

# JOSEPH A. ATWOOD

**Professor: Agricultural Economics & Economics Dept.  
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## EDUCATION:

**Ph.D., Agricultural Economics (1985)**, Graduate College, University of Nebraska, Lincoln.  
- Areas of Study: *Production Economics, Risk Management and Finance*

**M.S., Agricultural Economics (1980)**, Graduate College, University of Nebraska, Lincoln.  
- Areas of Study: *Resources and Energy Production, Production Economics*

**B.S., Animal Science-Agri Business Option (1978)**, College of Agriculture, University of Nebraska, Lincoln.

**A.A. (1976)**, York College, York, Nebraska.

## CLASSES TAUGHT AT MONTANA STATE UNIVERSITY:

AGEC 341 -- Farm and Ranch Management  
AGBE/ECNS 345 -- Agricultural Finance  
AGBE 467 -- Quantitative Methods in Economics  
ECNS 204 -- Microeconomics  
ECNS 491 -- Advanced Data Analytics in Economics  
ECON 201 -- Microeconomics  
ECON 400 -- Seminar: Mathematical Economics  
ECON 400 -- Seminar: Special Topics in Quantitative Economics  
ECON 500 -- Graduate Seminar: Mathematical Economics  
ECON 594 -- Graduate Seminar: Special Topics in Quantitative Economics  
EFIN 101 -- Introduction to Financial Engineering  
EFIN 301 -- Financial Engineering I  
EFIN 401 -- Financial Engineering II

R Classes/Workshops – Weekly meetings one to two semesters per year for faculty, graduate students, and undergraduates. 2005-2007; 2009-2017.

## CLASSES TAUGHT AT UNIVERSITY OF NEBRASKA-LINCOLN:

AECN 896 -- Introduction to R (Spring 2008)

## PUBLICATIONS:

### Refereed Journal Articles:

Atwood, J., and S. Shaik. (2020) "Theory and Statistical Properties of Quantile Data Envelopment Analysis." *European Journal of Operational Research*. 286:649-661.

Hamilton, L., M. McCullough, G. Brester, and J. Atwood. (2020) "California's Wage Rate Policies and Head Lettuce Prices." *Journal of Food Distribution Research*. 51(2):92-110.

Shaik, S., Atwood, J. A. (2020) "Comparative Study of Alternative Approaches to Estimate Productivity." *J. Quant. Econ.* 18:747-766. <https://doi.org/10.1007/s40953-019-00191-x>

- Brester, G., J. Atwood, M. Watts, and A. Kawalski. (2019) "An Examination of the Influence of Genetic Modification Technologies on U.S. and EU Crop Yields". *Journal of Agricultural and Resource Economics*. 44(1):16-31.
- Villegas, L, Smith, V., Atwood, J. and E. Belasco. (2016) "Does Participation in Public Works Programs Encourage Fertilizer Use in Rural Ethiopia?" *International Journal of Food and Agricultural Economics*. 4(2):101-124
- Watts, M., J. Atwood, B. Beattie. (2015) "Water Degradation Implications When Whole-farm Irrigation Water is Binding." *Water Resources and Economics*. 9:3-22.
- Shaik, S., J.A. Atwood, and G. A. Helmers. (2012) "Did 1933 New Deal Legislation Contribute to Farm Real Estate: Regional Analysis." *Journal of Policy Modeling*. 34(6): 801-816.
- Shaik, Saleem., Ashok K. Mishra, and Joseph Atwood. (2012) "Aggregation Issues in the Estimation of Nonparametric Linear Programming Productivity Measures." *Journal of Applied Economics*. 15(1): 169-187.
- Buschena, David E., and Joseph A. Atwood. (2011) "Evaluation of Similarity Models for Expected Utility Violations". *Journal of Econometrics*. 162:105-113.
- Brester, G., J. M. Marsh., and J. Atwood. (2009) "Evaluating the Farmer's-Share-of-the-Retail-Dollar Statistic." *Journal of Agricultural and Resource Economics*. 34(2):213-236
- Buschena, David E., David Zilberman, and Joseph A Atwood. (2007) "Risk Attitudes Over Income With Discrete Status Levels." *Review of Agricultural Economics*. 29 (Fall):405-411
- Atwood, J., J. Robison-Cox, and S. Shaik. (2006) "A Statistical Examination of 'Yield Switching' Fraud in the Federal Crop Insurance Program." *American Journal of Agricultural Economics* 88(2):365-81.
- Shaik, S., J. Atwood, and G. Helmers. (2005) "The Evolution of Farm Programs and their Contribution to Agricultural Land Values." *American Journal of Agricultural Economics*. 87(5): 1190-97.
- Brester, G.W., J.M. Marsh, and J. Atwood. (2004) "Distributional Impacts of Country-of-Origin Labeling in the U.S. Meat Industry." *Journal of Agricultural and Resource Economics* 24(2): 206-27.
- Atwood, J., S. Shaik, and M.J. Watts. (2003) "Are Crop Yields Normally Distributed?: A Reexamination." *American Journal of Agricultural Economics* 85(4): 888-901.
- Atwood, J., and D.E. Buschena. (2003) "Evaluating the Magnitudes of Financial Transaction Costs on Risk Behavior." *Agricultural Systems* 75(2-3): 235-50.
- Atwood, J., S. Shaik, and M.J. Watts. (2002) "Can Normality of Yields be assumed for Crop Insurance?" *Canadian Journal of Agricultural Economics* 50(2): 171-84.
- Atwood, J., and G.A.Helmers. (1998) "Examining Quantity and Quality Effects of Restricting Nitrogen Applications to Feedgrains." *American Journal of Agricultural Economics* 80: 369-81.
- Atwood, J., M.J. Watts, and A.E. Baquet. (1996) "An Examination of the Effects of Price Supports and Federal Crop Insurance upon the Economic Growth, Capital Structure, and Financial Survival of Wheat Growers in the Northern High Plains." *American Journal of Agricultural Economics*. 78(1): 212-24.
- Atwood, J. (1993) "Constant Dollar Financial Statements." *Review of Agricultural Economics*. 15(1): 157-66.

- Atwood, J. (1990) "Determining Firm Specific Values for Risky Assets." *Western Journal of Agricultural Economics*. 15(2): 196-203.
- Hatch, V., J. Atwood, and J. Segar. (1989) "An Application of Safety-First Probability Limits in a Discrete Stochastic Farm Management Programming Model." *Southern Journal of Agricultural Economics*. 21(1): 65-72.
- Atwood, J., M.J. Watts, G.A. Helmers, and L.J. Held. (1988) "Incorporating Safety-First Constraints in Linear Programming Production Models." *Western Journal of Agricultural Economics*. 13(1): 29-36.
- Hatch, V., and J. Atwood. (1988) "A Risk Programming Model for Farm-Raised Catfish." *Aquaculture*. 70: 219-30.
- Atwood, J., M.J. Watts, and G.A. Helmers. (1988) "Chance-Constrained Financing as a Response to Financial Risk." *American Journal of Agricultural Economics*. 70(1): 79-89.
- Atwood, J., L.J. Held, G.A. Helmers, and M.J. Watts. (1986) "Performance of Risk-Income Models Outside the Original Data Set." *Southern Journal of Agricultural Economics*. 18(2): 113-23.
- Helmers, G.A., M.R. Langemeier, and J. Atwood. (1985) "An Economic Analysis of Alternative Cropping Systems for East Central Nebraska." *American Journal of Alternative Agriculture*. 1(4):153-58.
- Helmers, G.A., M.J. Watts, and J. Atwood. (1985) "Relevancy of Cash Flow as a Measure of Business Performance." *Agribusiness: An International Journal*. 1(4):311-31.
- Atwood, J. (1985) "Demonstration of the Use of Lower Partial Moments to Improve Safety-First Probability Limits." *American Journal of Agricultural Economics*. 67(4): 787-93.
- Helmers, G.A., R.V. Sahs, and J. Atwood. (1985) "Risk-Income Efficient Leases - The Landlord's Perspective." *Journal of the American Society of Farm Managers and Rural Appraisers*. 49(2): 27-33.
- Helmers, G.A., L.J. Held, M.J. Watts, and J. Atwood. (1984) "Deviation Constrained Programming: The Impact of Risk Income Frontiers." *North Central Journal of Agricultural Economics*. 6:142-50.

#### **Reviewed Publications:**

- Brester, G.W., J.M. Marsh, and J. Atwood. (2004) "Who Will Bear the Costs of Country-of-Origin Labeling?" *Choices* 19(4).

#### **Books:**

- Brester, G., J. Atwood, and M. Boland. (2023) *"Equilibrium Displacement Models: Theory, Application, and Policy Analysis"*. The University of Minnesota Library Publishing Services. Forthcoming: (Currently in formatting process by publisher.)

#### **Book Chapters (Reviewed):**

- Brester, G. and J. Atwood. (2018) "The Impact of Genetic Modification Technologies on Agricultural Productivity: Evidence from a Comparison of US and EU Crop Yields." *Agricultural Policy in Disarray Volume II*. American Enterprise Institute.
- Atwood, J., and S. Shaik. (2018) "Quantile DEA: Estimating qDEA-alpha Efficiency Estimates with Conventional Linear Programming." *Productivity and Inequality*. Springer Press.

Atwood, J., M. Watts, V. Smith, G. Helmers, and B. Brava Ureta. (1993) "Implications of Tax Policy for Farm Structure." *The Changing Size and Structure of America's Farms*, Westview Press.

#### **Journal Articles Accepted/Forthcoming**

Brester, G., M. McCullough, J. Atwood, and C. Graham-Austin. "Beer Excise Taxes and the Craft Beverage and Modernization Tax Reform Act." *Journal of Agricultural and Resource Economics*. Preprint published online, May 2022. Forthcoming 2023.

Walden, J., and J. Atwood "Measuring Fishing Capacity with Quantile Data Envelopment Analysis." *Marine Resource Economics*. Accepted December 2022. Forthcoming 2023

#### **Journal Manuscripts Under Review or Revision:**

Owenhouse, J., J. Atwood, and M. Watts. "The Effects of Institutional Development Upon Costs of Country Level Private Borrowing." *EconModels*. (Submitted 2021)

Shaik, S. and J. Atwood. "How Important are Directions in Directional Distance Function Efficiency Measures?" *A Quarterly Journal of Operational Research*. Under Revision.

#### **Working Papers and Manuscripts in Preparation:**

Kai, D., and J. Atwood. "Power Analysis of Hypothesis Tests When Regressing Estimates of Data Envelopment Analysis." To be submitted to *European Journal of Operational Research*. January 2023.

Atwood, J., and F. Kawalski. "Obtaining Less Conservative and More Robust cVaR Approximations to Probabilistically Constrained Optimization Problems."

Atwood, J. and G. Brester. "Cash Flow vs. Collateral Based Lending: Is There a More Informative Middle 'C'?"

Atwood, J. and E. Belasco. "Upside Contracts and Grain Marketing." To be submitted to: *Agricultural Finance Review*.

Shaik, S. and J. Atwood. "An Efficiency Analysis of the Effects of Weather and Climate Variables Upon U.S. Crop Productivity".

#### **Invited Papers:**

Atwood, J. "Using R for Agent Based Modeling." Canadian and Western Agricultural Associations Joint Annual Meetings. Banff, Alberta. June-2011.

Atwood, J. "Cash Flow vs. Collateral Based Lending: Is There a More Informative Middle 'C'?". University of Illinois - ACE Departmental Seminar Series. September 25, 2009

Atwood, J. "A Brief Overview of Weather Derivatives and the Effects of Potential Trends upon Temperature Based Derivatives " SCC-76 Economics and Management of Risk in Agriculture and Natural Resources Meetings, Galveston, TX, March 19-21, 2009.

Atwood, J., and D. Buschena. " An Overview of Copulas and Other Recent Developments in Modeling Joint Distributions with "Unrelated" Marginal Distributions and Asymmetric Upside and Downside Joint Relationships." SCC-76 Economics and Management of Risk in Agriculture and Natural Resources Meetings, Orange City, AL, March 15-17, 2007.

- Atwood, J., and M.J. Watts. "Using Satellite-Based and/or Weather Station Information to Construct Smaller than County Sized Area Insurance Instruments." SCC-76 Economics and Management of Risk in Agriculture and Natural Resources Meetings, Myrtle Beach, SC, March 16-18, 2006.
- Atwood, J., and J. Robison-Cox. "Fraud Detection in Federal Crop Insurance." Annual meeting of group IEG-76 Economics and Management in Agriculture and Natural Resources Gulf Shores, Alabama. March 25-27, 2004.
- Atwood, J., and D.E. Buschena. "An Analysis of Risk Attitudes over Income." *American Agricultural Economics Association Meetings*, Toronto, Canada, 1997.
- Atwood, J., and D.E. Buschena. "An Analysis of Risk Attitudes over Income." *Southern Regional Project Meetings*, Gulf Shores, Alabama, March 1996.
- Atwood, J., and M.J. Watts. "Bootstrapping for Risk Estimation When Setting Premiums on Crop Insurance." *Statistics Research Seminar*, Department of Statistics, Montana State University, November 1994.
- Atwood, J., and M.J. Watts. "Bootstrapping Discrete Markovian Transition Probabilities with Complete and Reduced Sets of State Variables." Published in *Quantifying Long Run Agricultural Risks and Evaluating Farmer Responses to Risk. Proceedings of a Seminar sponsored by Southern Regional Project S-232*. Department of Resource Economics and Policy, University of Maine, Orono, Maine, June 1993.
- Helmets, G.A., J. Atwood, and T. Jaued. "Modeling Irrigation Decisions and Stream Flow Minimums - An Application of Discrete Stochastic Programming and Zero-One Safety First Programming." Published in *Quantifying Long Run Agricultural Risks and Evaluating Farmer Responses to Risk. Proceedings of a Seminar sponsored by Southern Regional Project S-232*. Department of Resource Economics and Policy, University of Maine, Orono, Maine, June 1993.
- Atwood, J. "The Evaluation of Probability Distributions with Special Emphasis on Price Distributions Derived from Option Premiums: A Discussion." Published in *Future Directions in Risk Analysis for Agricultural Production Firms. Proceedings of a Seminar Sponsored by Southern Regional Project S180*. Department of Agricultural and Applied Economics, University of Minnesota, St. Paul, MN, August 1987.
- Atwood, J., and G.A. Helmers. "Risk-Return Analysis with Riskiness Evaluated Relative to a Hierarchy of Target Incomes." Paper presented at the annual meeting of the Nebraska Academy of Sciences, Lincoln, NE, April 1985.

**Peer Reviewed Competitively Selected Papers and Posters:**

- Atwood, J. (2019) "Applications of Continuous Relaxed Constraint Programming in Portfolio Assessment and Portfolio Optimization Subject to VaR, cVaR, and Related Measures of Risk Constraints." Annual Meeting - Institute for Operations Research and the Management Sciences (INFORMS). Seattle Washington. October 19-23, 2019.
- Atwood, J. (2019) "Portfolio Assessment and Portfolio Optimization Subject to VaR, and cVaR, Risk Constraints." SCC-76 2019 Annual Meetings. Kansas City, Mo. April 5-7, 2019.
- Atwood, J. "Robust Bootstrapping Methods in DEA." The North American Productivity Workshop. Miami, Florida. June, 2018.
- Atwood, J. and S. Shaik. "Robust Benchmarking and Efficiency Estimation Using QuantileDEA (qDEA): Methodology and Statistical Properties." Annual Meeting - Institute for Operations Research and the

Management Sciences (INFORMS). Houston, Texas. October 22-25, 2017

Atwood, J., S. Shaik. and J. Walden. "Radial Efficiency Metrics Using Worst-Case Reference Points." 15th European Workshop on Efficiency and Productivity Analysis (EWEPA) London. June 12-15, 2017.

Atwood, J. and L. Wardwell. "Synthetic Options: Potential Usefulness and Effectiveness in Agriculture." SCC-76 2017 Annual Meetings. Pensacola, Florida. March 31-April 1, 2017.

Atwood, J., A. Joglekar, and V. Smith. "Developing Consistent Estimates of Marginal Effects in a Simultaneous Equation Model with Limited Dependent Variables." Presented at Agricultural and Applied Economics Association Annual Meeting. Boston, MA. August 2016.

Atwood, J. and S. Shaik. "Quantile DEA: A Direct Linear Programming Based Approach to Obtaining Quantile Efficiency or Quantile Group Benchmarking Performance Estimates." Competitively selected poster presented at Agricultural and Applied Economics Association Annual Meeting. Boston, MA . August 2016.

Atwood. J. and E. Belasco. "Grain Marketing with Upside Contracts." Track session presentation. Agricultural and Applied Economics Association Annual Meeting. Boston, MA. August 2016.

Atwood, J. A. and S. Shaik. "Quantile DEA: Estimating qDEA-alpha Efficiency Estimates with Conventional Linear Programming." The North American Productivity Workshop. Quebec City, Quebec. June, 2016.

Atwood, J. A. and E. Rupert. "Is Dynamic Hedging Potentially Useful as a Reinsurance Tool for RMA's Revenue Insurance Products?" SCC-76 2016 Annual Meetings. Pensacola, Florida. March 17-19, 2016.

Atwood, J.A., S. Shaik. and G. Helmers. "Quantile DEA: A Direct Linear Programming Based Approach." Selected paper presented at the *European Workshop on Efficiency and Productivity Analysis*, Helsinki, Finland, June 17 – 20, 2013.

Helmers, Glenn, Saleem Shaik and Joseph Atwood. "Impact of the Section 1031 Like-Kind Tax Provision on Agricultural Land Values." Selected paper presented at the 2008 Annual Meeting of the *WAEA*, Big Sky, Montana June 25-27, 2008.

Shaik, S., J. Atwood, and G. Helmers. "Farm Programs and Agriculture Land Value: Case of Southern Agriculture." Selected Paper, SAEA Annual Meeting, Orlando, Florida, February 5-8, 2006.

Atwood, J., and J. Kastens. "Spatial Analysis in Crop Insurance." Selected paper, WAEA Annual Meeting, San Francisco, CA, July 6-8, 2005.

Shaik, S., and J. Atwood. "Spatial Analysis in Federal Crop Insurance: Challenges and Opportunities." Selected paper, AAEA Annual Meeting, Providence, Rhode Island, July 24-27, 2005.

Shaik, S., and J. Atwood. "Spatial Analysis in Federal Crop Insurance: Challenges." Selected paper, WAEA Annual Meeting, San Francisco, CA, July 6-8, 2005.

Shaik, S., J. Atwood, and G. Helmers. "The Evolution of Farm Programs and their Contribution to Farm Size." Selected Paper, AAEA Annual Meeting, Providence, Rhode Island, July 24-27, 2005.

Atwood, J., J. Robison-Cox, and S. Shaik. "A Statistical Examination of 'Yield Switching' Fraud in the Federal Crop Insurance Program." Selected Paper, AAEA Annual Meeting, Denver, Colorado, August 1-4, 2004.

- Shaik, S., and J. Atwood. "Demand for Optional Units in Crop Insurance." Selected Paper, AAEA Annual Meeting, Montreal, Quebec, July 27-30, 2003.
- Shaik, S., G.A. Helmers, and J. Atwood. "Scope and Scale Efficiency Gains due to Vertical Integration in the U.S. Hog Sector." Selected Paper, SAEA Annual Meetings, Mobile, Alabama, February 1-5, 2003.
- Helmers, G.A., and J. Atwood. "Causes for Convexity in Remaining Value Functions." Proc. S.E. Dec. Sci. Inst. 2002, pp. 28-30.
- Atwood, J., G.A. Helmers, and S. Shaik. "Farm and Nonfarm Factors Influencing Farm Size." Selected paper, Western & Am. Agr. Econ. Assn. Mtgs., Long Beach, Calif., July 28-31, 2002.
- Shaik S., and Atwood, J. "Optional Unit Policy in Crop Insurance." Selected paper, Western & Am. Agr. Econ. Assn. Mtgs., Long Beach, Calif., July 28-31, 2002.
- Shaik S., and Atwood, J. "An Examination of Types of Adverse Selection in Federal Crop Insurance." Selected paper, Western & Am. Agr. Econ. Assn. Mtgs., Long Beach, Calif., July 28-31, 2002.
- Helmers, G.A., J. Atwood, and S. Shaik. "Fertilizer and Fertilizer-Crop Diversification." Selected paper, W. Agr. Econ. Assn. Annual Mtgs., Logan, Utah, July 8-11, 2001.
- Helmers, G.A., J. Atwood, and M. Watts. "Educational Opportunities Using Economic Depreciation." Proc. SE Dec. Sci. Inst., 2001, pp. 45-47.
- Shaik, S., and J. Atwood. "An Examination of the Effects of Crop Insurance on the Resource use and Production Mix: County level Analysis." Am. Agr. Econ. Assn., Chicago, IL, August 2001.
- Shaik, S., and J. Atwood. "Estimating the Demand of Insurance and Supply of Indemnity Payments in Crop Insurance." Presented at the annual meetings of the Am. Agr. Econ. Assn., Tampa, FL, Jul. 30-Aug. 2, 2000.
- Atwood, J., S. Shaik, G.A. Helmers, and M. Langemeier. "Impact of Nitrogen Reductions on Risk and Net Returns." Selected paper, S. Agr. Econ. Assn. meetings, Memphis, TN, Jan. 30 - Feb. 3, 1999.
- Shaik, S., G.A. Helmers, and J. Atwood. "Farm-Nonfarm Relationships Affecting Farm Size in the Southeast." Selected paper, S. Agr. Econ. Assn. meetings, Memphis, TN, Jan. 30 - Feb. 3, 1999.
- Helmers, G.A., W. Dias, M.R. Langemeier, and J. Atwood. "Risk Analysis of Cropping Systems using Experimental Cropping System-Fertilizer Data." Selected paper, Am. Agr. Econ. Assn. meetings, Salt Lake City, UT, August 2-5, 1998.
- Helmers, G.A., and J. Atwood. "Endogenizing Durable Asset Ownership Costs in Linear Programming Models." Proceedings Southeast Decision Science Institute meetings, VA, February 25-27, 1998:33-35.
- Atwood, J., and G.A. Helmers. "Effect of Machine-Labor Fixity on Optimum Cropping Decisions." Selected paper, S. Agr. Econ. Assn. meetings, Little Rock, AR, February 1-4, 1998.
- Selly, R.A., G.A. Helmers, and J. Atwood. "Accuracy of a Simplified Procedure of Generating Long-Term Costs in Crop Budgets." Selected paper, S. Agr. Econ. Assn. meetings, Little Rock, AR, February 1-4, 1998.
- Atwood, J., G.A. Helmers, and K. Bernhardt. "Estimates of Long-Run Multi Cropping Efficiencies for Alternative Crops." Selected paper, W. Agr. Econ. Assn. meetings, Sparks, NV, Jul. 13-17, 1997. *Journal Agriculture and Application Economics* 22(1997): 401.

- Helmets, G.A., and J. Atwood. "Estimates of Capital-Labor Substitution Derived from a Farm Firm Programming Model." Selected paper, S. Agr. Econ. Assn. meeting, Birmingham, AL, February 2-5, 1997. *Journal of Agriculture and Application Economics* 29(1997): 201.
- Atwood, J., and G.A. Helmets. "Estimates of Bias and Improvements in Short-Run Programming Models for Cropping System Analysis." Selected paper, S. Agr. Econ. Assn. meetings, Birmingham, AL, February 2-5, 1997. *Journal of Agriculture and Application Economics* 29(1997): 197.
- Javed, M.T., G.A. Helmets, J. Atwood, and M. Baker. "Optimum Crop and Irrigation Decisions Under Uncertainty in Water Availability." Selected abstract, S. Agr. Econ. Assn. meetings, Greensboro, North Carolina, February 4-7, 1996. *Journal of Agriculture and Application Economics* 28(1996): 226
- Helmets, G.A. and J. Atwood. "Crop Diversification-Multi Cropping vs. Multi Herbicide-Tillage Methods." Selected paper, Am. Agr. Econ. Assn. meetings, San Antonio, Texas, July 28-31, 1996.
- Helmets, G.A., J. Atwood, and K. Bernhardt. "Impact of the 1990 Flexible Acreage and Reduced Program Acreage Base Provisions on Program Base and Net Returns to Producers." Selected paper, S. Agri. Econ. Assn. meetings, New Orleans, Louisiana, Jan. 29 - Feb. 1, 1995.
- Helmets, G.A., J. Atwood, T. Javed, and M. Baker. "The Performance of a Discrete Stochastic Programming Model with Chance Constraints on Environmentally Sensitive Stream Flow." Proceedings of the Southeast Decision Sciences Institute, 1995, pp. 42-44.
- Javed, T., G.A. Helmets, J. Atwood, and M. Baker. "Impacts of Reducing Remaining Stream Flow Variability on Irrigation Returns and Reservoir Levels." Paper presented to American Water Resources Association Spring Symposium, Salt Lake City, Utah, April 23-26, 1995. Proceedings, American Water Resources Association Spring Symposium, p. 189.
- Helmets, G.A., T. Javed, M. Baker, and J. Atwood. "Effects of Reducing Variability in Reservoir Water Levels on Irrigation Returns and Remaining Stream Flow Variability." Selected poster, S. Agri. Econ. Assn. meetings, New Orleans, Louisiana, Jan. 29 - Feb. 1, 1995.
- Atwood, J., S. Saleem, and G.A. Helmets. "Farm Size Adjustments and the Non Farm Economy - An Extension of the Kislev-Peterson Hypothesis." Selected paper, Am. Agr. Econ. Assn. meetings, Indianapolis, Indiana, Aug. 6-9, 1995.
- Helmets, G.A., and J. Atwood. "Implicit Bias of Commodity Programs by Farm Size." Selected paper, Am. Agr. Econ. Assn. meetings, Indianapolis, Indiana, August 6-9, 1995.
- Helmets, G.A., S.L. Elmore, J. Atwood, and K.J. Bernhardt. "Estimating Biases Toward Sustainable Agriculture from Crop Base Programs." Selected paper, W. Agri. Econ. Assn. meetings, Rapid City, South Dakota, July 9-12, 1995.
- Helmets, G.A., J. Atwood, K. Bernhardt. "Reduced-Cost Benefits from Multiple-Crop Systems." Selected paper presented at Am. Agr. Econ. Assn. meetings, San Diego, California, August 7-10, 1994.
- Javed, M.T., G.A. Helmets, J. Atwood, and M. Baker. "The Effect of Conditional vs. Unconditional Probabilities in a Discrete Stochastic Programming Model of Irrigation Decisions." Selected paper, S. Agri. Econ. Assn. meetings, Nashville, Tennessee, February 5-9, 1994.
- Helmets, G.A., K. J. Bernhardt, and J. Atwood. "Impacts of Commodity Programs on Sustainable Agriculture." Paper presented at the annual meetings of the W. Agri. Econ. Assn., Edmonton, Canada, July 1993.



- Helmers, G.A., K.J. Bernhardt, and J. Atwood. "Base Building Incentives and the Food, Agriculture, Conservation and Trade Act of 1990." Paper presented at the annual meetings of the Am. Agr. Econ. Assn., Orlando, Florida, August 1993.
- Atwood, J., V.H. Smith, and M.J. Watts. "Lemons, List Prices and Other Problems with Measuring Economic Depreciation Rates for Agricultural Machinery." Proceedings of the annual meetings of the W. Agri. Econ. Assn., Portland, Oregon, August 1991.
- Goroski, J., V. Smith, J. Atwood, and M.J. Watts. "Economic Depreciation and Tax Policy: The Case of Combine Harvesters." Paper presented at the annual meetings of the Am. Agri. Econ. Assn., Vancouver, BC, Canada, August 1990
- Watts, M.J., J. Atwood, G.A. Helmers, and L.J. Held. "Safety - First Programming - A Zero-One Approach." Paper presented at the annual meetings of the Am. Agr. Econ. Assn., Baton Rouge, Louisiana, August 1989.
- Held, L.J., G.A. Helmers, J. Atwood, and M.J. Watts. "Effect of Machinery Cost Economics of Diversified Risk Efficient Crop Plans." Paper presented at the W. Agri. Econ. Assn. meetings, Manhattan, Kansas, July 1987.
- Helmers, G.A., J. Atwood, M.J. Watts, and L.J. Held. "Financial Performance of Risk-Income Models." Paper presented at the W. Agri. Econ. Assn. meetings, Manhattan, Kansas, July 1987.
- Hatch, V., J. Atwood, and J. Seger. "An Application of Safety-First Probability Limits in a Discrete Stochastic Farm Management Programming Model." Paper presented at the S. Agri. Econ. Assn. meetings, Nashville, Tennessee, February 1987.
- Atwood, J., and K. McCurdy. "Bid and Sell Prices for Assets: An Application of Vector Sensitivity Analysis in Linear Programming." Paper presented at the S. Agri. Econ. Assn. meetings, Nashville, Tennessee, February 1987.
- Atwood, J., G.A. Helmers, K.M. Eskridge, J.M. Morrill, and M.R. Langemeier. "Pooling Cross-Sectional and Time-Series Yield Data for Risk Analysis." Paper presented at the annual meetings of Am. Agri. Econ. Assn., Reno, Nevada, July 1986.
- Held, L.J., G.A. Helmers, J. Atwood, and M.J. Watts. "Impact of Business Versus Financial Risk on Risk Income Choices." Paper presented at the annual meetings of Am. Agri. Econ. Assn., Reno, Nevada, July 1986.
- Atwood, J., D.D. Schulte, and G.A. Helmers. "Systems Analysis of Economics of On-Farm Energy Production." Paper presented at the annual meeting of American Society of Agricultural Engineers, San Luis Obispo, California, June 1986.
- Helmers, G.A., J. Atwood, and R.J. Sahs. "Landlord-Tenant Lease Efficiency - A Risk Income Analysis." Presented at the annual meetings of the S. Agri. Econ. Assn., Orlando, Florida, February 1986.
- Helmers, G.A., J. Atwood, M.R. Langemeier, and B.B. Johnson. "Sub-Optimal Analysis of Organic Farming in a Multiobjective Setting." Presented at the annual meetings of the Am. Agri. Econ. Assn., Ames, Iowa, August 1985.
- Atwood, J., M.J. Watts, and G.A. Helmers. "Reduction of the Second Degree Stochastically Efficient Set Using Safety First Type Constraints." Presented at the annual meetings of the W. Agri. Econ. Assn., Saskatoon, Saskatchewan, Canada, July 1985.
- Atwood, J., M.J. Watts, L.J. Held, and G.A. Helmers. "Imposing Safety-First Constraints on a MOTAD Frontier." Presented at the annual meetings of the W. Agri. Econ. Assn., San Diego, CA, July 1984.

Atwood, J., G.A. Helmers, and N.A. Stanley. "Modeling the Impact of Financial Growth on Farm Risk Behavior across Tim." Presented at the Southern Agricultural Economics Association meetings, Nashville, Tennessee, February 1984. (Abstract: *Southern Journal of Agricultural Economics* 16(1): 191).

Atwood, J., and G.A. Helmers. "After-Tax Implications of Graduated Payment Mortgages at the Micro-Level-Housing Example." Presented at the annual meeting of the Nebraska Economics and Business Association, Lincoln, Nebraska, October 1983.

Helmers, G.A., and J. Atwood. "The Impact of Inflation on Optimum Investment Strategy and Equity Position of Firms." Presented at the annual meeting of the Nebraska Economics and Business Association, Kearney, Nebraska, October 1982.

#### **Published Symposium or Proceedings Papers:**

Helmers, G.A., J. Atwood, M.J. Watts, and L.J. Held. "Fixity and Capital Costing Assumptions in Agricultural Risk Research with Implications to Livestock." Paper presented at the S-180 Regional Meeting, Tampa, FL, March 1986.

Held, L.J., and J. Atwood. "Evaluating the Performance of Risk Programming Models Outside the Data Set." Paper presented at the GPC-10 Meeting, Fargo, ND, May 1985.

Atwood, J., M.J. Watts, and G.A. Helmers. "Safety-First Models Based on Lower Partial Moment Sample Statistics." Paper presented at the S-180 Regional Meeting, Charleston, SC, March 1985.

Helmers, G.A. and J. Atwood. "Kinds and Sources of Risks in Livestock Production and Marketing." In: *Risk Management Strategies for Agricultural Production Firms: Perspectives and Research Issues*. Oklahoma Agricultural Experiment Station, Department of Agricultural Economics, AE-8350, 1983.

#### **Departmental Publications for Professional and Public Distribution:**

Owenhouse, J., J. Atwood, and M. Watts. (2020). "The Effects of Institutional Development Upon Costs of Country Level Private Borrowing." Staff Paper #2020-2

Walden, J. and J. Atwood. (2019). "Measuring Technical Efficiency and Capacity with Data Envelopment Analysis: A foundational approach using the R programming language." (Internally reviewed by NOAA-NMFS). Department of Agricultural Economics and Economics, Montana State University. Staff Paper #2019-2.

Atwood, J. and G. Brester. (2019). "Homogeneity of Degree 1 Production Functions and the Development of Dual Equilibrium Displacement Models." Department of Agricultural Economics and Economics, Montana State University. Staff Paper #2019-1.

Atwood, J. and S. Shaik. (2016) "Quantile DEA: Estimating qDEA- $\alpha$  Efficiency Estimates with Conventional Linear Programming." Department of Agricultural Economics and Economics, Montana State University. Staff Paper #2016-1.

Atwood, J. (2014). "Cash Flow vs. Collateral Based Lending: Is There a More Informative Middle 'C' ". Department of Agricultural Economics and Economics, Montana State University. Staff Paper #2014-4.

Atwood, J., A. Bittenger, and V. Smith. (2014). "Developing Consistent Marginal Effect Estimates in a Simultaneous Equation Model with Limited Dependent Variables." Department of Agricultural Economics and Economics, Montana State University. Staff Paper #2014-5.

- Atwood, J., S. Shaik, and G. Helmers. (2014). "Quantile DEA Using Linear Programming". Department of Agricultural Economics and Economics, Montana State University. Staff Paper #2014-6.
- Atwood, J. (2007). "An Examination of LR 93 Economic Research Issues." Report prepared for the Nebraska Legislature. December, 2007.
- Zhen, C., J. Atwood, and D. Buschena. (2004). "Improving Statistical Models of Crop Yield Forecasting Using AVHRR-NDVI Satellite Data." Department of Agricultural Economics and Economics, Montana State University. Staff Paper No. 2004-3.
- Atwood, J., J. Robison-Cox, and S. Shaik. (2003). "A Direct Test of 'Yield Switching' Fraud in the Federal Crop Insurance Program." Department of Agricultural Economics and Economics, Montana State University. Staff Paper 2003-2.
- Atwood, J., M.J. Watts, and S. Shaik. (2003). "An Examination of Potential Fraud in Crop Insurance Due to Yield Switching between Optional Units in US Cotton". Department of Agricultural Economics and Economics, Montana State University. Staff Paper #2003-1.
- Atwood, J., and M.J. Watts. (2000). "Rating Avocado Insurance: An Overview." Department of Agricultural Economics and Economics, Montana State University. Staff Paper 2000-6.
- Watts, M.J., J. Atwood, and S. Shaik. "Low Risk Farmer." Staff Paper 2000-5. Department of Agricultural Economics and Economics, Montana State University, January 2000.
- Atwood, J., and J. Saltiel. "Heteroskedasticity of Farm Level Residual Variability." Staff Paper 2000-2. Department of Agricultural Economics and Economics, Montana State University, January 2000.
- Atwood, J., S. Shaik, and M.J. Watts. "Are Crop Yields Really Normally Distributed?" Staff Paper 1999a-3. Department of Agricultural Economics and Economics, Montana State University, December 1999.
- Atwood, J., and S. Shaik. "Measurement of Adverse Selection in Crop Insurance Using an Expected Indemnity Approach." Staff Paper 1999a-2. Department of Agricultural Economics and Economics, Montana State University, December 1999.
- Atwood, J., G.A. Helmers, and S. Shaik. "Examining the Effects of Rural Economies on Farm Size and Off-Farm Employment." Staff Paper 1999a-1. Department of Agricultural Economics and Economics, Montana State University, July 1999.
- Atwood, J., and M.J. Watts. "Crop Insurance Update and Discussion." Staff Paper 1999a-6. Department of Agricultural Economics and Economics, Montana State University, June 1999.
- Atwood, J., J. Driscoll, V. Smith, and M.J. Watts. "Federal Crop Insurance Programs - History, Practice, and Issues." Staff Paper 1999a-4. Montana State University. Department of Agricultural Economics and Economics. May 1999.
- Atwood, J., and M.J. Watts. "Federal Crop Insurance Programs and Cotton Briefing Information." Staff Paper 1999a-5. Department of Agricultural Economics and Economics, Montana State University, May 1999.
- Atwood, J., A.B. Baquet, and M.J. Watts. "Income Protection." Staff Paper 1997-9. Department of Agricultural Economics and Economics, Montana State University, 1997
- Atwood, J. and G.A. Helmers. "Examining Quantity and Quality Effects of Restricting Nitrogen Application to Feedgrains: A Partial Equilibria Analysis." Staff Paper 1996-1. Department of Agricultural Economics and Economics, Montana State University, 1996

Atwood, J., V.H. Smith, and M.J. Watts. "Economic Depreciation and Tax Policy: The Case of Combine Harvesters and Semi-Trailer Cabs." Staff Paper 1992-8. Department of Agricultural Economics and Economics, Montana State University, 1992

Watts, M.J., A. Baquet, and J. Atwood. "Interest Rate Risk Premiums and Credit Availability." Staff Paper 1992-7. Department of Agricultural Economics and Economics, Montana State University, 1992

Smith, V.H., U.R. Kehoe, M. Cremer, and J. Atwood. "The Widow's Nite: Altruism, Self-Interest, and Voluntary Giving." Staff Paper 1992-6. Department of Agricultural Economics and Economics, Montana State University, 1992.

Goetting, M.A., J. Atwood, and D. Young. "Estimating the Amount to Save for College." Montguide #MT199103HR. Montana State University Extension Service, 1990.

Goetting, M.A., J. Atwood, and P.M. Tengal. "Estimating the Amount to Save for Retirement." Montguide #MT8905. Montana State University Extension Service, 1989

Helmets, G.A., J. Atwood, and M.R. Langemeier. "Economics of Alternative Crop Rotation Systems for East-Central Nebraska - A Preliminary Analysis." Staff Paper #14. Department of Agricultural Economics, University of Nebraska, 1984.

Helmets, G.A., M.J. Watts, and J. Atwood. "Relevancy of Cash Flow as a Measure of Business Performance." Staff Paper #5. Department of Agricultural Economics, University of Nebraska. 1984

Atwood, J., and L.K. Fischer. "Cost of Production of Fuel Ethanol in Farm-Size Plants." Report #115. Department of Agricultural Economics, University of Nebraska, 1980

Turner, M.S., and J. Atwood. "Trucking Grain? What Does It Cost?" Report #94. Department of Agricultural Economics, University of Nebraska, 1979

**Unpublished Papers:**

Helmets, G.A., M.J. Watts, and J. Atwood. "Asset Fixity and Farm Management Analysis." Presented at the GPC-10 Meetings, Fort Collins, CO, May 1986.

Helmets, G.A., and J. Atwood. "Agricultural Risk Research - Its Development and Emerging Thrusts." Presented at the NCR-113 Meetings, St. Louis, MO, October 1984.

Atwood, J., and G.A. Helmets. "Structural Implications of Tax Timing with Constant Real Versus Constant Nominal Debt Payments." Presented at the GPC-10 Meetings, Bozeman, MT, June 1983

**Other Presentations:**

Atwood, J. (2022). "The Effects of Inflation Upon the Purchase and Financing of Long-Term Assets". *The 7th Annual Buying and Selling Ranches and Farmland in Montana Seminar Series – The Seminar Group: Legal and Professional Education*. Billings, MT. September 30, 2022.

Atwood, J. (2022) "Exchange and Trade". *Montana Council of Economic Education: High School Teachers Continuing Education Workshops*. Bozeman, MT. July 14, 2022

Atwood, J. (2022) "Prices". *Montana Council of Economic Education: High School Teachers Continuing Education Workshops*. Bozeman, MT. July 14, 2022

Atwood, J. (2022) "Inflation". *Montana Council of Economic Education: High School Teachers Continuing Education Workshops*. Bozeman, MT. July 15, 2022

- Atwood, J. (2019). "Relaxed Constraint Programming: Theory and Applications." Department of Computer Science Seminar Series. Montana State University. September 30, 2019.
- Owenhouse, J., J. Atwood, M. Watts, and J. Calderon. (2019) "Assessing Credit Riskiness Around the World." Department of Agricultural Economics and Economics Seminar. Montana State University. May 2, 2019.
- Atwood, J. "Linear Elasticities Models and Methods." Working session presentation to faculty and graduate students. Kansas State University Department of Agricultural Economics. Manhattan, Kansas. May 17, 2018.
- Atwood, J. "nCm Bootstrapping." Working session presentation to graduate students. Kansas State University Department of Agricultural Economics. Manhattan, Kansas. May 18, 2018.
- Atwood, J. "Quantile DEA Methodology and Potential Applications." Departmental seminar series. Kansas State University Department of Agricultural Economics. Manhattan, Kansas. May 18, 2018.
- Atwood, J., S. Shaik., and G. Helmers. "Quantile DEA: A Direct Linear Programming Based Approach". Department of Agricultural Economics and Economics Seminar. Montana State University. January, 2014.
- Atwood, J. "Cash Flow vs. Collateral Based Lending: Is There a More Informative Middle 'C'?" Department of Agricultural Economics and Economics Seminar. Montana State University. November, 2009.
- Atwood, J. "Weather Derivatives: An Overview and Examination of Issues in the Development of the Weather Derivatives Market." Department of Agricultural Economics and Economics Seminar. Montana State University. December, 2008.
- Atwood, J. "Weather Derivatives: An Overview and Examination of Issues in the Development of the Weather Derivatives Market." Department of Agricultural Economics Seminar Series. University of Nebraska-Lincoln. April, 2008.
- Atwood, J. "The Use of Copulas in Modeling Joint Distributions." Department of Statistics Seminar Series, University of Nebraska-Lincoln, November, 2007.
- Atwood, J. "An Overview of Copulas in Modeling Joint Distributions." Department of Mathematical Sciences Seminar Series, Montana State University, April, 2007.
- Atwood, J. "Information Content in Lagrangian Augmented Systems: An Application to Fraud Detection in Federal Crop Insurance." Department of Mathematical Sciences Seminar Series, Montana State University, October 2003.
- Atwood, J. "A Direct Test of 'Yield Switching, Fraud in the Federal Crop Insurance Program." Department of Agricultural Economics and Economics Seminar Series, University of Nebraska, April 2003.
- Atwood, J., and M.J. Watts. "Are Credit Card Interest Rates Too High?" Seminar Department of Agricultural Economics Seminar Series, University of Nebraska, July 1992.
- Smith, V., J. Atwood, and M.J. Watts. "Economic Depreciation and Tax Policy in the United States." Presented as an Invited Paper for a University of Nottingham (England) Economics faculty seminar by V. Smith, December 1991.
- Smith, V., J. Atwood, and M.J. Watts. "Economic Depreciation and Tax Policy in the United States." Presented as an Invited Seminar for a University of Manchester (England) Agricultural Economics faculty seminar by V. Smith, December 1991.
- Smith, V., J. Atwood, and M.J. Watts. "Economic Depreciation and Tax Policy." Presented as an Invited Paper to a USDA Economic Research Service meeting, Washington, D.C. by V. Smith, September 1991.
- Atwood, J. "Risk Modeling Using Lower Partial Moments." Invited Speaker Seminar Series, Department of Agricultural Economics, University of Georgia, Athens, GA, January 1986.

Atwood, J., and G. Helmers. "Cash-Flow - Relevance to Agriculture in the 1980's." Presented to the Executive Committee of the Nebraska Banker's Association, Lincoln, NE, May 1984.

Atwood, J. "Costs of Producing Fuel Ethanol in On-Farm Plants." Invited presentation at annual meeting of the Great Plains Resource and Economics Committee, Big Sky, MT, June 1980.

Atwood, J. "Costs of Producing Fuel Ethanol in On-Farm Plants." Invited presentation at Four State Conference for Farm Management Specialists, Wagoner, OK, May 1980.

**HONORS AND AWARDS:**

Distinguished Faculty Award. College of Agriculture. Montana State University. 2022.

Pure Gold Award. Montana State University. 2011, 2018

Teaching Award of Merit. North American Colleges and Teachers of Agriculture and MSU Department of Agricultural Economics and Economics. 2017.

Distinguished Visiting Professor. University of Nebraska. 2007-2008

Friend of the Student Award. College of Agriculture, Montana State University, 2003.

Outstanding Published Research Award. Western Agricultural Economics Association, 1999.

Alpha Zeta, College of Agriculture, Teacher of the Semester, Fall 1991

**University of Nebraska, Lincoln:**

Department of Agricultural Economics Outstanding Ph.D. Student Award, 1984

Department of Agricultural Economics Outstanding Master's Student, 1980

President, Ag Economics Graduate Student Association, 1978-1979

Gamma Sigma Delta Outstanding Senior Award, 1978

Animal Science Department Senior Scholarship Award, 1978

**Lubbock Christian College, Lubbock, Texas:**

Junior Class Achievement Award - 4.0 Cumulative GPA, 1977

ACRS - Lubbock Chapter Merit Scholarship, 1977

Alpha Chi Honor Society, 1976-1977

Outstanding Transfer Student Scholarship, 1976

**York College, York, Nebraska:**

Highest GPA in Graduating Class, 1976

Sophomore Class President, 1976

Phi Beta Kappa, 1976

Bible Honors Student, 1976

Outstanding Sociology Student, 1976

Outstanding English Student, 1976

**PROFESSIONAL AND UNIVERSITY SERVICE:**

Associate Editor - *JARE* 2009-2011

Montana State University Updating Procurement Service Committee 2014-2015

Departmental Residential Instruction Committee, 2014-2015

Departmental Search Committee , 2008-2010, 2015-2016.

College of Agriculture Recruitment and Retention Committee, 2006, 2007.

Department Advisory-Promotion Tenure Committee, 1990-1992, 1995-1996, 1998-1999, 2000-2002, 2010-2011, 2015-2017, 2019-2020.

Department Graduate Committee, 2005-2011.

Chairman, College of Agriculture Computer Policy and Oversight Committee, 1995, 1996, 1997.

Chair, Department Search Committee - two positions, 1997.

Montana State University Promotion and Tenure Committee, 1997.

Montana State University Search Committee for Dean of Agriculture, 1998-1999.  
Advisory Council, Western Agricultural Economics Association, 1994-1997.  
MSU Computing Service, Software Advisory Committee 1991-1997.  
University Computer Policy Committee, 1990-1997.  
University Research Computing Committee, 1990-1994, 1996.  
Advisor to Alpha Zeta, 1990-1993.  
Departmental Search Committee for four positions, 1990-1992.  
Coordinated Poster Selection/Review Process--Farm Management-Risk Area for meetings of American Agricultural Economics Association Meetings, 1990, 2006-2008.  
AERO-MSU Joint Planning Committee on Sustainable Agriculture, Winter 1988-1989.  
Departmental Curricula Committee for Montana Extension Agent Training, Winter 1988-1989.  
Chaired Selected Papers Session, Annual Meetings of the American Agricultural Association, August 1988.  
Search Committee for five positions in College of Business, Fall 1988.  
Chaired Selected Papers Session, Annual Meetings of the SAEA, February 1986.  
Reviewed manuscripts for *American Journal of Agricultural Economics*, *Journal of Agricultural and Resource Economics*, *Journal of Agricultural and Resource Economics*, *Review of Agricultural Economics*, *J.E.E.M.*, *Canadian Journal of Agricultural Economics*, *Southern Journal of Agricultural Economics*, *European Journal of Operational Research*, 1985-2021.  
Advisor for 12 to 31 undergraduate students annually 1988-Present.  
Chaired or served on 37 Masters and Ph.D. committees at Auburn University, UNL, and MSU.  
Reviewed Promotion and Tenure Documentations and wrote external review letters for 4 promotion/tenure applications at external universities. 2016

**PROFESSIONAL MEMBERSHIPS:**

American Agricultural Economics Association  
American Risk and Insurance Association  
Southern Agricultural Economics Association  
Western Agricultural Economics Association

**GRANT AND CONTRACT SUPPORT:**

USDA/RMA, "Holistic Debt, Crop Insurance, and Whole Farm Financial Risk Management Tool." \$306,835; 1/2005-7/2009. (With Tim Watts)

USDA/RMA, "Avocado Rating Instruments Contract." \$10,000; 7/2004-6/2005. (With Myles Watts)

USDA/CSREES, "Investigation of Alternative U.S. Cotton Insurance Product and Rating Procedures." \$92,000; 1/2/2001 – 12/31/2001. (With Myles Watts)

USDA/CSREES, "Investigation of Alternative U.S. Crop Insurance Product and Rating Procedures." \$43,000; 7/1/2001 – 12/31/2001. (With Myles Watts)

USDA-ERS, "Assessing the Feasibility of Implementing IP on a Broad Basis." \$203,140; 1999-2001. (With Myles Watts)

USDA-ERS, "Review of US Cotton Rates." \$69,000; 1998-2001. (With Myles Watts).

USDA-ERS, "Compliance and Fraud Detection." \$200,000; 1999-2000. (With Myles Watts and IITRI Corp.)

USDA-ERS, "Expansion of Avocado Insurance Program." \$70,451; 1999-2000. (With Myles Watts)

USDA-ERS, "Effects of Unit Size on Premiums Paid." \$167,000; 1999-2000. (With Myles Watts)

USDA-ERS, "Expansion of Income Protection Insurance." \$80,000; 1996-1998. (With Myles Watts)

USDA-ERS, "Developing an Avocado Revenue Insurance Product." \$34,860; 1996-1998. (With Myles Watts)

USDA-ERS, "Cost of Production-Based Revenue Insurance: A Pilot Project." \$99,334; 1995-1996. (With Myles Watts)

USDA-ERS, "A Combined Crop Approach to Whole Farm Insurance: Development of a Pilot Program." \$96,831; 1995. (With Myles Watts)

Federal Crop Insurance Corporation, "Whole Farm Insurance." \$34,500; 1993-1995. (With Myles Watts)

Montana Wheat and Barley Committee, "The Impact of Group Risk Plan Crop Insurance on Montana Producers." \$18,000; 1993-1994. (With Myles Watts and Alan Baquet)

Federal Crop Insurance Corp., "An Investigation of Multiple Peril Crop Insurance Participation Rates in Semi-Arid Production Regions: The Role of Rate Structures, Disaster Relief, and Other Commodity Programs." \$110,000; 1992-1994. (With Myles Watts and Alan Baquet)

MONTS, "Economic Depreciation: The Constant Rate Hypothesis and Tax Policy." \$10,500; 1990-1991.

Alabama Research Institute, "Technology for Beef Cattle Production and Marketing." \$125,000; 1986-1987. (With Rob Martin)

Alabama Peanut Producers, "Developing Production Practices for Peanuts That Will Maintain Yields While Reducing Production Costs." \$5,000; 1986-1987. (With Rob Martin)

Center for Rural Affairs, Walthill, Nebraska, "Tax Incentives on Sandhill Land Development." \$4,000; 1983-1984. (With Glenn Helmers)

#### **UNPUBLISHED RESULTS FROM FUNDED RESEARCH:**

- Numerous Internal Reports to RMA-USDA, U.S. Congress, and Other Entities. (Not authorized for public release.)
- Development and Modification of Insurance Rating Methodology for RMA-USDA
  - Developed orthogonal decomposition methods to incorporate information from disparate sources and over different time intervals into premium rates. (Adopted in pilot areas/crops and under consideration by RMA.)
  - Developed statistical indexing procedures that improve efficiency of crop insurance liability establishment procedures. (Adopted in pilot areas/crops and under consideration by RMA for expanded adoption.)
  - Developed spatial statistical catastrophic loading/smoothing procedures. (Adopted in pilot areas/crops and under consideration by RMA for expanded adoption.)
  - Developed several crop insurance products currently offered by RMA-USDA.
  - Procedures adapted or under consideration by private insurance and reinsurance entities.
- Identification of Potential Waste, Fraud, and Abuse
  - Developed statistical procedures (with corresponding computer code) to screen all U.S. purchasers of crop insurance for potential yield switching fraud. RMA-USDA has applied procedure and code to all crop insurees.
  - Identified potential waste, fraud, and abuse of provisions of RMA crop insurance products. Recommended corrective actions. RMA-USDA has implemented some recommendations and is considering others.

#### **PUBLIC SOURCE SOFTWARE DEVELOPED AND MAINTAINED**

JCODE64: An R package containing various R functions and data sets.

MMLPDEA: R-Fortran Interface to DEA and DDEA estimation and bootstrapping using Fortran. Also provides R interface to Miller's Fortran Linear Programming code.



quantileDEA and qDEAC: R packages that implement/bootstrap conventional and quantile Data Envelopment Analysis (qDEA).