

## **FACTORS INFLUENCING ENROLLMENT IN AGRICULTURAL EDUCATION PROGRAMS AS EXPRESSED BY IOWA SECONDARY AGRICULTURAL EDUCATION STUDENTS**

**Randal Reis**, Agriculture Instructor  
Postville Community High School, Postville, IA

**Alan A. Kahler**, Professor  
Iowa State University

### **Abstract**

*Secondary agricultural education students in Iowa were surveyed to determine factors that influenced their enrollment in agricultural education programs. Responses were collected from 5.5 Iowa secondary agriculture programs and 1429 students. The people who most influenced the respondents to enroll in agricultural education were parents, the agriculture instructor, a friend, and a former agricultural education student. The personal and organizational factors which most influenced the respondents to enroll in agricultural education were personal interests, possession of a farm background and participating in an agriculture course. Students were most satisfied with FFA activities, contest activities, and the supervised agricultural experience program. They were least satisfied with classroom facilities, agricultural mechanics course work and leadership activities. It was recommended that Iowa agricultural educators maintain active recruitment programs that share information about the agricultural program with potential students, parents, school administrators and the public. They should analyze the mechanics phase of the program seeking ways to strengthen it and share information with counselors to use in their work of advising students.*

Perhaps no other discipline has experienced the dilemma that agricultural education at the secondary level has over the years. Seemingly, the dilemma is one of misconception based on the belief that agricultural education programs are designed to train students only for production agriculture. The notions that students with limited academic abilities can succeed in an agricultural occupation, and that agricultural education is for someone else's child, are two frequently stated misconceptions about agricultural education (Warmbrod, 1968).

According to The National Research Council (1988), agricultural education has a long history in American education. Based on the beliefs of students enrolled in the program, agricultural education remains one of the most widely praised secondary programs in the country. Most programs consist of three parts: classroom and laboratory instruction, supervised agricultural experiences, and

the FFA. Students and teachers spend considerable time in and outside the school following the curriculum and working on projects.

When federally supported agricultural education was created in 1917, about one-third of the U.S. population lived on farms. Farm businesses dominated rural life and sustained rural communities. Today, the U.S. farm population is about 2.2 percent of the overall population. Technological evolution over the last half century has transformed the nature and vastly broadened the range of agricultural occupations and professional careers. U.S. industries that serve agriculture by producing, processing, marketing, and preparing food and fiber products for consumers account for about \$700 billion in economic activity each year. This is about 16.5% of the gross national product (U.S. Department of Agriculture and Commerce, 1986; U.S. Department of Commerce Bureau of the Census, 1986).

Agriculture, broadly defined, is too important a topic to be taught only to the relatively small percentage of students considering careers in agriculture and pursuing studies in agriculture. Students should come to appreciate that the plants and animals providing our food and fiber are part of a vast web of life that functions as an integrated whole. Every species of plant and animal depends not only on its physical environment, but on the biological component of the environment as well. All living creatures are part of the same cycles of matter and energy. Education will be incomplete unless students learn what is essential for the lives of our crops, animals, and plants (Moore, 1987).

Most Americans know very little about agriculture, its social and economic significance in the United States, and particularly its links to human health and environmental quality. Few systematic educational efforts are being made to teach or otherwise develop agricultural literacy in students of any age. Although children are taught something about agriculture, the material tends to be fragmented, frequently outdated, usually only farm oriented, and often negative or condescending in tone (National Research Council, 1988).

According to the National FFA Organization (1986), enrollment in secondary agricultural education programs peaked in 1977 when about 697,500 students were enrolled in agricultural education programs across the nation. Since that time enrollment in agricultural education programs nationally has steadily declined. Declining enrollment is a major concern for agricultural educators across the country.

There are many possible reasons for the decline in secondary agricultural enrollment. Population trends have shown a decline in the number of high school-aged students. Increased high school graduation requirements have put pressure on students to ensure that they are adequately prepared to graduate. College entrance requirements have changed, making students hesitate to take vocational courses. Lam (1987) identified

interpersonal reasons, school factors, significant others, socioeconomic and home factors as barriers that influence students not to enroll in further educational pursuits. Kotrlik (1987) found that parents were the dominant influence on a student's decision whether to enroll in agriculture classes when attending high school. Herr (1987) found that students will seek the advice of a teacher, parent, friend, counselor and others before enrolling in agriculture classes. Connors et. al, in a Michigan study (1989), found that 45 percent of the non FFA members responded that they enrolled in agricultural education because they were interested in agriculture, they needed a science credit, and they thought it would be an easy class or they were forced to enroll.

In order to improve recruitment, agricultural educators need to understand what motivates students to enroll in agricultural education classes. They need to understand why students are or are not participating in agricultural classes today. With this knowledge they can better understand how to improve their programs and enrollments, and serve more students.

### **Purpose and Objectives**

The purpose of this study was to analyze the factors that led students to enroll and participate in secondary agricultural education programs in Iowa. Specific objectives were as follows:

1. To determine who influences students to enroll in secondary agriculture courses in Iowa.
2. To determine what personal and organizational influences stimulate students to enroll in secondary agricultural classes.
3. To determine if students are satisfied with their agricultural education programs.
4. To determine if selected factors influence the perceptions of students toward enrolling in agriculture courses.

## Procedures

The data for this study were collected by means of a questionnaire. A list of people and factors that influence students to enroll in an agricultural education program at the secondary level was compiled based on the results of other relevant studies (Birkenholz, 1986; Eaddy, 1986; Herring, Marshall, and Briers, 1989; Rossetti, Elliot, Price, and McClay, 1989; Martin, 1985), the experience of the researcher, and the experience of members of the faculty in the Department of Agricultural Education and Studies at Iowa State University.

The questionnaire consisted of 13 demographic questions about the background of the respondents (Part I), 27 statements assessing the degree of influence each person or factor had on the respondent's decision to enroll in agriculture classes (Part II), and nine statements assessing the degree of satisfaction the respondents had with different phases of the agriculture program (Part III). The cover page of the questionnaire contained a letter to the instructor along with instructions for students when filling out the questionnaire.

Using a Likert-type scale, respondents were asked to rate each item on Part II of the questionnaire from 1 to 5 where "1" represented no influence and "5" represented very much influence. For Part III of the questionnaire respondents were asked to rate the items on a scale of 1 to 4 where "1" represented very dissatisfied and "4" represented very satisfied. A descriptor of "no opinion" was not used in the scale.

The questionnaire was administered to twenty secondary students not participating in the study to assess the reliability of the parts of the instrument. Reliability coefficients for the people influences was .85; for the personal and organizational factors was .84; and for the program satisfaction factors was .84.

To provide information that would satisfy the objectives of the study, a random sample of 66 of

259 Iowa high schools conducting agricultural education programs was selected to participate. The questionnaires were mailed to the agriculture instructors at the 66 selected schools. Each instructor was directed to administer the questionnaires to all students in their agriculture classes (grades 9- 12). Student responses were received from fifty-five schools. The instructors in the remaining 11 schools were contacted by letter and telephone encouraging them to administer the questionnaires to their students and return them to the researcher. The 55 responding schools provided 1429 student responses that were used in this study.

The student responses were analyzed using frequencies, percentages, means, standard deviations, t-tests and analysis of variance. The alpha level of .05 was used to determine significant differences between or among mean scores.

## Findings

Of the respondents, 28.3% were in the 9th grade, 27.4% were in the 10 grade, 23.5% were in the eleventh grade, and 20.8% were in the 12th grade. Eighty-six percent were males and 14% were females. Fifty-eight percent lived on the farm, whereas 42% lived in small towns or urban areas. Forty-four percent planned to work in an agricultural occupation after high school graduation, whereas 52% planned to work in nonagricultural occupations.

Based on the mean scores presented in Table 1, the people who most influenced the respondents to enroll in agricultural education were parents, the agriculture instructor, a friend, and a former agricultural education student. The people who least influenced the respondents were the county extension director, another teacher, the 4-H leader, and the high school counselor.

The personal and organizational factors which most influenced the respondents to enroll in agricultural education while attending high school were "personal interests," "possession of a farm

background,” and “the fun of participating in an interesting agriculture course.” Those personal and organizational factors with least influence were “4-H activities,” “pre-high school recruitment program,” “farm organizations,” and “interest in agriculture as a major in college.” These observations were made based on data presented in Table 2.

Table 1. Persons Influencing Enrollment in Agriculture (N= 1429)

Standard	Mean <sup>a</sup>	Person Deviation
Former agriculture student	2.75	1.34
Student outside of agriculture	2.00	1.20
A friend	2.87	1.37
Student enrolled in agriculture	2.89	1.33
Fellow student	2.70	1.33
Agriculture instructor	2.93	1.45
High school counselor	1.78	1.14
Another teacher	1.64	1.04
Pastor	1.41	0.91
County extension director	1.56	1.08
Parents	2.95	1.46
Brother or sister	2.17	1.45
Relative	2.18	1.38
Neighbor	1.79	1.20
4-H leader	1.71	1.20
People associated with agricultural businesses	2.22	1.35

<sup>a</sup>5 = very much influence; 4 = much influence; 3 = some influence; 2 = little influence; and 1 = no influence.

Based on data presented in Table 3, the phase of the agricultural education program that the respondents were most satisfied with were “FFA activities,” “activities associated with their course work in agriculture,” “contest activities,” and “the supervised agricultural experience program.” Phases that the respondents were least satisfied with were “classroom facilities,” “agricultural mechanics

course work,” “laboratory facilities,” and “leadership activities.”

Comparison of the people, personal and organizational influence mean scores grouped by grade level and Iowa Vocational Agriculture Teachers District revealed no significant differences among group means. A similar observation was made when mean scores were compared for satisfaction with phases of the agriculture program for both of these variables.

When the people, personal and organizational influences and satisfaction means were grouped by level of academic achievement, significant high mean scores were observed for those respondents with higher levels of academic achievement for a large number of the influences studied. These observations were based on data presented in Table 4.

Residence of the respondents had little or no effect on how the respondents rated the influence of people on their decision to enroll in agricultural education. Significant differences were observed among means for nine of eleven personal and organizational influences when grouped by residence. In each comparison, the respondents who lived on a farm had higher mean scores that did those who lived in small towns or urban areas.

When the influences and satisfaction mean scores were grouped by gender, a few significant differences were observed. For the personal and organizational influences and satisfaction with program areas were compared by gender, female mean scores tended to be higher than for males.

These observations are based on data presented in Tables 6 and 7.

## Conclusions/Recommendations

### Conclusions

It was observed that the most often cited personal and organizational factor that influenced students to enroll in agricultural education were personal interests followed by personal desires and farm background. This is very interesting because many other studies have not studied personal desires and personal interests in their research. Findlay (1982) found that an ambition to pursue a

professional career was the primary factor that influenced black students to enroll in vocational agriculture. In this study, occupational opportunities were not ranked high. Farm background probably ranked high because a majority of the respondents grew up on farms. One could hypothesize that many students are participating in agricultural education programs because of interest or curiosity in certain areas of agriculture and not just for preparation for a certain occupation or agricultural discipline such as farming.

Table 2. Personal and Organizational Influences on Enrollment in Agriculture (N=1429)

Influence	Mean <sup>a</sup>	SD
4-H activities	1.91	1.34
Reputation of FFA chapter	2.58	1.40
Farm organization	2.16	1.39
Past agricultural experience	2.96	1.52
Occupational opportunities	2.98	1.45
Farm background	3.17	1.51
Interest in agriculture as a major in college	2.41	1.47
Fun of participating in an interesting agriculture course	3.14	1.38
Personal interests	3.59	1.35
Pre-high school recruitment program	1.98	1.24

<sup>a</sup>5 = very much influence, 4 = much influence; 3 = some influence; 2 = little influence, 1 = no influence

Table 3. Student satisfaction with phases of agriculture program (N= 1429)

Phase	Mean <sup>a</sup>	SD
Agriculture course work	3.15	.71
Activities in agriculture	3.21	.74
Supervised agricultural experience program	3.17	.74
Leadership activities	3.11	.82
Contest activities	3.18	.81
FFA activities	3.29	.79
Agricultural mechanics course work	2.95	.86
Classroom facilities	2.96	.76
Laboratory facilities	3.06	.90

<sup>a</sup>4 = very satisfied, 3 = satisfied, 2 = dissatisfied, 1 = very dissatisfied

Table 4. People, Personal and Organizational Influence by Academic Achievement

Influence	Academic Achievement				N=	F value	F prob.	
	A	B	C	D				
	N=	N=	N=	N=				
<b>Person Influence</b>								
Former agriculture student	Mean <sup>a</sup>	2.92	2.72	2.76	2.48	2.75	1.76	.15
	SD	1.34	1.31	1.35	1.55	1.34		
Student outside of agriculture		1.83	1.95	2.10	2.13	2.00	3.12	.03
		1.15	1.15	1.26	1.33	1.20	(1<4; 2<4; 3<4) <sup>b</sup>	
Friend		2.88	2.87	2.92	2.24	2.87	4.13	.00
		1.36	1.35	1.38	1.29	1.37	(1>4; 2, 3>4)	
Student enrolled in agriculture		2.11	2.90	2.86	2.31	2.89	4.86	.00
		1.38	1.32	1.41	1.36	1.37	(1>3, 4; 2>4; 3>4)	
Fellow student		2.78	2.69	2.70	2.43	2.70	.99	.40
		1.34	1.31	1.35	1.27	1.33		
Agriculture instructor		3.15	3.01	2.85	2.17	2.93	7.65	<.00
		1.48	1.40	1.47	1.36	1.45	(1>3, 4; 2>4; 3>4)	
High school counselor		1.72	1.68	1.91	1.76	1.78	4.64	.00
		1.13	1.05	1.23	1.15	1.14	(1>3, 4)	
Teacher outside of agricultural education		1.72	1.54	1.72	1.63	1.64	3.50	.02
		1.19	.92	1.11	1.03	1.04	(1>4)	
Parents		3.32	2.98	2.84	2.56	2.95	6.44	<.00
		1.42	1.41	1.50	1.50	1.46	(1>2, 3,4)	
<b>Personal and Organizational Influence</b>								
4-H activities		2.14	1.95	1.81	1.85	1.91	2.97	.03
		2.49	1.36	1.27	1.29	1.34	(1>3)	
Reputation of the FFA chapter		2.77	2.59	2.53	2.17	2.57	2.92	.03
		1.46	1.37	1.42	1.41	1.40	(1>3; 2>4)	
Farm organization		2.03	2.16	2.15	2.52	2.16	1.71	.16
		1.39	1.34	1.41	1.50	1.43		

Table 4 Continues

Table 4. Continued

Influence	Academic Achievement				N=	F value	F prob.
	A N=	B N=	C N=	D N=			
Past agriculture experience	3.34 1.59	3.08 1.48	2.78 1.51	2.33 1.43	2.96 1.52 (1>4; 2>4)	11.12	<.00
Occupational opportunities	3.23 1.45	3.11 1.40	2.81 1.46	2.35 1.47	2.98 1.45 (1>4; 2>3, 4; 3>4)	9.72	<.00
Farm background	3.51 1.54	3.26 1.47	3.02 1.51	2.67 1.57	3.17 1.45 (1,2, 3>4; 2, 3>4)	7.64	<.00
Interest in agriculture as a major in college	2.76 1.64	2.56 1.50	2.20 1.36	1.80 1.26	2.41 1.47 (1>3, 4; 2>3, 4)	13.20	<.00
Fun of participating in interesting agriculture course	3.36 1.38	3.22 1.32	3.02 1.39	2.63 1.58	3.14 1.38 (1>3, 4; 2>3, 4; 3>4)	6.24	<.00
Personal interests	3.85 1.24	3.64 1.29	3.50 1.41	2.94 1.60	3.59 1.35 (1>3, 4; 2>3, 4; 3>4)	7.57	c-.00
Pre-high school recruitment	2.02 1.33	2.00 1.21	1.96 1.24	1.91 1.28	1.98 1.24	.23	.87

"5 = very much influence, 4 = much influence, 3 = some influence, 2 = little influence, 1 = no influence

<sup>b</sup>Scheffe's post hoc test was used to detect differences between group means

It was observed that the person with the greatest influence on students' participation in agricultural education were their parents followed by the agriculture instructor and former agricultural education students. This finding is similar to findings reported by Herring et. al (1989) and Kotrlik (1987) in their studies of barriers to student enrollment in secondary agriculture programs.

Respondents were most satisfied with "FFA activities," "activities conducted as a part of the agricultural education program," and "contest activities." They were least satisfied with the

facilities in which the program was conducted and agricultural mechanics course work.

### Recommendations

It is the opinion of the researchers that agricultural education instructors throughout the state of Iowa should establish and maintain an active recruitment program for their programs. The program should provide information to potential students, parents, school administrators and the public about the program.

Table 5. Satisfaction with Phase of Vocational Agriculture Program by Academic Achievement

Phase	Academic Achievement				N=	F	F
	A	B	C	D			
	N=	N=	N=	N=			
Agricultural course work	181	622	572	54	1429		
Mean <sup>a</sup>	3.25	3.16	3.13	2.93	3.15	3.3	.02
SD <sup>b</sup>	.75	.66	.75	.87	.71	(1>3,4; 2>4; 3>4) <sup>b</sup>	
Agricultural activities	3.34	3.25	3.17	2.87	3.21	6.72	<.00
	.68	.68	.79	.89	.74	(1>3,4; 2>4; 3>4)	
Leadership activities	3.30	3.19	3.02	2.67	3.11	13.32	<.00
	.76	.75	.85	1.01	.82	(1>3,4; 2>3,4; 3>4)	
Contest activities	3.31	3.25	3.10	2.70	3.17	11.17	<.00
	.82	.75	.83	1.00	.75	(1>3,4; 2>3,4; 2>4)	
FFA activities	3.41	3.35	3.23	2.91	3.29	8.07	.00
	.76	.71	.84	.94	.33	(G-3,4; 2>3,4; 3>4)	
Supervised agricultural experience program	3.29	2.30	3.12	2.96	3.17	4.09	.01
	.70	.71	.77	.89	.74	(1>3,4; 2>4)	
Agricultural mechanics course work	2.94	3.01	2.98	2.93	2.99	.38	.77
	.86	.85	.88	.93	.87		
Classroom facilities	3.06	2.97	2.93	2.63	2.95	3.61	.01
	.83	.80	.90	1.03	.86	(1>4; 2>4; 3>4)	
Laboratory facilities	3.08	3.06	3.07	2.93	3.06	.47	.71
	.91	.88	.90	1.06	.90		

<sup>a</sup>4 = very satisfied; 3 = satisfied; 2 = dissatisfied; 1 = very dissatisfied

<sup>b</sup>Scheffe's post hoc test was used to detect differences between group means

The mechanics phase of the agricultural education program should be carefully analyzed to find out why students were least satisfied with it and steps taken to reorganize and update this phase of the program. Historically, this phase of the program has been one of the highest rated leading students to enroll in the program.

It is highly recommended that the counselors in schools that are conducting agricultural education programs be made aware of those factors that influence students to enroll in agricultural education programs. In particular, counselors should be made aware of the importance of the role they play in influencing students as they consider

Table 6. Personal and Organizational Influence Group Means by Gender of Respondents

		Gender		t value	t prob
		Males N=1223	Females N=206		
4-H activities	Mean <sup>a</sup>	1.89	1.07	-1.65	.10
	SD	1.31	1.48		
Reputation of FFA chapter		2.53	2.82	-2.73	.00
		1.40	1.39		
Farm organization		2.19	1.97	2.13	.03
		1.39	1.37		
Past agricultural experience		3.01	2.67	3.05	.00
		1.50	1.60		
Personal desires		3.54	3.74	-1.82	.07
		1.42	1.33		
Occupational opportunities		3.00	2.84	1.47	.14
		1.44	1.47		
Farm background		3.26	2.66	5.34	<.00
		1.49	1.54		
Interest in agriculture as a major in college		2.44	2.26	1.60	.11
		1.47	1.47		
Fun of participating in agriculture course		3.09	3.41	-3.06	<.00
		1.38	1.33		
Personal interests		3.56	3.73	-1.63	.10
		1.36	1.30		
Pre-high school recruitment program		1.97	2.06	- .93	.35
		1.23	1.31		

<sup>a</sup>5=very much influence, 4=much influence, 3=some influence, 2=little influence, and 1=no influence.

enrolling in agriculture classes and plan the studies while they attend high school. The agriculture teacher should work with his or her counselor to develop a thorough understanding of the program. In doing so, the counselor can do a better job

counseling prospective students about the agriculture program and encouraging all students to consider enrolling in agriculture classes.

Table 7. Satisfaction with Phases of the Agriculture Program by Gender of the Respondents

		Gender		t value	t prob
		Males N=1223	Females N=206		
Agricultural course work	Mean <sup>a</sup>	3.14	3.20	-1.32	1.87
	SD	.73	.64		
Agricultural activities		3.19 .75	3.34 .65	-2.94	<.00
Supervised agricultural experience program		3.16 .75	3.28 .65	-2.35	.02
Leadership activities		3.08 .82	3.34 .74	-4.23	<.00
FFA activities		3.26 .80	3.50	-4.78 .68	<.00
Agricultural mechanics course work		3.00 .90	2.92 .63	1.47	.14
Classroom facilities		2.93 .88	3.10 .74	-2.92	<.00
Shop facilities		3.07 .92	3.01 .72	.97	.33
Contest activities		3.14 .82	3.41 .70	-4.98	<.00

<sup>a</sup>4 = very satisfied, 3 = satisfied; 2 = dissatisfied; 1 = very dissatisfied

Agriculture instructors should study why some personal and organizational factors have 'little' to 'some' influence on students to enroll in the agriculture program. Each of these factors could influence students to enroll in the agriculture program in a beneficial way and assist the agriculture instructor and school in reaching more students and maintaining a strong enrollment in the program. To accomplish the above, agriculture instructors should share information about the

agriculture program with these people. Strong emphasis should be placed on sharing the goals of the program, its content, and its achievements.

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