the sucrose treatment under intermittent light and normal light treatments, while the sucrose treatment gave better rooting than glucose under continuous light. The response of the cuttings to photoperiod was not significant.

The results indicate that foliar application of glucose and sucrose do not increase the rooting response of stem cuttings of **Ligustrum lucidum.** Neither can any relationship between photoperiod and rooting be shown. Further studies of this problem are suggested.

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Vocational Agricultural Education . . .

Dr. James Elliott, Editor

Performance in College Freshman Biology as Related to High School Preparation in Science and Agriculture

Kenneth Neal Petermann and James D. Elliott*

INTRODUCTION

In recent years various studies have resulted in the generalization that college success, as measured by grades earned, is not closely related to secondary school training in a specific subject matter area (3, 4, 5). If this conclusion is taken at face value, it can be assumed that the various regulations of college admissions committee which uniformly require specific credit (s) in particular subject matter areas for admittance are in fact, groundless. Nevertheless, colleges continue to require various courses as entrance prerequisites presumably because they and their administrations suspect the existence of a beneficial relationship between secondary training and college level performance in specific subjects.

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The data reported in this paper were collected to supplement existing knowledge in this area of investigation. More specifically, the present study attempts to ascertain the reliability of beliefs held by some local and state administrators (7) that vocational agriculture as taught in secondary schools is not proper training for prospective college science students. In general, these administrators seem to feel that a student taking a preponderance of science courses in high school with little or no agriculture increases his chances of success in college science offerings. A review of the literature on this subject reveals no adequate basis for such a belief. (1, 2, 3, 4, 5).

The primary object of this investigation was to compare the performance (measured in terms of grades) in a college biology course (freshman botany) of students whose secondary school training encompassed either science subjects only or vocational agriculture only in conjuction with the normal secondary curriculum. However, a preliminary investigation of all male students enrolled

in the particuluar biology course in their first semester in college, during the years 1951-60 (fall semester only), revealed the surprising fact that, of the 489 students selected for the study, just four had taken vocational agriculture only. (This fact is perhaps one of the more important statistics derived from this study). Therefore, the data were seperated into two groups, one composed of 281 students who had had science only and the other containing 204 students who had had some combination of science and vocational agriculture. The data were taken from the students' permanent college records and from their high school transcripts. Letter grades were arbitrarily assigned a numerical value to facilitate statistical analysis (A=95, B=85, C=75, D=65 F=55). The statistical techniques employed were taken from Snedecor (6).

Results and Discussion

The initial analysis, made by group-comparison technique, indicated that the average college biology grade (70.82) over the ten-year period achieved by the students having high school science only was not significantly different from that (69.85) of those students who had had high school training in both science and vocational agriculture. A further search showed that this observation was also valid on a year-by-year basis, except for the unexplained deviation of the 1951 comparison-group, in which the science-only group made significantly higher grades in biology (at the five-per cent level) than did the agriculture-science group. Figure I presents the total data graphically. An examination by Chi Square procedure substantiates the foregoing observation of no significant difference between the two groups. Thus it was observed in this study, as in others (1, 3, 4), that subject matter preparation in high school did not influence the college grade level achieved.

Moreover, the data revealed that the better college performances achieved by certain students of both groups were primarily related to better high school performance—not the training in a specific high school subject. This conclusion was drawn from the information given in Figure II, showing highly significant correlations between high school grades and college grades. The calculated regression lines indicate an approximate increase of 3/8 grade point in the college biology grade for each grade point increment in high school. It should be noted, however, that for a given high school achievement level, the science-only students tend to make higher college grades: on the other hand, in order to achieve equal college grades, the agriculture-science boys must perform at a somewhat higher level in high school.

The agriculture-science boys actually received higher grades (the average of both their agriculture and science courses) in high school than the science-only group (84.3 vs. 79.7). This difference was highly significant at the one per cent level. Further investigation yielded the fact that the average agriculture grade (85.9) was significantly different from the same students' average science grade (82.4) at the five per cent level. A subsequent comparison of the science grade (82.4) of the agriculture-science group and the science grade of the science-only group (79.7) also revealed a significant difference. It may be concluded from such findings that, if the two groups were drawn from students of comparable scholastic ability, the significantly higher science grade achieved by the agriculture-science boys was in part due to their agriculture subject matter (correlation coefficient .554, significant at the one per cent level). If one considers the popular conception (one admittedly difficult to substantiate statistically) that boys taking high school agriculture are not, in fact, scholastically equal to those pursuing the science-only program, then their observed superior performance in science is even more surprising.

FIGURE I

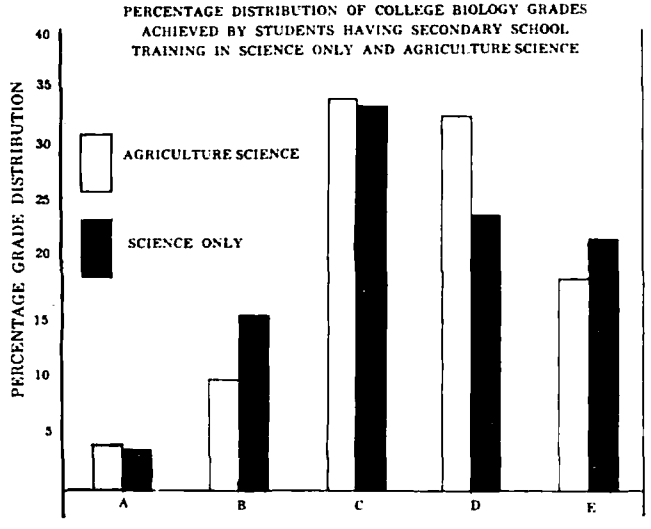
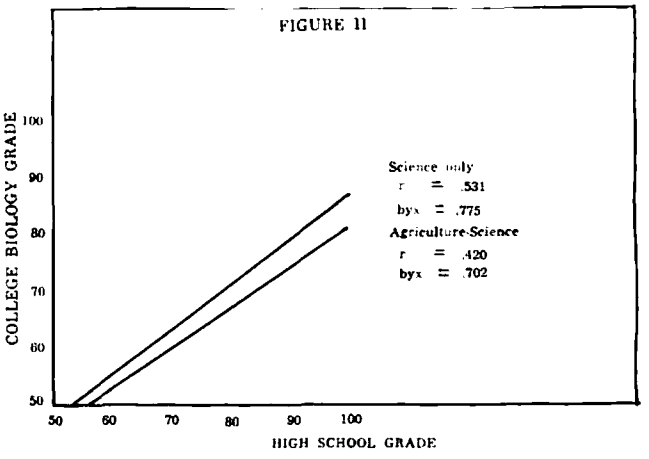
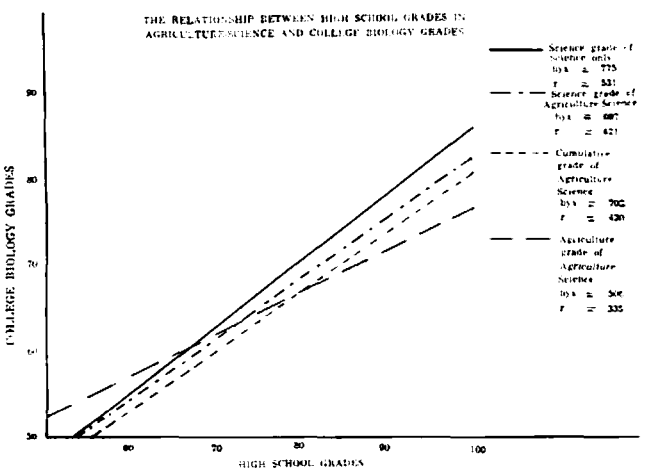


FIGURE II



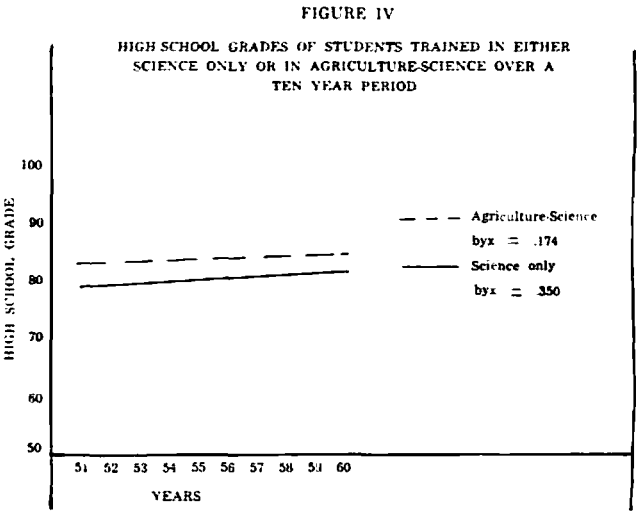
As has been shown previously in Figure II, there was a significantly positive relationship (r=.420) between the average of the agriculture-science high school grades and the college biology grades. To partition the influence of the combined agriculture grade and science grade used to obtain the agriculture-science average grade and to determine the possible effect of each one on the college biology performance, Figure III was constructed. From the calculated data it was apparent that the college level performance was more closely related (r=.421) to the student's high school science achievements than it was to his agriculture grade (r=.335). Indeed, as indicated by the regression coefficients, the high school science grade alone is just as effective a predictor of college success as was the combined agriculture-science grade (by .697+.702 respectively).

FIGURE III



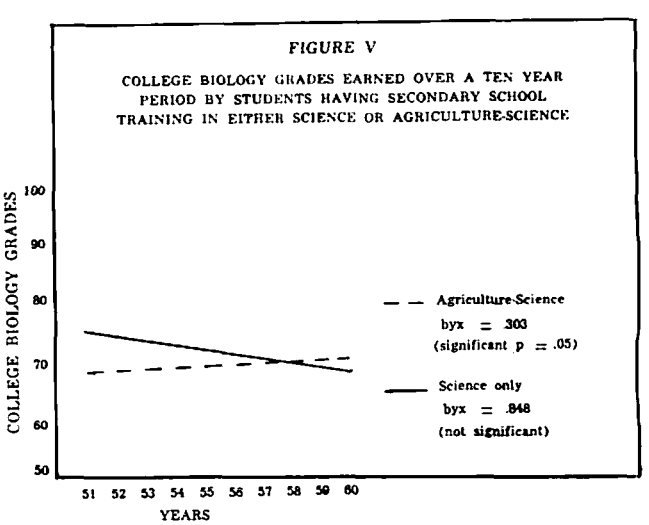
During the decade under study, and more specifically the last three years of that period, a wide spread attempt was made to increase both quality and quantity of the high school science offerings. Such a program would presumably lead to a de-emphasis of vocational subjects. Such a presumption was subsequently substained by the data. During the first eight years,the students taking science only in high school averaged 52.0 per cent (std. dev. 6.1): in 1959 the per cent increased to 67.2, and it advanced to 70.8 in 1960. To ascertain the influnce of this increased science emphasis on high school performance, data for the two groups were arranged as shown in Figure IV. It is apparent that, though both groups improved over the decade, the science-only groups (regression coefficient .350) progressed at twice the rate of the agriculture-science groups (regression coefficient .174), who admittedly also received the benifits of increased quality, if not quantity, of science instruction.

FIGURE IV



Because of the increase noted in high school performance of both groups over the years, it was considered desirable to ascertain whether the college biology level of performance was rising similarly. Construction and analysis of Figure V indicated that the agriculture-science groups did progress slightly over the years (regression coefficient .303). Contrary to expectation, however, the science-only groups showed a decline in performance (regression coefficient—.848). Though the regression coefficient of .303 for the agriculture science groups different significantly from zero, that of the science-only groups (—.848) did not. This lack of a significant relationship was due to the rather large standard error of estimate. Nevertheless, Figure IV definitely reveals no evidence that the emphasis on science during the the period under investigation has improved the college level performance of the science-only group.

FIGURE V



SUMMARY AND CONCLUSIONS

The following statements summarize the pertinent conclusions drawn from this study:

1. Performance in a selected college biology course was not related to the students' secondary school training in science or a combination of agriculture and science.
2. Variation in level of performance in a selected college biology course was significantly related to the individual's level of performance in secondary school.
3. The agriculture grades of high school students taking both agriculture and science were significantly higher than their respective science grades, which, in turn, were significantly higher than the science grade achieved by the science-only group.
4. The high school science grade earned by boys having both agriculture and science was more closely related to their subsequent performance in college biology than was their agriculture grade.
5. Over the decade (1951-1960) there was a small, but steady, increase in high school performance of both groups.
6. During the decade (1951-1960) the college level performance of the agriculture-science group rose approximately 3.6%, whereas that of the science-only group showed no rise.
7. The percentage of students taking science only in high school increased significantly in the last two years covered by this study.
8. During the decade under study, only four students of 208 taking vocational agriculture failed to take some science. No such students were found after 1956.

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DEAN FOLK IN FATAL ACCIDENT

It is with regret that we report to NACTA the untimely passing of M. Hayne Folk, Jr. retired Dean of the School of Agriculture and Forestry at Louisiana Tech. Mr. Folk was returning from a visit in the Carolinas when he was critically injured in an automobile accident near Tuskegee, Alabama; he died a few minutes later.

Mr. Folk was a charter member and past-president of NACTA. He retired from his duties as Head of the Botany Department and Dean of the School of Agriculture and Forestry on July 1, 1964. He was scheduled to continue teaching on a full-time basis in the department of Botany.

Dean Folk was a member of the faculty of Louisiana Tech from 1926 til his death. He served his institution in many capacities. His numerous committee assignments and responsibile positions attested to his ability and leadership.

Those in NACTA who knew him well will share with us, his staff, a deep feeling of personal and professional loss.