

## **HIGH SCHOOL AGRICULTURE PROGRAM COMPLETERS AND THEIR SUCCESS IN COLLEGE**

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During the last decade the educational reform movement has significantly impacted all aspects of education. Many national and state task forces have addressed the educational crisis. Educators and the various publics have been looking at the traditional values of the American education system. The National Commission on Excellence in Education in its final report, *A Nation at Risk: The Imperative for Educational Reform* (1983), described the rising tide of mediocrity in our schools and the need to reemphasize the basics necessary for success in life and work in the next century. This report caused vocational programs especially to justify their existence in the schools.

New standards in education, a result of the Excellence in Education movement, required high school students to meet more stringent graduation and college entrance requirements, and usually the new standards did not include vocational education, especially vocational education in agriculture. Many agricultural educators contend the new standards limit the options of students enrolled in high school agriculture programs because these students may be less likely (and in many cases may be unable) to complete the college preparatory curriculum and also sustain their enrollment in secondary agriculture classes.

Cole and Bokor (1989) found that high school curriculum alone is not an adequate predictor of success in a college of agriculture curriculum and degree effort. They also found no difference between the type of high school curriculum (general education, college preparatory, secondary agriculture or a combination of agriculture and college preparatory) studied for influencing students' decision to attend college.

Cole and Bokor (1989), however, did find that the high school curriculum studied influenced the choice of a major for college of agriculture students and that college of agriculture students who had secondary agriculture spent less time completing their degrees and changed majors less frequently.

Warmbrod and Doerfert (1987) concluded from their study that secondary agriculture students are less likely to complete a high school college preparatory curriculum, just as likely to graduate from college and perform just as well academically in college as do students who do not enroll in secondary agriculture. They also suggested that high school class rank and ACT scores may be better predictors of college success than high school curriculum studied.

It appears from the above and other studies that the type of high school curriculum studied and the resultant college entrance requirements based on high school curriculum prerequisites may not predict success in college as anticipated.

### **Statement of the Problem**

The studies cited above focused primarily on the success of secondary agriculture students in colleges of agriculture, where an assumed natural articulation exists. However, how do students, classified as program completers in secondary agriculture, succeed in major and degree programs in colleges other than agriculture? In other words, do students who complete a high school curriculum in agriculture, which may or may not include all the components of a college preparatory curriculum, succeed in college as well as students who did not complete a high school agriculture curriculum? The investigation of the success in college of high school agriculture program completers as compared to the success in college of students not classified as high school agriculture program completers formed the basis of this study.

### **Purpose of the Study**

The purpose of this study was to describe the success in college of secondary agriculture program completers as compared to the success in college of students not classified as secondary agriculture program completers. The following specific research questions were investigated:

1. What differences existed in high school grade point average, high school class rank and SAT or ACT scores between a group of students classified as high school agriculture program completers who have matriculated to a university and a group of students not classified as high school agriculture program completers who have matriculated to the same university?
2. What differences existed in the first semester grade point average and number of credits passed between a group of students classified as high school agriculture program completers who have matriculated to a university and a group of students not classified as high school agriculture program completers who have matriculated to the same university?
3. What differences existed in the retention rate, probation and disqualification rate, cumulative grade point average, average number of credits per semester and graduation rate between a group of students classified as high school agriculture program completers who have matriculated to a university and a group of students not classified as high school agriculture program completers who have matriculated to the same university?

### **Methods and Procedures**

**Population and Sample:** The Idaho State Division of Vocational Education classifies high school students who have completed Agriculture III and IV as secondary agriculture program completers. The secondary agriculture program completers from 1981-82 through 1987-88 ( $N = 4239$ ) constituted one of the populations of this study. From this population of secondary agriculture program completers, 240 students who had matriculated to the University of Idaho during 1982-83 through 1988-89 were selected as the sample for this study. The selection of the sample of secondary agriculture program completers was assumed to be representative of students participating in secondary agriculture and matriculating to a university for further education.

Students not classified as secondary agriculture program completers and having matriculated to the University of Idaho during 1982-83 to 1988-89 constituted the second population of this study. A random stratified sample ( $n = 1235$ ) was chosen from this population and was used as the comparison group. The sample was stratified across the matriculation years of 1982-83 to 1988-89. The University of Idaho's Management Information Services selected the samples of the study.

**Collection of Data:** The data reported in this study were supplied by the University of Idaho's Management Information Services from the University's Student Records System.

**Analysis of Data:** The data from the two samples of students were analyzed using analysis of variance (ANOVA) for an unequal number within groups to test for differences between the two groups. The subgroups (matriculation year) of the samples contained different numbers of observations due to missing data in the Student Records System. An alpha level was set at .05. If no significant differences between the two samples of students were found the conclusion was to be that the secondary agriculture program completers were as successful in college as the non-completers.

### **Findings and Discussion**

The investigators had expected to find significant differences between the two samples of students in this study based on the fact that credit in secondary agriculture had been disallowed toward the high school graduation requirements and toward the requirements for admission to the universities and colleges of the state. The investigators further assumed that since the credit in secondary agriculture was no longer accepted for admission into the universities and colleges, those high school students completing a secondary agriculture program would be less prepared for college work and would achieve differently than students not completing a secondary agriculture program.

**Question 1:** No significant differences at the .05 level were found between the secondary agriculture program completers and non-completers on the high school related variables of high school GPA, high school class rank percentile, ACT Composite score, SAT Mathematics score and SAT Verbal score (Table 1).

However, significant differences at the 0.05 level were found for the variables of ACT English score and ACT Mathematics score. The non-completers scored higher than the secondary agriculture program completers.

Table 1

High School Variables, Means, F-values and the Probabilities of the F-values Being Due to Chance or Error when Comparing Secondary Agriculture Programs Completers and Non-completers

Variables		Completers	Non-Completers	F	p
High School GPA	$\frac{M^a}{n^b}$	3.21	3.14	2.21	0.1375
		139	592		
High School Rank (percentile)		31.04	32.17	0.37	0.5442
		193	853		
ACT Composite		20.22	20.90	3.15	0.0761
		222	878		
ACT English		18.34	19.68	14.99	0.0001*
		222	878		
ACT Mathematics		18.15	19.45	6.43	0.0113*
		222	878		
SAT Mathematics		485.56	491.21	0.07	0.7890
		27	299		
SAT Verbal		447.78	466.56	0.85	0.3583
		27	299		

<sup>a</sup> Mean values for completers or non-completers.

<sup>b</sup> Numbers of completers or non-completers.

\* p < .05

**Question 2:** When the two samples of students were compared on the variables of first semester credits and first semester GPA, no significant differences were found (Table 2). No attempt was made to ascertain the type of credit (core, college or major) the students attempted or earned.

Table 2

First Semester Variables, Means, F-values and the probabilities of the F-values Being Due to Chance or Error when Comparing Secondary Agriculture Programs Completers and Non-completers

Variables		Completers	Non-Completers	F	p
First Semester Credits	$\frac{M^a}{n^b}$	13.41	13.58	0.63	0.4266
		157	739		
First Semester GPA		2.49	2.46	0.23	0.6286
		157	739		

<sup>a</sup> Mean values for completers or non-completers.

<sup>b</sup> Numbers of completers or non-completers.

**Question 3:** When the two samples of students were compared on the variable of retention, a significant difference at the 0.05 level was found for the percent of students that returned to the university for their second and third year (Table 3). The percent of secondary agriculture program completers returning for their second and third year was significantly less than the percent of non-completers returning.

However, when the two groups of students were compared on three variables indicative of academic problems (referral to the dean, academic probation and academic disqualification), no significant differences were found between secondary agriculture program completers and non-completers. Even though the secondary program completers had a lower retention rate, the difference was not due to academic probation or disqualification.

Readers should note that the number of total observations in each sample used for the comparison of credits earned per semester and cumulative GPA is greater than the number used for the retention variables. Part of the difference is due to missing data and part is due to students returning to the university after dropping out for some time.

Table 3

Continuing Student Variables, Means, F-values and Probabilities of the F-values Being Due to Chance of Error When Comparing Secondary Agriculture Programs Completers and Non-completers.

Variables		Completers	Non-Completers	F	p
% Returning Year 2	$\bar{M}^a$	66	75	6.64	0.0101*
	$n^b$	179	774		
% Returning Year 3		54	65	6.99	0.0084*
		152	681		
% Referred to Dean		02	02	0.00	0.9973
		179	774		
% Placed on Probation		01	01	0.07	0.7909
		179	774		
% Disqualified		02	01	0.89	0.3453
		179	774		
Credits/Semester (Retained Students)		14.84	15.54	4.29	0.0387*
		157	739		
Cumulative GPA (Retained Students)		2.50	2.46	0.30	0.5843
		157	739		
Five Year or Less Grad. Rate		0.32	0.30	0.27	0.6043
		80	419		

<sup>a</sup> Mean values for completers or non-completers.

<sup>b</sup> Numbers of completers or non-completers.

\*  $p < .05$

A significant difference in the number of credits earned per semester was found; the secondary agriculture program completers earned less credits per semester than did the non-completers. No significant difference, though, was found when the samples were compared on the variables of cumulative GPA and graduation rate in 5 years or less.

### Conclusions

Since no significant differences between the secondary agriculture program completers and non-completers were found when the two groups were compared on the variables of high school GPA, high school class rank percentile, ACT Composite score, SAT Mathematics score, SAT Verbal score, first semester credits earned, first semester GPA, academic probation rate, academic disqualification rate, cumulative GPA, and graduation rate, the investigators concluded the samples of this study were drawn from the same population.

While significant differences between the secondary agriculture program completers and non-completers were found when the two groups were compared on the variables of ACT English score, ACT Mathematics score, retention rate and credits earned per semester, the combination of differences and variables are such that they do not change the investigators' conclusion that the samples of this study were drawn from the same population.

### Implications

If secondary agriculture credit was excluded from the list of high school credit accepted for admission to colleges and universities because it was perceived that students enrolling in the program were less prepared for college or were less successful in college, the findings of this study seems to indicate just the opposite. Perhaps, the requirements for admission to college should be revised in light of current information.

If secondary agriculture is not accepted for admission to the state's colleges and universities, the future potential secondary agriculture program completers will have to decide whether to enroll in agriculture rather than other subjects based on information not consistent with the findings of this study. In the opinion of the investigators, this will be an unfortunate situation for high school students interested in secondary agriculture and college and those secondary agriculture programs

that will lose quality students and further skew the program with students who do not have the ability to be successful in college. The students remaining in the secondary agriculture programs will also lose quality association.

#### References

A Nation at Risk: The Imperative for Educational Reform. (1983). Washington, D.C.: U.S. Department of Education, National Commission on Excellence in Education.

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