

# RESEARCH THEMES, AUTHORS, AND METHODOLOGIES IN THE *JOURNAL OF AGRICULTURAL EDUCATION*: A TEN YEAR LOOK

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## *Abstract*

*The Journal of Agricultural Education (JAE) has been a primary outlet of agricultural education publishing and research and activity dissemination—a claim validated in this study. The purpose of this study, which was a part of a larger study, was to assess ten-years of JAE to determine primary and secondary research theme areas, frequent primary and secondary research themes by year, prolific authorship, and research methods and types used, using a mixed-methods design. Analyzed in this study were 323 research articles published in JAE from 1997 through 2006. Thirty-nine primary research theme areas and 37 secondary research theme areas were identified. The compilation list of primary and secondary research themes, and prolific themes identified by year are reported. There were 751 JAE authors identified, with James Dyer (9.0%) being the most prolific. Quantitative research methods were the most common (80.5%). The most frequent research method types were survey methods (45.5%). Research themes appear cyclic and additional research must be completed to determine depth and research influence of the potential cycles. Researchers must diversify their methodological research types to go beyond survey research. This research should be used comparatively with priorities areas identified in the National Research Agenda to determine where future research focus should be incorporated.*

## Introduction

Agricultural education contributes scholarship to agricultural and educational systems by linking technical areas of agriculture and humanistic dimensions (Barrick, 1989). It is difficult both to determine the impact of agricultural education and to see its future potential (Williams, 1991). In 1987, the North Central Association of State Agricultural Experiment Station Directors expanded its social science area with the acceptance of agricultural education as a discipline (NCA-24 Committee, 1987). With recognition of agricultural education as a discipline, researchers have sought to understand the theoretical and conceptual underpinnings in context, and numerous attempts have been made to focus the discipline. These attempts have typically focused on three main objectives: (a) analyzing the dimensions of agricultural education, (b) summarizing critiques of agricultural education research, and (c) suggesting strategies to focus the discipline (Barrick, 1989). More recently, the scope has expanded to include (d) summarizing prolific authors (Harder & Roberts, 2006; Radhakrishna & Jackson, 1995; Radhakrishna, Jackson, & Eaton, 1992); and (e) identifying statistical methods used (Bowen, Rollins, Baggett, & Miller, 1990; Dyer, Haase-Wittler, & Washburn, 2003; Mannenbach, McKenna, & Pfau, 1984). Newcomb (1993) indicated a need to transform university agricultural education programs by broadening them and defining programs of inquiry. In 1990, agricultural education researchers were encouraged to “develop an improved conceptual framework for future investigators” and “integrate existing work” (Birkenholz, Harbstreit, & Law, 1990, p. 32).

Although there have been few specific calls from the discipline to examine its essence, numerous scholars have expounded on disciplinary typology (Baker, Shinn, & Briers, 2007; Barrick, 1989; Buriak & Shinn, 1989, 1993; Crunkilton, 1988; Dyer et al., 2003; Frick, Kahler, & Miller, 1991; Hamlin, 1966; Harder & Roberts, 2006; Knight, 1984; Kotrlik, Barlett, Higgins, & Williams, 2001, 2002; Love, 1978; Mannebach, 1981; Mannebach et al., 1984; McCracken, 1983; McKinney, 1987; Miller, 2006; Miller, Stewart, & West, 2006; Moore, 1991, 2006; Moss, 1986; Radhakrishna, 1995; Radhakrishna, Eaton, Conroy, & Jackson, 1994; Radhakrishna & Jackson, 1992, 1993, 1995; Radhakrishna & Mbaga, 1995; Radhakrishna & Xu, 1997; Shinn, 1994; Silva-Guerrero & Sutphin, 1990; Warmbrod, 1986, 1987; Warmbrod & Phipps, 1966). However, the review of literature failed to identify a holistic examination of research in the discipline. It is essential to examine critical components of agricultural education research to understand the current state of research and take a more futuristic approach to knowledge pursuit, development, and examination.

“The future of agricultural research depends upon many variables, not the least important of which is acquisition and application of new knowledge generated from research” (Dyer et al., 2003, p. 61). Moore (2006) posited that it is clear agricultural educators are not “driving” the profession; they spend their time “dabbling in esoteric research that doesn’t have much relevance to the real world” (p. 1). Concerns have been voiced about whether agricultural education is actively engaged in research that is needed, progressive, and rigorous. Since the 1990s, rapid growth in research and publishing activities in agricultural education has resulted in a plethora of agricultural education literature (Radhakrishna & Jackson, 1995), and new research outlets were created. “Given the institutional demands of research, teaching, extension, and service, faculty often must allow one area to suffer to meet the expectations of another” (Myers & Dyer, 2004). If research suffers then every aspect of the agricultural education discipline suffers with it.

The need for this research is grounded in research by Ball and Knobloch (2005); Baker, Shinn, and Briers (2007); Crunkilton (1988); Knight (1984); Miller, Stewart, and West (2006); Newcomb (1993); and Radhakrishna and Xu (1997). Knight wrote that a discipline's journals and magazines are good indicators of research priorities in the discipline. Radhakrishna and Xu found that research journal articles are indicators of the profession's scientific activity, philosophy, and application. Ball and Knobloch indicated that it is critical for practitioners to examine the knowledge base of the field to allow the profession to reflect upon actions and ultimately improve the discipline. Crunkilton identified the need for agricultural education to know where it can and should go with research in its pursuit to develop empirical knowledge. Newcomb called for agricultural education research to become more focused, coordinated, and conducted passionately. Miller, Stewart, and West identified the need to review literature to maintain a clear sense of the discipline's research agenda. Baker, Shinn, and Briers indicated the need to examine core knowledge objects and knowledge domains. The expressed need to focus the agricultural education discipline, examine its knowledge base, and review its literature creates a call for use of a holistic approach to examine research in agricultural education.

There have been few specific calls in agricultural education to examine the essence of its research. Yet, there is a need to understand where the discipline has been to allow the profession to better understand where to focus research efforts in the future. "There is a need to re-examine agricultural education in a future that has already happened. Has the knowledge changed along with the times?" (Baker et al., 2007, p. 1). Baker, Shinn, and Briers indicated a need to examine core knowledge objects and collective knowledge domains for agricultural education, and this need remains. In an effort to strengthen research agendas, the *National Research Agenda [NRA]: Agricultural Education and Communication, 2007-2010* was created as a guide for developing futuristic research (Osborne, n.d.). Yet, how can we be sure where we are headed with research, and if the direction is adequate and appropriate, if we are unclear as to where we have been? There is a need, as illustrated by research, to analyze the dimensions of agricultural education in a holistic manner and suggest strategies to focus the discipline and prepare it for the future.

In the past, agricultural education has used limited and infrequent approaches to examining its research. By holistically examining critical components of agricultural education research, the discipline can deepen its understanding of the current state of research and take a more futuristic approach to knowledge pursuit, development, and examination. The discipline might examine many components: research theme areas, variety in research theme areas by year, prolifically published authors, and types of research being conducted. Because a discipline's journals are indicators of research priorities (Knight, 1984), by analyzing research journals it should be possible to examine dimensions of agricultural education in the *Journal of Agricultural Education (JAE)*. Understanding research occurring in agricultural education can assist the discipline and other integrated specializations, as identified in the *NRA*, to more fully focus literary contexts and further strengthen the discipline. This study assisted in creating an agricultural education framework by determining the experience-base of research reported in *JAE*. Until we understand the depth and type of research occurring in our premier journal, we will be unable to determine what futuristic research should occur in agricultural education.

## Conceptual Framework

The future of agricultural education depends on many variables and application and acquisition of new knowledge via research is extremely important (Dyer et al., 2003). Yet, the quality of research has been questioned for more than two and a half decades, and in some cases has been identified as inferior to other disciplines (Buriak & Shinn, 1993; Dyer et al., 2003; Radhakrishna & Xu, 1997; Silva-Guerrero & Sutphin, 1990; Warmbrod, 1986).

The conceptual framework of the study (Figure 1) was grounded in work by numerous scholars in agricultural education. Several researchers have completed various components of journal analysis in agricultural education: familiarity and quality of journals and importance of faculty publishing (Radhakrishna, 1995; Radhakrishna & Jackson, 1993); research theme areas (Buriak & Shinn, 1993; Dyer et al., 2003; Miller et al., 2006; Moore, 1991; Radhakrishna & Xu, 1997; Silva-Guerrero & Sutphin, 1990); prolific authors (Harder & Roberts, 2006; Radhakrishna & Jackson, 1995; Radhakrishna et al., 1992); and statistical methods used (Bowen, Rollins, Baggett, & Miller, 1990; Dyer et al., 2003; Mannenbach et al., 1984).

This study examined all research articles published in *JAE* from 1997 to 2006. The study assessed primary and secondary research theme areas, authorship, and research methods and types using a content analysis approach. This research is the first step in identifying a research experience-base framework for agricultural education, using the premier journal, as identified in a field study. Conceptually, this research examined agricultural education with respect to five identified integrated specialization areas of teacher education, extension education, agricultural communications, international agricultural education, and leadership education by analyzing scholarship in published *JAE* research articles. The experience-base, from this research, can then be used as a framework to suggest future research strategies when compared to the *NRA*.

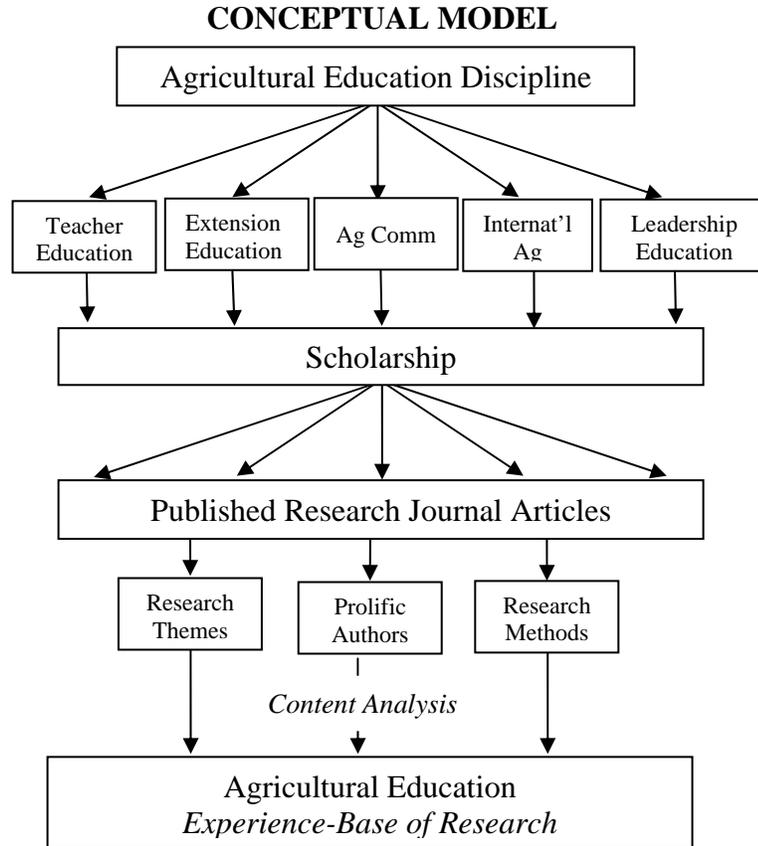


Figure 1. Conceptual base of the study.

### Purpose and Objectives

The purposes of this study, which was a part of a larger study, were to review research published in the *Journal of Agricultural Education* from 1997 to 2006 and to examine the historical record of the journal to provide a base of past research, in order to create an experience-base to examine and direct future research. *JAE* is a research journal with authors who are university and college faculty; it is not a practitioner-based outlet. The specific objective was to describe and synthesize published research in the *JAE* during the ten year period by: (a) identifying primary (knowledge-base) and secondary (conceptual-base) research themes in published research articles; (b) identifying primary and secondary research theme areas among research articles published by year; (c) identifying the most prolific authors; and (d) identifying research methods and designs.

### Research Methods and Procedures

This study employed a mixed-methods content analysis design. Content analysis as a research method has existed for decades, and the best content-analytic studies use mixed methods methodologies (Weber, 1990). Content analysis can be used to give researchers insight into problems or hypotheses that can then be tested by more direct methods. Content analysis is a systematic, replicable technique for compressing many words of text into fewer content categories based on explicit rules of coding (Berelson, 1952; Krippendorff, 1980; Weber, 1990).

Content validity was maintained using both previous research as a guide and a field study to focus the research. Baker, Shinn, and Briers (2007) identified 104 individuals as active agricultural education research authors. A field questionnaire was developed and sent to 96 of those authors with valid email addresses. The contacted authors were asked to identify premier journals and to validate or add to research theme categories. Research theme categories were created based on previous content analyses of journals in the specializations of teacher education, extension education, agricultural communications, international agricultural education, and leadership education. These categories were provided to the pilot study, and it was the respondents' responsibility to compress or expound on research theme areas. The pilot study identified 37 research theme areas for the five specialization areas identified in the *NRA*. Dillman's (2000) Tailored Design Method was used, and 62 of 96 possible respondents completed the questionnaire, yielding a 65% response rate.

Research journal articles from 1997 to 2006, in the identified premier journal, the *Journal of Agricultural Education*, were used as the frame for the study. The main focus of each article (knowledge-base) was coded as the primary research theme area. The most prevalent supporting theme (conceptual-base) was identified as the secondary theme of each article. The principal investigator and a peer independently reviewed the material and formed a checklist of information required during the review of each journal article. The researchers compared notes and reconciled differences on their initial checklists via negotiations. Researchers used a consolidated checklist to independently apply coding. The researchers then checked for agreement in coding; if reliability was not acceptable, then the previous steps were repeated. Once reliability had been established, the coding was applied on a large-scale basis. The final stage was a periodic quality control check (Weber, 1990). Inter-coder reliability was completed, with at least 10% overlap for the reliability test. Final reliability was calculated using a random sample of 5% of the analyzed articles. Reliability was assessed using Spearman's rho. Reliabilities met or exceeded the minimum standard of .70 (Bowen et al., 1990; Tuckman, 1999).

## Findings

The *Journal of Agricultural Education* was identified in the field study as the premier research journal by 93% of respondents. All research journal articles ( $N = 323$  articles) published in *JAE* from 1997 to 2006 were analyzed. Primary research themes identified in *JAE* are shown in Table 1. There were 39 primary research themes identified in *JAE* in the ten-year content analysis. The most frequently identified primary research theme was teacher preparation and competence (10.2%). The second most frequent primary research theme was needs assessment, identified in 9.0% of the *JAE* research articles. Primary research theme areas identified in *JAE* research articles 6.5% or fewer times are identified in the table.

Secondary research themes identified in the *JAE* are displayed in Table 2. There were 37 secondary research theme areas identified. The most frequently identified secondary research theme was teacher preparation and competence (11.8%). The second most frequent secondary research theme was food, agriculture, natural resources, health, and family, identified in 6.5% of the research articles. Secondary research theme areas identified 6.2% or fewer are in the table.

Table 1

*Primary Research Themes Identified in the Journal of Agricultural Education 1997–2006*

(*N* = 323)

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Research Theme	<i>f</i>	<i>P</i>
Teacher Preparation and Competence	33	10.2
Needs Assessment	29	9.0
Perceptions and Attitudes Assessment	21	6.5
Food, Agriculture, Natural Resources, Health, and Family	20	6.2
Research (methods and models)	17	5.3
Academic Programs	12	3.7
Critical Thinking	12	3.7
Distance Education	12	3.7
Evaluation	12	3.7
Instructional and Program Delivery Approaches	12	3.7
Processes, Principles, and Styles of Learning	12	3.7
Youth Leadership and Development	12	3.7
Appropriateness of Education	10	3.1
Leadership Management	10	3.1
Institutional Organization and Institutionalization	8	2.5
Curriculum and Program Development	7	2.2
Professional Development	7	2.2
Service and Experiential Learning	7	2.2
Diversity (culture, ethnicity, gender)	6	1.9
Knowledge Competencies and Development	6	1.9
Leadership Development	6	1.9
Volunteer Development and Leadership	6	1.9
Career Development and Assessment	5	1.5
Leadership Education	5	1.5
Agriculture Literacy	4	1.2
Communication Management	4	1.2
Formal and Informal Teaching Approaches	4	1.2
Skill Development and Competencies	4	1.2
Communication Technology	3	0.9
Policy Issues	3	0.9
Communications of Scholarship	2	0.6
Globalization and Internationalization	2	0.6
Information Sources and Technology	2	0.6
Organizational Development and Leadership	2	0.6
Writing	2	0.6
Diffusion of Innovations	1	0.3
Marketing and Promotion	1	0.3
Media Relations	1	0.3
Quality of Life and Life Skills	1	0.3

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Table 2

*Secondary Research Themes Identified in the Journal of Agricultural Education 1997–2006*  
(*N* = 323)

Research Theme	<i>f</i>	<i>P</i>
Teacher Preparation and Competence	38	11.8
Food, Agriculture, Natural Resources, Health, and Family	21	6.5
Curriculum and Program Development	20	6.2
Distance Education	18	5.6
Evaluation	18	5.6
Formal and Informal Teaching Approaches	17	5.3
Institutional Organization and Institutionalization	17	5.3
Youth Leadership and Development	17	5.3
Instructional and Program Delivery Approaches	16	5.0
Appropriateness of Education	15	4.6
Academic Programs	12	3.7
Processes, Principles, and Styles of Learning	12	3.7
Diversity (culture, ethnicity, gender)	9	2.8
Perceptions and Attitudes Assessment	9	2.8
Professional Development	9	2.8
Needs Assessment	8	2.5
Leadership Management	7	2.2
Research (methods and models)	6	1.9
Communications of Scholarship	5	1.5
Leadership Education	5	1.5
Volunteer Development and Leadership	5	1.5
Career Development and Assessment	4	1.2
Critical Thinking	4	1.2
Knowledge Competencies and Development	4	1.2
Leadership Development	4	1.2
Quality of Life and Life Skills	4	1.2
Skills, Knowledge, and Competencies	4	1.2
Community Development and Leadership	3	0.9
Accountability	2	0.6
Information Sources and Technology	2	0.6
Media Relations	2	0.6
Collaborations, Partnerships, and Coalitions	1	0.3
Consumer/Audience Response and Analysis	1	0.3
Globalization and Internationalization	1	0.3
Marketing and Promotion	1	0.3
Policy Issues	1	0.3
Service and Experiential Learning	1	0.3

Table 3 identifies most frequently-occurring primary research themes by year. Theme details, frequencies, and percentages can be seen in the table.

Table 3

*Most Identified Primary Research Themes in the Journal of Agricultural Education by Year*  
(*N* = 323)

Year	Research Theme	<i>n</i>	<i>f</i>	<i>P</i>
1997	Needs Assessment	29	6	20.7
1998	Needs Assessment	26	4	15.4
1999	Needs Assessment	30	7	23.3
2000	Food, Agriculture, Natural Resources, Health, and Family	43	5	11.6
2001	Perceptions and Attitudes Assessment	27	4	14.8
2002	Teacher Preparation and Competence	28	3	10.7
2003	Teacher Preparation and Competence	31	4	12.9
2004	Teacher Preparation and Competence	34	4	11.8
2005	Teacher Preparation and Competence	33	6	18.2
2006	Teacher Preparation and Competence	42	10	23.8

Table 4 outlines frequently used secondary research themes, identified in the *JAE*, by year. Theme details, frequencies, and percentages can be seen in the table.

Table 4

*Most Identified Secondary Research Themes in the Journal of Agricultural Education by Year*  
(*N* = 323)

Year	Research Theme	<i>n</i>	<i>f</i>	<i>P</i>
1997	Youth Leadership and Development	29	4	13.8
1998	Appropriateness of Education			
	Distance Education			
	Diversity (ethnicity, gender, culture)			
	Evaluation (4-way tie)	26	3	11.5
1999	Perceptions and Attitudes Assessment	30	4	13.3
2000	Teacher Preparation and Competence	43	8	18.6
2001	Food, Agriculture, Natural Resources, Health, and Family			
	Institutional Organization and Institutionalization (2 way tie)	27	3	11.1
2002	Teacher Preparation and Competence	28	4	14.3
2003	Teacher Preparation and Competence	31	5	16.1
2004	Institutional Organization and Institutionalization	34	4	11.8
2005	Distance Education			
	Institutional Organization and Institutionalization			
	Teacher Preparation and Competence (3-way tie)	33	4	12.1
2006	Teacher Preparation and Competence	42	9	21.4

Prolific authors identified in *JAE* are listed in Table 5. No distinction was made between lead and supporting authorship. There were 751 authors (duplicated count) identified in the 323 analyzed *JAE* articles. James Dyer was identified as the most prolific author in the journal, authoring or co-authoring 29 of the 323 articles (9.0%). Additional prolific *JAE* authors are identified in the table.

Table 5

*Prolific Authorship in the Journal of Agricultural Education 1997–2006 (N of Authors = 751; N of Articles = 323)*

<i>JAE</i> Author	<i>f</i>	<i>P</i> of Authors	<i>P</i> of Articles
Dyer, James E.	29	3.9	9.0
Miller, Greg	19	2.5	5.9
Lindner, James R.	12	1.6	3.7
Rudd, Rick D.	12	1.6	3.7
Williams, David L.	11	1.5	3.4
Roberts, T. Grady	10	1.3	3.1
Ball, Anna L.	9	1.2	2.8
Balschweid, Mark A.	9	1.2	2.8
Edwards, M. Craig	9	1.2	2.8
Garton, Bryan L.	9	1.2	2.8
Thompson, Gregory W.	9	1.2	2.8
Briers, Gary E.	8	1.1	2.5
Knobloch, Neil A.	8	1.1	2.5
Johnson, Donald M.	8	1.1	2.5
Murphy, Tim H.	8	1.1	2.5
Osborne, Edward W.	8	1.1	2.5
Wingenbach, Gary J.	8	1.1	2.5
Conroy, Carol A.	7	0.9	2.2
Dooley, Kim E.	7	0.9	2.2
Kelsey, Kathleen D.	7	0.9	2.2
Myers, Brian E.	7	0.9	2.2
Talbert, B. Allen	7	0.9	2.2
Trexler, Cary J.	7	0.9	2.2
Connors, James J.	6	0.8	1.9
Cano, Jamie	6	0.8	1.9
Gamon, Julia A.	6	0.8	1.9
Gartin, Stacy A.	6	0.8	1.9
Shih, Ching-Chun	6	0.8	1.9
Torres, Robert M.	6	0.8	1.9

Research methods used in the *JAE* were identified. Quantitative research methods were the most common at 80.5% (260 out of 323 articles), followed by qualitative in 11.1% of the articles (36 out of 323); the least often used research methods were mixed qualitative and quantitative methods (8.4%; 27 out of 323). Research designs used in the 323 analyzed articles published in the *JAE* are outlined in Table 6. Surveys were the most frequent research design used (45.5%). Correlation research designs were used in 10.5% of the published research. Additional research designs and procedures, in *JAE* research articles, are identified in the table.

Table 6

*Research Design Used in the Journal of Agricultural Education 1997–2006 (N = 323)*

Design	<i>f</i>	<i>P</i>
Survey	147	45.5
Correlation	34	10.5
Experimental	28	8.7
Historical	25	7.7
Delphi	19	5.9
Ex Post Facto	12	3.7
Case Study	9	2.8
Content Analysis	9	2.8
Interviews	9	2.8
Evaluation	8	2.5
Other designs	23	7.1

### Conclusions

The *Journal of Agricultural Education* was identified as the premier journal in agricultural education. Although *JAE* was identified as the premier journal, the discipline relies on numerous additional journals to disseminate scholarship. Research in *JAE* is adding to the scope and topography of research occurring in the discipline.

In articles published, variety in research theme areas was seen. However, teacher preparation and competence monopolized the discipline, being the most frequently identified primary and secondary research theme. Needs assessment was the most frequently identified primary research theme from 1997 to 1999. Investigations focusing on teacher preparation and competence were the most frequent research theme areas published in *JAE* journal articles from 2002 to 2006. Research themes were cyclic, moving between primary and secondary and moving out of primary and secondary for a time before cycling back in. An example of this phenomenon is the theme teacher preparation and competence. It is seen as the most frequent secondary research theme in 2000 and then cycles out before being the most frequent primary and secondary research theme in 2002. This theme remains the most frequent primary research theme throughout the analyzed years, and was noted as the most identified secondary research theme area in 2003, 2005, and 2006. These apparent research cycles may be indicators of the breadth of research occurring in the field. But are they indicators of research depth? Frequent research themes may be indicators of what agricultural educators' value in terms of research priorities.

Numerous researchers add to the scope of the discipline; no author or authors dominated *JAE*. Quantitative research employing survey methods were most prevalent in agricultural education research. Based on research methods and designs, agricultural education lacks research methodological diversity and scope and, perhaps, depth and quality—if one assumes that depth and quality are indicated by methods that move toward cause and effect relationships.

This study was an attempt to establish an experience-base in research occurring in agricultural education. It is critical to create an experience-base in order to complete a comprehensive and holistic examination of a benchmark, such as the *NRA*. Ball and Knobloch (2005) and others have indicated the explicit need to improve the agricultural education discipline, and this study was undertaken in an effort to assist in that area. We must make every effort to understand the depth and impact of agricultural education research.

### **Discussion and Implications**

Baker, Shinn, and Briers (2007) issued a specific call to examine the knowledge domains of agricultural education. Miller, Stewart, and West (2006) identified the need to review literature to maintain a clear sense of the discipline's research agenda. This study identified variety in research theme areas in published agricultural education research. Agricultural education research may reflect a broader view as it examines elements of various knowledge domains. Furthermore, numerous researchers add to the scope and topography of the discipline; no author or authors dominated the discipline. Because researchers bring with them a variety of interests in research topics and strategies, this finding is important in research diversity.

Furthermore, this research discovered that numerous researchers add consistently to the scope and topography of agricultural education research; however, there are prolific authors who clearly led the way in published research in *JAE*. Because researchers bring with them a variety of interests in both research topics and strategies, this finding is an important component in research stability and diversity. Would the discipline benefit from prolific authors assisting graduate students and new faculty with developing research focus? Can we better utilize prolific authors by highlighting their areas of expertise and using them as specialists? Would this allow us the opportunity to move from a generalist approach in examining knowledge to becoming research area (theme) experts?

Knight (1984) and Radhakrishna and Xu (1997) indicated that published research journal articles are indicators of the profession's current state. Although this research supports Knight and Radhakrishna and Xu, it also provides a note of caution and an evident need for more variety in research methodology and design in the discipline. If research reported in *JAE*, over the past ten years is indicative of all research in the discipline, then there is a clear need to improve methodological research strategies beyond survey research. There has been criticism regarding research rigor and diversity in the discipline. The findings of this study indicate that a majority of research in agricultural education is survey research. There is a need to engage in more rigorous research methodologies to answer the "why" questions as well as the "what is." There is a need to understand if current research is adding to depth and not just the breadth of research.

In 1993, Newcomb identified a need to transform university agricultural education programs; he encouraged universities to broaden programs by offering leadership programs,

extension education, agricultural communications, and international development and to add depth to teacher education programs. The 1990s was a time of rapid growth in research and publishing activities in agricultural education; this resulted in enormous growth of agricultural education literature (Radhakrishna & Jackson, 1995; Sax et al., 1999). Since that time research programs have shifted and publication outlets have increased. It is critical that agricultural education have a clear picture of past research priorities and strategies to allow the discipline to continue to improve its investigations. As faculty members in agricultural education continue to forge new alliances and diversify funding portfolios, it is important to know where we have been in order to identify where we should go in the future. This study was a step in determining an experience-base of research in agricultural education. This research attempted to outline research priorities, strategies, and designs used during the past ten years; it calls for a comparison of the identified experience-base to a futuristic framework, such as the *National Research Agenda: Agricultural Education and Communication, 2007-2010* (Osborne, n.d.).

### **Recommendations**

The profession must continue to reflect upon those actions that ultimately improve and strengthen the discipline. It is imperative that professionals in agricultural education improve research methodologies to include more experimental research. We must understand if today's research is adding to the depth of our "well" of research and not merely to the breadth. Our research should strive for depth, richness and impact. We must continue to deepen our "well" of knowledge and not just enlarge our "pool." As a discipline, do we have the volume and quality of theoretical underpinnings and fundamental works needed to support us as we expand the broadness of our "well"? Or do we need to continue to move deeper before we expand in width? Reflections regarding efforts to improve and diversify the discipline must continue. Additional research must be completed to expand the research themes identified in this study. Broader research themes would assist agricultural education in determining how research is incorporated into the integrated specialization areas, as identified in the *NRA*, as well as other disciplines and research initiatives.

A pattern appears to exist in the primary and secondary research themes identified in this study. Further inquiries should be completed to determine the degrees of research theme cycles, meaningfulness of cycles, and how cycles affect agricultural education both as an area of scholarship and as an area of practice. Agricultural education researchers must diversify their research methodological portfolios to include more variety in research methods and designs. Additional investigations should be completed to determine the depth and rigor of survey methods used in our research. Research must continue to determine whether current research methodologies are serving the discipline in an effort to advance its scholarship. Further discovery should be done to provide methods and standards for exceptional rigorous research in agricultural education. Investigations should also focus on determining the breadth and depth of exploration and application of research in each of the identified research theme areas represented in this study.

Additional research must be completed to determine the breadth and depth of research themes identified in this study, and how/if these themes affect research occurring in agricultural education. Current agricultural education research (experience-base) must be compared to emerging research priorities for the discipline. By using a benchmark, such as the *National Research Agenda: Agricultural Education and Communication, 2007-2010*, (Osborne, n.d.),

agricultural education can better determine if past research is supporting emerging research priority areas, and determine where adjustments must be made. It is also critical to determine how agricultural education research is incorporated into other disciplines and research initiatives.

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