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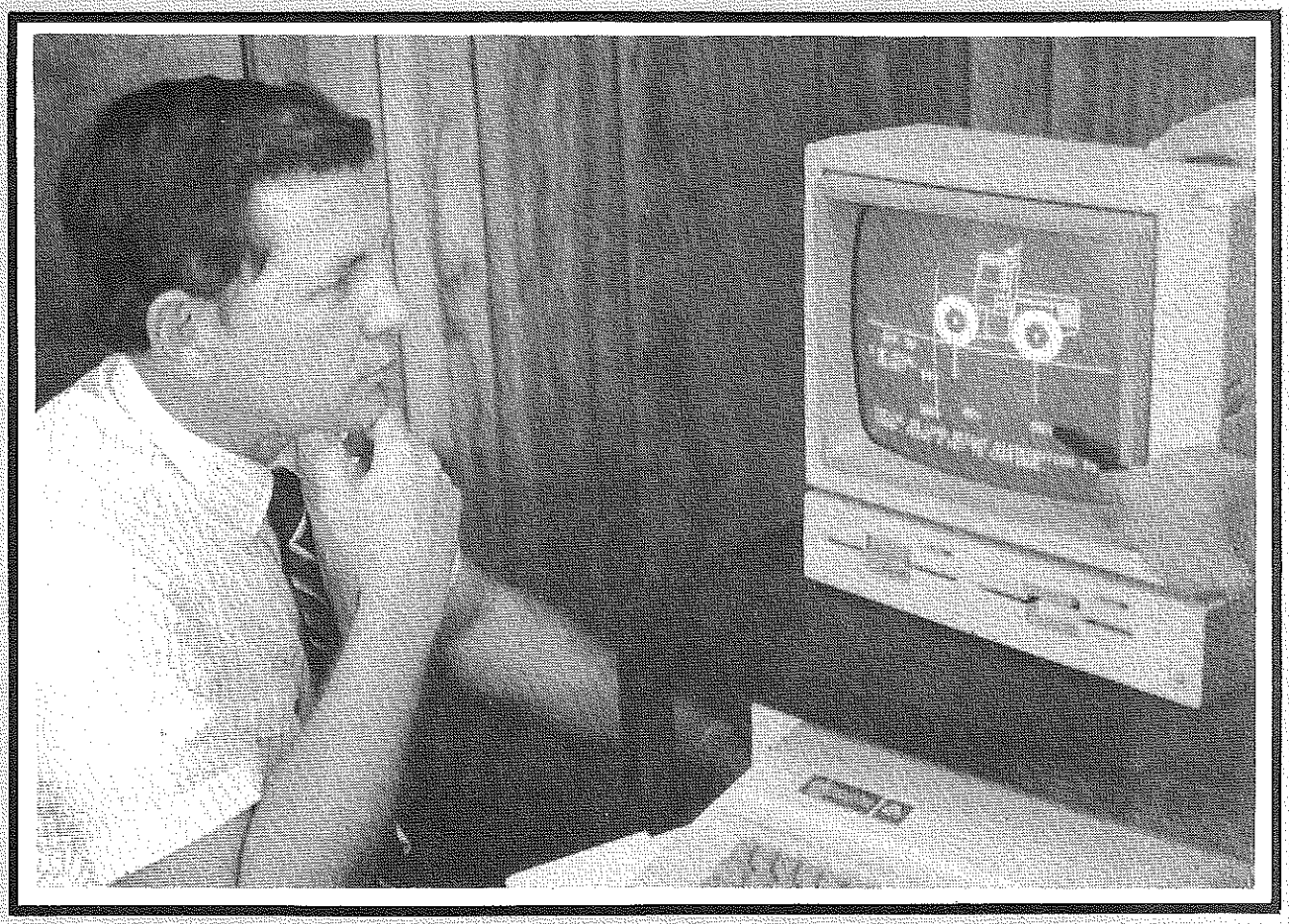

THEME: Agricultural Opportunities for Rural Nonfarm Students

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ARTICLE SUBMISSION

Articles and photographs should be submitted to the Editor, Regional Editors, or Special Editors. Items to be considered for publication should be submitted at least 90 days prior to the date of issue intended for the article or photograph. All submissions will be acknowledged by the Editor. No items are returned unless accompanied by a written request. Articles should be typed, double-spaced, and include information about the author(s). Two copies of articles should be submitted. A recent photograph should accompany an article unless one is on file with the Editor.

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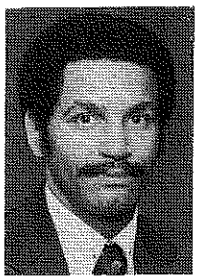
You Can't Go Home to the Farm



By Blannie E. Bowen, Editor

(Dr. Bowen is an Associate Professor in the Department of Agricultural Education at The Ohio State University.)

The time is rapidly approaching when it is virtually impossible to live and work on a farm. This is true even for individuals who acquire clear title to a farm through an outright purchase, an inheritance, or by whatever means. According to U.S. Department of Agriculture data published in USA Today earlier this year (April 22, 1987, p. 18), owning a farm in America was a bad risk over the last five years. The USDA data show that farm land prices nose-dived from $823 per acre in 1982 to $595 per acre last year. The 1987 average is projected to be $548 per acre. These figures suggest that farm ownership must have immense sentimental value because economically it's making even less sense.

This situation did not occur without warning. Agricultural economists have written for years that this country needs fewer farmers. They are also projecting that this trend will continue into the next century. Table 1 shows why economists can accurately predict such trends.

Data in Table 1 show that U.S. farmers must spend an average of only three (3) hours this year to produce 100 bushels of corn. They will need only seven (7) hours to produce 100 bushels of wheat. A bale of cotton can be produced in five (5) hours. One should logically expect today's farmers to be much more efficient than those of 200 years ago when 90 percent of all Americans were farming. For a variety of reasons, only two percent of Americans are now involved in farming.

Table 1
Hours Needed to Grow Major U.S. Crops

Crop	Hours Needed In 1787	1987
Corn (100 bushels)	344	3
Wheat (100 bushels)	373	7
Cotton (1 bale)	601	5

Source: USA Today, May 4, 1987, page 1A.

As larger farms become more mechanized and technological innovations run rampant, economic principles more so than sentimental reasons will determine who enters and stays in farming. For most Americans, this translates into a very simple message that Thomas Wolfe, the noted writer, uttered so brilliantly. Wolfe said you can't go home anymore. Quite honestly, you should not expect to go home and farm either. This should not be a startling revelation for anyone who has followed trends in agriculture the past 50 years. Unfortunately, knowing trends and accepting them are two separate and distinct matters.

With these new realities staring Americans in the face, agricultural education is beginning to accommodate these trends. Program modification and diversification seem to be key ingredients as agricultural education in general and vocational agriculture in specific meet challenges confronting contemporary society. This issue examines some of the problems inherent when students from rural areas, either by choice or circumstance, must be labeled rural, nonfarm.

A parallel question not asked enough is what happens when young and adult farmers also become rural, nonfarm residents? All too often, solutions involve divorces, suicides, alcoholism, drug abuse, financial chaos, and a host of undesirable endings. A ray of hope appears through the clouds when financial counseling, job re-orientation, entrepreneurship training, and similar programs are delivered by agricultural and educational agencies.

As vicious and distasteful as the situation seems "down on the farm," merely hoping for a brighter day is far from an answer. Because agricultural educators pride themselves on using the problem solving approach to instruction, they are in a unique position to provide the needed direction. A viable profession has the ingenuity, creativity, and the desire to solve problems facing contemporary society, including the farm sector. If agricultural education cannot deliver, i.e., solve such problems, it should cease to exist as a profession.

Individuals who prepared articles for this issue show that agricultural educators can do the job. These articles offer possibilities that have moved beyond the laboratory or experimentation stage. Many are being successfully implemented by teachers across the U.S. Others in the profession must join the bandwagon to prove that Wolfe was only partially right. When students live in a rural area, they can go home — but not to a farm or ranch. It is safe to bet the ranch on this. Dave Howell is to be commended for assembling articles on this timely topic.

About the Cover

Larry Ermis, a former teacher of vocational agriculture and currently curriculum specialist at the Instructional Materials Service at Texas A&M University, considers a computer graphic for inclusion in instructional materials for agricultural mechanics courses being developed for students of agricultural science in Texas. Ermis is finding that a variety of methods must be used to provide nonfarm students with technical competencies needed for successful entry and advancement in agricultural industry. (Photo courtesy of James Christiansen of Texas A&M University.)

Three Myths About Agricultural Education

By David L. Howell, Theme Editor

(Dr. Howell is an Associate Professor in the Department of Vocational, Technical and Adult Education at the University of New Hampshire, Durham, New Hampshire 03824-3599.)

Did you know that there are students in your school who want to learn more about plants and animals but don't understand how their interests relate to your program? Of course you do! You also know they may not have an interest in cows and corn, but if they saw how you relate your instruction to small animals or greenhouse production, they would find it very interesting. What is the image of your program in the school and community? Are the guidance counselors telling interested college preparatory students to forget about taking vocational agriculture because it won't prepare them for college?

There are three great myths that we must destroy before students, parents, and teachers can view our programs as having opportunities which go beyond cows and corn. They need to know that the knowledge and skills can lead to many careers in agribusiness.

Myth #1 — Vo-Ag and Farm Students

Many high school students aren't aware that vocational agriculture has the majority of its occupational opportunities off the farm. With all the economic problems farmers are facing, many aren't aware that we still have 25% of our work force employed in an agriculturally related business where there are many opportunities available. Are we making these opportunities known to our community? As you can learn from Dr. James Christiansen's article in this issue, Texas is now developing curriculum materials and semester courses in floral design, laboratory animal technology, and aquacultural technology, to name a few.

Our vocational agriculture programs aren't just for students from farms and haven't been since the 60s. Yet what do people think of when asked what you teach?

Myth #2 — Vo-Ag and Nonfarm Students

We must not only teach our subject matter, but must also find ways for our students to learn important skills and develop their leadership potential. Dr. Philip Ogline, in his article in this issue, identifies ways we can be creative in using our home facilities and community resources for experimental application of the subject matter covered in the classroom. Stream improvement and wildlife habitat development provide varied skills relating to a class in wildlife management. Much can also be learned from a backyard rabbit project or as Dr. Christiansen points out in his article, from raising honey bees or feeding steers in a neighbor's corral. What landscaping needs to be done around the schools in the community? Ten acres or five hogs isn't the only way to learn important job skills.

What about the FFA? Are we doing all we can to encourage everyone to participate? We now have many activities and contests and it is difficult for you to do everything. Use your alumni to help prepare certain teams. They are interested and knowledgeable. It is important to have as many students involved as possible so everyone can benefit from the FFA and its leadership activities. Be sure to notify the community of your activities so they are aware and informed, and the members recognized.

Myth #3 — Vo-Ag and College Prep Students

As Dr. Robert Martin writes in his article, agricultural technology requires well trained and educated individuals. People need to know that we are teaching for tomorrow's needs in agribusiness. With many of our college students majoring in an area of agriculture without any agricultural experience, they are finding it difficult to locate the employment they want. Our vocational agriculture students, therefore, have a major advantage of possessing many of the skills needed for employment before entering college.

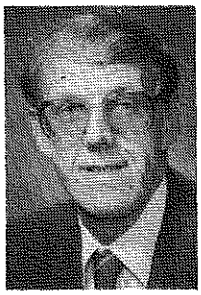
Exposing the Secret

Let's not keep what we are doing a secret anymore! Let's destroy these myths and let everyone know that we are teaching "applied" biology, botany, and mechanics. As Dr. Martin suggests, we shouldn't sell the farm to look for the diamond mine — we have it! Let's help others discover what we can offer. Agribusiness has many areas that have great employment opportunities and we can prepare students for them. If we share our secret with others and expose these myths for what they are, many more of us will be concerned with having too many students.

Where Do I Start?

Why not start with your advisory committee members? They can help identify the employment opportunities and skills needed. These individuals can also tell the community about your secret and destroy the myths. The articles in this issue will give you many more ideas.

Meeting the Needs of Rural Nonfarm Students in the East



By Philip H. Ogline

(Dr. Ogline is a Vocational Agriculture Instructor at Garden Spot High School, New Holland, Pennsylvania 17557.)

Agriculture requires the services of about 18.3 million people to store, transport, process and merchandise the output of the nation's farms. This totals approximately one out of every five jobs in private enterprise. In addition, providing services and supplies to farmers requires approximately four million more employees knowledgeable in agricultural production. Considering that farmers make up less than 3% of the population, there are very few individuals who possess farm experience. How will students of the future get this much needed experiential exposure to meet the agricultural employment competency needs? Some suggestions proven successful at the Garden Spot High School are provided in this article.

Changing Situations

During the fall term of 1986, 2,072 students were enrolled in the Pennsylvania State University's College of Agriculture. Approximately, 1,658 or 80% lacked farm backgrounds or came from limited farm backgrounds, according to an estimate made by the College's Office of Resident Education. In Pennsylvania, secondary vocational agriculture programs are experiencing the same trends. In many Eastern areas, population is increasing, farmland is vanishing, wildlife habitat is diminishing, and the student population is coming mostly from suburban environments. Coupled with this is the increase in technology which requires a stronger agricultural background than before.

The depressed agricultural economy has forced many supportive agribusinesses to eliminate their Supervised Occupational Experiences (SOE) training stations. This decreases the opportunity for high school vocational agriculture programs wishing to provide students meaningful instruction with a supervised occupational experience program. Changes in curriculum content and experiential exposures must be considered to meet the constantly changing needs of students and agricultural industry.

Considerations For Change

Education is only one of the tax supported program experiencing adversity and fewer resources. Vocational agriculture programs must be kept viable and of high quality to provide convincing evidence for continued support. We cannot take the attitude that because less support is available, we will do less. Negative reactions will provide our critics the evidence they need to further curtail support or eliminate it entirely. The youth and adults we serve will be directly and permanently affected. Meeting the needs of rural nonfarm students demands flexibility.

Creative use of home facilities and community resources for experiential application must be adapted in a holistic curriculum approach. Small scale "backyard farming" can provide many necessary employment competencies. School farms/land laboratories, both for secondary and postsecondary students, can serve as an excellent training station for individual and group learning experiences. If you lack these facilities, look for landowners, industry, municipalities, community organizations or conservation agencies that own facilities where "hands-on" agricultural competencies can be taught. These opportunities are unlimited. Service clubs or sportsmen clubs have financial resources, limited labor input, and are always looking for individuals/groups to assist with community service activities such as woodlot management, stream improvement, wildlife habitat development, or construction projects at local parks or fairs where varied skills can be learned. Do not forget "Learning By Doing" projects in broiler production, swine, dairy calves, rabbits, pheasants, or fish rearing that can be organized as a co-op enterprise to enhance financial as well as management decision skills. We must think of careers which encompass all areas of agriculture

Many agricultural careers require advanced education. Postsecondary on-farm experience programs with a natural resources management emphasis are being implemented by land grant universities. These programs provide needed competencies for students completing vocational agriculture programs. They also instruct the increasing number of college of agriculture enrollees lacking vocational agriculture experience and farm backgrounds.

This author is a die-hard agricultural production teacher. However, the results of a local Agricultural Interest Inventory of 8th graders as potential first year students indicated the majority were interested in agriculture, but not necessarily agricultural production. The findings of the survey provided the impetus for the development and implementation of a new instructional program in a traditional agricultural production curriculum. This segment of instruction is entitled "Environmental Agriculture." Community and administrative support for this change provided the opportunity to reach many students who would not have enrolled in the traditional program. In times of declining enrollment, changing environs, and emphasis on agri-

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Meeting the Needs of Rural, Nonfarm Students in the East

(Continued from page 5)

Wildlife habitat is improved by brushpile construction in conjunction with a property owner and a sportsmen's club. Career competencies can be acquired on an individual or group basis and qualify as partial SOE credit.

Stream improvement and fish habitat development enhance competencies through group construction and placement of this fish hotel. (Photos courtesy of the author.)

science, this deserves consideration. Curriculum changes that focus on community interests and employment needs can keep a quality program viable. Teachers who insist on running programs solely for those from farms will have a hard time staying in business.

Whenever changes are made, one is always concerned about maintaining quality instruction and SOE projects. Pennsylvania requires, and this author strongly supports, approved SOE projects. A vital part of the Environmental Agricultural curriculum of the Eastern Lancaster County School District is supervised occupational experience projects.

To provide modern experiences and skills, regardless of background or home residence, students have an opportunity to select supervised occupational experience projects in various approved areas depending upon individual interests. An approved record book and accompanying records are required in at least one of the following:

I. **Production Projects** — (Pennsylvania Agricultural Production Record Book) Involves raising an animal(s) or a crop with records on expenses, receipts, approved cultural practices, and yields.

II. **Work Experience Projects** — (French Bray — Supervised Occupational Experience in Agriculture Record Book) — Involves securing employment in an occupation relating to Environmental or Production Agriculture, etc., and keeping records on the type of experiences gained, hours of work, and wages earned.

III. **Wildlife Conservation Projects** — (A Wildlife Conservation Project Planning and Record Book for Pennsylvania Vocational Agriculture) — Involves planning and implementing a project to improve wildlife habitat. The management plan, observations, and record of activities conducted must be recorded.

IV. **Directed Laboratory Experience Projects** — (Pennsylvania Book of Practicum Skills) — Involves selection of an individual occupational interest area and conducting individual tasks to develop competencies required for employment in an occupational cluster listed in Figure 1.

A. Fish and Wildlife Conservation
B. Forestry
C. Soil, Land, and Water Conservation
D. Outdoor Recreation
E. Agricultural Services

Figure 1: Occupational Clusters

Examples of individual tasks within the Fish and Wildlife occupational cluster include:

1. Shadow a full-time employee of three different conservation agencies for at least a complete day with each. Keep a log of activities and write a report of its relevancy to your career goals.
2. Secure sponsorship of a local sportsman club for raising game birds/fish or become an active participant in their game propagation activities. Keep record of experiences.
3. Collect six bird nests. Make an exhibit of the nests and identify the bird that built each nest including the building materials. Write an essay of not less than 100 words. (In some states a permit is required to collect nests.)
4. Make plaster-of-Paris casts of the tracks of six different animals. Label each and include a 100 word essay pertaining to each of the animal's habitat, lifestyle, eating habits, etc.
5. Establish a nature trail. Identify points of ecological interest with station markers and a script. Conduct field trips for interested classes.
6. Collect, mount, and identify at least 30 different insects. Include information on place and date of capture. Choose any 10 and describe lifestyles, eating habits, and interesting facts in 100 word essays.
7. Adopt a stream or pond. Make daily temperature and quality tests — pH and dissolved oxygen. Determine sources of input flow. Relate results to the kinds of fish that could survive in this environment in an essay of not less than 250 words.
8. Collect, mount, and identify at least 25 different weeds. Describe each in at least 50 words including control measures, edible, or medicinal uses.
9. Collect, mount, and identify at least 20 wildlife food sources. Choose 10 of the specimens and in 50 words, describe the identifying characteristics of each food source, and species that utilizes it, and during what season.

10. Attend a planning commission, zoning hearing or wildlife seminar. Explain in a 250 word essay the implications of the outcomes for wildlife and humans.

The above activities are only examples of various experiences students can get within the cluster of Fish and Wildlife Conservation. At least one of these activities per quarterly grading period must be completed for each student selecting a Directed Laboratory Project as his/her SOE project. (Examples of others are available from the author upon request.)

Summary

Secondary vocational agriculture programs and colleges of agriculture have long provided the technical background in agriculture that graduates need. However, a declining farm population has prompted the need for agricultural students to secure practical "Learn by Doing" experiences away from home as well. Although, instruction and experiences should be agriculturally oriented, it should not be limited to farming. Agriculture's impact on the natural environment and the interrelationships of agricultural practices in the context of a broader ecological picture should also be stressed. The goal is for the student to understand the interaction of farming practices and natural resources. SOE projects for nonfarm students bridge the disassociation of man to nature that nonfarm students face when attending textbook lectures with meager field experiences.

Directed laboratory experience projects are just another way SOE projects can be incorporated into the vocational agriculture curriculum. They offer a cost-efficient alternative, under the teacher's control, which may be a necessary option if SOE programs are to be a vital part of vocational agriculture for all students. Limited school budgets, declining enrollments, and fewer students with the opportunties for SOE programs in their family-owned farm or agribusiness indicate that the use of directed laboratory experiences needs to be maximized. These out-of-class activities are especially important for students who need to develop skills acceptable for employment and for students with a limited opportunity for traditional SOE programs.

Vocational agriculture has always been a program designed to meet the needs of its students and employers. All of the community resources must be utilized with imagination and innovativeness in planning changes to meet these needs. Perhaps some of these ideas used at New Holland in the Environmental Agriculture curriculum will provide approaches for other vocational agriculture programs to consider in these changing and difficult economic times.

THEME

Mastering the Possibilities

There's an old story about a farmer who lived in South Africa at the time that diamonds were first discovered there. A visitor told him about the fortunes being made by men discovering diamond mines. The farmer sold his farm as quickly as he could and went off to seek his fortune. He searched far and wide, but never found any diamonds. In the end, he lost everything, including his health.

In the meantime, the man who had bought the farm found a large, unusual stone in the creek that wound through the farm and he put it on his mantle as a curio. One day a guest saw the stone and told the owner that it was one of the largest diamonds he had ever seen. The owner said that there were stones like that all over the place. The farm turned out to be one of the richest mines in the world.

Whether this story is authentic or not makes little difference. It makes a point that applies to all of us. Many of us are like the first farmer. We fail to see opportunities around us, just as the farmer failed to see diamonds. Opportunities abound no matter where we live or what we do. Success may be close by, if we take the time and trouble to look for it.

Perhaps we should consider the plight of the South African farmer with the blinders on when we consider agricultural education and the study of that discipline.

By Robert A. Martin

(Dr. Martin is an Assistant Professor in the Department of Agricultural Education at Iowa State University, Ames, Iowa 50011.)

The Situation

While many vocational agriculture programs in the Midwest appear to be undergoing a significant metamorphosis, others are maintaining the status quo. Still other programs are losing students in increasing numbers. These situations are causing a considerable amount of anxiety among high school teachers, school administrators, teacher educators, and college administrators. In studying the situation, agricultural educators are not all that surprised to note what has happened. Agriculture in the 1980s is considerably different from agriculture in the 1970s. The clientele of agricultural education has changed. Vocational agriculture students are not the same as students of an earlier time.

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Mastering the Possibilities

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Many vocational agriculture programs in Iowa now have as many rural nonfarm students as farm students. Several have more. Some teachers consider this situation a liability. Others see diamonds in the rough!

Why are some programs flourishing and others waning? What activities are being conducted to enhance involvement by students who are from diverse settings? What strategies can be followed to assist students in meeting their needs? How do we master the possibilities in future curriculum offerings?

Activities

Change is occurring in the units being taught and the experiences being gained through supervised agricultural experiences and leadership development activities. A cows, plows, and sows focus in vocational agriculture is slowly evolving into a multifaceted program. Diversification of program offerings is now popular in the Midwest. In a region where production agriculture has traditionally been the focus, diversification of the industry has begun to change the focus of education about the industry.

Teachers are beginning to offer course work related to the seven occupational areas of agricultural industry (horticulture, sales and service, forestry, conservation and natural resources, agricultural mechanics, agricultural products and processing, and production). Many teachers are seeking course work for updating skills and knowledge to accommodate an urge to diversify program offerings. The seven occupational components offer some new emphasis areas for vocational agriculture programs in places like Iowa and Nebraska. The following courses/units are examples of a small number of new offerings by teachers in the Midwest.

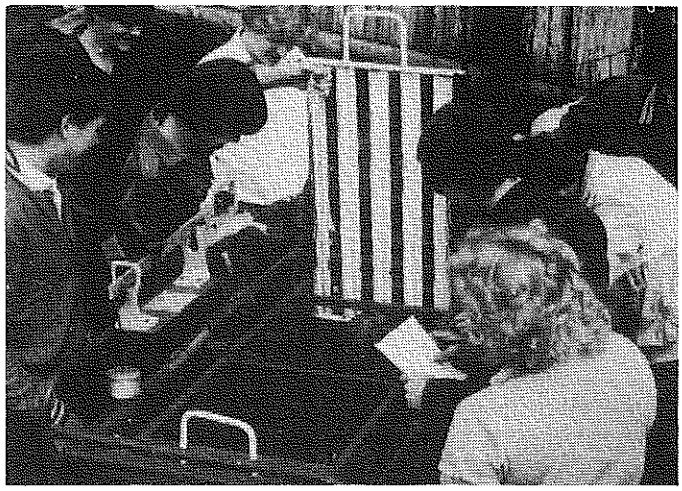
Taxidermy	Agricultural Communications
Hunting and Trapping	Agricultural Business Operations
Small Engines Repair Business	Selling Agriculture Produce
Fruit Production	Greenhouse Crops
Vegetable Production	Laboratory Animal Production
Rabbit Production	Agricultural Business Management
Lawn Care and Management	Christmas Tree Production
Landscaping	Food Processing
Plant Care	
Bee-Keeping	
Farm Law	
Water Quality Analysis	

Figure 1: New course offerings by teachers in the Midwest.

Many nonfarm as well as farm students are conducting experience programs in the above areas as a result of study in the agriculture curriculum.

Strategies for Meeting Needs

How can we adjust to the new "wave" in agricultural development as it relates to the study of agriculture? Perhaps the following steps can help teachers and other professionals re-evaluate programs of agricultural education. Several teachers in Iowa are currently utilizing this set of strategies to refocus their programs to meet the needs of today's students of agricultural education.



Rural nonfarm students at Nevada High School in Nevada, Iowa, conduct a group animal science project in sheep management and technology. (Photo courtesy of Tom Bruening, Vocational Agriculture instructor, Nevada, Iowa.)

Nonfarm students at Nevada High School operate and manage a business transaction in the marketing of poinsettias. (Photo courtesy of Tom Bruening, Nevada, Iowa.)

1. **Survey student needs** — Many students in high school have interests related to agriculture, but are not aware of the possibilities in the industry. Having students indicate areas of interest by checking a list of possible courses or units offered in agriculture opens many opportunities for agricultural education.
2. **Survey agricultural businesses, farmers, and parents** — The community is the richest source of information and teaching resources. The possibilities are endless regarding expansion of the curriculum to meet the needs of rural nonfarm students interested in agriculture.
3. **Survey graduates** — Collect information from graduates of the program. What are graduates doing now? What skills are they using? What should be studied in agriculture to meet a diverse student population?
4. **Compile information** — All of the information should be carefully analyzed and summarized into a form that can be used by the advisory committee and vocational agriculture teacher.

5. **Initiate new programs or program ideas** — The information gathered through this process can be used to start new units or courses based on needs and interests of students and the community's agriculture.

Meeting Future Needs

The next "wave" of agricultural education is actually upon us now. It is related to biotechnology or as it is often called, bioscience. Whatever its name, agricultural scientists predict it will be more significant than anything we have seen yet in the agricultural production, products, and processing industries.

According to Harlander (1986), by the year 2000 the worldwide market for biotechnology derived food and agricultural products could be valued at tens of hundreds of billions of dollars. Biotechnology or use of microorganisms in animal and plant production and processing has been used for centuries. However, it has taken on new significance as a result of recent discoveries in the new biology of agriculture.

Many teachers of agriculture are already preparing to meet the challenges of the new agriculture. Basic experimental projects conducted by agriculture students provide the basis for an exciting array of experiences that go far beyond traditional agricultural production projects. The real future of agricultural education may be in challenging students to conduct basic scientific experiments as a means of fostering the use of the scientific method and problem solving skills. Are we ready for new clientele a program of this nature might attract?

Think about it. We already have a national contest and award program for teachers to report their activities in agricultural science. There will soon be a national agricultural science contest for students of vocational agriculture.

The challenge for local vocational agriculture programs is to adjust to meet these rapid changes without losing perspective. Agriculture teachers have known for some time that all students can't fit one style of learning or one type of program. The secret may be in striking a balance between various possibilities. In the final analysis, local programs of vocational agriculture must decide what works best for them. Many educators are willing to bet that the future belongs to those who adapt, alter, revise, and focus on the future and not settle for the status quo.

The students we meet each day in our classes, although unlike students in the past, may be diamonds in the rough. The projected program content, although radically different from that of the past, may also be likened to diamonds in the rough. Why not consider mastering the possibilities?

References

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THEME

Meeting the Needs of Rural Nonfarm Students in the Southwest — One State's Approach

BY JAMES E. CHRISTIANSEN

(Dr. Christiansen is a Professor in the Department of Agricultural Education at Texas A&M University, College Station, Texas 77843.)

Prologue

Clay was 15, a loner. He lived in a "ramshackled" house on a one acre lot three miles from town. Classmates cruelly nicknamed him "Squirrelly." He loved small animals. Injured birds were always being brought to him for care. He enrolled in vocational agriculture and won the state FFA entomology contest. He raised rabbits and earthworms as productive enterprises. He paid his way through junior college with his earnings, surprising a high school English teacher who had predicted that he would never amount to "a hill of beans." He then graduated from college, working at odd jobs and raising earthworms to do so. He now teaches biology.

Susan also was 15. She, too, lived out of town. Unlike Clay, she had many brothers and sisters. She took vocational agriculture against the wishes of her parents; that was not a "Ladylike" thing to do, but she wanted "to own something of my very own." She fed-out steers in a neighbor's corrals, animals financed by an understanding banker. She never went to college. She married. Five years later she told her vocational agriculture teacher that the best thing that happened to her in growing up was "taking ag and raising those animals. I proved that I could do something hard by myself."

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Meeting the Needs of Rural Nonfarm Students in the Southwest — One State's Approach

(Continued from page 9)

Henry was 16, the only son of a truckdriver father and a sales clerk mother. They lived on three acres in the country. He was older than other freshmen because he had contracted polio in infancy, which delayed his education. He raised bees as a productive enterprise, selling comb honey to specialty stores in a large city of 400,000 people 13 miles away. In four years he had earned enough to pay for two years of college. With good grades for scholarships and money from his bees, he finished the last two years of college and became a science teacher. He still raises bees and sells comb honey as a hobby.

What is the Point?

These three individuals did not come from agricultural backgrounds. They did not enter agricultural careers. They took vocational agriculture in high school. They were pioneers among students today enrolled in vocational agriculture. Their numbers will increase in the future. Should we adapt our curriculum to meet the needs of such students? They will not enter the agricultural work force.

The world is changing. Only 10% of the goods on supermarket shelves today are in the same form or packaging as in 1956. We entered the computer age several years ago. The laser age is upon us. Careers in biotechnology are in the future of today's freshman high school students.

Agriculture is also changing, both production agriculture and agriculturally related businesses, here at home and abroad. Agriculture in most countries that we have taken for granted has changed dramatically in the past 10 years. We now are challenged by and in competition with other countries for agricultural sales. At home, we see a resurgence of interest in small-scale specialty agriculture.

Consequently, the curriculum in vocational agriculture needs to change also to prepare a changing student to live and to earn a living in a changing world. Educators in Texas have embarked on a massive revision of the secondary curriculum in order to prepare students for the 21st century.

What is Being Done?

The traditional four-year, modified cross sectional curriculum in vocational agriculture used in Texas is being phased out in the next two years. In its place will be a curriculum in Agricultural Science and Technology consisting of 32 semester length courses. These courses may be selected "cafeteria style" by school districts to best meet the individual and societal needs of that particular school service area.

The content in 25 of the courses has already been developed with input from advisory committees, working committees of teachers of agriculture, teacher educators from nine teacher education institutions, curriculum specialists of the Instructional Materials Service, and the state staff in agricultural education. The next step will be to have the technical content of each course reviewed by committees of experts in different fields.

Pilot testing of several courses will be carried out by selected schools in the fall of 1987. The Instructional Materials Center will modify existing instructional materials and develop new materials for the new courses, concentrating initially on those courses that are most likely to be chosen by local school districts.

The New Curriculum

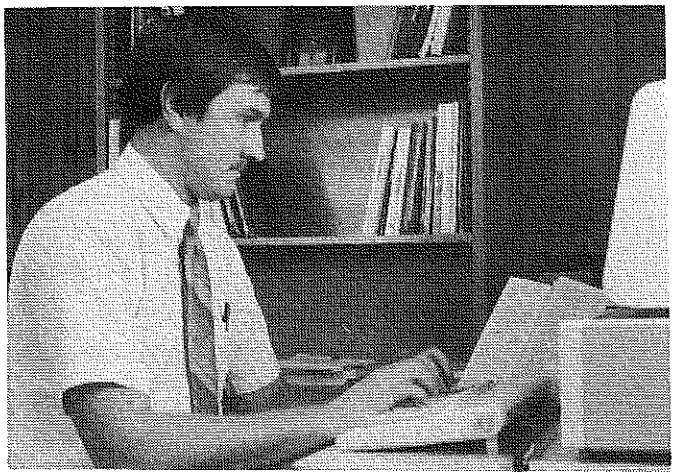
The 25 courses developed to date are displayed in Figure 1. The first two courses, AgSC 101 (Introduction to World Agricultural Science and Technology), and AgSc 102 (Applied Agricultural Science and Technology), are intended to be comprehensive courses that normally would be offered to first-year students and would be strongly suggested, but not required as prerequisites for any of the other courses taken. However, that decision would be left to individual school districts as those two courses would be offered at any time. The 200 level or cluster courses contain related basic content that generally can fit into a sequence with the related 300 level courses in the same series. For example, AgSc 221 could be in a sequence with any 320 level course in agricultural mechanics.

Teachers will be able to offer specializations in their schools. For example, if the teacher has a need to offer a specialization in horticulture, the four year curriculum might look something like this: **Year One:** AgSc 101, Introduction to World Agricultural Science and Technology and AgSc 102, Applied Agricultural Science and Technology. **Year Two:** AgSc 261, Introduction to Horticultural Sciences and AgSc 362, Nursery Plant Production. **Year Three:** AgSc 363, Greenhouse Plant Production and AgSc 361 Landscape Design, Construction, and Maintenance. **Year Four:** AgSc 365, Fruit, Nut, and Vegetable Production and AgSc 315, Entrepreneurship in Agriculture.

Departments, especially multiple teacher departments, will be able to offer several different semester courses each semester, thus appealing to the varying interests of different students. Also, some of the courses to be offered should appeal to students who have no real interest in agriculture *per se*, but who, nevertheless, have specific needs or interests. An example of such a course is AgSc 222, Home Maintenance and Improvement, that could be offered to any student in a school, even those who have not taken the AgSc 100 series courses. Another such course would be AgSc 314, Personal Skills Development in Agriculture.

It is envisioned that a supervised occupational experience program will be optional for students in AgSc 101 and that the "traditional" SOEP will be required of students enrolled in AgSc 102. However, students enrolled in the semester length 200 and 300 series courses must have a supervised occupational experience program related to the content of the particular course or courses in which they are enrolled.

Cooperative employment experience will be provided for students desiring on-the-job experience in approved agricultural settings related to the courses in which enrolled. An approved training plan would be required, and the teacher would provide supervision. Such experience would be available only to students who are 16 years of age or older.



Tim Knezek, curriculum specialist, stores data for use in developing a new semester length course in agricultural management for use by teachers of agricultural science in Texas. (Photo courtesy of the author.)

Curriculum writers Debbie Thompson and John Carnes discuss the organization of a course outline for a new semester course in agricultural science being developed at the Instructional Materials Service at Texas A&M University. (Photo courtesy of the author.)

What Cautions Are in Order?

As the new curriculum is intended to provide experiences so that students can comprehend the world of agriculture and the food chain, care must be taken to insure that students do acquire relevant experiences in the laboratory and through supervised occupational experiences. Consequently, teachers must be alert to opportunities to provide those experiences; otherwise, there is a real danger that students will ". . . learn how corn grows," but will not" . . . learn how to grow corn." If that happened, even though the course may be up-to-date and scientifically oriented, it still may not be vocationally oriented.

School administrators, counselors, and teachers of agricultural science will need to work closely together in selecting the courses most appropriate for their particular community. Advisory committees need to be utilized in this process.

Sound career guidance must be provided continually to students. Why? The curriculum is characterized by flexibility and adaptability.

Students who desire to take one of the semester courses in agricultural science should be encouraged to do so, even if for avocational reasons. Remember the third student described in the **Prologue**?

Problems to be Resolved?

The first question in the minds of many teachers is: "If a student takes a course in animal science, for example, in the fall semester, and the livestock judging contests are held during the spring semester, and the student is not enrolled in an animal science course at that time, will he or she be eligible to compete in that contest as an FFA member?" This and related questions have not been resolved as of February 1, 1987; however, they should be resolved by the time you read this.

As advanced courses are developed, articulation needs to be developed between secondary and postsecondary institutions. This will be especially important if the possibility exists that postsecondary credits may be earned by students who take an equivalency examination for college credit after completion of an advanced course in high school. Mechanisms for doing so and the implications of such a possibility on enrollments at the postsecondary level also have not yet been addressed.

Epilogue

There were 16 students in the class. Four came from farms; six came from small 1-1½ acre "ranchettes" outside of town; four came from town itself having no previous exposure to agriculture; two came from town, but their parents were directly engaged in agribusiness. Only two, at the most, would enter careers in production agriculture or related agribusiness. But all were being prepared for a career and to support themselves better while pursuing another career, if they so chose.

In the process, they were being kept abreast of the changing nature of agriculture and were acquiring skills that would permit them to function better as citizens in the 21st century. Some were still searching for that "ideal" career. Others had their sights already fixed upon a career. Some were working for agricultural organizations while others were growing aloe vera and chili peppers and raising earthworms and catfish.

But all were learning basic agricultural skills in a variety of settings, were learning to predict the consequences of using new technologies in agriculture, were understanding how technological changes in agriculture can affect careers, were learning how to switch to alternate and/or underutilized livestock and cropping systems, were learning to use emerging solid state technologies to increase agricultural productivity, were acquiring global perspectives of agricultural technology, and were acquiring leadership skills needed for the leaders of tomorrow.

At the same time, their teachers of agriculture were keeping abreast of new agricultural technologies through continuing and varied in-service activities, technologies that emerged since they had been in school.

The events in the **Prologue** actually happened. In Texas, the events portrayed in this **Epilogue** are just now coming to pass. Teachers of agricultural science are embarking upon a new course with their curriculum in agriculture, a course for rural nonfarm students, for students from farms and ranches, and for students from towns and cities who seek careers in agriculture and related areas for the 21st century.

(Continued on page 12)

Figure 1

Proposed Curriculum for Agricultural Science and Technology, Texas, 1987

Course Numbering System

Legend: 00 Series — Comprehensive
10 Series — Agricultural Business and Management
20 Series — Agricultural Mechanics
30 Series — Agricultural Production
40 Series — Agricultural Products and Processing
50 Series — Agricultural Services and Supplies
60 Series — Horticulture
70 Series — Forestry
80 Series — Renewable Natural Resources

100 Series Semester Length Courses
Comprehensive Courses, Grades 9-12, ½ Unit Credit

Agricultural Science 101 (AGSC)	Introduction to World Agricultural Science and Technology
Agricultural Science 102 (AGSC)	Applied Agricultural Science and Technology

200 Series Semester Length Courses
Cluster Courses, Grades 10-12, ½ Unit Credit. Each course in this series contains a core of related, basic content that generally can fit into a sequence with the related 300 series technical level courses. For example, Hort 261 could be in a sequence with HORT 361, 362, 363, 364, and 365.

AGSC 221	Introduction to Agricultural Mechanics
AGSC 222	Home Maintenance and Improvement
AGSC 231	Animal and Plant Production
AGSC 241	Food Technology
AGSC 261	Introduction to Horticultural Sciences
AGSC 281	Energy and Environmental Technology

300 Series Semester Length Courses
Technical Courses, Grades 10-12, ½ Unit Credit

AGSC 311	Agribusiness Management
AGSC 313	Agricultural Production Management and Marketing
AGSC 314	Personal Skills Development in Agriculture
AGSC 315	Entrepreneurship in Agriculture
AGSC 321	Agricultural Structures Technology
AGSC 322	Agricultural Metal Fabrication Technology
AGSC 323	Agricultural Power Technology
AGSC 331	Specialty Agriculture
AGSC 332	Animal Sciences
AGSC 333	Plant and Soil Science
AGSC 334	Equine Science
AGSC 361	Landscape Design, Construction, and Maintenance
AGSC 362	Nursery Plant Production
AGSC 363	Greenhouse Plant Production
AGSC 364	Floral Design and Interior Landscape Development
AGSC 365	Fruit, Nut, and Vegetable Production
AGSC 381	Wildlife and Recreation Management
Technical Courses (300 Series) To Be Developed	Agricultural Environment and Pollution Control
	Aquacultural and Maricultural Technology
	Arboriculture, Forestry, and Allied Land Use
	Animal Health Technology
	Companion and Laboratory Animal Technology
	Range Science Technology

400 Series Courses
Pre-employment Laboratory Training Courses, Grades 11-12, 1-2 Units of Credit

AGSC 421	Agricultural Power and Machinery
AGSC 422	Agricultural Mechanics
AGSC 431	Animal Production
AGSC 441	Meat Processing
AGSC 451	Agricultural Pest and Pesticide
AGSC 461	Horticulture
AGSC 471	Forestry
AGSC 481	Agricultural Resources

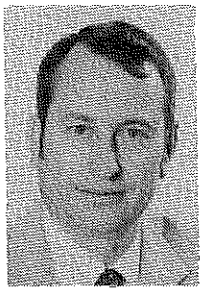
500 Series Courses
Cooperative Training Courses Currently Being Offered

600 Series Semester Length Courses (To Be Developed)
Advanced Courses, Grade 12, ½ Unit Credit, Prerequisite(s) Required.

AGSC 602	Applying Technological Innovations in Agriculture
AGSC 611	Advanced Agricultural Economics
AGSC 631	Advanced Animal Science
AGSC 635	Advanced Soil and Crop Science

Meeting the Needs of Rural Nonfarm Students

Cowboys, Indians, and Conquistadores are all a part of Southwestern history and influences of these and other groups are still highly visible in this part of our nation today.



By Rosco C. Vaughn

(Dr. Vaughn is a State Supervisor of Agricultural Education for the New Mexico State Department of Education, Box 3501, New Mexico State University, Las Cruces, New Mexico 88005.)

Diversity Best Describes the Southwest

Extreme differences in climate, topography, and agricultural commodity production are found within the Southwestern states. In this area, farms tend to be large and highly specialized. Quantity and quality of irrigation water; government labor regulations and export policies; and technological advances in harvesting, plant and animal breeding, and irrigation are major factors that will determine the future of agriculture in the region.

Diversity of people is also a major characteristic of the Southwest. Public schools in rural areas generally have several ethnic groups represented in their student populations. For example, New Mexico claims one of the largest percentages of minority children of any state in the nation. Its school population of 46 percent Anglo, 40 percent Spanish surnamed, and nine percent American Indian presents the state with a tricultural mission for providing education to meet student needs. The diversity in climate, agriculture, and students implies a diversity of needs in rural educational settings. Sparse population, small schools/small school districts, inadequate finances, and the presence of economically disadvantaged groups are conditions found in the rural areas of the Southwest.

Emerging Trends

Because of the movement of people and jobs into many rural areas, the differences in lifestyles from rural to urban areas have decreased during the 1970s and 1980s. More rural females are found in today's labor force. Manufacturing jobs are increasing in many rural areas. This trend is probably closely correlated to an increase in part-time farming with many farmers now involved in off-farm employment. The increase in the number of people mixing farm and nonfarm employment and more people combining retirement with employment in rural areas have impacted Southwestern agriculture.

While the rural socioeconomic structure has changed, and will probably continue to change during the remainder of this century, the impact of changes in agricultural technology will have the most impact on agricultural education in the area. The emerging biotechnologies and information technologies will continue to impact rural communities. These changes in technology have already moved from the farm to the rural community. Implement dealers, bankers, farm supply merchants, marketing firms, and organizations are feeling the impact of a changing agricultural industry. Rural employment levels, tax receipts, and service occupations have also been affected. Many of the agricultural problems are local in scope.

Economists predict that potential exists for Southwestern agriculture to continue to grow in scope and output. However, they also predict that production increases will be limited by the cost of irrigation water and the need to control environmental factors.

Needs of Rural Nonfarm Students

The aspirations and expectations of Southwestern rural, nonfarm students are as diverse as the areas in which they live. The vocational agriculture teacher in a typical Southwest community is required to design a curriculum to meet local community situations and needs. The ethnic makeup of the student population and the agricultural practices in the local school district are likely to be quite unique. For example, very little information is available to help the teacher meet the individual and collective needs of American Indian students.

Teachers need to be willing to devote considerable time to adapting curriculum materials and teaching methods to their school and community. State supervisors and teacher educators must recognize the diversity of schools, communities, and agriculture in the Southwest and be willing to deal with this diversity of student needs.

Increasing graduation requirements, the popularity of computer science courses, and declining student body population in many rural communities make the process of maintaining vocational agriculture as a viable part of the school curriculum more difficult. Public school administrators are often forced to make decisions on cost-effectiveness of various courses and programs because of student driven funding formulas. Therefore, it is necessary for vocational agriculture to attract a sufficient number of students to compare as favorably as possible with other elective courses and programs. *(Continued on page 14)*

Meeting the Needs of Rural Nonfarm Students

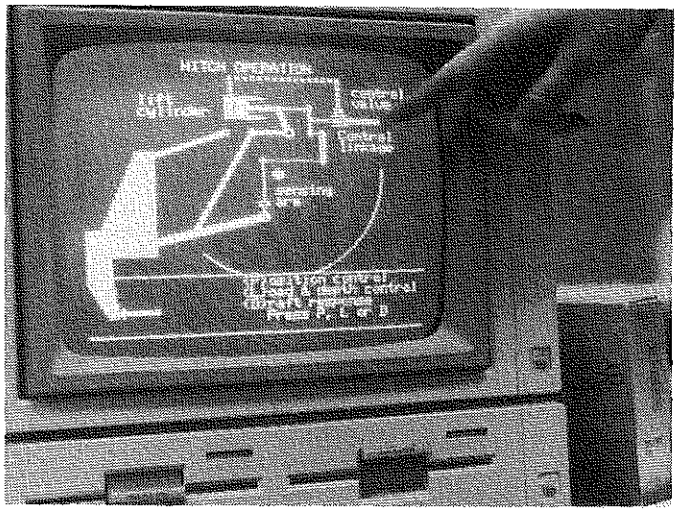
(Continued from page 13)

The young people in today's rural vocational agriculture classes are more advanced than ever before. They can lead tomorrow only if we provide the knowledge and training they will need to cope with the changing American society and the rapidly changing agricultural technology. Teachers can no longer teach what they were taught. They must be prepared to learn, change, and adapt on a daily basis. The programs of the early 60s may not survive the 1990s. It is questionable whether students will accept them, whether legislatures will fund them, and whether local school boards and local committees will tolerate them.

Preparing for the 21st Century

Because the agricultural industry in this country is changing at a rapid pace, agricultural education needs to become involved in technological advancement and position itself as a dynamic and flexible educational delivery system that is on the cutting edge of progress in the agricultural industry. Objectives and priorities need to be established to update the instructional program to meet local, regional, and national needs. These objectives should emphasize agriscience and agribusiness related skills. These skills should be developed through both traditional and innovative teaching approaches including experiential activities, leadership development, problem solving, and other applied techniques.

Modifications of our traditional supervised occupational experience programs (SOEP) may be needed. For example, students desiring to become employed in international agriculture may need to receive SOEP credit in an entirely different manner than would traditional production agriculture or agribusiness students. Experiences in agriculture may need to be quantified in terms other than dollars earned and hours worked.



A new curriculum for nonfarm youth for the 21st century means using new technology. Microcomputer programs will be used increasingly to teach how something works, as illustrated above, as well as how to perform an operation. (Photo courtesy of James Christiansen, Texas A&M University.)

The image of the agricultural instructional programs should be changed to reflect a scientific and futuristic nature. Classroom instructional activities, laboratory experiences, leadership development through the FFA, and supervised occupational experiences must be updated to reflect this new image.

A balanced combination of the traditional and a newly developed futuristic program of agricultural education must be effectively marketed to students, parents, business and industry, teachers, educational institutions and agencies, and the general public. The future of agricultural education in the Southwest and throughout this country depends upon the willingness of our profession to critically analyze our programs and adjust them to meet the challenges of today's rapidly changing technology.

Agricommunication: A New Opportunity

As family farms continue to disappear and once-rural families turn to urban areas in search of jobs and a new way of life, many youths are finding themselves displaced and disoriented. The once rural youth are now classified nonfarm, but for many, their ambitions are still in agriculture.

For years vocational agriculture teachers have faced the challenge of training students for careers in production agriculture and agribusiness. But as the job markets in these fields continue to tighten and more agriculture classes are made up of rural nonfarm and nonrural youth, instructors and students must look for alternative opportunities in agriculture.

Agricommunication offers one that opportunity. Students don't have to be from a farm background or even be rural youth to qualify for careers in agricommunication. The qualification that does matter is an interest and desire to work in agriculture.

Some rural nonfarm students have just enough production agriculture experience to realize they enjoy agriculture and want a career in some aspect of it. Others want to farm, but realize in today's economy, it would be difficult to establish a farming operation. Vocational agriculture instructors should be aware of opportunities in agricommunication for these students.

A Case in Point

One example of a nonfarm youth who wanted to work in agriculture was Larry. He was raised in a small town. Larry considered himself rural but did not have a farm background. As a teenager, Larry's ambition was to work in production agriculture and perhaps own a farm someday. But, as Larry became more involved in agriculture through his SOE and FFA activities, he realized the timing was not right to enter production agriculture.

Larry's SOE in production agriculture gave him the background he needed to feel comfortable in an agricultural profession. During Larry's senior year in high school, he worked on the school newspaper and competed in FFA public speaking contests. He excelled in both areas. These combined experiences made him a prime candidate for a career in agricommunication.

Larry's college curriculum filled in the gaps in his experience. He took a mixture of agriculture and communications courses. Such required courses as animal and plant science were combined with communications courses in journalism and broadcasting.

Larry is now a writer for a regional agriculture publication. He travels a multi-state area covering agricultural-related events, interviewing farmers and agribusiness leaders. His work involves both writing and photography assignments.

By Jacquelyn P. Deeds and Eva A. Dorris

(Dr. Deeds is an Assistant Professor in the Department of Agricultural and Extension Education and Ms. Dorris is a News Editor for the Cooperative Extension Service at Mississippi State University, Mississippi State, Mississippi 39762.)

Agricommunication Programs

Larry has a bachelor of science degree in agricommunication from one of the 26 colleges and universities in the nation now offering degrees in agricommunication or agricultural journalism. Although curricula are different in the various universities and colleges with agricommunication degree programs, the basic requirements for the program are the same. Students should have a working knowledge of production agriculture and agribusiness and the skills and abilities needed to be a good communicator.

Employment opportunities for agricommunication graduates are numerous and varied. Among the graduates of all programs, placement within the field has been high. The agricommunication program is designed for a student who wants a diversified rather than a specialized program in either agriculture or communications. It offers maximum flexibility which will enable the student to obtain an education for specific individual needs and career goals while providing a rather broad background.

Students with a degree in agricommunication will have opportunities for employment in agribusiness, television, radio, newspapers, magazines, governmental agencies, and other areas of agricultural industry where good communication skills are important.

The learning experiences of agricommunication students may be enriched by participation in many university activities, most specifically the university chapter of the Agricultural Communicators of Tomorrow (ACT). One main purpose of this organization is to give students more practical experiences in their field.

In addition to field trips and guest lecturers, the organization frequently publishes the college of agriculture newsletter or magazine. Agricommunication students serve as writers, photographers, editors, and layout personnel of the publications.

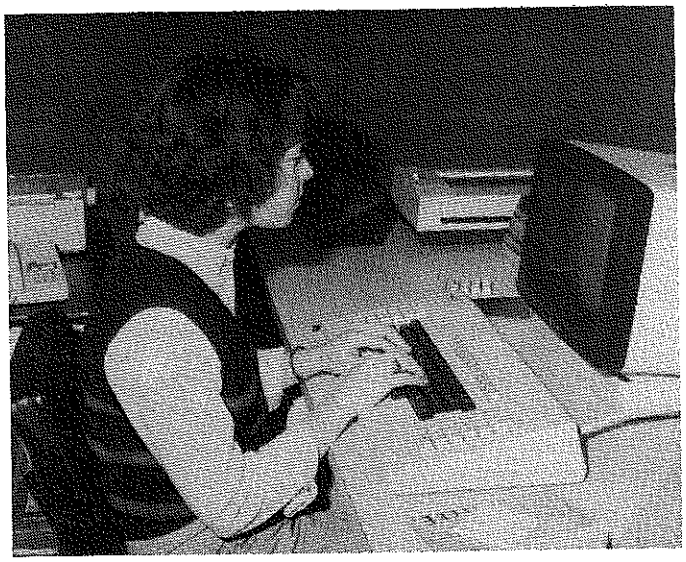
(Continued on page 16)

Agricommunication: A New Opportunity

(Continued from page 15)

Many of those placed from the program at Mississippi State University are from rural nonfarm or urban backgrounds. Some of the jobs held by graduates include public information specialist with the State Department of Agriculture, news writer and editor with the Cooperative Extension Service, Extension 4-H youth agent, sales and public relations representatives for seed and chemical companies, writers for local newspapers and regional agricultural publications, and radio broadcasting.

Many agricultural publications require photography and layout skills in addition to writing. (Photo courtesy of Eva A. Dorris, Mississippi State University.)



Word processors have replaced the agricultural writer's typewriter making the process easier and the transmission instantaneous. (Photo courtesy of Eva A. Dorris, Mississippi State University.)

Meeting the Need

Instructors can help students determine their career goals and in some cases decide if communications is a possible field for an individual student. At the high school and college level, students who have good writing skills, show an interest in working with people, and who eagerly take part in public speaking contests or leadership roles may be inclined toward a career in agricommunication.

The importance of agricommunication programs is becoming more evident. State and privately supported agricultural organizations are calling on their public relations and information departments to keep agriculture and its importance in the public's view.

At a time when organizations are cutting back on their sales teams, the same organizations are increasing their public relations teams.

Agricommunication is one of the fastest growing fields in agriculture. It provides an answer to the question of a career opportunity for many vocational agriculture students with a rural nonfarm background.

The story of agriculture needs to be told to the nonfarm community. Who better to do the job than students of vocational agriculture?

Radio broadcasting, both on-the-air and prepared programs for information, public relations and community service, is an important part of agricommunication. (Photo courtesy of Eva A. Dorris, Mississippi State University.)

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Change is Reality

By Paul W. Davis, Jr.

(Mr. Davis is a Vocational Agriculture Instructor at Coe-Brown Northwood Academy, Northwood, New Hampshire 03261.)

Employment opportunities for graduates of vocational agriculture programs in the traditional production areas of beef, dairy, corn, grains, and other large scale crops have disappeared in New England. If, during this era of shrinking school budgets and the re-evaluation of educational priorities the curriculum is not changing to meet the changing needs of agricultural industry, our students will be denied an extremely valuable educational program.

Changes in vocational agricultural education will have to be made to reflect the changes in the community itself. An example of a program changing to meet the new agricultural needs in New England is the vocational agriculture program of southeastern New Hampshire's Coe-Brown Northwood Academy.

Changes in Agriculture

For more than 300 years, the Southeastern area of New Hampshire has had a history of production agriculture. When the settlers started harvesting "King Pines" to be the masts and timbers of England's sailing fleet, more than 82% of New Hampshire was covered by trees. By the mid 1800s, the need for cleared land for the growing of wheat, sheep, and other agricultural products had reduced the forest land to less than 80 percent. The Western expansion of the country, coupled with industrial development, depression, and rising fuel and operating costs, eliminated the region's dependency on production agriculture as a major employer.

Today, forests again cover more than 87% of the state. The thousands of miles of stone walls that criss-cross the forests are the only visible remains of the countless family farms that formed the agricultural base of the area. There are only a handful of traditional production agriculture enterprises left in the region.

However, the economy of the region is healthy. New Hampshire's unemployment rate is less than three percent. Within 25 miles of the Academy's grounds are many employment sites not related to traditional agriculture. They include five cities, an Air Force base, a naval shipyard, and The University of New Hampshire. Metropolitan Boston and the surrounding High Tech Valley are an easily commutable 60 miles away.

The few existing agricultural production career opportunities do not attract many of today's high school graduates. With local fast food chains, shopping malls, and consumer service businesses offering beginning, part-time employees $6 and more an hour, plus unlimited flexible hours, benefits, and paid vacations, it is hard to convince high school students of the viability of a career in production agriculture.

A successful vocational agriculture program must be responsive to the changing role of agriculture in its community and to the changes in occupational opportunities available to students. An integral part of that responsiveness is Supervised Occupational Experience (SOE).

For the Vocational Agriculture Department at the Coe-Brown Northwood Academy, it is the program. Each of the agriculture programs within the department stresses SOEP and other experiences that support the concept of training for a career in an agribusiness or industry. In a time when a number of vocational programs in the same geographical area are suffering from falling enrollments and program cancellations, the agriculture department at Coe-Brown has waiting lists for many courses. For the 1986-87 school year, a third full time instructor was added to the department.

Future of Vocational Agriculture

Where is the future for vocational agriculture programs in nonfarm areas? Agricultural skills will continue to have a place in the marketplace. Agriculture teachers will have to be aware of the changes and be ready to adapt our programs. The Coe-Brown Northwood Academy staff and Advisory Committee have studied the community to determine changes in curricula offerings.

The animal science career areas have changed from beef and dairy to pets and small animals. Pet shops, kennels, grooming services, animal shelters, laboratories, and small animal farms provide many job opportunities. The only real difference between these enterprises and production agriculture is in the size of the animal. Genetics and breeding, nutrition, sanitation, selection, and health management are all transferable skill areas. It is much cheaper to provide students with production and management training using a warren for rabbits than the land needed for raising one beef calf. This approach has the advantage of allowing for the production of two or more complete generations in one school year.

Currently, New England is experiencing a strong demand for lumber. The low prices of home heating oil, however, have decreased the firewood production business. There is, however, a growing demand for urban or residential forestry services. Arboriculture and consulting on the management of parcels of less than 10 acres offer numerous career opportunities for foresters.

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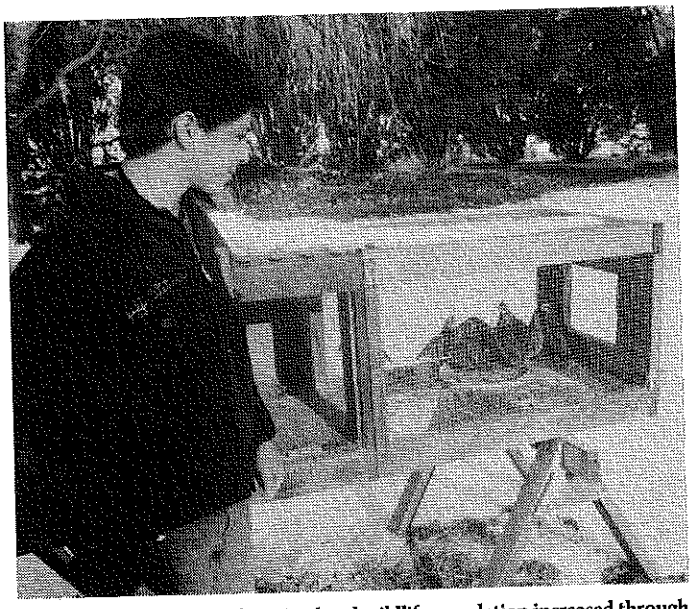
Change is the Reality

(Continued from page 17)



Valuable knowledge can be gained and wildlife population increased through small-scale backyard SOE projects like this quail raising and releasing enterprise. (Photo courtesy of Philip Ogline, New Holland, Pa.)

With fewer tractors and other machinery on the farm, coupled with increased cost and complexity, many agriculture programs can no longer provide students with practical, mechanical experiences. The future lies in training quality technicians who can service the growing array of lawnmowers, snowblowers, rototillers, chain saws, and other small gasoline and electricity driven equipment that relate to the urban setting.

The growth areas in the plant science field will continue to be in landscaping and floral products. The current housing boom in New England is creating a demand for landscape designers, installers, and maintenance workers. The latter two areas provide entrance level opportunities to many students seeking supervised occupational experiences. There will be increasing numbers of jobs available in both the flower production and floral design fields as the trend continues to buy cut flowers to add to the decor of the home.

Summary

Of the previously mentioned career areas, entrepreneurship and small business management are vocational agriculture programs that need increased effort. The "hows" and "whys" of setting up and running a small service business are skills that more and more agriculture program completers will be using. Many people find themselves providing a quality product or service. They also find their enterprises failing because they have no knowledge of how to run a business.

Vocational agriculture can continue as a viable educational program only if teachers are ready and willing to adapt to the changes that are here. Programs must provide training in careers that the future will demand. A crystal ball isn't the answer. The answer is in listening to employers and the public. Remember, "Change is the Reality" if we are to have meaningful programs.

THEME

Change and Opportunity in the Southeast

"Today's world is one of change and in it agriculture is no exception" is a phrase a young third-year vocational agriculture student spoke in 1963 as he began his entry in the FFA Public Speaking contest at the local level. Little did that young speaker realize that his words were so profound! In the 24 years since this writer spoke those words, our world and indeed agriculture have changed exponentially. We have seen the origin and development of microcomputers, genetic engineering, biotechnology, robotics and a myriad of devices, techniques, and skills that we could only dream of in the 1960s. We have also seen the trend continue that producers of agricultural products have declined in number while the number of persons needed with agriculturally-related skills to process, distribute, market, and service agricultural products has increased.

By Max B. McGhee

(Dr. McGhee is a Professor in the Department of Agricultural and Extension Education at the University of Florida, Gainesville, Florida 32611.)

The Changing Southeast

In the Southeastern U.S. we have also seen trends with implications for the agricultural industry such as:

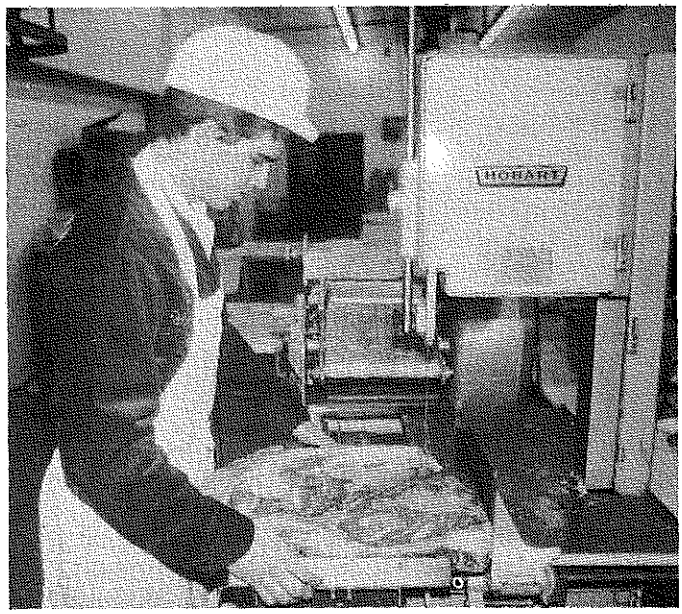
1. A migration of persons from the Northeast and Midwest "rust belt" in search of employment.
2. An increasing number of "exotic" agricultural enterprises such as tropical fish, alligator, and exotic bird production, marketing, and distribution.
3. Increased requests for assistance from agencies such as Cooperative Extension by "non-traditional" clientele (suburban, rural nonfarm, condo-dwellers, etc.)

With these trends in mind, it is logical to believe that although agricultural producer numbers will decrease or remain somewhat constant in the future, the number of individuals needed to fill positions in agriculturally-related industries will increase. We also find that characteristics of students enrolled in vocational agriculture programs continue to become increasingly more nonfarm in nature. In Florida, increasing numbers of vocational agriculture students come from suburban or urban areas and fewer from rural, or more specifically, farm backgrounds. Thus, their interests are not related to skill development and experience for careers in agricultural production. In fact, enrollment figures would indicate a trend toward increased interest in areas of instruction such as agricultural sales and services, horticultural businesses, natural resources, and wildlife.

A question one must ask is, "Are there opportunities for rural nonfarm youth in the Southeast?" I believe the conclusion is a resounding, "Yes." With increases in population in the Southeast have come demands for more agricultural products and services. Therefore, more trained workers will be needed to provide these products and services. Although some producers of agricultural products will be needed, most of the demand for trained agricultural workers will be in the areas of processing, marketing, and distribution.

Opportunities Present and Future

When one looks at data concerning the size of the agricultural industry in Florida, it is evident that many opportunities now exist and should continue for the employment of skilled workers. This can be illustrated by the fact that Florida agriculture produces 37 different commodities ranging from alligators to zucchini. Florida citrus is one of the world's most productive agricultural industries, producing 60 percent of the world's grapefruit and one-fourth of the world's oranges. Ninety-five percent of the country's production of orange juice concentrate is packed in Florida. In addition, Florida is ranked first in beef cow numbers among states east of the Mississippi River, 17th in the U.S. in milk production, and third in the Southeast. A leader in fresh market vegetables, Florida's total acreage, production, and value of fresh market vegetables is exceeded only by California. Besides being at the forefront of production of agricultural commodities, Florida has one of the fastest growing ornamental horticulture industries in the country. It is first in production of foliage plants and second in production of flowers. USDA surveys show that Florida growers devote some 111 million square feet to producing foliage plants which is 72% of the total U.S. space and accounts for 50% of the total sales. For an industry as extensive as described here to maintain and expand, there is one essential ingredient — PEOPLE! Skilled workers are needed in a myriad



Agribusiness placement SOE projects will continue to be a vital part of vocational agriculture programs attempts to meet local experiential needs. (Photo courtesy of Philip Ogline, New Holland, Pa.)

of occupations related to agriculture. Some of these workers could conceivably be more "employable" if they had the experiences gained from actually growing up on a farm. However, most of the jobs in tomorrow's agriculture of the Southeast will not require this experience. Therefore, opportunities exist for rural nonfarm youth in many areas of agricultural industry in the Southeast.

Opportunities that could and most likely will exist in the future include:

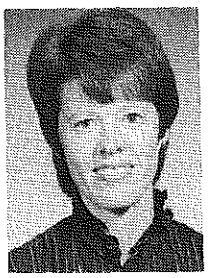
1. **Agricultural computer specialists** — Individuals with expertise in the use of computer software for record keeping, product control, inventory, and other similar tasks will be needed in increasing numbers. Although their primary skills may relate to computers, their "employability" will be increased with knowledge and experiences gained through vocational agriculture.
2. **Agricultural biotechnology technicians** — These individuals will be needed to carry out the many skills involved in tissue culture and related industries. These skills are commonly practiced in the ornamental horticulture industry today and it is evident that this trend will continue into the future.
3. **Natural resources specialists** — To maintain the delicate balance between urban growth and the fragile environment of Florida and the Southeast, individuals such as urban foresters, park rangers, and pesticide applicators will be in demand.

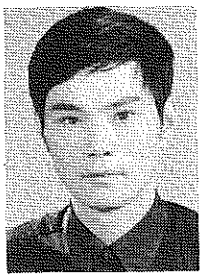
Challenges and Opportunities

"Today's world is one of change and in it agriculture is no exception" is as fitting a phrase for 1987 as it was in 1963. The opportunities for youth in the Southeast from all facets of society (rural, urban, farm, nonfarm) "DO" exist and we in agricultural education face many challenges to prepare young men and women for these opportunities. Will we meet the challenge for the future?

ARTICLE

Agricultural Education in The People's Republic of China





By Janet L. Henderson and Changxia He

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The People's Republic of China (PRC) is presently transforming from subsistence agriculture to modern agriculture. The Chinese government has set a goal of realizing agricultural modernization by the year 2000. To reach this goal, the Chinese government has modified its agricultural policy since 1978 as a means to speed the development of agriculture. Under the new policy, farmers are encouraged to make maximum personal profit by every means. They can decide freely that they either remain in the people's commune or work individually. To reach the goal of modernization, the country must have the capacity to develop and transfer agricultural technology and the farmers must have the ability to utilize the new technology.

After 35 years of struggle, China has built an agricultural education system. Although the system is not perfect and needs improvement, agricultural education has played a very important role in the agricultural development of China. There are some differences between the Chinese educational system and the Western system which should be clarified. First, the Chinese central government controls all of the nation's educational programs. The Central Education Committee decides the objectives for each educational program and the number of students each university/college should enroll each year. Second, the universities and colleges are classified according to specific areas. For instance, there are Industrial Universities, Agricultural Colleges, and Teacher Colleges. Third, higher education is totally free in terms of tuition, instructional fees, boarding, and medical care. Some specific colleges such as teacher colleges even provide students with free meals. Fourth, upon graduation, the graduates of universities and colleges receive a job provided for them by the government. The top-ranked students have priority to choose where they want to go. The four items mentioned above are also true for the technical schools which belong to secondary education.

All Chinese students are required to have a balanced education in three areas: Morality, Intellect, and Physique. The moral education emphasizes that students should be good citizens. The intellect part of education focuses on the articulation of theory and practice, development of skills of problem solving, and the ability to work individually. The physical portion of education is for students to have a healthy, strong body. The "three good" students (i.e., students who are excellent in terms of moral, intellectual, and physical characteristics) are elected annually by their classmates. The benefits of being a "three good" student is to enter college without an entry examination for high school students and to choose a desirable job for college graduates.

Types of Schools

There is a national entry examination held in July each year. All students except children of kindergarten must take the examination to enter higher schools. Students usually begin their education at age six or seven. The length of school years is as follows: six years for primary school, three years for junior high school, and three years for senior high school. Currently, 96% and 68% of the school-age children are in the elementary and junior high schools, respectively. The primary and secondary school students have to pay tuition to go to school, but the amount of tuition is very inexpensive compared with other expenses of the Chinese family. In a typical Chinese three-member family, the tuition for schooling is approximately 4% of the family's annual income.

At the college and university level, there are seven agricultural universities and 29 agricultural colleges throughout the country. These universities and colleges consist of departments of agronomy, agricultural economics, agricultural engineering, plant pathology and protection, horticulture, soil science and agricultural chemistry, food science and nutrition, veterinary science, and veterinary medicine. The students attend a four-year program in each department. After completing the program, the students are sent by the government to various agriculture-related positions. Most of those graduates work at the county level as extension agents. Approximately 24,000 students graduate from the agricultural colleges and universities each year.

Secondary Agricultural Education

At the secondary level, the situation is quite different from that of the college and university. The schools of secondary agricultural education can be classified into three general categories - technical agricultural schools, general secondary schools in which agricultural courses are taught, and vocational agriculture schools.

Technical agriculture schools are usually shared by several counties. There are 367 technical agricultural schools including agricultural engineering and aquatic schools. Currently, there are 96,989 students enrolled in the schools. The schools train students who have received a nine-year general education. The students enter the school at age 15. The students live in the school building. Food, tuition, boarding, and medical care are provided by the state. The specialties in the technical schools are similar to those of the agricultural colleges, but are somewhat broader in scope. For instance, the specialty in the technical schools combines agronomy and plant protection into agronomy. The students enter the technical schools by passing the National Admission Examination and receive jobs immediately following graduation offered by the government. However, the graduates of the technical schools are sent to relatively lower level agricultural-related positions such as laboratory assistants and extension agents in the people's commune level.

General secondary schools in which agricultural courses are taught are the most common source of agricultural education at the secondary level, especially at the junior high school level in rural areas. The grade levels of students in this school are from seventh to ninth and students enter the school at age 12. The student gets into the school by passing an entry examination. The students have to pay a small amount of tuition. Most of the students in the schools are farm boys and girls. In the school, students receive both general education including courses in mathematics and science, and agricultural education courses including agronomy, agricultural mechanics, and agribusiness management. The agricultural education courses usually are taught at the eighth and ninth grade level. The students stay in the schools for three years. After graduation, most of the students return home for farming and agricultural-related positions. Few of them seek further education. The government does not provide jobs for the graduates of this type of school.

Vocational agriculture schools are few in number. But, the trend is that vocational schools will expand rapidly. From 1980 to 1984, the number of vocational schools, including vocational agriculture schools, increased from 3,314 to 7,002 and the number of students in those schools increased from 454,000 to 1,745,000. The Education Committee of China made a decision recently that the ratio of general high schools to vocational schools will be changed gradually to 1:1 by the year 1995. Currently the ratio is 7:1. The students study from 10th to 12th grade and get into the schools by passing an entry examination. The students are also farm boys and girls and they have to pay tuition. The students study vocational agriculture courses in the schools, but they receive little practical experience because equipment and well-trained vocational agriculture teachers are lacking.

The purpose of the vocational agriculture schools is to train students for full time farming and other agriculture-related positions. There are no agricultural youth organizations and no supervised practice at the students' homes. There are usually two or more vocational agriculture schools in each county. The students receive nine years of general education before entering vocational agriculture schools and then stay in the schools for three years. The graduates of these schools, like those of general secondary schools in which agricultural courses are taught, enter farming or other agriculture-related businesses. The government does not provide jobs for the graduates of vocational agriculture schools.

Future Needs

Some points may be made concerning the agricultural education situation in China. For a long period of time, especially during the Cultural Revolution, the work of providing farmers and agribusiness persons with skill training prior to entering work was ignored. Traditionally, farming skills in China were taught within the father-son relationship. This procedure cannot meet the needs of modern agriculture because of the new technology and the utilization of machines needed to prepare competent, skilled farmers. Therefore, there is a need for developing secondary vocational agriculture programs to meet the demands of preparing young people with agricultural knowledge and skills.

Second, there is currently no four-year teacher education program in agriculture at the college/university level. The teachers working in the secondary schools are graduates of the agricultural colleges and the technical schools. The obvious weak point of these teachers is that they do not receive systematic teacher training in education courses such as teaching methods, psychology of learning, and program planning. Therefore, agricultural education as a program at the college/university level to prepare vocational teachers in China is at the beginning stages.

Third World countries such as the People's Republic of China must continue to develop and modernize their agricultural education system to improve economic growth. *(Photo courtesy of the authors).*

ARTICLE

Community-Based Programs: Providing Agricultural Opportunities for Rural Nonfarm Students

By Kerry S. Odell and Layle D. Lawrence

(Dr. Odell is an Assistant Professor and Dr. Lawrence is a Professor and Chair of Agricultural Education at West Virginia University, Morgantown, West Virginia 26506.)

In addition to its student-centered characteristics, vocational agriculture has a long tradition of identifying and meeting the needs of local communities. Teacher education programs and state departments of education promote vocational agriculture curricula based on specific needs of local communities.

Anyone who reads the newspaper is aware of the crisis in American agriculture. The problems in our agricultural sector have caused dramatic changes in the structure of rural communities. Rural schools have also been greatly affected, as have the occupational opportunities of the students who attend them. Have our vocational agriculture programs adapted to meet the needs of today's rural communities? Or, have we abandoned the concept of community-based programs of vocational agriculture?

Problems of Rural Communities

The needs and problems of rural communities are complex and varied. Over generalization can be a problem when one discusses the nature of rural communities in the U.S. Nachtigal (1980) categorized rural communities as "rural poor," "traditional middle America" and "communities in transition."

Regardless of how they are categorized, most rural communities suffer from three problems. First, the economic base of rural communities has traditionally been poor. This problem is aggravated by the present state of the agricultural, forest, and mining industries. Limited job opportunities in rural communities have caused many residents to leave, seeking employment in the more job rich metropolitan areas. Rural communities need to expand and diversify their economic bases. Rosenfeld (1983) suggested that rural communities encourage the development of small-scale, home-based businesses that provide products and services directly to the local community and surrounding areas.

Second, rural communities do not offer the quality and quantity of social and cultural opportunities available in metropolitan areas. As a result, fewer middle and upper income families are attracted to rural areas, adding to the already depressed economic conditions existent in these communities.

Third, rural schools are often inadequately financed, poorly staffed, and unable to offer a sufficiently comprehensive curriculum. These problems are mainfested in low test scores and poor student achievement. A larger variety of learning experiences tied to the unique characteristics of the community are needed by many students who attend rural schools.

Changes in Rural Schools

A number of rural educators are calling for changes in rural schools and school programs. Many of the proposed changes are not new, having been a part of the modus operandi of vocational agriculture programs since their inception. Reformists have pointed out that rural secondary school curricula need to be more integrated, making them more meaningful and relevant to rural students. Likewise, vocational programs must change, becoming more closely aligned with the needs of local business and industry. Nachtigal (1980) predicted that "rural education will be more of a hands-on experience in the year 2030, built in the context of the local rural setting." Rosenfeld (1983) suggested focusing on small-scale entrepreneurial training for rural secondary students. These changes may not be seen as drastic or novel to those in vocational agriculture.

Opportunities for Nonfarm Students

If programs of vocational agriculture are indeed based on the needs of the local community, what can agricultural educators do to improve opportunities for our rural nonfarm students, utilizing what we know about the needs and problems facing rural communities and schools? One answer is the development of entrepreneurial abilities. Nonfarm students are prime candidates to take advantage of entrepreneurial opportunities. Since we have always promoted entrepreneurship in farm settings, it makes sense, both educationally and within the context of the rural community, to develop these abilities in all of our students. This thought has been promoted in vocational education for the past few years. Yet, the results of our efforts to develop these abilities in rural nonfarm students are not apparent.

How can we provide entrepreneurial opportunities for nonfarm students? First, we must review our traditional practices relative to supervised occupational experience programs (SOEPs). Traditionally, SOEPs were based on home farm needs and opportunities. Students carried out production and improvement projects using the resources they had available at home. Rural nonfarm students often face limited home resources and as a result, find it difficult to carry out a traditional SOEP that can lead to establishment in an occupation. As a result, many do not attempt to conduct any type of SOEP. So, how do we provide these students with opportunities to put their agricultural knowledge and skills into practice? A few ideas that have been used and a few that have merit for the future are offered for consideration.

Home-Based Enterprises

Agricultural opportunities, as well as interests and abilities, vary from student to student. When possible, rural nonfarm students should be assisted and encouraged to find opportunities for production SOEPs. These will likely be of a different nature than the traditional crop or livestock enterprise. Students with access to a few acres of land should be encouraged to use it intensively, perhaps by producing small fruits or vegetables for sale at roadside or farmers' markets or through pick-your-own operations. Hotbed, coldframe, and greenhouse production of bedding plants are operations no more expensive to establish than livestock enterprises. Game birds, rabbits, and laboratory animal enterprises require little space and can be very effective ways of developing entrepreneurial abilities. In many areas, honey bees can be a unique and profitable enterprise. Students with access to woodlots can utilize their management skills in thinning and harvesting timber for sale as sawlogs, pulpwood, or firewood.

Students with access to garage or shed space can develop machinery or small gasoline engine repair services or establish welding and fabricating facilities. Contract lawn and yard services and seed, feed, and fertilizer businesses are also possibilities. In communities with outdoor recreational opportunities, bait production and sales enterprises or trail riding stables may be feasible. Small animal grooming or training services may be promoted if they can be justified by community need.

School-Based Enterprises

Some rural nonfarm students will lack opportunities for home-based enterprises or agricultural placement. In this case, school-based enterprises should be promoted. Rural nonfarm students can be given an opportunity to use their knowledge and practice skills in a simulated situation closely resembling the actual workplace. In the agricultural mechanics laboratory, students can develop enterprises that allow them to produce products or perform services needed and marketable in the local community. Greenhouses, when available, can be used to provide students opportunities to grow and sell ornamental and bedding plants to local citizens or farmers' markets. School land laboratories also offer opportunities for students to have enterprises similar to those conducted on local farms. These enterprises may be of limited scope, but provide valuable ownership and managerial experiences.

In using school-based enterprises, it is important that the student, teacher, and parent be involved in the development of a comprehensive enterprise agreement. Liability and available teacher time must be considered on an individual teacher and school basis. In many cases, school-based placements of up to 25 percent of student enrollment is manageable.

Summary

Classroom and laboratory instruction for rural nonfarm students should accentuate development of entrepreneurial skills and abilities. Communications, salesmanship, and recordkeeping should be stressed. Instruction should be based on the needs of the community as identified by the vocational agriculture teacher and reviewed and verified by the local vocational agriculture advisory committee.

When nonfarm students have actual experiences upon which to "hang their hats," the problem solving approach to teaching is more meaningful. Agricultural experiences allow students to relate classroom instruction to SOEPs, FFA contests, awards, and recognition, and ultimately to become established in a career that requires agricultural knowledge and skills. Therein lies the reason for vocational agriculture's existence.

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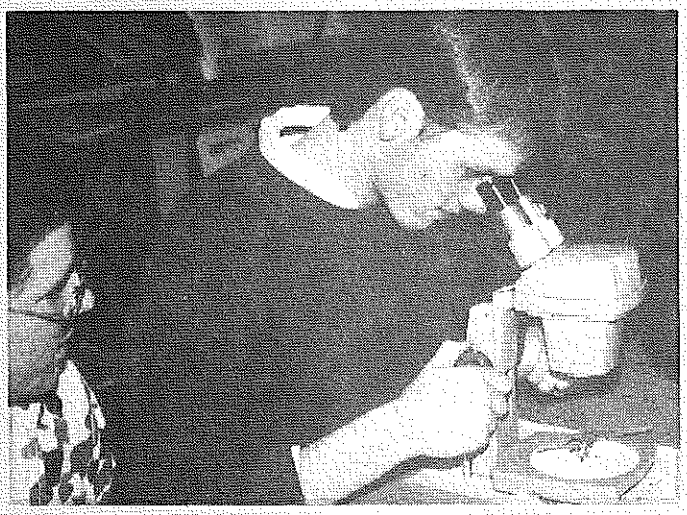
Stories In Pictures

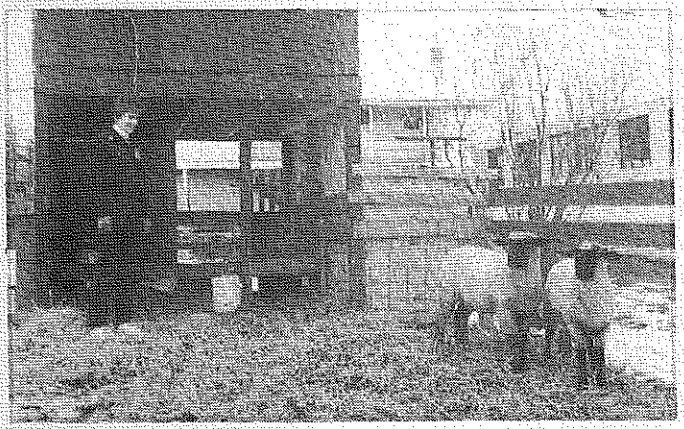
Agricultural Opportunities for the Rural Nonfarm Student

Nonfarm students of Nevada High School in Nevada, Iowa, evaluating a soybean plot (which is a student group project) for lodging, insect and disease damage, and plant production. (Photo courtesy of Tom Bruening, Vocational Agriculture Instructor, Nevada, Iowa.)



The study of sexual reproduction of plants, seed parts, and the emaculation of plant parts is important for nonfarm as well as farm students enrolled in vocational agriculture. (Photo courtesy of Tom Bruening, Vocational Agriculture Instructor at Nevada, Iowa.)

Agricommunication is an excellent career option for FFA leaders such as former National FFA Officer Nanci Mason. Agricultural communications allows Mason to build upon her vocational agriculture experiences while she studies public relations, broadcasting, photography, and writing and editing at Mississippi State University. (Photo courtesy of Eva A. Dorris, Mississippi State University.)



Agricultural skills can be gained by nonfarm students through backyard farming SOE projects as experienced by this future vocational agriculture teacher. (Photo courtesy of Philip Ogline, New Holland, PA.)