Assessing Research Capacity In Agricultural Education: A Departmental And Disciplinary View

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Abstract

The purpose of this study was to assess the research capacity of agricultural education from a departmental and disciplinary perspective. The population consisted of agricultural education department chairs located in universities during the 2000-2001 academic year (*N*=86). Sixty-four department chairs representing 36 states returned the questionnaire, yielding an overall response rate of 74%.

The findings indicated a wide disparity in the human capacity for research in agricultural education. The discipline of agricultural education was characterized by a number of relatively small programs, with few faculty FTEs, and little graduate student support. It was concluded that most agricultural education programs have sufficient research support staff and research infrastructure to meet their needs. Further, the primary disciplinary strengths were in the areas of Curriculum Development & Instructional Design, and in Needs Assessment.

This study revealed that the discipline of agricultural education had numerous strengths to contribute to interdisciplinary research initiatives. Agricultural education faculty should be encouraged to participate in collaborative research that addresses problems of social significance. Experiment station directors and funding agency administrators should be made aware of the potential contributions that agricultural educators can offer interdisciplinary research teams. Furthermore, agricultural education faculty should strive to integrate courses and research experiences into doctoral programs to ensure that future faculty are adequately prepared for success in a cultural environment that emphasizes the need for interdisciplinary research.

Introduction and Theoretical Framework

Agricultural education by its very nature is a teaching profession. The primary motive that has prompted most university agricultural education faculty to pursue a career in higher education is the desire to be an effective teacher, and the satisfaction of contributing to the success of their students. Over the years, agricultural educators have devoted their primary efforts toward teaching and service functions (Buriak & Shinn, 1989). Faculty in agricultural education are recognized at universities for their ability to teach, advise students, design curriculum, and conduct people-oriented activities.

Research, a major function of most institutions of higher learning, has been and remains an important professional expectation. However, "most agricultural educators do not have the passion for research that they do for teaching" (Newcomb, 1993, p. 2). Miller (1998) challenged the profession to view research as a means to contribute to a knowledge base, and the "application of that knowledge to help solve the real problems of people" (p. 10). Silva-Guerrero and Sutphin (1990) described research as "a line of inquiry to focus the profession on salient problems that are significant to the future of agricultural education" (p. 2).

Research in agricultural education has a relatively short history. Although agricultural education faculty have been employed by land grant universities since the early 1900s, it wasn't until 1960 that the *Journal of the American Association of Teacher Educators in Agriculture*, now known as the *Journal of Agricultural Education*, was first published. The first National Agricultural Education Research Meeting was held in 1974. Faculty attending this meeting witnessed presentations of research papers on topics primarily related to problems facing secondary agricultural educators (Birkenholz & Greiman, 1999).

Through the years, agricultural education research has evolved while striving to improve the credibility of its research efforts. Radhakrishna (1998a) reviewed papers presented at National Agricultural Education Research Meetings from 1974 to 1997. He found that subject matter topics had expanded tremendously from traditional topics to new and emerging research areas. However, as the scope of research topics expanded, his findings suggested that there was no systematic research agenda for the profession. This has led to the characterization that agricultural education research lacks focus.

Other authors in the profession have identified similar concerns regarding research activities in agricultural education. Buriak and Shinn (1989) found that external decision-makers (i.e., Deans of Resident Instruction in Agriculture, Directors of Experiment Stations, Deans of Education) perceived agricultural education research as lacking focus and sufficient funding, and was being conducted for promotion and tenure rather than for its importance and utility to the profession. A similar conclusion was reached through a national study (Buriak & Shinn, 1993), when it was found that internal experts in agricultural education were either reluctant or incapable of focusing research.

Several colleagues in the profession have addressed the concern of conducting purposeful research in agricultural education. Warmbrod (1986) complimented the profession for improving the sophistication of research design, and the quality of statistical procedures.

However, he warned that researchers should not over emphasize the research process at the expense of considering significant problems. Moore (1994) presented colleagues a basic research axiom: "The purpose of agricultural education research is to find answers to meaningful questions and problems" (p. 14). Chairs of past National Agricultural Education Research Meetings concluded that while the profession should celebrate and encourage diversity in research, individual faculty and departments should embrace a research focus (Radhakrishna, 1998b). Chairs suggested the need for more applied research that is interdisciplinary in nature, and challenged the profession to develop a systematic research agenda.

The agricultural education profession has made limited attempts to develop a programmatic research approach. Silva-Guerrero and Sutphin (1990) determined priority topics and categories for research in agricultural education, and ascertained their level of relevance at the state, regional, and national level. Their study recommended that researchers should prioritize relevant topics to develop programmatic and collaborative research. However, little progress towards focused research in agricultural education has resulted over the past decade.

How might a collaborative and focused research effort assist agricultural educators? Brown (1980) suggested that programmatic research efforts on the regional and national level might compensate for shortages of FTEs in agricultural education. He challenged agricultural educators to conduct focused, rigorous, long-term research, and to collaborate with researchers on a regional level to solve major problems.

Further, Newcomb (1993) identified lack of funding, lack of staffing, lack of time, and lack of maturity as limitations of the research effort in agricultural education. To overcome these challenges, he suggested coordinated partnerships to research well defined areas. The profession should add depth to its scholarship by producing a "demonstrated track record of sustained discoveries that reach a critical mass" (p. 7). Williams (1991) suggested that partnerships with agencies, industry, and teams of researchers would allow for interdisciplinary research. He contended that multiple researchers who provide increased expertise and resources could better conduct research projects. Jordan (1993) argued that research in agricultural education should extend beyond its disciplinary confines to address larger and more significant research problems.

In addition to agricultural education, other disciplines received similar advice regarding the need for collaborative research efforts. Recommendations concerning the future direction of land grant research suggested an increased emphasis on inter- and multidisciplinary research, and the need for collaboration across disciplines, institutions, and states (Committee on the Future of the Colleges of Agriculture in the Land Grant University System, 1996). Team research that produces useful answers, and other interdisciplinary approaches have been recommended as priorities for the land grant system (Board on Agriculture, 1996). Synergy developed through collaboration was identified as a means to advance research efforts beyond what might have been accomplished by a single researcher (Hafernik, Messerschmitt, & Vandrick, 1997).

Faculty in agricultural education are in a position to contribute to interdisciplinary research in an attempt to develop solutions to major societal problems affecting agriculture and rural areas. However, agricultural education as a discipline needs to be able to effectively assess and communicate the role and scope of its potential contributions. Agricultural researchers,

experiment station directors, and funding agency administrators should be made aware of the potential contributions that agricultural educators can offer to interdisciplinary research. In order to communicate the skills and abilities of agricultural education researchers, it is necessary to assess individual, institutional, and disciplinary strengths.

While previous studies on research in agricultural education have focused on strategies and priorities to improve research, few have assessed research capacity. Boakye-Dankwah and Smith (1991) examined research productivity of agricultural education faculty members in a national study. Factors that faculty considered critical to conducting research were having assigned time for research, availability of qualified graduate assistants, and having a collaborative departmental climate. In a similar study, Kotrlik, Bartlett, Higgins, and Williams (2001) reported that the most important variables in faculty research productivity were number of doctoral students advised, self-confidence in conducting research, and the number of graduate assistant hours allocated to the faculty member.

Birkenholz and Greiman (2000) found that agricultural education faculty were primarily oriented toward teaching, with lesser but nearly equal time devoted to administrative, research, and service activities. They also found individual faculty expertise in each of 27 disciplinary skill areas; but could not discern a core set of skills that were uniform across all faculty. A related study examined the departmental and disciplinary research capacity from the perspective of department chairs in the North Central Region (Greiman & Birkenholz, 2000). The study found a wide disparity among departments in the number of FTE faculty, number of graduate students, and number of available graduate assistantships. Further, the disciplinary categories of Needs Assessment, and Curriculum Development & Instructional Design were identified as disciplinary strengths.

For the purpose of this study, research capacity was defined as the collective capability of agricultural education faculty to conduct independent research or to contribute to interdisciplinary research. Research capacity not only relates to the potential for performing research within the discipline, but also the potential to contribute to developing solutions to larger research problems that lie beyond disciplinary boundaries. Prior to communicating the research skills and potential contributions that agricultural education offers for building collaborative efforts, it is necessary to first assess its research capacity. The study sought to establish a profile of agricultural education research capabilities.

Purpose and Objectives

The purpose of the study was to assess the research capacity of agricultural education from the perspective of individual departments, and in the context of the entire profession. The specific research objectives were to:

1. Determine the human resources available to contribute to research programs involving agricultural education.
2. Determine availability and adequacy of research support staff and research infrastructure.
3. Identify disciplinary strengths in agricultural education.

Methods and Procedures

Survey research methods were utilized to collect data for this study. The population consisted of agricultural education department chairs located in universities in the United States during the 2000-2001 academic year (*N*=86). The population frame for this study was obtained from the *American Association for Agricultural Education (AAAE) Directory of University Faculty in Agricultural Education* (AAAE, 2001). The entire population of department chairs was surveyed.

Members of the North Central Administrators in Agricultural Education (NCA-24) committee played a key role in the data collection process. Agricultural education faculty, primarily departmental administrators, from each of the land grant institutions in the North Central Region comprised the committee. The data collection instrument was created by a NCA-24 subcommittee in response to a charge to assess the research capacity of agricultural education. During a period of several months, multiple drafts of the instrument were developed and modified as a result of email, face-to-face, and telephone communications. The NCA-24 committee reviewed the instrument and served as the expert panel to assure the validity of the instrument.

The data collection instrument was comprised of two parts. The first part requested that respondents provide information regarding research capacity within their agricultural education department. One section requested the number of faculty Full Time Equivalents (FTEs) by program area, rank, faculty appointment, and tenure status. Another section asked respondents to report the number of graduate students and their level of assistantship support (i.e., none, ¼ time or ½ time). Respondents were also asked to indicate the availability of 17 institutional research support items, and whether each item was adequate in meeting the research needs of their department. The research support items were organized into two categories: support staff and infrastructure. Respondents were to answer 'yes' or 'no' regarding the availability and adequacy (i.e., does it meet the departmental needs) of each research support item at their respective institution.

The second part of the data collection instrument asked respondents to report their perceptions of the level of expertise within the agricultural education profession regarding various disciplinary skills. Twenty-seven disciplinary skills were organized into four categories: Needs Assessment, Curriculum Development & Instructional Design, Information Transfer (Delivery), and Evaluation & Assessment. Respondents were asked to rate each disciplinary skill using the following scale values: 1 = none, 2 = little, 3 = some, 4 = much, and 5 = expert.

A cover letter explaining the study and the data collection instrument were mailed to each of the department chairs in the population frame. Respondents were given three weeks to return the completed instrument. During the fourth week, nonrespondents were mailed a second cover letter and data collection instrument. Both the initial mailing and the second mailing contained a self-addressed, postage paid envelope.

Nonresponse error was controlled by comparing respondents to nonrespondents on known characteristics (Miller & Smith, 1983). For this study, respondents and nonrespondents

were compared on FTE faculty employed in departments encompassing agricultural education programs, and on the type of institution where the program was located. Data revealed that respondents (M = 7.0) had more faculty in their department than nonrespondents (M = 1.8). Further, 63% of respondents were located in land grant institutions, while 36% of nonrespondents were from land grant institutions. Therefore, it is recognized that the findings of the study apply only to respondents and generalization to the population is not recommended.

Data were entered into a personal computer and analyzed using SPSS 10.0. Descriptive statistics were used to summarize and analyze the data since the purpose of the study was to describe the characteristics of the respondent's institution, and their perception of the agricultural education discipline.

Results and Findings

The first objective sought to determine the human resources available to contribute to research programs involving agricultural education. Data collection instruments were received from 64 department chairs representing 36 states, yielding an overall response rate of 74.4%. Four states did not have agricultural education faculty at institutions of higher education: Alaska, Hawaii, Maine, and Rhode Island. Sixty-three percent of the departments were located in land grant institutions, while 37% were from institutions other than land grants. Respondents reported a total of 469.5 FTE faculty employed in departments encompassing agricultural education programs at the 64 institutions. This total consisted of faculty FTEs distributed among the following ranks: 40.7 Instructors/Lecturers (9.6%), 115.8 Assistant Professors (27.3%), 112.6 Associate Professors (26.5%), 152.5 Professors (35.9%), and 3.0 Others (.7%). Department chairs indicated that 60.6% of the faculty were tenured. Slightly over one-fourth (26.5%) of the faculty were on a tenure track but had not yet been awarded tenure. Agricultural educators not on a tenure track accounted for 12.7% of the faculty.

As indicated in Figure 1, the average number of faculty in each institution by rank was as follows: 0.7 Instructors/Lecturers, 1.9 Assistant Professors, 1.8 Associate Professors, 2.5 Professors, and 0.1 Others. An average of 7.0 faculty were reported at each institution, however the range was from 1 to 31. Twenty-two (35.5%) of the institutions surveyed had three or fewer faculty FTEs in their department.

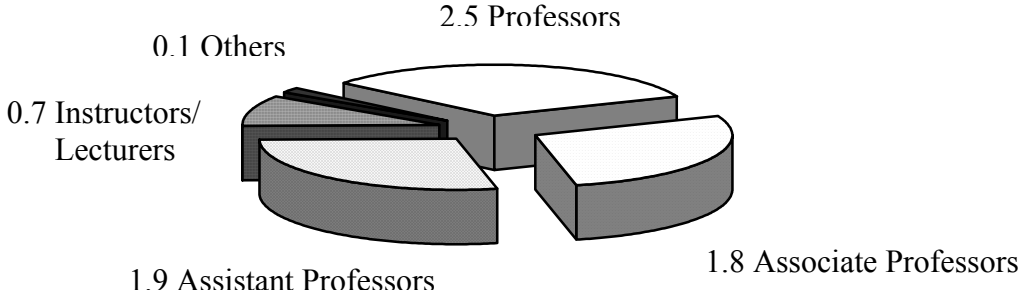

Figure 1. Average number of faculty in each department by rank.

Respondents indicated there were 803 full-time graduate students at the 64 institutions. This total consisted of 650 graduate students pursuing a Masters Degree, while 153 graduate students were completing a Doctoral Degree. However, there was a wide disparity in the number of full-time graduate students at each institution. Twenty-five departments (39.7%) reported having no full-time Masters students enrolled, while two institutions reported an enrollment of 46 full-time Masters students. The disparity was just as pronounced with doctoral students, as 52 departments (82.5%) reported no full-time doctoral students, while one department reported 26 full-time doctoral students.

As indicated in Table 1, 68% of the full-time graduate students pursuing a Master's Degree had no assistantship support ($n = 444$). In contrast, 60% of the full-time doctoral students were receiving assistantship support while completing their degree ($n = 91$). There was a wide range in the number of doctoral assistantships available at each institution. Fifty-two institutions reported no doctoral assistantships, while one institution reported 12 doctoral student assistantships available.

Table 1
Number and Percent of Full-Time Graduate Students in Agricultural Education by Degree Program and Level of Assistantship

	Masters Degree		Doctoral Degree	
Assistantship Level	*n*	%	*n*	%
None	444	68	62	41
¼ time	39	6	7	5
½ time	167	26	84	55

The second research objective sought to determine the availability and adequacy of research support staff and research infrastructure. As indicated in Figure 2, secretarial/clerical (95%), computer assistance (92%), and project management (90%) were the highest rated categories of research support staff that were available to departments. The lowest rated item was research data entry assistance, as only (57%) of departments reported that support staff were available to assist with data entry.

As shown in Figure 2, the two highest rated support staff categories that were meeting the needs of departments were project management (78%), and secretarial/clerical (76%). Department chairs rated manuscript preparation (54%), and research data entry (55%) lowest in meeting departmental support staff needs.

Internet access and microcomputer hardware support were the research infrastructure categories that every departmental respondent (100%) rated as 'available' (Figure 3). Other categories receiving high marks for availability were: library resources (98%), microcomputer software support (98%), data analysis software (97%), printing/duplication facilities (97%), and distance learning facilities (91%). The lowest rated research infrastructure category was publication support (funding for journal page charges), which was available in 57% of the departments.

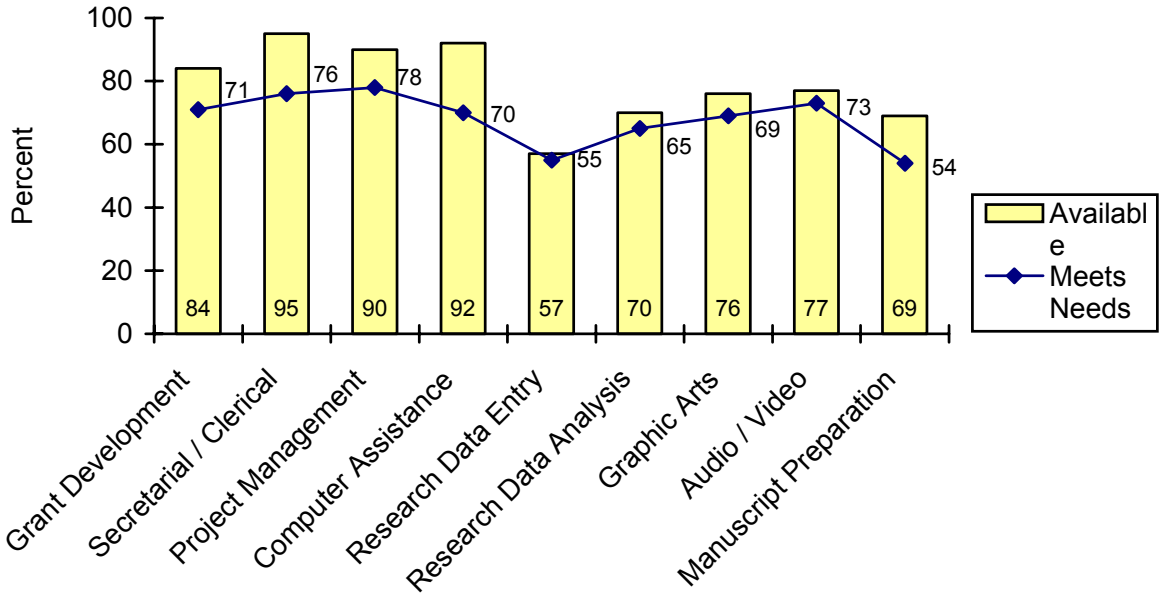

Figure 2. Availability and adequacy of research support staff.

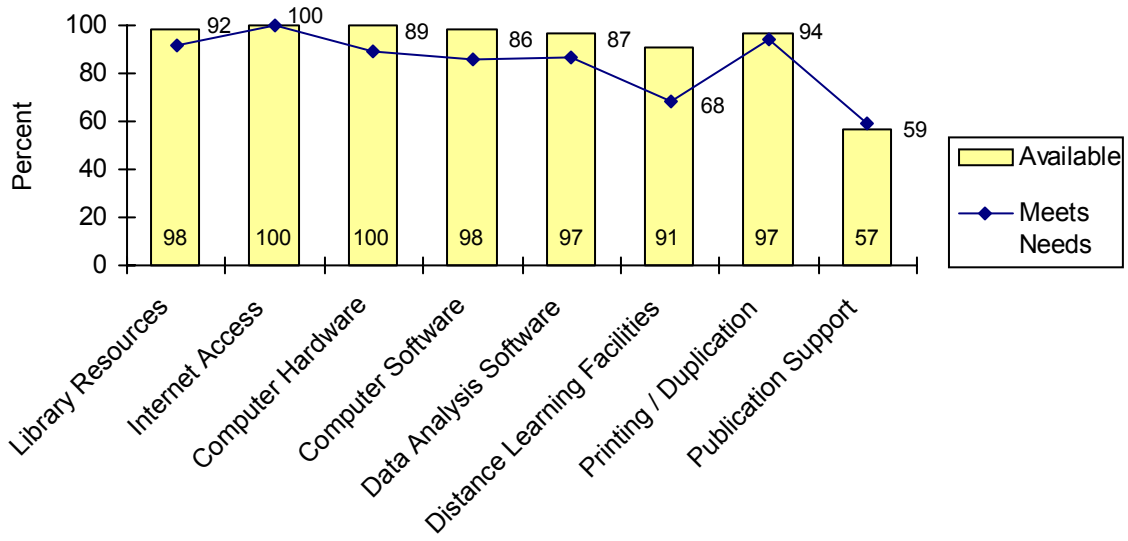

Figure 3. Availability and adequacy of research infrastructure.

In rating the adequacy of research infrastructure (Figure 3), Internet access received a 100% rating, while a number of other categories produced high ratings from department chairs: printing/duplication facilities (94%), library resources (92%), computer hardware (89%), data analysis software (87%), and computer software (86%). The lowest rated infrastructure category was publication support, as 59% of respondents rated this item as meeting their needs.

The third objective sought to identify the disciplinary strengths in agricultural education. Respondents were asked to rate disciplinary skills related to teaching and learning in the context of the entire agricultural education profession. Mean scores for disciplinary skills are reported in Table 2.

Table 2
Disciplinary Skills Related to Teaching and Learning

Disciplinary Category / Disciplinary Skill	*M*[a]	*SD*	Level of Expertise[b]
Needs Assessment			
Educational Program Planning	4.19	0.65	High
Survey Instrument Development	4.15	0.79	High
Population and Sampling Procedures	4.03	0.75	High
Advisory Committee Operation	4.00	0.81	High
Qualitative Assessment	3.27	0.87	Medium
Curriculum Development & Instructional Design			
Teaching Methods (planning)	4.56	0.64	High
Developing Objectives	4.52	0.59	High
Supervision of Learning	4.24	0.72	High
Experiential Learning	4.21	0.83	High
Motivation	4.11	0.68	High
Assessing Learning Styles	3.95	0.86	High
Information Transfer (Delivery)			
Teaching Methods (pedagogy)	4.48	0.59	High
Instructional Design	4.05	0.73	High
Educational Technology	3.79	0.73	High
Technology Adoption	3.70	0.71	High
Adult Education (andragogy)	3.60	0.86	Medium
Distance Learning	3.34	0.87	Medium
Evaluation & Assessment			
Instrument Development (data collection)	3.98	0.80	High
Program Evaluation/Review	3.90	0.80	High
Instrument Validity and Reliability	3.84	0.85	High
Follow-Up Studies	3.81	0.96	High
Program and Performance Standards	3.79	0.85	High
Evaluation Models	3.68	0.78	High
Performance Indicators	3.60	0.80	Medium
Tests and Testing (development)	3.56	0.80	Medium
Human Performance Measures (assessment)	3.52	0.84	Medium
Performance Reporting	3.50	0.99	Medium

[a] 1 = none, 2 = little, 3 = some, 4 = much, 5 = expert
[b] Low = *M* of 1.00 to 2.33, Medium = *M* of 2.34 to 3.66, High = *M* of 3.67 to 5.00

In the Needs Assessment category (Table 2), four of the five skills produced mean ratings above the 4.00 (much expertise) level. Educational program planning earned the highest mean rating of 4.19 in the category. Respondents rated qualitative assessment lowest (M = 3.27) of all the disciplinary skills in the Needs Assessment category. Within the category of Curriculum Development & Instructional Design (Table 2), respondents were asked to rate the profession's level of expertise regarding six disciplinary skills. Five of the six skills produced means above 4.00. Teaching methods (M = 4.56) and developing objectives (M = 4.52) produced the highest mean scores, while assessing learning styles (M = 3.95) produced the lowest mean score.

As shown in Table 2, department chair ratings of disciplinary skills in the Information Transfer (Delivery) category produced the widest range of mean scores among the four categories. Respondents rated teaching methods (M = 4.48) the highest in the category, and distance learning (M = 3.34) the lowest. The category of Evaluation & Assessment consisted of 10 disciplinary skills (Table 2). All skills earned mean ratings between 3.50 and 3.98, thus creating the most uniform scores among the four disciplinary categories. Instrument development (M = 3.98) was rated the highest, while respondents rated performance reporting (M = 3.50) the lowest.

Examination of the data in the four categories revealed that the 27 disciplinary skills received a range of scores from the department chairs, with an emphasis toward the 'expert' category of the rating continuum. Thirteen of the skills, almost half, received respondent ratings that ranged from 1 (no expertise) to 5 (expert). Respondents rated 11 of the skills using scores that ranged from 2 (little expertise) to 5 (expert). The remaining 3 skills earned ratings from 3 (some expertise) to 5 (expert). Therefore, each of the 27 disciplinary skills received ratings in the 2 (little expertise), 3 (some expertise), 4 (much expertise), and 5 (expert) categories.

In order to further assess the disciplinary strengths of agricultural education, the five point Likert-type response scale was divided into three equal segments. This resulted in scale ranges of 1.00 to 2.33, 2.34 to 3.66, and 3.67 to 5.00 that were categorized low, medium, and high, respectively. Skills that produced means in the high category (between 3.67 and 5.00), were identified as disciplinary strengths. As shown in Table 2, this classification system resulted in 20 of the 27 skills being categorized as disciplinary strengths. There were 7 skills that produced means in the 'medium' category, and no disciplinary skills that resulted in means in the 'low' category (i.e., below 2.34).

Conclusions, Implications, and Recommendations

The findings from this study provide an indication of the institutional and disciplinary research capacity in agricultural education. The perspectives of department chairs are valuable in assessing the profession's ability to conduct disciplinary as well as multidisciplinary research. Based on the responses from 64 agricultural education department chairs, the following conclusions and recommendations are drawn.

There is a wide disparity in the human capacity for research in agricultural education across the United States. The discipline of agricultural education is characterized by a number of relatively small programs, with few faculty FTEs, and little graduate student support. This

finding confirms prior studies that have acknowledged the limitations of research efforts in agricultural education (Birkenholz & Greiman, 2000; Boakye-Dankwah & Smith, 1991; Brown, 1980; Greiman & Birkenholz, 2000; Kotrlik et al., 2001; Newcomb, 1993). The current number of agricultural education faculty and graduate students may not be sufficient to serve the programmatic needs in undergraduate and graduate teaching and advising, extension/outreach programs, and a substantial research effort. Administrators at the department and college levels should investigate the need to provide additional support for the human resource base in agricultural education, thus increasing the potential for increased research productivity. Agricultural education faculty should consider collaboration on multidisciplinary research as a strategy to overcome human resource shortages. Colleagues with similar research foci may expand their research capacity by conducting multistate projects. The synergy of multidisciplinary research could help faculty overcome isolation and motivation concerns of individual research efforts.

Further, the profession must strive to adequately mentor graduate students in the scholarship of research. Do agricultural education faculty inspire in graduate students the desire to identify significant problems, and then utilize research to help find the answers? Graduate students, especially at the doctoral level, should be mentored to 'value' interdisciplinary research efforts, which will require a cultural shift among the existing cadre of faculty in agricultural education. Interdisciplinary courses and experiences should be integrated into the doctoral programs that prepare future faculty in our colleges and universities. Doctoral preparation programs also need to examine the structure and content of the degree program.

Most agricultural education programs have sufficient research support staff and research infrastructure to meet their needs. Although programs in some institutions may experience shortcomings in their research support staff or research infrastructure, such problems are not common throughout the discipline. Therefore, agricultural education faculty should strive to maximize the productivity of their research efforts by utilizing research support staff and infrastructure. In areas that appear to be inadequate, such as research data entry, manuscript preparation, and publication support, strategies should be pursued to increase their availability and adequacy.

In order to promote agricultural education research capacity, both from a disciplinary and multidisciplinary perspective, it will be important to effectively communicate disciplinary skills to the research community. A relatively narrow core of disciplinary skills characterizes the discipline of agricultural education. The study found that the primary disciplinary strengths are concentrated in the categories of Curriculum Development & Instructional Design, and in Needs Assessment, and confirms previous research conducted by Greiman and Birkenholz (2000). These categories are unique strengths that should be capitalized upon by participation in USDA grants that reward integrated research and extension activities in a single proposal (Agricultural Research, Extension, and Education Reform Act of 1998).

Further, the Kellogg Commission (1999) recommended that institutions encourage interdisciplinary research as part of the engagement agenda in its report on the future of state and land grant universities. Agricultural educators have the skills and abilities to make a unique contribution to interdisciplinary research teams. How can agricultural education faculty become

proactive leaders in guiding the formation and operation of such teams? Complex research areas such as food safety, biotechnology, environmental assessment, and sustainable communities may benefit from the disciplinary contribution of agricultural education.

Research in agricultural education has evolved from its infancy stage when its primary focus was on problems of secondary agricultural educators. Through the years, research in the discipline has witnessed increased rigor in data collection procedures and statistical analysis techniques employed. The recent trend within the USDA and at higher education institutions has been to expand the research focus beyond traditional disciplinary boundaries in order to address problems of greatest social significance. Researchers in agricultural education are being challenged to take another step forward in the evolutionary process to advance the quality and impact of their research.

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Assessing Research Capacity in Agricultural Education
A Departmental and Disciplinary View

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The authors of this study have generated very useful information and helpful guidelines for supporting and increasing the research capacity of agricultural education departments. The study was well designed and administered. They are commended for the succinctness of reporting their findings, and the utility of their conclusions and recommendations.

As previously mentioned, this report can well serve present day research planning efficiency in any agricultural education department. The introduction and theoretical framework presented provided interesting background information regarding the evolution of agricultural education research in the United States. It is interesting to note that upon follow-up on non-respondents a difference was found which limits generalizing the results of this study. It would be insightful to know what constituted the parameters of an agricultural education department included in this study. Agricultural education departments by "title" within universities vary significantly, as do the backgrounds, preparation, and assignment of faculty.

The authors cite the purpose of promotion and tenure as reason for engaging in research. It would have been interesting if the researchers could have measured and compared the amount of first author, interdisciplinary research being conducted by full professors, associate professors, assistant professors, or graduate students. As well, an interesting comparison would be of the research productivity by fully promoted and tenured faculty with research station appointments to those without appointments.

Another critical consideration to individual research capacity lies in motivation. Individual motivation, as investigated by Barbuto and Scholl (1999), may add another previously unconsidered ingredient to research capacity and productivity. It seems this dimension may provide explanation to some of the lack in focus and development of critical mass to research in general.

The significance of this study, as it should, lies in the recommendations offered. These recommendations serve as solid suggestions to enhance the research capacity of any agricultural education department wishing to do so. They provide a significant administrative contribution to the profession. The researchers are congratulated for this contribution.