", Sponsoring Organization: USDA/NIFA/ Agriculture and Food Research Initiative, Sponsoring Organization Is: Federal, Research Credit: \$145,161.35, PI Total Award: \$967,742.32.
2010. O'Neill, M.K., Ulery, A., Sengupta-Gopalan, C., Acharya, R.N., Arnold, R.N., **Smeal, D.**, Stanton, B.J., and Fox, D.T. 2010. Sustainable production of hybrid poplar for biofuel feedstock using saline water. USDA NIFA Agriculture and Food Research

- Initiative Competitive Grants Program: Sustainable Bioenergy. Submitted June 14, 2010. (not funded)
2010. Flynn, R., Ulery, A., Angadi, S., Carrillo, T., DuBois, D., Contrers-Govea, F., Deng, S., Grover, K., Idowu, J., Khanden, N. Lauriault, L., Sengupta-Gopalan, C., **Smeal, D.**, and Starbuck, M. 2010. Improving Land Use Efficiency and Rural Economies with Biofuel Crops Adapted to Semi-Arid Environments. US Dept. Energy and USDA NIFA. Biomass Research and Development Initiative. Submitted November 15, 2010.
2007. Identification of low-input grassland crops for biofuel production in semiarid environments. Sun Grant Initiative (South Central Region). \$70,000. Balota, M., W. Payne, J. Booker, J. MacDonald, M. O'Neill, **D. Smeal**, R. Arnold, L-K Almas.
2007. Payne, W., Balota, M., B. Bean, J. MacDonald, R. Lascano, J. Booker, L. Almas, M, O'Neill, D. Smeal, R. Arnold, R. Shaw, C. Engler, J.D. Booker. 2007. Grassland cropping systems for cellulosic ethanol production in Texas and New Mexico. USDA Proposal. Biomass Research and Development Initiative with Texas A&M University. CAHE No. AGO 4025. \$60,000 (pending).
2007. Goss, Ryan, M.K. O'Neill, **D. Smeal**, and B. Hodges. 2007. Improving turfgrass water-use efficiency with management strategies. Submitted to Golf Course Superintendents Association of America. Environmental Institute of Golf. January 4, 2007. CAHE No. AGO 3829. (not funded)
2007. **Smeal, D.** and staff of Navajo Preparatory School. Carl D. Perkins Career and Technical Education Improvement Act of 2006. Navajo Preparatory School, Farmington, NM. Cooperator. (pending)
2006. Irrigaid Gold for Improved Soil Moisture and Nutrient Use Efficiency in Canola (*Brassica napus* L.). \$78,553. Submitted – 12/22/05. Mick O'Neill, **Dan Smeal**, Rick Arnold, and Blake Onken.
2005. Low-cost Low-tech microirrigation for small scale farmers in Eastern Kenya and the Navajo Nation. \$100,000. Submitted 2005. Mick O'Neill, John Mexal, and **Dan Smeal**. USDA-CSREES International Science and Education Program
2005. Adaptation Potential of Pecans to the Four Corners Region. \$35,000. Mick O'Neill, Rolston St. Hilaire, and **Dan Smeal**. **Submitted to NMSU Agric. Exp. Sta.**
2004. Developing Efficient Irrigation Strategies for Urban Landscapes. Preliminary proposal to McCune Charitable Foundation. November 19, 2004. Amount of request: \$12,000.00. **Dan Smeal** and Margaret West.
2004. Developing Efficient Irrigation Strategies for Urban Landscapes. Proposal submitted to Water Task Force and Rio Grande Basin Initiative. FY2004 Efficient Irrigation for Water Conservation Program. June 25, 2004. Amount of request: \$52,856.00. **Dan Smeal** and Margaret West.

4. Cooperative Extension Activities

Although my present position is considered 100% research, I've spent a considerable amount of time in extension related activities. I frequently give presentations at regional

seminars, workshops, and master gardener sessions (see Other Speeches, Talks, and Presentations above) and have collaborated and served on extension-related committees with many cooperative extension personnel. I also frequently assist and provide valuable information to local growers in relation to irrigation management or other water management/conservation techniques in vegetable or crop production and landscaping.

5. Other Service

a. Departmental

- 2007. NMSU Turfgrass Team, Ryan Goss Chair.
- 2007. Selection Committee for NMSU ASC at Farmington Horticulturist position
- 2006. Met with Ryan Goss (turfgrass specialist in Department of Plant and Environmental Sciences) to discuss collaborative research activities, including graduate student possibilities. July 27, 2006. Farmington, NM.
- 2006. Assisted Dr. Theodore Sammis (state climatologist) with a study designed to evaluate evapotranspiration of poplar trees using an Eddy-Covariance system on the Navajo Indian Irrigation Project.
- 2005. Collaborated with Dr. Bernd Leinauer (Extension Plant Sciences) on evaluation of turfgrasses for New Mexico.

b. College

- 2007. New Mexico State University, College of Agriculture and Home Economics Town Hall Meeting. Farmington, NM. August 29, 2007 (participant).
- 2007. NMSU CAHE 2nd Quarterly Open Forum by Dean Catlett. Albuquerque, NM. March 26, 2007 (participant).
- 2007. NMSU Agricultural Science Center at Farmington Advisory Committee Meeting. Farmington, NM. April 18, 2007 (presented research results).
- 2006. Met with Margaret West and Tony Valdez – Rio Arriba Extension Office to discuss Xeriscape and turf exhibit strategy. July 26, 2006. El Rito, NM.
- 2005. Contributed to: Video – Optimizing Irrigation in New Mexico. Produced by Denise McWilliams (CAHE) and Jeanne Gleason (Ag. Comm.). 2005. Rio Grande Basin Initiative.
- 2005. Water Lecture Series. “The weather is our water supply: Community involvement in monitoring climate.” By Nolan Doesken. NMSU Ag. Coll. Water Task Force Seminar. Las Cruces, NM. Mar. 10, 2005. (participant)
- 2003-2005. Assisted Richard Arnold in a study designed to evaluate establishment of grasses for reclamation of disturbed soils at natural gas-well sites in San Juan and Rio Arriba Counties of northwestern New Mexico.

2003-2005. Assisted Rick Arnold in study: 'Revegetation of pipeline right-of-way and or well sites with selected cool and warm season cultivars and forbes for palatability, stand establishment, and erosion control in the intermountain region of northwest New Mexico'. 2004.

c. Extension

Have collaborated with local and state cooperative extension personnel (i.e. Gary Hathorn, Jan Tomko, Curtis Smith, John White, Joran Viers, Del Jimenez, Tony Valdez, etc.) on various activities, including the Master Gardener Program, preparation of (and participation in) workshops, seminars, tours, demonstration gardens, etc.

Serve (co-chair) of the Urban Landscape Water Conservation Coordinating Committee which has educational, public outreach objectives relative to water conservation.

Published weekly water-requirement estimates for alfalfa, turfgrass and xeric landscapes in the Talon newspaper (Aztec) and the Farmington ASC website (April – October, 2006).

d. Graduate School

Have assisted graduate students with on-site (Farmington ASC) research activities

e. University

2004. Service Award for 20 years employment at NMSU. April 29, 2004.

f. Community

Meetings

2009. San Juan College Horticulture Program Advisory Committee meeting. Farmington, NM. March 25, 2009.

2008. NMSU Agricultural Science Center Field Day. Farmington, NM. July 11, 2008. Active participant. Tour of research plots.

2008. Navajo Agricultural Products Industry/Agricultural Science Center Fertilizer Planning Meeting. Farmington, NM. March 6, 2008. Participant in discussions.

2008. NMSU Agricultural Science Center at Farmington Advisory Committee Meeting. Farmington, NM. April 7, 2008. Active participant.

2008. Waterwise Landscape Workshop. Durango, Colorado. April 12, 2008. Participant.

2007. AGRI 105: Xeriscaping at Home. June 5-26, 2007. San Juan College West. 1 credit hour.

2007. Served on Board of Directors – Hammond Conservancy District.

2007. NAPI/ASC Fertilizer Workshop. Farmington, NM. November 20, 2007 (participant).

- 2006. Monthly meetings. Hammond Conservancy District. (on Board of Directors)
- 2006. San Juan Agricultural Water-Users Annual Meeting. Bloomfield, NM. Dec. 6, 2005. (participant)
- 2005. San Juan Basin Water Readjudication Hearing. San Juan County District Court. Farmington, NM. Apr. 19, 2005.
- 2005. Educational Workshop. Navajo Agric. Products Industry. Farmington, NM. Mar. 28, 2005 (seminar presentation and participant)
- 2005. Navajo Agricultural Products Industry Educational Workshop Planning Meeting. Farmington, NM. Mar. 2, 2005. (participant)
- 2005. Navajo Agricultural Products Industry Crop Manger Education Planning Meeting. Farmington, NM. Feb 21, 2005. (participant)
- 2005. San Juan Agricultural Water-Users Annual Meeting. Bloomfield, NM. Jan. 18, 2005. (participant)
- 2005. Navajo Agricultural Products Industry Soil Fertility Meeting. Farmington, NM. Feb 8, 2005. (participant)
- 2005. San Juan County Agricultural Water-Users Business Meeting. Farmington, NM. Feb. 8, 2005. (participant)
- 2005. Bureau of Reclamation Navajo Unit Operation Coordination Meeting. Farmington, NM. Jan. 18, 2005. (participant)
- 2005. NMSU Agric. Science Center at Farmington Annual Advisory Committee Meeting. Farmington, NM. April 22, 2005. (research update presentation and participant).
- 2004. NMSU ASC at Farmington Field Day and Open House. July, 30, 2004.
- 2004. Navajo Nation Soil Conservation Service Water Conservation Meeting. Shiprock, NM. May 19, 2004. Presentation.
- 2004. U.S. Bureau of Reclamation. Navajo Dam Operations and Water Shortage Sharing Meeting. Farmington, NM. April 13, 2004.
- 2004. NMSU ASC at Farmington Advisory Committee Meeting. Farmington, NM. March 30, 2004. Presented research results – Xeriscape and turfgrass.
- 2004. Small Farms Workshop. Nenahnezad Chapter, Navajo Nation (near Farmington, NM). March 10, 2004. Keynote speaker and attendee.

Advisement and Consulting

- 2011. Irrigation Principles and Design. San Juan College, Farmington, NM. 3 credit hours. January 17 thru May 13, 2011.
- 2011. Participated in the Jose Fernandez Intern Program May 16 – Aug 15, 2011.
- 2009. Serve on advisory board – San Juan College Horticulture Program

2009. Contributed to a drought-tolerant plant database being prepared for New Mexico by the state's Office of the State Engineer.
2009. Contributed to Forage Production Manual of Colorado – water use data and review of chapter on irrigation (not yet published).
2008. Served as consultant to DesignWorks (landscape architects) in planning and design of a Hope Garden in Gallup, NM.
2008. Taught a community service class: Xeriscaping at Home. San Juan College Encore Program. Farmington, NM. May 1 – May 27, 2008. (21 total hours).
- 2005-2006. Consultant – Irrigation Management and Water Conservation Issues – Hammond Conservancy District. Prepared proposal with Ms. Teresa Lane (Business Manager) for US Bureau of Reclamation: Increasing Water-Use Efficiency on the Hammond Conservancy District through Education and Irrigation System Evaluation. Granted for \$25,000. January 2006.
- 1984-2006. Have consulted or advised Navajo Agricultural Products Industry (NAPI) on various projects:
- Have advised or consulted the cities of Farmington, Aztec and Bloomfield (2003-2006)
- (a) Parks Dept.: Water quality and irrigation of newly established turf.
 - (b) Discussed turfgrass and xeriscaping study with Roger Drayer, City of Farmington Parks Planner.
 - (c) City of Aztec Schools – irrigation of sports-field turfgrasses

Other

- Serve on Board of Directors – Hammond Conservancy District – Secretary/Treasurer
- Member: San Juan County Water-Users Association
- Elected to Board of Directors, Hammond Conservancy District. Bloomfield, NM. March 10, 2004.
- Member: City of Farmington, Water Conservation Committee (2004)
- Member: Hammond Conservancy District – Water Management Planning Committee
- Member: Hammond Conservancy District, San Juan County

g. State or Regional

Meetings

2012. Four Corners Educational Gardens, Inc. Board of Directors Meeting. Farmington, NM. February 13, 2012. Elected to Vice President.
2012. Western SARE Conference. Water: The Foundation of Agricultural Sustainability. Santa Fe, NM. August 7, 2012.

2012. W-2128 Annual Meeting. USDA Western Regional Collaborative Project for Microirrigation Research: Microirrigation for sustainable water use Lake Buena Vista, FL. Las Cruces, NM. Nov. 1-3.
2011. 11th Biennial Conference of Research on the CP Cultural and Natural Resource Management on the Colorado Plateau. Flagstaff, AZ. October 24 – 27, 2011 (talk on 27th)
2011. New Mexico Organic Farming Conference. Albuquerque, NM. February 18 – 19, 2011. Presentation on the 19th.
2011. NMSU ASC Farmington Advisory Board Meeting. April 13th, 2011, Farmington, NM.
2011. Western SARE Conference. Innovations in Sustainability: Techniques for New Mexico Agriculture. December 1, 2011. Farmington, NM.
2011. San Juan Agricultural Water Users Annual Meeting. Farmington, NM.
2010. NMSU Farmington ASC Advisory Committee Meeting. Farmington, NM. April 6, 2010. Active participant, presentation of research overview.
2010. Sustainable San Juan Meeting. Aztec, NM. May 10, 2010. Presentation and demonstration - drip irrigation.
2010. NMSU Farmington ASC field day. Farmington, NM. July 23, 2010. Study plot presentations and tours.
2009. Urban Landscape Water Conservation Coordinating Committee. Video-Conference. Farmington, NM. March 20, 2009. Active participant.
2009. W-2128 Annual Meeting NIMSS - Multistate Research Project Group – Microirrigation for sustainable water use. San Juan, Puerto Rico, Nov. 16, 2009. New member – presented research results for 2009 (Smeal and O’Neill).
2009. New Mexico’s Water Wise Plant List project meeting. Albuquerque, NM. Feb. 28, 2009. Preliminary plant list review and revisions for the NM Office of the State Engineer’s publication on xeric landscapes.
2008. Urban Landscape Water Conservation Coordinating Committee Meeting. Las Cruces, NM. April 24, 2008. Active participant.
2008. Urban Landscape Water Conservation Coordinating Committee Meeting. Polycomm: Las Cruces, Albuquerque, Santa Fe, and Farmington, NM. Farmington, NM. November 21, 2008. Active participant.
2008. New Mexico Organic Farming Conference. Albuquerque, NM. February 29- March 1, 2008. Presented Workshop.
2008. 22nd Annual Think Trees Conference: Tree Care in a Changing Environment. Albuquerque, NM. January 31-February 1, 2008. Attended for continuing education.
2007. New Mexico Agricultural Small Farm Conference and Trade Show. Moriarty, NM. November 2-4, 2007 (presented paper, demonstration and poster).
2007. New Mexico Landscape Training “Saving Every Drop”: Technical Sessions (7 hours). Albuquerque, NM. November 5, 2007 (presented paper).

2007. Four Corners Irrigation Workshop. Farmington, NM. May 2-3, 2007 (presented paper).
2007. San Juan Basin Extension Small Acreage Workshop. Hesperus, CO. May 5, 2007 (presented paper and demonstration).
2007. Red Valley/Cove Farm Board Workshop. Cove Chapter, Arizona. August 16, 2007 (presented).
2007. New Mexico Organic Farming Conference. Albuquerque, NM. February 16-17, 2007 (presented paper and demonstration).
2007. 15th Annual Four Corners Weed Management Symposium. Lewis, CO. March 8, 2007 (participant).
2006. Multiple Approaches to Improve Water Use Efficiency of our Cropping Systems: A Workshop in Sustainable Agriculture. Socorro, NM. Dec. 12, 2006 (participant).
2006. Urban Landscape Water Conservation Coordinating Committee. 2nd Annual Meeting. Socorro, NM. Dec. 12, 2006 (chair).
2006. 14th Annual Four Corners Weed Management Symposium. Farmington, NM. March 2, 2006. Attended for continuing education.
2006. Urban Landscape Water Conservation Coordinating Committee Meeting. Teleconference. January 30, 2006. Secretary.
2006. Urban Landscape Water Conservation Coordinating Committee Meeting. Teleconference. April 19, 2006. Elected to co-chair with Margaret West.
2005. Jemez y Sangre Water Resources Summit and Workshop: Managing Landscapes and Watersheds for Water Resources. Santa Fe, NM. Sept. 21-22, 2005. (poster exhibitor and participant)
2005. San Juan Basin Water Readjudication Hearing. San Juan County District Court. Farmington, NM. Apr. 19, 2005.
2005. Irrigated Pasture and Alfalfa Management Workshop. Farmington, NM. Apr. 5, 2005 (participant for CEU's)
2005. Pesticide Applicators Workshop. Farmington, NM. Feb. 22, 2005. (gave presentation).
2005. Urban Landscape Water Conservation Coordinating Committee Meeting. Albuquerque, NM. Nov 15, 2005. (secretary)
2005. Urban Landscape Water Conservation Coordinating Committee Meeting. Albuquerque, NM. May 16, 2005. (secretary)
2005. New Mexico Hay Association Southwest Hay Conference & Trade Show. Ruidoso, NM. Feb. 3-4, 2005. (attendee-CAAs)
2004. Community Water Conference: Water Conservation-“Protecting our most Valued Treasure”. Albuquerque, NM. August 31 – September 2, 2004. Two poster presentations.
2004. Desert Landscaping and Water Conservation Committee Meeting. Albuquerque, NM. August 11, 2004.

2004. Turf and Ornamental Seminar – NMSU CES. Farmington, NM. March 3, 2004. Gave two presentations and attended for CEU's.
2004. Four Corners Irrigation Workshop. Durango, CO. July 15, 2004. Presented paper.

h. *National or International*

Meetings Attended

2010. 20th International Pepper Conference. Las Cruces, NM September 12-14, 2010. Poster presentation.
2009. International Water Conservation Conference. Xeriscape Council of New Mexico. Albuquerque, NM. February 26 – 27, 2009. Attended.
2006. International Center for Arid and Semiarid Lands. 2006 Conference: Water in Arid and Semiarid Lands: Innovative Approaches and Informed Decision-Making. Lubbock, TX. Nov. 15-17, 2006. Presented paper.
2006. Irrigation Association. 27th Annual International Irrigation Show and Technical Conference. San Antonio, TX. Nov. 5-7, 2006. Presented paper.
2005. Alliance for Rural America Advisory Committee Meeting. Alcalde, NM. July 22, 2005 (participant – advisory committee member).
2005. 10th Xeriscape Conference. Albuquerque, NM. Feb. 24-26, 2005. (poster exhibitor and participant)
2003. 24th Annual International Irrigation Show. San Diego, CA. Nov. 18-20, 2003 (presented paper).

i. *Profession*

Committees

2011. W 2128 Microirrigation for Sustainable Water Use
2010. Western Education/Extension and Research Activities Committees:
 W 2128 Microirrigation for Sustainable Water Use
 W 2941 "Meteorological and Climate Data to Support ET-Based Irrigation Scheduling, Water Conservation, and Water Resources Management (from WERA202)"
- NIMSS - Multistate Research Project Group – Microirrigation for sustainable water use
- Irrigation Association - Conference Technical Sessions Organizing Committee.

WERA-202 (formerly WCC-202) Committee: Climatic Data Applications in Irrigation Scheduling and Water Conservation (Chair for landscape/turf sub-committee)
Urban Landscape Water Conservation Coordinating Committee – Secretary (2005),
President (2006)
Alliance for Rural America (Member- Advisory Committee) - 2005
National Water Efficiency Organization (2006)
WCC-202 Committee: Climatic Data Applications in Irrigation Scheduling and Water Conservation. Chairman – Urban Issues subcommittee.

Certifications

Certified Crop Advisor – ASA
Certified Landscape Irrigation Auditor – IA
Certified Irrigation Designer – IA
Public Pesticide Applicator - NMDA

Professional Society Meetings

2012. Irrigation Association Annual Conference Technical Sessions. Orlando, FL. November 4-5, 2012.
2010. Western Society of Weed Science Annual Conference. Waikoloa, Hawaii. March 11, 2010. Oral presentation.
2010. Annual Conference of the American Society for Horticultural Science. Palm Desert, CA. August 4, 2010. Poster presentation.
2010. National Decennial Irrigation Conference. Phoenix, AZ. December 5, 2010. Oral presentation.
2009. Irrigation Association's. 2009 Irrigation Show and Technical Conference. San Antonio, TX. December 2-4, 2009. Gave presentation and participated in committee meeting.
2008. Soil and Water Conservation Society 2008 Annual Conference. Tucson, AZ. July 26-30, 2008. Presented paper and attended sessions.
2007. International Irrigation Show and Technical Conference. San Diego, CA. December 9-11, 2007 (presented paper).
2006. International Center for Arid and Semiarid Lands. 2006 Conference: Water in Arid and Semiarid Lands: Innovative Approaches and Informed Decision-Making. Lubbock, TX. Nov. 15-17, 2006. Presented paper.
2006. Irrigation Association. 27th Annual International Irrigation Show and Technical Conference. San Antonio, TX. Nov. 5-7, 2006. Presented paper.

- 2006. Irrigation Association Technical Conference Committee Meeting. Nov. 5, 2006. San Antonio, TX. Member.
- 2005. American Society of Agronomy 97th Annual Meeting (An International Meeting). Salt Lake City, UT. Nov. 6-10, 2005. (presented paper and participant).
- 2005. Southwest Turfgrass Conference and Trade Show. Albuquerque, NM. Oct. 25-28, 2005. (gave presentation and participated).
- 2005. WCC-202 (WERA-202) Climatic Data Applications in Irrigation Scheduling and Water Conservation. Annual Coordinating Committee Meeting. Tempe, AZ. Aug. 23-24, 2005 (presentation, participant – committee member)
- 2005. Irrigation Association – Conference Technical Session Review Committee teleconference. June 15, 2005. (review of abstracts for IA Technical Conf.)
- 2005. American Society of Agricultural Engineers – New Mexico Section. Truth or Consequences, NM. Mar. 4, 2005. (presented paper and participant).
- 2004. Comprehensive Nutrient Management Plan Workshop. NRCS and NM CCA Board. Albuquerque, NM. December 13-16, 2004. Training for CCA CEU's.
- 2004. Southwest Turfgrass Conference. Albuquerque, NM. November 16-19, 2004. Participant.
- 2004. WCC-202 Committee (Climatic Data Applications in Irrigation Scheduling and Water Conservation) meeting. Boise, ID. August 16 – 20, 2004. Committee member/participant/presentation.
- 2004. Irrigation Association Technical Conference Committee Meeting (telephone meeting). July 1, 2004. Participant – selection of papers for IA Technical Conference.
- 2004. New Mexico Native Plants Society Meeting. Farmington, NM. April 15, 2004.
- 2004. Plateau Sciences Society Meeting. Gallup, NM. January 18, 2004. Presented paper.
- 2003. Irrigation Association Technical Conference Committee. San Diego, CA. Nov. 18, 2003.

Schools and Special Training

- 2011. Irrigation Faculty Academy, June 22 – 23, 2011. Walla Walla, WA. Irrigation Association.
- 2011. U.S. Dept. Interior, Bureau of Reclamation Grant Writing Training. Durango, CO. November 15, 2011.
- 2007. Employee Training: Lifting Safety. NMSU Environ. Health & Safety. Chuck Ryder. Farmington, NM. Sept. 26, 2007.
- 2007. Received federal certificate to apply restricted use pesticides in Navajo Indian country. Federal Commercial Applicator Certificate Number R9784VLE. October 26, 2007 U.S. EPA Region IX.

2007. New Mexico Landscape Training: Drip design in the landscape (8 hours). Albuquerque, NM. November 6, 2007.
2007. New Mexico Landscape Training: SMART Technologies for irrigation management (8 hours). Albuquerque, NM. November 7, 2007.
2006. Maintained Public Pesticide Applicator License (Category 1A and 1B) with the New Mexico Department of Agriculture
2004. Successfully completed requirements for Certified Crop Advisor. Exams taken in Las Cruces, NM. Feb. 6, 2004. Confirmed passing grades on March 18, 2004. Certification Officially received October 7, 2004.

Proposal or Manuscript Reviews:

2012. Manuscript review. Net irrigation requirements for Florida turfgrasses. Romero, C. and Dukes, M. Irrigation Science. May 14, 2012.
2011. Manuscript review: Lavender Variety Trial Results for North-Central New Mexico, 2003 through 2005. Charles Martin et al. February 14, 2011
2010. Manuscript review: Pejic, B., J. Gvozdanic-Varga, S. Milic, R. Stricevic, B. Cupina, and D. Krstic. 2010. Effects of irrigation schedules on yield and water use of onion (*Allium cepa* L.). Irrig. Sci. Reviewed March 2010.
2010. Proposal review: Developing Forage Management Strategies to Meet Changes in New Mexico Agriculture. Hatch Proposal. NMSU Plant and Environmental Sciences Dept. Reviewed January 2010.
2009. Irrigation Association Technical Conference Abstracts review. Technical Conference Committee. May 2009. (about 80 abstracts).
2009. Publication review: Harvest timing and byproduct addition effects on corn and forage sorghum/silage grown under water stress. Mark Marsalis, Sangu Angadi, Francisco Contreras-Govea, and Rex Kirksey. May 15, 2009.
2008. Proposal review: Alternative crop research and development for small-scale growers in New Mexico. Charles Martin, New Mexico State University – Hatch proposal. April 1, 2008.
2008. White paper review: Urban landscape center at NMSU. Ted Sammis, New Mexico State University. White paper for proposal. April 30, 2008.
2008. Irrigation Association Technical Conference Abstracts review. Technical Conference Committee. May 2008. (about 70 abstracts).
2008. Manuscript review: Effect of deficit irrigation on some yield characteristics of sweet corn. A. Oktem and A. G. Oktem. Submitted to New Zealand Journal of Horticulture. June 3, 2008.
2007. Cultivation of *Anemopsis californica* under small scale grower conditions in New Mexico. Charles Martin. Submitted for NMSU Report.

2007. Irrigation Association Technical Conference Abstracts review. Technical Conference Committee. May 22, 2007 (about 80 abstracts).
2007. Determination of crop coefficients for irrigation management of crops. by Piccinni, G., J. Ko, A. Wentz, D. Leskovar, T. Marek, and T. Howell. Manuscript review. Nov. 9, 2007.
2007. Utilization of saline and other impaired waters for turfgrass. Leinauer, B. Proposal review. Nov. 9, 2007.
2006. Irrigation Association. 27th International Irrigation Technical Conference Abstracts for presentations. Abstract reviews submitted April 7, 2006.
2006. Evaluation of crop yield models for cowpea in Nigeria. Irrigation Science 2006-0080. Manuscript review completed and submitted Nov. 15, 2006.
2006. Planting date and furrow-irrigation effects on cowpea for edible dry beans, Southern High Plains. NMSU Research Report. Manuscript review completed and submitted April 24, 2006.
2005. Collaborated with Ms. Bridgit Martin (NeoGardens, Albuquerque, NM) in preparation of a USDA/SBIR proposal: Clay pot irrigation for small farms and urban gardeners. Submitted Aug. 30, 2005 (pending).
2005. Demonstrating Hybrid Poplar Uses for Arid Lands. IALC. M.K. O’Neill, J. Mexal, and T.W. Sammis.
2005. Hybrid poplar development for environmentally desirable bioproducts and sustainable biofuels. USDOE-USDA. Mick, O’Neill and John Mexal.

Other

2006. Met with Jay Moolinijzer and Del Jimenez for strategy meeting regarding the Milan Homestead Project. February 28, 2006. Farmington, NM.
2004. Attended coordinating meeting in Ganado, Arizona at Hubbell Trading Post to discuss possible research plan with Dr. Edward Martin (ASU), Nancy Stone (NPS), Dr. Mick O’Neill (NMSU), and Rick Arnold (NMSU), to reintroduce agriculture to the National Historic Site. March 22, 2004.

j. Industry and non-profit organizations

- Served on Board of Directors – Hammond Conservancy District. Elected secretary in Sept. 2005. Prepared proposal with Ms. Teresa Lane (Business Manager) for US Bureau of Reclamation: Increasing Water-Use Efficiency on the Hammond Conservancy District through Education and Irrigation System Evaluation. Submitted June 30, 2005. Grant received for \$25,000.
- Collaborating with Jay Moolinijzer (Alliance for Rural America) on a USDA project ‘The Ramah Navajo Community Food Security Project’. The project will design and implement a culturally relevant model that will re-introduce traditional and integrated modern agricultural methods to promote nutritional self sufficiency on the Ramah Navajo community.

2004. Preliminary evaluation of a low-cost, low-tech drip irrigation system for small plots. Material provided by IDE (International Development Enterprises). Plan to continue project under new Hatch proposal.
- 2004-2006. Collaborator with Dr. Edward Martin and Dr. Donald Slack (University of Arizona) and Dr. Mick O'Neill (NMSU). Demonstration and Comparison of Irrigation Strategies on the Navajo Nation. TRIF (Technology and Research Initiative Fund) Water Sustainability Proposal.
- 2003-2005. Collaborated with Dan Spare (Keller, Bliesner Engineering) on evaluation of irrigation efficiency on the Navajo Indian Irrigation Project.

6. Professional societies

American Society of Agricultural and Biological Engineers (2006-present)

American Society of Agricultural Engineers (1997-2005)

Irrigation Association (1987-present):

 Certified Sprinkler Irrigation Designer

 Certified Landscape Irrigation Auditor

 Member – IA Conference Technical Sessions Committee

New Mexico Native Plant Society (2004-2011)

Southwest Turfgrass Association (1997-2005):

 Certificate of Recognition for Outstanding Contribution (Oct. 27, 2000).

Urban Landscape Water Conservation Coordinating Committee

Section 2: Appendix:

Resume (period from 1983 thru 2003)

(b) Professional Communications (1983-2003)

(1) List of Publications

Refereed Journal Articles

- Asare, D.K., T.W. Sammis, **D. Smeal**, H. Zhang, and D.O. Sitze. 2000. Modeling an irrigation management strategy for minimizing the leaching of atrazine. *Agric. Water Mgmt.* 48:225-238.
- Al-Jamal, M.S., T.W. Sammis, S. Ball, and **D. Smeal**. 1999. Computing the crop water production function for onion. *Agric. Water Mgmt.* 46:29-41.
- Al-Jamal, T.W. Sammis, S. Ball, and **D. Smeal**. 1999. Yield based, irrigated onion crop coefficients. *Appl. Eng. Agric. A.S.A.E.* Vol. 15(6): 659-668.
- Zhang, H., **D. Smeal**, and J. Tomko. 1998. Nitrogen fertilizer value of feedlot manure for irrigated corn production. *J. Plant Nutrition*, 21(2), 287-296.
- Asare, D.K., T.W. Sammis, **D. Smeal**, and T.L. Jones. 1996. Sensitivity of simulated field water balance to alternate soil hydraulic data. *Trans. ASAE*, 39(6): 2085-2092.
- Zhang, H., **D. Smeal**, R.N. Arnold, and E.J. Gregory. 1996. Potato nitrogen management by monitoring petiole nitrate level. *J. Plant Nutrition*, 19(10&11): 1405-1412.
- Murray, M.W., R.N. Arnold, E.J. Gregory, and **D. Smeal**. 1994. Early broadleaf weed control in potato (*Solanum tuberosum*) with herbicides. *Weed Tech.* 8:165-167.
- Smeal, D.** and H. Zhang. 1994. Chlorophyll meter evaluation for nitrogen management in corn. *Commun. Soil Sci. Plant Anal.* 25(9&10), 1495-1503.
- Arnold, R.N., M.W. Murray, E.J. Gregory, and **D. Smeal**. 1993. Weed control in pinto beans (*Phaseolus vulgaris*) with imazethapyr combinations. *Weed Tech.* 7:361-364.
- Smeal, D.**, E.J. Gregory, and R.N. Arnold. 1992. Interseasonal variability in the water use - production function of alfalfa. *J. Prod. Agric.* 5: 576-580.
- Smeal, D.**, C.E. Kallsen, and T.W. Sammis. 1991. Alfalfa yield as related to transpiration, growth stage, and environment. *Irrig. Sci.* 12:79-86.
- Arnold, R.N., M.W. Murray, E.J. Gregory, and **D. Smeal**. 1990. Weed control in established alfalfa (*Medicago sativa* L.). *Appl. Agric. Res.*, 5(3): 195-197.
- Arnold, R.N., E.J. Gregory, and **D. Smeal**. 1989. The Russian wheat aphid. *N.M. Acad. Sci. J.* 28:140.

- Arnold, R.N., E.J. Gregory, and **D. Smeal**. 1988. Effects of herbicides on weeds in field corn grown on coarse-textured soils. *Appl. Agric. Res.*, 3(1): 21-23.
- Sammis, T.W., **D. Smeal**, and S. Williams. 1988. Predicting corn yield under limited irrigation using plant height. *Trans. A.S.A.E.*, 31(3): 830-838.
- Sammis, T.W., S. Williams, **D. Smeal**, and C.E. Kallsen. 1986. Effect of soil moisture stress on leaf area index, evapotranspiration and modeled soil evaporation and transpiration. *Trans. A.S.A.E.* 29:956-961.
- Arnold, R.N., E.J. Gregory, and **D. Smeal**. 1986. Evaluations of insecticide for control of corn earworm (*Heliothis zea* Boddie; Lepidoptera: Noctuidae) on sweet corn in northwestern New Mexico, 1979-1983. *J. Appl. Agric. Res.* 1: 172-174.
- Abdul-Jabbar, A.S., T.W. Sammis, D.G. Lugg, C.E. Kallsen, and **D. Smeal**. 1983. Water use by alfalfa, maize and barley as influenced by available soil water. *Agric. Water Mgmt.*, 6: 351-363.
- Secor, J.B., S. Shamash, **D. Smeal**, and A.L. Gennaro. 1983. Soil characteristics of two desert plant community types, which occur in the Los Medanos area of southeastern New Mexico. *Soil Sci.*, 136 (3): 133-144.
- contributed to: Sammis, T.W., E.J. Gregory and C.E. Kallsen. 1982. Estimating evapotranspiration with water-production functions or the Blaney-Criddle method. *Trans. A.S.A.E.*, 25 (6): 1656-1661.

Proceedings

- Smeal, Dan**, R.N. Arnold, and Michael K. O'Neill. 2003. Broadleaf weed control in field corn with postemergence herbicides. *Proc. West. Soc. Weed Sci.* Vol. 56:47.
- Arnold, R.N., Michael K. O'Neill, and **Dan Smeal**. 2003. Broadleaf weed control in spring-seeded alfalfa. *Proc. West. Soc. Weed Sci.*, Vol. 56:47.
- Smith, K.W., R.N. Arnold, and **Dan Smeal**. 2003. Russian knapweed control on southern Colorado rangeland. *Proc. West. Soc. Weed Sci.*, Vol. 56:31.
- R.N. Arnold, Michael K. O'Neill, and **Dan Smeal**. 2003. Weed management in irrigated crops. *Proc. 3rd. Ann. Four Corners Irrig. Wkshp.* Farmington, NM. pp. 25-26.
- Smeal, D.**, R.N. Arnold, J.F. Tomko, and M.K. O'Neill. 2002. Chile pepper (*Capsicum annuum* L.) yield response to nitrogen source and rate. *Proc. Great Plains Soil Fertility Conf.*, March 5-6, 2002. Denver, CO. pp. 188-193.
- Arnold, R.N., M.K. O'Neill, and **D. Smeal**. 2002. Broadleaf weed control in spring-seeded alfalfa. *W.S.W.S. Proc.* 55:45-46. ISSN: 0091-4487.
- Smeal, D.** and J. Tomko. 2001. Consumptive-use of turfgrass in northwestern New Mexico. *Proc. 2nd Annual Four Corners Irrig. Workshop.* June 21-22, 2001. Farmington, NM. Pgs. 1-10.

- Smeal, D.**, J.F. Tomko, and R.E. Arnold. 2000. Effect of N fertilizer source and rate on the yield, quality and storability of potatoes. Proc. Great Plains Soil Fertility Conf., March 7-8, 2000. Denver, CO. Vol. 8:290-295.
- Smeal, D.** 2000. Water use of cool season and warm season turfgrasses in northern New Mexico. Proc. SW Turfgrass Assoc. Ann. Conf., Oct. 24-27, 2000. Ruidoso, NM. Pgs. 35-55.
- Arnold, R.N. and **D. Smeal**. 2000. Broadleaf weed control in spring-seeded alfalfa with post-emergence applications of AC 299-263 and imazethapyr. Proc. WSWS, 53:23.
- Gregory, E.J., R.N. Arnold, and **D. Smeal**. 1997. Broadleaf weed control in spring-seeded alfalfa with postemergence applications of ac 299-263 and imazethapyr. WSWS Proc. Vol. 50, pg. 27.
- Arnold, R.N., E.J. Gregory, and **D. Smeal**. 1997. Annual grass and broadleaf weed control in dry beans with dimethenamid applied postemergence at the 1st, 3rd, and 6th trifoliolate leaf stage applied before or after cultivation. WSWS Proc. Vol. 50, pg. 21.
- Smeal, D.**, J.F. Tomko, E.J. Gregory, and R.N. Arnold. 1999. Root yield of buffalo gourd as related to water-use. Proc. Fifth Inter. Conf. on Desert Development 'The Endless Frontier'. Inter. Center Arid Semi-Arid Land Studies, Office of Inter. Affairs. Texas Tech Univ. Vol. I, pp. 414-422.
- Smeal, D.**, H. Zhang, J. Tomko, E.J. Gregory, and R.N. Arnold. 1996. Sulphur fertilization of wheat and alfalfa with oil refinery by-products. Proc. Great Plains Soil Fertility Conf., Denver, CO, March 4-6, 1996, pp. 212-222.
- Zhang, H., **D. Smeal**, and J. Tomko. 1996. The effect of cattle feedlot manure and nitrogen fertilizer on corn growth. Proc. Great Plains Soil Fertility Conf., Denver, CO, March 4-6, 1996, pp. 223-229.
- Arnold, R.N., E.J. Gregory, and **D. Smeal**. 1996. Broadleaf weed control in pinto beans with preemergence, preemergence/postemergence and postemergence herbicides. W.S.W.S. Proc. 49:21. ISSN:0091-4487.
- Gregory, E.J., R.N. Arnold, and **D. Smeal**. 1996. Broadleaf weed control in spring-seeded alfalfa with postemergence applications of AC 299-263 and imazethapyr. W.S.W.S. Proc., Vol. 49:19. ISSN:0091-4487.
- Smeal, D.**, E.J. Gregory, J. Tomko, and R.N. Arnold. 1995. Carbohydrate Biofuels III. Consumptive-use and root yield of buffalo gourd (*Cucurbita foetidissima* HBK). Proc. 2nd. Biomass Conf. Americas: Energy, Environment, Agriculture, and Industry. N.R.E.L. Aug. 21-24, 1995, Portland, OR. pp. 333-342.
- Zhang, H., **D. Smeal**, R.N. Arnold, and E.J. Gregory. 1995. Potato nitrogen management by monitoring petiole nitrate level. Proc. West. Nutrient Mgmt. Conf. Proc., March 9-10, 1995, Salt Lake City, UT, Vol. 1, pp. 210-215.
- Asare, D.K., T.W. Sammis, **D. Smeal**, and H. Zhang. 1995. Atrazine dynamics in a field irrigated soil. Proc. Inter. Symp., A.S.A.E. - Water Quality Modeling. Orlando, FL, April 2-5, 1995, pp. 31-40.

- Gregory, E.J., R.N. Arnold, and **D. Smeal**. 1995. Broadleaf weed control in spring-seeded alfalfa with postemergence applications of AC2990-263 and imazethapyr. W.S.W.S. Proc., Vol. 48, pg. 27.
- Arnold, R.N., E.J. Gregory, and **D. Smeal**. 1995. Broadleaf weed control in pinto beans with imazethapyr and imazethapyr combinations. W.S.W.S. Proc., Vol. 48, pg. 29.
- Shultz, E.B. Jr., W.G. Bragg, J. Whittier, S.G. Haase, D.R. Swanson, **D. Smeal**, and E.J. Gregory. 1994. A clean-burning biofuel as a response to adverse impacts of woodsmoke and coal- smoke on Navajo health. Proc. Bioenergy '94 Conference, Reno, NV October 2-6.
- Gregory, E.J., R.N. Arnold, and **D. Smeal**. 1994. Weed control in field corn with metribuzin applied postemergence alone or in combination. W.S.W.S. Proc. 47(16). ISSN: 0091-4487.
- Arnold, R.N., E.J. Gregory, and **D. Smeal**. 1994. Broadleaf weed control in field potatoes. W.S.W.S. Proc. 47(17).
- Murray, M.W., R.N. Arnold, E.J. Gregory, and **D. Smeal**. 1993. Early broadleaf weed control in potatoes with herbicides. Proc. Pacific Div. A.A.A.S. Vol. 12, Part I, pg. 55.
- Arnold, R.N., E.J. Gregory, **D. Smeal**, and M.W. Murray. 1990. Residual effects of DPX-R9674 in field corn, pinto beans and potatoes. Proc. West. Soc. Weed Sci., 43:77.
- Arnold, R.N., E.J. Gregory, and **D. Smeal**. 1989. Effects of herbicides on annual broadleaf weeds in pumpkins grown on coarse-textured soils. Proc. West. Soc. Weed Sci. 42:237.
- Smeal, D.**, R.N. Arnold, and E.J. Gregory. 1988. Yield and maturity of chile peppers (*Capsicum annuum*) as influenced by irrigation. Proc. N.M. Acad. Sci.
- Arnold, R.N., E.J. Gregory, and **D. Smeal**. 1988. The Russian wheat aphid. Proc. N.M. Acad. Sci.
- Arnold, R.N., E.J. Gregory and **D. Smeal**. 1987. Line source herbigation of cinmethylin (SD-95481) for grass control in pinto beans. Proc. Western Soc. Weed Sci. 40:133-140.
- Arnold, R.N., E.J. Gregory, **D. Smeal**, and W.J. Price. 1987. Broadleaf weed control in carrots. Proc. 63rd. Ann. Meet. S.W. and Rocky Mtn. Div., Amer. Assoc. Advance. Sci., pg. 12.

Experiment Station Publications

Bulletins

- Arnold, R.N., **Dan Smeal**, and Michael K. O'Neill. 2003. Weed management in irrigated crops. CSU Tech Bull. LTB03-1, pp. 25-26.
- Smeal, D.**, J. Tomko, E.J. Gregory, and R.N. Arnold. 1994. Water-use and yield of alfalfa in northwestern New Mexico. N.M.S.U Agric. Exp. Sta. Bull. 770.

Research Reports

- Smeal, D.**, C.K. Owen, R.N. Arnold, J.F. Tomko, and E.J. Gregory. 2001. Thirty years of climatological data: 1969 to 1998. NMSU's Agricultural Science Center at Farmington, New Mexico. Agric. Exp. Sta. Res. Rpt. 744. New Mex. State Univ., Las Cruces, NM.
- Arnold, R.N., M.W. Murray, E.J. Gregory, and **D. Smeal**. 1997. Weed control in field potatoes. N.M.S.U. Agric. Exp. Sta. Res. Rpt. No. 723.
- Arnold, R.N., M.W. Murray, E.J. Gregory, and **D. Smeal**. 1996. Weed control in field corn with postemergence herbicides. N.M.S.U. Agric. Exper. Sta. Res. Rep. 709.
- Arnold, R.N., M.W. Murray, E.J. Gregory, and **D. Smeal**. 1996. Weed control in pinto beans with imazethapyr alone or in combination with other herbicides. N.M.S.U. Agric. Exper. Sta. Res. Rep. 710.
- Gregory, E.J., I. Benally, J.M. Jordan, M. Rosales, R.N. Arnold, and **D. Smeal**. 1995. Peach variety evaluation in northwestern New Mexico, 1970-1988. N.M.S.U. Agric. Exp. Sta. Res. Rep. 701.
- Gregory, E.J., C.K. Owen, R.N. Arnold, **D. Smeal**, and J. Tomko. 1995. Twenty five years of climatological data, 1969-1993. Agricultural Science Center at Farmington, NM. N.M.S.U. Agric. Exp. Sta. Res. Rep. 693.
- Gregory, E.J., R.N. Arnold, **D. Smeal**, and M.W. Murray. 1993. Dry bean variety trials, Agricultural Science Center at Farmington, 1980-1988. N.M.S.U. Agric. Exp. Sta. Res. Rpt. 679.
- Arnold, R.N., M.W. Murray, E.J. Gregory, and **D. Smeal**. 1992. Weed control in established alfalfa (*Medicago sativa*) in northwestern New Mexico. N.M.S.U. Agric. Exp. Sta. Res. Rpt. 663.
- Gregory, E.J., R.N. Arnold, **D. Smeal**, C. Owen, and M.W. Murray. 1992. Potato cultivars harvested at different dates in northwestern New Mexico. N.M.S.U. Agric. Exp. Sta. Res. Rpt. 662.
- Arnold, R.N., E.J. Gregory, **D. Smeal** and M.W. Murray. 1990. Annual weed control with selected herbicides in field corn grown in coarse-textured soils. N.M.S.U. Agric. Exp. Sta. Res. Rpt. No. 643.
- Gregory, E.J., C.K. Owen, R.N. Arnold, and **D. Smeal**. 1989. Twenty years of climatological data, 1969-1988. N.M.S.U. Agric. Exp. Sta. Res. Rpt. No. 640.
- Arnold, R.N., E.J. Gregory and **D. Smeal**. 1987. Evaluations of insecticides for control of corn earworm [*Heliothis zea* (Boddie)] on sweet corn in northwestern New Mexico, 1979-1983. N.M.S.U. Agric. Exp. Sta. Res. Rep. 598. 3 pp.

CAHE ACS/CES Special or Technical Reports

- Hathorn, Gary, Mick O'Neill, Rick Arnold, Daniel **Smeal**, and Curtis Owen. 2003. Field crops variety and fertilizer recommendations. Cooperative Extension Service and Agricultural Experiment Station. New Mexico State University. Las Cruces, NM, USA.
- Hathorn, G., M. O'Neill, R.N. Arnold, **D. Smeal**, C. Owen, and J. Tomko. 2001. Alfalfa production in the four corners. Coop. Ext. Svc. and Agric. Sci. Ctr. Publ. 40 pages.
- Hathorn, G., M. O'Neill, R.N. Arnold, **D. Smeal**, C. Owen, and J. Tomko. 2000. Field Crops – Variety and fertilizer recommendations. NMSU Coop. Ext. Svc. Bull.
- Gregory, E.J., C.K. Owen, R.N. Arnold, and **D. Smeal**. 1994. Performance of spring oat varieties in northwestern New Mexico 1979-1988. N.M.S.U. Agric. Exp. Sta. Coop. Ext. Ser. Tech. Rpt. 17.
- Arnold, R.N., E.J. Gregory, **D. Smeal**, and W.J. Price. 1987. The Russian wheat aphid. N.M.S.U. Agric. Exp. Sta. Spec. Rep. 70. Nov.

Technical Reports (N.M.W.R.R.I.)

- Sammis, T.W. and **D. Smeal**. 1983. The Effects of Decreased Watering on Wheat and Barley Yields. Tech. Compl. Rpt., Proj. No. 1-4-23652, N.M. Water Resources Research Institute, Rpt. No. 179. 66 pp.
- Sammis, T.W. and **D. Smeal**. 1983. Effects of Moisture Stress on Corn Production in the High Plains. Tech. Compl. Rpt., Proj. No. B-067-B069, N.M. Water Resources Research Institute, Rpt. No. 171. 64 pp.

Research Completion Reports

- O'Neill, M.K., R.N. Arnold, **D. Smeal**, T. Jim, C.K. Owen, and K.D. Kohler. 2003. Thirty-sixth Annual Progress Report: 2002 Cropping Season. NMSU Agricultural Science Center at Farmington. Agricultural Experiment Station and Cooperative Extension Service. New Mexico State University. Las Cruces, New Mexico, USA.
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- Smeal, D.,** E.J. Gregory, and R.N. Arnold. 1989. Inter-seasonal variability in the water-use production function of alfalfa. WSCS/WSSS Abst.
- Smeal, D.,** E.J. Gregory, and R.N. Arnold. 1988. Consumptive-use of alfalfa compared to reference evapotranspiration as calculated by various methods. Agron. Abst.
- Gregory, E.J., R.N. Arnold, and **D. Smeal.** 1987. Advantages and disadvantages of establishing a science center eight years ahead of the irrigation project. Agron. Abst.
- Smeal, D.,** E.J. Gregory and R.N. Arnold. 1986. Grain corn yield response to evapotranspiration and nitrogen. WSCS Abst. pg. 15.
- Arnold, R.N., E.J. Gregory, and **D. Smeal.** 1986. Efficacy of herbicides on weeds and field corn (*Zea mays*) grown on coarse- textured soils. WSCS Abst. p. 15.
- Smeal, D.** 1985. Potato yield response to nitrogation and evapotranspiration. WSCS/WSSS Abst.
- Arnold, R.N. and **D. Smeal.** 1985. Water-use production functions and consumptive-use curves of alfalfa in northwestern New Mexico. WSCS/WSSS Abst.

(3) Papers and or talks presented at professional society meetings*

2003. Climate-based irrigation scheduling for warm season and cool season turfgrasses. Irrigation Association Annual Conference, San Diego, CA. Nov. 19, 2003.
2003. NMSU/Farmington xeric demonstration garden (poster). Xeriscape Conference (Xeriscape Council of NM). Oct. 17-18, 2003. Albuquerque, NM.
2003. Web-based resources for irrigation scheduling (1 ½ hr. workshop). Southwest Turfgrass Conference. Sept. 23-26, 2003. Ruidoso, NM.
2003. Turfgrass irrigation update (1 hr.). Southwest Turfgrass Conference. Sept. 23-26, 2003. Ruidoso, NM.
2002. Chile pepper (*Capsicum annuum* L.) yield response to nitrogen source and rate. Great Plains Soil Fertility Conference, Denver, CO. March 5-6, 2002.

2001. Development of crop coefficients for turfgrass irrigation scheduling. American Society of Agronomy 93rd Annual Meeting. October 21-26, 2001. Charlotte, NC. (prepared by D. Smeal, presented by M. O'Neill)
2000. Effect of N fertilizer source and rate on the yield, quality and storability of potatoes. Great Plains Soil Fertility Conference, March 7-8, 2000. Denver, CO.
2000. Potato yield and quality as related to fertigation with UAN-32 and calcium nitrate. Western Society of Crop Science and Western Wheat Growers Annual Meeting. June 18-21, 2000. Moscow, ID.
2000. Water use of cool season and warm season turfgrasses in northern New Mexico. Southwest Turfgrass Association Annual Conference, Oct. 24-27, 2000, Ruidoso, NM.
2000. Development of crop coefficients for turfgrass irrigation scheduling. American Society of Agricultural Engineers National Irrigation Symposium, Nov. 14-16, 2000, Phoenix, AZ.
1998. Water conservation through turfgrass selection and irrigation scheduling. Irrig. Assoc. 19th. Ann. Expo. Tech. Conf. San Diego, CA. Nov. 1-3, 1998.
1997. Yield and quality of pasture grasses as related to irrigation. A.S.A. Ann. Meeting, Anaheim, CA. Oct. 26-31, 1997.
1996. Root yield of buffalo gourd as related to water-use. Fifth Inter. Conf. on Desert Develop., Lubbock, TX, Aug. 12-17, 1996.
1996. Sulphur fertilization of wheat and alfalfa with oil refinery by-products. Great Plains Soil Fertility Conf., Denver, CO, March 4-6, 1996.
1995. Relationship between chlorophyll meter readings and alfalfa tissue n content. W.S.C.S. Ann. Meet., Fort Collins, CO, June 18-21, 1995.
1995. Carbohydrate Biofuels III. Consumptive-use and root yield of buffalo gourd (*Cucurbita foetidissima* HBK). 2nd. Biomass Conf. of Americas, Portland, OR, Aug. 21-24, 1995 (prepared by D. Smeal, presented by J. Tomko).
1994. Effect of irrigation on the yield and yield components of tomato. 91st Meet. A.S.H.S. Oregon State Univ., Corvallis. August 7-10, 1994.
1993. Chlorophyll meter evaluation for nitrogen management in corn. Inter. Symposium on Soil Testing and Plant Analysis: Precision Nutrient Management. Olympia, WA, August 14-19, 1993 (prepared by D. Smeal, presented by H. Zhang).
1992. Yield and seed quality of winter canola as related to irrigation. W.S.C.S. Annual Meeting, Pullman, WA. 6/28 - 7/1, 1992.
1990. Yield response of five alfalfa cultivars to irrigation. WSCS Annual Meet., Las Cruces, NM, June 17-20, 1990.
1989. Line-source research on water and nitrogen management. 28th New Mexico Agric. Chem. and Plant Food Assoc. Educational Meeting, Roswell, N.M. January 10-11, 1989.
1989. Influence of irrigation level on chile yield and maturity. 28th N.M. Agric. Chem. and Plant Food Assoc. Educ. Meet., Roswell, N.M. January 10-11, 1989.

1989. Interseasonal variability in the water use - production function of alfalfa. WSSS/WSCS Joint Annual Meeting, Bozeman, MT, June 19-20, 1989.
1988. Consumptive-use of alfalfa compared to reference evapotranspiration as calculated by various methods. ASA-CSSA-SSSA Annual Meeting, Anaheim, CA., November 27 - December 2, 1988.
1988. Yield and maturity of chile peppers (*Capsicum annuum* L.) as influenced by irrigation. N.M. Acad. Sci. Fall Meeting. Farmington, N.M. September 16-17, 1988.
1986. Grain corn yield response to evapotranspiration and nitrogation. W.S.C.S. Ann. Meet., Moscow, Idaho. June 22-26, 1986.
1985. Potato yield response to nitrogation and evapotranspiration. W.S.C.S./W.S.S.S. Joint Meeting, Univ. of Nevada, Reno. June 16- 20, 1985.
- *Unless indicated otherwise, all presentations were given by Dan Smeal

(3) Other Speeches, Talks or Presentations*

2003. Turfgrass irrigation research and scheduling. Annual breakfast seminar for landscape professionals. Raindrops, Inc. Farmington, NM. Feb. 18, 2003.
2003. IPM in turf. Ornamental and Turf Seminar. N.M.S.U. C.E.S. Farmington, NM. Feb. 26, 2003. (prepared, in part, by Bernd Leinauer).
2003. Irrigation management. 10th Ann. Shiprock Agriculture Days. Shiprock, NM. April 3-4, 2003.
2003. Water conservation research – turfgrass and xeriscape (tour). Fourth Ann. Four Corners Irrig. Workshop. Farmington, NM. July 11, 2003.
2002. Irrigation management and crop water use of alfalfa in the Four Corners area. San Juan Basin Alfalfa and Irrigated Pasture Management Workshop. Cortez, CO. January 10, 2002.
2002. Introduction to botany. Master Gardeners Program. Aztec, NM. February 8, 2002.
2002. Introduction to turfgrass. Master Gardeners Program. Aztec, NM. February 8, 2002.
2002. Water-use and quality of turfgrass in northwestern New Mexico. Golf Course Superintendents Annual Meeting. Farmington, NM. Sept. 9, 2002.
2002. Conserving water in the landscape through turfgrass selection and irrigation scheduling. New Mexico Water Research Symposium. Socorro, NM. Aug. 13, 2002.
2002. Subsurface drip irrigation in northwestern New Mexico. Improving Irrigation Efficiency in Agriculture Conf. Las Cruces, NM. March 20-21, 2002.
2001. Development of crop coefficients for turfgrass irrigation scheduling. NMSU – CAHE 14th Ann. All-College Conf. Jan. 3, 2001 (prepared by D. Smeal, presented by M. O’Neill).
- 2001 Principles of irrigation. 8th Annual Shiprock Agricultural Days. Shiprock, NM. March 22, 2001.

2001. Calibrating small, tractor-towed sprayers. 9th Annual Four Corners Weed Management Symposium. Farmington, NM. April 10, 2001 (assisted by J. Tomko).
2001. Irrigation for turfgrass. 2nd Annual Four Corners Irrigation Workshop. Farmington, NM. June 21, 2001.
2000. Turfgrass irrigation. Turf and Ornamental Workshop, NMSU Coop. Ext. Svc., Mar. 22, 2000, Los Lunas, NM.
2000. Turfgrass irrigation management. Master Gardeners Program, Mar. 3, 2000, Farmington, NM.
2000. Pasture and alfalfa irrigation. San Juan Basin Alfalfa & Irrigated Pasture Workshop. March 28, 2000, Farmington, NM.
2000. Basic plant botany - Master Gardeners Program, Farmington, NM. Jan. 28, 2000.
2000. Growing turfgrass varieties - Ornamental and Turf Seminars: Hobbs, NM. Feb. 8, 2000.
2000. Growing turfgrass varieties. Ornamental and Turf Seminar. Farmington, NM. Feb. 29, 2000.
- 1999 Principles of irrigation. Basin Coop. Workshops; Durango, CO (Feb 23, 1999) and Cortez, CO (Feb 24, 1999).
1998. Basic plant botany. Master Gardener Program. Farmington, NM. March 27, 1998.
1995. Principles of irrigation. Community service class at San Juan College, Farmington, NM Feb. 1 - Mar. 8, 1995, (6, 2.5-hour sessions).
1990. Pinto bean irrigation research in northwestern New Mexico. Seminar - Four States Ag. Expo., Cortez, CO, February 23, 1990.
1984. Alfalfa growth and yield as related to evapotranspiration. NMSU Agric. Sci. Ctr. in Tucumcari, NM, August, 17 1984.
- *Unless indicated otherwise, all presentations were given by Dan Smeal

(4) Grants and Proposals

Funded Projects (Successfully Completed)

Years of Performance	Project Title	Funding Source and Amount
2003 O'Neill & Smeal	Enhancing irrigation efficiency through education	U.S. Bureau of Reclamation \$10,000.00
2002	Cooperative agreement for demonstration of water-efficient plants and turfgrass irrigation scheduling program validation	U.S. Bureau of Reclamation \$10,000.00
2002	Growth potential of <i>Chrysanthemum cinerariaefolium</i> L. for pyrethrin production on the Colorado Plateau of northwestern New	MGK Company \$3,000.00

	Mexico.	
2001	Development and evaluation of an irrigation scheduling program for turfgrass	U.S. Bureau of Reclamation \$5,000.00
2001 O'Neill & Smeal	Four corners irrigation workshop	U.S. Bureau of Reclamation \$5,000.00
2001-2002 O'Neill & Smeal	Sub-surface drip irrigation system design and installation	U.S. Bureau of Indian Affairs \$80,000.00
2000-2001	Growth Potential of <i>Chrysanthemum cinerariaefolium</i> L. for pyrethrum production on the Colorado Plateau of Northwestern New Mexico	MGK, Company \$6,000.00
1998-2000	Development and validation of an irrigation scheduling program for turfgrass	U.S. Bureau of Reclamation \$23,500.00
1998-2000	Effect of N fertilizer source and rate on the yield, quality and storability of potatoes	Hydro-Agri, North America, Inc. \$19,200.00
1998-1999	Effects of organic fertilizers on the growth and yield of alfalfa, corn, chile peppers, and potatoes	BioFlora International \$3,500.00
1998-1999	Effects of volcanic ash fertilization on the growth and yield of corn, potatoes, and chile peppers	Morningstar Corp. \$3500.00
1993-1999	Effects of tillage and nitrogen fertilization on crop growth, water-use and soil characteristics	State-Hatch
1997-1998	Effects of a water-absorbing polymer on the growth, yield, and water-use efficiency of corn and winter wheat	McMahon Bioconsulting Inc. \$3500.00
1993-1996	Effects of Sulfur and Phosphorus Fertilizer on Soil pH and the Growth, Yield and Quality of Agronomic Crops	Giant Industries & Gary-Williams Energy Corp. \$12,000.00
1994-1997	Water-use and Yield of Buffalo Gourd in Northwestern New Mexico	NEOS Corporation & Western Regional Biomass Energy Program (DOE) \$7,000.00
1992-1995 Sammis & Smeal	Atrazine Transport and Distribution in a field Soil Under Different Irrigation Regimes	USDA/CSRS \$48,860.00
1983-1994	Water-use Production Functions and Nitrogen-use Efficiencies of Sprinkler Irrigated Crops	State - Hatch
1992-1993 Smeal & Zhang	Corn Growth and Yield as Affected by Starter N Provided by Urea and Steer Manure	Navajo Agricultural Products Industry (NAPI)
1992-1995 Smeal & Zhang	Evaluation of a Chlorophyll Meter as a Fertilizer Management Tool	NAPI
1988-1996	Navajo Agricultural Products	NAPI

Gregory, Arnold & Smeal)	Inc. Supplemental Funding	\$350,000.00
1995	Research Apprenticeship Program	USDA-CSRS \$2,500.00
1988-1994 Gregory, Arnold, & Smeal)	Vegetable Management Practices for Northwest New Mexico	State - Hatch
1994	Research Apprenticeship Program	USDA-CSRS \$2,492.00
1992	Research Apprenticeship Program	USDA-CSRS \$1,633.00
1988	Research Apprenticeship Program	USDA-CSRS \$1,000.00
1987	Research Apprenticeship Program	USDA-CSRS \$1,596.00
1985	Research Apprenticeship Program	USDA-CSRS \$2,394.00
1980-1983 Sammis & Smeal	Irrigated Agricultural Decision Strategies for Variable Weather Conditions	N.M. Water Resources Research Institute (W.R.R.I.)
1980-1983 Sammis & Smeal	Effects of Decreased Watering on Wheat Yields in the High Plains Area of New Mexico	Interstate Streams Commission

Proposals Submitted (Not Funded)*

2003. H₂O Strategies, Inc. (Phillip S. Fleming) to evaluate a soil moisture control system. Total request: \$85,000.00. This was part of a larger proposal submitted to USDA/CIG by H₂O Strategies, Inc. with additional support requested from the New Mexico Water Innovation Fund. **Dan Smeal** and Mick O’Neill.
2002. National Zoysiagrass test and 2002 National buffalograss test. Pre-proposals submitted to National Turfgrass Evaluation Program. Beltsville, MD. August 27, 2001. **Dan Smeal**.
2001. National Turfgrass Evaluation Program - Bermudagrass. Requested \$6,000.00. **Dan Smeal**.
2001. Profitable Subsurface Drip Irrigation for the Western Intermountain Region. USDA/CSREES. Initiative for Future Agriculture and Food Systems Program. Total request – \$2,500,598.00 (three years) (co-collaborator with M. O’Neill).
2000. Development and Evaluation of an Irrigation Spreadsheet Program for Turfgrass. US Golf Assoc. Green Section, Turfgrass and Environmental Research. Total request - \$46,000.00 (three years) (**Smeal** and Leinauer).

2000. Efficient Irrigation for Crop Production on Small-scale Navajo Farms to Enhance Sustainable Agriculture. WSARE: USDA/CSREES Sustainable Agriculture Research and Education Program. Total request – \$307,025.00 (three years). (major participant with P.I. M. O’Neill).
2000. Collection and Validation of Baseline Data for Irrigation Scheduling on Golf Courses in the Southwest. Golf Course Superintendents Association of America. Total request - \$36,000.00 (three years). (**Smeal** and Leinauer).
1991. USDA-CSRS Research Apprenticeship Program. Requested \$2,472.00. **Dan Smeal**.
1990. Evaluation of the Potential for Groundwater Contamination by Atrazine Below Sandy Soils of Northwestern New Mexico as Affected by Irrigation. Western Region - Pesticide Impact Assessment Program. Requested \$27,340.00. **Dan Smeal and Rick Arnold**.
1990. USDA-CSRS Research Apprenticeship Program. Requested \$2,294.00. **Dan Smeal**.
1989. Use of Irrigation Scheduling on the Navajo Indian Irrigation Project to Conserve Energy and Water. N.M. Dept. Energy, Minerals and Natural Resources. Requested \$37,526.00. **Dan Smeal and Joe Gregory**.
1989. Effect of Tillage Method on the Water Use-Production Function and Atrazine Leaching Rate in Corn. N.M. Water Resources Research Institute. Requested \$72,706.00. **Ted Sammis and Dan Smeal**.
1989. USDA-CSRS Research Apprenticeship Program. Requested \$2,087.60. **Dan Smeal**.
1988. Effects of Acid Precipitation on the Growth and Yield of Agronomic Crops. U.S.D.A. Requested \$68,944.00. **Dan Smeal**.

*unless otherwise indicated, all proposals were submitted by Dan Smeal

4. Cooperative Extension Activities

Although my position is considered 100% research, I’ve spent a considerable amount of time in extension related activities. I frequently give presentations at regional seminars, workshops, and master gardener sessions (see Other Speeches, Talks, and Presentations above) and have collaborated and served on extension-related committees with many cooperative extension personnel. I also frequently assist and provide valuable information to local growers in relation to irrigation management or other water management/conservation techniques in vegetable or crop production and landscaping.

5. Other Service

a. Departmental

2003. Collaborated with Dr. Ted Sammis, NMSU Plant and Environmental Sciences Department, on development of irrigation scheduling spreadsheets for turfgrass (NMCC website) and other internet-accessible publications.

1980-2006. Collaborated with Dr. Sammis on numerous crop and turf consumptive-use studies and we've co-authored numerous publications (both journal and web-based) pertaining to crop water use.

1994-1997. Provided guidance and assistance to Dr. Sammis' graduate student (Daniel Asare, PhD) who did field work pertaining to the leaching rate of atrazine at the ASC, Farmington.

1998-2002. In collaboration with the state climatologist (Ted Sammis), I installed frost gauges and collected frost depth information in the Farmington area.

2000-2002. I collaborated with Dr. Ted Sammis and Dr. John Mexal on evaluating the relationship between accumulative chill units and growing degree-days until budding in apple trees. (collected data in Farmington area between 2000 and 2002).

1985-2006. In collaboration with the state climatologist I help maintain the New Mexico Climate Center automated weather stations at Farmington (ASC and NAPI).

I've attended and participated in Agric. Sci. Ctr. Field Days at Clovis, NM (1981-1982), Tucumcari, NM (1984 and 1989), Los Lunas (2000 and 2002) and Farmington, NM (1984 - 2006).

1984-2006. I've attended and participated in Agric. Sci. Ctr. Advisory Council annual meetings at Farmington, NM.

Luncheon reception with Dr. Miley Gonzalez, Steve Loring and ASC, Farmington advisory committee, Feb. 22, 2001.

b. College

Attended AES Annual Meetings (1984, 1985, 1986) and All-College Conferences (1987, 1990 – 2003).

Attended seminar 'Obtaining Funding for Faculty Research', Las Cruces, NM, March 21, 1991.

Member - Soil and Water Testing Lab Committee - 1988.

c. Extension

Published weekly water-requirement estimates for turfgrass and alfalfa in the Farmington Daily Times newspaper. April through October 2003.

Coordinated the presentation of videoconference 'Land Application of Biosolids' at San Juan College, Farmington, NM, April 9, 1996.

Published weekly estimates of alfalfa and grass water-use in local newspaper (Daily Times) for irrigation scheduling – 1995

Represented the Farmington ASC at the N.M. Extension Support Council Annual Meeting in Roswell, NM. May 19-20, 1989.

Have presented numerous talks at local workshops, seminars, etc. These are listed under 'Other speeches and talks' and 'State or Regional' meetings.

d. Graduate School

Have assisted graduate students with on-site (Farmington ASC) research activities

f. University

2000. Recipient of the Stephen W. and Robert E. Roberts Memorial Staff Award, New Mexico State University.

f. Community

Meetings

2003. City of Farmington Water Conservation Committee. Office of Mayor Standley, Farmington, NM. March 26, 2003.

2003. Homeowner's Show. Animas Valley Mall, Farmington, NM. March 1-2, 2003. Handout: A Practical Guide to Managing Irrigations on Turfgrass.

2003. San Juan Agric. Water-Users Annual Meeting. Bloomfield, NM. Jan. 14, 2003.

2003. Annual breakfast seminar for landscape professionals. Raindrops, Inc. Farmington, NM. Feb. 18, 2003. (invited – presented paper).

2003. Water management during drought meeting. Farmington Mayor's office. Mayor Standley and other city officials. Farmington, NM. Feb. 11, 2003. (invited)

2003. City of Farmington water management plan. City board meeting, Feb. 19, 2003.

2002. Attended and participated in Hammond Conservancy District Water Management Plan Meeting. Bloomfield, NM. February 26, 2002. (invited).

2002. Attended San Juan Ag Water Users Annual Meeting. Bloomfield, NM. January 17, 2002.

2001. Eighth Annual Shiprock Agricultural Days. Shiprock, NM. March 22, 2001 (invited speaker).

2001. Attended and participated in the 'Development of the Dineh Demonstration Farm', planning committee meeting. Feb. 8, 2001, Shiprock, NM.

1996. Panel member - San Juan County Farm and Livestock Bureau, Panel discussion on water management -. 'Who's Watching Your Water'. Feb. 22, 1996.

1996. Attended San Juan County Turf and Ornamental Workshop, Farmington, NM, March 13-14, 1996

1996. Participated in meetings of the Hammond Conservancy District. Providing crop consumptive-use data for future water planning. April 4 and May 29, 1996.

1994. Attended Four Corners Weed Control Symposium, Farmington, NM. March 3, 1994.

1986. N.A.P.I. Potato Tissue Culture Meeting, Farmington, NM Nov. 11 and Dec. 12, 1986.

1986. N.A.P.I./B.I.A./Science Center Meeting, Farmington, NM Nov. 21, 1986.

Attend and participate in the monthly Farmington Chamber of Commerce Agriculture Committee meetings.

Regularly attend and participate in the annual 'Celebration of Agriculture' breakfasts sponsored by Farmington Chamber of Commerce, February or March of each year.

Advisement and Consulting

1984-2003. Have consulted or advised Navajo Agricultural Products Industry (NAPI) on various projects:

- a) Calibration of neutron probes and set-up of automated weather data retrieval system.
- b) Provided and configured a computer an irrigation scheduling program (assisted by Dr. Ted Sammis)
- c) Taught seminars on irrigation management and further advised crop managers on irrigation scheduling procedures.
- d) Helped evaluate outputs and water application uniformity characteristics of center pivots.

Tour and advisement/consultation, Dineh Demonstration Farm. Feb. 8, 2001, Shiprock, NM.

San Juan Mining Co: Evaluation of plan to irrigate native plants on coal strip-mining sites.

Advised San Juan Country Club golf course superintendent on proposed buffalograss plantings.

Frequently provide counseling or advisement to other growers in the Four Corners region on crop or turfgrass consumptive-use, irrigation system design, and irrigation scheduling.

Other

Member: City of Farmington, Water Conservation Committee

Member: Hammond Conservancy District – Water Management Planning Committee

Member: Hammond Conservancy District, San Juan County

Member: Farmington Chamber of Commerce Agriculture Committee.

Contributed to the development of a draft water management plan for the Hammond Conservancy District. Bloomfield, NM. February-October, 2002.

Agreed to teach a Water Management class at San Juan College, Farmington, NM (spring, 2002) but class was not held due to insufficient student enrollment.

Science Fair Judge - Rio Vista Middle School (1990 and 1991 and 1992), and Tibbets Junior High (1990 and 2002).

Spoke at Koogler Middle School during Career Fair. Explained career choices available in agriculture. Aztec, NM. April 14, 1992.

Cooperated with local Soil Conservation Service personnel in evaluation of an irrigation surge valve.

Provided many interviews to local newspaper regarding research at the ASC. Many of these stories appeared in other newspapers through the AP news service.

g. State or Regional

Meetings

2003. Fourth Annual Four Corners Irrigation Workshop. Shiprock, NM. July 10 & 11, 2003 (presented tour).

2003. Ornamental and Turf Workshop. Farmington, NM. Feb. 26 & 27, 2003 (presented paper).

2003. 11th Annual Four Corners Weed Management Symposium. Durango, CO. March 6, 2003.

2003. Urban Irrigation and Water Conservation Conference. Santa Fe, NM. March 29, 2003 (presented handout on turf irrigation mgmt.).

2003. 10th Annual Shiprock Agriculture Days. Shiprock, NM. April 3 & 4, 2003 (presented paper).

2002. 47th. Annual (W.R.R.I.) New Mexico Water Conference. Ruidoso, NM. Oct. 9-11, 2002.

2002. Golf Course Superintendents Annual Meeting in Farmington, NM. Sept. 13, 2002 (invited speaker).

2002. New Mexico Water Research Symposium. Socorro, NM. Aug. 13, 2002 (presented paper).

2002. Third Annual Four Corners Irrigation Workshop. Cortez, CO. July 11-12, 2002.

2002. Xeriscape Conference: 'Conservation for a Sustainable Future'. Albuquerque, NM. Feb. 22-23, 2002.

2002. Improving Irrigation Efficiency in Agriculture Conference. Las Cruces, NM. March 20-21, 2002 (presented poster).

2002. San Juan Basin Alfalfa and Irrigated Pasture Management Workshop. Cortez, CO. January 10, 2002 (invited speaker).

2001. Attended Ninth Annual Four Corners Weed Management Symposium, Farmington, NM. April 10, 2001.

2001. Second Annual Four Corners Irrigation Workshop. Farmington, NM. June 21-22, 2001 (invited speaker).
2001. Rio Grande Golf Course Superintendents Association Meeting. Farmington, NM. July 9, 2001 (invited).
2001. San Juan Basin Alfalfa & Irrigated Pasture Workshop, Durango, CO. Jan. 30, 2001
2000. San Juan Basin Alfalfa & Irrigated Pasture Workshop, Farmington, NM. March 28, 2000 (invited speaker).
2000. 8th Annual Four Corners Weed Symposium.. Cortez, CO. April 4, 2000
2000. Four Corners Irrigation Workshop, Cortez, CO - Feb. 17, 2000.
1999. Xeriscape Conference, Albuquerque, NM - March 5-6, 1999.
1999. San Juan County Weed Symposium, Durango, CO - April 8, 1999.
1996. 4th Annual 4-Corners/San Juan Basin Weed Symposium, Cortez, CO, March 21, 1996
1996. 41st Annual New Mexico Water Conference "Integrated Water Resources Management: Northwestern New Mexico as a Case Study" - Farmington, NM, Sept. 19-20, 1996.
1993. Inaugural Meeting of New Mexico Vegetation Management Association, Albuquerque, NM. Nov. 9-11, 1993 (participant).
1992. Special Meeting: The Role of Agriculture in State Water Planning. Albq., NM. 9/29/92 (participant).
1991. Attended and participated in the State Wide Tillage Research Meeting, Albuquerque, NM, March 20, 1991.
1990. Four States Ag. Expo. Seminar in Cortez, CO., February 23, 1990 (presented paper).
1989. 2nd Specialty Crop and Farmers Market Conference in Santa Fe, NM Apr. 20-21, 1989.
1989. N.M. Agric. Chemical and Plant Food Assoc. 28th Educational Meeting in Roswell, NM Jan. 10-11, 1989 (invited – presented two papers).
1988. Conference on Production and Marketing Alternatives for Specialty Crops on Small Farms. Santa Fe, NM April 28-29, 1988 (participant).
1985. New Mexico Water Resources Research Institute Symposium - "Water and Science" in Socorro, New Mexico, Feb. 15, 1985.
1982. New Mexico Water Conference - 27th Annual Meeting - "Hope for the High Plains" in Clovis, New Mexico, Apr. 1-2, 1982 (participant).

Other

Assisted in the selection of candidates for the Presidential Awards for Excellence in Science Teaching. N.M. Dept. of Education.

Colorado State University - Yellowjacket Agric. Experiment Station: Advised on experimental design (Abdel Berrada).

Have cooperated with the N.M. State Engineers Office regarding future agricultural water use in the Four Corners Region of New Mexico.

h. *National or International*

Meetings Attended

- 2003. 24th Annual International Irrigation Show. San Diego, CA. Nov. 18-20, 2003 (presented paper).
- 2003. Xeriscape Conference (Xeriscape Council of NM). Albuquerque, NM. Oct. 17-18, 2003 (presented exhibit).
- 2002. Great Plains Soil Fertility Conference in Denver, CO. March 5-6, 2002 (presented paper).
- 2000. Great Plains Soil Fertility Conference, March 7-8, 2000. Denver, CO. (presented paper).
- 1998. 12th. Annual 'Think Trees' Conference. Albuquerque, NM. Jan. 29-30, 1998.
- 1996. Great Plains Soil Fertility Conference, Denver, CO. March 4-6, 1996. (presented paper).
- 1996. Meeting: Fifth International Conference on Desert Development. Lubbock, TX, Aug. 12-17, 1996 (presented paper).
- 1995. National Science Foundation's 4th National Conference "Diversity in the Scientific and Technological Workforce" in Washington D.C., Sept. 21-23, 1995. Two papers were presented at this meeting by students who served as apprentices on two research projects at the science center.
- 1994. Great Plains Soil Fertility Conference, Denver, CO. March 10-11, 1994.
- 1993. A.S.C.E. Irrigation and Drainage Div. National Conference on Irrigation and Drainage Engineering - 'Management of Irrigation and Drainage Systems: Integrated Perspectives' - Park City, UT, July 21-23, 1993.
- 1990. IRDC-90, Irrigation Research and Development in the 90s. International Conference. University of Lethbridge, Alberta, Canada. July, 17-20, 1990. (participant).
- 1987. International Conference on Measurement of Soil and Plant Water Status. Utah State University, Logan. July 6-10, 1987.

Other

- 2000. Participated in USDA's Millennium Gardens Initiative – Fall, 2000.

i. Profession

Committees

WCC-202 Committee: Climatic Data Applications in Irrigation Scheduling and Water Conservation. Chairman – Urban Issues subcommittee.

Certifications

Certified Landscape Irrigation Auditor – IA

Certified Irrigation Designer - IA

Professional Society Meetings

2003. Irrigation Association Technical Conference Committee. San Diego, CA. Nov. 18, 2003.

2003. WCC-202 ‘Climatic Data Applications in Irrigation Scheduling and Water Conservation’ Committee Meeting. Kansas City, MO. May 20-21, 2003. Chaired the urban irrigation subcommittee.

2003. Southwest Turfgrass Association Annual Conference. Ruidoso, NM. Sept. 23-26, 2003 (presented paper and workshop).

2002. SW Turfgrass Assoc. Annual Conference. Ruidoso, NM. Oct. 22-25, 2002.

2001. SW Turfgrass Assoc. Annual Conference, Ruidoso, NM. October 9-12, 2001.

2001. Twenty-second Annual International Irrigation Show and Technical Conference (Irrigation Assoc.), San Antonio, TX. November 2-6, 2001.

2000. Western Society of Crop Science and Western Wheat Growers Annual Meeting. June 18-21, 2000. Moscow, ID. (presented paper).

2000. American Society of Agricultural Engineers National Irrigation Symposium, Phoenix, AZ. Nov. 14-16, 2000. (presented paper).

2000. SW Turfgrass Assoc. Annual Conference, Oct. 24-27, 2000, Ruidoso, NM (invited speaker).

1999. SW Turfgrass Assoc. Annual Conference, Ruidoso, NM, October 19-22, 1999.

1999. Western Society of Crop Science/Western Alfalfa Improvement Conference, Powell, WY. June 28-29, 1999.

1997. American Society of Agronomy Annual Meeting. Anaheim, CA. Oct. 26-31, 1997. (presented paper).

1997. Southwest Turfgrass Association Annual Conference. Ruidoso, NM. Oct. 13-15, 1997.

1996. Irrigation Association's 17th Annual International Irrigation Exposition and ASAE's Technical Conference, San Antonio, TX, Nov. 3, 1996.
1995. Western Society of Crop Science Annual Meeting, Fort Collins, CO. June 18-21, 1995. (presented paper).
1995. Irrigation Association's 16th Annual International Exposition and Technical Conference, Phoenix, AZ, Nov. 12-14, 1995 (presented paper).
1992. U.S. Committee on Irrigation and Drainage Annual Meeting: National Conference on Irrigation and Water Resources in the 1990's. Scottsdale, AZ. - 10/4-10/92.
1992. Western Society of Crop Science Annual Meeting, Pullman, WA. June 28 - July 1, 1992 (presented paper).
1991. American Society of Agronomy Annual Meeting, Denver, CO., October 27-31, 1991. (presented paper).
1990. Western Society of Crop Science Annual Meeting, Las Cruces, NM June 17-20, 1990 (presented paper).
1989. Western Society of Soil Science/Crop Science Joint Annual Meeting, Bozeman, MT. June 19-20, 1989 (presented paper).
1988. Amer. Soc. Agron./C.S.S.A./S.S.S.A. Annual Meeting. Anaheim, CA., November 27 to December 2, 1988 (presented poster).
1988. New Mexico Academy of Science Fall, 1988 Meeting. Farmington, NM, Sept. 16-17, 1988 (presented paper).
1986. Western Society of Crop Science Annual Meeting in Moscow, Idaho. June 23-26, 1986 (presented paper)
1985. Soil Conservation Society of America/American Society of Agricultural Engineers joint meeting in Albuquerque, New Mexico, Jan. 18, 1985.
1985. American Society of Agricultural Engineers National Conference on Advances in Evapotranspiration, Chicago, Ill., December 16-17, 1985.
1985. Western Society of Crop Science/Western Society of Soil Science joint annual meeting in Reno, Nevada, Jun. 17-19, 1985 (presented paper).

Schools and Special Training

2003. Radiation Safety Class. NMSU, Las Cruces, NM. Jan. 8, 2003.
2003. Applying the ASCE Standardized Reference Evapotranspiration Equations. U.S. Committee on Irrigation and Drainage. Workshop, Inter. Irrig. Show. San Diego, CA. Nov. 17, 2003.
2001. Landscape Drainage Design. Irrigation Assoc. Workshop – San Antonio, TX, November 2, 2001, 6 hours.
2001. Understanding Pumps, Controls and Wells. Irrigation Assoc. Workshop – San Antonio, TX, November 3, 2001, 4 hours.

2001. Microsoft Word Module II Training, San Juan College, Farmington, NM. December 18, 2001.
2000. Agriculture Drip/Micro Design Workshop. IA International Irrigation Show, Phoenix, AZ, Nov. 12-13, 2000.
1999. Irrigation Scheduling Workshop - Valmont Irrigation - Farmington, NM (NAPI) - March 17-18, 1999.
1999. Completed the following computer classes at San Juan College - Farmington, NM:
- Windows 98 - Nov. 29, 1999.
 - MS Word - Dec. 2, 1999
 - MS Excel - Dec. 7, 1999
 - MS Power Point - Dec. 9, 1999
1998. Completed workshop; 'Drip Irrigation in the Landscape'. Irrig. Assoc. Albuquerque, NM. Nov. 19, 1998.
1998. Completed Workshops: 'Field Hydraulics' and 'Sprinkler System Scheduling'. Irrig. Assoc. Albuquerque, NM. Jan. 28, 1998.
1997. Completed Certified Landscape Irrigation Auditor (CLIA) class, Albuquerque, NM. May 8-9, 1997. Certification as CLIA confirmed June 16, 1997.
1996. Seminar: Evelyn Wood Reading Dynamics for Business Professionals, Farmington, NM, Oct. 2, 1996.
1995. Seminar: 'Evapotranspiration and Irrigation Efficiency'. Arvada, CO., Oct. 10-11, 1995. A.S.A.E.
1995. Completed Step 3 process for certification as an Irrigation Designer with the Irrigation Association, Nov. 11, 1995. Certification as Sprinkler System Irrigation Designer. Confirmed, Nov. 3, 1996.
1993. Troxler Nuclear Radiation Safety Training, Albuquerque, NM, April 27, 1993.
1993. Pesticide Certification Exams for Public Applicators License, Farmington, NM, May, 12, 1993.

Proposal or Manuscript Reviews:

1991. Water Conservation Using Evapotranspiration Broadcast and Dynamic Control. M. Hirsch. USDA Small Bus. Innov. Res. Prog. December, 1991.
1991. Locally Calibrated Integrated Irrigation Scheduling Approach. S. Pleban. USDA Small Business Innovation Research Program. January, 1991.
1985. Techniques for Separating Plant Transpiration from Evapotranspiration. (anon.) 1985.
1984. The Use of Salt-treated Watershed Areas to Enhance Yields of Dryland Crops. D.H. Fuehring. W.R.R.I. 1984.

Other

2001. Meetings with Dr. S. Miyamoto, Texas A&M Univ., El Paso, TX and Dr. Bernd Leinauer and Craig Runyan, NMSU, Las Cruces, NM regarding proposal for Rio Grande Water Conservation Initiative, Jan. 10, 2001.
2001. Collaborated with Drs. Hailin Zhang and James Dangler (Navajo Agricultural Products Industry) in various soil fertility and irrigation studies (1992-2001).
1988. Cooperated with Utah State University - Identification of water-stress resistant varieties of alfalfa using plant carbon isotope ratios. 1986-1988.
1987. Evaluation of a subsurface irrigation system and its practicability of use for agronomic crops. Sponsored by England Sales and Service, Farmington, N.M. 1987.
1987. Evaluation of atmometer for estimating potential evapotranspiration. 1987.
1987. Evaluation of a soil moisture-sensing device for irrigation scheduling. 1986-1987. Hydrodyne Products, Inc.
1986. Cooperated with Technical Resource Center, Helena, MT. 1986. Provided consumptive-use data.
1986. Have worked cooperatively with Rodale Research, Emmaus, PA in evaluation of Amaranth. 1986.
- Have discussed research with various visiting groups, including agronomists from the Arab Republic of Egypt, students in Agric. Engineering from Fort Lewis College, CO., Western State Research Group from Colorado, Wyoming and Nebraska, N.A.P.I., Toro Packing Co. and other local growers.
- Cooperated with Allelix Seed Co, Ontario, Canada in evaluation of canola varieties.
- Cooperated with Dr. Ted Sammis (Agronomy and Horticulture Dept.) on research project involving maintenance of an automated weather station located on NAPI.

k. Industry and non-profit organizations

1999. Toured farms using drip irrigation and microorganism injection technologies on potatoes, sugar cane and other crops in Los Mochis, Mexico, Nov. 17-19, 1999. Invited. Expenses paid for by private industry.
1997. First Annual Stockosorb Conference, San Diego, CA. Nov. 13-16, 1997. (invited – presented paper). Expenses paid by Stockhausen, Inc.
1995. Participated in National Science Foundation's 'Research Careers for Minority Scholars Program' by serving as mentor to four Fort Lewis College (Durango, CO) students. May-August, 1995.
1988. Participated in Specialty Crop Tour sponsored by N.M.S.U. and C.S.U. Extension Services. Alamosa, CO. June 30 - July 1, 1988.

1988. Feature articles: Have given interviews regarding research to Farmington's 'Daily Times' and the 'Albuquerque Journal' newspapers. 1988.

Cooperated with Fort Lewis College, Durango, CO. in a program funded by the National Science Foundation: "Career Access Opportunities in Science and Technology".

7. Professional societies (1983-2003)

American Society of Agricultural Engineers (1997-present)

Irrigation Association (1987-present):

 Certified Sprinkler Irrigation Designer

 Certified Landscape Irrigation Auditor

 Member – IA Conference Technical Sessions Committee

Southwest Turfgrass Association (1997-2005):

 Certificate of Recognition for Outstanding Contribution (Oct. 27, 2000).

American Society of Agronomy (1985-90)

Western Society of Crop Science (1985-2002)

New Mexico Vegetation Management Association (1993-1997)

U.S. Committee on Irrigation and Drainage (1987-1996)

New Mexico Academy of Science (1987-91)

Crop Science Society of America (1989-90)

Soil Science Society of America (1985-90)

Conservation Tillage Information Center (1984-85)

Soil Conservation Society of America (1984)