

## News to me

The fifth National Young Farmer Educational Institute will be held November 28-December 1 at Greenville, South Carolina. The Jack Tar Poinsett Hotel will be the site of the Institute.

Soil is now known to be, not a substance, or a mixture of useful chemicals, but a phenomenon of the utmost complexity, whose delicate balance is easily disturbed and whose complete interpretation is yet far off.

—Paul B. Sears, *DESERTS ON THE MARCH*

The farmer can be proud of his record of productivity. As a result of his efforts, the average American family spends only about 16.5% of its take home pay for food today, compared to 17% last year, and 22% twenty years ago.

Agriculture's ability to feed and clothe the 300 million people expected to inhabit the United States by the year 2000 can be assured only if the farmer receives an adequate income for the use of modern equipment and technology while meeting his labor costs.

—New Holland News, Vol. 17, No. 1

Cow business is the biggest piece of American agriculture. It uses more land, requires more feed, produces more market value of product, and is front and center at more American meals than any other livestock or crop.

—Herrell DeGraff in *BEEF PRODUCTION AND DISTRIBUTION*

Kansas State University professors Dr. R. J. Coleman and Dr. M. J. Riley report that agri-business firms with high growth rates were younger, used capital more effectively, changed technology more, and used more aggressive product policies. They reported less mental "fixedness" and a greater research for improved methods and new ideas. The business leaders could stretch their minds beyond the management of physical resources and current operating problems.

A fact often overlooked by our urban population is farmers are consumers too. They buy most of the same products, and at the same retail prices. This part of agriculture's story has been difficult to get across to the public.

—New Holland News, Vol. 17, No. 1

Food is one of the urban consumer's biggest bargains. Those of us involved in agriculture need to help get this story told. To understand agriculture's problems in relation to their own, our urban neighbors need to look beyond the price of food, to learn where this food came from before it was placed in a can, and the how and why of its costs.

Almost every 'economy drive' concentrates upon the 'high costs' of the farm program in the Federal budget, and totally overlooks the devastating impact of what is happening to farmers and their incomes upon unemployment and inadequate growth throughout the whole U.S. economy.

—Leon H. Keyserling in *AGRICULTURE AND THE PUBLIC INTEREST*



# Agricultural Education

October, 1971

Number 4

Volume 44



Featuring —  
BROADENING THE OFFERINGS



The  
**Agricultural  
Education**  
Magazine

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COVER PHOTO

The lobster industry is important to the state of Rhode Island. Two students are involved in setting a lobster pot as part of the instruction offered in the marine resources program at North Kinstown High School in Rhode Island. (Photo supplied by Dr. Donald D. McCreight, Teacher Education, University of Rhode Island)

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From The Editor's Desk



This issue is devoted to a consideration of the need for broadening educational offerings in vocational agriculture. Many worthwhile and thought-provoking articles were submitted. Due to the obvious limitations of space, time and the editors' judgment many stimulating contributions must wait for a subsequent issue.

On a wall in a barbershop in Clemson, S. C., many moons past, hung a sign informing all barbershop philosophers, "Any fool can criticize, and most of them do." This served as a sort of moderator when arguments waxed at a higher than necessary pitch. This reference is not intended to suggest that critics of the present vocational agriculture programs are necessarily fools; it does suggest, in an oblique fashion, that many critics of vocational agriculture utilize a background of profound ignorance in arriving at their conclusions.

If ever an educational program has kept pace with changes in individual and community needs, vocational agriculture merits an accolade. From its beginning vo-ag strived to serve students in school, young people out of school and adults. The recent "discovery" of the problem solving approach to teaching is old hat to vo-ag teachers. The realization that close cooperation between home and school; teacher, student and parents is necessary for truly effective learning has been a cornerstone of vo-ag philosophy and a basic segment of its methodology since its origin. The use of community resources, local advisory councils and close working relationships with other agencies has likewise been a hallmark of the vo-ag program.

In common with many other aspects of rural education, vo-ag has experienced a chronic deficit of qualified instructors and a financially disadvantaged position. In spite of these handicaps research has shown that students graduating from high school with four years of vocational agriculture have been gainfully employed, either as workers or entrepreneurs, at the 90-95% level five years after graduation.

In the immediate future vocational agriculture faces challenges of greater complexity and magnitude than ever before. To meet these challenges successfully will require the application of the time-tested philosophy, principles and methodology. But it will take more than this. The ingenuity of the state leadership and the willingness of instructors at the community level to accept broadened responsibility will be of paramount importance. The impact of technology in education will certainly have an effect on teacher education programs.

The "lower" occupational and educational aspirations of rural youth *vis a vis* urban and suburban youth has been heralded for a decade or two by some sociologists and even by some vo-ag educators. There is little substance to support such statements. The scales and measures used to arrive at such conclusions are reflective of the inherent intellectual and educational snobbery that seems to be a part of our culture. Why is the desire to be a farmer rated as a lower aspiration than a preference for the law? It is this editor's opinion that lawyers have succeeded in creating an unholy mess in the administration of justice. The operator of a modern farm business creates new wealth; the lawyer and other professional or service occupations do not. It might be said that in urban and suburban areas people live off each other; farmers live off the bounty of the good earth.

Thus in assessing the future and implementing the continued broadening of educational opportunities agriculture it is imperative that vo-ag does not fall prey to false values or tangential dead end paths.

Vocational education has recently been plagued with a plethora of movements calling for "accountability" based on the occupational status of graduates. A bit of this is certainly justified. However, to assume that every student pursuing vocational agriculture must perform be subsequently engaged in an agricultural occupation is as silly as to assume that students who take a commercial or business course must end up as clerks, typists, stenographers, secretaries or accountants.

The influences and pressures which weigh upon the career choices of students in high school or post high school are not limited to the curriculums followed in secondary education. It might be well to evaluate the effectiveness of vocational agriculture in the same way as contract teaching does. We can guarantee that, given a student with a certain level of intelligence, aptitude and interest, vocational agriculture can provide him or her with the skills, techniques, attitudes and abilities to qualify for entry level requirements of an agricultural occupation. What occupational or career choices the individual makes after graduation or school-leaving is influenced by many factors unrelated to the curriculum followed. The draft board, parental pressure, employment opportunities, social and cultural forces and myriad other personal reactions may well be the deciding factor in career or occupational choice.

As certain as night follows day, vocational agriculture will have to continue to justify its existence. This is all to the good. But in the process, let us not be ashamed of training students to earn money; exercise thrift, leadership and patriotism. These are necessary ingredients for the future of America.



## BROADENING OFFERINGS IN VO-AG

Dr. Claud C. Marion  
Professor, Agricultural Education  
University of Maryland, Eastern Shore



More than two hundred and fifty leaders in Agricultural Education representing forty-seven states met in Denver, Colorado, in May, 1971, to map plans for the future of agricultural education. The most salient points discussed were broadening the offerings in Vo-Ag to extend from kindergarten through grade twelve and beyond high school. Cognizant of the increasing need for broadening the offerings in Vo-Ag, the prevailing mood throughout the seminar was one of urgency and optimism. Perhaps it has been a long time since so many knowledgeable participants were willing to come to grips with the problem, separating the conflict between beautiful idealism and stark reality. Extraordinary attacks on the program in Vo-Ag demands extraordinary counterattack. Our one best defense is to meet the needs of those seeking knowledge, information and careers in the wide and wonderful world of modern agriculture.

Vo-Ag in the elementary schools should be offered as general education on an appreciation level. Even in the formative years, one should know where food, clothing and shelter come from. The idea of safety, conservation and sanitation should be taught or nurtured early in the lives of our children. The offering on a junior high level to both sexes should be mainly exploratory — an introduction to agricultural education careers. Some technical courses in vo-ag, agri-business and natural resources should be offered at this level due to the high incidence of drop-outs before students have had an opportunity to learn about agriculturally related occupations.

The offerings on the high school level should be broadened in several directions: (1) The course offerings should extend beyond production agriculture, they should embrace such offerings as horticulture, farm machinery and repair, farm welding, natural resources and the several

fields in agri-business; (2) they should be extended to urban centers as well as rural, and (3) to girls as well as boys; (4) new programs should be designed to meet the needs of the disadvantaged and the handicapped, who are training in Agricultural Education.

Many disadvantaged youth are capable of learning specific skills which lead to gainful employment. Other concomitant learnings such as responsibility, cooperation, interest, pride in one's work and good work habits are learned by the disadvantaged.

There are nearly nine million people enrolled in Vocational Education. Nearly one million of this number were classified as disadvantaged and handicapped. These facts are indications that we, as agriculture educators, are beginning to realize the tremendous task agriculture has in helping the total program in Vocational Education meet the needs for students of all ages.

The agricultural education program should be responsible for its proportionate share of the disadvantaged — especially those interested in agriculture. However, it should not be responsible for all of the disadvantaged and misfits in order to solve administrative problems.

Another important aspect of offerings should be extended to the post high school level. Here the emphasis should be placed on training for employment. There are many job opportunities for technically trained individuals in agri-business and renewable natural resources. The post-secondary agricultural education programs could be designed to meet this need. Students receiving the basic fundamentals in any technical agricultural business will be employed in agri-business with advanced specific training given by industry.

There has been much talk about changing the name of vocational agriculture in order to change its image. Perhaps the best way to change the image is through broader offerings to meet the changing needs of young men and women who are seeking employment in agri-business.

## WHY NOT SIMULATED CLASSROOM INSTRUCTION?

Dr. Bobby R. Wright, Assistant Professor  
Department of Agricultural Education  
Virginia Polytechnic Institute and State University  
Blacksburg, Virginia



Would a simulated activity work in your classroom? Are you doing all you can to make the classroom instruction as meaningful as it can be to the students? Research shows that the teacher of vocational agriculture has opportunities through simulated classroom experiences to better prepare the student to enter the world of work.

Throughout America, many high school students find the only suitable vocational training offered them is in the field of vocational agriculture. Today the scope of vocational agriculture is much broader than thought even ten years ago. Production agriculture, the foundation of the vocational agriculture programs, must give room for training in areas such as agri-business, forestry, agricultural machinery service, and other areas of agriculture. Not all students have the desire to till the soil, but have an interest in other aspects of agriculture. Such a student may possess the capability for agricultural news reporting; selling agricultural machinery or supplies; banking related to the farmer; or being employed by one of the government agencies connected with agriculture and the conservation of America's resources. New programs create new challenges. For many of these occupations, the possibility for continuous occupational experience is limited.

As a teacher of vocational agriculture, you can help prepare these young men or women for any one of the areas of agriculture he or she chooses. Many teachers have successfully used cooperative programs for on-the-job training. However, there are some sections of the country where

cooperative training programs have not been adopted or accepted. The teacher may have developed the attitude that the program will not work in his area, thus depriving the students an opportunity to participate. The classroom offers a solution to this problem. Simulated activities taking place of the cooperative training centers have proven to be successful in the classroom.

Research conducted by the writer used simulated experiences in the classroom on purchasing cattle; banking involved in such purchase; selling of cattle to both an individually owned market and the auction sale; and securing and paying off the loan note. Each unit of instruction was designed to follow and articulate with a preceding unit in order that the total program might be of maximum benefit. Major emphasis was placed upon the terminal objective of enabling each student to realize the importance of completing further education and thus preparing himself for gainful employment. Emphasis was also directed toward developing the instructional program so as to encourage the student to adequately express himself verbally and in writing, and to conduct himself in a manner accepted in the business world. A simulated office was set up to acquaint the students with employer and prospective employee relations. The students were introduced to a receptive way of applying for employment and the necessary procedures of securing applications, making appointments, and personal interviews.

To illustrate the opinions of students toward the program, the following experience encountered by the researcher during a visit with one of the students is offered. Upon arriving at the center, prior to the time for school to begin, the researcher recognized some

of the students who were in the special instructional program class. It was a pleasant surprise when one student stopped him and wanted to visit. The conversation went much in this manner:

Student: "Hey, you know what! I've got a job for this summer with one of the feed companies downtown."

Researcher: "That's great."  
Student: "You know that stuff we've been studying in vocational agriculture sure did help me when I went down to talk about my job."

Basic communication skills were emphasized throughout the simulated classroom instruction. The student was afforded the opportunity to work math and English into situations he was familiar with. Applicable and relevant instructional materials increase the students' desire to learn and excel. Efforts were made at all times to improve the students' ability to communicate both verbally and in writing.

There are many advantages in using the simulated classroom instruction. The teacher is in a better position to supervise the training and learning phase of this instruction. Scheduling of other academic classes is less difficult because the student's daily schedule is not disturbed. The teacher is able to concentrate his efforts and time upon one training location thus allowing more time for individual student attention.

With simulated activities the teacher can develop a more realistic and meaningful learning experience for the student, whereby the student can better prepare himself for future employment. The teacher is required to spend time in preparing such simulated experiences, but how better can time be spent than in the preparation and training of young men and women who are America's future.

# MEAT INDUSTRIES—AGRI-BUSINESS PILOT PROGRAM

David E. Peterson, Instructor  
Cooperative Vocational Education Project  
Whitehall, Wisconsin



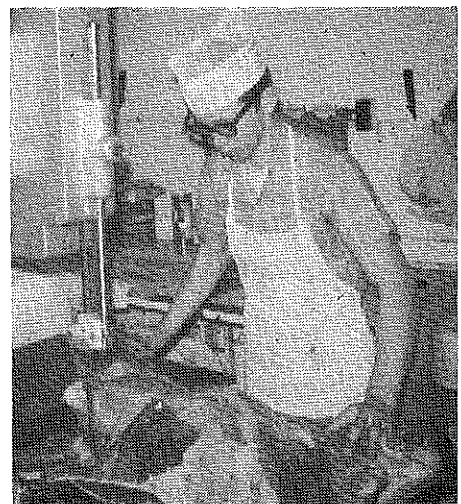
As the Vocational Project developed, research was conducted to determine the employment possibilities and needs of the five communities so a greater effort might be made to retain more of our youth within the area.

Research showed that there is a considerable amount of meat animal production farming within the area plus a considerable number of meat processors ranging from two specialized businesses employing several hundred workers to six medium sized, diversified businesses employing from two to twenty workers.

When the students were approached, it was found that each school had from three to five students with an in-

One of the offerings of the Cooperative Vocational Education Project comprising the public school districts of Arcadia, Blair, Independence, Taylor and Whitehall, Wisconsin is an Agri-business course in Meat Industries.

A course such as Meat Industries, which related to the needs and interests of the individual student, is now a realization for the students of these five smaller rural schools located in mid-western Wisconsin. In facing the fact that more must be done for the majority of our high school graduates who do not go on to higher education, the schools felt a need to offer basic vocational training. Thus, by joining together, these schools are able to offer vocational skill training in various occupational clusters and avoid course duplication, thus holding down capital investment for facilities.



Here a student is learning to use the power saw in cutting up the front quarter.



The students spend some time studying the confirmation and quality of carcass as part of their course. They also receive instruction from the state meat inspector.

dividual interest in the meat industry area.

In order to make the course meaningful and true to the industrial working world, lay persons were asked to work with the school in compiling a course of study.

Under the direction of David Peterson, Vocational Agriculture instructor, the course was formulated and arrangements made for implementation. Upon acceptance by the Department of Public Instruction, approval was given for the program to utilize federal funds as an Agri-Business Pilot Program. It was decided to offer the course for one semester.

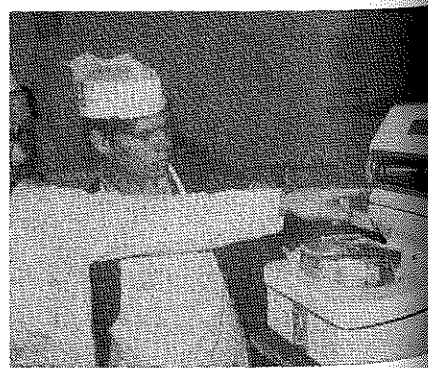
Gerald Mikunda, Coordinator  
Cooperative Vocational Education Project  
Whitehall, Wisconsin



Arrangements were made to lease outside facilities rather than install a meats lab within the school. In cooperation with a local meat business, Foss and Warner, located at Whitehall, the school is able to have access to slaughter, cutting, curing and wholesale and retail experiences.

At the start of the course, the students are introduced to types of meat producing animals and their care and feeding. Upon completion of this unit, classroom training is given pertaining to wholesale cutting, retail cut identification and tool care and safety.

From the technical classroom training phase, which lasts for three weeks, the students along with Mr. Peterson, move on location for their first observation and practical experience. In the plant, students not only observe the areas of slaughter, cutting, curing and selling but actually perform the various



Waiting on customers is the pay-off in over-the-counter sale of meat. Here students are learning to read the scale to determine the price of the purchase.

tasks under the direction of the instructor and skilled workers.

State inspection also is taking place continuously, which allows the student to observe and ask questions pertaining to meat inspection and receive first-hand information from the inspectors, who are most cooperative.

Field trips also are an important part of the course when the students visit various specialty processors within the local area as well as in Eau Claire and Madison.

The course is presently in its second year of operation and averages from 20 to 24 students per year from the five schools. The course is scheduled for the first two periods of the day and the students are transported to the central location.

The follow-up of graduates shows that they have entered the apprenticeship meat cutting program which has now been made available through the District #12 Vocational Technical School located in La Crosse, and are employed in retail sales, packing plant

operation, with several continuing their education in related fields.

Some of the problems encountered have been the lack of available text material pertaining to meat cutting and processing and scheduling students so they are able to participate. Outside of those minor problems, the project is felt to be highly successful in retaining students in local employment and providing them with the basic skill needed to be employed as a beginning meat processing employee.

## RENAISSANCE REQUIRED IN RURAL EDUCATION

Dr. James T. Horner  
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Lincoln, Nebraska



It is time for those interested in vocational agriculture to reflect upon the revolution in suburban education and the contrasting situation in rural America.

### Revolution in Education

Technology is being utilized to meet the changing concepts of learning and needs of students. Programmed, machine and computer assisted, television, film and tape instruction add to self-directed teaching and the concept of the teacher as a guide. Such developments as the use of "laser link" for transmitting dozens of channels of video lessons simultaneously seems imminent.

Methods and materials are modern. New approaches such as discovery learning of science principles and modern math are being used. A variety of resources are utilized to supplement the strength of each teacher and adds variety. Simulation and problem solving are being used to add realism to education.

Individuals are at the center of instruction. Active participation rather than passive learning, is emphasized. Thinking and problem solving rather than memorization of facts is stressed. Effective guidance and counseling is "people oriented" just as excellent teaching is student, rather than subject matter, oriented. Individually prescribed instruction permits a learner to proceed at his own pace.

Flexibility enhances individualizing of instruction. Flexible and modular scheduling and ungraded systems allow for a variety of types and rates of learning. Convertible, large-small classrooms without walls along with versatile furniture and equipment permit a wide variety of uses for learning activities both immediately and over the long range. Mobile instructional units on wheels, year-round schools, correspondence courses and traveling teachers add versatility.

Staffing is improved and is concerned with more than the mind. Supporting the teacher are the physicians, nurses, social workers, counselors, psychologists, speech therapists and specialists in administration, research and remedial reading. Para-professional

aides and technicians round out differentiated staffs.

Organization has been toward consolidation into centralized, unified, multi-purpose programs. This has enhanced quality of facilities, teachers and supporting services. Area vocational schools, university extension centers and junior colleges pool intellectual and cultural resources.

Curricula are being broadened. Community centered courses of study developed and conducted cooperatively with the community utilize all community resources in learning. Educational programs focus on special needs and the disadvantaged. Academic, cultural, and vocational aspects of curriculum and guidance are being "integrated" at all levels from prekindergarten through adulthood to capitalize on the experience, natural interests and motivations of all ages. General education is oriented toward the world of work and vocational programs are deliberately designed to feed back into academic work. It is my understanding that New York City, recognizing the importance of productive work for each family and the community and the need for all to have a marketable skill,



is requiring *all* students to complete at least a year of vocational education.

### The Reality of Rural Education

Although the decade of the sixties stirred a revolution in American education, it has not been equally shared as a reality in rural education. Rural America still retains its distinctive patterns. The school is the center of rural life. Values are more conservative. The school often takes a less "sophisticated" approach to education. The teachers are not expected to be "highly intellectual." Rural teachers are paid less, and qualified teachers desiring to teach in rural schools are in short supply. Farm people as a whole do not see the economic value of education in dollars and cents to say nothing of its other values. The college and occupational aspirations of rural youth are lower.

Farm youth not only complete fewer years of schooling, but they receive inferior schooling. Half again as many urban as rural farm high school graduates enroll in college (48 versus 32

per cent) and with half as many college required "deficiencies." Rural youth tend to drop out of school at an earlier age, and they are less successful than urban youth in the sense that they have more trouble getting a permanent job and that their jobs are not as remunerative. Educational attainment of rural adult lags by almost three years. Local rural communities, generally, are not capable of financing needed general and vocational education, although rural areas allocate a larger proportion of their limited resources to public education. Curricular offerings, including specialized programs for the slow or rapid learners, vocational programs and properly staffed guidance programs do not have the breadth of urban and suburban schools.

Many buildings are deficient and much equipment and teaching material is unsatisfactory. Both elementary and secondary rural schools are too small. Generally, the quality of the educational job rises significantly as the size of the school increases.

## PLANNING YOUR VO-AG PROGRAM FOR THE SEVENTIES

*Dr. Ralph Woodin*  
Professor of Agricultural Education  
The Ohio State University  
Columbus, Ohio

Long time programs for vocational agriculture are an important means of preparing teachers to meet the many changes confronting them. Such plans are useful at state and district levels but especially for local departments. The following are some reasons for a written long time program for every department of vocational agriculture:

1. Helps the teacher of vocational agriculture find his place in the community.
2. Outlines the job of the teacher of vocational agriculture.
3. Makes it possible to put "first things first."
4. Provides for continuity of a program even with a change of teachers.
5. Makes it easier to "sell the pro-

6. Leads to better community support.
7. Develops the concept of "our program and our responsibility" instead of "my program and my sole responsibility."

Before the teacher starts planning such a program, it is assumed that the local situation is known; that some evaluation of the current program of vocational agriculture has been made, and that important strengths and weaknesses of the program have been determined. Information on the community, its agriculture, and its school will be helpful in understanding the situation and in preparing a tentative plan.

If we believe that representatives of

Imposed instructional standards and other outside influences have been resisted by rural people. To argue that it is their responsibility and that they must be satisfied overlooks the fact that the Constitution of the United States provides for the free movement of people and that large numbers of rural people migrate to the city. Rural and urban must be considered as a "rurban" entity. All should be concerned about the uses of human and natural resources including people, soil, water, plants and animals.

Rural schools as a whole are substandard. A renaissance is needed in rural education. We must think about America and its rural youth component as the situation will be in the year 1980 or 2000. This envisages a nation with 300,000,000 citizens, with different kinds of schools and different kinds of teaching and learning programs, and we must do this right now. Someone must take the leadership in raising standards of rural education. Will that someone be YOU?

## EDUCATING FOR OFF-FARM AGRICULTURAL OCCUPATIONS IN VIRGINIA

*Claude E. Richard, Teacher Education*  
Virginia Polytechnic Institute



In order to assist teachers of agriculture to implement courses for high school students in off-farm agricultural occupations, the staff in Agricultural Education at Virginia Polytechnic Institute conducted classes for agriculture teachers throughout the state during the last two years.

One of the problems facing teachers was to determine which of the off-farm occupational experience programs they should offer that would best serve the needs of their students and the agricultural businesses in their communities.

In order to assist in solving this problem the teachers were asked to make a survey of the employment opportunities in the agricultural businesses in their school community areas. The teachers solicited names of the businesses, the number of people employed, the number of additional employees needed, and the number of additional employees needed within the following 3 to 5 years. They also collected data concerning the kinds of products handled and the types of work that additional employees would be expected to do.

Data were obtained from surveys of 739 agricultural businesses in 79 school community areas. In some school areas surveys were not made of all of the agricultural businesses in the area. Some teachers concentrated on only one type of business such as agricultural machinery service. Since the surveys were limited to the school area the largest cities in the state were not included.

The data summarized in Table 1 reveal that 13,338 persons were employed in the 739 businesses surveyed. Managers of the businesses indicated that 1,092 additional persons were needed at the time of the survey and 2,061 more employees would be needed within the following 3 to 5 years. This indicates that 3,153 more employees would be required within a 5-year period.

Table 1. Occupational Opportunities in 739 Off-Farm Agricultural Businesses In 79 School Districts

Employment Category	Number of Employees
Employment at time of study	13,338
Additional employees needed at time of study	1,092
Additional employees needed in following 3-5 years	2,061

Table 2 reveals the number of persons needed, classified by types of agricultural businesses. These data indicate there are considerably more persons needed in agricultural business (982) and agricultural machinery service (1162) than in the other agricultural areas. The small number shown for ornamental horticulture is the result of not including the larger cities in the study where most of the ornamental horticulture businesses are located.

Table 2. Total Number of Employees by Types of Businesses

Business Category	Number of Employees Needed
Agricultural business	982
Agricultural Machinery	1,162
Ornamental horticulture	220
Conservation and Forestry	539
Agricultural processing and marketing	250
Total	3,153

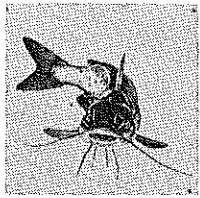
The types of jobs listed by the businesses were jobs in which entry level knowledge and skills are essential. Jobs were listed for foremen, salesmen, service and maintenance, skilled mechanics and many others which carry responsibility and for which comparatively good salaries are paid. Many salaries were as high as the salaries received by college graduates.

### Conclusions and Implications

1. The 79 school areas which were surveyed represent only about 39% of the areas served by the 206 schools in Virginia where vocational agriculture courses are offered. If as many additional trained workers are needed per school area in the 127 such areas in Virginia not surveyed as in the 97 school areas surveyed, approximately 8,000 additional trained

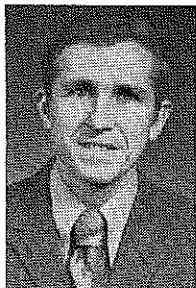
workers will be needed during the next 3 to 5 years. This does not include the number needed in production agriculture which is the foundation of all agribusiness.

2. In Virginia there are only about 2,000 high school students graduating each year who have had 4 years of vocational agriculture. This is far short of meeting the needs if all of them went into the agricultural field which, of course, they will not do.
3. To meet the needs in these 79 school areas mentioned above would require approximately 210 classes of 15 students each, the number that can reasonably be handled in one class. To meet the entire State needs would require approximately 500 classes of 15 students in each.
4. While much progress is being made to train people for off-farm agricultural occupations, more emphasis will be needed particularly in the area of informing prospective students, parents, guidance counselors and administrative officials of the need and employment opportunities in all phases of agriculture and the importance of becoming trained for these jobs.
5. Emphasis will need to be placed on the recruitment of well qualified vocational agriculture teachers, particularly for teaching these off-farm agricultural occupational experience programs.
6. In order to obtain a more complete picture of the employment opportunities, particularly in ornamental horticulture, a similar survey should be conducted in and around the larger cities in the State.
7. Because of the rapidly changing agricultural situation, it is recommended that vocational agriculture teachers throughout the State make a complete survey of the agricultural businesses in their school service areas at least every two years to keep abreast of the employment opportunities and needs.



## EDUCATING FOR A NEW AGRICULTURAL INDUSTRY

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A new "aquacultural industry" catfish farming — is emerging. Traditionally, American agriculture has not been concerned with water farming. The catfish industry involves (1) production, or catfish farming; (2) processing the harvested fish crop; (3) supplies in the form of feed, chemicals, and medications; and (4) equipment, such as boats, pumps, aerators, seines, and seine haulers. All of these aspects of catfish agriculture introduce new agricultural occupations. Likewise, persons employed in these occupations need at least an elementary knowledge of catfish culture and fish biology.

Fish farming has been carried on for many years. Chinese history reports the culture of fish around 2,000 B.C. In the middle ages in Europe "stewponds" became important. These were ponds in which living fish were stored. Wild fish were caught in the streams in the autumn and stored until needed as fresh food in the winter. Some fish were allowed to remain in the stewponds throughout the winter and spawn in the spring. Thus, the fish reproduced and fish farming was underway.

Very little fish culture was practiced in the United States until the twentieth century. The early interest, in the 1920's, was with bait fish, primarily minnows. Interest in fish culture greatly increased in the 1950's, especially in trout farming in the northern and western states. Little was known about catfish farming until 1960. Today catfish farming is established well enough in some areas to be regarded as a basic part of the agricultural economy. It has passed all other cultured fish crops in dollar value. The number of pounds of catfish produced has nearly tripled

in the last three years and in 1969 was valued at close to \$20 million. Catfish are grown in the southern tier of states reaching across the United States. The leading states in the culture of catfish are Mississippi, Arkansas, and Louisiana.

Catfish grow naturally in many of the streams and lakes of the United States. There are around 1,250 known species of catfish, of which 50 species are found in North America. Most species of catfish prefer the warmer climates of the southern states with longer growing seasons.

Catfish are easy to distinguish from other fish. The most distinctive features are the barbels, or feelers, about the mouth and the thick, scale-less skin which covers the body. A few species have been tried in commercial culture and the channel catfish (*Ictalurus punctatus*) is preferred by most catfish farmers. Channel catfish weighing one to three pounds are most desirable as food fish. With careful management, this size can usually be attained in two growing seasons, or a little less than two years.

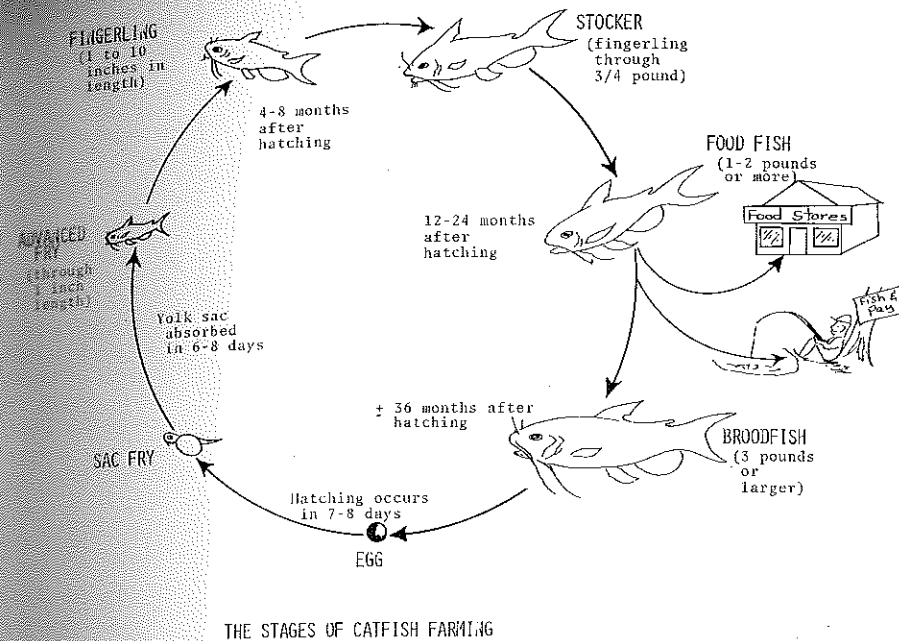
There are five types of catfish farming programs: (1) food fish, (2) broodfish, (3) fingerlings, (4) stockers, and (5) fish for catch-out ponds. Together, these make up the production aspect of the catfish industry. Food fish production involves growing fish for human consumption. Most catfish are harvested at weights of about one pound so that each fish is the proper size for cooking whole. About a ton of food fish can be produced per acre each year in ponds. Broodfish production involves growing fish to sexually-mature sizes of three to ten pounds for producers of fingerlings. Fingerlings are small fish under ten inches in length used to stock growing ponds. Fingerling production includes spawning the broodfish, hatching eggs, and rearing fry into fingerlings. Stockers are inter-

mediate size fish larger than fingerlings, but weighing less than three-fourths of a pound. They are frequently used for stocking catch-out ponds which are open to public fishing. Fees are assessed for fishing on the basis of pounds caught or a flat rate per day or a combination of the two. The catch-out pond is for the sport fisherman rather than for commercially processing or other food marketing establishments.

Catfish are currently being grown in two types of water structures: ponds and raceways. The water in ponds does not flow, while raceways are constructed so that the water flows. Ponds are usually larger than raceways; however, the number of pounds of fish that can be produced per acre of raceway is much greater than pond production. Large volumes of water are required with both types of facilities, especially raceways in which the water should be changed twice per hour.

Catfish may be produced in cages or allowed to have full access to water facilities. Cages are constructed of meshed wire and are usually 3 by 3 by 4 feet in size. The volume of fish produced per acre of pond is about the same with both methods. Cages are not widely used, but do have several advantages, especially in streams or lakes that cannot be seined.

Catfish can compete favorably with chicken, pork, and beef. As the present time, catfish comprise a very small portion of the per capita meat consumption — less than one pound annually. Farm-raised catfish have excellent flavor, are easy to eat, and can be prepared in a variety of ways. The high protein rations fed in catfish culture remove any trace of their natural habitat as scavengers. The patterns of consumption of catfish are changing. Catfish have traditionally been most popular in the South and along the Mississippi Rivers. But as migration of people occurs, catfish are being con-



sumed in all parts of the United States with increasing popularity.

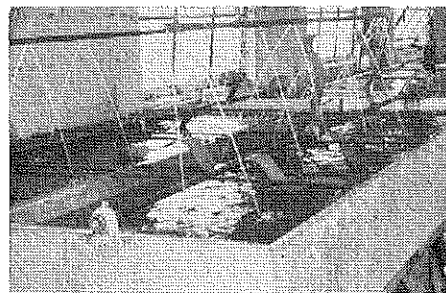
Several plants for processing food catfish are located in the southern United States. Considerable hand labor has previously been required for dressing, but mechanical fish skinners are now available. Research is underway to determine the feasibility of skinning fish chemically. Most of the catfish that are commercially processed are prepared for cooking and quick-frozen. Several fast-food restaurant franchise chains specializing in catfish are now constructing retail outlets. The small fish market types of operations serve as outlets for a considerable volume of catfish. Conventional restaurants and supermarkets are also receiving increased requests for catfish.

Several forms of processed catfish enter retail trade either fresh or frozen. The extent of dressing may vary from none at all to a completely prepared fish that is ready for cooking or pre-cooked. The common forms of preparation are whole, drawn, dressed, steaks, and fillets. Whole fish have not been dressed. The drawn form of preparation involves removing the viscera. The most common way of preparation involves removing the viscera, skin, head and some of the fins. Steaks are made from the larger dressed fish by cutting slices across the backbone. Each steak usually contains a segment of the backbone. Fillets, which usually contain few or no bones, are made by cutting a side section from along the backbone.

All levels of occupations are found in the catfish industry. Occupations involving managing, financing, selling, operating equipment, consulting, and

many other areas need persons who are educated in catfish culture. The required educational levels vary considerably. Due to the newness of the industry, many of the people working in it lack the education that is needed. Many phases of the industry, including the farmers growing the fish, are using trial and error in establishing methods and techniques of production. Fishery biologists are needed to conduct research on catfish production. Throughout the industry specialized skills are needed. In the past the best way to learn the necessary skills has been by practice. The local teacher of agriculture occupations must be able to assist with the educational program for many of the occupations, especially those requiring less than professional degrees.

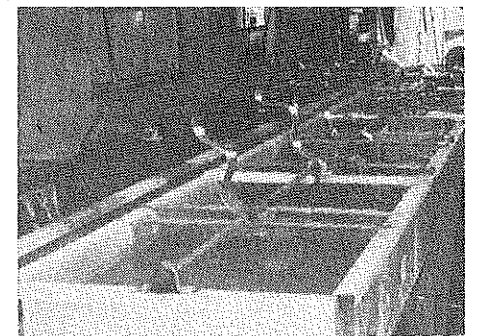
Persons interested in catfish farming need to become knowledgeable in ele-



The shaft in the middle of the trough turns at 30 or less r.p.m. The blades attached to the shaft cause water movement similar to that of the male catfish. With catfish, the male normally tends the eggs during incubation. He assumes a position above the egg mass (spawn) and by movement of his fins causes water to circulate through and around the egg mass. Catfish eggs hatch in 5-7 days.

mentary fish biology. This is difficult when little has been written and research is lacking. But the wheels are beginning to turn. Materials on the catfish industry are becoming more available. Several magazines on catfish farming have been initiated in the last two years. Curriculum specialists in vocational education are preparing instructional materials. Teachers in areas where fish farming is prominent should become acquainted with these materials.

There are many ways in which teachers of agricultural occupations can provide educational programs in catfish farming. Catfish culture is a highly technical production industry requiring persons who are willing to learn and to experiment. One of the agriculture teacher's first teaching opportunities will be in the basic biology of fish. Fish are different from the traditional animal husbandry enterprises. Farmers will need to know how and when fish spawn, and at what age, how to care for eggs and fry, how to treat for diseases and parasites, and how to feed.



The facilities shown were constructed by a farmer in a dairy barn that was no longer used. This shows only a portion of the hatchery operation which will produce 3 million fingerlings this year. When a length of one inch is reached the fish are transferred to rearing ponds at a rate of about 50,000-100,000 per acre. Within 4-8 months after hatching the fingerlings will be 5-8 inches long. A rule of thumb is that fingerlings sell for 1c per inch of length; therefore, 3 million at a length of 5 inches would gross \$150,000.

Oxygen depletion is a major problem. Entire fish populations can be lost if the amount of dissolved oxygen in water becomes low. Abundant water, free of pesticides, pollution, and other harmful residues must be available. Farmers must decide whether fish will be grown in open ponds, cages or raceways. The stocking rate per acre of surface water is influenced by a number of factors, such as size of fish desired and type of water facility used. Arranging and constructing water facilities and equipment for feeding is another aspect about which teachers will need to become knowledgeable.



It is highly likely that teachers in some areas will be teaching courses in catfish culture. What will be the instructional content of these courses? The content will vary with the needs of the local community and the needs of the students enrolled. A suggested outline of a general course in catfish culture follows. The first part of the outline analyzes the possibilities of catfish culture. The second major part of the outline places emphasis on the basic principles of fish biology, such as the parts of a catfish, growth and classification of species of catfish. A portion is devoted to constructing the necessary facilities and equipment. The final parts of the outline are concerned with the technology of production, harvesting, and marketing. This instructional content will change as results of research become available.

#### Outline of a General Course in Catfish Culture

- I. Determining the possibilities of catfish culture
  - A. Types of catfish culture instructional programs
  - B. Trends in catfish culture
  - C. Expected returns from catfish culture
  - D. Equipment and facilities needed
  - E. Investment required
  - F. Risks in catfish culture
  - G. Legal regulations
- II. Elementary catfish biology
  - A. Basic parts of catfish
  - B. Basic characteristics of catfish
  - C. Stages of growth
  - D. Identification of common species

- III. Constructing water facilities
  - A. Kinds of facilities needed
  - B. Specifications and arrangement
    1. Ponds
    2. Raceways
    3. Vats
- IV. Producing fingerlings and stockers
  - A. Managing broodfish
    1. Prior to spawning
    2. During spawning
    3. After spawning
  - B. Hatching eggs
    1. Trough method
    2. Pond method
  - C. Rearing fry
    1. Trough method
    2. Pond method
  - D. Rearing fingerlings
    1. Trough method
    2. Pond method
  - E. Rearing stockers
- V. Growing food fish
  - A. Production systems
    1. Ponds
      - a. Open or free access
      - b. Cages
    2. Raceways
  - B. Stocking rates
  - C. Time requirements
- VI. Feeding
  - A. Basic nutrient requirements of catfish
  - B. Methods of feeding
    1. Hand
    2. Self feeding
    3. Blowing feed
    4. Boat feeding
    5. Airplane feeding
  - C. Feed ingredients
  - D. Ratio of feed to gain
- VII. Securing and managing water
  - A. Sources of water
    1. Surface runoff, including streams
    2. Wells
    3. Springs

- B. Volume needed
  - C. Problems in management
    1. Oxygen depletion
    2. Plankton growth
    3. Trash fish control
    4. Off-flavor control
  - D. Fertilizing
- VIII. Controlling diseases and parasites
    - A. Diseases of catfish
      1. Identification
      2. Treatment
    - B. Parasites of catfish
      1. Identification
      2. Treatment
    - C. Calculation of treatments
  - IX. Controlling predators, trash fish, and other pests
    - A. Predators
      1. Identification
      2. Control
    - B. Trash fish control
    - C. Other pests
  - X. Harvesting and Hauling
    - A. Methods of harvesting
      1. Hooking
      2. Draining
      3. Seining
      4. Trapping
    - B. When to harvest
    - C. Hauling
      1. Facilities needed
      2. Water management
  - XI. Marketing
    - A. Steps in marketing catfish
    - B. Available markets
      1. Processors
      2. Recreational
      3. Other
    - C. Special considerations with catch-out ponds
  - XII. Processing
    - A. Steps in processing
    - B. Forms of fish preparation
    - C. Role of producer in processing

## PROJECTIONS AND PROSPECTS

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Department of Health, Education & Welfare  
Office of Education  
Washington, D.C.



It is predicted that during the 1970's the terms "Vocational Agriculture" and "Agricultural Education" will be changed to "Vocational Agribusiness" and "Agribusiness Education" respectively. This change is compatible with the 1967 revised dictionaries which continue to equate "agriculture" with "farming," but for the first time, includes a new word, "agribusiness"

which encompasses both the production of crops and livestock and all aspects of the off-farm industry of agriculture. A composite of the definitions in the various dictionaries and glossaries establishes authority for the new directions towards which our profession has been continuously moving. Let us examine this definition thoughtfully and accept the breadth of career preparation which it implies: (a) A blend of agriculture and business. (b) A combination of the production operations of a farm (ranch, greenhouse, nursery) and, in varying degrees,

the services associated with them; the manufacturing and distribution of farm equipment, fertilizers and supplies; the processing, storage, marketing and distribution of farm commodities including food and fiber; and, the conservation, preservation and use of renewable natural resources.

Due to this evolving change in image, enrollments in agribusiness education by 1979 is estimated to exceed 1,150,000 students, compared to the 900,000 students enrolled in vocational agriculture in 1969. Furthermore, by 1979, it is estimated that 55 percent of the

students enrolled at the secondary and post secondary levels will be training for career objectives in off-farm agribusiness and 45 percent with objectives in farming and ranching. Considering normal attrition, the number of individuals trained for entry into agribusiness occupations be inadequate to meet the identified manpower needs. Secondary enrollments in agriculture have steadily increased in recent years. These enrollments will increase from the present 537,000 to approximately 660,000 in 1979, as programs in agribusiness are extended to urban schools. Enrollments in post secondary institutions will continue to make rapid strides and will exceed 50,000 in 1979. Collegiate FFA Chapters will be established in many post secondary institutions and these may become an independent national FFA affiliate.

Adult enrollments will increase and should exceed 410,000 in 1979. The major thrust in adult education will be in farm business management and agricultural mechanics for beginning farmers with a minimum of 250,000 enrolled. Local and state associations of YFA will serve presently unmet needs of beginning farmers and become a catalyst in establishing and maintaining instructional programs. Adult courses will be offered more extensively in areas of off-farm agribusiness employment, especially for managers, technicians and skilled workers.

The foregoing estimates are based upon the assumption that there will be adequate staff at the national, state and local levels to provide counsel, guidance and promotion supporting the development of instruction in agribusiness and natural resources. Likewise, it is assumed that teacher education programs will be increased and modernized to produce teachers that are more specialized technically and professionally. Graduate trainees will be competent in a specialized technical field such as dairy, forestry, horticulture or agricultural mechanics. Professional training will enable them to work effectively with high school students, adults or the disadvantaged. It is essential that all beginning teachers be better trained in developing occupational experience programs and working with FFA. A high percentage of students enrolled will be the disadvantaged and handicapped who will be identified and counted accurately with new reporting practices. Entrepreneurship and work experience have always characterized vocational education in agriculture and these concepts will be further emphasized in the agribusiness program.

In 1969 only 8975 students were re-

ported as engaged in cooperative work experience. Had all students who were actually engaged in work experience been reported the number would have exceeded 75,000. It is imperative that all students engaged in supervised and coordinated work experience away from the home farm or establishment be counted as "co-op" students. By 1979 at least 200,000 will be engaged in work experience programs.

Unfortunately, only fragmentary information is available on the "Manpower Needs" in agribusiness. This is because the number of workers with agricultural competencies needed in manufacturing, transportation, communications, wholesale and retail trade, finance, insurance and real estate, services and government are lost in the composite of data for these classifications. A joint committee comprised of representatives of USDA, Commerce, HEW and Labor have designed a national study to identify the actual employment opportunities and training needs in these and other agribusinesses. The project, now four years old, is in need of funding. Until money is obtained, estimates on the manpower requirements in agribusiness undoubtedly will continue as "guess work" or will be equated with farming.

In view of this void of information vocational education will have great difficulty in meeting the mandatory requirements of the new Federal legislation providing training for jobs in agribusiness in which the national manpower needs have not been identified. The projected annual manpower needs in farming are available, both from USDA and the Department of Labor. However, to date no one has such valid national projections on the manpower needs in the rapidly expanding off-farm agribusiness segment of the industry. It is imperative that leaders in agribusiness, farm and agricultural trade associations join forces in the 1970's to see that this information is obtained. Much has been said about the term "agribusiness" and its replacing the word "agriculture." Undoubtedly this transition will occur rapidly.

In the meantime, let us give additional thought to the new philosophy emerging in vocational education. This philosophy re-directs vocational education and encourages a union with other types of vocational education, general and other types of vocational education along with the FFA and YFA are responsible for providing training in agribusiness and natural resources occupations. As professional educators in these

fields, ours is the opportunity and challenge to provide leadership in this important segment of American education.



## BOOK REVIEWS

### *Agricultural Education for the Seventies and Beyond*

In vocational and technical education in agriculture, new programs are being implemented, innovations tested, and old concepts challenged. Educators are devoting increased energies to formulation of long-range goals. The public is properly concerned whether the tempo is realistic and the direction relevant to future needs.

In 1967 the Commission on Education in Agriculture and Natural Resources appointed a Committee on Agricultural Education to review the situation and to recommend future directions for vocational and technical education with special reference to the preparation of agricultural educators.

This report focuses on vocational and technical education programs in agriculture at the secondary, postsecondary and adult levels. It is concerned with optimizing the effectiveness of these programs, and is designed to assist those in policy-making, planning and leadership positions to define the future role and scope of vocational and technical education in agriculture. It should aid those who must project the need for educational programs, develop the forms that such programs might take and define the nature of the preparation of those who will serve as educators in agriculture.

8" x 6 1/2", 44 pages. Single copies, \$75. Order number (42371). 10 percent discount on orders of 10 or more. Postage and handling charges added to orders not accompanied by payment. Requests not accompanied by payment will be honored only when they are submitted as official purchase orders from institutions or agencies; amount on purchase orders must be \$5.00 or more. All other orders must be accompanied by payment. No return privileges.

Frank R. Stover

# BROADENING VOCATIONAL AGRICULTURE

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In the twelve years since the vocational agriculture program began in the Eastern Lancaster County School District it has grown from a modest in-school program involving one teacher to a comprehensive plan involving four teachers. Included in the present format are complete in-school vocational agriculture classes including an extensive directed work-experience program. An active young and adult farmer group has many educational meetings as well as community and social activities. Course offerings in elective agriculture in the ninth grade and several junior agriculture clubs in the seventh and eighth grades round out the secondary and post-secondary agricultural activities. There is an agricultural program in the elementary school which, at the present time, involves all the pupils in the sixth grade throughout the district. An Outdoor Conservation Laboratory being developed for use by the entire school district under the auspices of the vocational agriculture department is the most recent addition to the program.

These programs do not just happen. There are several ingredients involved in the development of any successful program. These are an understanding school administration; sympathetic guidance counselors; and a cooperative community. In conjunction with these is precise planning and orderly growth. The basic agricultural program in the school must be very healthy before any additions are made. Probably the biggest mistake any vocational instructor can make is to think that some new program can rescue a faltering one already in existence. It is absolutely essential that the existing program is very sound and can carry itself.

The time and effort involved in broadening a vocational agriculture program is considerable. Possibly the first step is critical examination of the existing programs. This means evaluation of the strengths and weaknesses ruthlessly. Then a determination must be made concerning the nature of the weaknesses. If the shortcomings indicate a need for an expanded program, rather than failure of the existing one, then some new program might be considered. For example, many departments have added directed work-experience programs to meet the needs of students interested in agribusiness especially in areas where farming experience alone might no longer be appropriate.

The decision-making process regarding broadened vocational agriculture programs is complex. It is here the essential ingredients come into play. The vocational agriculture teacher must first plan the basic outline of the proposed program with the cooperation and assistance of the school administration. The thing will never get off the ground if this first step is ignored. The needs, assets and resources of the school community must be examined carefully in designing a program. School administrators are often much more aware of the resistances which may have to be overcome in implementing a new program, especially as they relate to financial or budgetary considerations.

The broadening of many vocational agriculture programs is often related to scheduling and the needs of the students involved. And it is here the guidance counselors are involved. They are the ones charged with planning the overall schedules of the students, especially as they relate to vocational choices. It is essential that they are understanding and sympathetic to the various facets of the vocational agriculture program. This is extremely im-

portant as it relates to the directed work-experience program and also to the elective agriculture courses. There must be cooperation between the guidance counselors and the vocational agriculture department if the best interests of the students are to be served. Another area where this cooperation is important is the scheduling of vocational agriculture students into academic courses. In the Eastern Lancaster County School District it is possible for a student to complete the requirements for college entrance while taking a limited vocational agriculture program. This would not be possible without a good working relationship between the two departments.

Finally the community, including parents, children, businesses and industry must support these programs if they are to succeed. Their cooperation and support comes if they understand what the programs are all about and how they will benefit the students and the community. It behooves the vocational agriculture teacher to budget a healthy portion of his time to promote community understanding by acquainting key community leaders with proposed programs, seeking their advice and suggestions and enlisting their support.

A poor fourth as far as ingredients in a successful program go, is the teacher himself. It will be difficult for even the best teacher to succeed with a new program if he lacks the first three ingredients, in fact a really good teacher probably wouldn't even try.

The teacher does have a role. This involves coordinating the concerns of the administration, guidance department and community into a feasible program.

After a decision has been made by the school administration and the other ingredients are present, the program must be planned in detail carefully.

Various aspects of this planning present problems that must be carefully resolved.

One which must receive primary consideration is personnel needs. Many new programs make such great demands on the time of the teacher that they cannot be implemented without the addition of new personnel. Each time a vocational agriculture department expands, consideration must be given to clearly defining the duties and responsibilities of each member of that department. It is essential that the duties and responsibilities of any new teacher be established before he is hired so he knows what he is going to do before he accepts the job. Often vocational agriculture departments request new personnel without carefully planning the use of his time. Then the new teacher will find his schedule loaded with study halls, the least desirable classes and nothing very challenging to do. It is not difficult to understand why he may be something less than enthusiastic in his performance.

In any multi-teacher department there should be definite areas of responsibility and each teacher should understand and respect these. In this four teacher department one teacher is responsible for the FFA and most of the in-school classes; another is devoted to the young and adult farmer program; the third developed and

teaches the elective agriculture and junior agriculture groups; and the fourth is involved in the elementary agriculture program. They arrange their schedules to meet one day per week. There is a department head and each staff member is urged to be candid about his area of concern so that misunderstandings and disagreements will be limited. For Eastern Lancaster County this system has served well.

After the issue of personnel needs is resolved, attention should be turned to the facilities and equipment which will be necessary to implement a new program. In most cases the facilities are already existing in the form of the vocational agriculture facilities of the high school. The only concern here is a satisfactory scheduling procedure to utilize the facilities to the best advantage of all concerned. In the case of a directed work-experience program the area of community cooperation comes to the forefront. In the elective or junior agriculture programs the cooperation of the guidance department and school administrators are vital. The most essential factor is that the issue of use of facilities is resolved before the program is implemented.

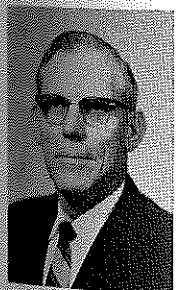
Equipment needs must also receive consideration. In some instances they will be minimal. However if a comprehensive program involving agriculture programs on the elementary, middle school and high school levels is

developed, it will probably be necessary to have some duplication of equipment particularly that related to visual aids. Efficient programs can probably not be developed around one film projector, for instance, if it must be used by two or three teachers in various schools. The budget for a comprehensive program must be carefully planned to avoid unnecessary duplication but care must be taken that enough equipment is available to operate successfully.

In conclusion it might be said that there are two distinct areas of consideration in the broadening of vocational agriculture programs by the implementation of new programs. One might be termed the spiritual considerations or the intangibles, those being an understanding administration, sympathetic guidance counselors and a cooperative community. The other is the tangible or physical considerations, those being personnel needs, facilities and equipment. It might be proper to draw an analogy here to man. The success of man is often measured on his short-term material successes. However over the long haul, his spiritual values are the ones which will ultimately see him through. The same can be said for new programs in any area. The facilities, equipment and personnel might be impressive and glittering, but if the intangible groundwork has not been properly laid, the programs will not succeed.

## PLACEMENT AND FOLLOW-UP OF STUDENTS

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A satisfactory placement and follow-up program in vocational education in agriculture must begin with a good student selection program. In order to have a good student selection program, guidance and counseling are essential.

If a satisfactory placement and follow-up program is to be executed, the students must keep the vocational agriculture teacher informed as to where they are and what they are doing for at least five years after completing their training.

The teacher of vocational agriculture should be able to place and follow up students better than any other teacher in the public school. He visits the student at home and gets acquainted with the student and parents. Putting it another way, a teacher who does a good job of student visitation and supervision will find it easier to do the placement and follow-up.

Vocational agriculture is evaluated primarily by how many students get employment in the occupation for which they are trained. Even though getting employment in the field for which vocational education students are trained is the primary measuring stick, there are other good things that come from instruction in vocational

agriculture that may be transferred to other occupations. For example, while in vocational agriculture a student should get excellent training in the FFA. This training will be of great value to the student even though he may never be employed in agriculture.

If a follow-up of students is to be an important measuring device for evaluating vocational agriculture, there should be a strong placement program in operation prior to the follow-up. Local school officials, including the vocational agriculture teacher, should secure all the help possible in placing students in jobs for which they are trained. Some suggested aids are local advisory councils, community placement committees, employment agencies



and businessmen in the service area of the school. In all communities an area manpower need study should be made to provide information for students of vocational agriculture. The local school must furnish the leadership for these placement aids, but valuable assistance can be secured from local people.

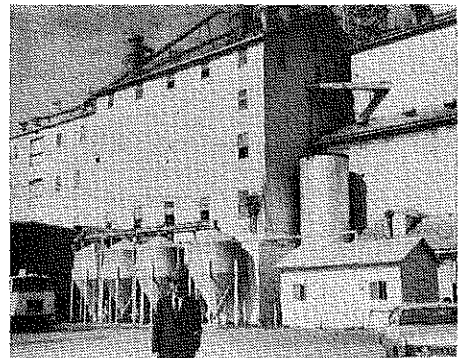
Even though we are obligated by law to follow up vocational education students, this should not be the main reason for determining what happens to students after completing their training. If any program is to survive and have the support of the public, it is necessary that a good public relations program be carried out. Therefore, placing students on the job for which they are trained is not enough. The public must be informed about such placements as these students are follow up over a period of years.

The teacher of vocational agriculture can collect valuable information from a good placement and follow-up program. Such information may be used to enrich the instructional program. Also a good follow-up program will enable the agriculture teacher to develop an adult instructional program that will meet the needs of all who need such instruction.

In summary, if students are properly selected and well taught, if the vocational agriculture teachers develop good relationships with the students and their families, if a good placement program is executed, and if the students are followed up for five years or more there should be evidence that a good program is in operation. Such a program will also provide the basis for a public relations program. In turn, such a public relations program will enable vocational agriculture to gain strong public support.

Charles Ritter, former state and national FFA officer, is now a successful agribusinessman. Ritter, who graduated from Hatley High School in Monroe County, Mississippi, was FFA state president in 1951-52 and was national FFA vice president in 1953-54. He worked one year with the National Future Farmer Magazine, and was employed for a time as coordinator of student affairs at Mississippi State University. Leaving Mississippi State University he was employed for about five years in the International Department at the First National Bank of Memphis. Since 1967 he has been executive vice president of the Attala Company, Kosciusko, Mississippi. The Attala Company manufactures and distributes livestock, fish, and dog food. Corn meal and family flour are also manufactured by the company. Ritter is on the board of directors of the Chamber of Commerce,

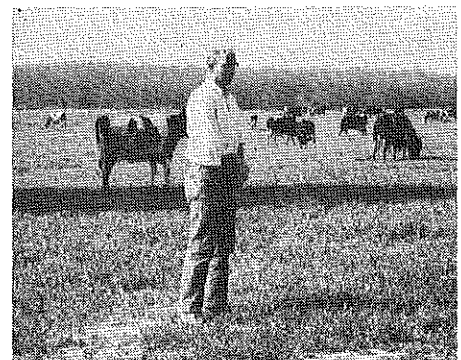
a member of the Attala County Industrial Development Committee, a member of the board of directors of the Corn Millers Federation (national organization), a member of the board of directors of Mississippi Feed Grain



Charles Ritter gives vocational agriculture and the FFA a large measure of credit for his success in agribusiness.

Association and a member of the Mississippi State University Development Foundation and past membership chairman of the Mississippi State Alumni Association. Charles, who was reared on a small Monroe County farm, readily admits that the FFA and vocational agriculture are largely responsible for his achievements.

Mickey Yarbrough, a successful farmer today, was FFA state president of the Mississippi Association in 1958-59. Yarbrough, of the Baldwin FFA Chap-



Mickey Yarbrough is a product of vocational agriculture and the FFA. He now attends adult farmer classes taught by his former FFA advisor, Mr. C. O. Hoover.

ter, received his American Farmer degree in 1959. Mickey and his brother, Walton, are partners in the farming business. They milk an average of 70 cows with an average production of 15,500 pounds of milk. In addition to the cows, they have 200 acres of wheat for winter grazing. Other crops are 60 acres of cotton, 100 acres of soybeans, and 85 acres of corn silage. The

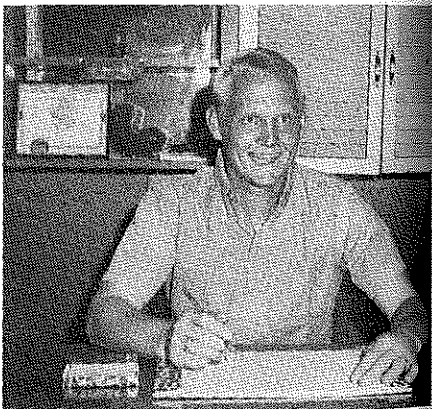
cotton last year produced an average of 804 net pounds of lint per acre. Mickey attends an adult farmer class taught by his former FFA advisor C. O. Hoover.

Farm manager, Alvin Woods, was state FFA president in 1967-68. He is now managing a 5,000 acre farm for Hederman Bros., Jackson, Mississippi. At the present time beef cattle and timber are the main sources of income on the farm.

Alvin's livestock management includes 354 mature brood cows, 68 first calf heifers, 150 heifers now being bred for the first time, 273 stocker yearlings, and 25 horses. Hay is about the only crop grown on the farm. Last summer Alvin put up 20,000 bales of hay.

In addition to being state FFA president, Alvin received his American Farmer degree in 1968. He placed third in the state public speaking contest. He showed beef cattle from the sixth grade until two years after finishing high school. In his words, his top achievement was showing the Grand Champion Angus heifer at the Mid-South Fair in Memphis.

Alvin is a member of the Farm Bureau, a member of the Board of Directors, Fines County Farm Bureau, a member of the Angus Association, Mississippi Cattlemen's Association, and vice president of the Forest Hill Chamber of Commerce.



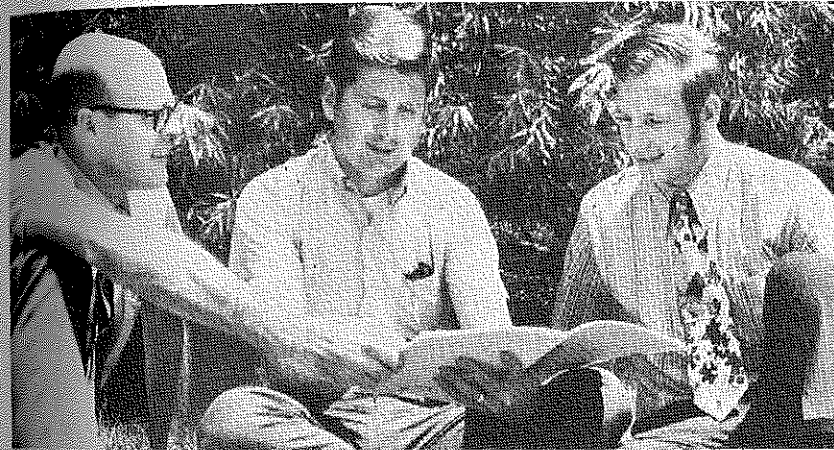
Managing a 5,000 acre beef and timber operation is Alvin Woods job. In addition to his proficiency in farming, Alvin is a fluent public speaker and community leader. He got his start through vocational agriculture and the FFA.

## STORY IN PICTURES

by Robert Walker,  
University of Illinois

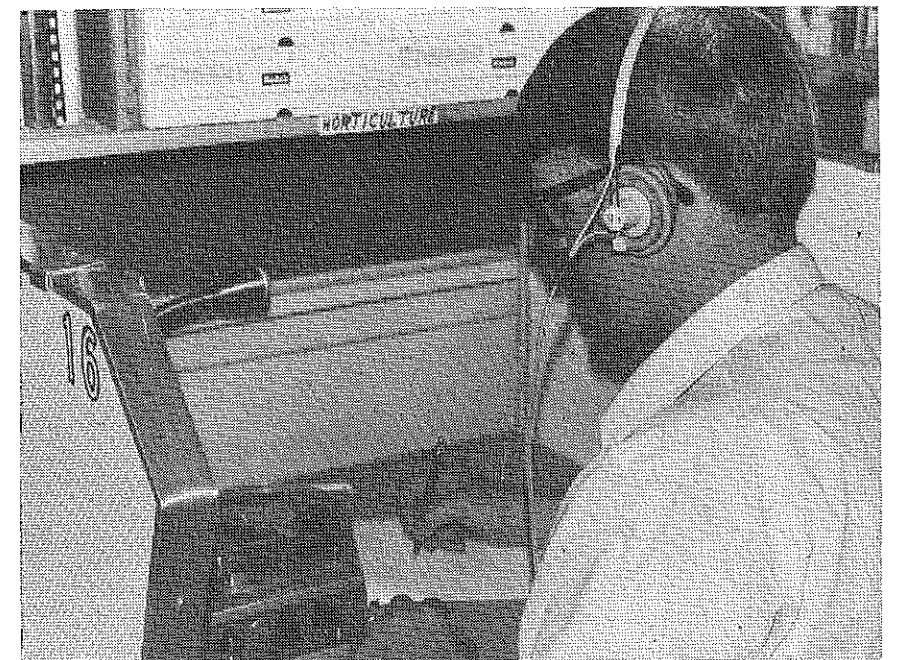


Two State officers of the Minnesota FFA, left to right: Lowell Miller, Northfield and Denny Sandmann, Lambertson are watching Minnesota's Commissioner of Agriculture Jon Wefald collecting the guaranteed water to 'kick off' Minnesota FFA's Operation Rain Gauge. W. J. Kortesmaki, State FFA Executive Secretary, is at the speakers' rostrum. (Photo from W. J. Kortesmaki)



Dr. Martin McMillion (left), Associate Professor of Agricultural Education, University of Minnesota, and Dr. Hollie Thomas (right), Assistant Professor of Agricultural Education, University of Illinois at Urbana-Champaign, discuss Mr. Bennie Byler's doctoral thesis proposal. Illinois teachers were privileged to have Dr. McMillion as a visiting professor during the first four weeks of the summer school session. (Photo by David Catron)

Gerald Gustafson, a senior in Agricultural Education at the University of Nebraska, completes an individualized learning assignment at one of the study carrels in the Ag Ed Laboratory. Under the supervision of Drs. Roland Peterson and Roy Dillon, students utilize mediated individualized materials for their methods and program planning courses. (Photo by Robert W. Walker)





## PLACEMENT & FOLLOW-UP—

### AIDS IN EVALUATING ACCOUNTABILITY OF VOCATIONAL PROGRAMS

*John A. Wilson, Coordinator  
Business, Industry and Education  
Four County Vocational School District  
Archbold, Ohio*



"A salable skill for every graduate" is the motto of many vocational education programs. This brings to the educational enterprise great responsibility. This responsibility goes far beyond the classroom and the occupational laboratory. The physical facilities, along with the competent instructors, are dedicated to developing a salable skill for every graduate; however, the question arises, "What is being done in the area of placement?"

Placement and follow-up of graduates are aids in evaluating accountability of vocational programs from the standpoint of the student, local business and industry, and the vocational instructor. The student hopefully desires to become gainfully employed or to become a successful employer. Business and industry is interested in employing trained personnel and the vocational instructor accepts this challenge.

The Four County Joint Vocational School serves four counties in Northwestern Ohio. The placement and follow-up service is a part of the Guidance Department and has five basic steps or functions.

The first step is to survey business and industry, preferably by interview. The business and industries are catalogued by using the Dictionary of Occupational Titles. The company name, address, person to contract, number employed and annual need for employment are put on a 3x5 rol-a-dex card in alphabetical order by counties for quick reference. Summary information from the survey is compiled and presented to all junior and senior stu-

dents. This information is helpful in many ways.



MR. HENRY MEINEKE, Owner of MEINEKE OLIVER SALES was interviewed for placement information. He indicated a need for a mechanic in his Oliver dealership.

The second step is to orient business and industry to the placement procedure. Each business and industry is invited by letter to Business & Industry Day, which serves two purposes. Student representatives from each vocational program serve as tour guides for the company officials as they visit the areas related to their employment needs, then a complete explanation of the placement procedure follows.

The third step is to identify job opportunities. The letter to secure the job title, description, compensation, and other information is mailed to all business and industry along with a list of all vocational programs offered. The job openings that are reported to the placement office are then put on the job opening form.

The fourth step is to arrange for interviews. The job openings are presented to the appropriate vocational class and names of interested students made available to the prospective em-

ployer. The student's application, evaluation by his instructor, grades, and attendance record are made available to the prospective employer prior to the student's interview. Those students not employed by the time of graduation are mailed the list of job openings. Interviewing facilities are available at the school or the student goes directly to the employer's place of business.



MR. MEINEKE on the left interviews agricultural mechanics graduate Tony Huener for the mechanic position. The interview was arranged through the guidance department of the Four County Joint Vocational School.

The fifth step is to follow up each graduate, preferably in person. This is the most informative step as to the effectiveness of the vocational training. Each graduate employed is contacted and interviewed as to his evaluation of his training, and his employer is also interviewed. This information is also used for state reports.

This five step placement and follow-up procedure provides valuable information in terms of the accountability of a program.

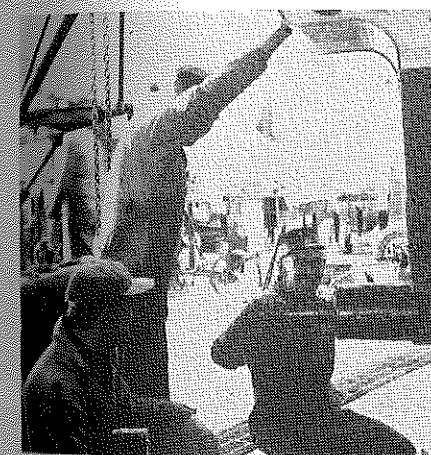
The area of Agricultural Mechanics, for example, included 17 graduates. Of these, 1 entered the armed forces, 5 went on for more training, 9 were employed in their field of training, and 2

were employed outside their field of training. The average starting wage for the 9 employed in agricultural mechanics was \$1.93 per hour. The students' reactions were very favorable in that the training was beneficial and adequate with suggestions being for more training



Service manager JOHN SCHWIEBERT evaluates Tony Huener's mechanical skills.

in hydraulics and electrical systems. The employers' reactions were also favorable in that the training was beneficial and adequate. They suggested more training in the use of the instruction book as well as general use of tools. They are looking forward to students with two years of training, since this was our first graduating class and had only one year of training.



TONY HUENER lower left with two co-workers work as a team in the service department.

You may ask, "Why do we feel that placement and follow-up are aids in evaluating accountability of vocational programs?" Of the 365 students who were graduated in May 1970, a breakdown shows that 256 were available for employment with 249 employed as of January 1, 1971.

The students' reactions, along with the employers' reactions, have assisted in the revising of each vocational curriculum. If we are to attain the goal of "a salable skill for every graduate," placement and follow-up is a must. Not only is this procedure invaluable in evaluating the accountability of vocational programs but it also affords an excellent public relations vehicle.

## WHO BECOMES ESTABLISHED IN FARMING!



*Walter T. Bjoraker  
Teacher Education  
University of Wisconsin  
Madison, Wisconsin*



*Virgil O. Martinson  
Marshfield Junior High School  
Marshfield, Wisconsin*

The following article is based on Virgil Martinson's Ph.D. dissertation, "Similarities and Differences Among Wisconsin Youth Who Have Become Established in or Have Discontinued Farming," University of Wisconsin, Agricultural Library, January, 1970.

Young men will continue to make occupational decisions and one of the careers chosen may be farming. A poor, uninformed, or unrealistic choice constitutes a delay to establishment in an occupation. Insight concerning the similarities and differences of those who become established in farming and those who leave the farm may be of considerable interest and help. Does the home situation, such as the number of brothers, the father's satisfaction with farming, the size and the socio-economic rating of the home farm, contribute to establishment in farming? How well did the individuals achieve scholastically in high school? Of what value was vocational agriculture and extension programs to them? Did those who are farmers have a greater opportunity to learn the business of farming through greater involvement and responsibility while at home on the farm? Does it make any difference what method is used as a beginning in farming? What progress was made during their tenure on the farm?

To answer these questions data were collected on sixty individuals who are presently farming or who had farmed for a period of time following graduation in 1957 from thirty-one high schools in Wisconsin.

### Findings

#### Similarities

Individuals who are presently farming and those who have left the farm are similar in the following ways:

1. With one exception members of both groups indicated that vocational agriculture had been helpful to them.
2. There was no appreciable difference between the two groups as to the number of brothers and present occupational status. Seventy-three per cent of those presently farming had two or fewer brothers as compared to 70% of those not presently farming.
3. There was no appreciable difference in regard to the father's satisfaction with farming. When the degree of satisfaction was computed, it was found that 86% of the farming group as compared to 82% of those who had left the farm indicated that the father's satisfaction with farming was rated satisfactory.
4. There was little difference in the kinds or the extent of participation in 4-H or FFA.
5. There was little or no difference of the socio-economic rating of the home farms from which the two groups came.

#### Differences

The differences most evident between the two groups were:

1. Those presently farming were enrolled for a longer period of time



in vocational agriculture. Seventy-eight per cent of the farming group was enrolled for four years in vocational agriculture as compared to 48% of those presently not farming. Eight per cent of the farming group had not been enrolled in vocational agriculture courses as compared to 17% of the non-farming group.

2. Those presently farming had greater knowledge of agriculture subject matter such as soils, crops, dairy cattle and farm management.
3. Those farming at the present time had a higher level of job responsibility while at home on the farm than those who have terminated their tenure on the farm. Thirty-five per cent of those presently farming had general or complete farm labor responsibility while at home on the farm as compared to 17% of those presently not farming.
4. The young men presently farming came from larger farms than did those who are no longer farming. Fifty-five per cent of the farming group came from home farms with one hundred or more crop acres as compared to 38% of the non-farming group.
5. Methods used to begin farming varied considerably. Sixty-seven per cent of those presently farming began their careers in some type of partnership or as an owner. None of those who are no longer farming had a similar arrangement. Eighty-six per cent of those who have left the farm began farming by working for their board and room or working at home for an indefinite allowance.
6. Those who are presently farming came from home farms which had a substantially higher investment. About 30% of those who are no longer farming grew up on a farm which had less than a \$30,000 investment, whereas only 14% of those presently farming came from a home farm of similar investment. Twenty-one per cent of the non-farming group came from home farms where the investment ranged between \$30,000 and \$59,000 as compared with 41% of those presently farming. Twenty-two per cent of those presently farming came from home farms which had a capital investment in excess of \$90,000; whereas only 4% of the non-farming group came from farms of a similar investment.

7. Credit was used more extensively by those presently farming than by those who are no longer farming, 73% vs. 26%.
8. Approved practices in livestock and crop production were used more extensively by the group presently farming than by those who have left farming.

### Conclusions

Young men who are becoming established in farming are interested in post high school educational programs sponsored by departments of vocational agriculture. Thirty-eight per cent of those presently farming participated in educational meetings sponsored by the local agricultural department as compared to only 22% of those who have left the farm. Twenty-nine per cent of the farming group attended meetings sponsored by the University Extension Service as compared to 13% of those who have left the farm. The farming group had a greater degree of participation in short courses at the University of Wisconsin, in college attendance and in special courses.

Working at home for board and room or working at home for an indefinite allowance are unsatisfactory methods for becoming established in farming. Only two of the twenty individuals who began farming under this arrangement are making progress toward establishment in farming.

Higher scholastic achievement was associated with establishment in farming. Eighty-four per cent of those who are presently farming achieved an "A" or "B" average while enrolled in high school as compared to 64% of those who are presently not farming who achieved a similar level of academic standing.

Wages received for work on the farm and wages from work off the farm are still important means for accumulating the necessary capital to make a beginning in farming. About 59% of the farming group indicated that capital invested in the farming business was acquired from wages earned on the farm. Thirty-two per cent of the present farming group stated that wages from off-farm work were invested in the farming operation.

*Not all who desire to do so are farming. Twenty-two percent of those who are no longer farming indicated that farming is the most desirable way of earning a living.*

Individuals presently farming have achieved a high level of job satisfaction. When asked what they plan to be doing ten years from now, 95% indicated they plan to continue in farming.

Considerable financial progress has been made in a decade of farming. Over half of the individuals presently farming have investments in excess of \$30,000 under their control. About 54% who responded to the gross income question reported annual incomes between \$15,000 and \$30,000. Annual increases in gross income ranging from \$1,500 to \$10,500 were reported by 81% of those who are presently farming.

Young persons who are interested in becoming established in farming will continue to be afforded that opportunity; however, family assistance in obtaining financial resources and land will be needed.

Parental cooperation and encouragement play a vital role in assisting young men to acquire knowledge, skills, attitudes and work habits which are necessary ingredients for a successful career in a complex and competitive agriculture.

### Recommendations

In face of a more complex and competitive agriculture, vocational agriculture and extension education programs should be planned and conducted relevant to the needs of individuals who are or who intend to become involved in farming.

Because of the need for larger capital assets and the increasing demand for land, it is recommended that parents of youth who are interested in the business of farming provide family assistance sufficient to enable young men to make a beginning in farming, yet not great enough to stifle individual initiative.

It is recommended that only the more capable individuals with a farm background be encouraged to enter the business of farming. Each prospective farmer should avail himself of agricultural education opportunities while in high school. Following graduation he should consider enrolling in an agricultural college for either the long or short course. While involved in farming he should take advantage of various educational opportunities made available by vocational agriculture departments, the Extension Service and commercial concerns.

## WHO IS TO BLAME?

*Theophilus W. Mungen, Jr.  
Graduate Student, Agricultural Education  
University of Idaho, Moscow*



Vocational agriculture teachers often complain about a lack of cooperation with their school counselors. To provide information on this subject, the writer completed a study<sup>1</sup> designed to ascertain the adequacy of the guidance program for students interested in vocational agriculture from vocational agriculture teachers and guidance counselors throughout Idaho, who were both employed at the same educational institutions.

The objectives of this study were:

1. To determine the methods guidance counselors use to inform students about the opportunities in vocational agriculture;
2. to investigate effective guidance techniques employed by vocational agriculture teachers and school counselors concerning each other's programs within their respective schools;
3. to determine if inadequacy exists in the guidance provided for students by agriculture teachers; and
4. to provide information which can be used by vocational agriculture teachers for effective guidance and counseling.

Two questionnaires were prepared. One was established for responses by agriculture teachers of Idaho; the other for responses by guidance counselors employed in schools that have agricultural departments. Sixty-five, or 97 per cent of the agriculture teachers' questionnaires and 83 per cent of the questionnaires sent to guidance counselors in schools with agriculture departments were returned.

Eighty-eight percent of the guidance counselors stated they were acquainted with the objectives of vocational agriculture and 83 percent of the agricultural teachers said they were knowledgeable of the objectives of the guidance program.

Agriculture teachers and school counselors related to students in the same manner about college careers. However, 89 percent of the agriculture teachers blamed the counselors for channeling the high achieving students into academic courses instead of agriculture. The agriculture teachers also encouraged the better academic students to go to college.

There were indications of need for improved communication between agriculture teachers and guidance counselors. Forty-four percent of the agriculture teachers provided follow-up information to the guidance counselors. There were some discrepancies in the responses. Counselors stated that 75 percent of the agriculture teachers failed to provide them with information as to the placement of agriculture students after high school graduation.

Guidance counselors provided agriculture teachers with information about prospective students interested in agriculture. They sent the prospective students to the agriculture teacher or later conferred with the teacher about the students. Seventy percent of the counselors stated they gave the students information about a career in agriculture.

A comparison of the agriculture teachers' and guidance counselors' responses regarding invitations to agricultural activities was also made. Three-fourths of the teachers replied they had invited the counselor to special activities, but less than one-half of the counselors responded that they had received invitations.

A vast difference was noted between responses of the guidance counselors and the teachers about the agriculture teacher's proficiency in providing the counselor with information about college of agriculture curriculum requirements. Seventy-four percent of the counselors replied they had not received any information about high school courses to aid agriculture students' preparation for a college career in agriculture from the teachers. Fifty-eight

percent of the counselors responded that they did not know the requirements for enrollment in the state agricultural college.

Ninety-six percent of the agriculture teachers used similar techniques and methods for discouraging drop-outs. Most teachers stated they lost few students and those who left the program often had a schedule conflict. A majority of the agriculture teachers stated they worked harder to keep the good students in their programs. However, no agriculture teacher utilized the assistance of the guidance counselor to retain students in the agriculture program. Furthermore, only 55 percent of the counselors faced with keeping students from dropping agriculture sought the agriculture teacher's advice.

One agriculture teacher commented that he would refer the student drop-out problem to the counselor. Eighty percent of the counselors related that they conferred with the agriculture teachers about a student's desire to drop out of school. Apparently the agriculture teachers do not willingly seek the help of the counselor.

About 94 percent of the guidance counselors strongly desired and sought assistance from the agriculture teacher in securing literature and basic communication. Some counselors had a good rapport with the agriculture instructor and materials were available to them.

*Over eighty percent of the counselors reported that they guided high achieving students to enroll in the college preparatory curriculum and placed the lower achieving students in vocational and shop courses.*

### Conclusion

There was significant evidence that agriculture teachers have not been providing occupational information to their school counselors.

A majority of the counselors were not knowledgeable of agriculture teachers' follow-up studies of graduates. Many counselors were unable to obtain this follow-up information. Unless

counselors have follow-up information regarding former student success, their counseling can be based only on generalities.

There were indications the agriculture teachers failed to involve counselors in agricultural activities. The evidence indicated that agriculture teachers had failed to up-date a new counselor. A previous counselor was given an invitation and it was on a continuing basis, but the agriculture teacher had failed to renew his involvement with a new counselor.

Guidance counselors and agriculture teachers were failing the agriculture students in at least one area. Three-fourths of the counselors were not abreast of the high school curricula for agriculture students to meet requirements for college entrance while continuing vocational agriculture in high school. Agriculture teachers make a sample pattern of high school courses available to the guidance counselors for students interested in an agricultural profession.

It was evident that agriculture teachers and guidance counselors were not communicating. The agriculture teacher was asking that the counselor communicate with him and the counselor

was making a similar request. The counselor was concerned with placing high ability students in the college preparatory courses and agriculture teachers also admitted a desire to guide high achievement students into college, but both the counselor and the agriculture teacher blamed the other for wanting to send these students through the college preparatory curriculum.

#### Recommendations

1. Occupational information should be provided by agriculture teachers to guidance counselors.
2. Guidance counselors should inform agriculture teachers of the objectives of the guidance program.
3. Agriculture teachers should furnish the guidance counselors with follow-up information on agriculture graduates.
4. Agriculture teachers should involve counselors in vo-ag activities including actual learning situations so the counselors are informed about opportunities available to agriculture students.

5. Agriculture teachers should provide counselors with high school curricula patterns that will enable students to take vocational agriculture and meet college requirements.

6. Agriculture instructors and counselors should become familiar with high school course requirements for agricultural college entrance.

7. Vocational agriculture teachers and guidance counselors should improve communications and cooperate for students' career opportunities.

8. Guidance counselors should become familiar with all career objectives and opportunities for all students.

9. Agriculture instructors and prospective agriculture instructors should make an effort to enroll in courses in counseling and guidance. Instructors should also become familiar with the interpretation of the test scores.

<sup>1</sup>A Study of the View of School Counselors and Vocational Agriculture Teachers Concerning Effective Guidance for Idaho Students Interested in Agriculture. Master's thesis. University of Idaho, Moscow, 68 p. 1971.

## CONTINUING INSTRUCTION IN PRODUCTION AGRICULTURE

Truett C. Lewis  
Vocational Agriculture Instructor  
Mt. Hermon High School, Louisiana



Everyone goes for something new. Teachers are no exception. With the advent of the new course of study in agri-business, there may be a tendency to let the pendulum swing too far in that direction at the cost of a most valuable area of our total program — production agriculture. Many departments in rural areas are having difficulty initiating the new program because of a lack of work stations plus administrators who do not understand or recognize the value and place of such programs.

Because of our location and past history, the rural school can serve a valuable service in balancing the total program by continuing to offer instruction in the area in which we can be most effective — production agriculture. We live and work in a state which has a great record of agricultural production and growth. If the teachers of vocational agriculture abandon production agriculture, what will be the national food situation ten years from now?

At a time when the reserve food supplies of our nation are dwindling and the population trends indicate a greater need for food and fiber, it concerns me that many of our colleagues are going all out for agri-business instruction.

Many students do not have the facilities nor the future potential for production agriculture, but every department has students who need and want courses of this nature. Teachers who willfully ignore this need are not only depriving such students of valuable training but also may be weakening our state and nation for the years that lie ahead.

I like to check what graduates are doing ten years after graduation. In my 28 years of experience I find it more realistic because it takes about ten years for a student to get around to doing what he really wants to do. When he graduates from high school he has to experiment with the easy city job he has heard about all his life. It usually takes 2 to 3 years for him

to realize this was a mistake. Now he is ready to become a farmer. If he can finance it and if he can locate an available place, he will return to his home community and use the training he received in high school. Give him about two years to get established and he will show you some production agriculture.

In my school community we have many students who return to the farm. In the graduating class of '60 we had 18 students in vocational agriculture. This was every senior boy in our school. Ten years have passed since these boys graduated. Four of the 18 finished college. One has a Ph.D. in Psychology and is an Executive Secretary for Texas State YMCA and YWCA. The other 3 obtained a B.S. in Agriculture. One of these is with the Federal Land Bank; one is an officer in the Marines and one is a farm owner-operator. Eight of the 18 are now active farmer-owners in our community. Four of the 18 are in ag-related occupations. One is with an oil distributing company serving farmers and one is with a local tire company. Two are in sales work. One sells cars and trucks and one is with a L-P gas company. I consider 16 of these 18 students, or 89%, working in the area for which they were trained.

We live in a dairy area and all of these young men are commercial dairymen. Their farms will average over 160 acres each and their milking herds will average 60 to 80 head of milking cows plus heifers and calves. Their land, building, equipment, and livestock inventory will average over \$75,000 per man.

If these boys had been offered a course in agri-business, every one would have taken it! Our state and nation would have lost 8 good farmers and they would have been unhappy the rest of their lives.

I dare any economist to check the net worth of these 8 young men and compare it with the net worth of 8 off-farm students in any community. Why train a boy in a vocation in which he will work for someone else for pennies when he can work for himself for dollars? Under present conditions the boy who sticks with production agriculture will be ahead 10 years from now because most everyone else will be in another field. Let us not overlook the continuing importance of instruction in production agriculture, especially in rural areas.

## SIGHT AND SOUND IN OCCUPATIONAL INFORMATION

C. Jordan Hudson, Jr.  
Center for Occupational Education  
North Carolina State University, Raleigh



Do you as a teacher of vocational agriculture find that a limited number of field trips and tours can be conducted during the school year? Factors such as distance, expense, and time missed from

classes restrict the number of activities of this nature that can be used to show students the various occupations available in metropolitan as well as rural areas. Why not do the next best thing? Bring the sight and sound of people working in industry to the students.

Through the use of 8 mm films and tape recorders it is possible to explore the jobs available in industry. These types of instructional aids are gaining popularity in the classroom and laboratory. Because of their versatility, they can be used alone or with other instructional techniques to bring personalized information about the world of work into the classroom.

You do not have to be a professional photographer to produce your own 8 mm instructional films. Many modern 8 mm cameras are so automatic that very little experience is necessary. In fact you may find that some students will be delighted to assist you. The super 8 mm films, because of their larger projected image, are favored over the regular 8 mm films for classroom viewing.

#### Some Procedures to Follow

After choosing the activity you wish to film, each phase of the activity should be planned carefully. First, you will want to contact the individual in charge of the business or industry and obtain his permission to film different activities and jobs. Make the first per-

sonal contact the keystone to obtaining future involvement and cooperation. You have to convince him of the importance of the project and show him the importance of his contribution. All the people involved are due an explanation.

To form a concept of the entire operation, have someone give you a guided tour of the business or industry. Arrange for introductions to those in charge of different sections and obtain their approval, guidance and cooperation. During the tour, notes should be made as to what activities should be filmed, how, and when. Afterwards, a list of activities should be planned including the sequence of events and appropriate time schedules. This will help prevent excessive film time at the beginning and hastily shown sketches toward the end. An effort should be made to film each activity separately and in sequence so that one can follow and distinguish the different jobs in a continuous series.

After the initial personal contact and tour of the industry, the Dictionary of Occupational Titles may be used to identify as many of the jobs as possible. This will prove beneficial in identifying personnel performing their different jobs.

At this point you should be ready to prepare the title and end frames for your movie. These frames should be neatly constructed. If your camera has a through-the-lens viewfinder, you can easily determine the legibility of the frames. Reading the instruction booklet is a must in learning to use the camera. Consult with persons who understand the operation of a movie camera.

During the actual filming, the photographer should have someone available to keep time and assist with the equipment. Each scene should be brief,



although allowing enough viewing time for students to comprehend the activity.

After filming a particular job or series of jobs, a tape recorder should be used for interviews and to capture the noise and vibrations which might be associated with the job. A portable cassette tape recorder will be suitable for the initial recording. Be sure that everyone involved talks directly into the microphone. You may not want to use all of the information that is taped; therefore, make sure that enough interviews are recorded to permit editing.

### Some Project Objectives

The following are some objectives that should be kept in mind while filming and recording:

1. Capture the physical features of the environment. These features should include such things as mobility on the premises, sanitation, lighting, noise, accident hazards and other physical characteristics.
2. Capture the psychosocial features, such as the predominant age range of employees, male versus female, isolated task or joint operation, opportunity for conversation, and close or occasional supervision.
3. Capture the physical demands of work performed, such as sitting or standing, visual acuity, color vision, finger dexterity, weight lifted and other physical demands.
4. Capture the psychological demands of work performed, such as

memory and other mental demands, precision and other pressures, and repetition or variety.

5. Capture the psychological rewards of work performed, such as freedom of behavior; responsibility; exercise of initiative, judgement and creativity; and direct or indirect service to others.

6. Give the pay, benefits and promotions available.

After the film is developed, a taped script should be prepared to be coordinated with the 8 mm film. It should serve as a narration of the film explaining the scenes as well as containing interviews with employees while they are performing a particular job. This phase will require a second tape recorder and will probably be the most time consuming facet of the operation. This script will also enable others to view the film without the actual producer being present.

Since most motion pictures are introduced with some type of musical arrangement, it may be a good idea to include some music before the beginning of the film to help set the mood and tempo for the audience.

If you really want to get sophisticated and have the budget to take care of it, some super 8 mm films can use either magnetic or optical sound tracks. Another very practical method is to have the film put into a closed-loop; a plastic container similar to the stereo tape cartridge. This closed-loop cartridge requires a special machine to

show the film but the time saved will be well worth the small investment. The cartridge is easy to place in the machine and show, requires no rewinding, students can operate and view it many times and it can be stopped when desired to examine a particular frame.

### Uses for Your Films

The 8 mm film and tape can be used for the following purposes:

1. As an individual counseling session about jobs where the teacher or counselor can stop the film and tape recorder to answer any questions the student may have.
2. As a group counseling session to show the different jobs at a business or industry.
3. As information about jobs for an occupational information or introduction to vocations course.
4. To take the place of a field trip where distance is a hindrance to making such a trip.
5. To supplement a field trip to business or industry; point out those activities which should be observed more closely.
6. To supplement instructional techniques in providing personalized information about the world of work.

As you obtain additional experience producing this type of instructional material, your innovativeness will permit you to try many different techniques

that, " . . . due to lack of time and money at the local level, preparation of audio-visual aids ought to be accomplished by subject-matter specialists at teacher-education institutions".

Even where the cost of videotape replay equipment or television receivers is within the grasp of the public high school, it is doubtful high schools will be in a position to produce effective television tapes for their own use for some time to come. It is more likely that this service will be provided by institutions of higher learning. The State of Wisconsin has had under consideration for several years, a plan providing for a network of educational television stations. Indications are that these stations would be located for the most part on the campuses of the State University System and University of Wisconsin-Madison.

It is probable, that students enrolled in vocational agriculture at the high school and post high school level in the future might receive a part of their instruction by television from one or more of these stations.

Several questions are pertinent to the topic of preparing television tapes.

1. Will learning be consistent for all subject matter?
2. What method of teaching is most appropriate for learning via television?
3. What is the most appropriate method of evaluating learning via television?
4. What is the influence of attitude toward television teaching on subsequent learning?
5. Do farm and non-farm students learn equally as well when taught by means of videotaped instruction?

The principal purpose of the study on which this article is based was to compare the effectiveness of three methods of teaching two units of agricultural subject matter using two styles of presentation.

The study was conducted with sixty-six freshmen and sophomore students who enrolled for and completed the basic crop production course at Wisconsin State University-Platteville during the spring semester, 1969. The course included the teaching-learning activities of two units of instruction. Each unit of instruction included four class periods of fifty minutes each.

Students were assigned to one of six treatment groups and treatments were randomly assigned to groups. A replicated 2 x 3 factorial design was adapted. Each of the two units of instruction was presented live by method 1, lecture, method 2, demonstration, and method 3, student participation, which

consisted of student committee reports. Videotapes were made of these live presentations and replayed for the students assigned to the three remaining groups. The dependent variables were the students post test scores, measures of both cognitive and affective learning. Total cognitive learning was measured as well as its' components, recall and comprehension. Three classification variables were also investigated. They were the attitudes of students toward television teaching, the home background of the students, and the previous training of the students in vocational agriculture.

### Summary of Findings and Conclusions

All three methods of instruction were equally effective, regardless of unit of instruction, when learning was measured in terms of recall, comprehension, and total cognitive learning, and affective learning. Students in the videotaped instruction groups learned as much as those in the live instruction groups when learning was measured by the same means. The single effects of method of instruction or style of presentation did not have a significant influence on cognitive or affective learning.

All three methods of instruction were equally effective regardless of style of presentation or unit of instruction when learning was measured in terms of the students ability to recall information. The same findings were true for total comprehension and for affective learning. However, there was a significant difference in comprehension learning due to the interaction affects of method of instruction and style of presentation. Students taught by means of videotaped demonstration scored significantly lower than students in all other groups. The videotaped replay of teacher demonstrations as a means of teaching College of Agriculture freshmen had limited effectiveness.

The attitudes of students toward videotaped instruction did not change significantly during the experiment, nor did the pre-experiment attitudes influence performance on the criterion tests. Students who were unfavorable toward television teaching performed equally as well as those students who had favorable pre-treatment attitudes.

With the exception of the group of students taught by videotaped demonstration, all comprehension scores were significantly higher than all recall scores. Tests measuring comprehension learning offer better alternatives to evaluating the effects of teaching

methods. Traditionally, we construct examinations which measure learning at the recall level.

Finally, students who had not had vocational agriculture in high school performed as well on the criterion measures as those who had vocational agriculture. Home environment of the students did not significantly influence their performance as students reared in urban settings and those from farm environments performed equally as well.

### Recommendations and Implications

Teacher training institutions will be called upon to take a more active part in solving the dilemma challenging the vocational agriculture instructor. On the basis of the research findings reported herein, it is recommended that:

1. efforts by colleges of agriculture to videotape learning activities for students be expanded. Students enrolled in agricultural sciences perform as well when taught by of videotaped instruction as they do when taught by means of live instruction. Videotaped instruction offers an effective means of supporting the competent teacher in the classroom.
2. the videotaping of selected subject matter presentations for replay should incorporate sufficient variety in the choice of method of instruction.
3. greater emphasis be given to testing cognitive learning in the agricultural sciences at levels higher than recall.
4. further research be conducted to evaluate the longrange effects of videotaped instruction on students attitudes.
5. additional research be conducted at both the high school and college level to test the effects on learning in of videotaped presentations of selected subject matter using appropriate methods of instruction.

(1) Scanlon, James. "The Relative Effectiveness of Supplementing Programmed Instruction with Block Review vs Spaced Review." Unpublished doctoral thesis, Cornell University, Ithaca, New York, 1967.

(2) Advisory Council on Vocational Education. *Vocational Education, The Bridge Between Man and His Work*. Office of Education, United States Department of Health, Education, and Welfare, Publication 1, Washington, D.C., 1964.

(3) Becker, Allen J. "Audio-Visual Needs of Wisconsin Vocational Agriculture Instructors In Secondary Schools." Unpublished M.S. thesis, Wisconsin State University-Platteville, 1969.

## VIDEOTAPED INSTRUCTION IN VOCATIONAL AGRICULTURE

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The general expansion of vocational agriculture has resulted in an awareness of several critical deficiencies.<sup>1</sup> Typical shortages are, 1) teachers trained in special subject matter areas, 2) instructional materials in these areas, and 3) media through which these instructional materials may be presented. The report of the National Advisory Council on Vocational Ed-

ucation indicates that limitations of the type noted above are typical of the smaller rural community high schools having programs in vocational agriculture.<sup>2</sup>

In reference to the shortage of teachers of vocational agriculture trained in the specialty areas, instruction by means of videotape replay promises to extend the functions of the teacher to include a broader content and involve increasing numbers of students.

The approach to the teacher shortage problem taken by many educators has been to recruit and provide more

teachers. It would appear that the addition of more teachers, should they be available, is not the complete answer to the problem. The employment of such measures as videotaped instruction, audio-tutorial learning carrels and programmed learning may be plausible answers to the problem of increasing the effectiveness of the teacher in the classroom.

Following such an approach, Becker set out to determine the audio-visual needs of Wisconsin vocational agriculture instructors.<sup>3</sup> Practically all the respondents in the Becker study stated

# THE IMPACT OF PARTICIPATING EXPERIENCES FOR AGRICULTURAL EDUCATION MAJORS

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Teacher education in agriculture has enjoyed a rich heritage over the last fifty years. Much of the agricultural success of this country can be traced to schools where successful programs of vocational agriculture have been in operation. Practical agricultural experience has been a requirement and a proven asset to teachers and students of vocational agriculture. The student of vocational agriculture has always conducted and participated in supervised occupational experience programs. Since all teachers of vocational agriculture should have had training in this area, they are cognizant of the fact that supervised experience is contributory to the successful performance of one's on-the-job responsibilities. This would be true in professional teaching circles as well as on the farm or agribusiness training stations.

The teacher who has had a pre-professional teaching experience should be expected to adjust to a new situation more quickly than one who has not had this opportunity. Based upon this belief, the writer, in 1967, conceived the idea that a participating experience program for students preparing to teach vocational agriculture could prove beneficial to the teacher education program at West Virginia University. The birth of

this idea resulted in serious thought being given to operational procedures, establishing of guidelines, locating cooperating agencies, establishing a program of student activities, supervision of student responsibilities as they relate to teacher education personnel, the local school staff and the cooperating teacher of vocational agriculture. At that time it had not been determined whether the agricultural education trainees would welcome a program of this nature.

The program was planned to provide experience in a productive work setting to derive desired educational outcomes. The reader will, no doubt, recognize this as embodying the philosophic concept of learning to do by doing. That is, the prospective teacher is placed for a definite period of time with a competent teacher of vocational agriculture to develop planned professional competencies in an actual teaching situation.

**This is not to be confused with student teaching since this program normally precedes it. This phase of professional involvement actually gives strength and support to the student teaching experience.**

Some educators believe that supervised experience programs form the core for vocational education. This philosophic view has, through creative effort, led to many superior programs. John Dewey was a proponent of "learning by doing." Through progres-

sive educational experience programs the student actually learns from his own experiences in addition to what the textbook and the teacher have revealed. Vocational educators are aware that there is a continuous interaction between the student, objects, and other persons in his environment.

From this philosophic concept of continuity one could conclude that what the individual has acquired in the way of knowledge and skill in one situation may be applicable in situations that follow. Dewey, as well as the educator of the seventies, would say that the above process goes on as long as life and learning continue.

As stated earlier, this program was initiated at West Virginia University by the writer in 1967. The first year was viewed as experimental. There were many "growing pains" with which we had to deal, but an evaluation at the end of the training period indicated that the seven participating students had definitely grown professionally. They not only had advanced in competency development, but had earned money to be applied to college expenses the following year.

The program is now in its fifth year of successful operation and has accommodated forty-eight agricultural education majors. Twelve have been scheduled for placement during the summer of 1971. Of those participating, twelve have graduated. Ten are teaching and two are in the armed services.

Based upon these data, it appears that the program has a great affinity for holding the graduate in his chosen area of preparation.

The cooperating agencies have been County Boards of Education. During the short life of the program, twenty counties have been involved with carrying out the program. The periods of involvement by counties vary from one to five years (summers). Several counties that have been involved in placement have hired the graduates which they helped train. The graduate already knew the local school situation and the period of orientation became shorter.

The placement period for work experience normally begins around the middle of May and extends to the third week in August. During this period the student is involved in as many professional experiences as possible to further acquaint him with the job of the teacher of vocational agriculture. In connection with these experiences, the student in placement earns two college credits in agricultural education. He prepares a paper based on his summer activities or completes a research project through which both the student and the local school program might benefit. It is believed that this procedure causes the student to apply his talents to the task at hand in a more dedicated manner.

Student selection has not been a difficult task. The financial part of the program is handled through the University Office of Student Financial Aid. Therefore, the student must be in good academic standing and declared eligible by Financial Aids Personnel.

On-job supervision is provided by a competent teacher of vocational agriculture. One member of the teacher education staff makes one or two visits to the school each summer, preferably near the beginning and the middle of the work period, to satisfy his interest in the student's educational program and to confer with the school officials relative to time reports, pay periods, etc. This is essential since the county school system furnishes part of the funds.

Participation in the program has not been limited to any particular grade level. Those benefiting have ranged from high school graduates ready to enter agricultural education to college seniors who have completed student teaching. All have benefited, but there

is no doubt that the benefit derived is commensurate with the level of academic training completed. The on-job responsibilities of the student should be in line with his level of academic training.

It is essential that the student be made aware of his obligations and responsibilities to the county school system, the school to which he is assigned, the vocational agriculture teacher, the people of the community, the agricultural education department, the educational institution from which he operates and to himself.

The participant normally reports to work three or four weeks before school closes in the spring. This affords an opportunity for him to gain experience in the classroom, in the local community with experience programs, and other areas of program development, district and state level activities.

A suggested program of participating experiences is designed as a guide for the student and supervising teacher. An example of activities included in the plan follows:

## May

1. Observation of regular Vo-ag teacher in action.
2. Assist the teacher in closing the school term.
3. Meet the school faculty and participate in an activity involving them.
4. Attend and assist with FFA activities.
5. Make supervisory visits with the teacher.
6. Look over the teacher's summer plan.
7. Closing school inventory.
8. Keep record of daily activities.

## June

1. On-farm instruction with teacher.
2. Meet people in community.
3. Work in vo-ag shop.
4. Assist with training soil judging team.
5. Study teachers filing system.
6. Visit prospective students with teachers.
7. Study local course of study.
8. Assist with community projects.
9. Attend State Vo-Ag Teacher's Conference.

## July

1. Attend State FFA Convention.
2. Supervise students on home farm.
3. Assist in preparation of County and State Fair exhibits.
4. Visit young and adult farmers with teachers.
5. Take soil samples for testing.
6. Attend local FFA meetings.
7. Prepare news release for local paper.

## August

1. Assist with FFA Officers Leadership Camp.
2. Prepare final report for evaluation of summer experience.
3. Get ready to open a new school term.
4. Supervision of experience programs.
5. Monthly activities report and time reports.

The agricultural education personnel at West Virginia University feel that this pre-professional experience has enriched the teacher education program through:

1. Coordination of theory and practice.
2. Increased development of understanding of other people and human relations skills.
3. Giving the student a greater sense of responsibility, and greater reliance on his own judgment.
4. Giving a greater sense of professional maturity.
5. Giving the student a greater understanding and appreciation of the job of the vo-ag teacher.
6. Giving the student an understanding of his place in a total school system.
7. Providing contacts that are useful in later performance of professional responsibilities.
8. Local school system benefiting from jobs performed by the student trained under direct supervision of the local teacher of vocational agriculture.
9. Strengthening the trainees' student teaching experience.
10. Making the county school system a part of the teacher education program.
11. Giving the agricultural education major an opportunity to earn while learning.



# NEWS TO ME

## A Repeat Reminder:

The South Carolina Association of Young Farmers will host the fifth National Young Farmer Institute November 28-December 1, 1971 in Greenville, S.C. at the Jack Tar Poinsett Hotel. The Institute had its beginning in 1967 when a small group of Young Farmers from several states conceived the idea of a national meeting for the purpose of exchanging ideas and information. From that small beginning, the Institute has grown each year and the fourth annual meeting in 1970 at Wichita, Kansas was attended by approximately 450 delegates representing about 22 states. The previous Institutes were held in Ohio, Texas, and Pennsylvania. Approximately 500-600 delegates from at least 30 states are expected for the meeting in Greenville, S.C. this year. Several states have indicated that they will be well represented with large delegations.

(Hugh McClimon)



This quote from the Rev. Giles C. Ekola, Senior Pastor, Calvary Lutheran Church, Alexandria, Minnesota: "A common concern between Vocational Agriculture and the farm organizations is for the wise use of resources. From the exposures I have had to Vo. Ag., I have come to appreciate the stewardship of the earth philosophy that it communicates. The policies of the farm organizations also reveal a continuous concern for constructive soil and water management.

"As a consumer dependent upon American agriculture, I hope that more and more Vo. Ag. groups and farm organizations will affirm their common ground. As a pastor with relationships with consumers, Vo. Ag. students, farmers, and members of farm organizations, I believe it is wholesome for these common concerns to be realized more fully."



Bankers with an understanding of today's agriculture appear to be in short supply in many rural areas. Some banks, particularly in the Midwest, early recognized a need for highly skilled people with agricultural backgrounds. However, there are still many opportunities in areas where changes in agriculture have been so rapid that local banks have not been able to keep pace with a demand for people trained to deal with an individual farmer's pressing need for capital to run his business.

Twenty years ago a farmer produced most of the feed for his livestock, marketed products locally, used inexpensive horse-drawn equipment, and operated on relatively small acreages. Modern farming has changed all this and in many occupations in agricultural business in the areas of banking, credit, insurance, land appraisal, and marketing, an employee must have a knowledge of farming operations, skills, and farming know-how.

Commercial banking firms are employing agricultural college graduates who have combined agricultural education with studies in economics and business administration.

There is little opportunity in agricultural college classes to learn skills and get practical experience in farming; therefore, the agricultural work experience you obtain while in high school is important. It will help you understand better some of the agricultural course work in college.

(New Holland News)



## GENES FOR TOMORROW

Plant explorers are running a critical race against time. Their goal: collect as many of the world's primitive and wild plants as possible in the next 10 years. By then, scientists fear, much important uncollected germ plasm will be lost.

Everywhere the march of progress, especially in developing countries, is decimating plant communities. Bulldozers uproot valuable species in the building of towns, roads, factories, and airports. Dams drown ancient habitats.

Goats graze many plants out of existence. And primitive varieties such as melons, once grown in rich diversity for local peasant marketplaces in Asia are no more, their place taken by a few super varieties adapted to broad regions.

Civilization depends upon crops that are grown far from their centers of origin. Paradoxically, of all the major crop plants making use of the bounty of U.S. agriculture, not one originated within our borders. Our complex agricultural system rests entirely on introduced plants that have been nurtured and dispersed over the centuries by farmers and plant breeders.

Valuable germ plasm has also been collected by USDA plant explorers who since 1898 have made over 150 global collecting expeditions and introduced some 350,000 collections. Many collections were put to good use but were eventually discarded so that today we retain about one-tenth of the early introductions in their original form.

(Agricultural Research, USDA)



The National Safety Council is going all out to reduce accidental drowning. Materials and films are available, not only from the Council but also from Red Cross, Coast Guard, extension service, manufacturers of water recreation equipment and boats, etc. Also, there are proven programs you could initiate such as NSC's "Operation Waterproof 4th Grade."

NSC has a new water safety film titled *FIND A FLOAT*. Many people drown needlessly each year often in full view of friends on the shore or in boats who stand by helplessly. The people have within reach means to save drowning victims — only they don't know it. *FIND A FLOAT* shows viewers many ordinary items—poles, branches, spare tires, oars, picnic paraphernalia, etc. — which can be used to keep a person afloat until help can reach him. If viewers could remember to use these or other improvised flotation devices, many lives could be saved. The film is color, 16 mm, 11½ minutes. Price: \$75, with 20% discount to NSC members, 10% to governmental agencies. Stock No. is 079.01.

