

## Richard N. Arnold Vitae

### Personal Data

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### Education

**M.S.**, 1980, Entomology and Plant Pathology, Agricultural Extension Education, and Horticulture, New Mexico State University

**B.S.**, 1975, Crop Science, New Mexico State University

### Experience

#### **Current position**

**College Professor-** Department of Entomology, Plant Pathology and Weed Science, New Mexico State University Agricultural Science Center at Farmington, NM.

#### **Previous positions associated with Department of Entomology, Plant Pathology and Weed Science, Agricultural Science Center, NMSU**

**College Associate Professor**, 2003-2005.  
**College Assistant Professor**, 2002-2003.  
**Pest Management Specialist**, 1986 to 2002.  
**Assistant Professor**, 1984 to 1986.  
**College Instructor**, 1980 to 1984.

## **Past Positions**

**Research Assistant II**, Research Assistant for E.J. Gregory at the Agricultural Science Center at Farmington, in agronomic research to include plot design, interpretation, and analysis of data. May 1980 to July 1980.

**Consultant**, Assisted Mr. Leslie Clayshulte at AGCO Chemical and Seed Company in Mesquite, New Mexico in pesticide application and field scouting. September 1979 to May 1980.

**Assistant**, Technical Service Director of the Navajo Agricultural Products Industry- Responsible for weed and insect control, irrigation scheduling, and fertilizer programs on approximately 30,000 acres. April 1976 to May 1979.

## **Key Highlights of Position/Programs/Projects**

### **Research Responsibility**

My position requires 100% of my budgeted time to be devoted to active research projects and other related activities. Research efforts for the present and future will be directed at the immediate concern of local and state growers, and industry. My research efforts are designed around efficacy and selectivity of new and old pesticides and pesticide combinations for weed and insect control in major crops grown in northwestern New Mexico.

My research activities fall into three categories: 1) weed control in crop and non-cropland, 2) insect control in agronomic or horticulture type crops, and 3) revegetation of disturbed lands with and without coal bed methane produced water for, stand establishment, and erosion control in the intermountain region of northwestern New Mexico. The clientele of these categories have been local and state farm and ranchers, Bureau of Land Management Farmington Field Office (BLM/FFO), United States Forest Service, Oil and Gas Producers, San Juan Cattle Association, Weed Science Society of America cliental, University Colleagues, Urban Communities, Navajo Agricultural Products Industry, Ute Mountain Farm and Ranch Enterprise, and Cooperative Extension Services of the surrounding Four Corners Area.

## Breakout of Research Areas, Titles, and Sources of Funding

Area	Title	Source
Weed Management	Chemical Weed Control in Crops Grown in Northwestern New Mexico.	Hatch and State
Pest Control Management	Weed and Insect Control in Crops Grown in the Four Corners Area.	Grant-in-fee
Revegetation	Revegetation of pipeline right-of-way and/or well sites with and without coal bed methane produced water with selected cool and warm season cultivars, and Forbes for palatability, stand establishment, and erosion control in the intermountain region of northwestern New Mexico.	Grant-in-fee

## Scope and Responsibility of Research Areas

Evaluate efficacy and selectivity of herbicides alone or in combination (registered or experimental) for weed control in major crops grown in northwestern New Mexico. I have also done extensive work in sweet corn controlling corn earworm, and in controlling Mexican bean beetle larvae and adults in dry beans. Revegetation of pipeline right-of-way and/or well sites with selected cool and warm season cultivar's, and forbes for palatability, stand establishment, and erosion control in the intermountain region of northwestern New Mexico was initiated in 2002. Pipeline right-of-way and/or well sites will be chosen for reseeding once disturbed. These cultivars will be evaluated for stand establishment, palatability, and for erosion control. Length of this project was approximately three years. Use of coal bed methane produced water for establishment of native and non-native grasses in the oil and gas producing basin of northwest New Mexico was initiated in 2003. Length of this project was approximately three years. Individuals involved were BLM/FFO, United States Forest Service, San Juan Cattle Association, and Oil and Gas Producers. A local advisory committee directs my research. I am the principle investigator for weed and insect control in northwestern New Mexico, and revegetation of disturbed lands with or without coal bed methane produced water in the intermountain regions of northwestern New Mexico. I also assist the Superintendent with state and regional projects when asked. I am responsible for timely written research results and other pertinent information concerning the protocols. I always try to

strengthen links with the advisory committee and local clientele concerning weed and insect control, whether urban or agronomic.

## **Grants and Proposals**

**Arnold, R.N.** 2002-2005. Revegetation of pipeline right-of-way and/or well sites with or without coal bed methane produced water on selected cool and warm season cultivar's and Forbes for palatability, stand establishment, and erosion control in the inter mountain region of northwest New Mexico.

**Funding Source:** San Juan Basin Oil and Gas Industries

**Funding Amount:** \$120,000.00

**Arnold, R.N.** 1980-2008. Chemical weed control in Agricultural Crops.

**Funding Source:** Chemical Weed Control Industry

**Funding Amount:** \$347,747.00, an average of approximately \$12,419.00 per year.

**Arnold, R.N.** and E.J. Gregory. 1984-1994. Supplemental funding to enhance Variety and Herbicide Testing of State Projects.

**Funding Source:** Navajo Agricultural Products Industry

**Funding Amount:** \$602,000.00, an average of approximately \$55,000.00 per year.

**Arnold, R.N.** 1980-present. Chemical weed control in crops grown in northwestern New Mexico. State-Hatch Project.

**Funding Source:** State

**Funding Amount:** \$6,500.00

**Arnold, R.N.** 1989-1994. CSRS, United State Department of Agriculture Research Apprenticeship Program

**Funding Source:** CSRS, USDA

**Funding Amount:** Approximately \$2,376.00 per year

## **Professional Affiliations**

Western Society of Weed Science-Student Contest Judge-2002.

Western Society of Weed Science-Member-at-Large-1998.

Western Society of Weed Science-Education and Regulatory-Chair. 1997.

Western Society of Weed Science-Sustaining Membership-Chair-1996.

Western Society of Weed Science-Weeds in Horticulture Crops-Chair. 1994.

Western Society of Weed Science-Weeds in Agronomic Crops-Chair. 1992.

Western Society of Weed Science-Member of Weed Ad Hoc Committee for the Weed Management Short Course-1992.

Weed Science Society of America-Member of Weed Alert Committee-1988-1992.

Western Society of Weed Science-Finance Committee-1988-1991.

New Mexico Agricultural Chemical and Plant Foods Association-Member of Scholarship Committee-1995.

New Mexico Academy of Science-President-1989.

New Mexico Academy of Science-Vice-President 1988.

New Mexico Academy of Science-Member-1987-1990.

Weed Science Society of America-Member-1986-present.

Western Society of Weed Science-Member-1986-present.

## **Awards and Recognitions**

Outstanding Weed Scientist for the Public Sector-2006- 59<sup>th</sup> Annual Meeting of the Western Society of Weed Science, Reno, Nevada.

Leadership Award (well seeding/ produced water studies)-2004-Presented by the Bureau of Land Management (BLM/FFO) at the 4-Corners oil and gas conference.

NMSU Staff Appreciation Award-2004-Recognized for outstanding team work with the oil/gas industry, cattle producers, and BLM/FFO collectively for the amelioration of rangelands.

20 year Service Award -2001-received from New Mexico State University.

Outstanding Young Agriculturist -1980-presented by the Farmington Chamber of Commerce.

Future Farmers of America -1992-Honorary Chapter Member - presented by the Kirtland Chapter of the Future Farmers of America.

Outstanding Young Farmer-1980-presented by the New Mexico Jaycees Fall Board, Las Vegas, NM.

### **Key Involvement and General Career Highlights**

Served as an Associate editor for Plant Management Network, Crop Management Section, appointed by the Crop Science Society of America.

Served as reviewer and contributor to the chapter of “Weeds” in the Integrated Pest Management for Potatoes in the Western United States.

Served as reviewer of the Western Society of Weed Science Progress Reports in Sections Weeds of Agronomic Crops and Weeds in Horticulture Crops.

Served on many committees and chaired several professional society offices in the Weed Science Society of American and Western Society of Weed Science.

Have held weed tours at the Science Center concerning my research for other professionals.

Each chemical industry research and development representative that issues a protocol for weed or insect research receives a written research report with Introduction, Materials and Methods, and Results.

I have presented over 80 presentations before professional societies and over 100 presentations to Cooperative Extension Services, Workshops, Master Gardeners, New Mexico Crop Production Association, and etc. either as an invited speaker or participant.

I am a Certified Crop Adviser in the state of Colorado, and I am also involved as a board member for the Certified Crop Adviser Program for the New Mexico.

Will continue to participate with the San Juan County Cooperative Extension Services and Colorado State University Extension Service, promoting dissemination of data, grower conferences, weed symposiums and master gardeners programs.

### **Publications**

#### **Books**

**Arnold, R.N.**, Integrated pest management for potatoes in the western United States. 1986. Contributed the Chapter on Weeds. University of California, Division of Agriculture and Natural Resources Publication 3316.

## **Refereed Journal Article**

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. of Sustainable Forestry*, 23 (2), pp. 47-62.

Smeal, D., M.K. O'Neill, and **R.N. Arnold**. 2005. Forage production of cool season pasture grasses as related to irrigation. *J. of Agricultural Water Management*, Vol. 76, Issue 3, pp 224-236.

**Arnold, Richard N.**, Dan Smeal and Michael K. O'Neill. 2005 Broadleaf weed control in field corn with postemergence herbicides. *J. of Crop Management* doi:10.1094/CM-2005-0224-01-RS.

Smeal, D., M.K. O'Neill and **R.N. Arnold**. 2005. Forage production of cool season pasture grasses as related to irrigation. *J of Agricultural Water Mangement*, Vol. 76, Issue 3, pp 224-236.

**Arnold Richard**, David B. Burnett, Jon Elphick, Thomas J. Feeley III, Michel Galbrum, Mike Hightower, Zhizhuang Jiang, Moin Khan, Matt Lavery, Fred Luffey and Paul Verbeek. 2004. Managing water from water to resource. *J. Oilfield Review*. Pp 26-41.

## **Proceedings**

**Arnold, Richard N.**, Michael K. O'Neill and Dan Smeal. 2008. Broadleaf weed control in dry beans with preemergence followed by sequential postemergence herbicides. *Proc. Western Society of Weed Science*, Vol. 61. p.50, ISSN:0091-4487.

**Arnold, Richard N.**, Michael K. O'Neill and Dan Smeal. 2008. Broadleaf weed control in tribenuron tolerant sunflower with preemergence followed by sequential postemergence herbicides. *Proc. Western Society of Weed Science* , Vol. 61. p.43, ISSN:0091-4487.

**Arnold, Richard N.**, Mick K. O'Neill and Dan Smeal. 2007. Broadleaf weed control in roundup ready alfalfa. *Proc. of the Western Society of Weed Science*, Vol. 60. p.70, ISSN:0091-4487.

Smeal, D., M.K. O'Neill, M.W. West and **R. N. Arnold**. 2007. A differentially-irrigated zeric plant demonstration garden in northwestern New Mexico. *Proc. Irrig. Assoc. 28<sup>th</sup> Ann. Inter. Irrigation Show and Tech Conference*.

- Smeal, Dan., M.W. West, Z.F. Williams, M.K. O'Neill, K.A. Lombard and **R.N. Arnold**. 2007. Efficient irrigation of small plots using a simple inexpensive micro-irrigation system. Proc. ICASALS Conf. Water in Arid and Semiarid Lands: Innovative Approaches and Informed Decision Making.
- 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. of the Western Society of Weed Science, Vol. 59. p.93-94, ISSN:0091-4487.
- Arnold, Richard N.**, Michael K. O'Neill, and Dan Smeal. 2004. Broadleaf weed control in field corn with postemergence herbicides. Proc. of the Western Society of Weed Science Vol. 57. p.61, ISSN:0091-4487
- Arnold, Richard N.**, Michael K. O'Neill and Dan Smeal. 2003. Broadleaf weed control in spring-seeded alfalfa. Proc. Western Society of Weed Science, should have been published on p.47, ISSN:0091-4487.
- Smeal, Dan, **Richard N. Arnold** and Michael K. O'Neill. 2003. Broadleaf weed control in field corn with postemergence herbicides. Proc. Western Society of Weed Science, p.47, ISSN:0091-4487.
- Smith, Kenny W., **Richard N. Arnold** and Dan Smeal. 2003. Russian knapweed control on southern Colorado rangeland. Proc. Western Society of Weed Science, p.31, ISSN:0091-4487.

### **Experiment Station Publications**

- Arnold, Richard N.**, Daniel Smeal, Michael K. O'Neill and Margret M. West. Broadleaf weed control in spring-seeded alfalfa, 1999-2003. 2007. New Mexico State University Agricultural Experimentation Research Bulletin, 795.
- Smeal, Dan, M.K. O'Neill, C.K. Owen, Z.F. Williams, M.W. West, and **R.N. Arnold**. 2006. Thirty five years (1969-2003) of climatological data. New Mexico State University Experiment Research Rpt. 756.
- Hathorn, Gary, Mick O'Neill, **Richard N. Arnold**, Daniel Smeal, Curtis Owen, and Jan Tomko. 2005. Alfalfa production in the four corners. New Mexico State University, San Juan County Cooperative Extension Service.
- Hathorn, Gary, Mick O'Neill, **Richard N. Arnold**, Daniel Smeal, and Curtis Owen. 2005. Field crop variety fertilizer recommendations. New Mexico State University, San Juan County Extension Service.

O'Neill, M.K., C.K. Owen, **R.N. Arnold**, and D. Smeal. 2004. Spring oats research in the four corners region, 1989-1998. New Mexico State University Agricultural Experiment Station Research Bulletin 787.

### **Western Society of Weed Science Progress Reports (Last Five Years)**

**Arnold, Richard N.** Michael K. O'Neill and Dan Smeal. 2008. Control of kochia in hybrid poplar. Western Society of Weed Science Research Progress Report, p. 5, ISSN:0090-8142.

**Arnold, Richard N.**, Michael K. O'Neill and Dan Smeal. 2008. Broadleaf weed control in dry beans with preemergence followed by sequential postemergence treatments. Western Society of Weed Science Research Progress Report, p.63, ISSN:0090-8142.

**Arnold, Richard N.**, Michael K. O'Neill and Dan Smeal. 2008. Broadleaf weed control in field corn with tembotrione alone or in combination. Western Society of Weed Science Research Progress Report, p.77, ISSN:0090-8142.

**Arnold, Richard N.**, Michael K. O'Neill and Dan Smeal. 2008. Broadleaf weed control in field corn with preemergence followed by sequential postemergence herbicides. Western Society of Weed Science Research Progress Report, p.78, ISSN:0090-8142.

**Arnold, Richard N.**, Michael K. O'Neill and Dan Smeal. 2008. Broadleaf weed control in tribenuron tolerant sunflower with preemergence followed by sequential postemergence herbicides. Western Society of Weed Science Research Progress Report, p.92, ISSN:0090-8142.

**Arnold, Richard 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, p.1, ISSN:0090-8142.

**Arnold, Richard N.**, Michael K. O'Neill and Dan Smeal. 2007. Control of downy brome in great basin wildrye with chlorosulfuron combinations. Western Society of Weed Science Research Progress Report, p.2, ISSN:0090-8142.

**Arnold, Richard N.** Michael K. O'Neill 2007. Control of Russian thistle in hybrid poplar. Western Society of Weed Science Research Progress Report, p.21, ISSN:0090-8142.

**Arnold, Richard N.**, Michael K. O'Neill and Dan Smeal. 2007. Broadleaf weed control in dry beans with preemergence followed by postemergence herbicides. Western Society of Weed Science Research Progress Report, p.77, ISSN:0090-8142.

- Arnold, Richard N.**, Michael K. O'Neill and Dan Smeal. 2007. Broadleaf weed control in Roundup ready field corn with postemergence Western Society of Weed Science Research Progress Report p.93, 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, p.94, ISSN:0090-8142.
- 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 Society of Weed Science Research Progress Report, p.101, ISSN:0090-8142.
- Arnold, Richard N.**, Michael K. O'Neill and Dan Smeal. 2006. Seedling emergence of Roundup ready field corn following preemergence herbicides. Western Society of Weed Science Research Progress Report, p.132, ISSN:0090-8142.
- 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 society of Weed Science Research Progress Report, p.133, ISSN:0090-8142.
- 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 Society of Weed Science Research Progress Report, p.134, ISSN:0090-8142.
- Arnold, Richard N.**, Michael K. O'Neill and Dan Smeal. 2005. Broadleaf weed control in dry beans with preemergence followed by sequential postemergence herbicides. Western Society of Weed Science Research Progress Report, p.94, ISSN:0090-8142.
- Arnold, Richard N.**, Michael K. O'Neill and Dan Smeal. 2005. Seedling emergence of roundup ready field corn following preemergence herbicides. Western Society of Weed Science Research Progress Report, p.100, ISSN:0090-8142.
- Arnold, Richard N.**, Michael K. O'Neill and Dan Smeal. 2005. Broadleaf weed control in field corn with preemergence followed by sequential postemergence herbicides. Western Society of Weed Science Research Progress Report, p.101, ISSN:0900-8142.
- Arnold, Richard N.**, Michael K. O'Neill, and Dan Smeal. 2004. Broadleaf weed control in spring-seeded alfalfa. Western Society of Weed Science Research Progress Report, p.67, ISSN:0090-8142.

- Arnold, Richard N.**, Michael K. O'Neill, and Dan Smeal. 2004. Broadleaf weed control in field corn with postemergence herbicides. Western Society of Weed Science Research Progress Report, p.97, ISSN:0090-8142.
- Arnold, Richard N.**, Michael K. O'Neill, and Dan Smeal. 2004. Broadleaf weed control in field corn with preemergence followed by sequential postemergence herbicides. Western Society of Weed Science Research Progress Report, p.98, ISSN:0090-8142.
- Arnold, Richard N.**, Michael K. O'Neill, and Dan Smeal. 2004. Broadleaf weed control in field corn with preemergence herbicides. Western Society of Weed Science Research Progress Report, p.99, ISSN:0090-8142.
- Arnold, Richard N.**, Michael K. O'Neill and Dan Smeal. 2003. Broadleaf weed control in spring-seeded alfalfa. Western Society of Weed Science Research Progress Report, p.59, ISSN:0090-8142.
- Arnold, Richard N.**, Michael K. O'Neill and Dan Smeal. 2003. Broadleaf weed control in field corn with preemergence followed by sequential postemergence herbicides. Western Society of Weed Science Research Progress Report, p.110, ISSN:0090-8142.
- Arnold, Richard N.**, Michael K. O'Neill and Dan Smeal. 2003. Broadleaf weed control in field corn with postemergence herbicides. Western Society of Weed Science Research Progress Report, p.111, ISSN:0090-8142.
- Arnold, Richard N.**, Michael K. O'Neill and Dan Smeal. 2003. Broadleaf weed control in field corn with preemergence herbicides. Western Society of Weed Science Research Progress Report, p.112, ISSN:0090-8142.

## **Other Publications**

- Arnold, Richard N.** 2007. Using coal bed methane produced water for establishment of native and non-native grasses in the Oil and Gas Producing Basin of northwestern New Mexico, 2003-2006. Document prepared for the Bureau of Land Management Farmington Field Office (BLM/FFO), Oil and Gas Industry of the San Juan Oil and Gas Producing Basin and Sandia National Laboratories.
- Arnold, Richard N.** 2006. Revegetation of pipeline right-of-way and or well sites with selected cool and warm season cultivar's and forbes for palatability, stand establishment, and erosion control in the intermountain region of northwestern New Mexico, 2002-2005. Document prepared for the Bureau of Land Management Farmington Field Office (BLM/FFO) and the Oil and Gas Industry of the San Juan Oil and Gas Producing Basin.