

# FACTORS INFLUENCING MINORITY AND NON-MINORITY STUDENTS TO ENROLL IN AN INTRODUCTORY AGRISCIENCE COURSE IN TEXAS

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## Abstract

*The authors investigated attitudes toward agriculture of minority and non-minority students to identify reasons for enrolling and perceived enrollment barriers. A stratified random sample of all students enrolled in two introductory agriscience courses in 60 agriscience programs was selected and surveyed using a five-part questionnaire.*

*The major findings and conclusions were that: 1) the majority of students and teachers were white males; 2) minority students, especially minority females, were underrepresented; 3) minority students tended to be from non-farm, non-rural areas; and, 4) minority students had more negative perceptions regarding agriculture and agricultural education, and were more likely to perceive their reasons for enrolling as being beyond their control, perceived more barriers to enrolling, and were less likely to see opportunities for themselves in agricultural careers or to perceive agriculture as diverse.*

*The following recommendations were offered: 1) the agricultural education profession should focus awareness and informational activities on the elementary grades and should conduct recruitment activities no later than the middle school grades; 2) efforts should be conducted to recruit more minorities into agriscience teaching; and, 3) activities should be conducted to reduce the perceived barriers for minority students.*

The National Research Council (1988) stated that the enrollment in secondary agriculture had traditionally been white males and that it continued to be that way. Although female enrollment increased during the 1980s, minority enrollment remained low. In The Strategic Plan for Agricultural Education, the National Council for Agricultural Education (1989) set as a priority goal for agricultural education, "To serve all people and groups equally and without discrimination" (p.4).

The debate on how to improve agricultural education for minority groups is not new. Schmitt and Bender (1971) conducted a survey of teacher-education institutions to determine the extent to which they provided experiences and preparation for teachers of minority populations. Schmitt and Bender (1971) found that the institutions were

doing little to address the issue.

The Texas state population is predicted to drop below 50% White by the year 2025 (Murdock, Hoque, & Hamm, 1989). The secondary enrollment in Texas public schools approached this minority-majority for the 1990-91 school year with 51.9% White, 13.9% Black, 31.7% Hispanic, 2.3 % Asian-Americans, and 0.2% Native Americans (Texas Education Agency, 1991). However, the percentage of minorities enrolled in agriscience courses was disproportionately low compared to the percentage of minorities in the secondary school population. In the 1990-91 school year, the agricultural education enrollment in secondary schools in Texas was composed of 76.5% White, 6.0% Black, 17.2% Hispanic, and less than 1% Asian-Americans, Native Americans, and others (Eudy, 1991).

## **Theoretical Framework**

The theoretical framework is based on the career decision-making models from sociology and psychology. From these models a basis exists for explaining why people choose to enroll or not enroll. People make decisions, including enrollment decisions, based on self characteristics and environmental factors (Herr & Cramer, 1992). Herr and Cramer (1992) summarized the Social Learning Theory of Krumboltz and his associates into four areas: genetic endowment and special abilities, environmental conditions and events, learning experiences, and task approach skills.

Ethnicity is a consideration under the genetic endowment and special abilities area; therefore, ethnicity plays a role in decision-making. Lipsett (1962) stated that people made choices partially based on the factors of social class membership, home influences, school, community, pressure groups, and role perceptions. Each of these influence the decision to join or not join an activity, group, course of study, or occupation.

Crites (1969) summarized the psychological approaches to career decision making by stating that people made decisions because of motivation or personality variables. Career development can be divided into life stages and substages (Super, Crites, Hummel, Moser, Overstreet, & Warnath, 1957). In the tentative substage of the exploration stage, ages 15 to 24, adolescents examine career possibilities through fantasy, school classes, and part-time work. Super (1957) concluded that youth perform self-exploration as a result of the environment and situations in the home. He discussed the school as a place that allows for formal exploration of careers through courses, clubs and organizations, and other activities.

## **Purpose and Objectives**

The purpose of this study was to identify factors influencing minority and non-minority students to enroll in an introductory agriscience

course in Texas. The objectives were:

1. To describe selected demographic and situational characteristics of minority and non-minority students enrolled in an introductory agriscience course; and,
2. To compare minority and non-minority students enrolled in an introductory agriscience course in Texas on reasons for enrolling, perceived barriers to enrolling, and personal opinions toward agriculture.

## **Methods**

The population of the study consisted of about 19,000 students enrolled in Agriscience 101, "Introduction to World Agricultural Science and Technology," and Agriscience 102, "Applied Agricultural Science and Technology," in approximately 1,000 Texas public schools during the Fall semester, 1991. Because of the inaccessibility to such a large number of individual students, a cluster sampling was utilized with agriscience departments as the sampling unit.

The sample was stratified using the ten supervisory areas of the state to ensure proportional representation from each of the state's geographical regions. By using a formula that bases the sample size on the smallest subgroup (Fink & Kosecoff, 1985), a sample of 60 agriscience departments was determined to be appropriate. Fifty-seven departments, with 1,399 AGSC 101 and 102 students, responded resulting in a 95% response rate. An assumption made by the researcher was that all Agriscience 101 and 102 students within the 57 departments completed the questionnaire. Although there were 1,399 useable responses, not all students answered each question.

The sample was surveyed using a five-part questionnaire. A panel of faculty and graduate students in the Department of Agricultural Education at Texas A&M University reviewed the instrument for clarity and content validity. The

instrument was field tested at two schools that had ethnic diversity and were not in the study. The original constructs were developed through a literature search and previous questionnaires by Flores (1989) and Marshall (1990). Scales to measure these constructs were developed based on both conceptual and empirical analysis. Factor analysis and Cronbach's coefficient alpha were used to obtain the strongest level of internal consistency.

Descriptive statistics were used to address objective one. Scales were developed to measure students' reasons for enrolling, perceived barriers to enrolling, and personal opinions toward agriculture. Analysis of variance was used to compare the students' minority status (independent variable) on the scaled variables (dependent variables) to satisfy objective two. The reasons for enrolling scales were called agriculture, influential persons, agricultural career, disavowance, and good feeling.

The influential persons scale was not statistically significant on the variable of minority status. The agricultural career and good feeling scales are not reported due to space limitations. The barriers to enrolling scales were called personal negative, teacher negative, course negative, and agriculture negative. The personal opinions scales were designed to measure the students' attitudes about various aspects of agriculture. They were called personal career, agricultural occupations, and occupational requirements.

The agriculture scale, 13 items with a Cronbach's alpha of .84, measured the influence of the agriscience course and agriculture in general on the student's decision to enroll. Most of the items in this scale related to the traditional aspects of agriculture and agricultural education, such as animals, fairs and shows, and hands-on learning. The disavowance scale, four items with a Cronbach's alpha of .67, measured the extent to which the student felt enrolling was out of his/her control. These items related to the influence of counselors, principals, and the placement of course offerings in the schedule.

The personal negative scale, five items with a Cronbach's alpha of .75, measured the influence of negative interactions with other students on perceived barriers to enrolling. These items addressed such issues as not being like the other students in class, having negative experiences with other students, and receiving peer pressure not to enroll. The teacher negative scale, four items with a Cronbach's alpha of .80, measured negative interactions with the agriscience teacher. This scale contained items such as teacher discrimination, the teacher not being like the student, and the teacher being indifferent.

The course negative scale, five items with a Cronbach's alpha of .83, measured the degree that perceived course attributes were a barrier to enrolling. This scale included items about the FFA, course difficulty, and career preparation. The influence of the student's negative perceptions toward agriculture on perceived barriers were measured by the agriculture negative scale, five items with a Cronbach's alpha of .86. These items related to the status, pay, and physical demands of agriculture.

The personal career scale, five items with a Cronbach's alpha of .80, measured the student's likelihood to enter an agricultural career. The agricultural occupations scale, seven items with a Cronbach's alpha of .85, measured the student's perceptions on the variety and scope of the agriculture industry. These items related to parts of agriculture besides livestock and crop production. The occupational requirements scale, six items with a Cronbach's alpha of .73, measured the student's perceptions on the requirements needed to obtain a job in agriculture. This scale included items related to the level of training, basic skills, education, and expertise needed for an occupation in agriculture.

## **Findings**

Blacks were 6.3% of the sample, while Hispanic students made up 17%. Whites (72.5%) were a majority of the sample. Less than 1% of the

sample identified themselves as Asian-American. Although less than 1% of the study population was Native American, 47 students (3.4%) in the sample identified themselves as such. There were five students who did not respond to this question, although their responses were useable for the other items on the questionnaire.

Table 1 shows that a majority (93.0%) of students identified the ethnicity of their teacher as White. Less than 2% of the students had a Black teacher, and less than 6% a Hispanic teacher. However, 5.9% of Black students in the sample had a Black teacher, while 27.8% of Hispanic students had a Hispanic teacher. Only 16 of the 1,011 White students (1.6%) had a Black or Hispanic teacher.

A plurality of White students (46.3%) reported that they lived on a farm or in a rural area (Table 2). One-fourth of the White students reported that they lived in a small town (population of 5,000 or fewer), while 28% identified their residence as a suburban (population of 5,001 to

50,000) or urban (population of 50,001 or greater) area. Black students reported they lived on a farm or in a rural area (35.6%), in a small town (35.6%), or in an urban or suburban area (28.7%). A majority of the Hispanic students lived in a small town (51.9%), 30.8% lived on a farm or in a rural area, and 17.3% reported they lived in an urban or suburban area.

Agriscience students who were also 4-H members, or had ever been members, constituted 36.5% of the sample. By ethnicity, 39.3% of White students, 34.9% of Black students, and 22.4% of Hispanics were either present or past 4-H members.

Table 3 shows that non-minorities were more likely than minorities to enroll in the agriscience course because of agricultural and agricultural education course reasons. On the other hand, the disavowance scale shows that minority students more so than non-minority students enrolled in the agriscience course for reasons perceived to be out of their control.

Table 1. Percentage of Students with Teachers of Each Ethnicity

Ethnicity of Student	Teachers' Ethnicity			Total* n (%)
	Black n (%)	Hispanic n (%)	White n (%)	
Black	5 (5.9)	2 (2.4)	78 (91.8)	85 (6.4%)
Hispanic	5 (2.3)	64 (27.8)	161 (70.0)	230 (17.4%)
White	8 (0.8)	8 (0.8)	991 (98.4)	1007 (76.2%)
<b>Overall</b>	<b>18 (1.4)</b>	<b>74 (5.6)</b>	<b>1230 (93.0)</b>	<b>1322 (100.0%)</b>

\*Does not include students who identified their ethnicity as Asian-American, Native American, or other.

Table 2. Residence of Students in the Sample

Ethnicity	Place of Residence					Total* n (%)
	Farm n (%)	Rural n (%)	Small Town n (%)	Suburban n (%)	Urban n (%)	

Black	12 (13.8)	19 (21.8)	31 (35.6)	19 (21.8)	6 (6.9)	87 (6.5%)
Hispanic	26 (11.0)	47 (19.8)	123 (51.9)	33 (13.9)	8 (3.4)	237 (17.8%)
White	195 (19.4)	271 (26.9)	259 (25.7)	216 (21.4)	66 (6.6)	1007 (75.7%)
Overall	233 (17.5)	337 (25.3)	413 (31.0)	268 (20.1)	80 (6.0)	1331

\*Does not include students who identified their ethnicity as Asian-American, Native American, or other.

Table 3. ANOVA of Students' Reason for Enrolling Scale Scores by Minority Status

Scale	Minority Status	n	Mean*	Standard Deviation	F Ratio	F Prob.
Agriculture	Yes	304	2.3343	.6823	85.2702	<.01
	No	1038	2.7343	.6590		
Disavowance	Yes	321	1.5600	.8704	52.0622	<.01
	No	1056	1.1681	.8465		

\*0 = strongly disagree; 1 = disagree; 2 = neutral; 3 = agree; 4 = strongly agree.

The barriers to enrollment scales (Table 4) show an opposite effect from the reasons for enrolling scales. All of the barriers scales have means below 2.0 which may lead to the conclusion that none of these constructs are barriers to enrolling. However, the range of scores for the individual scales included students' scores that approached "strongly agree."

Therefore, another interpretation may be that any one barrier is enough to keep students from enrolling even though overall barriers are low. Also, one must remember that regardless of perceived barriers, all students in this study did enroll. Students who had the opportunity to enroll, but did not may tend to have higher scores for the barriers scales. Therefore, for analysis purposes, a higher mean will be described as a perception of a greater barrier.

Minority students were more likely to perceive barriers to enrolling than non-minority students. Minority students perceived other students as being the greatest barrier to enrolling. The teacher negative scale yielded the lowest mean among minority student, indicating that the teacher was the least significant barrier.

Table 5 shows the students' personal opinions by minority status. For all three scales, non-minority students had the more positive personal opinions. Non-minority students saw more career opportunities for themselves in agriculture, more occupational diversity within agriculture, and showed more agreement that occupations in agriculture require knowledge and expertise. For all three scales, minority students approached "neutral" in their personal opinions.

Table 4. ANOVA of Student's Barriers to Enrollment Scale Scores by Minority Status

Scale	Minority Status	n	Mean*	Standard Deviation	F Ratio	F Prob.
Personal	Yes	316	1.5930	.7898	46.0754	<.01

Negative	No	1058	1.2198	.8768		
Teacher	Yes	314	1.3710	.8434	32.1939	<.01
Negative	No	1060	1.0356	.9415		
Course	Yes	318	1.5522	.8224	44.7291	<.01
Negative	No	1055	1.1674	.9213		
Agriculture	Yes	314	1.4758	.8640	33.5023	<.01
Negative	No	1062	1.1367	.9256		

\*0 = strongly disagree; 1 = disagree; 2 = neutral; 3 = agree; 4 = strongly agree.

### Conclusions

The ethnic composition of AGSC 101 and 102 classrooms was not proportional to that of Texas public schools. Minority students were underrepresented in these two introductory agriscience courses. These two courses are the gateway to future enrollment in agriscience courses. Unless minority enrollment in AGSC 101 and 102 is increased, overall minority enrollment in agriscience education will continue to be small.

Most agriscience students had a White teacher. If, as the literature suggests, students need role models of their own ethnicity to guide them into educational programs and subsequently into occupations, then minority students will continue to perceive agricultural occupations as not desirable for them unless more minority teachers are employed.

Fewer Black and Hispanic students had a rural background than White students. They also had more negative personal opinions towards the

traditional parts of agriculture. To overcome these biases, the urban aspects of agriculture may be emphasized to help in recruiting minority students into agriscience education.

Minority agriscience students, especially Hispanic students, did not have 4-H experience to the same extent as White students. If, as other parts of this research suggest, 4-H membership is related to a positive attitude toward agriculture, involving minority youth in 4-H might lead to higher enrollments in agriscience education.

Minority students were less inclined to enroll in AGSC 101 and 102 courses for agricultural reasons, and more likely to feel that they were in the course because of circumstances out of their control. Minority students were not attracted to enroll by the more traditional aspects of agriculture or agricultural education. Recruitment efforts that emphasize non-traditional agricultural topics such as ecology and urban horticulture may entice more minority students to enroll.

Table 5. ANOVA of Students' Personal Opinions Scale Scores by Minority Status

Scale	Minority Status	n	Mean*	Standard Deviation	F Ratio	F Prob.
Personal Career	Yes	303	2.3512	.7935	47.4834	<.01
	No	1037	2.7209	.8298		
Agricultural Occupations	Yes	309	2.4563	.7491	55.7732	<.01
	No	1047	2.8064	.7165		
Occupational Requirements	Yes	307	2.3051	.7205	56.4975	<.01
	No	1035	2.6370	.6669		

\*0 = strongly disagree; 1 = disagree; 2 = neutral; 3 = agree; 4 = strongly agree.

Also, minority students need to view agriculture education as a desirable course rather than as a course they were just "dumped into" by someone else. Minority students had higher scores on the barriers to enrolling scales and had more negative personal opinions toward agriculture and agricultural occupations.

The teacher negative scale had the lowest mean and the personal negative had the highest. While teachers may not be a large barrier to enrolling, it appears that peer pressure not to enroll and negative interactions with agriculture students may be a cause for concern. Until minority students' perceptions change and barriers to enrollment are removed, greater minority participation in agriscience education should not be expected.

### Recommendations

Because few minority students had either 4-H experience or were from farm/rural backgrounds, they lack early, positive images of agriculture and agricultural education. Agricultural education should focus awareness and informational activities on the elementary grades and should conduct recruitment activities no later than the middle school grades because waiting until students are in

high school may be too late.

The literature reveals that positive role models of the same ethnicity can be influential factors for students to enroll in agriscience courses and ultimately pursue agricultural careers. Agriscience education should work to increase the number of minority teachers in public schools. On an immediate basis, agriscience teachers should utilize minority agricultural professionals in the classroom and FFA activities. In addition, minorities should be depicted in instructional materials.

Because minority students were more likely to enroll for disavowance reasons, educators need to discourage the practice of forcing students into agriscience courses. Efforts should be made to change possible negative perceptions of agriculture held by guidance counselors and others in influential roles. If these influentials were more aware of positive aspects of agriculture, they may be able to communicate those aspects to minority students.

Because the highest barrier score was that of the personal negative scale, efforts should be made in this area. Attempts should be made to increase the agricultural awareness of adolescents, especially

minority adolescents, so that peers influence each other to consider enrollment in agricultural courses. This research did not explore what types of negative interaction minority students had with students enrolled in agriculture. More research needs to be conducted in this area.

The comparisons of minority and non-minority students in this study were between students already enrolled in the agriscience course. Research should be conducted comparing minority students not enrolled in an agriscience course with those enrolled in an agriscience course.

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