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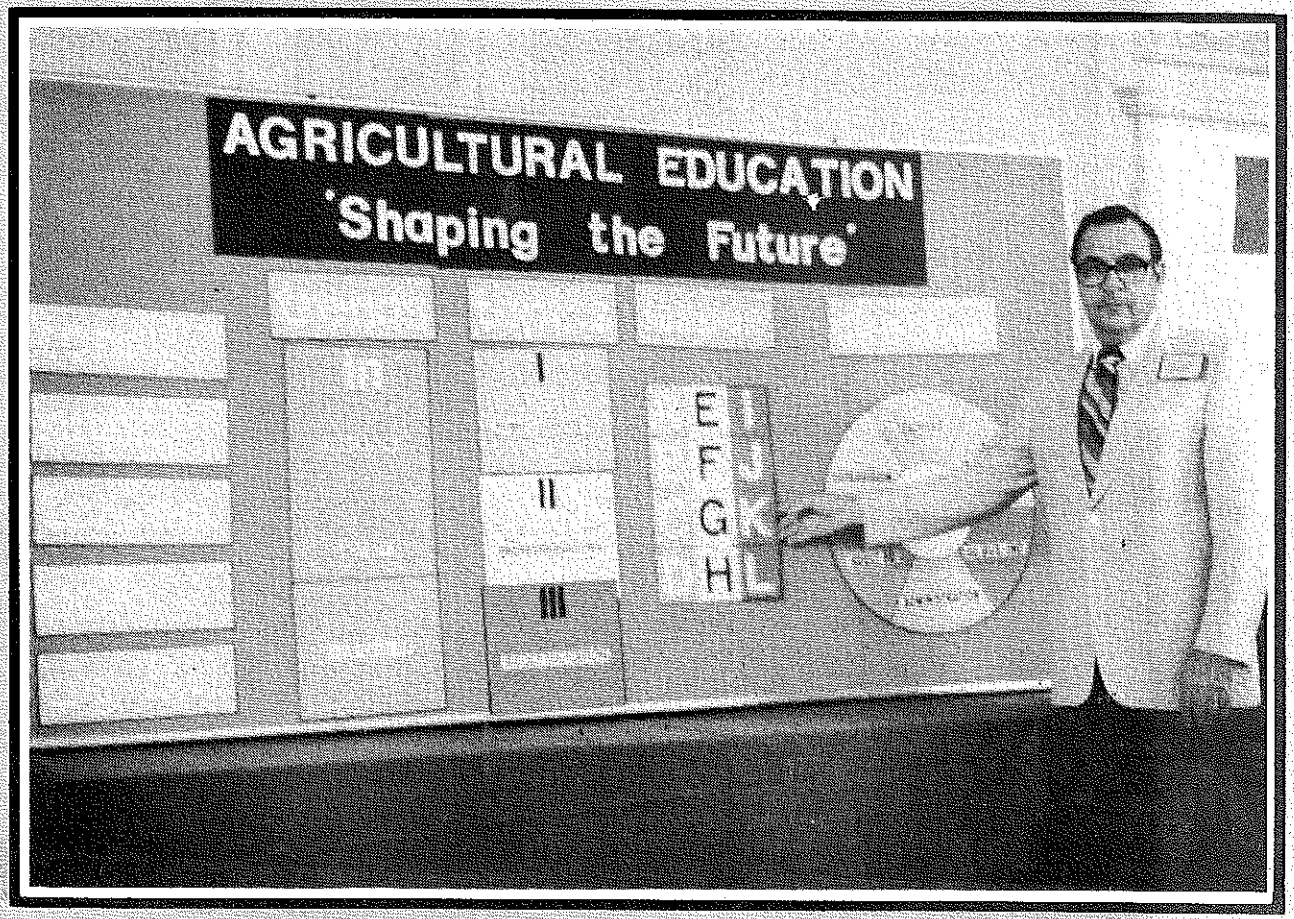

THEME: Safety Education

Special Report: The National Seminar in Agricultural Education

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ARTICLE SUBMISSION

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

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Safety Education

Safety is being free from danger and injury. Conditions which reduce the possibility of injury to students should be created and maintained in vocational agriculture/agribusiness laboratories. This requires continual, systematic analysis of laboratory environments. It also requires the development of safety consciousness on the part of instructors and students.

To help develop safety consciousness, safety education must be used. Some individuals in agricultural laboratories are not aware of the dangers which exist. Others know the safety practices but fail to follow them. Safety education involves making people aware of hazardous conditions and teaching them how to perform dangerous activities safely. Thus, there are two major elements in safety education: awareness and performance.

Safety in Laboratories

Safety in agricultural laboratories begins by properly installing and maintaining equipment. Safety features, such as protective shields, must be in place. The design of laboratory facilities is important in creating an environment with a minimum of safety hazards.

Safety education applies in all agricultural laboratory situations, not just in the mechanics lab. We need to give more attention to safety in horticultural, forestry, and agricultural products laboratories. Safety hazards exist though they may not be as obvious as with power equipment in the mechanics lab. The hazards of pesticides used in forestry and horticulture programs are not as apparent as the hazards in using a power saw, but the danger to human health may actually be greater.

The responsibilities of teachers in safety include:

- Organizing laboratories in a safe manner
- Providing proper safety equipment
- Providing appropriate protective clothing (or have students provide their own)
- Providing instruction in safety and the proper operation of equipment, use of chemicals, and other activities
- Keeping all equipment in safe working order
- Inspecting tools and equipment and replacing worn or damaged parts
- Setting a good example! (This means that the instructor practices proper safety procedures.)

September, 1980

The theme for this issue of the MAGAZINE is Safety Education. James H. Daniels of Clemson University is Theme Editor. He has organized articles on several areas related to safety education in vocational agriculture/agribusiness.

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

The National Seminar

After more than two years of planning, the National Seminar on Agricultural Education was held in Kansas City, Missouri, July 15-17, 1980. (An article giving more details on the Seminar is presented on pages 18-20.) The individuals who planned and carried out the Seminar are to be commended.

Did the real issues surface at the Seminar? Were the participants able to identify the issues and accurately suggest action steps? Of course, it is impossible to predict what the future holds. Another factor in the identification of issues is that the profession of agricultural education tends to strongly cling to tradition. We are sometimes so involved with our programs that we believe that the way they are is the way they should be.

We need research that addresses substantive aspects of our programs. We need to answer many questions: Does agricultural education make a difference? How important is adult/young adult education? How important is supervised occupational experience? How important is student organization participation? What program components produce the greatest educational benefit? The deliberations of participants in the Seminar could have been greatly enhanced if the findings of probing research had been available.

Without a doubt, we will have improved programs of agricultural education as a result of the Seminar. The issues must receive action — and how we do this will determine whether or not we will move forward.

The Cover

The cover photograph shows Harold Crawford of Iowa State University making an opening presentation to the participants at the National Seminar in Agricultural Education. Dr. Crawford served as Program Chairperson for the Seminar held July 15-17, 1980, in Kansas City, Missouri.

THEME

Safety: A Relevant Responsibility

By James H. Daniels, Theme Editor
Editor's Note: Dr. Daniels is Associate Professor of Agricultural Education at Clemson University.

There is increasing concern about the duties and responsibilities of educators. In the past, teachers were expected to provide everything for everybody. Very often duties and responsibilities have been implied rather than defined; however, the teachers of today, through the bargaining process are seeking more exact definitions.

Perhaps the most important responsibility of any teacher in an agricultural mechanics setting is to ensure the safety of the students. Concern for safety stems from three standpoints — moral, professional, and legal.

In a morally-conscious society, all individuals are expected to conduct themselves in a manner that will minimize the risk of creating a hazard to others. No rational, sane, or moral individual would desire that his/her action, or lack of action, cause a co-worker, student, or anyone else to be injured.

In the interest of maintaining the high standards and principles of good vocational agriculture programs, it is a professional responsibility of every teacher to update and police all areas of safety. We owe this to ourselves, the students, the administrators, and the parents, as well as the profession. Certainly it is agreed that personal injury or death, especially when caused by carelessness or negligence, severely damages the reputation of teachers, schools, and vocational agriculture programs in general.

According to state and federal laws, teachers are legally responsible for the safety of their students. There are individuals who will take any opportunity to bring a lawsuit against someone else. Teachers are certainly not exempt from this. The key word from the legal standpoint is negligence. According to Alexander, et al., in Public School Law:

Negligence is conduct falling below an established standard which results in injury to another person. It involves an unreasonably great risk which causes damage or harm to others. Negligence differs from an intentional tort in that negligent acts are neither expected nor intended. With negligence, a reasonable man (person) in the position of the actor could have anticipated the harmful results.

An accident which is unavoidable and could not have been prevented by reasonable care does not constitute negligence. No liability exists for an unavoidable accident.

Elements of Negligence

To have a valid cause of action for negligence, certain prerequisites must exist. The necessary elements are:

1. A duty on the part of the actor (teacher) to protect others against unreasonable risks;
2. A failure on the part of the actor to exercise a standard of care commensurate with the risks involved;
3. The conduct of the actor must be the proximate (or legal) cause of the injury; and
4. Injury, actual loss or damage must result from the act.

When confronted with the legal aspects of teaching agriculture, many beginning teachers will comment that they are almost reluctant to allow the students to use power tools because of the potential hazards and liabilities.

The following articles address safety from the standpoint of teaching vocational agriculture/agribusiness, primarily agricultural mechanics. It should be pointed out that these articles are not intended to frighten or intimidate the readers, but rather it is hoped that they will generate an interest in making laboratories safer places to work and learn.

THEME

What Is Your SQ?

What is your safety quotient (SQ)? Does your safety instructional program in agricultural mechanics measure up? Many of us need reminders about our responsibilities to students and their families, as well as our own families, to develop an attitude of safety awareness in work and play.

Today's students are tomorrow's workers. They must develop necessary safety attitudes and consciousness. Our responsibility as educators is clear: Students must be provided the necessary instruction to develop safe and skillful working habits. They must develop wholesome attitudes and mental awareness about safety for themselves and those around them.

An effective safety instructional program requires considerable planning and continued effort. Students are not unlike a piece of equipment that is being manufactured: Until all parts of the equipment are made and assembled, the product will not do what is intended. Without a total safety instructional program, our students educational program also will be incomplete.

A total safety instructional program must include both classroom and laboratory phases of study. The classroom should be the place to begin the safety awareness process. Then the agricultural mechanics laboratory will become the site for safety skill application.

By Victor A. Bekkum and Thomas A. Hoerner
Editor's Note: Dr. Bekkum is Assistant Professor of Agricultural Engineering at Iowa State University. Dr. Hoerner is a Professor in the same Department.

Using the portable circular saw as an example, a closer look will be made of some specifics of safety instruction in the classroom and laboratory.

Classroom

Most students are anxious to get into the agricultural mechanics laboratory. Before going, answer these questions: How many students are aware of the dangers in using power tools? What are the safety devices on the tools and how are they handled to be effective? What adjustments must be made for the safest operation? What personal protective equipment is required? Classroom study is beneficial before going to the laboratory.

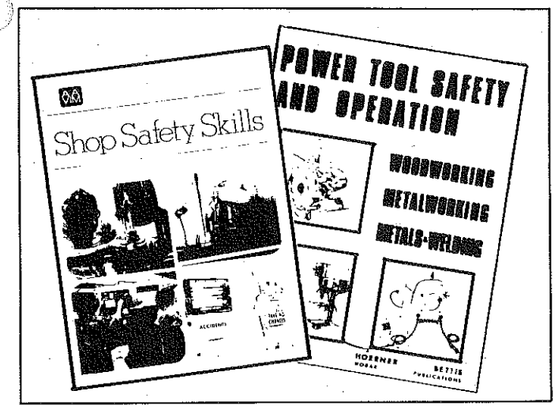

Figure 1. Safety Instruction Manuals.

How is the supply of safety manuals? Two manuals that provide essential safety information are shown in Figure 1. A recent publication is "Developing Shop Safety Skills" by the American Association of Vocational Instruction Materials (AAVIM), Athens, Georgia. This basic reference provides concepts and principles of shop safety and practices and procedures that help develop safety skills and attitudes. The "Power Tool Safety and Operation" manual by Hobar Publications, illustrates the safe use of specific portable and stationary power tools. Emphasis is placed on the identification of the parts of each tool, safe operational procedures, general safety practices, and completion questions for self-study. While it is not the intent of this article to review safety manuals, the point is to be sure to have and use instructional materials on safety.

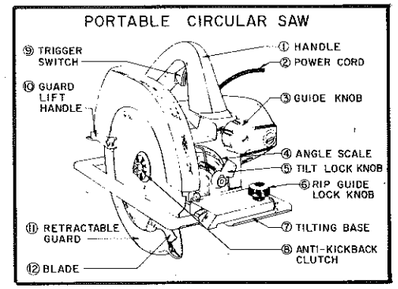

Figure 2. A transparency master of the Portable Circular Saw.

In addition to safety manuals, transparencies, such as the example on the portable circular saw shown in Figure 2, are very helpful in teaching the parts, adjustment, and operation of a power tool. Instructional packets, such as the one available with the "Power Tool Safety and Operation" manual, include teaching ideas and outlines in addition to transparencies. Teacher activities and student activities in the instructional packet provide excellent learning opportunities for developing safety awareness.

Laboratory

The second phase of safety instruction should occur in the laboratory setting. Demonstrate safety checks, such as those in Figure 3. Do not take for granted that students will make adjustments only after unhooking the cord or that they will check the guard for free movement on the portable circular saw. Figure 3 shows safety posters being used to emphasize specific safety precautions. Safety posters can also be used for part identification.

In addition to demonstrating the safety checks, the safe and proper use of power tools with proper personal protective equipment should be shown. For example, with the portable circular saw it is essential to demonstrate not only

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Figure 3. Safety posters are excellent instructional aids.

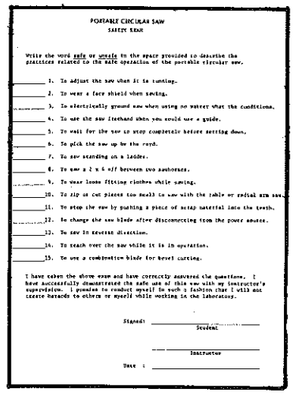
What Is Your SQ?

(Continued from Page 5)

crosscuts and rip cuts but also bevel, miter, and pocket cuts (See Figure 4). Upon completion of teacher demonstrations, students should demonstrate the proper technique of using the portable circular saw or other power tool.

Figure 4. Instructor demonstrates proper and safe method of crosscutting.

Before allowing students to begin required or approved activities, a safety exam (see Figure 5) should be used for each power tool. Be sure to go over the exam with students to clarify items answered correctly. Retain the corrected exams in your file as a record in the event an accident should occur and a liability suit were to ensue.



PORTABLE CIRCULAR SAW
SAFETY EXAM

Write the word safe or unsafe in the space provided to describe the practices related to the safe operation of the portable circular saw.

_____ 1. To adjust the saw when it is running.
_____ 2. To wear a face shield when sawing.
_____ 3. To electrically ground saw when using no matter what the conditions.
_____ 4. To use the saw freehand when you could use a guide.
_____ 5. To wait for the saw to stop completely before setting down.
_____ 6. To pick the saw up by the cord.
_____ 7. To saw standing on a ladder.
_____ 8. To saw a 2 x 4 off between two sawhorses.
_____ 9. To wear loose fitting clothes while sawing.
_____ 10. To zip or cut pieces too small to saw with the table or radial arm saw.
_____ 11. To stop the saw by pushing a piece of scrap material into the teeth.
_____ 12. To change the saw blade after disconnecting from the power source.
_____ 13. To saw in reverse direction.
_____ 14. To reach over the saw while it is in operation.
_____ 15. To use a combination blade for bevel cutting.

I have taken the above exam and have correctly answered the questions. I have successfully demonstrated the safe use of this saw with my instructor's supervision. I promise to conduct myself in such a fashion that I will not create hazards to others or myself while working in the laboratory.

Signed: _____ Student

_____ Instructor

Date: _____

Figure 5. Circular saw safety exam.

Once the students are prepared to begin working on required laboratory activities, there should be no let up on safety instruction. The development of safety consciousness must become a daily routine. As students progress with the application of knowledge in the skill areas, no doubt, many opportunities to stress safety will occur. In fact, failure to maintain an atmosphere of safety awareness could cause the instructor to be considered negligent in the legal sense of responsibility.

Safety Ideas

The basic safety instructional program described in this article should certainly be considered minimal. The progressive and enterprising instructor will want to include additional ideas and activities to further develop safety in the laboratory. Consider the following as individual or class projects:

- Safety poster assignments or contests — Have students design safety posters for specific tools or instructional areas. A contest with prizes will provide additional incentive. Post the completed signs in appropriate places.
- Safety survey — Have students conduct a survey of the community to determine the cause of tool-related accidents in homes, shops, and businesses.
- Safety meeting — Have students organize and conduct a safety meeting for parents, friends, and neighbors. The students should demonstrate the safe and proper operating procedures for many tools used in the home or on the farm.
- Safety inspection — Provide students with a laboratory safety inspection form to help locate possible hazards before beginning laboratory work. Such a form may be used in the home or farm workshop, too.
- Safety superintendent — Assign each student the responsibility of identifying safety hazards in the lab for a day or a week during the instructional unit.
- Safety test questions — Use a student written assignment to develop test questions on safety for a specific tool or area.
- Safety activity ideas — There are many that are related to your program or community.

Safety Instructional Checks

Safety instruction in agricultural mechanics must be well planned and carried out. It must be an integral part of the total instructional program. For a comprehensive safety program, include the following checks:

Classroom safety — Student activities should include the study of safety manuals and power tool posters. Transparencies of the power tools help to teach part identification, adjustment, and operational procedures. Instructional packets provide additional teaching ideas for student activities. The needed instructional materials should be available.

Laboratory demonstrations — Demonstrate safety checks and proper uses of power tools to students. Select one or two students to in turn demonstrate proper techniques to you and the class. Have safety posters displayed, and refer to them for safety tips.

Safety exams — Administer exams for specific power tools and for safety in general. Evaluate and review these with students before filing as a record.

Required and approved activities — Continue to stress safety, including the use of personal protective equipment and safe tool operation.

Special safety activity — Conduct a special class or FFA chapter activity on safety. Examples include poster campaigns, safety surveys, safety meetings, and safety inspections.

Follow these checks in your safety instructional program and we believe your SQ will measure up!

THEME

Safety — Who Sets The Standards?

By Richard Linhardt and Bill Long
Editor's Note: Dr. Linhardt is Associate Professor of Agricultural Education/Agricultural Engineering at the University of Missouri-Columbia. Mr. Long is a graduate assistant at the same university.

The National Institute for Occupational Safety and Health (NIOSH) has developed a guide for administrators, faculty, and staff in vocational programs. It is entitled Occupational Safety and Health in Vocational Education. Every private school and some public ones are covered by either federal or state safety health standards. Public schools in states where the federal government has not approved the enforcement of state-level standards are not subject to any direct safety and health regulations under the Occupational Safety and Health Act (OSHA). They are, however, subject to public pressures to conform and may be liable if they have deviated from recognized OSHA standards, should an accident occur. Public schools do come under state jurisdiction in those states where the OSHA plan has been approved by the federal government.

How does all of this relate to vocational agriculture/agribusiness? This article presents a list of the infractions that OSHA and state inspectors have commonly found in vocational agriculture laboratories in the states of South Carolina, Washington, and Missouri. A definite pattern has developed, and your own lab may very well have these same infractions. The following clearly go against the regulatory guidelines found in the Occupational Safety and Health in Vocational Education guide. The infractions listed represent those most commonly found in a large number of schools in three states and by no means entail all of the infractions that were found. Since the purpose of this article is to encourage all of us to provide a safer working environment for our students, the list has been broken into categories that may make it easier for us to form a plan of action to correct the problems.

How Does Your Shop Stack Up?

Management Infractions (Very little cost, if any, to correct.)

1. Fuel and flammable material stored in shop.
2. Blocked area to fuse boxes and main disconnect.
3. Fuse box not labeled.
4. Improper storage of lumber and supplies.
5. Poor housekeeping.
6. Welders left with electrode in holder.
7. Cleaning air pressure too high, over 30 psi.
8. Improper oxyacetylene storage.
9. No eye protection signs displayed.
10. Welder cables not stored properly and in poor condition.
11. Safety glasses broken and dirty.

Maintenance Infractions (Some cost, but necessary.)

12. Chisels, punches, etc., with mushroomed heads.
13. Shovels, etc., with cracked or taped handles.
14. Fire extinguisher absent or not maintained within one year.
15. Poor hoist condition.

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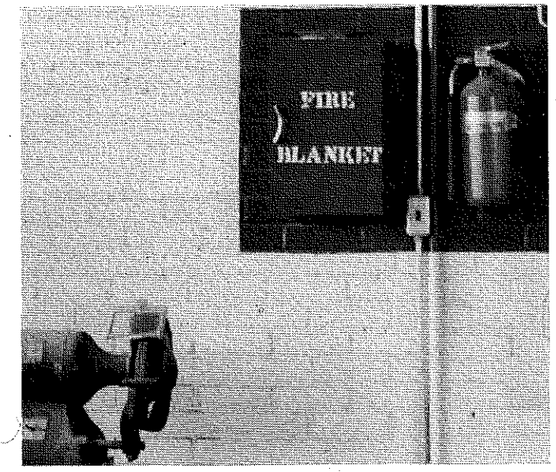
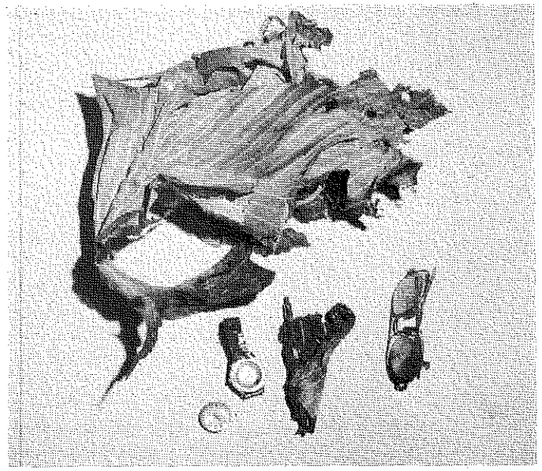




Many fatal accidents could be prevented with the proper equipment and many valuable seconds can be saved when the safety equipment is properly labeled and easily accessible.

16. Electric outlets not covered.
17. Uncovered junction boxes.
18. Ladders in poor repair or inadequate.
19. Chains defective.
20. Power tools not anchored to floor or wall.
21. Electric cords in poor condition — frayed, cracked, not clamped, etc.
22. Hand tool handles need replacing (hammers, files, etc.)
23. Radial arm saw out of adjustment with return or blade extended beyond table.
24. Power grinder rest out of adjustment, stone not dressed.

Guard Infractions (Many corrections can be made by teacher or students.)

25. Power tools not guarded or grounded.
26. Air compressor belt and pulleys not guarded.
27. Fans not guarded with ½ inch or smaller mesh.
28. Table saw not guarded, splitter or anti-kickback missing.
29. Jointer not guarded.
30. Overhead storage area without rail or toe board.
31. Steam cleaner belt not guarded.
32. Drill press belt not guarded.
33. Radial arm saw not guarded.

General Infractions

34. Paint storage not adequate — paint must be stored in double-wall vented cabinet.
35. Extension cords not grounded.
36. Lack of eye protection.
37. Fuel not stored in spill-proof cans.
38. No eyewash bottle around or near battery charger.
39. No spray painting booth.
40. Inadequate ventilation.

When confronted with these problems, a common response is, "Our school budget will not allow us to correct these problems." Well, many of these infractions would not cost anything to correct but a little time, and the items that will have to be purchased should be put high on the priority list of the school budget. After all, this is in direct relation to the health and well being of students as well as the liability of teachers and administrators.

It may be that your machines are too old and guards can no longer be purchased for them. If so, you can make guards or tool rests for them. Many instructors could, in fact, make better protective devices than those offered commercially. This may be an area of student involvement, since many students have the ability to correct many of our safety infractions. This could range from building a cabinet for the fire blanket to designing and constructing a belt guard for the air compressor. You may even consider devoting an entire week or even two weeks of class time to correcting safety infractions. This would not only solve many problems, but it could have a positive effect on the students in regard to safety consciousness.

A tool rest for a power grinder can be made from five to six inches of angle iron, often found in the scrap bin. The size of the angle iron is determined by the size of the stone. A belt guard for an air compressor can be made with two or three dollars worth of metal, a fraction of the cost of a commercially made guard.

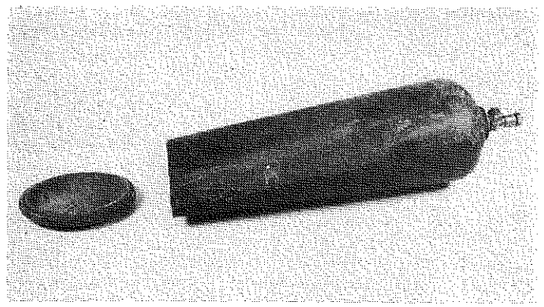
Obviously, all of the various cures of safety infractions cannot be listed in one article. In fact, every school shop has different problems. These must often be solved in different manners. We all must do something and not procrastinate.

Possible student injury could be reduced by making a list of all safety infractions and then attacking each one as if it were our enemy. To create such a list, it is best to go to the Occupational Safety and Health in Vocational Education guide. To get a copy, write:

U.S. Department of Health, Education and Welfare
Public Health Service
Center for Disease Control
National Institute for Occupational Safety and Health
Robert A. Taft Laboratories
4676 Columbia Parkway
Cincinnati, OH 45226
Ask for: DHEW (NIOSH) Publication No. 79-125

For machinery guarding standards, get these publications:

Federal Register, June 24, 1974
Essentials of Machine Guarding, OSHA 2227
U.S. Department of Labor
Occupational Safety and Health Administration
Washington, DC 20210



NIOSH rules are not meant to cause us trouble by having to comply, but by complying, they may save our lives.

THEME

How To Survive Ground Fault Current

By W. Forrest Bear
Editor's Note: Dr. Bear is Professor of Vocational and Technical Education and Agricultural Engineering at the University of Minnesota-St. Paul.

The ground fault current is the most common cause of electrical shocks. A ground fault current occurs when there is a failure in an electrical circuit which permits the current flowing in the "hot" wire to leak to an unintended ground instead of returning in the neutral wire. This condition occurs because of faulty connections, worn insulation, and moisture in appliances, tools, and motorized equipment that have deteriorated from age and abuse.

How Dangerous?

Ground fault currents are dangerous when people are in their path or complete an electrical circuit. Electricity follows the path of least resistance. When you contact an electrically "hot" point and an "excellent ground" such as water, damp earth, metal plumbing fixture, wet concrete or other metal, you become an electrical conductor. The current flow (amperes) through your body does the "killing." The amount of ampere flow depends upon the resistance of your body and the voltage in the circuit. Whether you are to be an injured patient or a statistic in the obituary column will depend on the combination of ohms resistance, voltage, and ampere flow in your body. It could happen to the other person. Remember, one out of five accidents with electricity is FATAL!

NFPA/ANSI/NEC

The exact code numbers and pages related to electrical safety in the National Fire Protection Association, American National Standards Institute, and the National Electrical Code publications are not being listed. If these three organizations and their concern for safety and human life don't impress you, it is doubtful if the endorsement of the Occupational Safety Health Act (OSHA) of these organizations and their regulations will either. For those who know that accidents occur to others, and that they do not have any personal liability responsibility, stop reading and proceed to the next article. All others are to continue.

GFC Protection

Provide ground fault current protection for 120 volt, single phase, and 15 and 20 ampere receptacles under these conditions:

1. In bathrooms and garages of dwellings.
2. In outdoor circuits where there is direct grade level access to the dwelling.
3. In the vicinity of swimming pools.
4. In laundry rooms and kitchen circuits near the sink (not code but common sense).
5. At construction sites where the receptacle outlets are not a part of the permanent wiring of the building or structure.

If the polarized black and white conductor circuits do not provide the necessary protection, and if the black, white and green (bare) polarized conductor circuits do not provide the protection, then a new safety device is needed. The name of this new unit is Ground Fault Circuit Interrupter (GFCI).

GFCI

The GFCI is an electronic device that measures current coming in and out of an appliance, tool, motor, or other electrical equipment. When the device senses a difference of only 5-6 milliamps (5-6/1000 of an empere), it stops the flow of current within 25 milliseconds (25/1000 of a second). Note the schematic of the GFCI in Figure 1.)

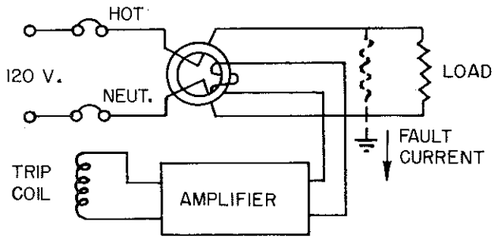


Figure 1. Internal Circuitry of a GFCI.

The GFCI is a ring transformer which senses the current flowing through both the hot and neutral load lines of the circuit. Ordinarily, this would always be the same. If a ground fault current exists, however, there is a different amount of current flowing in the hot line than the neutral line. The GFCI transformer senses this slight difference and sends a current to the amplifier, which actuates the circuit-breaker solenoid. Once the solenoid trips, the power is removed from the line, and the breaker must be reset manually. Since relatively low amounts of current can be fatal to the touch, the GFCI must operate quickly and at a low current level. The internal schematic does little to iden-

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How To Survive Ground Fault Contest

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tify the external features of the GFCI to the consuming public. Note Figure 2 for some common styles of GFCI units.

Unit A is a circuit breaker with a built-in GFCI. An extension cord unit is illustrated in "B". Unit "C" is a GFCI duplex receptacle. "D" illustrates a unit which can be plugged in and fastened to a regular duplex receptacle.

Agricultural Mechanics Utilization

The GFCI circuit breaker (A) should be installed in the circuit for the outdoor duplex receptacles. It could also be used on the duplex receptacle in the classroom laboratory near the sink. If that isn't feasible, units (C) and (D) could be used. Duplex receptacles near deep sinks and washing areas could have unit (C) installed. The extension cord unit (B) can be used with portable electric tools at many locations; such as the laboratory, the driveway in front of the overhead door, and at construction sites.

Why Me and GFCI?

Some educators ask this question, "Why me and a concern for the GFCI?" If a citizen and you become involved with a ground fault current, you might not be around next January to complete your Income Tax Form. If you are an educator working with youth in the agriculture mechanics laboratory, outside the laboratory on the driveway, in a court yard, at a construction site, or on the school's land laboratory, an accident and/or fatality might occur. An accident or fatality could result in a lawsuit to determine your personal liability responsibility. Either of these situations will attract the attention of your beneficiary and/or you!!

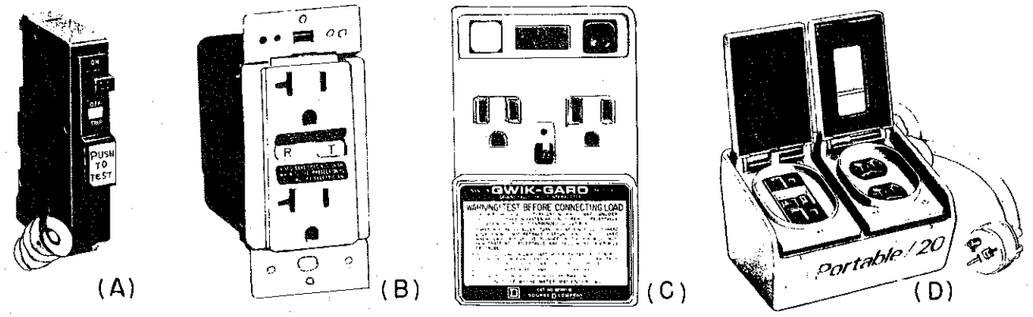

Figure 2. Common Styles of GFCI's.

THEME

The Eyes Have It — Or Do They?

In agricultural mechanics, the eyes have it — or do they? In visiting high school agricultural mechanics departments, we find programs where the eyes do not have it. The proper type of eye protection is not being used. Most states have laws regulating the wearing of proper eye protection in shop courses. Unfortunately, too many teachers ignore or through neglect do not require students to wear eye protection while working in the agricultural mechanics laboratory.

One excuse we hear from teachers is that he or she is just not sure what type of eye protection is required for specific conditions or operations. Do I require style A or B when working in the carpentry laboratory? Must I require side-shields in the welding laboratory? Are goggles approved eye protection or must students wear spectacle-type eye protection? If regular street-wear glasses are hardened, do they meet the state regulations? There are many questions and concerns regarding proper eye protection. The purpose of this article is to attempt to answer these questions and present up-to-date information on the latest standards of eye protection.

By Thomas A. Hoerner and Victor A. Bekkum
Editor's Note: Doctors Hoerner and Bekkum are authors of two articles in this issue of the Magazine. Both are at Iowa State University.

What Is Required in Eye Protection?

Proper eye protection means industrial quality eye protection and not safety glasses (street-wear glasses). In simple terms, industrial quality specifications are:

Lense thickness 3.0 mm and not more than 3.8 mm.

Lense must be hardened by heat treating.

Frames must be fire resistant.

Lenses must be inserted from front of frames.

Each lense is drop-ball tested with a 1" steel ball weighing 2.4 oz. from a height of 50 inches.

Plastic lenses used in flexible goggles or face shields must be at least 0.050 inch thick.

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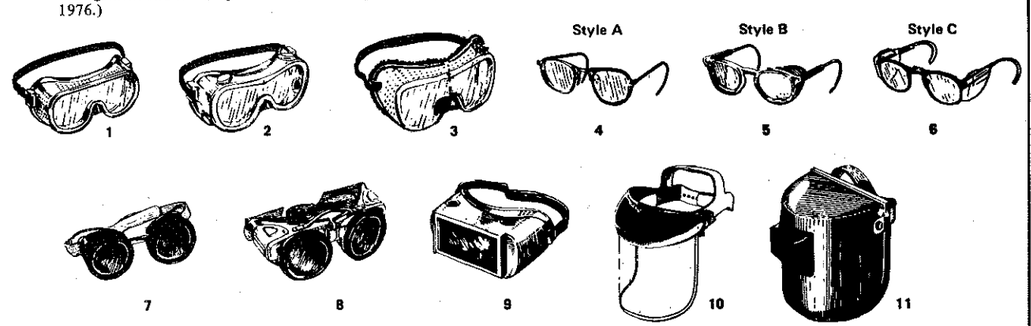
Figure 2. **Selection Chart for Eye and Face Protectors for Use in Industry, Schools, and Colleges**

This Selection Chart offers general recommendations only. Final selection of eye and face protective devices is the responsibility of management and safety specialists. (For laser protection, refer to American National Standard for Safe Use of Lasers, ANSI Z136.1-1976.)



1. GOGGLES, Flexible Fitting, Regular Ventilation
2. GOGGLES, Flexible Fitting, Hooded Ventilation
3. GOGGLES, Cushioned Fitting, Rigid Body
*4. SPECTACLES, without Sideshields
5. SPECTACLES, Eyecup Type Sideshields
6. SPECTACLES, Semi-/Flat-Fold Sideshields
**7. WELDING GOGGLES, Eyecup Type, Tinted Lenses (Illustrated)
7A. CHIPPING GOGGLES, Eyecup Type, Clear Safety Lenses (Not Illustrated)
**8. WELDING GOGGLES, Coverspec Type, Tinted Lenses (Illustrated)
8A. CHIPPING GOGGLES, Coverspec Type, Clear Safety Lenses (Not Illustrated)
**9. WELDING GOGGLES, Coverspec Type, Tinted Plate Lens
10. FACE SHIELD, Plastic or Mesh Window (see caution note)
* 11. WELDING HELMET

*Non-sideshield spectacles are available for limited hazard use requiring only frontal protection.
**See Table A1, "Selection of Shade Numbers for Welding Filters," in Section A2 of the Appendix.

APPLICATIONS

OPERATION	HAZARDS	PROTECTORS
ACETYLENE–BURNING ACETYLENE–CUTTING ACETYLENE–WELDING	SPARKS, HARMFUL RAYS, MOLTEN METAL, FLYING PARTICLES	7, 8, 9
CHEMICAL HANDLING	SPLASH, ACID BURNS, FUMES	2 (For severe exposure add 10)
CHIPPING	FLYING PARTICLES	1, 3, 4, 5, 6, 7A, 8A
ELECTRIC (ARC) WELDING	SPARKS, INTENSE RAYS, MOLTEN METAL	11 (In combination with 4, 5, 6, in tinted lenses, advisable)
FURNACE OPERATIONS	GLARE, HEAT, MOLTEN METAL	7, 8, 9 (For severe exposure add 10)
GRINDING–LIGHT	FLYING PARTICLES	1, 3, 5, 6 (For severe exposure add 10)
GRINDING–HEAVY	FLYING PARTICLES	1, 3, 7A, 8A (For severe exposure add 10)
LABORATORY	CHEMICAL SPLASH, GLASS BREAKAGE	2 (10 when in combination with 5, 6)
MACHINING	FLYING PARTICLES	1, 3, 5, 6 (For severe exposure add 10)
MOLTEN METALS	HEAT, GLARE, SPARKS, SPLASH	7, 8 (10 in combination with 5, 6, in tinted lenses)
SPOT WELDING	FLYING PARTICLES, SPARKS	1, 3, 4, 5, 6 (Tinted lenses advisable; for severe exposure add 10)

CAUTION:
- Face shields alone do not provide adequate protection.
- Plastic lenses are advised for protection against molten metal splash.
- Contact lenses, of themselves, do not provide eye protection in the industrial sense and shall not be worn in a hazardous environment without appropriate covering safety eyewear.

The Eyes Have It — Or Do They?

(Continued from Page 11)

Frames and lenses must be clearly marked with an identification of the manufacturer.

The following describes street-wear type glasses:

Lense thickness is a minimum of 2.0 mm.

Lense may be treated with heat or chemicals for hardness.

Lense may be inserted from back or front of frame.

Each lense is drop-ball tested with a 5/8" steel ball from a height of 50 inches.

Lense and frame do not need to carry manufacturer's trademark.

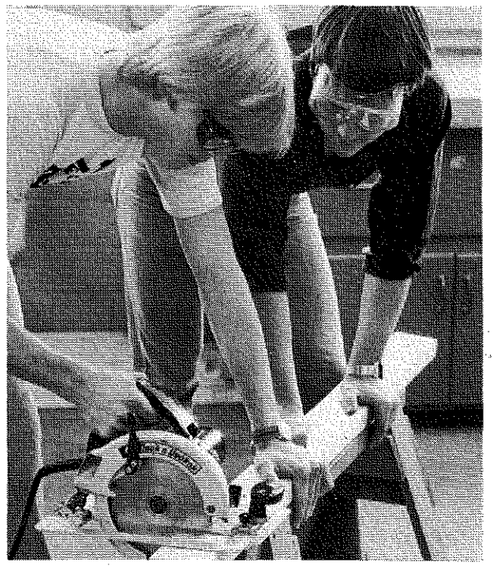


Figure 1. Students wearing proper eye protection for operation being performed.

Proper eye protection becomes quite simple in that students working in our agricultural mechanics laboratories must wear industrial quality eye protection which is easily identified by the manufacturer's trademark on the lense and the frame. Eye protection without the markings does not meet the standards and should not be allowed in shop classes.

What Is New in Eye Protection Standards

Information about the style or type to be worn is found in the latest American National Standard (Z87.11-1979). A selection chart is provided in the latest standard manual — (See Figure 2).

The latest standards and styles of spectacle type eye protection are:

Style A — Spectacle type, industrial quality eye protection without sideshields. See number 4, Figure 2.

Style B — Spectacle type, industrial quality eye protection with eyecup-type sideshields. Sideshields must be firmly secured and cover 50% of the peripheral area of the lense frame. Clip-on eyecup-type sideshields do meet standards if firmly secured to frame. Note number 5, Figure 2.

Style C — Spectacle type industrial quality eye protection with semi/flatfold sideshields. Sideshields must be firmly secured. Self-locking, slide-on sideshields are acceptable if firmly secured to protect against accidential removal. See number 6, Figure 2.

Applications for Eye Protection

Specific applications are outlined in Figure 2. The selection chart and specific applications that would be common in agricultural mechanics laboratories are described here.

Arc welding — As noted in the chart, adequate protection would be spectacle number 4, 5 and 6 (Styles A, B or C) along with arc welding helmet No. 11 and the correct shade lense for the welding amperage. Goggles are acceptable except they do no generally fit well under the welding helmet. A No. 10 shade lense is recommended for welding up to 150 amps with a No. 12 for higher amperages. If doing a great deal of chipping, goggles such as numbers 1 or 3 would be recommended to cover a greater area around the face and eyes during this part of the welding operation.

Oxy-Acetylene Welding and Cutting — Protectors 7, 8, and 9 with the proper tinted lense, No. 3 or 4, are recommended. Other possibilities for oxy-acetylene work would be spectacles numbers 5 or 6 along with a tinted face shield, number 10. This would provide more protection when not welding than would numbers 7, 8, and 9, if the welding goggles were lifted or removed.

Grinding — For light operations, goggle numbers 1 or 3, or spectacles numbers 5 or 6 (Style B and C) with face shield No. 10 would be recommended.

Carpentry Work — Although not indicated in the chart, proper eye protection would consist of numbers 1, 3, 5, and 6. Spectacles number 4 (Style A) would also be acceptable for conditions where there are no flying chips.

Chemicals — When handling chemicals, goggles No. 2 with hooded ventilation are recommended and a faceshield No. 10 over the goggles would provide even greater protection for the total face and neck area.

Study the selection chart for other applications that apply to the agricultural mechanics laboratory. No mention is made for working around machinery, engines, tractors, electricity, or electric motors. These operations also require proper eye protection. From the selection chart, numbers 1, 3, 5, and 6 would generally provide proper eye protection for these jobs.

Note the caution at the bottom of the chart: Face shields alone do not provide adequate protection, plastic lenses are recommended around molten metal splash and contact lenses, of themselves, do not provide eye protection but must be worn along with industrial quality protection for the specific operation.

The instructor must enforce eye protection laws, codes, and regulations. The example set for students by wearing industrial quality eye protection of the proper type for the jobs being performed in the agricultural mechanics laboratory is most important. Proper protection must be provided or made available for students. Remember, wearing eye protection is a lot like our 55 mile per hour speed limit. It is not only a good idea, but it is the law. DO THE EYES HAVE IT in your agricultural mechanics laboratory?

ARTICLE

Safety Instruction — Is It Enough?

By
Carl L. Reynolds
Editor's Note: Dr. Reynolds is Assistant Professor of Agricultural Education at the University of Wyoming.

The fuel tank ruptures and catches fire; two students are engulfed in flames. A student turns to the instructor for help; blood pulses from the stub that used to be a finger which was mangled by a table saw. Each is a shocking thought, but nevertheless each is a real life situation which occurred, and remains a nightmare for those vocational agriculture teachers involved.

Do safety instruction tests and demonstrations guarantee that serious accidents will not occur? Absolutely not!!

An adequate shop safety program requires more than the development of the knowledge and skills involved with machine operation and shop activities. It also requires the development and maintenance of a "safety attitude." Habits must be formed to insure that a safety conscious atmosphere is always maintained as a matter of daily practice in the vocational agriculture shop. Most teachers have probably considered the problem of "overkill" when teaching safety skills. It is difficult to know how much instruction must be given to prevent serious injury to students in the shop. It is a temptation for the teacher to reduce the time spent on safety instruction, especially after several years of experience in which no serious accidents have occured.

One approach to developing a safety program is to include direct instruction of attitudes and habits in the students. There is no such thing as an accident. Most all accidents that occur have a cause that can be identified. A student's attitude on a given day could be the reason for forgetting to put the guard in place or rushing to get the job done, resulting in injury. The comment, "I'm only going to make a small cut," before forgetting to put on eye protection might be the beginning of an extremely sad sequence of events.

An important part of safety instruction should include thought processes as well as how-to-do procedures. Students should be aware of their physiological and psychological limitations, which if exceeded, increase the chances for accidents to occur.

Physiological limitations include such factors as strength, endurance, and fatigue. A student's ability to perform at his or her best is adversely affected by such factors as noise levels, dust and fumes, and overall physical health.

Psychological factors are the second important category that must be considered in developing a sound safety program. Moods and emotions have a definite impact on the efficiency and safety of the worker. Students must be made aware that their "frame of mind" can effect the safety of themselves and their classmates. The following attitudes can adversely affect the concern of students for safety:

1. Low self esteem
2. Conflicts
3. Daydreaming
4. Depression
5. Insecurity
6. Financial problems

Students in vocational agriculture have such strongly identified goals that sound safety practices are set aside in the interest of accomplishing those goals. A student who is trying to complete a shop project in the class time allowed often foregoes critical safety steps. He might, for example, fail to check for leaks when installing new oxygen-acetylene cylinders, and the resulting undetected leak may cause a fire. The bolts on a machine are rusted and will not budge; the student grabs a torch and begins to cut them off. He fails to take the time to consider that the fuel tank is only inches away.

Constant attention must be given to insure that students maintain a continual safety attitude. One suggestion is to assign a student each period to serve as class safety officer. His or her duties would include such tasks as reporting any defective equipment or missing safety guards or shields and watching for unsafe practices. The findings of safety inspections by students should be reported to the teacher.

A strong safety program is a necessity in every vocational agriculture shop facility. The program must include formal safety instruction, safety tests and demonstrations, plus the development of a safety attitude on the part of all persons working in the shop. A safety program insuring this attitude must be maintained throughout the school year.

BOOK REVIEW

Manual Of Woody Landscape Plants, by Michael A. Dirr, Champaign, Illinois: Stipes Publishing Company, 1975, 536 pages, $12.88, paperback; $16.80, hardbound.

The title of this book gives a complete description of the contents. It contains over 900 different landscape plants, listing common and scientific names, with a cross index. Most of the plants have a line drawing to show leaf, bud, or stem characteristics. Each description has the common information on hardiness, size, fruit, etc., and also gives propagation methods and landscape value.

The book is geared as a test for a college level course in woody ornamental plants. It could be useful as a reference in a vocational horticulture class if detailed plant identification is taught.

Dennis L. Parrish
Montgomery Co. J.V.S.
Clayton, Ohio

ARTICLE

Living With Your Job

"I am a teacher of vocational agriculture by choice and not by chance." These are the words from the first paragraph of the creed for vocational agriculture instructors. And they are good words! Yet there are many instructors during the year who will have serious doubts about their choice of occupations.

The First Year

There are several times during an instructor's teaching experience that the instructor will consider leaving teaching to pursue some other occupation. The first year of teaching is one of these and carries with it the problems of preparation. This first year requires all of the instructor's time for lesson preparation for the day and evening classes. It seems like the first-year instructor just doesn't have time for anything else after school hours except preparing tomorrow's lessons. So in discouragement, another occupation comes to their minds because nothing else could demand so much of one's time. Changing occupations is seldom the answer. It means that the person will have to learn and prepare all over again. Next year will be a repeat of the last one.

Five Years

Another time that nags at an instructor comes after approximately five years of experience. This period causes the instructor to think that perhaps he or she could be doing something else that would be more rewarding and also earn a larger salary. They have received some success through perseverance during the five years of teaching. The students enjoyed their classes; the FFA progressed nicely; and somebody in industry talked to them and said, "We could use somebody like you in our business." So the ego got a boost and industry may have also told them that they would no longer have to worry about all those night meetings. But look ahead. Who conducts all these night meetings? Who goes out and sells in the evening? It seems that industry has the same problems as the vocational agriculture instructor.

By Clifford Van Berkum
Editor's Note: The author is a teacher of vocational agriculture at North Kossuth Community School, Swea City, Iowa.

Ten Years

The third time for doubt about one's occupation comes after ten years of experience. At this point in a person's life, he or she has passed thirty years of age. The instructor rationalizes in his or her mind that if one ever would want to leave teaching, this is the time to do it. The kids aren't in high school yet and so moving wouldn't be too emotional for the family. If I don't change jobs now, no one will want me because I will soon be too old!

Problem — Not Setting Priorities

One of the reasons many vocational agriculture instructors find themselves in one of the three situations previously described is that they haven't found out how to live with their job. They haven't been able to set priorities!

There are a number of things that require an instructor's time and efforts. Certainly teaching should be one that should be strongly considered because this is what each person is getting paid to do. A person who considers this to be their moral duty, to give the school district a honest days work for a day's pay, will be appreciated in that community.

Another priority should be the family. Too often, when the instructor is younger and he or she is trying to do the best job possible in teaching, the family takes second billing. After they leave home and are "grown up," the instructor realizes he or she should have spent more time with the children. How many times have your children asked you to go fishing, hunting, play basketball, or want your presence elsewhere? Can you make adjustments in your schedule so you can be with them? This should be one of your highest priorities!

We can also spend our time and efforts in community affairs if we feel community minded. As soon as one joins service organizations, they put you to work! What kind of FFA Chapter or professional organization would we have if no one wanted to give any effort?

And then there are those extracurricular duties required of teachers at basketball, football, wrestling, and music events, such as taking tickets, hall duty, and keeping score. Instructors who are selfish with their time in these areas can often be shunned by other faculty members, especially when it comes to FFA activities. Too often the vocational agriculture department becomes an entity in itself instead of part of the entire school system.

The last priority is that of leisure time and pursuit of hobbies. Sometimes these can be incorporated with our other priorities. Maybe time just has to be budgeted as one budgets the pay check at the end of each month. Budgeting time will work if one takes the time to set it up. Like most budgets, there will have to be some adjustments made during the month because of unforeseen conflicts. Flexibility has always been necessary with a budget!

A budget must be balanced! Anytime that one or more priorities outweigh the rest, the person using the time budget becomes unbalanced. An unbalanced person feels "tied down" or "pinned in" and begins to search for other occupations only to experience the same predicament a few months later.

The "Cure"

This article doesn't provide the perfect answer to the problems of vocational agriculture teachers. When anxiety does set in, it is time to take the creed off the wall and read it again, visit your biggest booster in the community to fill your ego cup, set your priorities in order so that you feel balanced again, and budget your time each month by making a calendar, setting time aside for family, leisure time, and the rest of your priorities.

ARTICLE

Make Safety An Integral Part Of Your Program

By David W. Pristupa and Rick Foster
Editor's Note: Mr. Pristupa is Vocational Agriculture Instructor at North Gem High School in Bancroft, Idaho. Dr. Foster is Assistant Professor of Agricultural Education at the University of Idaho.

You are the vocational agriculture instructor in an agricultural mechanics laboratory situation. You are helping Jim with a problem with an oxy-acetylene weld. As you finish, you turn around just in time to see Fred force a piece of metal into the grinding wheel. Within a fraction of a second, the wheel shatters sending pieces of sharp, jagged stone in every direction. Fred falls to the floor in front of the grinder grabbing at, for what was less than a second ago, his right eye. You run through the shop to where Fred lies as other students gather around. What went wrong? Did you teach Fred safety? Can you prove it?

The possibility of a vocational agriculture instructor becoming involved in a legal action resulting from a school-related pupil injury is greater today than at any other time in history. Recently, a $500,000 suit was filed in California on behalf of a young man who suffered an eye injury in a metal shop at a local high school. Another case involving a student who lost an eye in a laboratory mishap was filed in Massachusetts for one million dollars. Such lawsuits are becoming more and more prevalent as vocational agriculture programs grow and expand. The possibility of being named in legal action can be minimized if we would only identify and follow the basic procedures needed to teach safety. As vocational agriculture instructors, we have the responsibility of preparing our students for careers in a very hazardous industry. It is also our job to make them aware of every safety aspect of the occupations for which they are preparing.

One system of safety instruction is the "demerit system" used by William C. Harshman, Vo Ag Instructor at McGuffey High School, Claysville, Pennsylvania. Harshman's shop safety demerit system assesses students penalty points for any unsafe act in the laboratory. Accumulated penalty points can lead to suspension of laboratory privileges from three days to two weeks, depending upon the number and frequency of violations. More details of Harshman's system can be found in the March, 1974, issue of The Agricultural Education Magazine.

In a 1972 School Shop magazine article, Ron Lutz described a safety evaluation system which focused on testing techniques as a method of insuring that students are accountable for safe operational procedures with machines and equipment. Lutz suggested using specific tests or exams for each piece of equipment. Students must demonstrate their knowledge of safety awareness as well as the sequential procedures necessary to safely operate each tool. He further suggested an authorization card be given to students when they qualify to operate each machine. Students not successfully completing the safety exams are prohibited from using the equipment until they have demonstrated the required safety skills and attitudes.

Each of us, as vocational agriculture instructors, has our own ideas of the proper method for teaching safety. There is no right answer to the problem of how to instill a safe-working attitude. The best system is one that develops a safety awareness that our students practice in all facets of the vocational agriculture curriculum as well as in the community.

The primary purpose of a comprehensive safety program is to instill safety awareness in students. However, thought should also be given to the protection provided teachers by a comprehensive safety education program in case of accidents and subsequent liable suits. Being able to verify which students are capable of operating agricultural shop equipment and being able to produce proof that students have been instructed in a comprehensive safety program may be enough evidence to make the difference in the legal action because of an accident.

Several steps can be taken to help insure that your students will not become accident victims while participating in agricultural mechanics. You can improve your safety instruction by making it an integral part of your total program. Some suggestions to improve your total safety program are:

Teach an Introductory Unit in General Safety Education

It has generally been an accepted practice to provide a safety unit before students enter the shop. This unit may last one to three weeks, depending upon the individual instructor. In many cases, however, this instruction is the only safety education that is provided. Care must be taken to use this introductory unit to cover basic instruction in safety skills and general safety procedures in the agricultural mechanics laboratory.

Teach Specific Safety Information in Conjunction with Specific Agricultural Mechanics Units

As part of each agricultural mechanics unit, provide indepth safety information regarding hazards that exist relating to safe operation of machines and equipment. Teaching specific safety skills while studying particular equipment will make the instruction more meaningful and interesting to students.

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Make Safety An Integral Part of Your Program

(Continued from Page 15)

Administer Safety Exams

Follow up each unit of instruction with a safety exam and require passing scores to be 100 percent before students are allowed to enter the shop and/or operate specific equipment. This may mean that students will have to retake exams. However, making sure students are accountable for those items initially missed will insure that they are knowledgeable about all aspects of safety for the specific equipment. Ready-made exams are available from various sources. Hobar Publications offer safety exams on all types of equipment which can be used as they are or altered to meet specific needs.

Maintain a Safety File For Each Student

After completion of safety exams, place them in files that are kept for each student. Be sure the files on safety are readily accessible to you but not accessible to students. Materials that indicate the qualifications of students for operating equipment and knowledge of safety aspects should be kept up-to-date at all times. Having students sign each exam after 100% achievement is attained serves as proof that students are aware of the safety aspects in agricultural mechanics areas.

Maintain Personal Emergency Data on Each Student

Develop a personal data sheet on students containing the names of persons to contact in case of an emergency, known allergies, blood type, required medication, family doctor, family dentist, and any physical or emotional handicaps that the student may possess. Keep this data on the inside cover of each student's folder for easy access.

Train Students in First Aid, Emergency Procedures and CPR

Be sure students are aware of common first aid procedures that are used to treat injuries that occur in the agricultural mechanics laboratory. An awareness of the location of first aid equipment and fire fighting apparatus and a knowledge of emergency procedures are important steps in safety awareness. Safety emergency procedures should be posted in appropriate locations so students can review these procedures in case of an accident or emergency situation.

Another activity to increase the preparedness of students is the teaching of CPR (Cardiopulmonary Resuscitation). Emergency Medical Technicians are readily available in most communities to provide CPR training to students and faculty alike. Vocational agriculture instructors may wish to qualify as CPR instructors and provide training to their students themselves.

Require Practicums for Operating and Maintaining Power Equipment

As students pass safety exams designed to acquaint them with safety procedures for each piece of equipment, also require them to demonstrate actual safe operation of the particular machines. Provide an authorization card allowing students to use each machine only after they have successfully demonstrated its safe operation.

Involve Students in Your Safety Program

Display posters and safety publications in appropriate locations throughout the classroom and the agricultural mechanics laboratory. Involve students in the FFA Chapter Safety Award Program, being sure to complete Division I of the application on Classroom and School Shop Safety.

Post Safety Signs Next to All Power Equipment

Displaying safety signs which show step-by-step procedures and common safety tips for each piece of power equipment helps to maintain an awareness of safety. Lists of safety rules can be obtained through many commercial sources or from machinery manufacturers.

Safety Starts with You — The Instructor

Students will model their behavior after the examples that are set before them. It is imperative for instructors to practice all safety rules and regulations in an effort to set the proper example for students. The instructor should wear safety glasses at all times while in the laboratory and use the right tools and procedures for a job. You cannot expect your students to develop a proper safety attitude unless you provide the correct example.

By following the above suggestions and teaching students to comprehend and demonstrate safety skills, they will be better able to take part in agricultural occupations. By creating a safety awareness and maintaining safety files on all students, the instructor will be able to show a sound instructional program in safety education.

Safety is not something to be taken lightly. The instructor is the only one who can teach proper safety procedures in the laboratory. It is the instructor's responsibility to see that every student receives all the training necessary for the safe operation of equipment in the agricultural mechanics lab. Nothing should be overlooked. We must be sure that safety education is an integral part of our vocational agriculture programs.

The next time you enter your agricultural mechanics laboratory, think about Fred lying on the floor and ask yourself — "Could I prove I taught safety?"

Themes For 1981 Agricultural Education Magazine

Time Management	January
Community-Based Programs	February
Keeping Up To Date	March
Programs in Agricultural Supplies and Services	April
Energy Education	May
Adult/Young Adult Education	June
Professionalism	July
The Beginning Teacher	August
Student Management	September
Teacher/Professional Liability	October
Using Research	November
Relationships with Agricultural/ Educational Agencies	December

BOOK REVIEW

APPROVED PRACTICES IN BEAUTIFYING THE HOME GROUNDS By Norman K. Hoover, Danville, Illinois: The Interstate Printers & Publishers 1979, Fifth Edition, 292 pp. $8.50

The author has made a very important contribution to beautifying and managing the home grounds through this book — useful to both the student and the practitioner. With the field of ornamental horticulture becoming a major industry in this country, this book is valuable in the preparation of those wishing to learn skills for employment in this area.

The book emphasizs **approved practices** — those that have been tried, tested, and found successful by state agricultural experiment stations, U.S.D.A. nurserymen, gifted home gardeners, and landscaping specialists.

Opportunities for employment in the area of ornamental horticulture are discussed as well as use of the skills for personal enjoyment and enhancement of the home and its environs.

An early chapter of the book deals with "Home Ground Design." From design, the author moves to "Construction of Walks and Drives," "Grading, Establishing, and Maintaining the Lawn," "Plant Material Identification and Selection," "Planting Ornamentals," "Management of Trees and Shrubs," "Home Ground Structures," and "The Flower Garden."

The book is attractive. It has many pictures, sketches, and illustrations. High school students will like its short sections with many paragraph headings. The writing style is clear and sharp. This "how-to-do-it" manual is an important contribution.

Dr. Norman K. Hoover is Professor Emeritus of Agricultural Education, The Pennsylvania State University. He has had practical personal experience using many of the practices discussed. In addition, he has had close contact with research findings from agricultural experiment stations and experts in this field.

This book would be an excellent high school, technical school, or college text. Every vocational agriculture teacher should have one in his or her professional library. It could be a valuable reference to vocational agriculture students, home economics students, landscape design students, and to FFA'ers and 4-H'ers.

Joe R. Clary
North Carolina State Univ

THE PLANT PROTECTION DISCIPLINE, by Webster H. Sill, Jr., New York, Halsted Press, A Division of John Wiley & Sons, 1978, 190 pp, $25.00.

The purpose of this book is to promote the creation of a plant protection discipline. Plant protection is a combination of crop protection and plant pest management. It incorporates aspects of entomology, plant pathology, agronomy, nematology, and weed science.

A need is identified for individuals with Bachelors degrees in plant protection. Most people currently working in this area are very narrowly trained in a specific discipline. A much more general training is needed for those people working with agricultural producers. The total environment of the crop or plant must be considered when recommending and providing protection from pests.

Plant protection would be a new profession. It would parallel the general practitioner in medicine. The individual would be broadly trained to work at the field level in plant protection. The growing need to maximize the application of the total control components emphasizes the need for this new discipline.

The author is chairman of the Biology Department at the University of South Dakota at Vermillion and Director of the South Dakota Center for Environmental Studies. His interest in plant protection and long term pursuit of the subject is evident in the book.

This book is intended for persons responsible for the administration of crop protection and environmental matters. It will be of interest to everyone concerned about or involved in crop pest control. Students interested in careers in pest management will find the book to be very useful in mapping out a program to become a generalist in plant protection.

Eugene Anderson
Univ of Minnesota St. Paul

INSTANT WRITING COURSE: NEWS AND FEATURE STORIES by Joseph J. Marks. Danville, Illinois: The Interstate Printers and Publishers, Inc., 28 pp., $1.50.

A "how-to-do it" of news and feature article writing is presented in this concise, yet comprehensive, publication. It is divided into nine lessons, many of which have activities to be completed by the reader. Suggested solutions are offered for most of the activities. Topics covered in the lessons include: 1) What is News?, 2) How Do You Report News?, 3) Polish Your Style, 4) Write a Better Sentence, 5) Getting the Facts, 6) You're on Your Own, 7) Be Your Own Editor, 8) Writing Features, and 9) Keep on Writing.

After news is defined in Lesson 1, the structure of news articles is presented in Lesson 2 through a discussion of the inverted pyramid style of writing and the five W's and H (who, what, when, where, why, and how). Lessons 3-5 provide activities where words and phrases are simplified, sentences rewritten, and facts arranged into lead paragraphs. Lesson 6, "You're on Your Own," is designed to offer experience in constructing four types of articles: news, meetings, awards, and how-to-do it. Lesson 7 focuses on editing the copy for grammatical errors before publication. Writing feature articles is the focus of Lesson 8. Three topics are included: What makes a feature go?, Test your features, and The feature thinking/writing process. The concluding lesson suggests that writing skills are best developed by constructing articles and having them reviewed by readers and other writers.

The author has experience in agriculture and journalism and serves as news director and professor in the College of Agriculture at the University of Missouri-Columbia.

Teacher educators can use this publication in undergraduate courses where future high school vocational agriculture teachers and agricultural extension agents develop basic news and feature article writing skills.

Blannie Bowen
Mississippi State University

SPECIAL REPORT

The National Seminar — Agricultural Education: Shaping the Future

By Jasper S. Lee, Editor
(This report was compiled by the Editor during the National Seminar.)

Leaders of agricultural education met July 15-17, 1980, in Kansas City, Missouri, to study the issues and trends facing the profession. Participants listed action steps which could be taken for each of the issues. Resource persons representing segments of education, society, and agricultural industry discussed the current trends in these areas.

The purpose of this article is to summarize the National Agricultural Education Seminar entitled "Agricultural Education: Shaping the Future." Proceedings of the Seminar will be published separately and made available in late 1980.

Objectives

The general objective of the Seminar was to identify trends, issues, and new directions that will affect agricultural education during the remainder of the 20th century. The specific objectives were:

(1) To provide for open discussion among representatives of groups that are directly related and affected by future trends, issues, and new directions in agricultural education;

(2) To identify and set priorities for specific issues and to develop a description for each issue; and

(3) To identify and suggest activities, programs, and/or procedures for adjustment to the trends, issues, and new directions that will have an effect upon agricultural education.

Personnel

Paul Day, State Supervisor of Minnesota, and Byron Rawls, Education Program Specialist for the U.S. Department of Education, served as co-chairmen for the Seminar. Mr. Day also serves as Vice President for the Agricultural Education Division of the American Vocational Association. Harold Crawford, Department of Agricultural Education, Iowa State University, served as program chairperson. Larry Case, State Supervisor of Missouri, served as financial manager. General publicity was handled by Sam Stenzel, Executive Director of the National Vocational Agriculture Teachers Association.

Sponsorship

The Seminar was jointly sponsored by the Agricultural Education Division of the American Vocational Association and the Bureau of Occupational and Adult Education, U.S. Department of Education. Several financial contributors supported the Seminar.

Participation

Individuals from 46 states participated in the Seminar. The number and areas represented by the participants were as follows:

Secondary teachers of vocational agriculture/agribusiness	57
Postsecondary teachers of agriculture/agribusiness	15
Teacher educators	75
State-level supervisors	50
Administrators	6
Agricultural industry representatives	15
Graduate students	30
Guests	16
Total Participants	264

New Directions In Education

Arthur Mallory, Missouri Commissioner of Education, spoke to the Seminar on trends, issues, and new directions in education. Dr. Mallory, who describes himself as a "cheerleader for public education," previously served as a teacher and university president. His presentation is summarized here.

Trends Impacting Education

Population is getting older — This will result in a continued decline in the number of school-age youngsters and an increase in older persons.

Seminar participants worked in small groups to identify issues and action steps.

Highlights of Presentations at the National Seminar — Trends, Issues, and New Directions Affecting Agricultural Education

Changing job market — The trend is to less manufacturing and more service occupations. Technology is changing the nature of occupations.

Information explosion — It is becoming increasingly difficult to keep up to date. This makes curriculum selection more difficult and increases the need for retraining mature workers.

Changes in the nature of the family — A hectic pace of life has contributed to a decline in the participation of parents in school functions. It has become difficult to get parents to school meetings. Increasing divorce rates, two-career families, and single families are factors which also impact education.

Challenges in Education

Funding for public education — As enrollments in the public schools decrease, it is difficult to obtain the increased funds needed to cover inflation. The financial pressure on schools could become acute. In the late 1980's, only 20 percent of adults will have children in the public schools.

Attracting quality teachers — In effect, teachers are subsidizing education because of low earnings. The per hour rate of earning is lower for teachers than for plumbers, electricians, and many other occupations.

Determining what to teach — The knowledge explosion has made curriculum planning difficult. Schools will continue to assume non-instructional roles, such as food services.

Changing work ethic — There is a need for renewed dedication to quality work and productivity. Schools need to stress the importance of work and less dependence on the Federal government.

Today, there are many examples of rewarding non-productivity. Dr. Mallory further stressed the need for creating a partnership between business, the schools, and the family. He sees this as a challenge of the future.

Arthur Mallory, Missouri Commissioner of Education, gave the presentation on Trends, Issues, and New Directions in Education.

New Directions in Society

Daryl Hobbs, Director of Rural Development and Professor of Sociology at the University of Missouri, discussed trends in society which affect agricultural education. Dr. Hobbs feels that agricultural educators must deal with the concept of mass. We have mass media, mass education, mass entertainment, and mass merchandising. These have (and will) revolutionize rural America.

Another emerging phenomenon of our society is public reaction against "bigness." There is opposition to big government, labor, business — anything big. The public no longer feels that "growth is progress" and "bigger is better." This has resulted in some return of the population to the rural areas. Life in rural areas has greater personal identity and community emphasis.

Computer technology will have a big impact on society. Agricultural education must gear up for it. One example may be a decrease in the printing of paper agricultural bulletins, and the subsequent increase in use of small computers.

The 1980's may result in the increased withdrawal of the middle class from the support of public education. It is easier to transport information than people. The implications are for the emergence of alternatives to traditional public schools, especially as energy becomes more expensive.

Albert Timmerman and Byron Rawls review the Seminar program. Mr. Timmerman is President of the National Vocational Agriculture Teachers Association. Mr. Rawls is Education Program Specialist for Agriculture/Agribusiness, U.S. Department of Education.

Dr. Hobbs concluded by challenging each person to seek ways of solving problems. "If you're not a part of the solution, you are a part of the problem!"

New Directions in Agriculture

Dean A. Raber, Senior Vice President of the Federal Land Bank of Omaha, spoke on trends in agriculture. His primary emphasis was farming, especially farm management.

The "shoe box farmer" is dead, according to Mr. Raber. Farming has become big business and requires sophisticated record keeping and management. Merely storing receipts in a shoe box is completely inadequate.

An analysis of what tomorrow holds depends on how we define "farm." Mr. Raber contends that there are two groups of farms: commercial and part-time. A commercial farm is one which generates $40,000, or more, of gross sales each year. A part-time farm is one producing less than $40,000 gross sales per year but more than $1,000. There are 500,000 commercial farms in the United States and 1.8 million part-time

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farms. The commercial farms account for more than 80 percent of the farm production.

Commercial farming is not a way of life — it is a business. As such, sound management procedures must be followed. Only about 15 percent of the commercial farmers keep adequate records. Vocational agriculture needs to help in accounting, computers, marketing, and other management areas.

Agricultural Education in The New Department Of Education

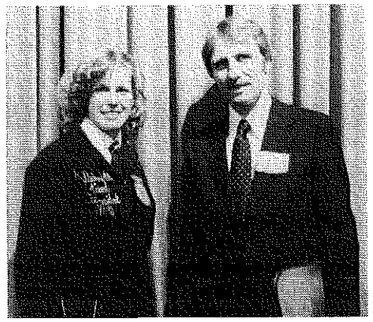
Vocational agriculture can play a major role in the overall achievement of the objectives of vocational education, according to Daniel B. Taylor, Assistant Secretary for Vocational and Adult Education, U.S. Department of Education. Dr. Taylor further indicated that vocational agriculture has been in a leadership role for many years. Four major ways vocational agriculture can contribute were discussed.

First, vocational agriculture can make a contribution to economic development and productivity. This includes community development, one example being the Building Our American Communities (BOAC) program initiated in 1971. The competition being provided by other nations shows that there is a need for increased productivity in the United States.

The second major way vocational agriculture can contribute is in providing equity for all persons — minorities, the handicapped, and women. Vocational education has not been able to attract and make programs accessible to the handicapped and minorities. Vo-ag can assume a leadership role.

A third area of contribution is youth unemployment in both urban and isolated rural areas. Unemployment runs as high as 40 percent for young minorities in urban areas. The Departments of Education and Labor should work together on this problem.

Energy is the fourth area. Vo-ag can educate about energy conservation and the use of alternative fuels, including alcohol.



Elin Duckworth, National FFA Vice President from Mesa, Arizona, and Daniel B. Taylor, Assistant Secretary for Vocational and Adult Education with the U.S. Department of Education, appeared on the Seminar program.

Dr. Taylor concluded by briefly discussing the reauthorization of the 1976 Amendments in 1981. A task force is developing recommendations to submit to Congress.

How the AVA Sees Agricultural Education

In Washington, agriculture has the image of a dying industry, according to Eugene Bottoms, Executive Director of the American Vocational Association. It is perceived only as production agriculture, better known as farming and ranching.

Agricultural educators need to work at communicating a broader meaning of agriculture. Further, the needs of rural communities need to be communicated. The trend of industry moving to rural areas can be used to help build agriculture.

Dr. Bottoms indicated that funding for vocational education should be a priority in agricultural education. Federal funding has declined from $17 per student in 1972 to the current level of $15. Vocational education needs to insure a supply of qualified workers and contribute to something being termed the "reindustrialization" of America. There is a shortage of workers in the middle of the job ladder — not in occupations at the top or bottom.

Dr. Bottoms is very concerned about the maintenance of service areas in vocational education. There is no way vocational education can become general education. To get specific identity in legislation, we must get our members of Congress to push for it.

Warmbrod's Observations of the Seminar

The final session of the Seminar featured a report by Robert Warmbrod on the observations he made of the presentations and small group discussions. Dr. Warmbrod is Professor and Head of Agricultural Education at The Ohio State University. He offered four major observations, as follows:

1. Agricultural education continues to be viewed as rural and a production agriculture program. If areas of agricultural industry other than production are to be served, we must start doing it. Further, our programs need more visibility in the rural areas.

2. Agricultural education is perceived primarily as secondary school vocational education driven by Federal funds. Other areas, including postsecondary, adult, and agricultural education below grade 9 are add-ons.

3. The seminar participants have endorsed what we are doing. We must be careful not to assume everything is okay. We must not endorse the status quo. We must make the needed adjustments.

4. There are many issues to be dealt with in agricultural education programs. The Seminar participants have surfaced these issues. It is our responsibility to deal with them.

Most of the issues will need to resolved by the various states. There is no single national program of agricultural education — and there should never be one.

Agricultural educators can make a difference. A strong commitment to the profession is needed. The professional organizations need to assume substantive leadership roles, according to Dr. Warmbrod.

ARTICLE

Inservice Training is a Means of Survival for New Teachers

By Donald D. Brown
Editor's Note: Dr. Brown was Assistant Professor of Agricultural Education at Oklahoma State University. He authored this article shortly before his death on March 29, 1980.

The competencies necessary to succeed as a vocational agriculture teacher are included in any well-planned preservice program for the certification of vocational agriculture teachers. The retention and perfection of these skills and concepts until they are ready to be used or put to the test in actual job situations is, however, alarmingly low!

The rapid turnover of teachers of vocational agriculture in Oklahoma in recent years has resulted in a teacher corps characterized by a high percentage of members who have taught five years or less. A large majority of these teachers have entered the teaching profession immediately upon graduation from college. Teachers with less than five years experience now account for well over half of the total number of teachers of vocational agriculture in Oklahoma.

The new teacher is faced not only with the task of becoming established in the community, but also of staying up-to-date and technically competent in an ever-changing field. Providing assistance to the new teacher is a particular challenge to teacher education and supervisory personnel.

The Beginning

In an effort to meet this challenge, the teacher educators in the Agricultural Education Department at Oklahoma State University, in conjunction with the state supervisory staff, implemented a state-wide, inservice training course for first year teachers of vocational agriculture. Courses of this nature had been offered before but were discontinued for one reason or another. In the Fall of 1973, a fresh, new, innovative approach to inservice training was utilized in the Southwest Supervisory District under the direction of John Jones and Robert Terry, both professors at Oklahoma State University. This program emphasized "hands on" experiences under the watchful eyes and tutelege of expert, more experienced teachers, who were readily recognized by their peers for their expertise. The tremendous acceptance and success of this program laid the basis for the present inservice training course for first-year teachers.

Beginning teachers become most aware of their needs for training as they encounter the problems of being a vo-ag teacher. This course was designed with a time sequence directly related to the teachers expected performance. Assistance is available to new teachers when they are most highly motivated to learn and at a time that is just ahead of their expected or required performance.

The Course Organization

The inservice course begins the first month the new teacher is on the job. During the third week in July, after the new teacher has had an opportunity to survey the community, visit all day students and generally become visible in the community, a three-day workshop is held on the Oklahoma State University Campus. Here, under the tutelege of the State Curriculum and Supervisory Staff, each teacher designs an annual teaching plan for each course he or she plans to teach. These teaching plans are broken down by units to be taught, the month they are to be taught, and the number of periods required for each unit.

Other important areas that are discussed include: getting supervised training programs started, incorporating the activities of the FFA into the vocational agriculture program, and on storage, and filing and utilizing curriculum materials and correspondence.

Summer Conference Session

During the annual summer conference, which is usually held the first week in August, two days are spent with beginning teachers. The first day is devoted to professionalism. Members of the State and regional professional organizations discuss the importance of membership. The Code of Ethics is presented, stressing its importance to the individual and the group. In Oklahoma, a unique pledge plan to support survivors of deceased teachers is explained to the new teachers. Other state report items are covered.

The second day is devoted to helping improve their livestock grooming skills. Most departments will be involved in local, county, district, and state fairs in September. These skills are demonstrated at this time to enable the beginning teacher to observe the most up-to-date techniques in livestock grooming. These demonstrations are held by expert teachers and their high school students.

Livestock Skills Session

Late in October or early November five separate meetings are held, one in each Supervisory District. These meetings are spent demonstrating and performing livestock veterinary skills. By meeting on a district basis the groups are small enough (8-15) that each individual can actually perform each of the skills taught. Many of the common livestock skills that teachers are expected to perform and teach their students are covered. These include castration, dehorning, hoof trimming, ear tagging, vaccinating, implanting, worming, tatooing, nose printing, and docking. Again, experienced teachers with special expertise in these areas serve as instructors. On some occasions local veterinarians are involved in the instruction.

Mid-Winter Conference Session

One day prior to the annual mid-winter conference for vo-ag teachers in

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January, the beginning teachers meet in Oklahoma City. Here, they are prepared for some of the activities and reports of the next two months. This session includes State Farmer applications, foundation applications, scrapbooks, banquets and supervised training records. Sample copies of the actual materials are available and are explained and presented by teachers who have particular abilities in these areas.

Young Farmer Conference Session

In Oklahoma, February is State Young Farmer Conference time. To encourage the beginning teacher to become actively involved in the functions and purposes of the Young Farmer Program, each beginning teacher is invited and expected to attend at least one day of the 3-day Oklahoma Young Farmer Conference.

Interscholastics Contests Session

The final meeting for this course is held in April during the State FFA Interscholastics Contest at Oklahoma State University. Many of the teachers will have teams participating in the contests. While their team members are participating, the teachers meet in Ag Hall where they learn how to complete and submit applications for Superior and Gold Emblem Chapter awards. This past year representatives of one of the Chapters with a Gold emblem rating presented a report on their application. Other reports pertinent to the teachers' summer program of activities and FFA annual report are also presented at this time.

Individualized Instruction

Throughout the entire course, time is set aside to take care of any special problems, questions, or individual needs. Effort is made to make the beginning teacher feel at ease in the learning situation. Individual assistance is provided the beginning teacher through school visits by a member of the Agricultural Education Staff, district supervisory staff, and/or neighboring vo-ag teachers. These visits are given a priority basis and are completed during the first six months of the new teacher's contract.

Experienced teachers are used in many of the instructional areas. The program is coordinated by the District Supervisors. Constant revision and improvement is being made to vitalize the instruction.

BOOK REVIEW

SELLING IN AGRIBUSINESS **by Larry E. Miller, New York, N.Y.: Gregg Division, McGraw-Hill Book Co., 1979, 134 pp., $5.00. Student Activity Guide, $3.00 (less educational discount)**

SELLING IN AGRIBUSINESS includes a text and a student activity guide.

The SELLING IN AGRIBUSINESS text is divided into three major units: (1) skills needed by an agricultural salesperson, (2) the agricultural sales process, and (3) personal responsibilities in addition to selling.

Each unit begins with an occupational matrix. The matrix shows the relationship between occupations in agribusiness and the competencies needed to enter and succeed in those occupations.

The eleven chapters in the text begin with a list of goals for the chapter. The goals are directly related to the competencies listed in the unit occupational matrix. At the end of each chapter, a set of questions to aid the student in meeting the chapter goals is given.

Unit one includes two chapters. Chapter one covers selling as an agricultural career with emphasis on career possibilities and skills needed to enter the various careers. The second chapter is concerned with the development of the various personal, communication, and technical skills needed by agricultural sales persons.

Unit two includes eight chapters devoted to the sales process. Chapter three on approaching customers discusses such items as the stages in making a sale, the importance of product knowledge, knowing you competition, opening a sale, and approaching the customer. Chapter four is determining the needs of the customer. This chapter is concerned with why people buy, satisfying customer needs, and how to deal with different types of customers. Chapter five on presenting agricultural supplies and produces covers the four steps in selling, the five stages of a sale, and the seven principles of a good sales presentation. How to recognize the common types of objections and handle them are covered in chapter six.

Also included in unit two is a chapter on closing the sale. This important chapter includes a discussion of ways to bring about the close of a sale, common mistakes that may cause the salesperson to lose the sale, and procedures to follow after the sale. How to use suggestion selling and how to handle payments are covered in chapters eight and nine. The final chapter in unit two describes the basic services businesses provide their customers and why the services are important.

Unit three is a single chapter on fulfilling personal responsibilities as a salesperson. The items covered in the chapter include the steps in prospecting for new customers, records sales people must keep, and how to deal with the shoplifting problem.

The STUDENT ACTIVITY GUIDE FOR SELLING IN AGRIBUSINESS is designed to help students develop problem-solving skills in a competency-based setting. The activity guide is designed to be used as a means of achieving the chapter goals.

Each chapter of the activity guide includes a short summary of the important concepts covered in the text. Several different types of individual and group exercises are included giving the teacher flexibility in using the guide.

The front of the activity guide contains a skill chart with a listing of all goals for the entire instructional module. This may be used as an evaluation instrument by both the teacher and the student.

These materials are primarily suited as a text or self-instructional unit for high school vo-ag classes. Any vo-ag department offering cooperative work experience programs in off-farm occupations should find this text and activity guide of benefit. Farm supply businesses may find the materials useful as a part of their sales training program for new employees. Junior colleges may find the text and activity guide useful as supplemental references in agribusiness sales classes.

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FFA PAGE

FFA Roots

BY ALLAN L. UTECH

Editor's Note: Mr. Utech is Consultant for Agricultural Occupations in Adult, Vocational and Technical Education with the Illinois State Board of Education, Springfield, Ill.

Following the enactment of the Smith-Hughes Act and prior to the establishment of the FFA, many states experimented with a variety of youth organizations and clubs for agriculture students. In selected literature of the times, February, 1918, to be exact, two such organizations were identified and described.[1]

In 1918, the United States was heavily involved in World War I, the "war to end all wars." The thoughts and energies of the citizenry were directed to winning the war as soon as possible. Food production was considered an important item in the successful conduct of the war. The potential of youth for expanded food production led to the development of the first organization, the United States Boys' Working Reserve.

Boys' Working Reserve

The United States Boys' Working Reserve was an organization under the jurisdiction of the United States Department of Labor. It enlisted boys (no girls) between the ages of 16 and 21 to work in food production. The fact that the nation was at war possibly explains the use of the term "enlist" in recruiting members.

The Boys' Working Reserve required an Oath of Office. After working on a farm for a minimum of six weeks an official badge of recognition was awarded. Close and careful supervision looking to the welfare of the boys was specified in the official directives. It was suggested that many of the boys working under the six month supervised practice experience as outlined by the Smith-Hughes Law might easily qualify for membership in the Boys' Working Reserve and receive recognition and honor of this great organization. It is interesting to note that Burridge D. Butler was the Federal State Director for the Illinois program. A few persons, the old-timers at least, will remember Mr. Butler for his affiliation with the WLS-National Barn Dance-Prairie Farmer organization.

Farm Boy Cavaliers

Probably the most unique organization for vocational agriculture students was the second, the Farm Boy Cavaliers. This was a non-military organization of farm boys mounted on horses.

The Farm Boy Cavaliers had four chief mottoes: service, honor, thrift, and loyalty. The main purposes were to work for achievements on the farm and for community betterment. You can see that BOAC ideas have been with us for some time. Cavaliers moved through ranks of "Pages," "Esquires," and "Knights" by attaining achievement badges. Achievement badges were earned by showing that definite work was done in such areas as follow: alfalfa or clover growing, applied chemistry, automobile operation, barley growing, barnyard sanitation, bee culture, beef cattle feeding, bird study, blacksmithing, buttermaking, canning, carpentry, cement work, corn growing, entomology, farm accounts, forestry, harness mending, harness oiling, manure spreading, meat curing, sausage making, meat cutting, milk production, oats raising, photography, pig raising, pipe fitting, plant diseases, plowing, poultry culture, rope work, rural health, sheep raising, soldering, wheat raising, and horsemanship.

A boy of any age who was able to mount a horse from the ground and ride at a gallop could become a Cavalier. A twelve year old may take three years to earn three achievement badges. If he had $50.00 invested in a farm project or in a savings bank he was qualified for the rank of "Esquire." In order to become a "Knight" he had to earn four additional badges and have $100.00 invested or collecting interest in a savings bank. A "Knight" must earn ten additional achievement badges. Knights were those who were eligible to obtain achievement certification for community service. What else would you expect of a "Knight"? A quick way through the ranks was a possibility for Cavaliers who had previous training.

Any four farm boys could organize a troop of Farm Boy Cavaliers by taking the pledge, electing a leader, a lieutenant leader, a secretary and a treasurer. Officers and members had to be reported to D.D. Mayne at the University Farm, St. Paul, Minnesota. The criteria for membership were rather specific. If you were a farm boy, had three friends who were similarly inclined, had a horse, and were able to mount and ride it you were in.

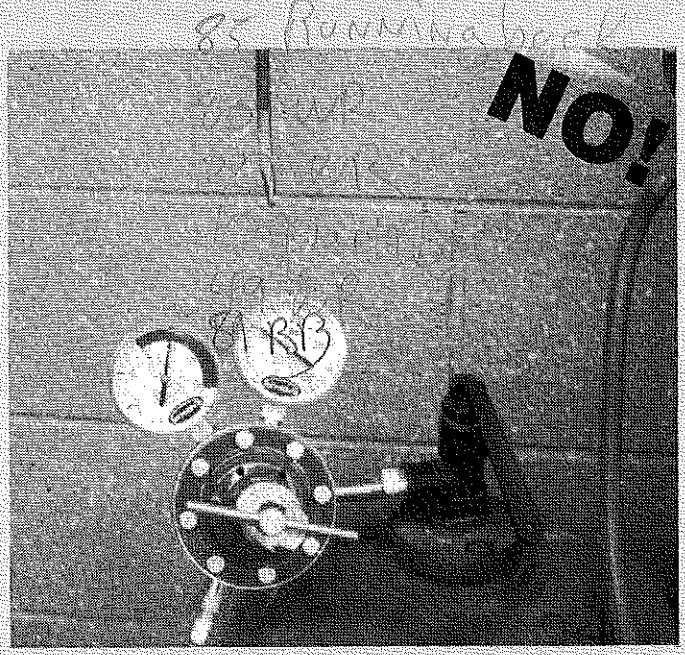
It was the opinion of the Illinois State Supervisor of Agricultural Education, A.W. Nolan, that the Farm Boy Cavaliers was an organization that fit well into the supervised farm practice requirement of the Smith-Hughes Law. The projects and work of the supervised farm practice could satisfy some of the requirements for achievement of a Farm Cavalier. Agriculture teachers were encouraged to bring as many of their students as possible up to the rank of Cavalier.

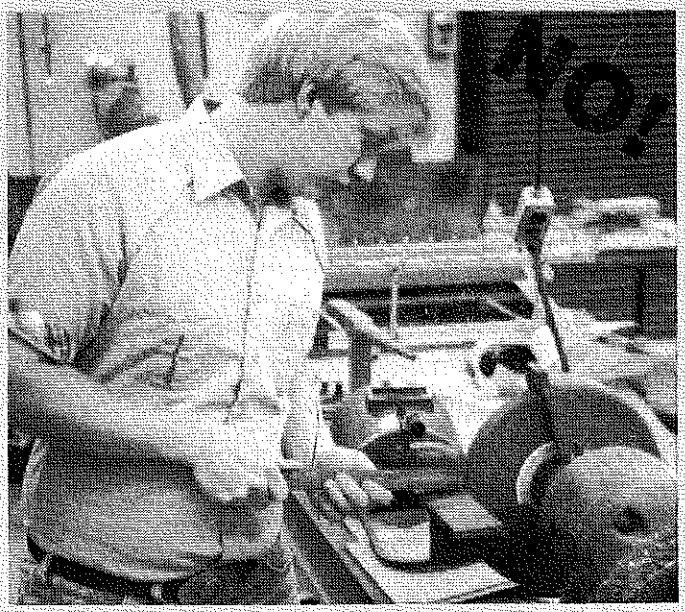
A division of Farm Boy Cavaliers without horses was called "Yeomen." Another division for girls was called "Home Cavaliers." No information was available in writing this article about the girls owning or riding horses.

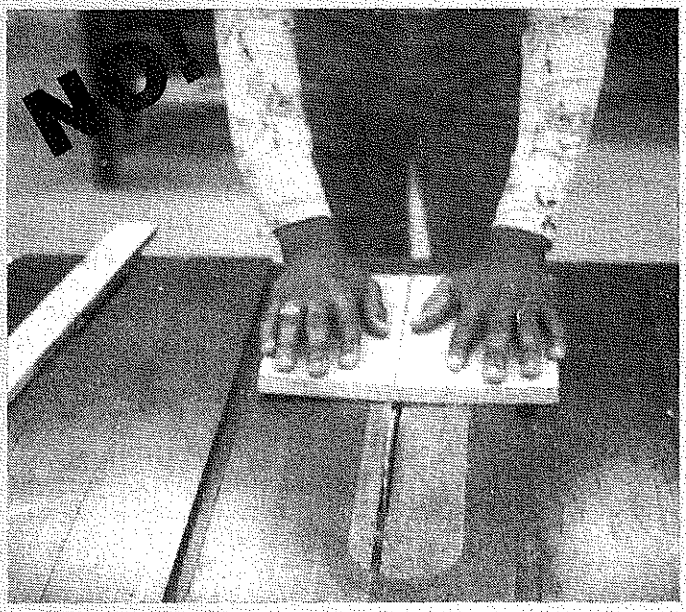
These two organizations are "FFA Roots." Perhaps, there are other individuals who could contribute articles leading to the establishment of the FFA.

[1]Board of Vocational Education, State of Illinois, Bulletin #8, Springfield, February, 1918.

Stories in Pictures:
Safety Education
What Not To Do!







(Photographs rom James H. Daniels, Clemson University)