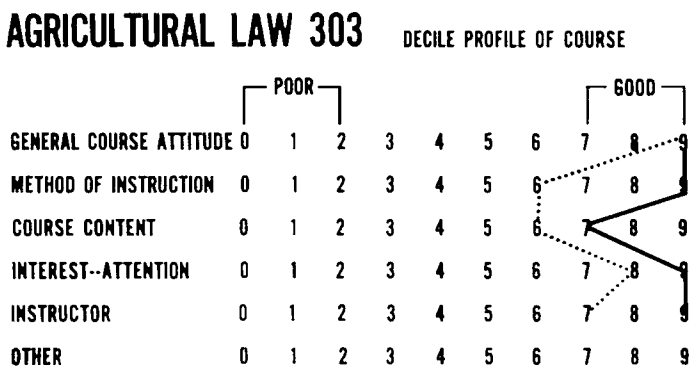
of the units had been previously assigned by the instructor. One-sixth of the students had not on their own studied the units by that time. At Decatur the AT carrel was located in the Cooperative Extension adviser's office two miles away from the educational center. This definitely hindered the study of the AT units by the student. The students were not motivated to travel this distance. Again, the times that they could get access to the carrel were not appropriate times for them to study. Note that in the other locations half or more of the units had been studied where the auto-tutorial carrel was located at the educational center. This immediately leads us to conclude that the carrel must be located at the educational center for the convenience of the student.

Except for Decatur all locations were favorably inclined toward the need for auto-tutorial units in the course. For two locations, access to the auto-tutorial units was a limiting factor in studying them. Carrel equipment problems did not appear to hinder study except in one location. In regard to the question "I would not hesitate to enroll in another course using the same teaching methods," we found three locations favorably inclined with three locations not favorably inclined. At this time we could perceive the lower rating for the instructional method on the decile score mentioned above.



Also, during the spring semester Agricultural Law was taught. The instructor used the conventional system for 57 students on campus and the UNIVEX system for 31 students. Data from all of the UNIVEX locations were averaged to represent the UNIVEX Net. These included the previously mentioned locations except Decatur. The Decatur location was so noisy and disturbing that the students travelled the extra distance to Urbana after the first week, to attend the course. In this case, the students were with the instructor in the UNIVEX terminal in Urbana. The instructor found this was very helpful to have the students right before him in conducting the class on the UNIVEX Net. Tests to check for significant differences were run between the UNIVEX Net group and the Urbana conventional classroom. The results indicated that the Urbana conventional classroom was rated significantly better than the UNIVEX Net as to (a) method of instruction, (b) student interest and attention and (c) the instructor. The UNIVEX Net was not perceived significantly different from the conventional classroom regarding (a) general course attitude (b) and course content. However, it should be noted that many instructors would be happy with the evaluation received by the UNIVEX system. The rating for the method of instruction and course content was still above the average for all-University courses.

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Economics of an Agricultural Education

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It is a natural tendency for all people within all Colleges within all Universities to see their particular specialty as extremely useful, or even crucial, to the needs of society. This feeling, taken along with the also natural desire of institutional self-perpetuation leads to the desire to increase, or at least maintain, the student enrollment within that College. We, in the Colleges of Agriculture, seem, as a group, to have that same desire. My argument is that by strongly competing for students who might otherwise be attracted to other Colleges within the University, we in Agriculture are performing a disservice to the very students we wish to serve. This argument is based on the very pragmatic view that agricultural students, by coming to college, are attempting to increase their potential earning power. The data do not show that agriculturalists' salaries compare favorably vis-a-vis the salaries of other specialists.

In support of the above contentions, I offer slight (but, I think, typical evidence) toward the desire to overestimate our College's potential service, considerably better evidence on the motivations of students, and hard data on comparative incomes within and without the agricultural professions.

Are Jobs in Excess Supply?

The type of overestimation to which I am referring could be typified by this quote from Carpenter and Ekstrom[1] in this journal.

> It is well-known that rural youth are in "surplus" for on-farm work, while the shortage of professionally trained agriculturists is acute. Few youth now living on farms will find an opportunity to farm. In 1964 Venn stated that only one of two youths now living on farms will farm in 1970. Schultz wrote in 1966, "Schools of agriculture are now graduating something over 9,000 trained persons per year, and it is estimated there are about 15,000 jobs available yearly for such persons in agriculture and food." Other regional and national surveys also indicate at least two jobs for each professionally trained agriculturist.
>
> Their article is concluded with a number of recommendations, two of which are quoted below:
>
> 1. Since professional agriculturalists are in short supply, efforts must be made to fill the demand.
> 4. Agricultural teacher educators and other agriculture faculty must search in their teaching, research and extension activities for ways to attract and hold students if agriculturists are to be provided for available positions.

It is well-known that rural youths are in "surplus" for on-farm work. One need only check the continuously declining numbers of farm workers to substantiate this fact. However, it is quite puzzling to me how one could claim that "the shortage of professionally trained agriculturists is acute." To an economist, it seems clear that one could claim that there was an agricultural manpower shortage, only if the demand for

these workers were reflected in highly competitive wage (salary) rates. While there may have been regional and national surveys where employers have indicated an interest in larger numbers of agriculturally trained people, these employers have not backed up this interest with high comparative wages. That agriculturalists' salaries are not competitive is shown by the data presented in the latter part of this article.

If one accepts these data, one could hardly argue that it is the duty of agricultural educators to search for additional students to help fill a pressing need for employees. Under such circumstances, Agricultural Colleges would be providing a service to agricultural businesses by providing them with a large quantity of relatively cheap labor, but would not be providing the students themselves with the service they desire, if their goal is to increase their income-making potential. Evidence as to farm youths' goals is presented in the next section.

Parenthetically, some comment should be made relative to the actual figures quoted by Carpenter and Ekstrom[1] relative to job availability. They quote H. Schultz[5] who, in a very general article, offers no documentation whatsoever. Promulgation of such general figures, without documentation or explanation as to what they actually mean in terms of specific type of jobs and salary levels, is misleading to our students in terms of their career planning.

What Are Farm Youths' Goals?

Nelson[3,4] estimated demand equations for agricultural education by the nation's Colleges of Agriculture. He found that the significant explanatory factors in his multiple regression analyses were (1) civilian male population, (2) rural population, (3) gross national product per capita, (4) net farm income per capita, (5) parity price ratios, and (6) the differential between United States disposable income per capita and net farm income per capita.

Of special interest here is the fact that the coefficients for both net farm income per capita and the differential between U.S. disposable income and net farm income per capita are positive. Nelson argues that:

> The positive effect of net farm income per capita upon agricultural enrollments supports the hypothesis that education is purchased for its value in satisfying present wants. The second motive for obtaining a higher level of education, to increase future productive capacity and consumption is given some empirical basis by the positive effect of the variable measuring the absolute difference between disposable income and net farm income per capita. An increasing income differential creates an incentive to improve one's financial situation and education is a method of accomplishing this task.

Thus, the differential between farm and nonfarm income is an incentive for farm youth to seek education, and larger farm incomes allow more to attempt to close this gap. Farm youth tend to go to agricultural colleges because they provide a more familiar environment. But, if their goal is to close their own personal income gap, it would seem that they might best be directed toward a nonagricultural oriented education, if such an education would provide them higher incomes and if they are personally adaptable. Let us examine nonfarm agricultural and nonagricultural salaries in the recent year, 1968.

Comparative Incomes Within and Without of Agricultural Professions

Data on median annual salaries of full-time employed civilian scientists are presented in Table 1. Data on the agricultural sciences are presented separately. The all fields data summarize the fifteen specialties reported by the National Register of Scientific and Technical Personnel[2]. In the third section of the table the salaries of the agricultural sciences are ranked, showing the number of fields with median salaries above and below the median of the agricultural sciences.

When all ranks and all employers are considered together, there are no fields ranking below the agricultural sciences.

At the Ph.D. level, the agricultural sciences are in the exact middle when considered over all employers, but when considered within employer class rank in the lower third in each case and at the bottom in federal government and industry and business.

TABLE 1. Median annual salaries of full-time employed civilian scientists, by highest degree and type of employer: 1968[a]

Scientific and technical field and highest degree	Total	Type of Employer: Educational institutions: Academic year	Educational institutions: Calendar year	Federal Government	Other government	Nonprofit organizations	Industry and business	Self-employed
All fields[b] (Median salaries)	$13,200	$11,000	$13,500	$13,500	$11,700	$14,700	$14,700	$20,000
Ph.D.	15,000	12,000	16,800	15,800	14,500	16,000	17,500	21,600
Professional medical	20,000	14,300	20,000	20,900	20,000	20,000	21,000	30,000
Master's	12,000	9,200	10,400	13,400	11,000	12,700	14,100	16,000
Bachelor's	12,000	7,200	7,500	12,200	9,700	11,700	13,000	15,000
Agricultural sciences (Median salaries)	11,000	10,500	12,200	10,900	9,300	12,500	10,800	12,300
Ph.D.	14,400	11,700	14,500	14,400	13,700	15,500	15,000	--
Master's	10,900	9,900	11,100	11,500	9,500	12,000	11,400	15,000
Bachelor's	10,000	--	10,500	10,300	9,100	10,900	10,000	11,500
	Number of fields above Agricultural Science[c]					Number of fields below Agricultural Science[c]		
Agricultural sciences (Rank)	14	0	13	14	7	7	14	0	12	0	13	1	13	0	15	0
Ph.D.	7	7	12	2	10	3	12	0	8	1	6	4	12	0		
Master's	12	4	3	10	2	11	12	0	8	0	8	4	12	0	4	0[d]
Bachelor's	10	3		3	7	11	0	9	1	9	1	9	0	5	0	

[a] Source: National Register of Scientific and Technical Personnel, "Summary of American Science Manpower, 1968," NSF 70-3, January, 1970.

[b] Fields reported were chemistry, earth and marine sciences, atmospheric and space sciences, physics, mathematics, computer sciences, agricultural sciences, biological sciences, psychology, statistics, economics, sociology, political science, anthropology, and linguistics.

[c] Where total number of fields above agricultural science plus total number of fields below agricultural science do not equal 14, the few median salaries were reported in certain fields to list.

[d] Agricultural science, chemistry, and biological science are equal.

[e] Agricultural science, earth and marine science, and biological science are equal.

At the master's level, the agricultural sciences rank well in educational institutions, but are in the lower third overall and at the bottom in federal government, other government, industry and business, and self-employed.

Those agricultural scientists with bachelor's degrees are in the lower fourth overall, rank fairly well compared to other bachelor's employed the calendar year in educational institutions, but are lowest or next to lowest in all other specific categories.

Of the fifteen fields, economists ranked the highest in almost every category. However, much to my personal chagrin, agricultural economists and land economists are the lowest paid of the economic specialities[6].

One might object to these data on the grounds that they are all professional specialties rather than a broad comparison including all agricultural college graduates. But what unique service does an agricultural college education provide if it does not provide a professional specialty? Sales personnel can be provided by most colleges, especially the colleges of business and public administration, and the students' agricultural background is adequate to allow them to relate to agricultural business if they so desire. The road to management positions is also at least as fast through a business college, aided by an agricultural background, if necessary.

Note also, within federal government, other government, and industry and business, the employer categories where most opportunities for students with bachelor's and master's degrees are available, that the agricultural specialties rank lowest or next to lowest in every case. These are the employer categories where those surplus jobs for the agricultural specialist are supposed to be going unfilled. One can only ask, "Unfilled at what salary level?"

Conclusions

A university education in any college is likely to be of value to an individual not only in terms of an increase in earning power, but also in the security and stability of income. However, some educations offer more potential than others. Agricultural colleges have an important role to play in educating those people with a definite interest in agricultural activities, as well as providing a more familiar environment for those farm youth who might not otherwise be attracted on

into higher education. However, we in agricultural colleges would be providing a greater service to youth if we were more realistic in our estimates of the earning potential of agricultural specialists vis-a-vis other professions.

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Recruitment Program for Agricultural Students

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INTRODUCTION

During the Spring Quarter of 1969, the faculty in the Division of Agriculture at Tennessee Technological University, Cookeville, Tennessee, initiated a recruiting program among the area high schools aimed at the respective students enrolled in vocational agriculture. Developed by a committee of three faculty members, this program involved a visit to the high school to present talks and slides. The team of recruiters who traveled to the schools consisted of one faculty member, a Tennessee Tech agricultural student who graduated from the respective school visited, and a Tech agricultural alumnus located in the area.

The objectives of the recruiting project were to interest high school students in higher education, to stimulate the student to come to Tennessee Tech, and to interest him in studying agriculture.

HOW CONDUCTED

Letters outlining the recruitment program were sent to all area Vo-Ag teachers within an hour and one-half drive from Cookeville. At the invitation of the school, we arranged a date and hour convenient to the Vo-Ag teacher. Except for one presentation to an annual FFA Banquet, all talks were during school hours. In most cases, we talked to only Junior and Senior Vo-Ag students, while on other occasions to all agriculture students or the entire student body. The format was adaptable to a wide range of situations. Groups of eighteen and 250 were the two extreme size audiences but usually twenty to fifty students were present during the team's visit. All of the agricultural faculty became involved in visitations to twenty schools with contact being made to 1127 students.

PROGRAM

The program, lasting approximately forty minutes, contained the following seven sections having been presented in order as they are listed here:

1. **Introduction** was by the faculty member who stated the purpose of the program, introduced the personnel involved, and acknowledged the invitation.

2. **Why go to college** consisted of a five minute prepared script presented by the student who emphasized the decisions a person must make in life including the decision to attend college and the financial rewards and self-satisfaction attained by pursuing a higher education. In addition, he stressed the need for more trained people in agriculture and agribusiness.

3. **What college has meant to me** was composed of a four-minute talk delivered by the alumnus. The content of this talk was left up to the discretion of the alumnus, but a suggested outline included personal attitudes, community status, job security and professional satisfaction.

4. **Getting ready to go to college.** The student used an analogy of a hunter going after a deer with bow and arrow thus affirming the need to set goals and acquire skills, then pursue those goals. Throughout this prepared portion of the program, the student pointed out the need for good study habits in both high school and college and the necessity to master certain basic subjects.

5. **Financial help and expenses** were summarized by the faculty member enumerating the costs for room, board, maintenance, books, laundry, laboratory fees, and incidentals. He then informed his audience of the availability of student loans, scholarships, and part-time jobs for agricultural students while in college.

6. **The slide presentation**, a prepared script narrated by the Tech student, focused on seventy-one color slides viewing scenes around the campus and in the classroom. The slides and accompanying script essentially depicted a conducted tour of the campus starting with scenes of the streets entering Tennessee Tech followed with views of buildings on the campus, including the stadium, dormitories, and married student housing. Candid pictures, which tell a story of students involved in everyday campus activity, bring the narration to life. Next are scenes of agricultural faculty members at work in their offices or in conference, and the script explains their respective subject matter responsibilities. Continuing, a series of slides follows one student through various events including work on the Tech Farm, in the soils laboratory, writing an examination, in a classroom, and seeking advice from the Dean. Additional slides picture students in the chemistry laboratory, on field trips, working on a float, helping a club's money-making project, conducting a club meeting, and participating in the homecoming parade. Graduation day finalizes the set of pictures.

7. **Summary and challenge**, a seven-minute prepared talk, allowed the faculty member to emphasize the opportunities and positions open for agricultural graduates in agribusiness and professional agriculture and to point out the increasing demand for trained specialists and personnel, not only in the field of agriculture, but also in closely related activities of recreation, city planning, nursery management, and consumer marketing.

DISCUSSION

Those who participated in the program representing the Tennessee Tech team had a variety of experiences. From comments shared with the program coordinator, it was obvious that certain helpful guidelines had been suggested from these trips to the high schools. These observations may be only relative to the Middle Tennessee area, however, they are worth consideration and thought.

Response to the letters, mailed to the high school seeking