

## Stories in Pictures: New FFA Officers

Six new National FFA Officers were elected at the National FFA Convention in November, 1979. Selected because of their knowledge, membership achievements, and leadership, these

young people will serve as the National Board Student Officers for the FFA. Their leadership is important to the continuing success of the



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# The Agricultural Education Magazine

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**THEME: Making Vo-Ag Relevant to the  
Needs of Agricultural Industry**

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EDITOR'S PAGE

Making Vo-Ag Relevant to the Needs Of Agricultural Industry



JASPER S. LEE, EDITOR  
(The Editor also serves as Professor and Head, Department of Agricultural and Extension Education, Mississippi State University.)

Vocational agriculture/agribusiness exists to provide a supply of competent manpower for agricultural industry. This includes preparing entrepreneurs as well as hired employees and serving the agribusiness sector as well as farming and ranching. The training may be of high school, postsecondary, young adult, and adult individuals.

Agricultural industry is the broad, all-encompassing term used to identify all of the functions associated with providing for the food and fiber needs of people. It is the composite of agribusiness and production agriculture. Agribusiness is said to be a complex blend of agriculture and business. It includes all of the business organizations which provide the inputs needed by farmers and ranchers and process, distribute, and otherwise market the products of farms and ranches.

The best statistical information available indicates that 17 percent of our labor force is employed in agricultural industry. With a labor force of over 95 million in the United States, there are about 16 million workers employed in agricultural industry. Of these, 3.2 million are in farming and ranching and 12.8 million are in agribusiness areas. Vocational agriculture/agribusiness has the responsibility for preparing and up-grading the skills of most of these persons.

Three Contributors to Relevancy

How is it possible to provide instruction that is relevant to the needs of an industry as diverse as agriculture? Several contributors to the relevancy exist. Three of these are: modern agriculture curricula, fully developed programs, and competent personnel.

Modern curricula are based upon the employment needs and opportunities in agricultural industry. Our system of providing food and fiber is no better than the weakest link. Our farm productivity can be no greater than the capability of the agricultural supplies and services area to make available the inputs needed to produce plants and animals. Likewise, our ability to market (process, distribute, etc.) farm products depends, among other things, upon producing the desired commodity. If vo-ag curricula do not prepare individuals for employment in all areas of agricultural industry, we are contributing to weak links in our system of food production.

Modern vo-ag curricula will include the areas of agribusiness as well as production agriculture. Of course, each local curriculum will need to be designed to serve the most pressing needs of the citizens in the school district. In some cases, this may be an all production agriculture curriculum, while in others it may be all agribusiness or a combination of agribusiness and production agriculture. Yes, our curricula must focus on opportunity, whether it is in horticulture, agricultural mechanics, agricultural supplies, farming, or other areas.

Programs must be developed to provide for the needs of people at various levels. In a high school program, the necessary elements must be in place in order to maximize relevancy. These elements include classroom and laboratory instruction, FFA participation, and supervised occupational experience. Programs at other levels must include the elements necessary for relevancy, whether it is laboratory instruction, supervised experiences, individual follow-up and instruction, or some other elements.

Competent teachers are needed to implement programs. Teachers must have a broad base of preparation, with one or more areas of specialization. Practical work experience is needed, especially in the area of specialization. Each teacher must have a personal commitment to keeping up-to-date in both the technical and professional aspects of agricultural education.

A Survival Issue

One of the major issues to confront vocational education in agriculture/agribusiness — and all of vocational education, for that matter — is the role of educational personnel of federal and state governments: Shall they be program oriented or compliance oriented? This is a major issue in the establishment of the new U.S. Department of Education.

The implication of compliance verses program emphasis needs to be understood. The trend in moving from emphasis on programs to compliance with government regulations and guidelines has been underway since the mid-1960's. We have seen the number of personnel with specific responsibility for vocational agriculture/agribusiness reduced to a very low level. (We can identify no more than two individuals with any significant amount of time commitment to vo-ag and the FFA at the Federal level.) The continuing trend to compliance emphasis threatens to erode our programs even more.

It is like this: We must have program emphasis, with compliance emphasis taking a secondary position. It is very possible for our programs to comply with regulations and, yet, lack relevancy. Many of the regulations are

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## Making Vo-Ag Relevant to the Needs of Agricultural Industry

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related to social concerns, without regard for program relevancy. The best way to overcome many of our social problems is through good career preparation. Vocational education needs leaders at the federal and state levels who can provide programmatic leadership!

Making vo-ag relevant to the needs of agricultural industry requires program leadership. It requires individuals who understand the nature of modern agriculture/agribusiness. It requires individuals who can relate to and communicate with employers and employees, whether on the farm or in agribusiness. An individual who is compliance oriented would likely have none of these abilities!

March, 1980

This issue of the MAGAZINE focuses on making vo-ag relevant to the needs of agricultural industry. Theme Editor Gary Briers of Iowa State University is to be com-

mended on his work in soliciting and compiling relevant articles. The authors represent a wide spectrum of interest and involvement in agricultural education. Of particular note is the fact that relevancy is addressed from several perspectives: a banker, a postsecondary teacher, a teacher, and a teacher-counselor.

### The Cover

Students need instruction which keeps them current with developments in agricultural industry. The cover photograph shows students at Hawkeye Institute of Technology, Waterloo, Iowa, learning to use an electronic device to detect estrus in swine. Mike Dunphy, animal science instructor, supervises the students. (Photo courtesy of Virgil Christensen, Hawkeye Institute of Technology, Waterloo, Iowa.)

ing that our instruction is relevant to industry needs.) Much of the work of identifying industry needs has been done through the *National Ag Occupations Competency Study* directed by David McClay of Pennsylvania. In Iowa, the Department of Public Instruction supplied each vocational agriculture department with a copy of the study. It remains the responsibility of the vocational agriculture teacher to "translate" the findings of the study into instructional programs for students!

Another traditional component of vocational agriculture which encourages industry relevance is the supervised occupational experience (SOE). Again, however, the teacher's responsibility is to guide students in selecting, planning, conducting, and evaluating SOE programs that are tuned into today's (and tomorrow's) agriculture. As several of the authors in this issue suggest, SOE programs can go a long way in making vo-ag relevant. SOE then becomes cyclic. The teacher guides students in the selection

of relevant SOE programs, and in their sharing of their experiences. The supervision of the programs can serve as a kind of inservice education for the teacher.

The FFA is the primal tool for the development of leadership and human relations skills, values, and ethics so desired by agricultural industry. We cannot, however, expect their acquisition to come simply because the FFA exists. Teachers must plan and provide activities for students with the *express goal* of developing those skills necessary in any kind of work.

Presented in this issue are examples of the needs of agricultural industry; in-service possibilities for teachers to assist them in becoming sensitive to industry needs; and agriculture programs at the secondary, postsecondary, and adult levels designed to meet industry needs. Let's now get on with the process of making vocational agriculture relevant to the needs of agricultural industry!

## THEME

## THEME

Making Vo-Ag Relevant —

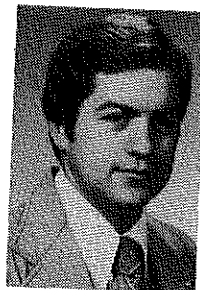
## Are You Up To The Challenge?

In vocational agriculture, we have long recognized that the teacher is the key — the catalyst — in a successful educational program. If we want to make vocational agriculture relevant to the needs of agricultural industry, we must begin with the teacher of vocational agriculture. Actually, we should start with the preservice teacher. Just as we require prospective teachers to complete a student teaching experience, might we also ask our students to get agricultural experience?

Too often we assume either that agricultural education students *have* an extensive background in agriculture or that the technical agriculture courses provide students with practical experiences. Either of these assumptions (or both!) may very well be false.

Step number 1, then, is to provide the preservice teacher with practical, realistic, and broad experiences in agricultural industry. Similarly, as Ms. Karns suggests in her article in this issue, *in-service* teachers should seek opportunities to gain direct experiences in agriculture during vacation periods, weekends, sabbaticals, or leaves of absence. In summary, the technical competence of the teacher of vocational agriculture in the practical aspects of agriculture can be one assurance that the vo-ag program will meet the needs of agricultural industry.

Along with the input of the "refined" product (a competent teacher), the "in-tune" vo-ag program depends upon several processes to achieve, maintain, and enhance its relevance to agricultural industry. Some "approved practices" include the use of: advisory committees to plan, implement, and evaluate relevant curricula; industry



By GARY E. BRIERS, THEME EDITOR  
Editor's Note: Dr. Briers is Assistant Professor of the Department of Agricultural Education at Iowa State University.

resource people in the classroom; field trips to provide realistic observations of agriculture; laboratory experiences that approximate industry job responsibilities; and cooperative occupational education plans that place students in job situations. These traditional processes, by design, should and can provide relevancy.

Other components of the vocational agriculture program are available to the teacher for relating instruction to industry needs. The teacher must plan classroom experiences — role playing, simulations, demonstrations, student activities, etc. — that are designed specifically with industry in mind. Too often, all of us as teachers select information to teach based only on the subject matter itself. For example, we may teach the origin of various breeds of livestock simply because that information exists. Rather, we should ask *industry* (or even ourselves): "What must our students know about livestock breeds to be successful in industry?" (Perhaps students *should know* the origin of breeds to be good herdsmen, breeders, etc. Nevertheless, by asking ourselves or others this question, we are ensur-

A Banker's View —

## What Are the Needs Of Agricultural Industry?

In a world that is always on the move, change is one of the few constants! In other words, though we may not know what the future will hold, we can rest assured that change will occur in it. The willingness of vocational agriculture teachers to make changes is critical to the development of good educational programs. On the other hand, certain characteristics of the programs are as certain and constant as the certainty and constancy of change. For example, vocational agriculture teachers should develop in their students the knowledges and skills to make them adaptable in the world of work.

I'm sure that you who are teachers have stood in the lobby after graduation to watch another class step out into the world. Often, we've wondered into which slot this or that individual would fit. My experience has been that the world has absorbed them, but the world has slots at all levels, and the quality of life at some levels leaves much to be desired. We may find that many students, after spending 13 years in the school system, go to the bottom levels. Perhaps we failed to prepare these students for the constancy of change or with the necessary skills to adapt. Let me give you some examples of the unaltering, ever-present needs of students in vocational agriculture.

### Basic Skills

Students who enter employment in agricultural industry need basic skills. They must be mentally prepared for work. So, the question many teachers need to ask themselves is "Are the students who leave my classroom, my laboratory, my program, mentally prepared for work?"

By MEL WEBER

Editor's Note: Mr. Weber is Vice President and Farm Management Representative, First State Bank, Manchester, Iowa. He formerly taught vocational agriculture in Delhi, Iowa, and worked in a farm supplies business.

Communication and computation skills are important if the individual is to secure, succeed, and advance in a job. Often we hear people declaring that schools must do a better job of providing students with the very basic, yet most important, skills of reading, writing, and arithmetic!

Vocational agriculture programs can and should help to develop these basic skills by involving students in appropriate activities designed for this purpose. Students of vocational agriculture need to learn the concepts and skills of good record keeping, production estimation, inventory control, pricing margins, and marketing techniques of the business world. And, as we develop these abilities in students, we are also developing writing and mathematical skills. Parliamentary procedure, human relations skills, and sales techniques help students develop communication abilities. Good business techniques and management skills are off-shoots of the basic skills we develop in students.

More specific facts and abilities can, nonetheless, be adaptable in nature. For example, mechanical skills and other hands-on skills should be top priorities in every vocational agriculture program. They open up many doors to entry level job opportunities, and they aid in the acquisition

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## A Banker's View —

### What Are the Needs Of Agricultural Industry?

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tion of managerial skills. Yes, beginning jobs still require technical ability!

#### Basic Facts

The backbone of agricultural industry (and the entire country's economy for that matter) is farming. Nevertheless, students need to learn the fact that there is not enough land out there for everyone. They need to be made aware of the financial resources needed for entry into farming and from where they would expect to get these resources if they did farm. If students totally understood and recognized these realities, it would put aside many false goals and help them establish proper priorities. Hopefully, they could then plan realistically for the future.

My experience as a loan officer fortifies my feeling that most young people have a very limited concept of budgeting and even a lesser understanding of how to actually implement one. In short, students must realize and understand that capital resources are a limiting factor for most of us. Changes in agricultural technology have not changed that fact and have probably made it even more important.

#### Basic Personal Qualities

Ethical standards and integrity need to be emphasized as desirable qualities to demonstrate our interaction with those with whom we work. We must be fair with everyone. Nothing leads to failure faster in agricultural business and/or farming than to develop a reputation of untrustworthiness. Personal integrity is a quality which we must develop. It is based on the appraisal others have of our character and honesty. These are two of the greatest assets an individual can have. Whether working in agricultural business or with farmers, honesty in our everyday affairs is paramount. We can develop these qualities in students by demonstrating it ourselves and by shouldering students with responsibilities that demand integrity.

Another unwavering quality needed by students is enthusiasm. Teachers need to constantly strive to develop enthusiasm in their students. Like integrity, one of the best ways to do this is by example. If the teacher does not believe, how can we expect students to be eager to learn and appreciative of the skills we hope to help them acquire? If you are a phoney, your students will find out shortly after they meet you. To be leaders and develop leaders, we must demonstrate — by being enthusiastic — that what we are doing is exciting and important.

Terms such as common sense, ability to analyze a problem, and good judgment are indications that one has the qualities required to think and/or work through a problem and select the most advantageous solution. We have all heard the statement, "We make our own breaks," which indicates that somewhere along the way we have the opportunity to make proper decisions and to select the right plan.

Individuals need to be aware of the fact that, in nearly all

cases, we are given alternatives from which to choose. Many times, how successful we are in life is determined by our being able to analyze problems and by being able to sort out the big management decisions from the small ones. We must instill in students the attitude that those who get by on hard luck are those who don't work and think hard.

Some might think of the quality of imagination as daydreaming, many times leading to frustration. Others look upon imagination as a willingness to investigate an idea which might be useful. For some, taking the time to follow through on an idea requires too much effort. We need to contemplate the future, whether we do it as a farmer might, driving his tractor back and forth across a field, or in moments of relaxation where we may let our mind mull possible options around in our minds.

In order to make proper decisions, we need to assist our students' dreams by supplementing them with continuing education. We need to be aware of any new proven practices and techniques which could be useful in our work. Without being aware of the progress in our area of work, we limit ourselves to learning by trial and error. So, imagination and continuing education go hand-in-hand.

Action is a quality needed by workers in agricultural industry. Many people go through the processes which involve planning and organizing, but they never get around to putting the plans into motion. On occasion a good plan is not accented by the necessary perseverance needed to follow through. We become satisfied with existing methods and have a hard time making the change. All too often we have seen the individual who talked a good game, but the results never quite matched the initial action plans. We need to make students aware of the fact that we really haven't done anything if what we do never really changes anything.

#### Advanced Skills and Abilities

Basic skills, abilities, and knowledges are needed by people involved in the industry of agriculture. As we move up the ladder in agricultural employment or into ownership, the competencies needed become more complex. I share a couple of examples.

Management requires a special kind of individual with special kinds of skills and attitudes. What are some of the requirements to be a good manager? A person who establishes definite goals and objectives is way ahead of the individual who is content to see what tomorrow brings. In our lives, whether we are managers or not, we need to establish both short-term and long-term objectives. Although the time period for attainment of certain goals varies, we need never be distracted from our objectives. Too many individuals never establish any really quality goals and objectives. Others are sidetracked by nonproductive distractions which only delay plans they have for the future. Agricultural industry needs "managers" who can and will establish goals and objectives and then work to attain them.

A manager of people depends on many principles which may be taught and developed in the vocational agriculture program. Motivation to be successful depends on the drive and desire of the individual. A confident manager allows employees to exert their drive, to grow in their jobs, and to share participation in the decision-making process.

Similarly, teachers should try to develop this growth by allowing and even encouraging students to make more decisions. The abilities to delegate responsibility and communicate effectively will help workers to respond properly. This allocation of certain responsibilities is a necessity if managers do not want to have to do too many things themselves. So the better managers are in delegating, communicating, and motivating, the more time they will have to manage, and the less time they will need to devote to technical skills.

Likewise, those of us who have been either teachers or in management positions know that to maintain a high degree of enthusiasm, we need to recognize individuals for their achievements and contributions. We must develop in our future managers the recognition that motivation of a worker cannot always be done with just a paycheck.

Finally, the good manager or owner of a farm or agricultural business must decide how much time to allocate to management and how much to the performance of technical skills. This, of course, varies not only with the site of the enterprise but also with different individuals. Too often people begin in management positions with skills as a "natural leader" and spend too much time doing technical skills. Experience alone provides us development in our leadership roles. But with this experience, I have noticed that one does fewer of the technical skills and spends more time as a management leader developing policies and determining the direction of the business. Could and

should vocational agriculture "speed up" this assuming of the real leadership role of a manager?

#### Summary

Employers understand that vocational agriculture programs normally do not stress skills beyond the basic competency level. Industry is willing to train individuals who demonstrate the ability to stay on the job. Similarly, employers expect a full day of quality work from their workers. Whether they are performing technical skills or managerial skills, the owner or boss is looking for quality workmanship. Many employers complain about the high percentage of rejected items that do not meet standards due to poor workmanship. A business, especially a business with a small number of employees who do specific skills, needs dependable people. It needs employees who can be on time and on the job on a regular basis. Employers are looking for individuals who will do their job and, when the business needs extra help on occasion, will be there to help.

The needs in agricultural industry are: basic skills, basic facts, and basic personal qualities. The attributes needed for success in agricultural industry today are the same as yesterday, and they promise to be the same in the future. Even as agricultural industry changes, its needs remain constant. Vocational agriculture programs should be designed to help develop these basic prerequisite skills and attitudes.

## THEME

### A Postsecondary Teacher's View —

## Making Vo-Ag Relevant: THE BOTTOM LINE

It really doesn't make much difference if we use the word relevant or meaningful or effective when we discuss making vo-ag instruction meet the needs of agricultural industry. It basically comes down to the **bottom line**: Are the skills and abilities being taught really the ones which the industry wants their employees to have? Do we as instructors honestly know what the needs of the employers are? We sometimes become too involved with textbook materials that contain information which is nice to know but really isn't needed by the student in order to be productive in his or her chosen occupational field. We are sometimes classified as having "tunnel vision." We become so involved with our day-to-day teaching activities that we neglect to take a look around to re-evaluate or even try to find out what changes industry has made and in what direction it is going. Relevant instruction means that we have to determine what skills and abilities a student must possess to be employable before we sort out the curriculum to be taught.

Students enrolled in postsecondary agriculture programs

BY VIRGIL CHRISTENSEN

Editor's Note: Mr. Christensen is Head of the Agriculture Department at Hawkeye Institute of Technology, Waterloo, Iowa.

have made their choice of occupational area. Through the guidance of their parents, their high school vo-ag instructor, and/or their counselor, they have usually made their decision before they arrive on campus. Many of them have had the opportunity to explore different agricultural occupations through experiences in high school vocational agriculture programs. When students enroll in an agriculture career program, they in a sense, sign a contract with the educational institution — the student supplies the tuition and the willingness to learn and we, the instructors, supply and present the materials being taught. If we don't use relevant materials, we haven't fulfilled our part of the contract. How then do we find out what the needs of industry are?

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## A Postsecondary Teacher's View — Making Vo-Ag Relevant: THE BOTTOM LINE

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### The Role of Advisory Committees

Course content can be determined by the effective use of advisory committees. Effective use means that the advisory committee must have a balance within the members that make up the program committee. This balance is achieved by having both employers and employees represented. Input is essential from both sides of the desk, so to speak. Employers tell us what they have to have to make their operations productive. Employees inform us as to what they have to offer in reference to their skills and abilities. A match between the two should result in a rewarding situation for both. One may ask the question, How many members should an advisory committee have? The number should be determined by having enough members to achieve representation from all segments of the industry and yet, small enough for all to feel free and comfortable in voicing their thoughts. Nine to twelve members should be enough to accomplish both of the above.

Two of the more common mistakes we make are that we either don't meet often enough with the advisory committees or we don't listen to them and make the changes in our curriculums which they recommend. Advisory committees should meet at least once a year and twice or more a year is recommended. The meeting should be long enough to be productive and short enough to be effective. Two to three hours are usually sufficient. Once we have been informed of their suggestions and recommendations, it is up to us to implement these into our teaching. If we don't make use of the committees, we are doing a great injustice to all segments of the agricultural industry.

Here is an example of how an advisory committee can influence a curriculum: The first program of study for our agribusiness management program contained two courses on agribusiness records and accounting and a course designed to acquaint students with the use of office machines. Recommendations from our advisory committee were not to try to make the students accountants but mainly to expose them to accounting systems used by most agribusinesses. We now offer one basic course in records and accounting. They also felt that since many of the firms use quite different types of office machines, the office machines course could be eliminated. Students would then be taught how to use the different machines while they were on employment experience. We now have more room in the curriculum for technical information.

### The Role of Student Experiences

Course content can also be adjusted by making use of input from the student employment experience segment of the educational program. Most postsecondary agricultural programs consist of some employment experience, sometimes called on-the-job training. The objective of employment experience is to enable the students to explore their potential occupational goals early in their career preparation and to gain experience within the occupations of their choice. The length of time devoted to employment experi-

ence varies from program to program and from college to college. The employment experience period should be long enough for the student to have as many different experiences as possible and, yet, not so long that the student becomes "extra" labor for the firm. The main factor to keep in mind when selecting employment experience opportunities is that the firm provides the experience which the student needs. When this is done, opportunities are available to the student through this segment of the educational program that cannot be achieved in the classroom.

Most of the students return to the campus with renewed enthusiasm towards the remaining course work. They have had a chance to apply the skills they have and realize that more is to be learned before they become full-time employees. Some of the students find that they don't wish to make a career in the area in which they worked and wish to make a change in direction. This is not all bad. It is easier to make a change while students are on campus than it is after they become employed.

The main benefit received by instructors from student employment experience is the change made in the instructional program as it is presented to future students. Instructors, while supervising the students, have a chance to visit with the employer and observe the operation. The objective is that the changes made will make the program more relevant to the industry. For example, we found that our animal science students weren't getting enough training in general machinery and tractor maintenance. They could balance a ration to feed the cattle, but did not know how to operate an unloading wagon. We have now placed more emphasis on machinery operation in our machinery and equipment management course for the animal science student.

As another example, students knew how to work under others, but really didn't know how to direct personnel under their supervision. To correct this, we added a course in personnel management to our program of study. We have a course in sales and salesmanship to which we have added a unit on sales resistance. More emphasis has been placed upon the effective use of credit because money is harder to come by, and sound money management knowledge can be utilized by everyone. The animal science student studying swine production is given information that stresses the importance of soundness of skeletal structure because of the industries' movement to confinement facilities. There are many more examples which could be listed of the changes made in the instructional program which serve to make vo-ag more relevant to the needs of the agricultural industry.

### Instructional Improvement is Continuous

To be effective, instructional improvement and course revision should be a continuous process throughout the instructor's career. The basic responsibility of the individual is to continually upgrade himself or herself in order to present to the student the most current knowledge and skills as well as to present the material using techniques of instruction that will most effectively assist the student in learning.

Five years ago, our institution took the responsibility to provide opportunities for instructional improvement and to provide working conditions that allow and encourage

the upgrading of instruction. This is called our "Instructional Improvement Credit Plan." Instructors are given up to a maximum of twenty days per year to take college courses to attend industry workshops and seminars, and/or to work in business or industry. Instructors earn credits by participating in one or more of the above. Our institute pays the instructor one hundred dollars for each credit earned. An instructor may earn up to a maximum of three credits per school year.

Our agricultural instructors have mainly attended college field days and workshops to gain new knowledge of educational and industrial materials. These seem to be the

most beneficial sources of current information. Another excellent source of information is articles published in agricultural periodicals. This includes industry advertisements and news as well as feature articles.

### The Bottom Line

It comes down again to the bottom line! We must listen to the industry to find out what it needs. We must incorporate these needs into the curriculum and teach students the needed skills and abilities. That's what this whole game is all about — efficient and effective production within the agricultural industry. It's up to us to make vo-ag relevant.

## THEME

### The Chillicothe Story —

# How A Comprehensive Vocational Agriculture Program Meets The Needs of Agricultural Industry

Vocational agriculture can help to meet the needs of agricultural industry for highly skilled personnel. This will require expanded programs of agricultural education. Just as agricultural industry encompasses more than the retailing and handling of agricultural products, vocational agriculture programs should encompass more than just production agriculture.

The relationships between agricultural industry and vocational agriculture provide the framework for the vocational agriculture program at Chillicothe (Missouri) Area Vocational School. By recognizing both differences and similarities between agribusiness and production agriculture, a well-balanced set of educational objectives has been implemented in the high school and adult vocational agriculture programs. The purpose of this article is to describe elements of the program (we call it a "training network") at Chillicothe.

### Our Production Agriculture Program

One area of the overall agricultural training network at Chillicothe is production agriculture. With instruction in animal science, plant science, agricultural mechanics, and farm management, the production agriculture program is designed to meet the needs of our community. Technical and practical competencies are taught. The objectives are accomplished in three ways: classroom instruction, laboratory instruction, and supervised occupational experience (SOE).

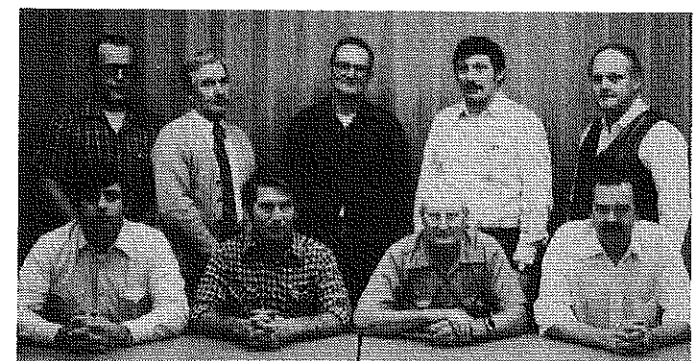
Student training in production agriculture area is based on the assumption that graduates will do one of three things: farm full-time, farm part-time, or go to college. A secondary assumption is that if they do neither of the three and enter some phase of agribusiness, then the knowledge gained will carry over to that field.

BY BILL GUTSHALL, DON BROWN, DON CASSADA,  
LEE FITCHETT, ROGER WOLF, AND RON WOLF

Editor's Note: The authors are vocational agriculture teachers at Chillicothe Area Vocational-Technical School, Chillicothe, Missouri.

Whether students enter farming or not, one basic fact remains: they must be adept in maintaining and analyzing basic accounting procedures. Therefore, all students, beginning with their animal science class, are required to maintain the Missouri Young Farmer Record Book. By becoming familiar with accounting procedures and analysis, their proficiency in money management and economic decision making is enhanced.

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The vo-ag instructors at Chillicothe Area Vocational School are: (seated, left to right): Roger Wolf, Dwaine Davenport, Don Ward, and Don Brown. (Standing, left to right): Don Cassada, Lee Fitchett, Wayne Wade, Ron Wolf, and Bill Gutshall.



## The Chillicothe Story —

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In addition to instruction in basic production agriculture taught in the animal and plant science courses, SOE is also emphasized. All students are encouraged to formulate their SOE programs consistent with their occupational objectives. Periodic farm visits by the instructor keep the students on track in their attempts to develop and realize their long range objectives. The third year of production agriculture emphasizes advanced livestock and crop production. Emphasis on record keeping is aggressively maintained in the third year. Students are encouraged to continue up-grading SOE programs.

During the third and fourth year, agricultural mechanics instruction is intensified. Students are given the option to choose either agriculture construction or "specialized shop." Technical skills in agricultural mechanics are accomplished both in the classroom and laboratory through hands-on application. Students are told what skills they are expected to learn, and instruction by demonstration is used to achieve the desired quality and proper procedures. A list of competencies is implemented for each student and his or her subsequent accomplishments are permanently recorded for future reference. This list is an especially useful reference when prospective employers inquire about students.

An example of a specific competency list follows:

### Competencies in Farm Power (Example)

Tractor Maintenance — The student should be able to:

	Level of Competence			
	1	2	3	4
1. Clean and Fill Battery	X			
2. Drain, flush and fill cooling system	X			
3. Clean and pack wheel bearings		X		
4. Adjust fan belts		X		
5. Adjust brakes			X	
6. Lubricate		X		
7. Change oil and filter	X			
8. Check tire pressure	X			
9. Align front wheels		X		
10. Tune-up ignition		X		

Key to Level of Competence: 1. Above average  
2. Satisfactory  
3. Needs Improvement  
4. Unsatisfactory

In addition to increased emphasis in agricultural mechanics during the fourth year, students can become more intensely involved in farm management. Such areas as agricultural credit, insurance, economic principles, income taxes, marketing, and partial budgets are emphasized. Complete record book analysis is taught by instructing students in the use of cash flows, depreciation schedules, financial statements, profit and loss statements, and enterprise analysis. Practical experience is gained through the implementation of a whole-farm plan based on an existing farm in the community.

## Our Agribusiness Program

Agribusiness was added to the Chillicothe agricultural curriculum in 1973. It is a full-time, four-year program with specific emphasis in the development of skills and characteristics sought by agribusinesses.

During the freshman and sophomore years, students develop basic competencies in agriculture through animal and plant science courses. The following basic skills in agribusiness are taught. These skills have been identified by representatives of agribusiness and the local advisory council. Areas of specific instruction include: selling and salesmanship, advertising and promotion, office procedures, office machines, money management, marketing agriculture products, and human relations. To facilitate "learning by doing" in the third year, students have access to video tapes, tape recorders, source people, and field trips. Students are also involved in mock, structured interviews conducted by local agribusiness personnel.

After three years of pre-employment agribusiness training, students are then given on-the-job training. This "bread and butter" of our agribusiness curriculum, for here that the characteristics of maturity, ambition, and practicality become visible. To enhance understanding among students, the employer, and the instructor, a training agreement is used which spells out all responsibilities. After an acceptable training plan has been developed, records are kept by the student and submitted for approval each Monday morning. Samples of on-the-job training skills are as follows:

- Graded seed corn
- Assembled 18 ft. offset disc
- Operated cash register
- Cut and wrapped hams
- Formulated drugs for feed
- Figured discount on soybeans
- Filled meat cases
- Planted wheat
- Combined soybeans
- Bagged feed
- Sold 4 chain saws
- Gave iron and rhinitis shots to 4 litters of pigs
- Priced freight

During employment, students are formally evaluated four times. The evaluations are based on competency levels and human relations involving the student, instructor, and employer. After completion of the agribusiness curriculum, a permanent file is maintained on each student.

## Our Postsecondary Farm Management Program

Since farming is the largest sector of agricultural industry found in our community, we have an educational program designed to facilitate the entry of young people into farming. Students in our postsecondary farm management program are 18-24 years old and are trying to make the transition from high school or college to farming. They may remain in this program from one to three years, with the eventual goal of leaving this program and entering a long-term farm management group.

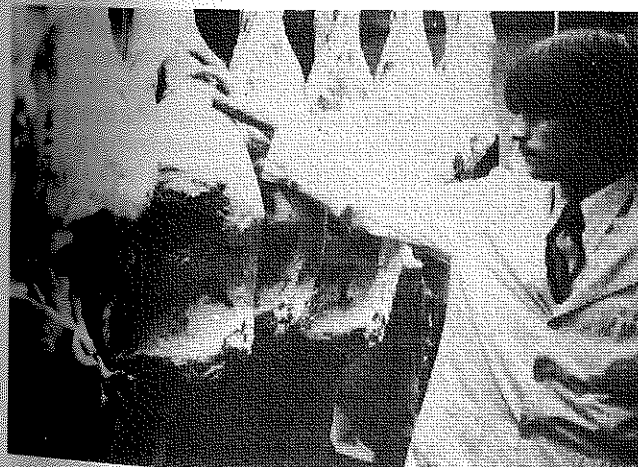
Instruction in the postsecondary farm management pro-

gram consists of two areas, classroom instruction and on-farm supervision. Class meetings are scheduled monthly from April to October and weekly during the fall and winter. Each member receives on-farm supervision every 4-5 weeks. Topics for the class are selected by the members, usually with 50 percent related to management and 50 percent related to production. On-farm supervision is about 70 percent financial management and 30 percent production oriented. Each member maintains the Missouri Young Farmer Record Book, which facilitates financial decision making and compares efficiency among members. Also, each member receives a personal financial analysis from the instructor along with an enterprise analysis breakdown of unidentified class members. In addition to financial management, other areas of specific concentration are soil testing and interpretation, livestock selection, animal nutrition, machinery selection, marketing, pest control, and livestock disease prevention.

## Our Postsecondary Farm Equipment Repair Program

Farm industrial equipment repair is another facet of the Chillicothe postsecondary program. Initiated in 1967, this two-year program deals directly with the needs of those planning to enter farm machinery repair occupations. An advisory committee consisting of machinery dealers and manufacturers helps coordinate teaching plans and basic competency skill development. Practical experience is encouraged in a laboratory setting designed as nearly as possible to that found in the repair shops of machinery dealerships.

Throughout this program, students are evaluated to determine mechanical competency development and skill retention. Results of each evaluation are permanently filed and readily available for future reference. On-the-job training is emphasized during the first year of instruction with each student receiving from 100-120 hours of basic on-the-job experience. Second year instruction is much more intense in specific areas of skills, such as fuel injection systems, hydraulics, and air conditioning systems.



Bret Dinwiddie is enrolled in the Chillicothe agribusiness program. Here he is shown gaining first-hand experience in meat processing as part of his supervised occupational experience program. (Photo courtesy Bill Gutshall, Chillicothe, Missouri.)

After graduation students receive placement help, with 15-20 job offers usually available for each graduate. Placement in the past has been very high, with 100 percent of those graduates desiring jobs being placed and receiving above average salaries.

A follow-up of graduates has been helpful in determining those areas of the curriculum that need to be upgraded. Most employers and graduates agree that the program is adequately meeting the needs for competent and highly motivated individuals in areas of agricultural equipment repair.

## Our Adult Farm Management Core Program

Adult education, although at times overlooked, is an integral and vital part in the over-all scheme of our vocational agriculture program. The adult program should be viewed as a culmination of previous efforts, via the high school and postsecondary programs, in a comprehensive agricultural training network. Our farm management core group is the basis of our adult program. It is the continuing phase of the vocational agriculture program, where those members of previous high school and postsecondary programs receive assistance to remain competitive in farming.

Chillicothe currently has twenty-seven members enrolled in the farm management core group, with one instructor committed to a full-time schedule. The Missouri Young Farmer Record Book is maintained by 86 percent of those enrolled in the program. Besides record keeping and record analysis, considerable emphasis is placed on management and production. As an added decision-making tool, members have at their disposal a computer data terminal and a programmable calculator. The computer terminal is coordinated by the instructor through the facilities of the University of Missouri and Virginia Polytechnic Institute and State University. Due to its versatility and mobility, the programmable calculator is best utilized during field visitations.

The instructor has a dual capacity role of being involved both in the classroom and with individual visits. Classes are scheduled throughout the winter months, with topics coinciding with member interests. The main thrust of the program is accomplished through individual visits made at all times of the year. Visitation frequency depends on membership status, with full-time members visited monthly and half-time members visited every other month.

At the start of each year, individuals establish a set of short-term goals for that year and review or revise already existing intermediate and long-term goals. By establishing goals, a framework for guidance and a benchmark for measuring accomplishments has been established. The long-term goals also provide program continuity. Short-term continuity is aided by the instructor's individual visitation form. This form is used during each monthly visit, indicating what was accomplished and what needs to be accomplished during the next visit.

The instructor's salary is paid in part by the state department of education, with membership fees making up the remainder. Fees are set annually with the consensus of the class executive committee and the instructor.

Implementation of adult education in the total voca-

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## The Chillicothe Story —

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tional agriculture program serves an ever-growing need and increases the impact of the total vocational program in the community.

### Summary

With a program the size of ours, there is considerable

need for coordination of the total program. Implementation and continuity of the entire Chillicothe vocational agriculture training network is facilitated by the agricultural supervisor. The supervisor is involved administratively in the day-to-day workings of all phases of the vocational agriculture program. By maintaining continuity, all programs are complementary, and thus better able to meet the needs of the diversified agricultural industry in Chillicothe, Missouri.

## THEME

## The Blackfoot Story —

# How Cooperative Education Meets The Needs of Agricultural Industry

When the agricultural cooperative education program was started in Blackfoot, Idaho, in 1970, there were a lot of skeptics in the community. Some didn't care for the idea of "kids running loose" for half a day, and some didn't want students to fill jobs that might be needed to support someone else's family. Still others objected to the idea of changing the emphasis of an already successful vo-ag program from a production agriculture format to one of training for farm-related occupations. Nonetheless, a community survey indicated that a majority of school district patrons were open to the establishment of an agricultural cooperative education program.

Agricultural cooperative education has been practiced in one way or another since the idea of vocational education began. In early colonial days, young people went through apprenticeship training to be blacksmiths, harness makers, millers, or other craftsmen while at the same time they were taught to read and write. In return for this training, the apprentice worked for the business as a full-time employee. As an organized part of vocational agriculture, cooperative education became an integral part of the program with the passage of the 1963 Vocational Education Act (PL90-576). It was further emphasized with the passage of the 1968 Vocational Education Amendments which provided money for planning and implementing cooperative education programs.

### The Blackfoot Program

The enrollment of the Blackfoot agricultural co-op program started out quite small and has grown so large that there are problems finding seating in the classrooms for all the students who register for the course. In order for students to enroll in the program, they must be seniors and have taken at least Vocational Agriculture I, although it is preferred that students complete the total program of Ag I, II and III. In the past nine years, 175 vocational agriculture students have completed the Blackfoot agricultural cooperative program.

By JAY C. MORTENSEN AND RICHARD M. FOSTER

Editor's Note: Mr. Mortensen is vo-ag instructor at Blackfoot, Idaho. Mr. Foster is a teacher educator at the University of Idaho.

Seniors enrolling in the co-op class meet each morning at 8:00 for the related instructional phase of the program. During the initial classroom meetings, students study specific human relations skills and explore many of the occupational interest areas. Many of the cooperating employers are used as resource persons, not only to describe their particular work station requirements, but also to provide realistic examples of how principles and concepts in the classroom relate to real life occupational settings. Students sometimes change their training station preferences based on such employer visits.

The work phase of the program begins approximately six weeks into fall semester, but only after students write their prospective employers and request job interviews. Every effort is made to insure that the job-getting process is as realistic as possible. Of course, there have been some instances when employers have decided not to hire a co-op student after the interview. Such cases most always turn out for the best, as an incompatible employer-employee relationship can be detrimental to that particular situation as well as to the entire co-op program.

The use of an advisory committee has been extremely beneficial to the success of the Blackfoot cooperative program. Many of the cooperating employers have positions on the departmental advisory committee and exert tremendous efforts to safeguard and improve "their" program. A recent attempt was made to reduce student enrollment and modify the cooperative education format, but advisory committee members were quick to point out the value of the program in teaching occupational skills to high school seniors. The attempt failed, and the advisory committee's influence at that particular time not only maintained the

program, but even enhanced its position as an important component of the high school curriculum.

Advisory committee members also provided input into such matters as new training station possibilities and subject areas to be considered in related classroom instruction. The amount of public relations provided simply by word-of-mouth has been of considerable benefit as well.

### What the Teacher Does

Supervision by the teacher during the initial few weeks of a student's placement is important in the transition from classroom student to employee. After the initial break-in period, supervisory visits are made weekly or by request. Here are some simple "Do and Don't" rules to be followed during supervisory visits.

- During the visits, the supervising instructor does:
- Show an interest in the work underway by being curious and asking questions when the opportunity presents itself.
  - Make notes after leaving on items which may be used for a conference with the student or for study assignments for the class.
  - Quickly sense the sponsor's desire to terminate a conference.
  - Consult with the training sponsor about progress of the student-learner in relationship to the training plan.
  - Involve the training sponsor in the evaluation of student-learners.

- During supervisory visits, the instructor doesn't:
- Call attention to student errors, bad practices, unsafe conditions, and the like in the presence of others.
  - Try to demonstrate how to do a job to which the student-learner is assigned.
  - Request a conference with the employer when he or she is obviously too busy.
  - Interrupt or interfere with the student-learner's work.
  - Appear to be loafing or just "passing the time of day."
  - Forget to reassure the student-learner before leaving.

The success of Blackfoot's cooperative program is based primarily on the cooperative spirit of each of the participating partners. Students must be interested and willing to commit both time and energy toward making their training programs a success. This commitment is developed mainly through classroom instruction and development of realistic co-op experience plans.

### Importance of Employer

The employer is the key to the entire program. It is expected that cooperating employers in the Blackfoot co-op program serve as teachers as well. The selection and development of on-the-job training stations is as important as the in-school instructional program since a large portion of the student's learning experiences will be gained on the job. The cooperative training station must be selected on the basis of the needs and career goals of the individual student-learner. Answers to the following questions aid in the final selection of good training stations:

- Does the training station sponsor show an interest in providing instruction on the job and not merely part-time employment for the student?
  - Does the training station sponsor express a willingness to match learning experiences to individual student capabilities?
  - Will the training station offer a variety of learning experiences for the student?
  - Does the sponsor indicate willingness to develop a step-by-step training plan in cooperation with the potential student and the vo-ag teacher?
  - Will the training sponsor discuss career possibilities with the student learner?
  - Is the physical and moral environment of the training station appropriate and beneficial for the student-learner?
  - Is the equipment and the training station safe, reasonably modern, and in good condition?
  - Is the business currently observing all state and federal laws relating to employment of minors?
  - Will the student-learners be employed at wages comparable to those paid to similar beginning workers or at the student-learner rate established by the U.S. Department of Labor?
  - Would the employer be willing to provide reports on student attendance, evaluation of work completed, and the personality development of the student?
- All of these questions and more need to be considered in selecting an appropriate student-training site.

### Benefits of Co-op

The benefits that the co-op program provides to students, the community, the school, and the employer cannot be fully measured. Some of the benefits are listed here.

- Benefits to students:
- Students can discover their true interests and abilities and test their aptitudes.
  - Make occupational choices.
  - Develop human relations skills.
  - Acquire specialized occupational competencies which could not be acquired within the normal school environment.
  - See the relevance of in-school learning and understand the meaning and purpose of the theoretical ideas presented in school.
  - Be better motivated toward work in all school subjects.
  - Earn while they learn.

- Benefits to Blackfoot High School:
- Provide an enlarged learning facility via use of community resources.
  - Expand the curriculum.
  - Decrease the dropout rate by better meeting students' career goals.
  - Develop and maintain a better relationship with agribusiness and industry in the community.
  - Become more responsive to the employment needs of

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## The Blackfoot Story —

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the community.

— Provide more individualized instruction.

Benefits to employers:

— Train potential full-time employees in their own plants.

— Obtain better qualified part-time employees who are receptive to instruction, motivated and interested.

— Get a more direct return from their school tax dollars.

— Render an important public service.

Benefits to the community:

— Young people capable of being more productive.

— Young people trained for local labor markets.

— Young people who are more apt to settle in the community.

— Better school-community relations.

Cooperative education in agriculture puts the cliché "experience is the best teacher" to work. Students gain entry-level job skills necessary to enter related occupations, the school is able to provide an expanded curriculum that is directly responsive to the community needs, and sponsoring employer gains reliable employees with the sights set primarily on learning rather than earning. Everyone gains through the implementation of a sound program.

## THEME

For the Horticulture Teacher —

# A Personal In-Service Program Can Keep You Relevant

Do not deceive yourself by thinking that as an employed vocational horticulture teacher you know everything about horticulture. The industry is rapidly changing and, regardless of your background, steps must be taken to ensure an up-to-date knowledge. Have you kept up with energy conservation techniques? Do you know which pesticides are legal to apply on horticultural crops? What are the operating costs facing the greenhouse, nursery, or florist in today's economy? These are just a sample of the questions that you will face in preparing students for their first horticulture job. Current, accurate, and relevant facts and practices need to be taught so that our students have the knowledge necessary for success in their first jobs.

To keep current with industry changes, the vocational horticulture instructor should be active within the industry. One approach is to join the *industry associations* (Teleflora, Inc., Florist Transworld Delivery, your state florist and landscape association, and local allied programs) and attend the meetings. If possible, become an active member, an officer, or on the board of directors. As an active member, try to plan a meeting to concentrate on new trends so that both you and the business persons have a current prospective. Many associations (one example is the Ohio Florist's and Nurseryman's Association) have yearly meetings which include a variety of speakers, workshops, and trade exhibits. You may be able to attend these meetings by using a professional day away from teaching. At the meetings, let the horticulturalists know who you are and what a vocational horticulture teacher does. Direct your informal conversations toward what they perceive to be the issues changing the industry. Determine any re-

BY CHRISTINE D. KARNS.

Editor's Note: Ms. Karns is currently a graduate student in Agricultural Education at Iowa State University. She previously taught horticulture in Clayton, Ohio.

sources which may be of help in up-dating your knowledge or which may be used in the classroom. Of most importance is to keep in contact with the horticultural business persons: Do not place a barrier between you, the educator, and the future employers of your students.

Visiting the local horticulture outlets is another manner to keep current with changing trends. Look at all phases of the industry from wholesale production and marketing to retail marketing so that you are able to visualize the total organization of the industry. Most owners are proud of their business and will openly explain their operation to you. (If you want a formal tour, be sure to contact the owner or manager prior to your visit.) By listening to the explanation and keenly observing the business, you will pick up many ideas based on actual practices to include in your teaching. It may be appropriate, here, to say you may observe some undesirable practices as well as desirable ones, but through visits to many businesses you will be able to differentiate between *new approved practices* and those of questionable quality.

Part of your responsibility in keeping up with current trends may be achieved by actually working in the industry. There is no better way to refresh yourself on the old approved practices and to learn new practices than by

being directly involved. Arrange with your local florist to become a part-time employee. Working one-half Saturday each week or helping out during the holiday rush may be enough time to keep up with the industry. Perhaps, summer employment is better for you and for two weeks you are able to arrange work at a greenhouse. Think of your job as realistic in-service education. It will be time-consuming and you won't make much money, but you will have some real and current experiences to include in your teaching!

Organize an in-service program on current trends with a university for all the horticulture teachers in your area. One longer session or several shorter sessions may be held to introduce the current trends of the industry. Bring in resource speakers from both the university and the industry. A university horticulturalist may introduce the latest research findings. An agricultural education expert can help you determine new methods to teach horticulture. The industry person can discuss the practices that should be taught to provide the student with the best perspective of the industry. The in-service session can give the vocational horticulture teacher a current outlook from various aspects — research, education, and industry — around which the course content can be built.

Meeting the challenge of including industry changes in your teaching can be partially done with resource persons. By utilizing industry people as resource persons, you will not only add variety to your class but also current trends will be introduced. Invite a horticulturalist to your class to discuss a topic of which you are unfamiliar. A unit on energy conservation may be best taught by the greenhouse owner who has just covered his/her range with polyethylene to reduce heat loss. A follow-up field trip to this greenhouse would permit you and your class to directly observe the reaction of the owner to the current energy conservation trends.

Outside of the classroom, a student's supervised occupational experience program allows you to keep up with the industry changes. Regardless of the type of project — garden plot, landscape design, or greenhouse crop — you and the student will be researching the current industry practices to ensure a successful experience. You may be able to arrange with a horticulture supplier to test the newest plant varieties in the student's project. The student benefits from a reduced cost of material, while the suppliers can observe the plant growth in the local climate. You can keep up with price changes, varieties, pesticides, and supplies as the student records his or her expenditures.

During the supervised occupational experience project, you and the student have the liability of obeying pesticide application regulations which forces you to have a current license. The student's own initiative and desire for the best production result may introduce you to new developments within the industry. You can capitalize on the knowledge students develop in their supervised occupational experience and incorporate it in your instruction.

Cooperative placement of a student offers another strategy for keeping current with industry changes. Once a student has been placed on the job, ask the employer for course content suggestions. From this introductory question, the employer is free to mention areas of study in which the student is deficient. These areas may be new

techniques unfamiliar to you which can now be considered for addition to your teaching. Through the cooperative placement situation, you may be able to form a close relationship with the horticulture industry persons. At times these people may be critical of your program, but by listening to their thoughts you may pick up suggestions which will help maintain an up-to-date horticulture program.

It is simple to consolidate the new ideas of horticulture experts through the advisory committee. Include horticultural professionals from the associations and organizations you have joined, local resource persons, cooperative placement employers, and horticultural suppliers on your advisory committee. The interaction of these industry representatives may generate concepts not considered previously. These persons can add insight for course content as well as for supplies, equipment, and laboratory facilities requirements. Your requests for up-dated equipment will be more favorably received when substantiated by experts who have used and *are using* that type of equipment.

Whether or not you keep current with the industry will be your decision. The horticulturalists cannot help you learn the new techniques unless you get involved with them. You can:

1. Join horticulture industry associations
2. Utilize horticulture outlets for field trips
3. Use horticulture experts as resource persons
4. Work in the industry
5. Participate in university sponsored in-service programs
6. Attend industry association workshops and seminars
7. Include horticulture professionals on your advisory committee.

Updating your program will enrich your students' education. They will have a better understanding of what to expect in their horticulture job and may be more at ease with the techniques used by the employer. With some extra effort you can involve horticulture experts in your program and provide your students with knowledge on the current trends of the industry.



Students usually enjoy classes in horticulture because they "learn by doing". (Photo courtesy of Montgomery County Joint Vocational School, Clayton, Ohio.)



## Privet, Petunia, or Peperomia — Can You Tell Them Apart?

Whether it be trees, shrubs, flowers, foliage plants, grass plants or weeds, the identification of plant materials is a very important aspect of horticulture. One reason is that a great many times a person who is working in a horticultural occupation will have customers with questions who will bring in just the leaves, a branch, or a flower. The customers will want to know what is wrong with the plant, why it is not growing, or where to plant it. Obviously, the first step in determining the answers to these questions is the positive identification of the plant.

It cannot be overemphasized how important well-developed plant identification classes are to a horticulture program. More and more schools are starting to incorporate some type of horticulture program in their class offerings. Many times these classes must be taught by agriculture instructors who are not well-versed in plant identification. I am not a converted agriculture teacher, but a converted botany teacher. Botany and horticulture are not as closely related as many people think. The following is how I moved out of the "twilight zone" into reality.

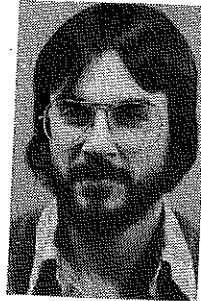
### How I Learned Plant Identification

At first many of us have a limited amount of plant identification knowledge with which to work. Either we were never trained in this area or like a good number of things you learn in college, you forget it and have to relearn it later when it is needed. Being a vocational agriculture or horticulture teacher, especially during the first couple of years, you are extremely busy with the FFA, class preparation, fruit sales, sick cows, and mildewy plants. Combined, these make it difficult to learn a large amount of diverse plant material in a short period of time.

I have found over the past five years that the best way to learn plant material is to work at it in a constant accumu-

By PAUL DROBAT

(Editor's Note: Mr. Drobat is Horticulture Instructor at Franklin High School in Franklin, Wisconsin.)



lation process. Start out teaching about the plants you know plus some with which you are slightly familiar. Make it a point to continually update and add to your personal list. As you become more familiar with more plants, the identification of them becomes easier. To cement the identification of the plant in my mind, I always ask myself, "what is it?" The more times you see a plant, the more little secret identification features will be revealed. You can then pass on these secret identification features to your students. Also, listen to your students. They will often come up with good ways of their own for remembering plant names.

### How I Teach Plant Identification

Nothing is better than when the student can see the actual plant, its leaves, bark, branching, flowers, and growing form. Of course, this is not always possible. It could be the wrong season, or the plant does not grow in your vicinity and it is impossible to get it from somewhere else.

When live material is not possible to obtain, the next best thing is slides. I think the 35mm camera is probably the most valuable tool a horticulture teacher has. Over the past five years, I have taken over 800 slides. These have been used extensively in my high school and adult evening classes. In the winter, you can have available the bark, leaves, flowers, and growing form of a tree or all of the different types and colors of the Chrysanthemum flowers.

If you are not a camera bug, slide sets can be purchased from a number of companies, but be careful. Some sets are of poor quality. Look for some of the sets your fellow teachers have purchased, and then make your choice. However, the best slide set is the one you tailor to your own class.

Pressed specimens are another way that works well, especially for trees and shrubs and weeds. The best way to obtain a collection of these with the least amount of work on your part is to give the students the assignment to bring in a certain number of pressed specimens they have pressed. They take a day and have them mount on choice specimens. If the assignment is to bring in specimens from the students' own backyards, it works doubly good. Not only are they learning about plants, but they are working with plants that are familiar to them. They will be the plants they learn and remember the best.

Pictures are another way to teach plant identification. However, good pictures are hard to come by. Pictures seem to confuse the novice. At times they do not seem to be able to put the picture and the real plant together. Taking pictures out of old magazines and catalogs and making flash cards out of them is a good aid, and a good way to use outdated seed catalogs!

The more different teaching aids you can gather together, the better job you can do. The following is a list of nine things I do, using these different aids to teach plant identification.

1. Repetition — the more times the students see the plants, the better.
2. Diversity — when possible, the more different ways a plant is shown the better. As with trees, show them in the fall in color, in flower, their winter form, with fruit, etc.
3. Grouping — try to place the plants together in groups according to some common characteristic. These

groupings can be made from natural or artificial characteristics.

4. Familiar Plants — have the students identify all the trees, shrubs, flowers, etc. in their own backyards or places they frequent. These plants will be the easiest to remember.

5. Research — give the students a stack of pressed specimens and a good set of reference books and let them find out what they are.

6. Knowledge — do not teach just names of plants. Tell the students something about the plant. This little bit of knowledge is many times as good as a physical characteristic.

7. Quizzes — many short quizzes help the students test what they al-

ready know and what they should study to prepare for the big test.

8. The Big Test — every plant identification unit should be followed by a test. On my big test, there are two parts, lasting two days. One day, 90-100 slides are shown for identification and the next day, 90-100 pressed specimens, fresh samples, and live plants are shown.

9. Review — in order to get the students to have a little better retention of the plant material, I have them list, on a prepared form, all the plants they have studied and rate how well they know the plant on a scale of one to three. The list is reviewed later on in the year.

At Franklin High School we have developed a three-year horticulture program. The first year includes botany, while the next two years cover horticulture sequence courses. During the last two years, I have identification units on landscape materials, such as trees, shrubs, annuals, perennials, turf species and their accompanying pests, weeds, foliage plants, and potted flowering plants. In all of the identification units, I try to use the teaching methods mentioned above. Some of the units are 15-20 class periods long. Others are only 3-5 class periods, depending upon the materials being studied and the rate at which the class is absorbing the material.

## This Business of Teaching

By  
FRANK E. KENNEDY  
(Editor's Note: Mr. Kennedy is Vocational Agriculture Teacher in Vega, Texas.)



When we hear the word "teach," what is our reaction? It should be learning, since it takes a teacher and a student to complete the process of teaching. Effective teaching is based primarily on two categories: (1) a well-versed, creative and energetic teacher, and (2) an audience willing to learn.

### Respect and Discipline Necessary

To fulfill the above categories there must be respect and discipline. Without discipline there can be no teaching or learning. I will hasten to admit this is a two-way proposition. Teachers must discipline themselves to the extent that they are fair, honest, and impartial. The teacher cannot get too close to the students because this will destroy much of the respect that has been gained.

A lack of communication and understanding is one of the main reasons that some teachers do not have discipline in their classes. Many times teachers assume the students understand something that seems so simple to us, especially when we have been teaching it for a number of years. We should be very careful not to let this happen. If we do, this can cause lack of communication and understanding just mentioned. To maintain discipline the stu-

detail what I expect from each student in my class and what they can expect from me. One example is that there will be no horseplay in my classes, and especially in the shop. The students know in advance what to expect if they get out of line. I make sure the students understand why I have each policy or rule.

### Individual Approaches

It is important to study and learn individual students because they are all separate individuals. What will work for one will not always work for the other. To bring out the desire to learn on the part of students the teacher should not get in a rut by using the same procedure all the time. A teacher must constantly change procedures in teaching, such as class discussion on one subject, written exercises on another, research and reporting on another, and so on.

### Give Students Responsibility

Students like to be given responsibility, whether they will admit it or not. As an example, when working in the shop, I will divide the class into groups and assign a student to be in charge of that group. We refer to this student as the foreman. I change foremen often, in some cases during the same period.

(Continued on Page 18)



## This Business of Teaching

(Continued from Page 17)

For example, in building a farm building (usually a storage house) one group will start cutting studs, another rafters, while another cuts floor and ceiling joists. After I feel they know what they are doing and how to do it, I have the groups change places until each group has learned each skill. I always try to point out mistakes or a better way to do what is being done. Above all, I try to praise the students when they have done their best.

When you find a student who learns quickly or may have had previous training, don't hesitate to use that student to help the other students. Many times a slow learner, or in some cases a disinterested student, will respond to a student when they won't to a teacher.

### Other Methods

Another method that usually works well which I use when teaching diseases of livestock is to assign one disease to each student. I let the students do research in class and any other place that

they may find authentic information. When each student has finished, then I have them give their report to the class. This is also good leadership training. Don't overlook the possibility of using resource people to speak to your class on specific subjects. When showing slides with prepared scripts, let different students read the script while you show the slides. Of course, the teacher will want to add his or her own comments as it goes along.

There are unlimited methods that make teaching interesting and effective; however, each teacher must develop his or her own technique.

### Student Survey

From a survey made of my junior and senior students on the subject, "What Makes Effective Teaching," many of the things I have mentioned were confirmed. The overwhelming majority listed "Secure attention and interest of the student." Other items listed by the students were:

1. Use different methods of instruction.

2. The teacher should try to understand the student.

3. Allow plenty of time for questions and answers.

4. The teacher should know the subject matter.

5. The teacher should have experience with students.

6. Allow students to express ideas and discuss them.

7. Take time to listen and discuss student problems.

8. Maintain discipline.

9. Don't dwell too long on one subject.

10. Add occasional humor with presentations.

11. Allow time for students to think on their own and learn by making mistakes.

12. Give more individual attention to slow learners.

13. Be fair with all students.

14. Teachers should try to encourage their thinking on the student level.

15. Let students assume some responsibility.

## ARTICLES

# Does High School Instruction in Agricultural Mechanics Make a Difference

The agricultural mechanics program is a very important part of vocational agriculture! It is important for several reasons:

- 1) it provides an excellent opportunity to "learn by doing,"
- 2) today's agriculture is highly mechanized,
- 3) it provides many opportunities for students to learn marketable skills, and
- 4) it is an important tool in capturing and maintaining interest in the total vocational agriculture program.

Learning new skills has always been emphasized and will continue to be in the future. Students today must possess marketable skills in order to contribute to society. The development of agricultural mechanics skills in-

volves much more than the presentation of facts and information. Many skills can be taught and learned through approved projects. However, we need to be careful not to over-emphasize projects in our teaching. Before any projects are approved, students should be required to complete certain activities where they learn specific skills. For example, if a student wanted to construct an approved welding project, he or she should first be required to complete certain basic arc

welding skills such as a butt, lap, and t-fillet welds.

This gives the instructor a good opportunity to check and see if the student has the ability to complete a welding project on a larger scale. This principle can apply to all areas of the agricultural mechanics programs, whether it is carpentry, tractor power, agricultural machinery, soil and water, or some other area.

### Our Research Procedure

A recent study at Iowa State University was conducted to measure the effect of previous agricultural mechanics training on achievement in a basic metals and welding course. The students enrolled in Agricultural Mechanics 254 were studied.

Information was collected from three sources:

- 1) a survey administered during the final week of each quarter,
- 2) a mechanical aptitude test, and
- 3) laboratory, lecture, and course totals obtained from each instructor involved in the study.

The mechanical aptitude test was given only to winter quarter students since copies of the test could not be obtained until that time. The lecture points were totaled from three tests administered during each quarter in lecture covering the areas of metals, oxy-acetylene welding and arc welding. Each test was worth 100 points. The laboratory points were totaled from:

- 1) 15 welds, each being worth 10 points,
  - 2) two welded trophies at 25 points each, and
  - 3) six metal projects totaling 165 points.
- Metal projects were evaluated using an evaluation form similar to the form illustrated in Table 1.

Table 1. Evaluation score sheet for evaluating a twist drill bit

Drill Bit Item	Possible Points
1. Cutting lips 59°	6
2. Cutting lips equal length	6
3. Clearance angle 12-15°	4
4. Correct angle between dead center and cutting lip	3
5. Smoothness of grind	2
6. Spiral chips	2
7. Safety & work habits	2
<b>Total</b>	<b>25</b>

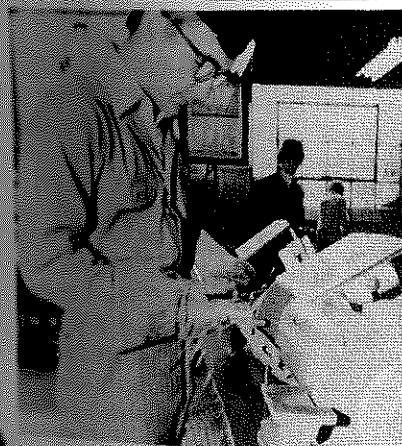


Figure 1. A student using safe and correct procedures in preparing metal for a required activity in oxy-acetylene welding.

An example one-page plan used in the metal phase of the course is illustrated in Figure 2. Note the parts of the one-page skill sheet including the plan, construction procedures, abilities and understandings to be learned, bill of material, and evaluation score sheet.

Three assumptions were made in the study:

- 1) all students had an equal opportunity to see, hear and learn the material presented,
- 2) differences in demonstrations and individual instructors produced no bias in the study, and
- 3) information obtained from the survey accurately reflected the ability of the participants.

### What We Found

Students who had received previous instruction in agricultural mechanics were compared to those who had received no previous instruction. Group one represented those students who had received no previous high school agricultural mechanics instruction and group two represented those who had received training. Data in Table 2 reveal scores for laboratory, lecture, total course, and the aptitude test by the amount of high school agricultural mechanics training.

Table 2. Mean dependent variable scores by amount of high school agricultural mechanics training.

Variable	Group <sup>a</sup>	N	Mean	S.D.	t-test
Lab.	1	42	292.43	26.31	-1.54
	2	162	299.08	19.22	
Lecture	1	42	242.76	21.67	-0.12
	2	162	243.18	19.20	
Course	1	42	535.43	40.65	-1.06
	2	162	542.53	30.75	
Aptitude	1	8	88.63	7.69	0.95
	2	57	88.68	8.26	

<sup>a</sup>Group 1, had no previous instruction in agricultural mechanics, Group 2 had one or more semesters of instruction in high school agricultural mechanics.

Even though scores were higher in all areas for those students who had received previous instruction in agricultural mechanics when compared to those who did not, no significant differences were found to exist.

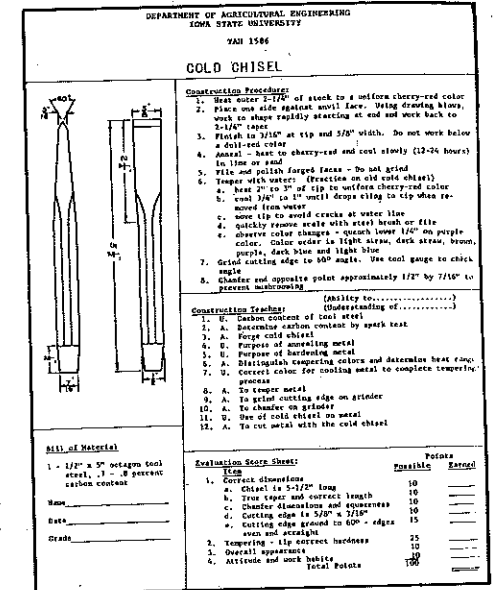


Figure 2. A one-page worksheet on sharpening a cold chisel.

The authors believe no significant differences were found for several reasons:

- 1) groups being compared were not of equal size,
- 2) students who had received previous instruction in agricultural mechanics may have enrolled in Agricultural Mechanics 254 with the idea that they could not gain much from the course since they had received previous training, and

- 3) high school and junior high school instructors may be placing too much emphasis on project development and not enough on skill development in areas related to agricultural mechanics.

Agricultural mechanics is an important and exciting area to teach. Approved projects can be very worthwhile, as they do give a sense of pride to the student completing the project. However, we should not overlook the importance of teaching basic skills first and then allowing each student time to complete an approved project or activity related to these skills.



## An Electrical Wiring Panel

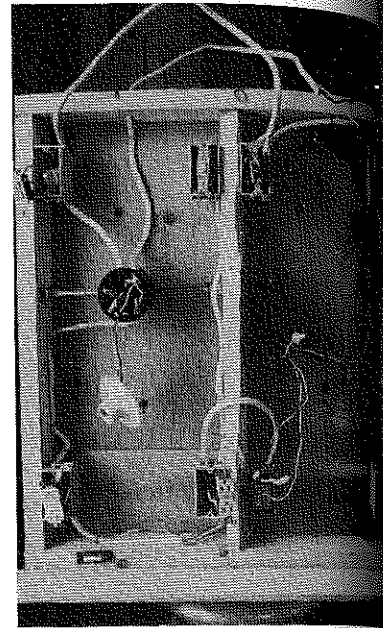
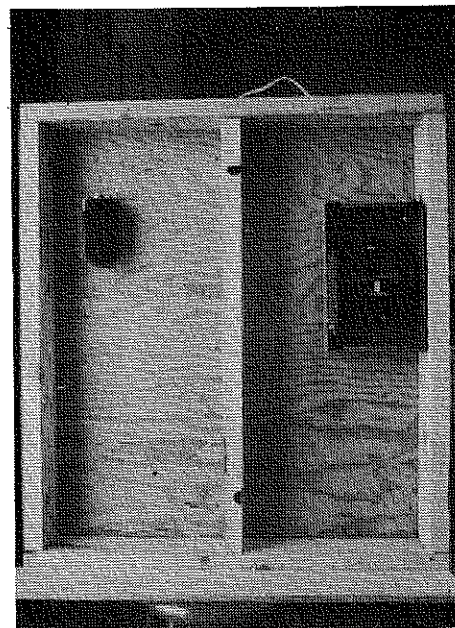
By VERN DAHLSTROM

*Editor's Note: Mr. Dahlstrom is teacher of vocational agriculture at the Billings Career Center, Billings, Montana. This article is based on his entry in the Ideas Unlimited Contest sponsored by the National Vocational Agriculture Teachers Association.*

An electrical wiring panel can be used as a "learning by doing" exercise in teaching wiring. A panel is also useful in preparing for agricultural mechanics contests.

I have found that a panel of the type I am describing here is compact and easy to store. It can be used without having to take up a lot of space in the laboratory.

I prefer a panel that is 4 feet by 4 feet square, with the studs on 16 inch centers. Two panels are made and then put together back to back. One side of the panel has a breaker panel and a wall receptacle placed in the wall. The other side has two 3-way switches, two wall receptacles, and a light attached to the studs according to electric code



specifications. The wires are stapled to the studs. (See the accompanying photographs.)

We have made six of these panels for our vo-ag department. (The teacher of

industrial electricity also uses the one when not needed in vo-ag.) In addition, our panels have been transported and used for our district contests.

## ARTICLES

### Is a Teacher a Leader?

Teaching is a part of leadership, and vice-versa. It may be easier to do a job than to teach another to do it, but the true leader helps others develop their skills. A lot has been said about leadership: What is it? Why do some people have it? Many concepts have been attached to leadership. Because it has been used in so many different ways, people are on guard when they hear the word, "leadership." Most people don't know how to register this concept in their minds until they hear the speaker develop it. Even then, they are not sure.

What is this thing or concept called leadership? How is it taught? How is it learned? Who can be a leader? When is it necessary? Where does one use it?



By  
ROBERT A. MARTIN  
*Editor's Note: Mr. Martin is an instructor in the Agricultural Education Department at The Pennsylvania State University.*

Why be a leader? As vocational agriculture teachers we work with this concept every day, but do we really know what we are doing and what the concept can mean in terms of our teaching? These are questions without easy answers.

#### What is Leadership?

Leadership is not a mystical trait; individual has and another has. It is learned behavior that anyone can master and improve by study and application. Anyone can be a leader if they have the determination to develop the abilities that make a leader. Leaders are not born, they are developed, most completely by their own efforts. All right, you say, but you still haven't said what leadership is. Good people. Of all the definitions I have heard, the one closest to expressing the meaning of leadership:

True leadership is that ability to cause others to take initiative, act, and responsibility for any endeavor.

...and in so doing cause the group to achieve its goals and at the same time make the individuals in the group feel happy about being involved in the process.

True leadership sets the pace but not the boundaries of group effort. In modern day society we want people to be creative. The true leader brings out this creativity in people by making each individual feel they have something to contribute and that their input is important.

A true leader sees the direction in which a group is moving and gets there quicker than the group as a whole, quick enough so the leader's ideas and actions may influence the thoughts and behaviors of the group. A leader helps the group achieve what it believes is important. The leader's thoughts are consistent with his speech and actions. He has ideas and can make suggestions, modifications, or expansions of ideas. But the leader can receive and implement others' ideas, too. The leader is open, receptive, and kind.

There are many forms of leadership. But in true leadership we are thinking in terms of positive group effort. Some might think in terms of a leader being one that dominates a group and forces his/her opinion and ways on the group. This may be leadership but certainly not what the majority want. It may be what the majority get but not what the majority want.

Sometimes people confuse leadership with bossing. There is a difference.

- The boss drives men —
  - The leader guides them.
  - The boss depends on authority —
  - The leader on good will.
  - The boss creates fear —
  - The leader develops confidence.
  - The boss assigns tasks —
  - The leader sets the pace.
  - The boss says, "I" —
  - The leader says, "We".
  - The boss says, "Go" —
  - The leader says, "Let's go".
- (Author unknown)

#### Why Be a Leader?

Leaders serve. This is the key to developing a true leader. Leaders put emphasis on their value to others. Benefits to self are incidental, but by assisting others, individuals gain much. Teachers are in a unique position here. Whether we realize it or not,

students tend to emulate their teachers. They learn by example.

Persons who have learned to lead have the characteristics most young people admire and want for themselves. Good leaders have respect, poise, confidence, ability to think clearly and skill to shoulder responsibility. They are productive and useful citizens of society. Leaders have maturity, because development as a leader helps develop maturity. To be good teachers requires us to be good leaders.

#### Who Can Be a Leader?

Contrary to popular belief, individuals are not suddenly crowned with the qualities needed for effective positive leadership. Anyone can be a leader with work. Every member in a group is a leader when he contributes an idea. Leadership passes from person to person as each contributes to achievement of group goals. A group reaches its peak of performance and effectiveness when leadership is diffused throughout the membership. There should be no limit to the number of leaders within a group. The more the better because the very act of leadership develops initiative, creativity, and mature responsibility that the group needs from each group member.

As teachers, we have the responsibility to be effective leaders in the groups in which we work from day to day. We also have the responsibility to effectively develop leadership in those students whose lives we help shape. It is no easy task. Whether we realize it or not we may be and are shaping leadership abilities in those group projects we sometimes have our classes involved in or those group or classroom discussions we carry on or those numerous FFA committee meetings. The opportunities are endless. We need to recognize them as opportunities and use them to the fullest extent so that we can get everyone involved and draw out that leadership quality and potential that lies within our students.

#### How Does One Learn to Lead?

The best way to learn how to lead is to lead. This does not mean a person must dominate. It means being "fired-up" and having that enthusiastic drive to get something done. A leader must have a desire to serve, to achieve goals, and to leave things better than they were when the leader found them. It

also means potential leaders must study leadership. Beal, et. al.,<sup>1</sup> suggest a five point program to learn leadership:

1. Study the qualities of recognized leaders.
2. Study yourself. Recognize your strong and weak points.
3. Work at being a good follower. Those that cannot obey cannot effectively lead.
4. Learn as much as possible about group action. Make sure you understand your group.
5. Develop a plan of learning and improvement in leadership and work your plan.

Remember that leadership is a function. It is something a person does. It is not a group of personality traits.

#### When is Leadership Needed and Learned?

The timing of leadership may be important. Do we recognize when leadership is needed most? The true leader recognizes opportunities to serve the group and takes the initiative to help make those sometimes fuzzy ideas of the group into clear cut goals and directions of positive movement. Our emphasis should be on leadership as a process not solely on the leader as a person.

It is most important for leaders to remember that their particular ability may be very effective in the situation in which they now work, yet in other situations their leadership may be less effective. It is likely, however, that the person who is effective in one or more situations will want to learn how to be more effective in other situations. Herein lies the never-ending learning process. To be effective leaders we must always be learning.

As has been stated, leadership is learned by experience and study. Leadership ability comes with practice. Each experience builds on the next and provides the background for more complex leadership tasks. Leadership experience may bring mistakes, but as Mahatma Gandhi once said, "Freedom is not worth having if it does not include the freedom to make mistakes."<sup>2</sup> The true leader rebounds from mistakes and uses these experiences to build a firmer base for positive effective leadership.

(Continued on Page 22)



## Is A Teacher A Leader?

(Continued from Page 21)

### Where is Leadership?

Where leadership is or should be can be determined on the basis of where the leader is today and what the group the leader represents has as goals. Leadership is a group phenomenon. One cannot lead unless there are those to be led. So we need to start where we are. Start in that classroom, in that teacher's meeting, in that church meeting. Begin listening, learning, participating, acting, and positively contributing to the group and we will be leading. We will be providing direction to the group. As teachers, we are in the midst of this phenomenon called leadership every single day. Do we take advantage of it?

### Summary: We Are Examples

It is well for leaders to keep in mind at all times that we become an example

to other members in our group the moment we participate. We need to remember this as teachers. Example is the best teacher. Individuals with whom a leader works are likely to copy attributes, characteristics and methods used by the leader. This is where it is and what it is and what it is all about in-so-far as teachers are concerned. Teachers are leaders shaping the lives of future leaders. As the following poem expresses, we will do this by our very example:

I'd rather see a lesson  
Than to hear one any day.  
I'd rather you walk with me  
Than merely show the way.  
The eye's the better teacher  
And more willing than the ear  
And council is confusing;  
But example is always clear.  
The best of all the teachers  
Are those who live their creeds,  
For to see good put into action  
Is what everybody needs.

I can soon learn to do it  
If you let me see it done.  
I can watch your hand in action  
But your tongue too fast may  
And the counsel you are giving  
May be very fine and true,  
But I'd rather get my lesson  
By observing what you do.  
(Author unknown)

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## BOOK REVIEW

HANDBOOK OF  
AGRICULTURAL OCCUPATIONS  
by Norman K. Hoover  
Danville, Ill.: The Interstate Printers  
and Publishers, Inc., 1977,  
Third Edition  
364 pp., \$9.25

For many years, agriculture and farming were used almost synonymously. Even today's dictionary makes very little distinction between these two terms. Although most well-informed people now understand that agriculture or agindustry is a much broader term than farming or production, misunderstandings continue to exist in some influential circles. This handbook clarifies the meaning of these and several other related terms in a lucid manner.

A major purpose of this handbook is to provide realistic information about a cross section of off-farm occupations in agindustry without neglecting employment opportunities on farms and in the professions. Therefore, seven of the fifteen chapters emphasize "Off-Farm Occupations" which generally do not require a college degree. These include: agricultural supplies; agricultural mechanics; agricultural products — livestock, fruit, and vegetables; agri-

cultural products — cereal grains and other crops; ornamental horticulture; agricultural resources — conservation, wildlife, and recreation; and forestry. In addition, three chapters stress "Occupations in Agricultural Production" and cover self-employment, paid employees, and service occupations. One chapter is devoted to "Professional Occupations in Agriculture."

Occupational briefs are included for 87 typical off-farm agricultural occupations. These briefs are organized around an appropriate four point outline: 1) description and nature of the work, 2) working conditions, 3) educational and personal qualifications, and 4) how to enter and advance. All of the occupational briefs were reviewed and updated by professional persons in agriculture or by agriculture industry persons for the third edition. Succinct descriptions of 72 titles for owners and employees in agricultural production are also included.

The functional handbook is theoretically sound from a vocational guidance standpoint. Four chapters focus on "Career Education in Agriculture" and embody the philosophy of Frank Parsons who believed persons considering employment should study themselves,

evaluate different occupations, match their attributes with their opportunities before making a final decision. These chapters are also permeated with the occupational choice and vocational development theories of Ginzberg, al., Super, and Tiedeman.

Dr. Hoover, Professor Emeritus of Agricultural Education, The Pennsylvania State University, is uniquely qualified from extensive experience as a teacher, researcher, and author to write a book of this nature. He has participated in many professional meetings, workshops, and summer schools with teachers of agriculture and vocational guidance counselors on this and related topics.

This handbook is designed primarily for high school youth from any background with curiosity about the ag industry, but interested adults could benefit from reading it. It should serve as an invaluable reference for guidance counselors, teachers of agriculture, county agents. The book also appears appropriate for students and guidance personnel in two-year community colleges and technical schools.

J. Alex Hash  
Clemson University  
Clemson, South Carolina

## FFA PAGE

# National FFA Foundation Report

The National FFA Foundation Sponsoring Committee completed an excellent year in 1979, raising over \$1,000,000. This is a new record of financial support for the FFA.

Robert D. Lund, Chairman of the Sponsoring Committee, announced the new record during the past National FFA Convention. Lund, who is Vice President of General Motors Corporation, relinquished the duties of chairman for 1980 to Roland M. Hendrickson, President of the Agricultural Division of Pfizer, Inc.

Changes in the FFA Foundation Sponsoring Committee include:

- 1980 Chairman:  
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- 1981 Chairman:  
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1982 Chairman:  
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Past Chairman:  
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Vice President  
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Warren, Michigan 48093

The Sponsor's Advisory Committee has added ten new members. These are: Emmett Barker, Farm & Industrial Institute; Robert M. Book, Elanco Products Company; Glen Christians, Massey-Ferguson, Inc.; F.J. Doering, Wisconsin Department of Public Instruction; B.D. Gill, Amoco Oil Company; Allan Grant, American Farm

Bureau Federation; William Jensen, Butler Manufacturing Company; Ted Priebe, Century Communications; Gordon Sawyer, Sawyer/P.R. and E. Norris Tolson, E.I. duPont de Nemours & Company.

Continuing members of the Sponsor's Advisory Committee are: A.J. Adolphi, Ciba-Geigy Corporation; Connie O. Borsting, Weyerhaeuser Company; Jack Campbell, Miller Publishing Company; John Davies, International Harvester Company; Donald E. Fricker, J I Case Company; Odell C. Miller, Ohio State University; Raymond C. Reiker, Stork/Gamco.

The Executive Director of the National FFA Foundation Sponsoring Committee is Bernard L. Staller. Don N. McDowell serves as consultant to the Committee. The address of the Office of the Sponsoring Committee is 310 North Midvale Boulevard, P.O. Box 5117, Madison, Wisconsin 53705.

## NVATA Board of Directors

The National Vocational Agricultural Teachers' Association (NVATA), an American Vocational Association (AVA) affiliated organization of agricultural educators within the AVA Agriculture Education Division, began its

32nd year of professional service and leadership with the conclusion of the 73rd AVA Convention in Anaheim, California. Pictured are the members who will serve on the 1979-80 NVATA Board of Directors.



(Standing, left to right): Tom Jones, Vice President, NVATA Region I, Marana, Arizona; Robert J. Tuttle, Vice President, NVATA Region II, Eckert, Colorado; Layton G. Peters, Vice President, NVATA Region III, New Ulm, Minnesota; Dale Butcher, Vice President NVATA Region IV, West Lafayette, Indiana; Troy W. Carothers, Sr., Vice President, NVATA Region V, Ocala, Florida; Arthur P. Ives, Vice President, NVATA Region VI, Oxford, New York.  
(Seated, left to right): Sam Stenzel, Executive Director, Alexandria, Virginia; Albert Timmerman, Jr., President, Rockdale, Texas; John P. Mandy, Past President, Meridian, Idaho.  
(Photograph courtesy of Sam Stenzel, Executive Director, NVATA, Alexandria, Virginia.)

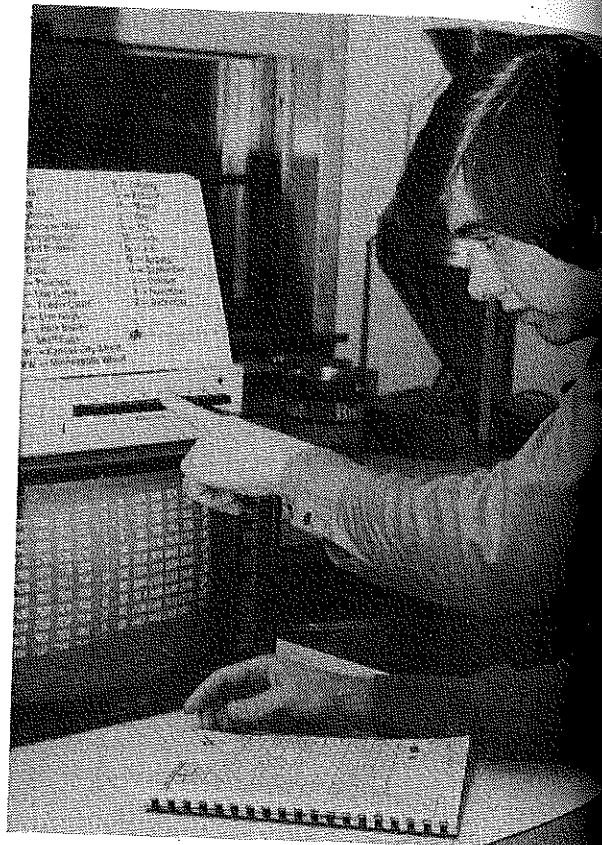
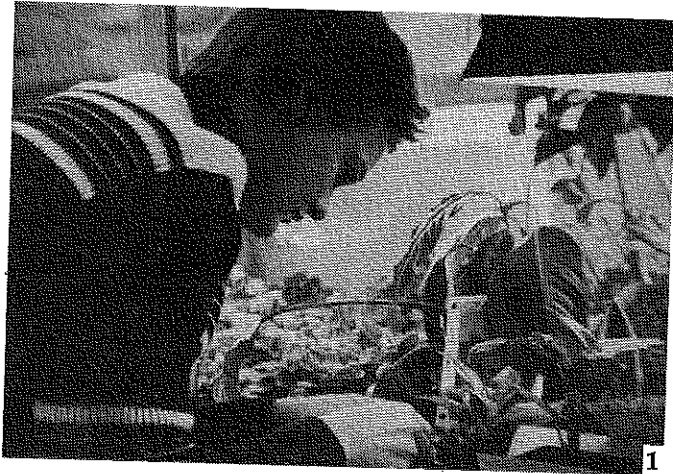


Stories In Pictures:

## Making Vo-Ag Relevant to the Needs of Agricultural Industry

Relevant programs in agricultural education are needed if competent manpower is to be available for agricultural industry. New skills will need to

be taught. Success in today's agricultural industry requires people who know computers, search, human relations, and many other skills.



### Photograph Descriptions:

1. A student at Hawkeye Institute of Technology is shown propagating a plant. This experience is being gained on-the-job with a greenhouse firm.

2. Getting foods into the forms desired by consumers requires skills in many areas. This student at Chillicothe, Missouri, is shown at work in his supervised occupational experience program.

3. Many agricultural occupations involve selling. Here a student at Hawkeye Institute of Technology is shown receiving instruction in sales procedures from her employer while on employment experience.

4. Computers are increasing in importance in agriculture. This student in a commodity marketing course at Hawkeye Institute of Technology is learning how computers are aids in making decisions.

### Photograph credits:

Photographs 1, 3, and 4 are courtesy of Virgil Christensen, Hawkeye Institute of Technology, Waterloo, Iowa.

Photograph 2 is courtesy of Bill Gutshall, Chillicothe, Missouri.

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