

PERSONNEL DOCUMENT

Allan Wayne Gray

Associate Professor – Department of Agricultural Economics

SECTION A: GENERAL INFORMATION

1. Academic Degrees

<u>Degree</u>	<u>Year</u>	<u>Institution</u>	<u>Years Attended</u>
B.S.	1992	Tarleton State University Agricultural Economics	1988-1992
M.S.	1993	Texas A&M University Agricultural Economics	1992-1993
Ph.D.	1998	Texas A&M University Agricultural Economics	1994-1998

2. Previous Non-Purdue Professional Experience

Nov. 1991- Aug. 1992 Extension Assistant, Texas Agricultural Extension Service, Texas A&M University System, Stephenville, TX.

Sept. 1992- Dec. 1993 Research Assistant, Agricultural and Food Policy Center, Texas A&M University (one-half time assistantship).

Jan. 1994- Aug. 1998 Research Associate, Agricultural and Food Policy Center, Texas A&M University (89% research, 11% teaching).

3. Selected Awards and Honors

AAEA Distinguished Policy Contribution Award – Group Award, 1997.

AAEA Annual Meetings' Poster Competition 3rd place (out of 49 posters), 1998.

Edwin G. Nourse Award (outstanding Ph.D. dissertation), National Council of Farmer Cooperatives, 1999.

United States Distance Learning Association's "Excellence in Distance Teaching: Higher Education," 2002.

Class of 1922 Helping Students Learn Award, Purdue University, 2002.

Provost's "Seeds of Success Award", 2005.

Outstanding Agricultural Economics Extension Website from the Extension section of the American Agricultural Economics Association, 2006.

Purdue University Cooperative Extension Specialists Association Team Award, 2006.

Purdue University Dean's Team Award, 2007.

AAEA Distinguished Extension/Outreach Program – Individual Less than Ten Year's Experience, 2007.

4. Current Memberships in Academic, Professional, and Scholarly Societies

American Agricultural Economics Association

International Food and Agribusiness Management Association – Board Member, 2007

Southern Agricultural Economics Association

INTRODUCTION

Dr. Gray's Extension, research, and teaching program focuses on agricultural business management. Dr. Gray's program epitomizes the land grant university mission by integrating his nationally-recognized Extension program with a strong peer-reviewed, applied research program in agricultural business management. Dr. Gray values his role as a key contributor to team efforts in developing high impact Extension programs with his colleagues in Agricultural Economics, the College of Agriculture at Purdue University, and across the U.S. In addition, his outstanding teaching record focuses on helping students learn the quantitative methods that he uses in his applied research program. The examples gleaned from his interactions with agricultural businesses in his Extension program are brought back to his classroom to provide rich examples that provide his students with context in applying the concepts that he teaches.

SECTION B: ENGAGEMENT

1. Current Extension Programs

Dr. Gray's nationally-recognized Extension program is consistent with the land grant mission of disseminating research results through engagement. The focus of his Extension program is helping decision-makers understand the strategic implications of their business decisions. Within this broad context, Dr. Gray focuses on decisions under uncertainty, the implications of agricultural policy for strategic decisions, and understanding the decision making processes of key customers. Dr. Gray has distinguished himself by helping, facilitating, and leading teams of colleagues, as well as working individually to develop original and effective Extension program materials, backed by peer-reviewed, applied research, and delivering these materials to numerous diverse and important audiences. The impacts of his Extension program can be recognized by the number of groups that contract with Purdue to have him deliver his program more than once, the amount of activity observed on websites he has helped create, the adoption of his materials by other educators, the external funding for his programs, and the recognition of his peers through refereed publications and the American Agricultural Economics Associations Distinguished Extension/Outreach Award for an Individual with Less than 10 Years Experience.

Major Programs

Strategic Management for Farmers and Small Business -- The Strategic Business Planning for Commercial Producers (SBPCP) program is an excellent example of Dr. Gray's Extension education efforts in strategic management of agricultural businesses. The SBPCP program is an innovative program focused on educating farm owners/managers in the critical concepts and tools for the CEO of a successful farming operation. The SBPCP program focuses on helping agricultural producers learn to think strategically about the direction of their farm business in a rapidly changing environment. Dr. Gray coordinated the development of the strategic management and finance teaching material used in the SBPCP program. Dr. Gray's direct responsibilities included development of curriculum, development of strategic management teaching materials, writing Extension publications supporting the teaching materials, and delivering the strategic management materials to producer audiences. Dr. Gray has used this material in numerous programs, including Purdue's SBPCP program and The Executive Program for Agricultural Producers (TEPAP) administered by Texas A&M University. He has delivered this material in person to audiences of more than 200 producers, as well as led the effort to create

a website to deliver the SBPCP to a wider audience. The website contains publications, annotated PowerPoint presentations, worksheets, checklists, and other tools for managers and educators. Electronic activity reports for calendar year 2006 indicate that the website has been receiving an average of 114 unique visitors a day. Dr. Gray also led the effort to extend these materials to Extension educators in other states. The materials were presented at a workshop for farm management Extension educators in the 12-state Midwest region in 2001. Many of the educators have now adopted at least a portion of these materials in their programs. The full set of materials is found at www.agecon.purdue.edu/extension/SBPCP/index.asp.

Dr. Gray and his colleagues recognized that much of the material in the SBPCP program could be tailored to fit the needs of many small business owners. As a result, Dr. Gray and several of his colleagues initiated the development of the Agricultural Innovation and Commercialization Center (AICC), which received a \$1,000,000 grant from USDA in 2003. A primary output from the AICC was the development of web-based software designed to help entrepreneurs and small businessmen develop business plans. Dr. Gray was a member of the AICC/New Ventures team responsible for developing the INVenture software. In addition to the software, Dr. Gray was also a contributing member on several Extension publications and two M.S. theses in support of the AICC/New Ventures team's efforts. This team's effort was recognized with the Outstanding Agricultural Economics Website from the Extension Section of AAEA, the Purdue University Cooperative Extension Specialists Association Team Award, both in 2006, and with the Purdue Agriculture TEAM Award in 2007.

Dr. Gray has taken the material developed in the SBPCP program and extended it to create other successful outreach education programs. One example is The Business of Potatoes workshop, which has been delivered to 200 potato producers during the first three years (2004-2006) of the program. Potato producers from throughout the United States come to Purdue for an intensive 3-day workshop that focuses on strategic and financial management issues important to their operation. A case study developed around a potato operation is utilized for discussion of several management issues, including business expansion. The case study is accompanied by a user-friendly spreadsheet designed to help participants learn about the analysis of net present value and the financial implications of alternative strategic growth options. Due to the success of this program, a similar program was developed and delivered to 50 tomato producers in California in January of 2006. This same material has been used in workshops for 110 financial services officers and business analysts from Farm Credit Services of Mid America (FCS) in 2004, 2006, and 2007 to help them better understand the strategic management issues facing farm businesses. As an indication of the impact of this program, FCS has now made this workshop a permanent part of their biennial employee education curriculum.

Agricultural Policy – Agricultural policy is a critical influencer of strategic decisions for agricultural producers and agribusiness. Dr. Gray has an active and influential Extension program in agricultural policy based on his research program in commodity farm policy and structural change in agriculture. He has been invited by numerous audiences to make presentations on farm policy-related issues. For instance, he was asked to make a presentation based on his work in understanding differences among Farm Households at the 2003 National Center for Food and Agricultural Policy's conference on "Farm Policy and the Rural Economy." In 2006, Dr. Gray took the lead in developing a symposium at the annual meetings of the

American Agricultural Economics Association on the incidence of alternative farm policies for the 2007 Farm Bill. In 2007, Dr. Gray was asked to present a principal paper on the implications of the changing structure of U.S. agriculture for future policy at the Canadian Agricultural Economics Society meetings. In addition to these presentations to policymakers and peers, he is regularly invited by the national and state Farm Bureaus to speak about policy issues ranging from commodity farm policy, to household impacts of farm programs, to structural change in agriculture. In 2006, Dr. Gray conducted a farm policy discussion session with 30 members of the Indiana Farm Bureau task force as they began development of their position for the 2007 Farm Bill. Dr. Gray is also often invited to work with agribusiness companies to help them better understand the implications of farm policy. In 2006, Dr. Gray presented an outlook for the 2007 Farm Bill to over 100 people at the American Seed Trade Association's Corn and Sorghum Meetings in Chicago. In 2006 and 2007, Dr. Gray made policy presentations to 14 different groups reaching more than 700 people. Often these groups ask Dr. Gray back for a third or fourth time to hear his perspective on the latest in national farm policy. Dr. Gray has taken a coordination role in developing a website containing information on the current 2007 Farm Bill debate that includes articles written by Dr. Gray and his colleagues on issues pertinent to the debate (<http://www.agecon.purdue.edu/farmbill/>). Finally, Dr. Gray is a key contact for Senator Lugar's staff on issues related to agricultural policy, including the 2007 Farm Bill.

Dr. Gray's agricultural policy work also focuses on developments in biofuels, with an emphasis on biodiesel, and the future of the livestock industry in Indiana. Since, 2003 Dr. Gray has presented updates on the state of the biofuels industry to numerous Extension audiences including policy makers, agricultural producers, agribusiness managers, and biofuels industry leaders. His work on potential legislation for biofuels in Indiana was instrumental in helping policy makers develop the system of incentives for growing that industry in lieu of creating a mandate to require biofuels to be sold in Indiana. Finally, his work on strategies for growing the Indiana livestock industry has been presented to numerous audiences including policy makers, Extension educators, and agricultural producers, helping them to understand better the impediments that must be overcome to allow the various livestock industries to grow. Dr. Gray's impact on Extension clientele in agricultural policy can be summed up by the following quotes:

Allan is a bright spot on any agenda. Allan is the exceptional speaker whose energy and creativity breaks the monotony. He is especially adept at introducing an audience to a new way of looking at an issue they all believe they understand thoroughly: the Federal commodity programs. His ability to communicate the economic core of a question as well as place it in an up-to-date context distinguishes him from many of our colleagues. I have personally seen to it that Allan has talked to the Congressional legislative aides who deal with farm policy. As a testament to Allan's effectiveness, I can tell you that not one of them fiddled with a Blackberry while he was on the podium! --Susan Offutt, Former USDA-ERS Administrator

I have worked with Dr. Gray for a number of years on various projects. As a policy organization, Farm Bureau looks to Dr. Gray to give us viable policy options as we interact with "The Hill" in Washington D.C. He has a great way of communicating those options so that our members and the members of Congress can understand. Ag policy is one of the most difficult and complex issues to tackle. Dr. Gray's efforts

have been most helpful as I work with my local, state and national leaders to have an impact in the farm policy debate. – Don Villwock, President, Indiana Farm Bureau

Risk Management – Dr. Gray also has a successful program in strategic risk management for agribusiness managers. The focus of this work is helping decision-makers understand the various domains of risk faced in the agricultural industry and identifying tools to help analyze and manage these risks. Much of the material Dr. Gray uses in these programs stems from his classroom teaching in quantitative methods and risk management in the M.S. and MS/MBA programs as well as from his applied research and peer reviewed publications in this area. Dr. Gray first delivered this program in 2004 and 2005 to approximately 90 agribusiness professionals as a session within several Center for Food and Agricultural Business (CAB) programs including the American Seed Trade Association Management Academy, the Consolidated Grain and Barge Emerge program, and the Syngenta ALPS program. These two-to three-hour sessions were focused on helping these audiences think through the risks faced in their business units and possible strategies they could employ to manage these risks through concepts and case study applications. These initial offerings were well received by the audiences. As a result, Dr. Gray and his colleagues developed a curriculum in strategic risk management for agribusiness delivered in a standalone program called Strategic Decision Making under Uncertainty (SDMU). This program has been delivered in 2006 and 2007 to 30 middle and upper level managers across the agricultural business chain. The success of these first two programs has resulted in CAB deciding to offer the SDMU program again in 2008.

Understanding Key Customer's Decisions – Part of Dr. Gray's Extension program is focused on helping agribusiness managers better understand the needs of their customers. For example Dr. Gray led the development of a program to help John Deere territory managers improve their aptitude for analyzing the financial performance of their dealers. This program uses a case study dealership to guide territory managers through the profitability linkage model to help them hone their skills in discovering areas where they can have the biggest impact in helping their dealers improve their financial performance. Dr. Gray was directly responsible for development of the program curriculum, teaching materials, and software-based teaching aides as well as delivery of about 50-percent of the material. The Deere Financial Training program has now been delivered seven different times between 2005 and 2007 reaching 110 middle level managers. Based principally on the material developed through the Deere Financial Training program, Drs. Gray and Boehlje also developed a financial training curriculum for middle- and upper-level managers for Royster-Clarke. This program focused on helping operational managers understand the impact of their decisions on the profitability and cash flows of the parent company. The program was delivered to 60 managers over the course of two different programs between 2005 and 2006. Finally, Dr. Gray leads the Large Commercial Producer project to examine the attitudes and buying preferences of large commercial producers in the U.S. Dr. Gray is directly responsible for acquiring the funding, executing the survey, analyzing the results, and developing Extension materials based on the results. This applied research project provides information useful to agribusiness managers providing inputs and services to the agricultural production sector. The information from this project is used to develop material delivered at the National Conference for Agribusiness every 5 years. This conference has between 150 and 200 participants at each offering. In addition, the material from this project is disseminated through a number of popular press articles authored by Dr. Gray and his colleagues.

2. Engagement Responsibilities in Conferences, Schools, Workshops or Meetings

(a) Programs in the United States

From 1998 through 2002, Dr. Gray made 48 presentations to U.S. audiences reaching approximately 3600 participants. In all of the programs that were formally evaluated over that period, Dr. Gray received above a 4.0 on a 5.0 scale. The following table summarizes the major programs and workshops Dr. Gray delivered since 2002. Dr. Gray has made more than 100 presentations during that time period reaching more than 3500 constituents.

Program	Role	Dates	Audience	Rating	Comments
Strategic Management for Farmers and Small Business					
Strategic Business Planning for Commercial Producers	Curriculum Development / Lecturer	2003-2007	125	4.5/5.0	Includes 4 core curriculum courses and 4 alumni programs held each year in February.
Business of Potatoes and Tomatoes	Curriculum Development / Lecturer	2004 – 2007	130	4.75/5.0	5 courses to national audiences of potato and tomato producers
Understanding Key Customer Accounts	Curriculum Development / Lecturer	2004 – 2007	90	4.75/5.0	4 courses to Farm Credit Services Employees across the Eastern Corn Belt
Agricultural Innovation and Commercialization Center	Curriculum Development / Instructor	2004	80	4.5/5.0	5 presentations to entrepreneurial and government audiences highlighting AICC/New Ventures.
Agricultural Policy					
Agricultural Policy and Structural Change in U.S. Agriculture	Curriculum Development /Lecturer	2003-2007	1470	N/A	Over 50 presentations to local , state, and national policy makers, producer audiences, and numerous agribusinesses.
Biofuels Policy Outlook	Lecturer	2003-2007	300	N/A	15 Presentations to local, state, and national policy makers and industry leaders.
Growth of the Indiana Livestock Industry	Curriculum Development / Lecturer	2003-2005	81	N/A	3 presentations to local and state policymakers and educators
Risk Management					
ASTA Advanced Management Forum	Lecturer	2005	15	4.5/5.0	First delivery of risk management material associated with risk score carding and heat mapping

Agricultural Leadership Plus for Syngenta	Lecturer	2006 – 2007	80	4.5/5.0	2 separate programs focusing on real options thinking for managing risk
Emerge Program for Consolidated Grain and Barge	Lecturer	2006	31	4.6/5.0	1 program of risk material on real options thinking
Strategic Decision-Making Under Uncertainty	Curriculum Development / Lecturer	2005-2006	30	4.7/5.0	2 programs focused on risk management curriculum.
Strategic Marketing Management					
Understanding Buying Behaviors of Large Commercial Producers	Curriculum Development / Lecturer	2003-2007	625	4.3/5.0	13 presentations made based on the results of the Large Commercial Producer Survey.
Linking Finance and Marketing in Agribusiness	Curriculum Development / Lecturer	2005-2007	229	4.75/5.0	14 presentations to help agribusiness managers evaluate financial information for retailers.

(b) Programs for International Audiences

Prior to 2003, Dr. Gray made 9 presentations to international audiences in the policy and strategy areas reaching approximately 300 participants. In all of the programs that were formally evaluated over that period, Dr. Gray received above a 4.0 on 5.0 scale.

Program	Location	Date	Audience	Evaluation	Presentation
Wageningen MBA Programs	W. Lafayette, IN	09/03	25	N/A	U.S. Agricultural Policy: Past, Present, and Future
New Zealand FAME Program	W. Lafayette, IN	07/06	35	4.6/5	U.S. Agricultural Policy Overview
International Agribusiness Management Association Meetings	Buenos Aires, Argentina	06/06	160	N/A	The Future of the World Soya Sector
Taiwan ICDF: Agricultural Policy Development and Management	Taipei, Taiwan	04/07	25	N/A	The Emerging U.S. Agricultural Industry: Implications for Farm Size, Diversity, and Agricultural Policy

3. Publications Related to Continuing Education Programs

Refereed Journal Articles

- Ehmke, C.* and A. Gray*. “The Executive Institute for Commercial Producers Program,” *Journal of Extension*, (24)(5)(2004). ARP # 2007-18209. (2nd Tier)
- Gray, A.*, M. Boehlje*, V. Amanor-Boadu*, and J. Fulton*. “Agricultural Innovation and New Ventures: Assessing the Commercial Potential,” *American Journal of Agricultural Economics*, (86)(5)(2004):1322-1329. ARP# 2007-18208. (1st Tier)
- Melvin, J.*, M. Boehlje*, C. Dobbins*, and A. Gray*. “The DuPont Profitability Analysis Model: An Application and Evaluation of an E-Learning Tool,” *Agricultural Finance Review*, (64)(1)(2004):75-89. ARP# 2007-18214 (2nd Tier)
- Ehmke, C.*, C. Dobbins*, A. Gray*, A. Miller, and M. Boehlje. “Which Way to Grow at MBC Farms?” *Review of Agricultural Economics*, 4(2004):1-14. ARP# 2007-18217. (1st Tier)
- Boehlje, M.*, and A. Gray*. “Restructuring of the Ag Lending Markets: The FCS Dilemma,” *Choices, The Magazine of Food Farm and Resource Issues*, 1st Quarter, (20)(1)(2005). ARP# 2007-18215. (2nd Tier)
- Gray, A.* and M. Boehlje*. “Risk Sharing and Transactions Costs in Producer-Processor Supply Chains,” *Choices, The Magazine of Food Farm and Resource Issues*, 4th Quarter, (20)(4)(2005). ARP# 2007-18222. (2nd Tier)
- Boehlje, M.*, A. Gray*, and J. Detre. “Strategy Development in a Turbulent Business Climate: Concepts and Methods,” *International Food and Agribusiness Management Review*, (8)(2)(2005):21-40. ARP# 2007-18218. (2nd Tier)
- Detre, J.*, B. Briggeman*, A. Gray*, M. Boehlje*. “Scorecarding and Heat Mapping: Tools and Concepts for Assessing Strategic Uncertainty,” *International Food and Agribusiness Management Review*, (9)(1)(2006):71-92. ARP# 2007-18216. (2nd Tier)
- Lynch, K.*, J. Akridge*, S. Schaffer and A. Gray. “A Framework for Evaluating Return on Investment in Management Development Programs,” *International Food and Agribusiness Management Review*, (9)(2)(2006):54-74. ARP# 2007-18219. (2nd Tier)
- Gunderson, M.*, M. Roucan*, M. Boehlje, and A. Gray*. “Analyzing Risk and Uncertainty of New Product Marketing: the Case of eMerge Interactive and Verfিয়ে®,” *International Food and Agribusiness Management Review*, (9)(3)(2006):38-48. ARP# 2007-18221. (2nd Tier)

Purdue Extension Publications

Prior to 2003, Dr. Gray had 13 Extension publications not listed here to conserve space.

- Gray, A.*, and O. Doering. “Issues in Agricultural Policy.” *Purdue Agricultural Economics Report*, February 2003.
<http://www.agecon.purdue.edu/extension/pubs/paer/2003/paer0203.pdf>
- Boehlje, M.*, and A. Gray*. “Risk, Economic Value-Added, and Capital Structure.” *Purdue Agricultural Economics Report*, May 2003.
<http://www.agecon.purdue.edu/extension/pubs/paer/2003/paer0503.pdf>
- Detre, J.*, C. Wilson, and A. Gray. “Investment in Downstream Publicly Traded Firms as a Vertical Integration Strategy to Increase Returns and Reduce Annual Volatility for Pork Producers.” *Purdue Agricultural Economics Report*, August 2003, 11-14.
<http://www.agecon.purdue.edu/extension/pubs/paer/2003/paer0803.pdf>

- Gray, A. "Some Changes in 2004 Farm Programs!" *Purdue Agricultural Economics Report*, February, 2004. <http://www.agecon.purdue.edu/extension/pubs/paer/2004/paer0204.pdf>
- Dobbins, C.* A. Gray, A. Miller, M. Boehlje, and C. Ehmke. "Strategic Planning: Scanning the Horizon." *Purdue University Cooperative Extension Service*, EC-716. May 2004. <http://www.ces.purdue.edu/extmedia/EC/EC-716.pdf>
- Boehlje, M.* , C. Dobbins* and A. Gray*. "The Competitive Environment: New Realities." Farm Business Management for the 21st Century series. *Purdue University Cooperative Extension Service*, EC-717:8. May 2004. <http://www.ces.purdue.edu/extmedia/EC/EC-717.pdf>
- Ehmke, C.* , C. Dobbins* , A. Gray, M. Boehlje, and A. Miller. 2004. "Developing Vision and Mission Statements." Farm Business Management for the 21st Century series. *Purdue University Cooperative Extension Service*, EC-720:12. May 2004. <http://www.ces.purdue.edu/extmedia/EC/EC-720.pdf>
- Gray, A.* , M. Boehlje* , C. Ehmke* , C. Dobbins and A. Miller. "The Internal Analysis of Your Farm Business: What Is Your Farm's Competitive Advantage?" Farm Business Management for the 21st Century series. *Purdue University Cooperative Extension Service*, EC-721:12. May 2004. <http://www.ces.purdue.edu/extmedia/EC/EC-721.pdf>
- Gray, A.* and M. Boehlje*. "Risk Sharing and Transactions Costs in Producer Processor Supply Chains." *Purdue Agricultural Economics Report*, April 2006. <http://www.agecon.purdue.edu/extension/pubs/paer/2006/april/paer0406.pdf>
- Gray, A. "Is Biodiesel as Attractive an Alternative as Ethanol?" *Purdue University Cooperative Extension Service*, ID-341. December 2006. <http://www.ces.purdue.edu/extmedia/ID/ID-341.pdf>
- Gray, A.* and M. Boehlje*. "Overview of the 2007 USDA Farm Bill Proposals for Commodities." *Purdue University Cooperative Extension Service*, EC-745-W. April 2007. http://www.ces.purdue.edu/extmedia/EC/EC_745_W_Commodities.pdf
- Boehlje, M.* , J. Detre* , and A. Gray*. "Overview of Farm Savings Accounts (FSA) Alternatives." *Purdue University Cooperative Extension Service*, EC-746-W. May 2007. <http://www.ces.purdue.edu/extmedia/EC/EC-746-W.pdf>
- Boehlje, M.* , A. Gray* , C. Dobbins, A. Miller and C. Ehmke. "Implementing Strategy: The Key Strategic Decisions for the Farm Business." *Purdue University Cooperative Extension Service*, EC-753, June 2007. <http://www.ces.purdue.edu/extmedia/EC/EC-753.pdf>

Staff Papers

- Boehlje, M.* , A. Gray* , and C. Dobbins*. "Strategy Development for the Farm Business: Options and Analysis Tools." *Purdue University Staff Paper* 04-12. September 2004. http://agecon.lib.umn.edu/cgi-bin/pdf_view.pl?paperid=16838&ftype=.pdf
- Gray, A.* , M. Boehlje* , and J. Akridge*. "Strategic Positioning in Agribusiness: Analysis and Options." *Purdue University Staff Paper* 04-13. September 2004. http://agecon.lib.umn.edu/cgi-bin/pdf_view.pl?paperid=16836&ftype=.pdf

Presented Papers

- Gray, A., M. Boehlje, C. Dobbins, C. Ehmke*, and A. Miller. "Strategic Business Planning for Commercial Producers." Presented Paper. Triennial Conference: Change in Rural America: Social & Management Changes. National Ag Risk Education Library, Lexington, KY, June, 2004. http://www.agrisk.umn.edu/TriennialConference/TriennialPubs/16_8AM/B_GRAY.pdf

Trade Publications

Dr. Gray had 4 trade publications prior to 2003 that are not listed here to conserve space.

Boehlje, M.* and A. Gray*. “U.S. Agriculture in the 21st Century.” *Feed & Grain*. April/May 2003.

Akridge, J. *, and A. Gray*. “Commercial Producer Attitudes Important for Sales Strategy.” *Feedstuffs*. April 12, 2004.

Boehlje, M.*, A.Gray*, B. Briggeman*, and J. Detre*. “Risk and Uncertainty in Agriculture: What Are the Sources?” *Seed World*. May 2004.

Boehlje, M.*, A. Gray*, and B. Briggeman*. “Uncertainty in Agriculture: What are the Sources?” *Seed World*. Volume 15, Number 5, May 2004.

Akridge, J. *, and A. Gray*. “Product Brand May Matter to Commercial Producers.” *Feedstuffs*. June 14, 2004.

Gray, A.*, and J. Akridge*. “Are Producers Always in Search of the Cheapest Price?” *Feedstuffs*. July 12, 2004.

Briggeman, B.*, J.Detre, M. Boehlje, and A.Gray. “Strategic Risk Assessment Through Scorecarding.” *Seed World*. Volume 15, Number 7, July 2004.

Akridge, J.*, and A. Gray*. “Bundle or Menu: What Type of Pricing Strategy Works Best?” *Feedstuffs*. August 9, 2004.

Boehlje, M.*, and A. Gray. “Change and Risk Management: Managing Time and Options.” *Agri-Marketing*. September 2004.

Briggeman, B.*, M. Boehlje*, and A. Gray*. “Bringing Value to Scorecarding.” *Seed World*. Volume 15, Number 9, November 2004.

Briggeman, B.*, M. Boehlje*, A. Gray*. “Putting the Risk Scorecard to Work for Your Seed Company.” *Seed World*. Volume 16, Number 1, January 2005.

Akridge, J.*, M. Boehlje*, and A. Gray. “Strategic Positioning for Retailers/Dealers.” *Agri-Marketing*. October 2006.

Other Instructional Materials Developed for Continuing Education

Decision Support Software for Continuing Education

Prior to 2003, Dr. Gray developed 2 decision support software programs for farm policy analysis.

Gray, A.* “NPV Analysis Program for the MBC Farms Dairy Expansion.” Purdue University, 2003. Excel Spreadsheet available from the author upon request.

Gray, A.* “NPV Analysis Program for the Boone’s Farms’ North Dakota Farm Purchase.” Purdue University, 2003. Excel Spreadsheet available from the author upon request.

Akridge, J., M. Boehlje, C. Ehmke J. Fulton, A. Gray*, W. Oliver, M. Marshall, and M. Roucan. “AICC INventure Software.” Purdue University, 2004.

<https://www.agecon.purdue.edu/planner/>

Gray, A.*, B. Briggeman and J. Detre. “Decision-tree Analysis Program for Strategic Decision Making Under Uncertainty Program.” Purdue University, 2005. Excel Spreadsheet available from the author upon request.

Gray, A.* and M. Roucan. “Financial Linkage Model Analyzer for the John Deere Financial Management Program.” Purdue University, 2004. Excel Spreadsheet available from the author upon request.

Gray, A.* and M. Roucan. "NPV Analysis Program for the Hageman's Tomato Farm Expansion Alternatives." Purdue University, 2006. Excel Spreadsheet available from the author upon request.

Case Studies Developed for Continuing Education

Prior to 2003, Dr. Gray had 3 case studies. An additional case study has been listed under refereed journal articles. These case studies are available from the author upon request.

Ehmke, C.*, A. Gray*, and M. Boehlje. "Boone Brother's Farms, LLC." Center for Food and Agricultural Business, Department of Agricultural Economics, Purdue University, November, 2003.

Roucan, M.*, A. Gray*, and M. Boehlje. "Hageman Tomato Farm." Center for Food and Agricultural Business, Department of Agricultural Economics, Purdue University, CAB CS 05.1, October 2005.

Akridge, J.*, M. Roucan-Kane*, A. Gray*, M. Boehlje and C. Bitsanis. "Excel Cooperative: Strategic Response to the Boom in Ethanol." Center for Food and Agricultural Business, Department of Agricultural Economics, Purdue University, CAB CS 07.2, March 2007.

4. Continuing Education Grants

In addition to the grants below, Dr. Gray received 3 grants prior to 2003 totaling \$19,750 of which he was responsible for \$11,750.

Current Grants

1. Agency/Title: John Deere & Company, *Financial Decision Making*
2. Duration of Funding: January, 2005-June 30, 2008
3. Amount of Award: \$216,550
4. Role: Co-PI with M. Boehlje
5. Responsibility: \$108,275

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1. Agency/Title: Farm Credit Services of Mid America, *Managing Key Customer Accounts*
 2. Duration of Funding: July, 2003 – June, 2008
 3. Amount of Award: \$166,400
 4. Role: Co-PI with M. Boehlje
 5. Responsibility: \$83,200

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1. Agency/Title: Farm Credit Services of Mid America, *Executive Institute for Commercial Producers Alumni Workshop*
 2. Duration of Funding: February, 2005 – February, 2008
 3. Amount of Award: \$49,000
 4. Role: PI
 5. Responsibility: \$49,000
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Past Grants

1. Agency/Title: CAB Open Enrollment Program, *Strategic Decision Making Under Uncertainty*
 2. Duration of Funding: August, 2005 - March, 2007
 3. Amount of Award: \$56,772
 4. Role: Co-PI with M. Boehlje
 5. Responsibility: \$28,386
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1. Agency/Title: Syngenta Corporation, *Business of Potatoes*
2. Duration of Funding: November, 2003 - November, 2006
3. Amount of Award: \$226,258
4. Role: Co-PI with M. Boehlje
5. Responsibility: \$113,129

1. Agency/Title: Syngenta Corporation, *Business of Tomatoes*
2. Duration of Funding: January 26, 2006-January 29, 2006
3. Amount of Award: \$47,136
4. Role: Co-PI with M. Boehlje
5. Responsibility: \$23,568

1. Agency/Title: USDA, *Agricultural Innovation and Commercialization Center*
2. Duration of Funding: December 3, 2003 – December 3, 2004
3. Amount of Award: \$1,000,000
4. Role: Co-PI with M. Boehlje, K. Foster, J. Fulton, C. Lusk, M. Marshall, J. Lusk, J. Akridge, C. Ehmke, B. Jones, B. Tao, K. Hayes, S. Cordes, B. Richert, and E. Pajor
5. Responsibility: \$200,000

1. Agency/Title: Farm Credit Services of Mid America, *Executive Institute for Commercial Producers*
2. Duration of Funding: July 1, 2001 – December 31, 2003
3. Amount of Award: \$630,000
4. Role: Co-PI with M. Boehlje and C. Dobbins
5. Responsibility: \$210,000

1. Agency/Title: Illinois Livestock Development Group, *Strategic Visioning Workshop*
2. Duration of Funding: August 29, 2003
3. Amount of Award: \$6,500
4. Role: Co-PI with M. Boehlje
5. Responsibility: \$3,250

1. Agency/Title: American Seed Trade Assoc., *Management Institute for the Seed Sector of Russia*
2. Duration of Funding: June 1, 2002 – July 31, 2003
3. Amount of Award: \$69,000
4. Role: PI
5. Responsibility: \$69,000

5. Service on University and Departmental Committees

College/University Committees	Year	Role
Agenda and Policy Committee	2004-2007	Member
Helping Students Learn Award	2004-2005	Judge
Grievance Committee	2007-Present	Member

Departmental Committees	Year	Role
Dr. Gray served on 7 departmental committees prior to 2002.		
Seminar Committee	2002-03	Member
Faculty “Super” Search Committee	2003-04	Member
Graduate Student Poster Competition	2004-05	Judge
M.S. Curriculum Review Committee	2004-2005	Member
Department Head Review Committee	2007	Member

6. Evidence of Interdisciplinary and Team Activities

Dr. Gray is involved in a number of team-oriented continuing education activities. The Strategic Business Planning for Commercial Producers project and the National Conference for Agribusiness are two excellent examples of Dr. Gray's team efforts in Extension. Dr. Gray has taken on coordination roles in both of these programs to develop the curriculum and educational materials and to facilitate the delivery of the material to various audiences. Dr. Gray was also a key contributor to the AICC/New Ventures team responsible for developing the INVenture software to help entrepreneurs develop business plans. Finally, Dr. Gray worked with a team of colleagues from Agricultural and Biological Engineering, Agronomy, Animal Science, and Agricultural Economics to develop an educational series focused on the growth of the Indiana livestock sector. He was co-major professor with Dr. Boehlje on a M.S. thesis that researched the feed, harvesting, and environmental absorption resources of Indiana compared to other states and within the state of Indiana. This research was then turned into a staff report and an Extension presentation used as the lead presentation in an Extension education series delivered by the multi-disciplinary team.

7. Consulting Activities Related to Outreach

Dr. Gray has conducted 3 feasibility studies for companies considering investments in biodiesel production facilities and 1 feasibility study for a company considering investment in an ethanol plant. These feasibility studies have been critical in helping Dr. Gray understand the intricacies of the biofuels market from both the firm and macro perspectives.

8. Evidence of National Recognition

(a) Invited Presentations to Peers and National Audiences

Prior to 2003, Dr. Gray had 5 invited presentation not listed here to conserve space.

Gray, A. "U.S. Agricultural Commodity Policy: Income Transfers or Income Stability."

Presentation, *National Center for Food and Agricultural Policy Workshop*, May 2003.

Gray, A. "Economic Analysis of Alternative Indiana State Legislation on Biodiesel." *Soybean Board Eastern Corn Belt Leadership Meeting*, Indianapolis, IN, August, 2003.

Gray, A. "Historical View of Agricultural Policy." *USDA/ERS Purdue Joint Conference on Agricultural Policy*, Indianapolis, IN, October 2003.

Gray, A. "Understanding Buying Behaviors of Large Commercial Producers." *National Agricultural Marketing Association*, Kansas City, MO, April 2004.

Gray, A. "Analysis of alternative Indiana Biodiesel Policies." *Indiana Senate Subcommittee on Rural and Agricultural Business*, August 2004.

Gray, A. "AICC – The Agricultural Innovation and Commercialization Center." *Indiana Senate Subcommittee on Rural and Agricultural Business*, August, 2004.

Gray, A. "Agricultural Innovation and New Ventures: Assessing the Commercial Potential." Presentation of Principal Paper, *American Agricultural Economics Association Meetings*, Denver CO, August 2004.

Gray, A. "Agricultural Policy Outlook." *Midwest Outlook Forum*, August, 2005.

Gray, A. "Corn Vs. Crude: The Future of Ethanol Production." *American Seed Trade Association's National Corn & Sorghum Meetings*, December 2005.

Gray, A. "Agricultural Policy Outlook." *Midwest Outlook Forum*, August, 2006.

- Gray, A. "Outlook for the 2007 Farm Bill." *American Seed Trade Association's National Corn & Sorghum Meetings*, December 2006.
- Gray, A. "Biofuels Industry Outlook." *Colorado Cooperative Council Meetings*, Colorado Springs, CO, February 2007.
- Gray, A. "Agricultural Policy Outlook." *Colorado Cooperative Council Meetings*, Colorado Springs, CO, February 2007.
- Gray, A. and M. Boehlje "Drivers of Change in Farm Business Structure: Implications for Future Policy." Presentation of Principal Paper, *Canadian Agricultural Economics Society*, Portland, OR, July 2007.

(b) Other Evidence of National Impact

•In 2007 Dr. Gray received the American Agricultural Economics Association's award for an Individual Outstanding Extension/Outreach Program – Less than Ten Years of Experience.

•At the request of the U.S. House of Representatives Committee on Agriculture and the U.S. Senate's Committee on Agriculture, Nutrition, and Forestry, Dr. Gray has provided analyses and white papers on several agricultural policy issues. These requests have included analysis of the Farm Financial Protection Act, analysis of the Flexible Fallow program, analysis of the proposal to ban packer ownership of livestock, The FARM21 proposal from Senator Lugar. Dr. Gray's analyses influence the development of Farm Bills, which are written every five to seven years and are the most important pieces of legislation affecting U. S. agriculture. Dr. Gray is considered a key contact for Senator Lugar's staff on issues related to agricultural policy, including the 2007 Farm Bill.

•The Executive Institute for Commercial Producers program has been conducted for more than 100 producers in the five-state Eastern Corn Belt Region. The visibility of this program has resulted in peer land grant institutions in the 12 state Midwestern region adopting portions of the material in their Extension programs. In addition, Dr. Gray has been asked to present Executive Institute material he developed to other audiences around the nation in programs offered by other peer institutions (such as Texas A&M University).

•The website for the Agricultural Innovation and Commercialization Center (AICC), of which Dr. Gray was a major contributor, was recognized in 2006 with the Extension Section of the American Agricultural Economics Association's Outstanding Agricultural Economics Website.

•Since 2003, Dr. Gray has been quoted in numerous local and national press outlets including: *Wall Street Journal*(2), *New York Times*(1), *Agriculture Online*(3), *AgWeb.Com*(14), *Rushville Republican* (5), *South Bend Tribune* (2), *Indianapolis Star* (1), *Dealer & Applicator* (3), *Farm Journal Media* (1).

SECTION C: DISCOVERY

1. Current Research Programs

Dr. Gray's applied research program supports his Extension programs in agribusiness management. His research is focused on developing information to help farmers, agribusinesses, and policymakers make sound strategic decisions in an uncertain environment. Dr. Gray values his interaction with graduate students in his research and involves them in these activities through supervision of theses and dissertations as well as through publications outside of the students' main research where possible. A brief description of some of Dr. Gray's research efforts are provided below.

Strategic Management for Farmers and Small Business – Risk and returns to developing a market for value-added grains have become an integral part of Dr. Gray's programs for farmers helping them understand the tradeoffs associated with entering the value-added grains market. In 2005, Dr. Gray supervised the work of Michael Meagher, an M.S. student, examining the risk and returns to producer investment in a corn masa flour plant. This work has been instrumental in Dr. Gray's Extension work helping producers understand the strategic issues associated with vertical integration in to value-adding activities. In 2007, Dr. Gray supervised the work of Alea Lynch, an M.S. student, on estimating technical change in U.S. corn yields. This work has been presented at the 2007 American Agricultural Economics Association meetings and a journal article is currently in process. This work will make a major contribution to Dr. Gray's work in helping producers and agribusinesses understand the strategic implications of supplying and acquiring corn with increasing demand for corn for biofuels.

Agricultural Policy – In a cooperative agreement between Dr. Gray and USDA's Economic Research Service (USDA-ERS) Dr. Gray supervised a research project by his Ph.D. student, Brian Briggeman, to develop a taxonomy of U.S. farm household types. This taxonomy of household types is driven by the ERS Agricultural Resource Management System (ARMS) database. This research has led to the completion of Brian Briggeman's dissertation, a number of presentations to regional and national conferences, a journal article in the *Review of Agricultural Economics*, and the development of a technical bulletin for ERS that will be published in the near future describing the new typology. USDA-ERS has adopted the typology as an alternative to their widely used farm typology and has begun additional analyses using this typology. The new typology is contributing to Dr. Gray's goal of developing policy models that incorporate the behavior of farm households to illustrate how alternative farm policies impact different farm households in different ways. The collaborative effort has generated \$145,000 in funds to date and is anticipated to spawn more funding in the future.

Dr. Gray is also pursuing research on the risk and returns to alternative farm policies to support his Extension efforts in this area. In 2004, Dr. Gray and his colleagues published a journal article in the *Review of Agricultural Economics* that measures the effects of various agricultural policy tools and their collective impact on the value of crop insurance for farmers. This article lends strong support to the argument that many agricultural policy tools conflict with each other causing inefficiency in policy spending. An M.S. student, Jacob Acmoody, recently finished his thesis focusing on the development of a farm level simulation model to examine the risk and return impacts of farm policy changes with a special emphasis on impacts on asset values and

debt repayment capacity. This research effort has led to two professional association presentations. Research results from both studies have been requested by Congressional staff and politicians during debate on agricultural policy. In 2007, Dr. Gray was a committee member on Josh Detre's Ph.D. dissertation, "The Effect of Farm Savings Accounts on Farm Household's Portfolios." This work has contributed to the understanding of how farm savings accounts, as an alternative farm policy, affect the investment behavior of farm households. This research has led to one Extension publication and a journal submission from this work is in development.

Dr. Gray has also conducted research on state level agricultural policies. A research project with the Indiana Soybean Board examined the impacts of alternative state-level biodiesel policies on the Indiana economy. The research has resulted in a research report and a *Purdue Agricultural Economics Report* as well as a number of Extension presentations on the future of biofuels in the U.S. Dr. Gray has also been involved in research to understand the impediments to growing the livestock industry in the State of Indiana. Tyler Mark's M.S. thesis addressed this issue resulting in a staff paper and an Extension presentation used as part of an Extension series on the State of Indiana livestock sectors.

Risk Management – Recent increases in the rate of structural change in agriculture places increasing emphasis on quantifying the impacts of vertical integration, supply chains, and contracting arrangements on the structure of agriculture. Dr. Gray works with Drs. Preckel and Boehlje to develop models to explain and estimate the impacts of alternative coordination arrangements on structure in the value-added grains industry and the pork producer/packer industry. Funding from the USDA-NRI, USDA-ERS, and the American Farm Bureau Foundation has supported this research. To date, this research has resulted in the completion of two dissertations (Mike Poray and Stephen Slinksky), four selected paper presentations, four referred journal articles and a staff report. Michael Poray's dissertation work addressed coordination in the hog industry between packers and producers. This research illustrates the benefits of closer coordination in this value chain through contracts and vertical coordination. This work is quickly becoming an integral part of the agricultural policy debate on regulating vertical coordination in the pork industry. In addition, Dr. Poray's work led to three additional journal articles published by Drs. Gray, Boehlje, and Preckel examining the risk/return tradeoffs in the pork supply chain. This work is contributing to the professions understanding of the importance of balancing risk sharing in the sustainability of value chains.

Understanding Key Customer Decisions -- Understanding the changing farm businesses of commercial agricultural producers is fundamental to the success of firms and organizations providing products, services, and information to agriculture. To provide insights into the current and expected structure and demands of these changing agricultural enterprises, Dr. Gray, through the Center for Food and Agricultural Business (CAB), is conducting a study of commercial producer buying behavior -- a continuation of studies conducted in 1993, 1998, and 2003. The study provides a comprehensive look at a critical group of large, commercial agricultural enterprises. The current study will examine the buying behaviors and preferences of large commercial producers and will take a longitudinal look at the data to see how producers' attitudes and buying behaviors are changing over time. From the 2003 study, numerous Extension presentations and industry publications were developed as well as a research report. In addition, the 2003 survey results were used in an M.S. thesis and a Ph.D. dissertation. As

with the previous studies, the 2008 large producer study will be the primary focus of the 2008 National Conference for Agribusiness organized and led by Dr. Gray and his colleagues in CAB. Finally, in 2004 and 2006, Dr. Gray was the major professor for Tony Torres and Michael Gunderson. Their dissertations explore customer relationship management practices and producers' willingness to pay for various levels of service quality. Dr. Torres work has recently resulted in a journal article. Dr. Gunderson's work is the major focus of the 2007 National Conference for Agribusiness, and a journal article from his work has been submitted for review.

2a. Published Work

Articles Published in Refereed Journals

- Gray, A.*, J. Richardson*, and J. McClaskey. "Farm Level Impacts of Revenue Assurance." *Review of Agricultural Economics*, 17(1995):171-183. (1st Tier)
- Gray, A.*, W. Harmon*, J. Richardson*, A. Wiese, G. Regier, P. Zimmel, and V. Lansford. "Economic and Financial Impacts of Residue Management: An Application in the Texas High Plains." *Journal of Production Agriculture*, 10(1997):175-183. (2nd tier)
- Sprott, L. R.*, M. D. Harris, J. W. Richardson*, A. W. Gray*, and D. W. Forrest. "Pregnancy to Artificial Insemination in Beef Cows as Affected by Body Condition and Number of Services." *Professional Animal Scientist*, 14(1998):231-235. (2nd Tier)
- Krueger, A. *, V. Salin*, L. Eden, G. Williams and A. W. Gray*. "Profitability of Geographic Diversification." *Journal of Food Distribution*, 30(1999):112-123. (2nd Tier)
- Richardson, J.W*. S.L. Klose*, and A.W. Gray*. "Procedure for Estimating MVE Probability Distributions." *Journal of Agricultural and Applied Economics*, 32(2000):299-315. (2nd Tier)
- Krueger, A. *, V. Salin*, and A. W. Gray* "Market Integration and Profitability of Geographic Diversification Under Uncertainty." *Agribusiness: An International Journal*, 18(2002):81-99. Purdue Journal Paper #16938. (2nd Tier)
- Poray, M.*, A. Gray*, M. Boehlje*, P. Preckel. "Evaluating Alternative Coordination Systems in the Pork Industry." *International Food and Agribusiness Management Review*, (6)(2)(2003):65-85. ARP# 2007-18220. (2nd Tier)
- Gray, A.W. *, B. Gloy*, M. Boehlje*, and S. Slinsky. "Impacts of Alternative Government Payment Mechanisms on the Probability Distribution of Returns to Land and the Value of Crop Revenue Insurance." *Review of Agricultural Economics*, 2(2004):238-253. Purdue Journal Paper # 16894. (1st Tier)
- Preckel, P.V*. , A. Gray*, M. Boehlje*, and S. Kim*. "Risk and Value Chains: Participant Sharing of Risk and Rewards." *Journal on Chain and Network Science* (4)(1)(2004):25-32. ARP# 2007-18224. (2nd Tier)
- Florence, J. *, W.E. Tyner*, and A. Gray*. "La stabilisation du revenu des agriculteurs: un objectif central dans les politiques agricoles des Etats – Unis et de L'Union Européene." *Economie Rurale*, 281(2004):5-22. ARP# 2007-18228. (2nd Tier)
- A. Gray*, M. Boehlje*, and P. Preckel*. "Value Chain Risk and Reward Sharing and Governance Structures: Implications for Industry Strategy and Structure." *Journal on Chain and Network Science*, (6)(1)(2006):45-54. ARP# 2007-18225. (2nd Tier)
- Detre, J. *, C. Wilson*, and A. Gray*. "Buying Stock in Value-Added Companies: Can it Help Manage Annual Volatility in Pork Production Returns" *Agricultural Finance Review*, 67 (2007):175-196. ARP# 2005-17718 (2nd Tier)

- Torres, T.*, J. Akridge*, A. Gray, M. Boehlje and R. Widdows. "An Evaluation of Customer Relationship Management (CRM) Practices Among Agribusiness Firms." *International Food and Agribusiness Review*, (10)(1)(2007):36-60. ARP# 2007-18229(2nd Tier)
- Briggeman, B.*, A. Gray*, M. Morehart, T. Baker and C. Wilson. "A New U.S. Farm Household Typology: Implications for Agricultural Policy." *Review of Agricultural Economics*, (29)(4) (2007): in press. ARP# 2007-18226. (1st Tier)

Research Abstracts

- Gray, A.*, J. Richardson*, and J. McClaskey. "Farm Level Impacts of Revenue Assurance." *Journal of Agricultural & Applied Economics*, 27(1995):315.
- Gray, A.* and A. Saha. "Impacts of Farm and Non-Farm Income on Land Values." *Journal of Agricultural & Applied Economics*, 28(1996):221.
- Gray, A.*, and D. Anderson. "A Simulation Approach to Agribusiness Behavior Modeling." *American Journal of Agricultural Economics*, 80(1998):1208.
- Bewley, J.*, M. Boehlje, A. Gray, S. Kenyon, S. Eicher, M. Schutz. "Development of a Stochastic Simulation Model to Assess the Potential Economic Benefits Associated with Investment in Precision Dairy Farming Technologies." *Journal of Dairy Science*, 84(2006):1.

Proceedings Papers

- Craig, D. M.* and A. W. Gray*. "Strategic Choices in the Enhanced Seed Market for a Farm Supply Cooperative." Proceedings of the Annual Conference for the International Food and Agribusiness Management Association, Florence Italy, 14-15 June 1999.
http://agecon.tamu.edu/iama/1999%20Congress/Forum%20Papers_PROCEEDINGS/Gray_Allan.PDF

Staff Reports

- Gray, A.W* and P.V. Preckel*. "Voluntary Set-Aside with a Price Risk Management Incentive." West Lafayette: Purdue University Department of Agricultural Economics. *Staff Paper Series, No.00-5*, June 2000.
- Diaz-Hermelo, F.*, A.W. Gray*, E. G. Smith*, J. W. Richardson, P. Feldman and C. White. "Strategic Cooperative Financing to Meet the Challenges of a Changing Structure of Agriculture." West Lafayette: Purdue University Department of Agricultural Economics. *Staff Paper Series, No.01-5*, August 2001.
- Poray, M.*, A. Gray*, and M. Boehlje*. "Evaluation of Alternative Coordination Systems between Producers and Packers in the Pork Value Chain." West Lafayette: Purdue University Department of Agricultural Economics. *Staff Paper Series, No.02-05*, August 2002.
- Althoff, K., C. Ehmke, and A. Gray. "Economic Analysis of Alternative Indiana State Legislation on Biodiesel." Department of Agricultural Economics and The Center for Food and Agricultural Business, Purdue University ARP #17107, Revised July 2003.
- Akridge, J., C. Alexander, M. Boehlje, D. Downey, A. Falwell, D. Foley, A. Gray, L. Whipker, and C. Wilson. "Serving Commercial Producers: Meeting Needs, Adding Value." Purdue University Department of Agricultural Economics and the Center for Food and Agricultural Business. *Staff Paper Series, No.04-04*, March 2004.
- Althoff, K. and A. Gray. "Analysis of the Impacts Resulting from the 2002 Farm Bill on Indiana Fruit and Vegetable Growers." West Lafayette: Purdue University Department of

Agricultural Economics. *Staff Paper Series, No.04- 05*. June, 2004.

http://agecon.lib.umn.edu/cgi-bin/pdf_view.pl?paperid=14641&ftype=.pdf

Gray, A., J. Detre, and B. Briggeman. "Valuing Limited Information in Decision Making Under Uncertainty." West Lafayette: Purdue University Department of Agricultural Economics. *Staff Paper Series, No.05-02*. May, 2005.

http://agecon.lib.umn.edu/cgi-bin/pdf_view.pl?paperid=16036&ftype=.pdf

Boehlje, M. A. Gray, and T. Mark. "The Growth Potential for the Indiana Livestock Industries." West Lafayette: Purdue University Department of Agricultural Economics. *Staff Paper Series No.06-06*. April 2006. http://agecon.lib.umn.edu/cgi-bin/pdf_view.pl?paperid=21951&ftype=.pdf

2b. Unpublished Work

Gunderson, M.*, J. Akridge*, and A. Gray*. "Service Quality in Agronomic Inputs: Does the Hierarchical Model Apply?" *Review of Agricultural Economics*. In Review. ARP# 2007-18227.

3. Research Results Presentations

Dr. Gray and his colleagues made 14 presentations of research results prior to 2002 that are not listed here.

Gray, A.W. "Analysis of Farm Policy Alternatives: A Collaborative USDA and University Effort," selected paper, *Southern Agricultural Economics Association Meetings*, Orlando FL, 6 February 2002.

Davis, T.,* A. Gray*, and M. Boehlje*. "Evaluating Supply Chains in the Specialty Grains Market for High Oil Corn," selected paper at *12th Annual World Food & Agribusiness Symposium and Conference*, IAMA, The Netherlands. June 2002.

Detre, J.*, A. Gray*, and C. Wilson*. "Investment in Publicly Traded Firms as a Vertical Integration and A Risk Diversification Strategy," selected paper, *American Agricultural Economics Association Meetings*, Long Beach CA, 28-31 July 2002.

http://agecon.lib.umn.edu/cgi-bin/pdf_view.pl?paperid=14453&ftype=.pdf

Poray, M.*, A. Gray*, M. Boehlje*, P. Preckel. "Evaluating Alternative Coordination Systems in the Pork Industry," selected paper, *13th Annual World Food & Agribusiness Symposium and Conference*, IAMA, Cancun Mexico, 21-24 June 2003.

<http://www.ifama.org/conferences/2003Conference/papers/gray.pdf>

Detre, J., A. Gray, T. Nilsson, and C. Schroeter. "The Need for Optimal Incentives in Popcorn Contracts under Uncertainty," selected paper, *14th Annual World Food & Agribusiness Symposium and Conference*, IAMA, Montreaux Switzerland, 12-15 June 2004.

<http://www.ifama.org/conferences/2004Conference/Papers/Detre1087.pdf>

Detre, J., B. Briggeman, and A. Gray. "Compound Options: A Real Options Application to an Agricultural Business," selected paper, *American Agricultural Economics Association Meetings*, Denver CO, 1-5 August 2004. http://agecon.lib.umn.edu/cgi-bin/pdf_view.pl?paperid=14453&ftype=.pdf

http://agecon.lib.umn.edu/cgi-bin/pdf_view.pl?paperid=14453&ftype=.pdf

Preckel, P.V., A. Gray, and M. Boehlje, S. Kim. "Vertically Aligned vs. Open Market Coordination: Dominance or Co-Existence," selected paper, *American Agricultural Economics Association Meetings*, Denver CO, 1-5 August 2004.

http://agecon.lib.umn.edu/cgi-bin/pdf_view.pl?paperid=14488&ftype=.pdf

Detre, J., Briggeman, B., A. Gray and M. Boehlje. "Scorecarding and Heat Mapping: Tools and Concepts for Assessing Strategic Uncertainty," selected paper *15th Annual World Food &*

- Agribusiness Symposium and Conference*, IAMA, Chicago IL, 25-28 June 2005.
http://www.ifama.org/conferences/2005Conference/Papers&Discussions/1044_Paper_Final.pdf
- Rios, A. and A. Gray. "U.S. Agriculture: Commercial and Large Producer Concentration and Implications for Agribusiness Segments," selected paper, *15th Annual World Food & Agribusiness Symposium and Conference*, IAMA, Chicago IL, 25-28 June 2005.
http://www.ifama.org/conferences/2005Conference/Papers&Discussions/1080_Paper_Final.pdf
- Briggeman, B.C., M.A. Gunderson, J.D. Detre, and A.W. Gray. "Protecting Your Turf: First Mover Advantages as a Barrier to Competitor Innovation," selected paper, *15th Annual World Food & Agribusiness Symposium and Conference*, IAMA, Chicago IL, 25-28 June 2005.
http://www.ifama.org/conferences/2005Conference/Papers&Discussions/1045_Paper_Final.pdf
- Gray, A. and P. V. Preckel. "Vertically Aligned vs. Open Market Coordination: Dominance or Coexistence," selected paper, *International Federation of Operational Research Societies' Triennial Conference*, Honolulu, HI, 10-15 July 2005. http://www.euro-online.org/ifors/display.php?page=treat_abstract&frompage=edit_session_cluster&sessionid=184&paperid=1199&admin=
- Rios, A. and A. Gray. "U.S. Agriculture: Commercial and Large Producer Concentration and Implications for Agribusiness Segments," selected paper, *American Agricultural Economics Association Meetings*, Providence RI, 24-27 July 2005. http://agecon.lib.umn.edu/cgi-bin/pdf_view.pl?paperid=16367&ftype=.pdf
- Tyner, W., F. Jacquet, and A. Gray. "Farm Income Stabilization: A Central Goal for American and European Policies," presented paper, *XIth EAAE Congress*, Copenhagen, Denmark, 23-27 August 2005.
http://www.eaae2005.dk/ORGANISED_SESSION_PAPERS/OS3_AAEA_Tyner_etal.pdf
- AcMoody, J. J.V. Balagtas, A. Gray*, and M. Boehlje. "Farm Level Incidence of the U.S. Farm Policy Proposal to the WTO," selected paper, *American Agricultural Economics Association Meetings*, Long Beach, CA, July 2006. Available online at http://agecon.lib.umn.edu/cgi-bin/pdf_view.pl?paperid=21881&ftype=.pdf
- Gray, A., P. Preckel, and M. Boehlje. "The Case for Heterogeneity in the Pork Supply Chain: Sharing of Risks and Rewards," selected paper, *17th Annual World Food Symposium and Conference*, IAMA, Parma, Italy, June 2007.
http://www.ifama.org/conferences/2007Conference/SymposiumPapers_files/1072_Paper.pdf
- Akridge, J., A. Reimer, M. Boehlje, and A. Gray. "Market Segmentation Practices of Retail Agribusiness Firms," selected paper, *15th Annual World Food & Agribusiness Symposium and Conference*, IAMA, Parma, Italy, June 2007.
http://www.ifama.org/conferences/2007Conference/SymposiumPapers_files/1053_Paper.pdf
- Gunderson, M., J. Akridge, M. Boehlje, A. Gray, and J. Lusk. "Invest in People, Products, or Plants? Farmer Preferences for Service Quality Attributes," selected paper, *15th Annual World Food & Agribusiness Symposium and Conference*, IAMA, Parma, Italy, June 2007.
http://www.ifama.org/conferences/2007Conference/SymposiumPapers_files/1019_Paper.pdf
- Lynch, A., A. Gray, and M. Holt. "Modeling Technical Change in U.S. Corn Yields," selected paper, *American Agricultural Economics Association Meetings*, Portland, OR, July 2007.
http://agecon.lib.umn.edu/cgi-bin/pdf_view.pl?paperid=26363&ftype=.pdf

4. Involvement in the Graduate Program

Completed Graduate Student M.S. Theses Supervised

- Craig, D.M. "Strategic Choices in the Enhanced Seed Market for an Input Supply Cooperative." *M.S. thesis*, Purdue University, June 1999. (1 Presented Paper)
- Collantes-Gentes, C. "Impacts of Alternative B2B Arrangements in the Agrochemical Industry for Retailers." *M.S. thesis*, Purdue University, October 2001.
- Detre, J.D. "Investment in Downstream Publicly Traded Firms as a Vertical Integration Strategy to Increase Returns and Reduce Annual Volatility." *M.S. thesis*, Purdue University, August 2002. (1 presented paper and 1 journal article) .
- Althoff, K. "Economic Analysis of Alternative Indiana State Legislation for Biodiesel." *M.S. thesis*, Purdue University, June 2004. (1 research report)
- Meagher, M. "Analysis of the Potential Returns of a Corn Masa Flour Production Facility Utilizing Stochastic Simulation." *M.S. thesis*, Purdue University, May 2005.
- Lynch, A. "Modeling Technical Change in U.S. Corn Yields." *M.S. thesis*, Purdue University, August 2007. (1 presented paper).

Completed Graduate Student Ph.D. Dissertations Supervised

- Diaz-Hermelo, F. "Modeling Member Responses to the Farmer Owned Cooperative's Alternative Capital Management Strategies." *Ph.D. dissertation*, Purdue University, September 2001. (2 presented papers, 1 research report, and 1 submitted journal article). Dr. Diaz-Hermelo is currently a Professor at Buenos Aires University, Argentina.
- Davis, T. "Risk and Returns in Developing a Market for Value-Added Grains: A Case Analysis Using High-Oil Corn." *Ph.D. dissertation*, Purdue University, October, 2001. (2 presented papers, 1 extension publication, and 2 journal submissions). Dr. Davis is currently an Extension Economist at Clemson University.
- Poray, M. "Measuring the Impacts of Alternative Coordination Mechanisms on the Pork Industry." *Ph.D. dissertation*, Purdue University, December 2002. (3 presented papers, and 1 journal article). Dr. Poray is currently an Asset Manager for Constellation Energy Group.
- Slinsky, S. "Optimal Production Planning with Uncertainties Inherent to Biological Production Processes: The Popcorn Company Case." *Ph.D. dissertation*, Purdue University, December 2004. Dr. Slinsky is currently a Staff Economist with the National Cotton Council.
- Torres, A. "Factors Influencing Customer Relationship Management (CRM) Performance in Agribusiness Firms." *Ph. D. dissertation*, Purdue University, December 2004. (1 journal submission). Dr. Torres is currently a Marketing Analyst for Tanamura and Antle.
- Briggeman, B. "A New U.S. Farm Household Typology: Implications for Agricultural Subsidies." *Ph. D. dissertation*, Purdue University, May 2006. (3 presented papers, 1 research report, and 1 journal article.) Dr. Briggeman is currently an Assistant Professor at Oklahoma State University.
- Gunderson, M. "The Economics of Delivering Service in Agribusiness." *Ph. D. dissertation*, Purdue University, September 2006. Dr. Gunderson is currently an Assistant Professor at the University of Florida.

Summary of Graduate Student Involvement

Served as Major Professor

Completed M.S. – Non-thesis	2	M.S. in Process – Non-thesis	0
Completed M.S. – thesis	6	M.S. in Process – thesis	0
Completed Ph.D.	7	Ph.D. in Process	1

Served as Member of Advisory Committee (not major professor)

Completed M.S. – Non-thesis	1	M.S. in Process – Non-thesis	0
Completed M.S. – thesis	19	M.S. in Process – thesis	1
Completed Ph.D.	1	Ph.D. in Process	1

5. Research Grants and Awards Received:

External Funds: current grants

1. Agency/Title: ERS-USDA, *Understanding Farm Household Decision-Making Behavior*
 2. Duration of Funding: July, 2007 – September, 2008
 3. Amount of Award: \$20,000
 4. Role: Co-PI with R. Keeney
 5. Responsibility: \$10,000
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External Funds: past grants

1. Agency/Title: ERS-USDA, *Understanding Farm Household Decision-Making Behavior*
 2. Duration of Funding: September 13, 2004 – September 30, 2006
 3. Amount of Award: \$125,000
 4. Role: Co-PI with C. Wilson, and M. Boehlje
 5. Responsibility: \$41,667
-

1. Agency/Title: Indiana Pork Producers, *The Growth Potential for Indiana Livestock Industries*
 2. Duration of Funding: September 1, 2004 – August 31, 2005
 3. Amount of Award: \$40,000
 4. Role: Co-PI with M. Boehlje
 5. Responsibility: \$20,000
-

1. Agency/Title: Indiana Soybean Board, *Economic Analysis of Alternative Legislation on Biodiesel*
 2. Duration of Funding: January 2003 – September 2003
 3. Amount of Award: \$42,513
 4. Role: PI
 5. Responsibility: \$42,513
-

1. Agency/Title: American Farm Bureau, *Impacts of Alternative Coordination Mechanisms on the Hog Production/Packing Sub Sector*
 2. Duration of Funding: January 2001 – December 2001
 3. Amount of Award: \$50,000
 4. Role: Co-PI with M. Boehlje
 5. Responsibility: \$40,000
-

1. Agency/Title: Bayer Chemical, *The Impact of Alternative Business-to-Business Arrangements between Agricultural Chemical Manufacturers and Retailers*
 2. Duration of Funding: December 2000 – September 2001
 3. Amount of Award: \$28,000
 4. Role: PI
 5. Responsibility: \$28,000
-

1. Agency/Title: USDA-CSREES, *Analysis of the Consequences of Alternative Structural Arrangements on the Agricultural Sector*
 2. Duration of Funding: August 2000 – September 2001
 3. Amount of Award: \$26,000
 4. Role: Co-PI with P. Preckel and M. Boehlje
 5. Responsibility: \$8,500
-
1. Agency/Title: USDA-RBS, *The Role of Cooperative Financing in the Changing Structure of Agriculture*
 2. Duration of Funding: October 1999 – September 2000
 3. Amount of Award: \$37,500
 4. Role: Co-PI with E. Smith (Sub-Contract) Texas A&M
 5. Responsibility: \$20,000
-
1. Agency/Title: USDA/NRI, *Systems Assessment of High-Oil Corn at the Farm, Elevator and End-User Levels*
 2. Duration of Funding: October 1999 – September 2001
 3. Amount of Award: \$156,000
 4. Role: Co-PI with F. Dooley, J. Fulton, D. Maier, and T. Vyn
 5. Responsibility: \$52,000
-
1. Agency/Title: Midland Coop , *Modeling Firm-Level Economic and Financial Behavior of a Retail Agronomic Supply Firm*
 2. Duration of Funding: October 1998 – June 1999
 3. Amount of Award: \$500
 4. Role: PI
 5. Responsibility: \$500
-
1. Agency/Title: USDA-CSREES, *Analysis of the Consequences of Alternative Structural Arrangements on the Agricultural Sector*
 2. Duration of Funding: October 1998 – March 2000
 3. Amount of Award: \$25,987
 4. Role: Co-PI with P. Preckel, O. Doering, M. Boehlje
 5. Responsibility: \$6,000
-

Internal Funds

1. Agency/Title: ARP, *Systems Assessment of High-Oil Corn at the Farm, Elevator and End-User Levels*
 2. Duration of Funding: September 1999 – August 2001
 3. Amount of Award: \$28,000
 4. Role: Co-PI with F. Dooley, J. Fulton, D. Maier, T. Vyn
 5. Responsibility: \$5,600
-

6. Evidence of National/International Recognition

Refereed 1 article for the *American Journal of Agricultural Economics*
 Refereed 1 article for the *Canadian Journal of Agricultural Economics*
 Refereed 2 articles for the *Journal of Applied and Agricultural Economics*
 Refereed 1 article for *Journal of Agribusiness*
 Refereed 1 article for *Agribioforum*
 Refereed 2 articles for *International Food and Agribusiness Management Review*

Refereed 3 articles for *Choices, The Magazine of Food Farm and Resource Issues*

Section Review Chair and Session Moderator for *Southern Agricultural Economics Association Meeting's* presented papers section. Fall 2000.

Policy Section Reviewer for the *American Agricultural Economics Association Meeting's* selected papers section. 2002.

Reviewer for the 17th Annual *World Food Symposium and Conference*, selected papers section, 2007.

Choices Editorial Board. 2005-Present.

Board of Directors for the International Food and Agribusiness Management Association, 2007-present.

SECTION D: LEARNING

Dr. Gray teaches two courses in quantitative methods in the fall semester. AGEC596A is taught to resident M.S. students in agricultural economics. AGEC692 is a distance delivered course taught to students in joint MS/MBA program offered jointly between Purdue University's Department of Agricultural Economics and the Kelley School of Business at Indiana University. Finally, Dr. Gray team teaches a Ph.D. level agribusiness strategy course with Drs. Boehlje and Fulton every other spring semester. Dr. Gray has received consistently high ratings for all of his courses. In addition, Dr. Gray has received awards for his efforts in developing and delivering his distance-based course.

1. Evaluations and Courses Taught: 2002-2007

University Cafeteria Student Ratings (Mean) Core Questions

Year	Course	Credit Hours	Students	Course Ratings		Benchmark Ratings ¹	
				Course	Instructor	Course	Instructor
03-04	AGEC596A	3	17	4.4	4.7	4.1	4.2
04-05	AGEC596A	3	11	4.9	4.9	4.3	4.4
05-06	AGEC596A	3	21	4.7	4.5	4.3	4.3
06-07	AGEC596A	3	13	4.0	4.0	4.4	4.6
02-03	AGEC692	3	15	4.8	4.9	4.2	4.4
04-05	AGEC692	3	8	4.6	4.7	4.1	4.2
05-06	AGEC692	3	23	3.6	3.7	4.3	4.4
06-07	AGEC692	3	17	4.0	4.3	4.4	4.6
02-03	AGEC691E ²	3	15	N/A	N/A	4.2	4.4
04-05	AGEC691E	3	3	N/A	N/A	4.1	4.2
06-07	AGEC691E	3	9	N/A	N/A	4.4	4.6
05-06	AGEC690 ³	3	8	4.8	4.8	4.3	4.3

¹ Benchmark courses are MS level AGEC courses for that particular year.

² AGEC 691E is jointly taught by Drs. Gray, Boehlje and Fulton. However, Dr. Fulton was the instructor of record. Thus, only Dr. Fulton receives ratings for this course.

³ AGEC690 is the Quantitative Methods II course taught in the MS/MBA program. Dr. Gray taught this course during the fall of 2005. Dr. Fulton now teaches this course.

2. Contributions in Course and Curriculum Development

Dr. Gray has developed and delivered a distance-based quantitative methods course since 1999. The course focuses on providing incoming MS/MBA students with a working knowledge of basic quantitative techniques. The course covers descriptive statistics, probability theory, hypothesis testing, linear and multiple regression, forecasting techniques, and stochastic simulation. A critical dimension of the course is the almost exclusive use of distance technology. Since students spend more than 80% of the course off-campus at their normal jobs, the material for the course must be delivered via the Internet. The course uses audio lecture recordings, animated lab lessons, immediate feed-back quizzes, textbook reading assignments, homework problems, and cases in quantitative decision-making to deliver the material. Dr. Gray has received university and national teaching awards based on the success of this course.

Dr. Gray has had success engaging distance-based students in his quantitative analysis course through flexibility and utilization of a systematic approach to keep the students involved with the materials, instructor, and other students. Dr. Gray personalizes his recorded lectures by calling on specific students within the lecture to address their comments or questions received the previous week. In addition, Dr. Gray provides students with feedback on their assignments through a personalized recording, allowing for timely feedback. Dr. Gray has also implemented a plan to make sure distance students have answers to their questions within 12 hours of sending in their questions allowing them to be more efficient in their study time. Finally, Dr. Gray uses group work for several of the activities in his course to help the distance students develop relationships with each other and to learn from each other. This integration of teaching methods has been recognized by both University level and national level teaching awards.

In September of 2003, Dr. Gray introduced a new 500 level course in quantitative methods and applied simulation techniques based primarily on the work in his MS/MBA course. The course filled a need in the department for an applied treatment of statistical methods and stochastic simulation for M.S. and Ph.D. students. The course covers key concepts in the analysis of data in a wide range of agricultural business settings with a focus on helping students learn to communicate the results of quantitative analysis in a business setting. A critical dimension of the course is the application of the techniques to “real world” case problems where students have an opportunity to analyze real world data sets. In addition, students have the opportunity to build a simulation model from scratch, and use it to analyze alternative risky decisions. Many of these case problems come from Dr. Gray’s research projects and projects developed by students in his MS/MBA course. This course is having a clear impact on the level of rigor employed in M.S. theses in the department. Dr. Gray’s active involvement in graduate student research (indicated in the previous section of this document) is a direct reflection of the number of students eager to employ the methods taught in this course.

3. Preparation of Instructional Materials

Dr. Gray has prepared extensive handout material, PowerPoint lecture slides, and homework problem sets for his courses. Comprehensive web sites have been developed for Dr. Gray’s applied simulation and quantitative analysis courses.

4. Activities that Have Contributed to Teaching Effectiveness

Dr. Gray's Extension and research program is complementary to his teaching efforts. He draws on these experiences to keep students abreast of state-of-the-art research in agribusiness management decision-making under uncertainty. His research also allows him to develop "real world" problem sets. Involvement in the Center for Food and Agricultural Business similarly enriches the experiences Dr. Gray can bring to his classes, providing a much more "real-world" orientation.

5. Other Evidence of Teaching Excellence

(a) Teaching Awards

Distance Learning Award for Excellence in Distance Teaching: Higher Education, 2002.

United States Distance Learning Association -- The United States Distance Learning Association is a non-profit organization promoting development and application of distance learning at the K-12, higher education, and continuing education levels. Eighty nominations were submitted in 2002 and only one award was given in each category. Nominations were judged based on a weighted criteria of overall course effectiveness, innovation in course design, innovation in technology, innovation in teaching strategies, and peer support letters.

1922 Helping Students Learn Award – Purdue University, Provost Office, 2002.

(b) National Teaching Organizations

Virtual Education Consortium Advisory Council -- Dr. Gray was selected to the advisory council for this new consortium in 2002. The consortium's mission is to promote the use and enhancement of distance education technologies and pedagogy in all educational venues.

6. Teaching Related Publications and Presentations:

Referred Publications

Briggeman, B.*, A. Gray* and J. Detre*. "Using Limited Information to Support the Decision to Launch a New Product in the Fruit Juice Market: A Teaching Case Study." *Review of Agricultural Economics*. In Press.

Other Publications and Presentations

Gray, A. "Teaching Quantitative Materials at a Distance." Presentation at the World Food and Agribusiness Forum. International Agribusiness Management Association, June 2000.

Gray, A. "Learning to Deliver a Quantitative Methods Course via Distance Education." Poster at the Teaching, Learning, and Technology Showcase, Purdue University, Feb/Mar 2000.

Torres, A.*, and A. Gray*. "Teaching Quantitative Methods Via Distance Technology." Poster presented at the WCC-72 Conference on Agribusiness, Las Vegas, NV. June 2001.

Richardson, J.* and A. Gray*. "Simulation for Risk Analysis." Workshop conducted at the American Agricultural Economics Association Meetings, Long Beach, CA. August 2002.

Gray, A. "Engagement in Distance Education." Presentation delivered to the Education Technology Brown Bag series at Purdue University, September 2002.

ALLAN W. GRAY
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