

# CLINICAL EXPERIENCES FOR AGRICULTURAL TEACHER EDUCATION PROGRAMS IN NORTH CAROLINA, SOUTH CAROLINA, AND VIRGINIA

*Thomas R. Dobbins*

Clemson University

*William G. Camp*

Virginia Polytechnic Institute and State University

## Abstract

*The purpose of this study was to build a task list for the clinical experience program for the agricultural teacher education programs in North Carolina, South Carolina, and Virginia. The objectives were to: (1) compile a list of clinical experiences, both early field and student teaching, that currently are provided in the clinical experiences for students of agricultural education in three selected teacher education programs, and (2) determine which tasks should be included for both the early field and student teaching experiences. A modified Delphi technique was used to collect data via three questionnaires. Data were analyzed using mean scores and standard deviations of tasks rated on a five point Likert-type scale. Those tasks that the panelists rated with a standard deviation of less than or equal to one were considered to have met consensus, as suggested by Shinn (1998). The population for this study consisted of agriculture teachers, secondary school administrators, agricultural education field staff, and agricultural education teacher educators from North Carolina, South Carolina, and Virginia. Thirty-four Delphi panel members were purposively selected from the population. Thirty-one panel members responded to Round I, 33 panel members responded to Round II, and 29 responded to Round III yielding an overall response rate of 92%. Rounds I, II, and III resulted in 102 tasks for early field and student teaching experiences that met consensus. Based on the findings, the researcher developed a task list for early field experiences and student teaching experiences to be considered for use by the agricultural education programs in the three cooperating states.*

## Introduction

Change is constant, inevitable, often uncomfortable, and usually problematic in areas such as education. Agricultural education is not immune from change or the problems associated with change. Herring and Norris (1987) contended that if agricultural education did not change its methods of teaching, it would die. Long before the Herring and Norris article, the Vocational Education Act of 1963 recognized the changing face of agriculture by expanding the definition of vocational agriculture to include the preparation of students for any occupation involving knowledge and skills in agricultural subjects.

## Introduction and Theoretical Framework

The Committee on Agricultural Education in Secondary Schools Board on Agriculture of the National Research Council issued a report in 1988, titled *Understanding Agriculture—New Directions for Education*. This report called for major reform in agricultural education and also in teacher education programs. This report recommended the following:

Teacher preparation and in-service education programs must be revised and expanded to develop more competent teachers and other professional personnel to staff, administer and supervise educational

programs in and about agriculture.

Colleges of agriculture, particularly in land-grant universities should become more involved in teacher preparation and in-service education programs, curriculum reform, and development of instructional materials and media (p. 7).

The report found that agricultural literacy programs were not available for those preparing to teach, other than for individuals entering vocational education careers.

Agricultural education programs in the public schools are dependent on agricultural teacher education programs (McGhee & Cheek, 1989) because they produce the teachers for the programs. Teacher education programs must be flexible to ensure that they provide the experiences that are needed to prepare the future teachers for our changing society.

According to McLean and Camp (1998), agricultural teacher educators have experienced pressure over the past 15 years to reform the process of preparing agricultural teachers. They further stated that there was a void of current data on curricular content or structure in agricultural teacher education programs. Camp and Bailey (1999) stated, "We can see that there is a long-standing and broad advocacy for and acceptance of field-based student teaching apprenticeship as of a paramount importance in agricultural teacher education" (p. 62).

This study focused on how early field experiences and student teaching experiences should be designed to meet the needs of the contemporary agricultural education student. This study used behavioral learning theory, in particular mastery learning, as its theoretical framework.

According to Fosnot (1996), behavioralism regards psychology as a scientific study of behavior and explains learning as a system of behavioral responses to physical stimuli. Schwartz (1978) noted

that Rene' Descartes (1596-1650) divided behavior into two classes, voluntary and involuntary. Voluntary behavior was governed by reason of the mind, and involuntary behavior was purely mechanical.

Fosnot (1996) outlined one aspect of behavioralism as it applies to instruction as "educators using the behavioral framework preplanned into assumed component parts – 'skills' – and then sequencing these parts into a hierarchy ranging from simple to more complex" (p. 9). According to learning theorists such as Gagne (1988), learning results from observations, listening to explanations from teachers who communicate clearly, and engaging in activities or practice sessions with feedback. The classical behaviorist model of instruction is Bloom's mastery learning model. This mode breaks wholes into parts, and skills are broken into subskills. Bloom's model indicated that if "needs" are met and if the skills are broken down into the appropriate sub-skills, then one could teach until mastery is reached (Fosnot, 1996).

If the appropriate clinical competencies can be identified for agricultural teacher education, and if the competencies can be subdivided into the appropriate subtasks, then teacher educators should be able to structure experiences in such a way that our students will be able to master those competencies. To make possible a systematic structuring of the clinical component of the agricultural teacher education preservice program, a current valid and comprehensive list of competencies would be required. A review of the literature indicated that no such list of tasks was available prior to this study.

### **Purpose and Objectives**

The purpose of this study was to build a task list for the clinical experience programs, both early field and student teaching, for the agriculture teacher education programs in North Carolina, South Carolina, and Virginia.

The following objectives were established to guide this research:

1. Compile a list of tasks experienced during both early field experiences and student teaching that currently are provided in the clinical experiences for students of agricultural education in three selected teacher education programs.
2. Determine which tasks should be included for both the early field and student teaching experiences.

### Methods/ Procedures

A modified Delphi technique was used to generate a task list for clinical experiences for agricultural teacher education preservice, including both early field experience and student teaching. The initial task list for Round I of the study was developed by using the three cooperating agricultural teacher education programs' existing requirements for clinical experiences. The researchers editorially combined similar tasks and reworded some of the tasks to ensure consistency across the entire list. To ensure the intent of the combined tasks were not altered, the researchers formed a jury with one agricultural educator from each of the cooperating programs to ensure content validity and guard against researcher bias. Data were collected by three mailed questionnaires over a five-month period in 1999.

The population for this study consisted of eight agricultural teacher educators, nine agricultural education field staff, 790 agriculture teachers, and 278 secondary school administrators from North Carolina, South Carolina, and Virginia. The researchers selected these three states because they were already working together as a consortium on a project entitled Reinventing Agricultural Education for the year 2020. The researchers asked three teacher educators, one from each of the cooperating land-grant universities, to nominate experts from each of the categories from their state. Thirty-six experts were nominated and 34 agreed that they considered themselves to be appropriate for the study and agreed to serve on the panel.

In Round I, the panel of experts responded to the first questionnaire that

contained the original list of tasks developed from the three cooperating agriculture teacher education programs at the land-grant universities. This questionnaire included:

1. 36 tasks for early field experiences (EFE);
2. space for additional comments for EFE;
3. 62 tasks for student teaching experiences (STE);
4. a space for additional comments for STE, and
5. questions to identify background information about the panel members.

In Round II, the researcher incorporated commentary for those tasks that did not meet consensus from Round I. The questionnaire for Round II included:

1. 16 total tasks for early field experiences for nine of the items panel members were also asked to select from among three options: move to STE, leave in EFE, or do away with this task;
2. six new tasks for EFE developed from Round I;
3. 17 tasks in STE;
4. eight new tasks for STE developed from Round I, and
5. a space for additional comments.

In Round III, the panel of experts responded to a task list made-up of tasks that did not meet consensus in Round II. The questionnaire contained 1) 12 tasks for EFE and STE and 2) the option to vote to remove or keep each task.

Data collected from the three questionnaires were analyzed using standard deviations and mean scores. The tasks were rated using a five point, Likert-type scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Not Sure, 4 = Agree and 5 = Strongly Agree. Consensus was met for this study if the standard deviation was equal to or less than one. Those tasks that the panelists rated with a standard deviation of less than or equal to one were considered to have met consensus, as suggested by Shinn (1998). The comments gathered during this study were

selected by the researchers when the same comment was made three times on a task.

indicated by a standard deviation  $\leq 1$  (Shinn, 1998), Round I in the modified Delphi technique produced the highest number of consensus items on important issues. Round I produced 422 additional comments. These comments were used to enhance the tasks that did not meet consensus in Round I.

## Findings

### *Early Field Experiences*

Of the 36 tasks listed in Round I, 20 tasks met consensus (see Table 1). As

Table 1  
*Tasks That Met Consensus for Early Field Experience*

<i>M</i>	<i>SD</i>	<b>Statement</b>
		<b>The student will:</b>
4.84	.37*	Review the course of study and teaching calendar of cooperating teacher.
4.71	.64*	Observe high school agriculture classes during instruction.
4.58	.56*	Observe assigned teacher's style of teaching.
4.55	.68*	Jointly plan EFE with local agriculture teacher and university professor prior to EFE.
4.55	.51*	Become familiar with type(s) of program(s) in the assigned school.
4.45	.57*	Learn grading system of assigned school.
4.39	.84*	Identify the characteristics of good teaching and of competencies required of agricultural education instructors in a world of changing agricultural technology before starting EFE.
4.39	.70#	Work with the university professor, local agriculture teacher, and school administration on developing a written plan for EFE.
4.35	.95*	Conduct/observe assigned FFA meetings.
4.33	.61*	Fill out relevant university forms.
4.32	.75*	Identify principles and teaching strategies involved in developing and conducting agricultural education programs including integration of basic skills and academics before EFE.
4.27	.67#	Perform tasks assigned by the agriculture teacher in relation to a plan developed by university professor, local agriculture teacher, and school administrator.
4.23	.99*	Become familiar with agriculture teacher's role in public relations.
4.21	.74#	Visit the designated school one time before EFE to meet with school officials and assigned cooperating teacher to get a feel for the school environment.
4.19	.95*	Develop an understanding of the philosophy, goals, importance and relationship of agricultural education curricula within the local school.
4.17	.87#	Observe different teaching and learning styles.
4.10	.70*	Give a report on activities conducted by secondary agricultural education teachers in assigned school.
4.06	.96*	Observe middle school agriculture classes during instruction.
4.06	1.00*	Visit key people in the community and become familiar with the community.
4.03	.84*	Observe academic classes during instruction.
3.81	.87*	Complete and document a minimum of 40 clock hours of EFE.

Table Continues

M	SD	Statement
		<b>The student will:</b>
3.78	.83#	Meet/interview vocational administrator, guidance counselors, and department advisory committee.
3.77	.91^	Learn the components of a complete agricultural education middle and secondary school curriculum, including scope, sequence, and accountability measures.
3.73	.78^	Provide individualized instruction to students while supervising agricultural experience programs conducted by students.
3.71	.90*	Observe non-ag vocational classes during instruction.
3.71	.76#	Work with the local agriculture teacher on his/her grading system in relationship to homework/tests and grade several exercises.
3.64	.90#	Become familiar with adult education program.
3.52	.91^	Monitor class during testing.
3.50	.92#	Discuss with the local agriculture teachers how the local agriculture programs meet state department of education requirements.
3.48	.97#	Become familiar with professional development activities available during the summer months.
3.38	.96#	Give a written critique of the local agriculture program as the final part of EFE.
3.07	.87#	Attend a local school board meeting.

*Note.* \* - Consensus reached in Round I; # - Consensus reached in Round II; ^ - Consensus reached in Round III

Three themes arose from the comments in Round I: time, planning, and cooperation. Two groups, the agriculture teachers and secondary school administrators, seemed to echo these themes. However, these two groups believed that 40 hours was too much time spent for the EFE experience while teacher educators felt that 40 hours was the correct amount of time. The commentary indicated that planning and cooperation were two practices that could not be separated. All four groups believed that planning and cooperation were vital and that should occur before EFE.

In Round II, the panel members were asked to rate 16 tasks, and seven met consensus. According to Hostrop (1975) and Linstone and Turoff (1975), the data should converge toward the majority opinion on

Round II more so than any other round. The general consensus among comments received from Round II was "all the EFE tasks are very important; however does the student have the time to complete all these tasks?"

In Round II, the experts were also given the opportunity to vote on nine EFE tasks. The experts could vote to move the task to STE, leave the task in EFE, or delete the task. Round III produced three EFE tasks which met consensus (Table 1).

#### *Student Teaching Experiences*

Of the 62 tasks listed in Round I, 44 met consensus (see Table 2). Round I produced 545 additional comments. These comments were used to enhance the tasks that did not meet consensus in Round I.

Table 2  
*Tasks That Met Consensus for Student Teaching Experience*

<i>M</i>	<i>SD</i>	<b>Statement</b> <b>The student will:</b>
4.87	.34*	For at least part of the internship, have a full teaching load and perform all of the associated duties of a teacher.
4.84	.58*	Plan, in conjunction with the cooperating teacher, a teaching calendar for the time period of the STE.
4.84	.37*	Keep accurate records and prepare appropriate reports as requested by the cooperating teacher, cooperating school district, and/or agricultural education department.
4.84	.37*	Plan and deliver effective instruction about agriculture to secondary or middle school students.
4.84	.37*	Attend school faculty meeting in the assigned school.
4.81	.40*	Jointly plan the STE with the cooperating teacher and university supervisor.
4.74	.44*	Develop and use instructional aids to match the learning environment and learning needs of individuals and groups.
4.65	.55*	Supervise student agricultural experience programs (SAE).
4.58	.56*	Become familiar with the policies and procedures of the assigned local school's agricultural education department documented by the completion of specified activities and reports required by the agricultural education department.
4.58	.72*	Perform non-instructional duties that may be assigned to the cooperating teacher(s).
4.58	.62*	Attend an area or district agricultural education meeting.
4.55	.57*	Meet professional agriculture personnel in community.
4.53	.78*	Advise local FFA Chapter or an approved youth leadership organization to include the plan of activities, meetings, activities, and achievement recognition as documented by the completion of specific activities and reports.
4.52	.51*	Examine an Individualized Instruction Plan (IEP) and discuss with a special needs teacher.
4.48	.63*	Interview one guidance counselor – discuss Agricultural Education and guidance programs.
4.45	.85*	Demonstrate effective communications with students, peer teacher, parents, and community leaders substantiated by the completion of specific written documents and reports.
4.45	.81*	Recruit students for agriculture classes.
4.42	.62*	Participate in a post-internship seminar designed primarily to promote continued professional growth through reflective practice (university).
4.42	.62*	Observe the teaching techniques of the cooperating teacher in both secondary and adult instruction and complete a teaching observation report for each observation.
4.42	.67*	Attend the agriculture advisory council meeting for the assigned program.
4.41	.50#	Plan, present, evaluate, and demonstrate teaching practices that are generally carried out in a laboratory setting.

Table Continues

Table 2 Continued

<i>M</i>	<i>SD</i>	<b>Statement</b> <b>The student will:</b>
4.38	.62*	Demonstrate positive public relations through planned publicity for the assigned agriculture program and students. Public relations should not be limited to youth leadership recognition. Documentation should include media releases, photographs, and work samples.
4.35	.55*	Develop and demonstrate a reflective approach to professional practice during STE.
4.35	.75*	Maintain a daily and weekly journal of reflective exercises during STE.
4.35	.88*	Supervise the completion of one award application for FFA or approved youth group.
4.34	.60#	Use new computer/agricultural technologies in classroom instruction.
4.29	.64*	Grade student SAE record book.
4.26	.86*	Plan and conduct activities with a non-vocational teacher designed to integrate core courses and agricultural education.
4.26	.82*	Plan FFA week activities.
4.26	.96*	Read professional journals.
4.25	.62#	Have a meaningful experience planning classroom instruction that will culminate with a laboratory activity.
4.23	.76*	Demonstrate an acquaintance with the school and community as documented by the completion of specific activities and reports as required by university and secondary or middle school.
4.19	.78#	Develop and teach integrated lesson with academic (core subject matter) teacher.
4.19	.63^	Be encouraged and exposed to the professional organizations that have ties with agricultural education.
4.13	.86*	Plan, manage, and evaluate school and community services such as the greenhouse, land laboratory, or other community resources as documented by the completion of specific activities and reports.
4.13	.66#	Develop classroom management experiences/options.
4.06	.77*	Review the permanent records of five students in his/her agriculture classes.
4.06	.66#	Develop a teaching calendar based on the needs of the agriculture program at the local high school.
4.03	.77#	Visit farmers and agribusinesses in the local area.
4.03	.92#	After completion of a successful student teaching experience, write a newspaper article in regards to the assigned agriculture program.
4.00	.82*	Demonstrate special methods and techniques for adult learners in both group and individual instruction.
3.97	.95*	Evaluate the local agricultural education department.
3.97	.87*	Complete one State Department of Education form in relation to agricultural education.
3.94	.85*	Observe and evaluate an adult class being taught using an approved evaluation form by agricultural education.
3.91	.89#	Conduct an examination of how the agricultural education program serves the school/community.

Table Continues

Table 2 Continued

<i>M</i>	<i>SD</i>	<b>Statement</b> <b>The student will:</b>
3.88	.78 <sup>^</sup>	Observe a class in another department in assigned school.
3.85	.62 <sup>#</sup>	Interview student/teacher about a cooperative work experience contract if appropriate.
3.84	.82 <sup>*</sup>	Conduct in-depth case studies of students, including students identified as having special needs.
3.83	.99 <sup>*</sup>	Assist the cooperating teacher(s) in planning an adult course of study.
3.82	.95 <sup>#</sup>	Assist the local agriculture teacher in conducting adult education class if appropriate for school in which student teaching experience is being conducted.
3.78	.91 <sup>#</sup>	Interview the local vocational director to determine procedures of personnel, financial and facilities management.
3.74	.96 <sup>*</sup>	Compare and contrast the development of adolescents and adults, and identify effective instructional strategies to meet individual and group learning needs.
3.74	.73 <sup>*</sup>	Tutor a special needs student.
3.74	.95 <sup>#</sup>	Conduct a mock interview with appropriate school officials.
3.69	.79 <sup>^</sup>	Attend/observe the young farmer chapter meeting if appropriate.
3.62	.98 <sup>*</sup>	Conduct a case study on a secondary or middle school agricultural student.
3.58	.97 <sup>#</sup>	Meet local media representatives or district communication department staff who can assist in public relations.
3.58	.87 <sup>#</sup>	Attend local civic activities in the assigned location.
3.52	.97 <sup>#</sup>	Live in the community while student teaching if appropriate and housing is available.
3.36	.90 <sup>#</sup>	Interview a social caseworker in relation to classroom activities for special needs students if appropriate.
3.34	.90 <sup>#</sup>	Develop a list of addresses of magazine subscriptions and catalogs used at the school so the student teacher can use them as a resource when they become teachers.
3.15	.91 <sup>#</sup>	Conduct an agriculture/agribusiness case study.

*Note.* \* - Consensus reached in Round I; # - Consensus reached in Round II; ^ - Consensus reached in Round III

Three themes evolved from the comments: time, planning, and cooperation. Two groups, the agriculture teachers and secondary school administrators, seemed to echo these themes. During STE, the agriculture teachers and school administrators felt that the majority of time should be on "classroom teaching." Teacher educators and field staff felt a mixture of teaching, FFA, and community activities should occur during the STE.

The commentary indicated that planning and cooperation were two practices that could not be separated. All four groups felt that planning and cooperation were vital and that they should occur before STE. One

example used was that STE should be a contractual agreement between the student, agriculture teacher, teacher educator, and school administrator.

During Round II, 17 of the revised STE tasks were rated, and 13 STE tasks met consensus. Of the eight new tasks recommended by the panel members, seven met consensus. According to Hostrop (1975) and Linstone and Turoff (1975), the data should converge toward the majority opinion on Round II more so than any other round. The general consensus among comments received from Round II was "all the tasks are very important; however, does the student have the time to complete all

these tasks?" Another area of concern that came from Round II was the adult education program and young farmer program. North Carolina does not have either of these programs and Virginia middle school agriculture teachers do not have these programs. Respondents from these two groups rated tasks associated with adult education and/or young farmers as a low priority. Round III provided three additional tasks for STE, (Table 2).

In general, little movement toward consensus is expected after Round II, according to Hostrop (1975) and Linstone and Turoff (1975). In this study, the most movement occurred between Round I and Round II. Minimal additional movement toward consensus was obtained between Round II and Round III as anticipated. According to Sutphin (1981) other studies have shown that after three rounds of the Delphi, little to no movement toward consensus will be gained. A fourth round was not deemed necessary since minimal shift in panel perception was reported between rounds two and three. Of the tasks rated in Rounds I, II, and III, 111 tasks met consensus and were included on the task list.

It was evident from the commentary that the Delphi panel struggled with the tasks that they believed to be out of sequence, e.g. tasks listed in EFE that some members believed should be included in STE. According to one panel member, "you are getting the cart before the horse." Another replied with, "The student must crawl before he/she walks." The order of tasks became increasingly important to the panel members as the process progressed. One agriculture teacher suggested in his Round III comments that another study should be done to place the tasks in order of importance and to sequence them from easy to difficult. The comments made during this study indicated that the tasks should be sequenced using the behavioral framework.

### **Conclusions and Implications**

Based on the findings of this study, EFE and STE are essential components of the pre-service program. The overall response rate of 92% indicated the importance of this study to the panel of experts. A

comprehensive task list was compiled during the three rounds of the Delphi. The Delphi technique proved to be an excellent research technique for this type of study.

The task list developed during this study is comprehensive. This list should be flexible to meet the needs of the students and the agricultural programs involved in the implementation of the tasks. The task list may be beneficial for the planning, implementation, and evaluation of both types of clinical experiences. The primary concern echoed by all four groups during this process was the student's time. In order for the student to meet the demands of the tasks for early field experience and student teaching, she/he must have a detailed program of work. This program of work must have input from the student, agriculture teacher, teacher educator, and secondary school administrators.

The task list can help university faculty members determine preservice clinical requirements for students enrolled in agricultural teacher education programs. In order for students to accomplish the tasks during their clinical experiences, they must have an understanding of the following areas: curriculum development, learning styles, technical areas, teaching methods, teaching techniques, and academic integration methods, according to the comments collected from the respondents of the survey.

Because the Delphi technique was employed, slightly unequal balances between groups gave no individual or group an advantage in the decision and discussion process (Dybas, 1980). Each panel member discussed and provided feedback on the tasks that they supported strongly and/or disagreed with strongly. The process took time to collect, revise, interpret data, and provide feedback to the panel. The task list developed by this process has the potential to enhance the requirements for clinical experiences required by the three cooperating departments of agricultural education.

### **Recommendations**

The recommendations listed in this section are based upon findings of this study

and impressions gained by the researchers while conducting the study.

1. Agricultural teacher educators should consider developing a general model for the clinical experience components of the agricultural education program in the three-state area while maintaining appropriate flexibility for local program adaptations. Teacher educators in each state involved in the study should take the findings of this study and consider formulating tasks that specifically address issues important to the future of agricultural education in the respective state.
2. Agricultural teacher educators should conduct future research on the task list compiled during this study. The commentary from the study suggested that additional research be conducted on the task list to establish the ranking of importance.
3. Replication of this study should be conducted on a national level.
4. The agricultural education profession should develop specific efforts to continually study, discuss, and identify issues of importance in relationship to pre-service curriculum and specifically clinical experiences.

### References

- Camp, W. G., & Bailey, B. F. (1999). Student teaching in agricultural education. *Proceedings of the 26<sup>th</sup> Annual Southern Agricultural Education Research Conference*. Memphis, TN, 26, 62-74.
- Dybas, A. (1980). *A delphi approach to industrial arts teacher education electronics curriculum identification*. Unpublished doctoral dissertation, The Ohio State University, Columbus.
- Fosnot, C. T. (1996). *Constructivism: Theory, perspectives, and practice*. New York, NY: Teachers College Press.
- Gagne, R. M., & Driscoll, M. P. (1988). *Essentials of learning for instruction (2<sup>nd</sup> Ed.)*. Upper Saddle River, NJ: Prentice Hall.
- Herring, D. R., & Norris, R. J. (1987). Shaping the future of vocational agriculture. *The Agricultural Education Magazine*, 60(4), 20-23.
- Hostrop, R. (1975). *Managing education for results*. Homewood, IL: ETC Publications.
- Linstone, H. A., & Turoff, M. (Eds.). (1975). *The delphi method: Techniques and applications*. Reading, MA: Addison-Wesley.
- McGhee, M. B., & Cheek, J. G. (1989). Assessment of the preparation and career patterns of agriculture education graduates. 1975-1985 *Proceedings of the 16<sup>th</sup> Annual Southern Agricultural Education Research Conference*. Orlando, FL, 16, 20-27.
- McLean, R. C., & Camp, W. G. (1998). Exemplary agricultural teacher education programs in the United States. *Proceedings of the 25<sup>th</sup> Annual Southern Agricultural Education Research Conference*. Little Rock, AR, 25, 35-42.
- National Research Council (1988). *Understanding agriculture: New directions for education*. Washington, DC: National Academy Press.
- Schwartz, B. (1978). *Psychology of learning and behavior*. New York, NY: W. W. Norton and Company, Inc.
- Shinn, C. G. (1998). Transforming agricultural mechanics curriculum through expert opinion to model technologies in food, environmental, and natural resource systems, *Proceedings of the 25<sup>th</sup> Annual National Agricultural Education Research Meeting*, New Orleans, LA, 25, 270-282.

Sutphin, H.D. (1981). *Positions held by teachers, teacher educators, and the state supervisors about selected national issues in agricultural education*. Unpublished Doctoral Dissertation, The Ohio State University, Columbus.

THOMAS R. DOBBINS is an Associate Professor in the Department of Agricultural Education at Clemson University, 218 McAdams Hall, Clemson, SC 29634. E-mail: [tddbns@clemson.edu](mailto:tddbns@clemson.edu).

WILLIAM G. CAMP is a Professor in the Department Education at Cornell University, 416 Kennedy Hall, Ithaca, NY 14853. E-mail: [wgcamp@vt.edu](mailto:wgcamp@vt.edu).