An Examination of Kentucky University Freshmen Attitudes Regarding Agricultural Education and the Agricultural Industry

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Abstract

This study assessed the attitudes of university freshmen majoring in agriculture at a land grant and three non-land grant institutions in Kentucky. Perceptions of high school agricultural programs, university agricultural programs, and the agricultural industry were analyzed, along with demographics of university agriculture freshmen. Demographics indicated that freshmen students majoring in agriculture within Kentucky were white, female, had agricultural experience, completed high school agriculture course work, had a farm background, participated in 4-H, and were members of the National FFA Organization.

Freshmen majoring in agriculture in Kentucky are supportive of high school agriculture programs; however those students with personal experience in secondary agricultural education expressed more positive attitudes than those who did not experience agricultural education firsthand. Students with an agricultural education experience agreed that more students should be encouraged to enroll in high school agriculture programs, and high school agriculture is a good preparation for college study in agriculture. Students who had taken agriculture in high school believed that college-bound students should be encouraged to enroll in high school agricultural courses; however, students who did not take high school agriculture were uncertain. Freshmen majoring in agriculture were also uncertain if high school agriculture courses were beneficial for higher achieving students. In addition, they were uncertain whether high school agriculture courses were beneficial for lower achieving students.

Students were in disagreement that only students with farm backgrounds should pursue careers in agriculture, and if only students pursuing careers in agriculture should enroll in high school agriculture programs. Disagreement was shared by all groups when asked if only students majoring in agriculture should major in college agriculture. However, students with high school agriculture program experience were stronger in their disagreement for this statement. Students also disagreed that college agriculture was easier than other subjects. Respondents strongly disagreed with the statement that agriculture courses at the university level were better suited for male students.

Freshmen majoring in agriculture generally held positive attitudes toward the field of agriculture. Agreement was shared by all groups that agriculture is a scientific area of study and a highly technical field. However, uncertainty exists relating to the image of agriculture.

Introduction/Theoretical Framework

Enrollment in agriculture programs at both the university and high school levels has fluctuated considerably over the past 20 years. Enrollment at the University programs of agriculture has also changed. Manderscheid (1988) reported a 24% decline in Land Grant University agriculture enrollments and a 13% decrease in non-Land Grant University agriculture enrollments across the nation from 1978 to 1988. Paralleling this decrease in university agriculture program enrollments were cutbacks in faculty positions. According to the American Association for Agricultural Education (AAAE), university agricultural education faculty membership decreased from a 1984 high of 326 faculty members to today's membership of 242 active faculty members (AAAE, 2003).

While universities were responding to decreased numbers by downsizing agricultural education departments and programs, high school enrollments in agriculture courses were rebounding. Several states modernized agriculture curricula as suggested by the National Research Council (1988) and reaped almost immediate results in the form of increased student numbers. By 2001-2002, 742,732 students across the nation were enrolled in agricultural education (National FFA Organization, 2003).

For the 2002-2003 academic school year in Kentucky, 28,974 students were enrolled in high school agriculture courses (Career and Technical Education, 2003). Courses are classified into career clusters of agricultural business, agricultural mechanics, exploratory agriculture, forestry, horticulture, and production agriculture.

At the university level, colleges, schools, and departments of agriculture also are reporting increased enrollments. Litzenberg, Whatley, and Scamardo (1992) reported that, with the exception of the North Central region, agricultural education enrollments had recovered to early 1980 levels. According to USDE, 1992 enrollments in colleges of agriculture nationwide had increased by 18.9% (USDE, 1996). However, the demographic composition of today's agriculture classes has changed from that of the 1980s.

Dyer, Breja and Andreasen (1999) studied backgrounds and attitudes of freshmen in the College of Agriculture at Iowa State University. They reported a majority of the freshman majoring in agriculture had completed at least one high school agriculture course, were members of FFA, 4-H, possessed an agricultural experience while in high school, and were from a farm or rural background. However, the majority of students with a farm, FFA or 4-H background had lessened from previous years.

With an increasing number of freshmen coming from urban backgrounds and/or situations in which they have gained no knowledge of or experience in agriculture, new problems and opportunities have emerged. According to Russell (1993), this lack of agricultural background and/or experience jeopardizes the long-term future of the agricultural industry. Russell (1993) warned of an impending lack of experience, referred to as "brain drain" (p.14). He warned the number and quality of individuals trained and experienced in

agriculture will continue this downward trend. Colleges, schools and departments of agriculture must provide information, not only in agriculture, but also about agriculture. However, losses in enrollment translate to losses of dollars from instructional budgets. The needed resources to provide this instruction may not be available.

Fishbein and Ajzen (1975) provided the theoretical framework for this study. They determined that intentions to participate in an activity could be predicted based upon knowledge, observation, or other information about some issue. This model suggested that a person's intent to pursue study in a field of agriculture, or to become actively involved in an agricultural career, may be predicted by analyzing his/her beliefs about agriculture.

The problem addressed by this research was to identify students entering colleges or universities who are likely to complete a program of instruction and seek employment in the industry of agriculture, and examine their attitudes. The conceptual model for this study emphasized the need to study those factors that influence a student's selection and pursuit of field of study and corresponding career choice.

Purpose/Objectives

The primary purpose of this study was to assess the attitudes and intentions of university freshmen majoring in agriculture toward their high school agricultural programs, university agricultural programs, and the agricultural industry. The study addressed the following questions:

1. What are the backgrounds of university freshmen majoring in agriculture?

2. What were the attitudes of university freshmen enrolled in agriculture regarding secondary agricultural education programs?

3. What were the attitudes of university freshmen regarding agriculture as a major area of study and an industry?

4. What was the influence of high school agriculture programs experiences on the attitudes of students who are now pursuing agricultural majors?

Methods/Procedures

This study was descriptive in nature. Four universities with programs of agriculture (one land grant and three non-land grant) in Kentucky were included in this study, with a population of 524 students. A student roster from each university college admissions office served as the population frame for this census study. Surveys were distributed by agricultural education faculty members at each university in the Fall 2002 academic semester.

A two-part questionnaire used in this study was developed by Dyer, Lacy, and Osborne (1996) and was used with their consent. The instrument was reviewed for content and face validity at that time. Part I of the questionnaire addressed demographic information and contained closed-ended and partially closed-ended questions. Part II of the instrument was divided into attitudes toward three constructs: Agriculture as an Area of Study, High School Agriculture Programs, and University Agriculture Programs. These sections used a five-point Likert-type scale (1=Strongly Disagree, 2=Disagree, 3=Uncertain, 4=Agree, 5=Strongly Agree). Dyer, et al. reported reliability estimates for the three constructs using Cronbach's Alpha (r=.85, .78, .88, respectively). Data were analyzed using descriptive statistics, using measures of central tendency and variability.

Survey instruments were distributed to each student during a scheduled class in October/November 2002 by an agricultural education faculty member at each university. Surveys were completed and returned to the faculty member, and follow-up contacts were made in December 2002 requesting instruments from non-respondents. Completed data collection instruments were received from 365, which resulted in a 72.5% response rate.

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 attitudes of the respondents.

Results/Findings

Research Question 1: What are the backgrounds of university freshmen majoring in agriculture?

A slight majority of the student respondents were female (52.1%, *n*=190) and large major of the respondents were Caucasian (93.1%, *n*=339). Six African American (1.6%), two Hispanic (0.5%) and four persons with other ethnicity types were also identified (1.1%).

In university agricultural programs throughout Kentucky, 45 percent (n=166) of the respondents were majoring in Animal Science, 58 students (15.9%) studying Agricultural Economics, and 40 (11.0%) students majoring in Ag Biotechnology.

One-third of the respondents (34.2%, *n*=125) had a farm background. An additional 23.0% (*n*=84) of the students were from medium urban backgrounds (population 10,000 to 99,000). Sixty three (17.3%) students studying agriculture come from small towns less than 10,000 and 10.1% (*n*=37) of the respondents have a rural, non farm background. The remaining 54 respondents (14.8%) indicated their background was from a population over 100,000.

Fifty-seven percent (n=210) of the respondents reported having taken agriculture in high school, 55.1% (*n*=201) indicated they were members of FFA; and 48.5% (*n*=177) had been involved in 4-H. Forty-one percent (n=150) of the students who completed high school

agriculture courses rated the program as "good", 14.8% indicated the program was "average" and 13.4% indicated the quality of the secondary agriculture program was "poor."

The majority of the respondents (60.8%, *n*=222) indicated they had both paid and unpaid work experiences in agriculture. Forty-four respondents had an unpaid work experience only, and 34 (9.3%) students had only a paid work experience. Sixty-five (17.8%) students indicated they had no type of agriculture work experience prior to enrolling in the university agriculture program.

Research Question 2: What were the attitudes of university freshmen enrolled in agriculture regarding secondary agricultural education programs?

A majority (55.5%) of university freshman majoring in agriculture reported course work in high school agricultural education, whereas 155 students (45.5%) reported no high school course work in agriculture.

Respondents were very supportive of high school agriculture programs (Table 1). More than three-fourths (77.9%) of freshman majoring in agriculture agreed that college bound students should be encouraged to enroll in high school agriculture programs, and 72.9% of the respondents agreed that more students should be encouraged to enroll in secondary agriculture.

A majority (67.4%) of the respondents agreed that high school agriculture is a good preparation for college study in agriculture. Most (63.8%) respondents agreed high school students should take some course work in agriculture; however 59.0% of the respondents believed only students pursuing careers in agriculture should enroll in high school agriculture courses. Freshmen (44.5%, n=161) majoring in agriculture agreed that high school agriculture should become more scientific.

Students were uncertain in many areas regarding the statements on high school agriculture courses (Table 2). Students are uncertain if high school courses are beneficial for higher-achieving students (42.9%), high school courses are beneficial for lower-achieving students (41.1%), high school agriculture is easier than other subjects (38.7%), and that high school agriculture should become less vocational (42.8%). Likewise, respondents disagreed with statements regarding high school secondary agricultural education programs. Two hundred forty-seven students (68.4%) disagreed that high school agriculture programs are better suited for male students.

Table 1.
Attitudes of University Freshmen Regarding High School Agriculture Programs

Statement	Agree* F (%)	Uncertain F (%)	Disagree** f (%)
College-bound students should be encouraged to enroll in high school agriculture programs.	284 (77.9)	61 (16.7)	20 (5.5)
More students should be encouraged to enroll in high school agriculture programs.	266 (72.9)	79 (21.6)	20 (5.5)
High school agriculture is good preparation for college study in agriculture.	244 (67.4)	100 (27.6)	18 (4.9)
Most high school students should take some course work in agriculture.	233 (64.1)	89 (24.5)	41 (11.3)
Only students pursuing careers in agriculture should enroll in high school agriculture courses.	215 (59.0)	93 (25.5)	56 (15.4)
High school agriculture should become more scientific.	161 (44.5)	149 (41.2)	51 (14.1)
High school agriculture courses are beneficial for higher-achieving students.	154 (42.4)	156 (42.9)	53 (14.6)
High school study in agriculture is easier than other subjects.	135 (37.3)	140 (38.7)	86 (23.8)
High school agriculture courses are beneficial for lower-achieving students.	134 (37.0)	149 (41.1)	79 (21.8)
High school agriculture should become less vocational.	114 (31.4)	155 (42.8)	93 (25.6)
High school agriculture classes are better suited to male students.	35 (9.6)	79 (21.8)	247 (68.4)

*The term "agree" includes the combined responses of "strongly agree" and "agree."
**The term "disagree" includes the combined responses of "strongly disagree" and "disagree."

Table 2.
Attitudes of University Freshmen Regarding University Agriculture Programs

Statement	Agree* f (%)	Uncertain f (%)	Disagree** f (%)
More students should be encouraged to enroll in university agriculture programs.	266 (72.9)	79 (21.6)	20 (5.5)
College agriculture classes are better suited to male students.	22 (6.0)	57 (15.7)	284 (78.2)
College study in agriculture is easier than in most other subjects.	68 (18.6)	97 (26.6)	199 (54.6)
Most college students should take some course work in agriculture.	215 (59.0)	93 (25.5)	56 (15.4)
Only students pursuing careers in agriculture should enroll in college agriculture courses.	83 (22.7)	46 (12.6)	236 (64.0)

*The term "agree" includes the combined responses of "strongly agree" and "agree."
**The term "disagree" includes the combined responses of "strongly disagree" and "disagree."

Research Question 3: What were the attitudes of university freshman regarding agriculture as a major area of study and an industry?

Respondents (59.0%, *n*=215) indicated most college students should take some course work in agriculture. Seventy-two percent (*n*=266) stated that more students should be encouraged to enroll in university agriculture programs. Likewise, a majority of students (64.0%, *n*=236) disagreed that only students pursuing careers in agriculture should enroll in college agricultural courses. Over half (54.6%, *n*=199) of the students majoring in agriculture disagreed that college study in agriculture is easier than in most other subjects. When asked if college agriculture classes are better suited for males, 78.2% (*n*=284) disagreed.

University freshmen majoring in agriculture attitudes toward the field of agriculture were generally positive. As indicated in Table 3, respondents viewed the field of agriculture as both scientific (94.5%) and technical (80.8%). Almost three-fourths (74.0%) of the students believe the image of agriculture is improving, and that 41.9 percent believe that most people have a positive image of agriculture. Students disagreed (88.0%) with the statement that only students with farm backgrounds should pursue careers in agriculture.

Table 3.
Attitudes of University Agriculture Freshmen Regarding the Agricultural Industry

Statement	Agree f (%)	Uncertain f (%)	Disagree f (%)
Agriculture is a scientific area of study.	346 (94.5)	16 (4.4)	3 (0.8)
Agriculture is a highly technical field of study.	295 (80.8)	58 (15.9)	12 (3.3)
The image of agriculture is improving.	270 (74.0)	70 (19.2)	25 (6.9)
Most people have a positive image of agriculture.	153 (41.9)	115 (31.5)	97 (26.6)
Only students with farm backgrounds should pursue careers in agriculture.	22 (6.1)	21 (5.8)	317 (88.0)

*The term "agree" includes the combined responses of "strongly agree" and "agree."
**The term "disagree" includes the combined responses of "strongly disagree" and disagree."

Research Question 4: What was the influence of high school agriculture programs experiences on the attitudes of freshmen students who are now pursuing agricultural majors?

High School Agriculture Program

Table 4.

Comparison of Attitudes - High School Agriculture Program vs. Non-Program Graduates

Statement	No High School Agriculture			High School Agriculture	
	M	SD		M	SD
Agriculture is a scientific area of study.	4.43	.59		4.50	.67
Most people have a positive image of agriculture.	3.23	.89		3.19	1.02
Agriculture is a highly technical field of study.	3.90	.75		4.20	.77
The image of agriculture is improving.	3.82	.79		3.96	.87
More students should be encouraged to enroll in university agriculture programs.	3.79	.85		4.09	.90
More students should be encouraged to enroll in high school agriculture programs.	3.74	.95		4.39	.76
College-bound students should be encouraged to enroll in high school agricultural courses.	3.63	.99		4.21	.86
High school agriculture is good preparation for college study in agriculture.	3.60	.87		4.22	.90
High school agriculture should become less vocational.	3.23	.86		2.93	1.20
High school agriculture should become more scientific.	3.43	.73		3.36	1.07
Only students with farm backgrounds should pursue careers in agriculture.	1.59	.92		1.59	.92
High school agriculture courses are better suited to male students.	2.11	1.02		1.91	1.06
College agriculture courses are better suited to male students.	1.91	1.03		1.80	.93
High school study in agriculture is easier than in most other subjects.	3.10	.74		3.24	1.21
College study in agriculture is easier than in most other subjects.	2.50	1.03		2.52	1.14
High school agriculture courses are beneficial for higher-achieving students.	3.07	.79		3.55	.99
High school agriculture courses are beneficial for lower-achieving students.	3.07	.85		3.25	1.16
Most high school students should take some course work in agriculture.	3.40	.88		3.93	.91
Most college students should take some course work in agriculture.	3.35	.94		3.76	.95
Only students pursuing careers in agriculture should enroll in high school agriculture.	2.57	1.00		2.12	1.10
Only students pursuing careers in agriculture should enroll in college agriculture.	2.62	1.12		2.28	1.18

Students who had completed high school agriculture courses expressed more positive attitudes toward educational programs in agriculture than those non-program graduates. (Table 4). Program graduates agreed (*M*=4.39) that more students should be encouraged to enroll in high school agriculture programs, however non-program graduates were uncertain (*M*=3.74). Program graduates of high school agriculture programs agreed (*M*=4.22) that high school agriculture is good preparation for college study in agriculture, and graduates without high school agriculture courses were uncertain (*M*=3.60). When asked if college bound students should be encouraged to enroll in high school agricultural courses, program graduates agreed (*M*=4.21) and non-program graduates were uncertain (*M*=3.63).

All respondents, both program graduates (*M*=3.36) and non-program graduates (*M*=3.43), were uncertain if high school agriculture should become more scientific. When asked if high school agriculture should become less vocational, non-program graduates were uncertain (*M*=3.23) and program graduates disagreed (*M*=2.93). Both groups were uncertain if most high school students should take some course work in agriculture. However, program graduates were more in agreement (*M*=3.93) than non-program graduates (*M*=3.40). Uncertainty was evident for both groups with the statements that high school agriculture courses are beneficial for higher achieving students and high school agriculture courses are beneficial for lower achieving students. Non-program graduates rated each statement the same (*M*=3.07). However, program graduates more strongly agreed that high schools course are beneficial for higher-achieving students (*M*=3.55), than for lower-achieving students (*M*=3.25).

All respondents disagreed (*M*=1.59) with the statement that only students with farm backgrounds should pursue careers in agriculture. Disagreement was also exhibited regarding only students pursuing careers in agriculture should enroll in high school agriculture programs. Program graduates disagreed more strongly (*M*=2.57) than non program graduates (*M*=2.12) on this statement.

University Agriculture Program

Respondents disagreed with many statements regarding the university agriculture program. Disagreement was shared by both program graduates (*M*=2.28) and non-program graduates (*M*=2.62) that only students majoring in agriculture should enroll in college agriculture; however, students enrolled in high school agriculture programs were stronger in their disagreement for this statement.

Both non-program graduates (*M*=2.50) and program graduates (*M*=2.53) disagreed that college agriculture is easier than most subjects. Strong disagreement was stated regarding agriculture courses at the university level are better suited for male students. Those respondents who studied agriculture at the high school level (*M*=1.80) strongly disagreed, whereas those who had no agriculture course prior to enrolling at the university (*M*=1.91).

Agricultural Industry

Respondents strongly agreed that agriculture is a scientific area of study. However, those students who were involved with high school agricultural education programs more strongly agreed (*M*=4.50) with the statement than non program graduates (*M*=4.43).

High school program graduates (*M*=3.19) and non-program graduates (*M*=3.23) were uncertain whether most people have a positive image of agriculture. However, both groups are uncertain but lean to agreement that the image of agriculture is improving. Again, program graduates (*M*=3.96) are more in agreement with this statement than those students who did not take agriculture in high school (*M*=3.82).

When asked if agriculture is a highly technical field of study, program graduates agreed (*M*=4.20). However, those who graduated high school without enrolling in agriculture were in less agreement (*M*=3.90).

Conclusions

A slight majority of university agriculture freshmen in Kentucky are white, female, and had a farm background. Students studying agricultural education at the high school level perceive its quality as good. These students were also members of the FFA and some had involvement with 4-H. Prior to enrollment at the university, students had experiences in both paid and non-paid agriculture activities. Students major in a variety of agriculture programs; however the most frequent major was animal science.

Entering freshmen majoring in agriculture are supportive of high school agriculture programs. Students who had completed high school agriculture courses either agreed or disagreed with statements more strongly than those students who had not experienced agricultural education at the secondary level. Agricultural education program graduates also expressed more positive attitudes toward educational programs in agriculture than those non-program graduates**.**

Program graduates agreed that more students should be encouraged to enroll in high school agriculture programs, and agricultural education is good preparation for college agriculture studies. Students who had taken agricultural education in high school believed that college bound students should be encouraged to enroll in high school agricultural courses; however, those students who did not take high school agriculture were uncertain. Students are unsure if most high school students should take some course work in agriculture, curriculum should become more scientific, or the curriculum should become less vocational. Freshmen majoring in agriculture also are uncertain if high school agriculture courses are beneficial for higher achieving students, and also if high school agriculture courses are beneficial for lower achieving students.

Students disagreed that only students with farm backgrounds should pursue careers in agriculture, and if only students pursuing careers in agriculture should enroll in high school agriculture programs. Disagreement was shared by all students when asked if only students majoring in agriculture should enroll in college agriculture; however, those enrolled in high school agriculture programs strongly disagreed with this statement. Students also disagreed with the statement that college agriculture is easier than in most subjects. Strong disagreement was evident for asking if agriculture courses at the university level are better suited for male students.

University freshmen students majoring in agriculture attitudes toward the field of agriculture were generally positive in their attitudes. Agreement was shared that agriculture is a scientific area of study and that agriculture is a highly technical field; however, uncertainty exists among all students whether the image of agriculture is improving. Disagreement between program graduates and non-program graduates existed when asked if agriculture is a highly technical field of study. Program graduates agreed with this statement; however those who graduated high school without enrolling in agriculture were uncertain.

Recommendations

In this state, more female students are enrolled in university agriculture programs than male students. In the past, students enrolled in colleges, schools and departments of agriculture have been traditionally male. Faculty members teaching agricultural courses should be made aware of demographic trends such as gender, geographic location, prior agricultural work experience, etc. These trends influence the classroom and the student learning that occurs in the classroom. Faculty and administrators must be aware and adapt to the needs and learning styles of the students they teach. As student demographics change, we must adapt and improve our teaching strategies to enrich and challenge our students. In return this will benefit the careers of our students, university agricultural programs, and the agricultural industry.

This study included all university freshmen students majoring in agriculture across the Commonwealth of Kentucky (one land grant and three non-land grants). Further study should be conducted to analyze the "type of student" enrolled in the land grant university compared to the non-land grant university. Factors such as high school GPA, ACT scores, technical agriculture background, and the agricultural education experiences should be taken into consideration.

Analyzing the attitudes of university faculty in agriculture would be of benefit. Determining faculty perceptions of the secondary agricultural education program, university programs of agriculture, and the agricultural industry as a whole would be insightful and be worth investigating this area further.

Longitudinal studies should be conducted to compare university agricultural freshmen students' demographics, attitudes of the recruitment process, and issues surrounding retention over time. A follow-up study on these students throughout their university experience should

occur. This research also should be replicated to study other entering classes of freshmen to compare groups over time.

Discussion/Implications

As state and federal budgets tighten and accountability for schools at all levels becomes more crucial, professionals in agriculture must be aware of the attitudes of the clients—our students. University agricultural educators are vital to the success of state high school agricultural education programs and have an important role in the colleges of agriculture as educational specialists. Teacher educators in agriculture must serve in a public relations role to administrators, other faculty members, high school teachers and prospective students in sharing the importance of agriculture in higher education. This is not important only for agricultural education programs, but for all programs.

In this study, a finding was that freshmen students in Kentucky believe the high school programs could be more scientific. Are agricultural education programs preparing teachers to teach at a higher level? Are the students in high school agricultural education being challenged and held accountable?

As agricultural education curriculum is assessed one must take in account those attitudes of students who were a part of the agricultural education program and who are college-bound. However, we must not also forget those high school students who are preparing for entrance into the workplace immediately after high school graduation. This finding points out that there is not clear cut direction for the high school agriculture program. Are programs changing to meet the needs of the college bound AND the graduate going into the work place? A balance must be found and implemented; making the job of agriculture educators even more difficult.

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