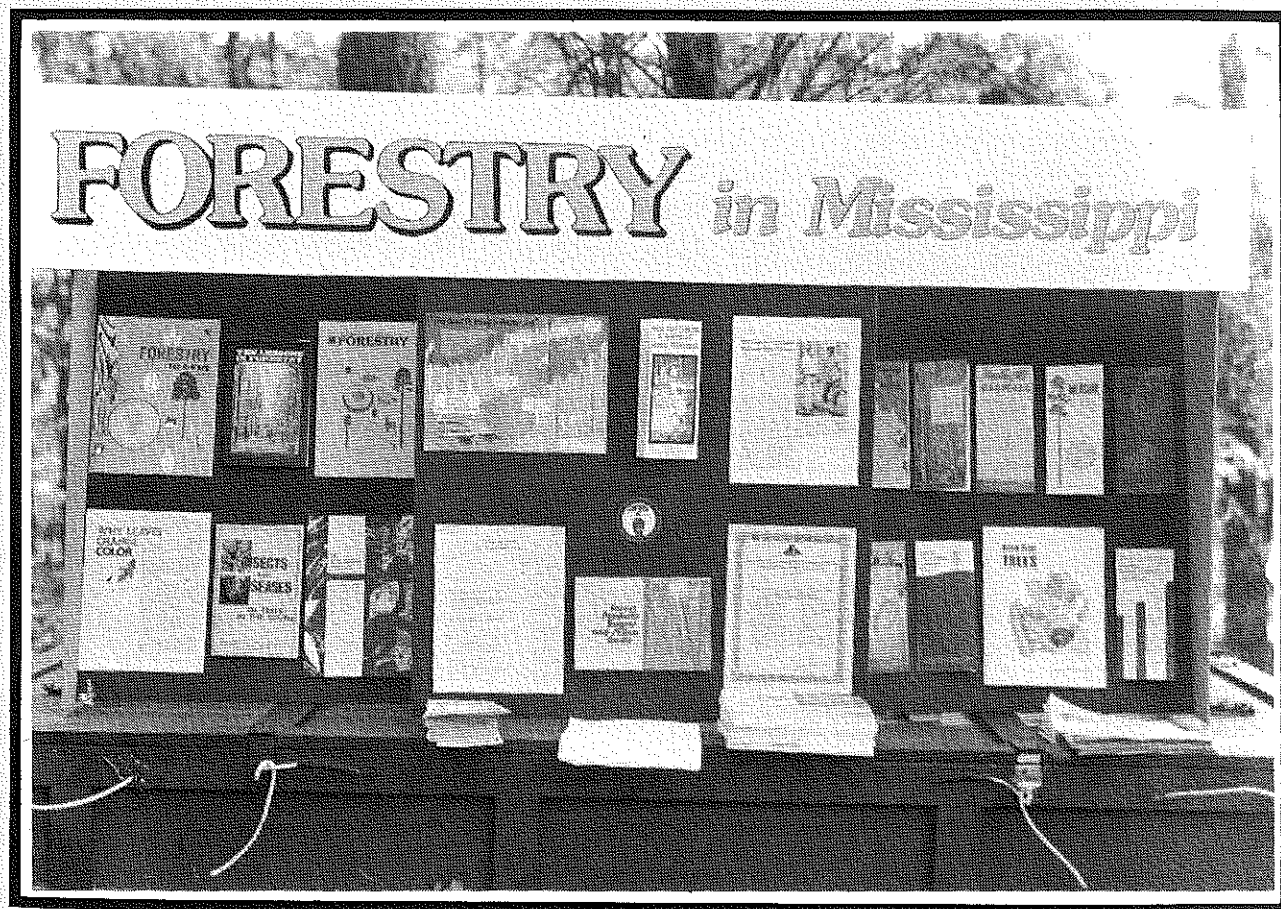


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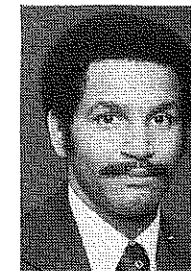


**THEME: Staying Current —
Forestry and Natural Resources**

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Our National Resources



BY BLANNIE E. BOWEN, EDITOR

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

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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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During the 1960s, natural resources and other environmental issues were foremost on the minds of Americans. Getting back to nature was one of the "in" things to do. The environment was popularized through song, dance, pictures, the mass media, books, magazines, and most other media known to humans at the time. Somewhere along the way, however, we discovered that our lakes, streams, and other bodies of water were almost hopelessly polluted. At the same time, the air over Southern California was popularizing smog. Residents of various cities and towns discovered that they were living on dump sites containing harmful materials that might decompose after 1,000 years or so. Farmers learned that pesticides such as DDT and many of their trusted herbicides were simply too potent to be used as intended. The battle lines were drawn, but it is still not clear who was friend and foe.

Hippies, ecologists, and flower children were often labeled the foes. The establishment tended to be portrayed as the good folks. The war was on, but a strange twist of fate brought no clear winner in the disputes. Americans discovered that natural resources are in fact national resources and should be treated as such. To an extent, the opposing groups pooled their energies so that preserving natural resources became a priority item for most Americans.

While dump sites, acid rain, and nuclear waste disposal are still high on the agenda, many of the other problems have been partially licked or are close to being remedied. It is now fashionable to fish in Lake Erie and many other major bodies of water. The air in Los Angeles and many other large cities is not the topic of everyday conversation. Cities and small towns alike have beautification efforts to make sure the natural landscape is preserved. In most states, it will cost you at least \$100 if you are found to be guilty of throwing litter any place but in the green dumpsters found along most rural highways.

Twenty years later, we are fortunate that the land, air, water, and other precious resources are viewed as national treasures too precious to be permanently lost through neglect, apathy, and wanton abuse. Residents of every state, town, city, and rural community voice their concerns about the environment and hazardous waste. These concerns, even in 1986, appear well-founded. In 1984, the U.S. Environmental Protection Agency identified 19,000 hazardous waste sites in the U.S. Some 530 abandoned sites were placed on a clean-up list termed high national priority. To the surprise of few, most of these sites are in highly industrialized areas, but few states are without these potential time bombs. Coupled with the Union Carbide tragedy in India and near tragedies in West Virginia and Oklahoma, Americans are rightfully concerned about the environment for themselves and future citizens of this land.

Since natural resources are now cherished by all as a commodity capable of performing a desired service or

yielding valuable products, striking a happy balance seems paramount for several reasons. Earlier this year, one major national publication hailed gardening as the most popular hobby in the U.S. Further, as Americans move away from red meats as major sources of protein, poultry and fish seem more than capable of making the difference in our diets. This rekindled interest in fish products has helped transform fried catfish, long in delicacy in the eyes of many Southerners, into a national fish of sorts.

A venture involving Mississippi catfish producers and Church's Fried Chicken will only enhance the popularity of what much of the U.S. would call a scavenger or scrub fish. This emerging enterprise will have significant economic impact since new jobs are being created in terms of the production, processing, distribution, and marketing segments. Similar expansions can be expected if the lowly crawfish becomes a staple in the diets of Americans since it can safely be produced as a double crop with rice. Perhaps the greatest expansion will occur, however, if researchers and consumers determine that tasty "freshwater shrimp" can be produced in an economic manner. Environmental concerns suggest that these products must be both economical and safe for human consumption.

Similar advances are occurring in the forestry area as well. But, unlike the fisheries industries, forestry faces a very viable enemy that nearly decimated the automobile industry in this country — foreign competition. In many areas of the U.S., over half of the lumber is imported. This could have grave consequences for a state such as Alabama because an author writes in this issue that forestry is the largest employer in that state. The same prospect would be expected for the Pacific Northwest since it is a major lumber and paper production center.

These and other natural resource problems confront vocational agriculture from two angles. First, all agricultural educators must be aware of and concerned about environmental problems and issues. Second, secondary and post-secondary teachers with specialized programs in various areas of natural resources must be concerned about factors and forces related to employment opportunities for their graduates. Quite simply, preserving and making wise use of our national resources is a concern for all Americans.

Dr. Danny L. Cheatham secured authors to share their thoughts about this very important topic. He is to be congratulated for getting a variety of authors to address such a diverse area of concern.

Staying Current in Natural Resources

Staying current! As a teacher, how important is it to stay current in our chosen profession? Can we afford to stand in front of a classroom full of students or serve as an administrator and not be on the cutting edge of knowledge and technology? Obviously, the answer is "shame on us" for thinking of such a preposterous idea. While all of us have wrestled with ideas and ways of staying current in our field of study, few of us have given serious thought about the consequences which occur when we fall short of our goal.

John Naisbett in his book titled MEGATRENDS points out how fast knowledge is changing and growing in volume. He stated that by 1985 the volume of information will have grown between four and seven times that of only a few years earlier. In essence, scientific and technical information is doubling every five to seven years. Unless we stay current in our field(s), our subject matter becomes obsolete. Students we are teaching and preparing to enter the world of work will leave our classroom lacking the knowledge and skills needed to operate in our complex society.

Importance of Natural Resources

Many of us fail to realize the importance of natural resources and the impact this area has on our lives. Our very existence is dependent upon an adequate understanding and wise use of our natural resources. When we refer to "natural resources," we include such areas as the air we breathe, the environment in which we live, the water we drink, the soil that grows our food, the forests that provide timber for our homes, oil and gas that furnish our energy, our vast rangelands, wetlands and wildlife. Vocational agriculture teachers and administrators who work with natural resources programs face difficult but exciting challenges in providing students with knowledge, problem-solving, and thinking skills that will allow them to deal with the complex problems relating to the natural resources areas of the future. As professional educators, the thought of carrying out this important assignment without being at the cutting edge of new knowledge and technology in the natural resources area is simply unthinkable.

Problems and Issues

When we look to the future we immediately see complex problems developing and natural resources issues of the past continuing to fester and demanding action. Let's identify some of these problems and issues that will demand our attention.

- Accelerated soil erosion — removing the most productive layers of soil, causing decreases in productivity.



By DANNY L. CHEATHAM,
THEME EDITOR

(Dr. Cheatham is an Associate Professor in the Department of Agricultural and Extension Education at Mississippi State University, Mississippi State, Mississippi 39762.)

- Protection, development, and efficient management of water resources.
- Environmental issues including air pollution, use of chemicals and pesticides, and acid rain.
- Renewable resources, including forests, rangelands, and wildlife.
- Depletion of agricultural lands for use in urban expansion.
- Vanishing nonrenewable resources and conservation measures.

These are only a few of the problems that we will be called upon to address. These problems and issues are complex and require cooperation and teamwork and must be studied and addressed from a multidisciplinary approach. All agencies, organizations, and individuals must play a part. If we are to stay current, we must maintain close ties and relationships with all those agencies and organizations involved in natural resources.

This Issue

Many people feel that we are living in an information society and are virtually drowning in information. This appears to be true. Our challenge today is to take this information and convert it into relevant and meaningful knowledge that will help us get along in the society in which we live and function effectively in our profession, i.e. agricultural education. We must stay current in our field(s) of expertise. This issue of THE MAGAZINE will provide some ideas and suggestions for readers to consider as they struggle with the task of staying current in the natural resources area. These authors have addressed some of the areas relating to natural resources that are receiving attention in our society today. One particular article attempts to identify and provide information on successful natural resources programs across the nation. Through the process of sharing successful efforts with others, we all learn and grow professionally. Staying current doesn't just happen. It takes effort and planning. It could be the most important thing we do this year.

Staying Current in Forestry

Staying informed is a problem for all of us, but seems particularly difficult for teachers. It is hard to find time between lesson planning, teaching, and working with students to make the necessary effort to stay current in any subject. In forestry the task can seem formidable at first because so many agencies, organizations, companies, and individuals comprise the forestry community. Many state and federal agencies exist to help private individuals manage their resources. Forest industries convert raw materials into finished products to sell. Still others promote forestry and land use. Every organization is unique and the information available from each will reflect particular goals.

Forestry is also unique in its diversity of subject matter areas. Your particular needs might range from forest herbicides to log grading to the concepts of growth and yield. Your limited time plus the many possible sources and types of information could give you the impression that staying current in forestry is a lengthy, dismal effort. However, this is far from the truth. Since your time is a limited resource, our intent in this article is to explain an efficient way for vocational agriculture instructors to tap the various information sources and stay current in forestry. We will offer an action plan to answer the question, "How can I get the most current forestry information with the least amount of effort?"

Before you initiate the action plan, you should be familiar with the major forestry information sources and the opportunities they offer. Here is a "menu."

Cooperative Extension Service

The Cooperative Extension Service should be your primary link with the research of the land grant university. Extension is the "arm" of the land grant university that "extends" current research and information to those outside the university. Extension forestry specialists should be your primary source for current information. Congress has given the Extension Service the responsibility to provide education programs in agriculture and natural resources to a variety of clientele groups. Vocational agriculture instructors, as individuals and as a group, are Extension Service clientele. What can Extension offer you?

Newsletters. Most state Extension forestry programs include one or more periodic newsletters which provide current forestry news, meeting notices of events, lists of available publications, and other timely information. In Mississippi, for example, the MAGNOLIA LOGGER is a newsletter written specifically for timber harvesting clientele. The EXTENSION FORESTRY NEWSLETTER is for a general statewide forestry audience, and the FOREST OWNER UPDATE is written specifically for North Mississippi timber owners. Contact your state Extension forester and ask to be placed on the mailing list for all the newsletters.



By THOMAS A. MONAGHAN AND ROBERT A. DANIELS

(Dr. Monaghan is Leader of Extension Forestry and Mr. Daniels is an Extension Forester with the Mississippi Cooperative Extension Service, Mississippi State, Mississippi 39762.)

Publications. You should be able to start a small reference library with the publication available from Extension foresters. Extension foresters write publication based on current technology and their assessment of the needs of their clientele. They also maintain supplies of publications from other sources.

Contact your local county agent's office to obtain a list of publications available from the state Extension forestry office or land grant university. The county agent will have a supply of many of the forestry publications. This person can help you obtain copies of those publications not in stock. Extension publications are usually available at no charge, but some states are required by law to cover printing costs. Extension forestry publications will help you in staying current and you may be able to obtain limited supplies as reference materials for your students.

Workshops and Shortcourses: In many states, Extension foresters conduct workshops and shortcourses for professional foresters and other clientele groups. These activities are time-efficient means of staying current in forestry. Workshops and shortcourses range from 1 to 5 days in length. They usually provide detailed information on one or more current subjects, such as prescribed burning, forest regeneration methods, and forest economics. Some workshops and shortcourses may be available during summer months when school is not in session.

Field Days, Tours, and Demonstrations. Extension foresters, in cooperation with other agencies, organizations, industries, and consultants, sponsor field days, tours, and demonstrations to show methods and results of forestry practices to landowners, managers, and the general public. These programs will help you stay current and you may be able to use them as teaching tools for your students. Be sure to contact the primary sponsoring agency well in advance if you plan to bring a large group of

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Staying Current in Forestry

(Continued from Page 5)

students. In Mississippi, instructors and their students are often asked to assist with field days by serving as tour guides and in other roles. Such involvement can provide you and your students the opportunity to work with professional foresters and prospective employers. Your students would have an opportunity to put forth their best effort and show themselves as good prospective employees. Do not underestimate the value of exposure to the forestry community in keeping yourself and your students current in forestry.

Audiovisual Materials. Most Extension foresters can provide slide-tape programs, films, and videotapes for your self-improvement and for classroom use. Your county agent should have a list of audiovisual materials for loan to the general public. Extension foresters will be able to provide more technical information or training materials.

Computer Software. Public domain software may be available from your state Extension forester or Extension Computer Applications Department. Many states publish lists of available software. Contact your county agent or Extension forester for more information.

State Forestry Agencies

Most state forestry agencies are responsible for fire control, forest management planning, and a variety of technical services for private landowners. Functions vary from state to state, but forest regeneration, improvement, and protection are among the technical services. They also operate seed orchards and tree seedling nurseries. Information and education may be another of their roles. Here are some opportunities:

Publications. Publications are usually not a primary function of a state forestry agency, but you should consider them a first step in becoming familiar with the agency and its services. Your local county or area forester should be able to provide most of the agency's publications. First, become familiar with the various functions of your local forestry agency. Then, you can begin to seek out other opportunities this agency may provide in your attempt to stay current.

Equipment Demonstrations. County or district wildlife suppression crews may be able to demonstrate the use of firefighting equipment and wildlife suppression techniques. Other possibilities include tree planting equipment, direct seeding, and herbicide application demonstrations.

Forest Nurseries and Seed Orchards. Nursery personnel should be able to conduct tours and demonstrations of nursery and seed orchard practices. For efficiency, you could organize a group of instructors and schedule a tour of a state nursery or seed orchard. You can learn about seed collection, grafting, genetic improvement, and handling and grading of seedlings. After obtaining a basic knowledge of nursery and seed orchard practices, you can maintain a current level of expertise by reading available journals and publications related to these subjects.

Forest Management. Because of the wide variety of technical services provided by different state forestry agencies, you should have many opportunities to observe the work of agency employees. Your free time would be well spent visiting state forestry personnel to observe the jobs that they perform on private, nonindustrial forest lands.

State Forestry Associations

Most states have a state forestry association of foresters, landowners, and other individuals and firms interested in supporting forestry. Association members tend to be far ahead of nonmembers in knowledge of current issues in forestry. Active membership will help you stay current by providing several specific opportunities.

Publications. Forestry association magazines, periodic newsletters, and legislative alerts summarize current issues of regional and state significance.

Membership. Of course it is difficult to be a member of every association related to the subjects you teach. Dues can add up, but if you want to stay current in forestry, this is money well spent. Try working with your state's forestry association to develop a "creative" arrangement to reduce membership rates for a significantly large group of vocational agriculture instructors. For example, the Mississippi Forestry Association (MFA) made such an offer to encourage membership by personnel of several agriculture-related agencies. MFA's regular annual membership fee of \$30 was reduced to \$10 provided these "special"

members could recruit two additional members during the year.

Committee Involvement. Most state forestry associations have several active standing committees which address issues affecting forestry in their state. Examples include tree farm, governmental affairs, and communication committees. Through committee work, instructors can meet with foresters from all segments of the forestry community and gain insight into the diversity of viewpoints on current issues. A group of instructors, active on different committees, could share reports and increase the effectiveness of their efforts to stay current.

Meetings. Association annual meetings provide technical sessions and opportunities to meet prospective employers of your students. Remember that frequent exposure to the forestry community is important. If a prospective employer knows the caliber of certain teachers, this person may take special interest in the students.

Society of American Foresters

The Society of American Foresters (SAF) is an organization of professional foresters. Since a major society effort is promotion of the forestry profession, SAF offers many opportunities to stay current in the professional aspects of forestry. A professional degree in forestry qualifies you for regular membership in SAF. With a related degree and experience in teaching forestry, you qualify as an affiliate member. Members receive the *JOURNAL OF FORESTRY* and other timely information. State, chapter, and group meetings are held periodically and technical sessions are included.

SAF has recently undertaken a voluntary Continuing Forestry Education (CFE) program to encourage foresters and other professionals to stay current in forestry. You can take advantage of SAF's concern for professional forestry improvement by participating in the CFE program.

Forestry Schools and Universities

In addition to the Extension forestry functions of the land grant universities, many other universities also offer forestry and natural resources curricula. The *CONSERVATION DIRECTORY* published by the National Wildlife Federa-

tion lists more than 100 colleges and universities that offer degree programs in forestry, natural resources, or environmental studies. You may be able to take advantage of special courses or continuing education programs offered by schools in your area.

U.S. Forest Service

In addition to the administration of our National Forests, the Forest Service conducts research in the entire field of forestry and related resources. Research publications, resource bulletins, general technical reports, and newsletters are available from many different Forest Service offices throughout the U.S. Examples include: *TREE PLANTER'S NOTES*, *RESEARCH ACCOMPLISHED*, *FOREST GRASS-SOUTH*, *FOREST MANAGEMENT BULLETINS*, and *PEST MANAGEMENT NEWS*. Contact your nearest Forest Service headquarters, get the address of the nearest Forest Experiment Station, and write for a list of available publications.

Action Plan

Now that you are familiar with the major organizations that offer current forestry information, you need a course of action. This "Action Plan" lists some steps to take now to get the most forestry information with minimum effort.

1. Contact your local county agent and/or Extension Forestry office, have your name placed on their forestry mailing list, and ask for a list of publications.
2. Contact the forestry agency of your state government, request copies of available publications, and ask to be placed on a mailing list if one is maintained.
3. Join your state forestry association and volunteer for committee work in your area of interest.
4. Subscribe to one or more forestry journals or magazines.
5. Become acquainted with local foresters through forestry meetings, office visits, and personal contacts.
6. Invite local foresters to be guest instructors for your classes. Allow them to present topics of their choice rather than assigning them a topic.
7. Explore opportunities from additional sources.

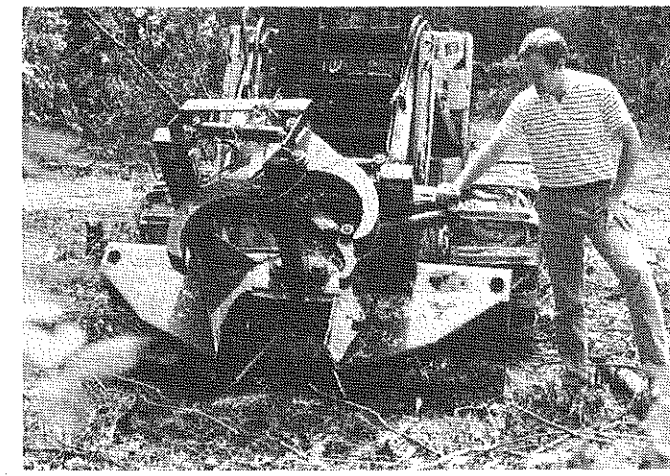
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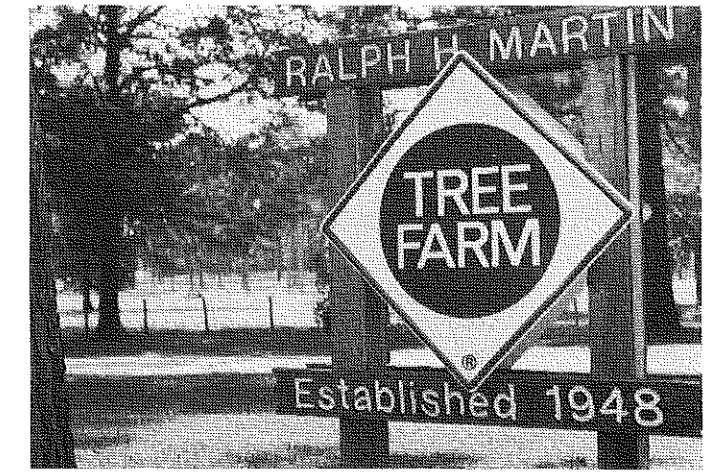
Research forests at land grant universities offer opportunities to see the development of current technology. (Photo courtesy of Tom Monaghan and Bob Daniels.)



Forestry field days bring together representatives of many different agencies, organizations, and industries. (Photo courtesy of Tom Monaghan and Bob Daniels.)



Demonstrations of modern forestry equipment may be provided by agencies or industry personnel. (Photo courtesy of Tom Monaghan and Bob Daniels.)



The Tree Farm program is one of many opportunities for involvement with foresters and forestland owners. (Photo courtesy of Tom Monaghan and Bob Daniels.)

Staying Current in Forestry

(Continued from Page 7)

Additional Sources and Opportunities

Here is a partial list of regional and national organizations which can provide additional opportunities to stay current on forestry-related technology and issues. Many state and local organizations may also be available.

American Forestry Association
1319 Eighteenth St., N.W.
Washington, D.C. 20036

Publishes a monthly magazine, AMERICAN FORESTS, and a bi-weekly newsletter, RESOURCE HOTLINE.

American Forest Institute
1619 Massachusetts Ave., N.W.
Washington, D.C. 20036

Provides forestry publications, teaching aids, audiovisuals, and vocational guides; national sponsor of the TREE FARM program, publishes AMERICAN TREE FARMER magazine.

American Pulpwood Association
1025 Vermont Ave., N.W.
Suite 1020
Washington, D.C. 20005

Publishes periodic newsletter, PULPWOOD HIGHLIGHTS, technical releases, and special project publications.

Forest Farmer Association
P.O. Box 95385
4 Executive Park East, N.E.
Atlanta, GA 30345

Publishes FOREST FARMER magazine, FOREST FARMER MANUAL, and NEWS ALERT primarily for forest owners in southern states.

Forest Resource Systems Institute
Courtview Towers, Suite 24
201 N. Pine Street
Florence, AL 35630

Serves members as a clearinghouse of information on forestry applications of computer technology; publishes newsletters, bulletins, and software directory.

National Wildlife Federation
1412 16th St., N.W.
Washington, D.C. 20036

Publishes a comprehensive, annually-revised CONSERVATION DIRECTORY which lists organizations, agencies, and officials concerned with natural resource use and management.

National Woodland Owners Assn.
374 Maple Ave. East
Vienna, VA 22180

Publishes NATIONAL WOODLANDS magazine and WOODLAND REPORT newsletter; provides additional services to members.

Southern Forest Institute
2900 Chamblee Tucker Road
Bldg. 5
Atlanta, GA 30341

Publishes SOUTHERN TREE FARM NEWS; provides publications, audiovisuals, and other public relations information relating to Southern forestry.

Southern Forest Products Assn.
P.O. Box 52468
New Orleans, LA 70152

Publishes periodic SF NEWSLETTER; offers various publications on Southern forestry and forest products.

Summary

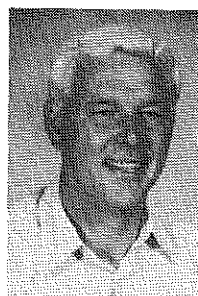
Our society uses large amounts of wood products, but also demands preservation of our forest environment. This requires a balanced approach to forest management. Management of forests and other natural resources must have consistency through time. The forestry community operates within the constraints placed on it by our society. Society as a whole must be aware of how the forestry community produces wood products and other benefits while it safeguards the resource. Developing this awareness requires continuous emphasis on education. You and all educators are very important people to foresters and other conservationists. Therefore, feel free to contact them to get the information you need to stay current in forestry.

THEME

A Teacher's Perspective on Staying Current in Natural Resources

In these "trying times" for production agriculture, teachers of vocational agriculture have an opportunity to retain strength and stability in their instructional programs by shifting emphasis to areas such as forestry and natural resources as noted by vocational education legislation of the early 1960s. Teachers must also accept that areas such as forestry and natural resources are a part of agriculture and that career opportunities do exist. Students have vocational as well as avocational interests and teachers can do an effective job of training.

Some teachers are reluctant to start in-depth programs in forestry and natural resources feeling they lack proper training and experience. These limits can be broken down and seeds for a successful, meaningful program established. As a teacher working in this specialty area, I have attempted to achieve the above and remain current by working closely with the many related agencies and individuals and by taking advantage of opportunities available in the community. As an extra, the school's program boasts a rolling, partially wooded 230 acre land laboratory which has been a beneficial link. Results of these relationships



BY NED STUMP

(Mr. Stump is a Vocational Agricultural Instructor at Prairie Heights School, LaGrange, Indiana 46761.)

have yielded many worthwhile activities and the need for the teacher to stay current. Listed below are a few examples of activities and methods used to stay current in the natural resources program area.

Fish and Game Area Managers: Periodic visits by conservation classes to various wildlife management projects of our adjoining Pigeon River Fish and Wildlife area keep us current on wildlife feeding, restoration, disease control, and the total management picture for our community.

Hardwood Processors: One of the most modern hardwood mills is close to the school. Yearly forestry class visits allow viewing of double band saw operations, grading, and kiln drying of local hardwoods.

Agricultural Stabilization and Conservation Service (ASCS), Consulting Foresters and Timber Buyers: Management of an 80 acre hardwood forest stand requires help and assistance from both the public and private sector. A timber sale from the school farm of just under 100,000 board feet of oak, cherry, ash, and walnut netted just over \$20,000. A five year Long Term Agreement (L.T.A.) is maintained with local ASCS officials for timber stand improvement practices, pond building, and reforestation plantings. The forest is offering a continuous supply of firewood from tops and cull trees for share cutting by students and community members as well.

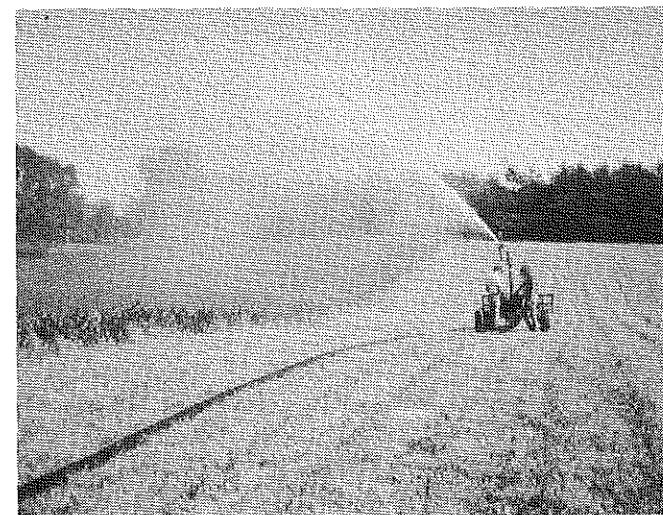
Area Forest Service: A community tree planting program consisting of some 15,000 to 37,000 conifer and hardwood seedlings are planted annually utilizing the FFA Chapter tree cooperative and tractor mounted planter.

American Walnut and Indiana Fine Hardwoods Association: During the past five autumns, black walnut seeds have been collected for the state nursery. This effort has netted just under 3,000 bushels of green seed at \$2.25/bushel. Members are returned \$1.50 per bushel for their efforts.

Department of the Interior, U.S. Bureau of Land Management: Relationships with these federal agencies have resulted in the management and daily maintenance, including feed from the school farm, for a wildlife study area which supports buffalo, white tail deer, Canadian geese, and more.

Area Taxidermist: Each fall, wildlife class members utilize community road kills, especially red and fox squirrels, to practice taxidermy. These projects result in FFA and personal exhibit specimens. One class member has her own business specializing in fish mounts.

School Farm: Students participate in leading and interpreting nature tours for visitors. Annually 1,500-1,800 elementary and high school students visit during spring and fall. Vocational agriculture students guide them over



No-till corn in alfalfa sod with chapter irrigation on school farm. Technical assistance and help are provided by SCS, ASCS, and other state, federal, and local agencies. (Photo courtesy of Ned Stump.)

the two mile figure-eight, 28 stop Nature Trail. Students maintain and enrich trail stops each spring and fall in preparing to share the area with visitors.

Soil Conservation Services (SCS): Students are involved in yearly cropping of the school farm's 60 tillable acres, utilizing approved practices designated in the long range and updated soil conservation plan. Practices include sod buffers on steep slopes, contour strip cropping, no-till row cropping, legume-grass meadow mixtures, irrigation, and fertility and management practices to enhance top land care and utilization.

National Oceanic & Atmospheric Administration: Daily since May of 1968, students have collected, maintained, and reported weather observations from the U.S. Weather Bureau Station.

Cooperative Extension Service: Working with Purdue University's Agronomy and Entomology Departments, plant growth projects and biological insect pest control studies have been conducted. Also, through cooperation with a private research laboratory in Washington, D.C., an acid rain study has been launched.

Local Conservation Officers: Annually students assist local conservation officials in promoting wildlife habitat through distribution and planting of wildlife food plots, by building nesting structures for water fowl and squirrels, and in releasing quail, pheasants, and mallard ducks. Students also prepare and conduct outdoor safety programs with the assistance of the area conservation officers. Topics and audiences include: lawnmower safety for all 5th graders, snowmobile safety for all 6th graders, hunter education for all 7th graders, and boat and water safety for all 8th graders.

Student Campouts: Students have assisted with overnight campouts of many school youth groups on the school farm with night hikes, camp fire vespers, and hay rides.

National Buffalo Association Membership and Periodicals: THE NATIONAL BUFFALO JOURNAL, OUTDOOR INDIANA, MICHIGAN OUT-OF-DOORS, TRACKS, FUR, FISH AND GAME, NORTHERN LOGGER, and many Department of Natural Resources (DNR) bulletins provide students and teachers alike with the opportunity to keep informed and current.

(Continued on Page 10)



Hunter education with conservation officers assisting at school farm safety range. (Photo courtesy of Ned Stump.)

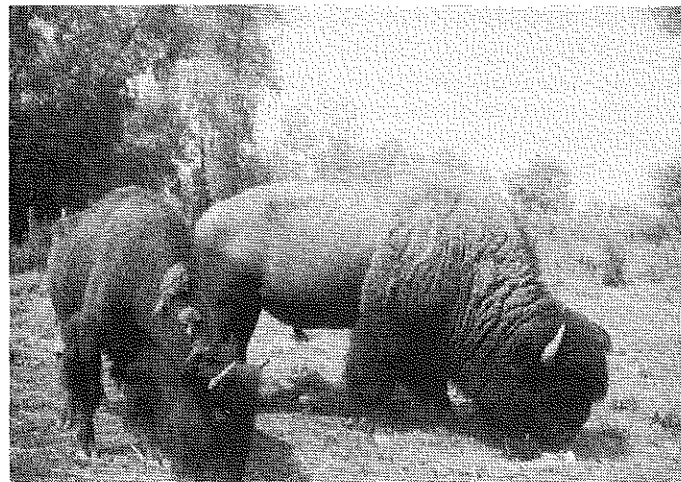
A Teacher's Perspective on Staying Current in Natural Resources

(Continued from Page 9)

Save Our Small Game: This program has assisted wildlife class members in planning home wildlife areas (of 20 acres or more) and competing for state award prizes while applying learned skills.

Environmental Education Association of Indiana (EEAI): Working with professionals and association meetings has provided a wealth of opportunity to "hitch hike" new ideas for forestry and natural resources into our vocational agriculture curricula.

County Carvers: A local whittlers group meeting in our vocational agriculture facility provides a unique opportunity for students and members to learn and appreciate more of the qualities of our fine hardwoods and their potential use in an artistic way.



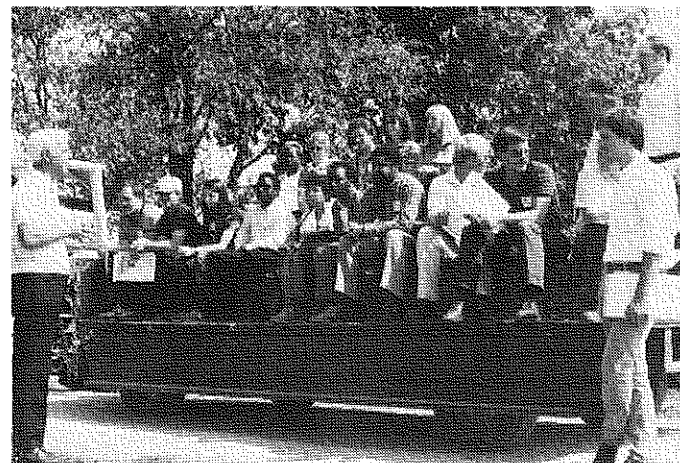
Prairie Heights FFA wildlife area buffalo herd. Involvement of federal and state agencies provide exciting opportunities for staying current in the wildlife area. (Photo courtesy of Ned Stump.)

State Park and Nature Foundation Personnel: Visits and open forums with natural resources people such as Kellogg's sanctuaries in Michigan, and Pokagon State Park add much to the natural resources curricula.

Trips and Vacations: The FFA chapter has taken wilderness achievement trips to Canada and the northwoods for nearly 20 years providing a subtle reference for much in-class discussion. These trips plus personal ventures such as a recent drive up the Al-Can Highway and a swing through the Alaskan Wilderness continually provide opportunity to keep a teacher up-to-date.

Summary

Staying current in the forestry and natural resources areas should be a natural challenge for the involved teacher coming through an **interested desire** and not necessarily a felt need. Teachers must have a special enjoyment about what they are doing and radiantly share that with their students and associates to be successful.



Michigan State University Seminar on Wheels visit to Prairie Heights School Farm. Interacting with other professionals creates the climate for growing in knowledge and understanding of natural resources. (Photo courtesy of Ned Stump.)

Water Demand For Irrigation in 1984

An estimated 83 million acre-feet of water were used to irrigate in 1984, averaging 1.8 acre-feet per acre, according to results of a survey published by the Commerce Department's Census Bureau and U.S. Department of Agriculture. Rice, alfalfa, cotton, sugar beets, and vegetables received the heaviest amounts of water, averaging over 2.0 acre-feet per acre, while soybeans and tobacco received less than 1.0 acre-feet per acre.

The survey showed that 24 million acres were irrigated with water from farm irrigation wells and another 16 million from off-farm water suppliers. About 44 percent of the water came from wells, 44 percent from off-farm suppliers, and 12 percent from other on-farm sources such as ponds and creeks. The leading states in irrigated land were California, 7.8 million acres; Nebraska, 5.8 million; and Texas, 4.9 million.

The nation's farms had 353,005 wells capable of use for

irrigation, and 506,394 irrigation pumps of all types. The cost of pumping was just over \$1 billion, or an average of \$7,400 for farms reporting such expenses. Electricity accounted for 64 percent of pumping costs, or \$640 million.

The Census Bureau points out that these data are subject to sampling variability and other sources of error. Copies of the 1984 FARM AND RANCH IRRIGATION SURVEY, PRELIMINARY REPORT, are available for \$1.00 each from the Customer Services Branch, Data User Services Division, Bureau of the Census, Washington, D.C. 20233.

The Cover

Publications are a most efficient way to stay current in forestry. (Photo courtesy of Tom Monaghan and Bob Daniels.)

THEME

Programs Staying Current in Forestry and Natural Resources

Staying current often means looking around us to see what others are already doing that we can imitate or modify in our own programs. Examination of outstanding programs in Forestry and Natural Resources is one way of staying current. Much can be learned by seeing what others are doing and doing well in programs all around the country.

Agricultural education leaders in selected states were asked to identify creative and innovative teaching programs in Forestry and Natural Resources in their states at both the secondary and post secondary level. The programs identified were greatly varied and, in many cases, unique. The programs did have some common elements that are important for successful programs of vocational agriculture. Those common elements were a) emphasis on hands-on experience, b) use of an industry advisory committee, c) a high percentage of students were placed in the natural resources industry or seeking further education, d) secondary programs had active FFA participation, and e) the programs had received recognition as being outstanding in their state.

If you see a program identified here or one in your state that interests you, find out more about it. The best way to stay current is to learn from each other.

Alabama

The Bibb County Area Vocational School Forestry Unit is designed to prepare students for employment in Alabama's most important industry. (The forest industry employs more people in Alabama than any other industry.) The course includes units in timber cruising, surveying, logging, insect and disease control, log scaling, fire control, prescribed burning, forest management, and wildlife management. Bibb County also has the first and only tree trimming (line clearance and tree surgery) unit in the state.

Instructor Roger Brothers indicates that over 75% of course completers over the last 12 years are employed in the forest industry. The forestry unit has an active FFA chapter. Chapter members have won numerous awards on the District, State, and Regional levels in such contests as Forest Management, Wildlife Management, and Forestry Judging.

California

The Forestry Program, identified as an outstanding one in California, is located in an urban area with a population of over 300,000. The Ag Farm Lab is part of the Department of Career/Vocational Education of the Fresno Unified School District.

The Forestry facility at Fresno includes: (1) One and one-half acre Christmas tree plantation (24 acre Ag Farm



By JACQUELINE DEEDS

(Dr. Deeds is an Assistant Professor in the Department of Agricultural and Extension Education at Mississippi State University, Mississippi State, Mississippi 39762.)

by the Fresno Air Terminal), (2) Biomass Project (California Department of Forestry grant) — 2 acres each Eucalyptus and Monterey Pines for fuel wood, (3) Native plant park, (4) Propagation unit — two greenhouses and lath area, (5) Arboretum being developed with Native Indian Village and natural plant communities, and (6) Equipment for scaling and cruising, as well as tools for Forestry firefighting and other forestry work.

This program utilizes local forests and facilities for field trips. The Ag Farm Lab enables students to utilize a forest-type environment for hands-on learning of forest skills.

The students take part in many community service activities related to the Forestry area including landscaping the Fresno Arts Center, Fresno Sneeze-Free Garden, Ag Farm Park, and Millerton State Park landscaping. Through these efforts, the program has won five National Building Our American Communities (BOAC) Awards and the State BOAC Award five times. David L. Smoljan is the Forestry Program instructor.

(Continued on Page 12)



Fire protection training is a key element in many programs such as Carroll County's participation in Keep Virginia Green. (Photo by G.L. McGrady, Carroll Co., VA.)

Programs Staying Current in Forestry and Natural Resources

(Continued from Page 11)

The Forestry Program has won five State Exemplary awards presented by the State Agriculture Bureau staff. The awards are based on what happens to the students as to job-related placement and college or trade school placement as well as participation in the FFA. Approximately 80 percent of the students from the program go on to at least a two-year college or are placed in jobs related to the program. The program works closely with Kings River Community College, located in Reedley, California, in helping students prepare for a career.

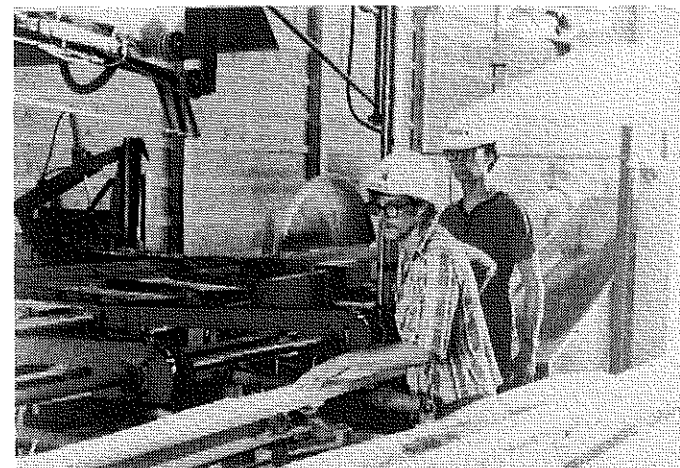
Colorado

Colorado Mountain College (Leadville Campus) is the only school west of the Mississippi offering a two year degree program, Associate in Applied Science, emphasizing land and water reclamation. The goal of the program, which began in 1974, is to provide students with skills in a variety of environmental areas. Over the last five years, about 75% of the graduates have found jobs in the environmental fields and are earning good salaries.

The student receives technical training in plant and soil science, wildlife hydrology, wastewater treatment, equipment operation, surveying, cartography, range management, landscaping, and land reclamation techniques. Students perform much of their laboratory work on the 250 acre campus below Colorado's two highest peaks. Field trips and guest speakers are an integral part of the program. In the summer between the two years of study, students perform a field internship, working for industry or government. The director and main professor is Pete Moller. He is assisted by 11 faculty members and receives guidance from a 17-person advisory committee.

Minnesota

Orr High School, with Jerry Hovi as the vocational agriculture instructor, has a program which involves harvesting as well as the preparation and planting of seed-



Hocking's modern hydraulic sawmill provides realistic training laboratory for students in all phases of sawmill operation. (Photo by Hocking Technical Institute.)

lings for the next generation to harvest. Equipment utilized in the program includes a skidder as well as a knuckle boom loader.

The program at Grand Rapids Senior High School, Grand Rapids, under the direction of John Anderson, includes forest harvesting, reforestation, and air and water analysis. Grand Rapids is the home of the Blandin Corporation. The Blandin Foundation has provided funds for purchasing trucks, skidders, and other equipment used by students.

The post-secondary program at Brainerd Area Vocational Technical Institute (AVTI) is an exemplary instructional program preparing students for careers in forestry, wildlife, and game management. Doug Keran is Instructor and Elwood Wessman is Assistant Director.

Each year, approximately 300 students apply for the 24 openings in a two year program designed to prepare technicians for careers in Forestry and Natural Resources.

Duluth AVTI program in Forest Harvesting Technology has Willie Morris and Michael Ojard as instructors. This program prepares young men and women to operate as well as repair "state of the art" Forest Harvesting Equipment. Students work in the actual environment of the modern lumberjacks.

A Logging Management program is also offered at Duluth AVTI. Dr. Rodger Palmer is Adult Director. The program is designed for self-employed entrepreneurs engaged in the production of pulp, wood, lumber, and associated forest products. Tailored after the Farm Business Management program, this adult program provides information in financial management techniques utilized by those engaged in Forestry.

New York

The Conservation and Natural Resources Program at South Adirondack Occupational Center at Hudson Falls serves several counties in New York State's Adirondack Mountains. The teachers in Conservation are Donald Sipp, Brian Downing, and Thomas Newton. The program has an active agricultural consultant committee to assist in planning, evaluating, and providing direction for the pro-



Unique programs such as the tree trimming unit at Bibbs Co., AL., deserve consideration in the development and redesign of forestry and natural resources programs. (Photo by Roger Brothers, Bibbs Co., AL.)

gram. While forestry is emphasized in the program, time is spent on equipment maintenance and repair, proper equipment operation, and safety.

Business management is also an important component of the program. The teachers in this program are piloting the new state agriculture curriculum for Natural Resources and Ecological Occupations this year. Supervised Occupational Experience Programs are emphasized, along with an active FFA Chapter. In fact, in the past few years, this chapter placed first or second in the state level Building Our American Communities program.

Ohio

The Natural Resource Management program at Maplewood Vocational School in Portage County with "hands-on experience" is training students to obtain jobs in the area of Natural Resources. The instructor for the program is Tom Hackenbracht. Maplewood's Natural Resource Management program has an 88-acre land lab for the students to work with, and develop for public and school use. Students spend three hours each day in the lab applying what they have learned in related classroom instruction. The land lab has 1-1/4 miles of boardwalk, three pine plantations, a sugar maple grove, two ponds, and one-fourth mile of stream.

Hocking Technical College's (HTC) Natural Resource Department's programs, established in 1968 and consisting of Associate Degree programs in Recreation and Wildlife, Forestry, plus specialized programs in Sawmill Operation, Lumber Grading, Timber Harvesting, and Tree Care (Arboriculture), are unique in the United States. The HTC Ranger Institute adds to the college's program variety and uniqueness. The program is under the supervision of Allen Talbott.

Responsible for managing 5,000 acres of forested land, student crews participate in forest and wildlife management planning while performing on-the-job contract labor for private and public companies. Students in the Timber Harvesting program harvest timber and deliver logs to the on-campus, fully automated, hydraulic sawmill.

Hocking's 252-acre campus is being developed as an outdoor forest recreational area complete with nature center, hatchery and rearing ponds, wildlife fields, hiking and riding trails, and a forestry museum. Major responsibility for the development of this park rests with the students enrolled in the Natural Resource program.

Majors in Fish Management, Wildlife Management, Interpretation, and Natural Resource Enforcement are

available to Recreation and Wildlife students. Forestry students have a major responsibility in operating and competing in the Ohio Forestry Association's Paul Bunyan Show Festival hosted annually by Hocking Technical College.

Hocking's Recreation & Wildlife and Forestry Technologies were both awarded State of Ohio Governor's Excellence Awards in higher education for the 1984 academic year. Placement data for 1984 graduates (one year after graduation) show over 70% placement in non-subsidized employment with additional graduates continuing education due to several 2 + 2 programs with major universities.

Virginia

Natural Resources Management III, IV, and V are taught at Carroll County High School in Virginia. There are 60 males and 6 females enrolled in Natural Resources Management programs at Carroll County High School this year under the direction of G.L. McGrady.

Natural Resources Management is part of the Agricultural Resources program and involves the production, maintenance, harvesting, processing, and distribution of our natural resources. The course includes resources management, conservation, human relations, and leadership development topics. The study of career opportunities and the development of marketable skills through supervised occupational experiences are also a part of this program.



Forestry and Natural Resources programs also supply opportunities for competition and recreation such as Hocking's annual Paul Bunyan show. (Photo by Hocking Technical Institute.)

Coming in June . . .

Staying Current in Animal Agriculture

Legal Issues and Concerns Facing Teachers Using the Outdoor Classroom

Natural Resources Education in Oregon primarily encompasses two major vocational cluster areas of instruction. These are Forestry/Forest Products which is designed for skill development in Forest Management and Forest Harvesting and Manufacturing; (i.e.), forestry aide, forest technician, loggers, mill workers, equipment operators, feller-bucker, and other related occupations; and the Agriculture cluster which provides opportunities to obtain skills in Farm Forestry, Range and Wildlife Management, Soil and Water Conservation, and other related skill development pertinent to natural resource education.

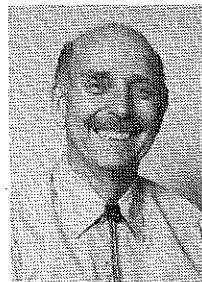
The outdoor laboratory/field is an essential component of each program area. Students are involved with hands-on activities and projects using the outdoor laboratory. These projects and activities in both programs involve students in the use of hazardous tools and equipment along with working conditions that emulate those of the industry. School projects and activities consist of clear-cut logging of a few acres of timber or a selective logging project. Students operate chain saws, set chokers, operate tractors and rubber tire skidders, and operate donkeys when using a tower and climbing. Students are learning by actual hands-on experience. Other projects include thinning, both commercial and pre-commercial; tree planting, fire line construction around logging units, stream clearance, woodcutting, Christmas tree culture and shearing, and fire prevention/suppression activities. Many of these activities are also included in a farm forestry management project (tree farm or woodlot management). Special natural resource management projects encompass inventorying timber stands and wildlife habitat for birds and big game such as deer and elk. Topographic sites vary with these projects as well as tools and equipment needed to accomplish the task. All of these tasks require that students be "field" and safety wise.

These projects must comply with all laws and regulations. As an example, in fire season appropriate fire tools and equipment may be required and state permits needed for operation of power driven equipment. Legal responsibilities for activity directed natural resource education is varied and complex.

Field Experience and Training

There are two types of field experiences for students to obtain hands-on experiences: (1) Cooperative work experience by placing a student with an employer on a paid or unpaid basis and (2) Field projects/activities that are directed by the instructor of the program. In each case, students are involved with hazardous tools and equipment and are learning by doing. Projects can be on school land sites or off-campus farm/forest experiences.

In each of the types of field experiences, students must



By HOWARD W. BROCK AND GORDON GALBRAITH

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have adequate medical insurance coverage. This can be provided by the school or covered through their parents' medical plan. In certain activities, the schools are required by law to provide Workers' Compensation insurance. This is cooperative work experience nonpaid (Employer Relationship). Where students have this coverage, the school pays for their insurance on an assumed hourly wage earning, generally the current minimum federal wage. On all paid work experiences, the employer must provide this coverage.

The major concerns to schools/instructors are the projects and activities which are part of the instruction program and directed by the instructor of the program. Students are involved in all types of field projects/activities using hazardous tools and equipment on private, public, or school land laboratories. This increases the risk for accidents and potential liabilities. Appropriate student medical insurance should be a must for all of the students along with adequate liability insurance for the school and the instructor. If Workers' Compensation insurance can be obtained, this would be highly advisable as this type of coverage provides for medical, disability, and liability.

Oregon had this coverage sanctioned until a recent attorney general's opinion negated its legality when reviewing the statute which was applied. Plans are in place to revise this current law to cover projects directed by the school and instructor at the next legislative session in 1987. We believe this is a critical issue for our Natural Resources Programs in order to provide the needed protection to both the student, the instructor, and the school district.

Legal Issues and Concerns

Safety Instruction

Safety instruction starts with the instructor. Is the instructor well versed in the current safety rules and regula-

tions? Does the instructor carry a valid first aid card? Is safety a daily and constant attitude that permeates the instructional program and not just a one-time lesson? Does the instructor practice all safety rules at all times and acts as a role model for the students? Does safety always come first and not sacrificed to get the job or task done because time is short? Is the maintenance and repair of safety devices receiving as much, if not more, priority as sharpening the saw chain, tuning up the chain saw, or replacing an axe handle? Safety instruction is no better than the training and commitment of the instructor to enforce rigid safety rules. Safe work habits must be a prerequisite to field activities and instruction.

Safety instruction must be accompanied with documentation for the protection of the instructor and school district. Every student enrolled should have a file that includes the safety exams taken, the scores, and checklist of demonstrated safe use of equipment. Minimum safety criteria must be established for students to use and participate in instructional activities that present a hazard. Under no circumstance should a student be involved in a hazardous activity or use of a hazardous tool that prior safety instruction and documented safety proficiency is not in the student's file. The assumption that safety instruction in the curriculum and a daily lesson plan with gradebook scores will be sufficient documentation is erroneous. This does not document for a legal inquiry that a specific student has demonstrated safety understanding and proficiency.

Safety Rules, Devices and Protective Equipment

Current industry safety standards should be the minimum expectations for the instructional program even if not required by law for a school program. In most cases, a more stringent safety program should be established for the instructional program. Eye protection, hearing protection, hard hats, gloves, work shoes, and bucking chaps are the normal expected safety devices that must be available depending upon the activity. In addition, current safety rules must be strictly adhered to regarding transportation and storage.

Transportation

Because most schools' land laboratory projects/activities are off campus, this shows the need for adequate and appropriate transportation for hauling students and the tools, equipment, and supplies needed for the operation.

It is not a good safety practice to haul loose tools and supplies when hauling passengers. In most states, it is against the law. Another important consideration is hauling of fuels for saws and other equipment. These must be carried on the outside of the crummy or bus. Remember that with saws, if fuel is in the tanks, they need to be located outside of the vehicle. Tool boxes or carriers can be adapted to the vehicle to provide space for carrying the tools, equipment, and supplies to the project area. A safety program regarding passenger responsibility is also important.

Field Supervision

Field supervision is critical to the safety of the operation. Instructors must use common sense in relation to the supervision needed with the type of project/activity and the terrain. Students require close supervision. In the forest

with low visibility and adverse vista, supervision becomes difficult. Aides and/or key dependable advanced students can assist in the overall supervision of the project and are essential for good safety. Fire crews use the straw boss concept in a 1 to 5 ratio. This is a good guide to follow. Also, a responsible student could serve as a project safety officer, reporting and correcting safety violations or actions. This is an excellent safety device and leadership activity. When students are involved in hazardous activities, it is prudent and important to provide for their supervision so accidents can be prevented and to reduce the risk of liability.

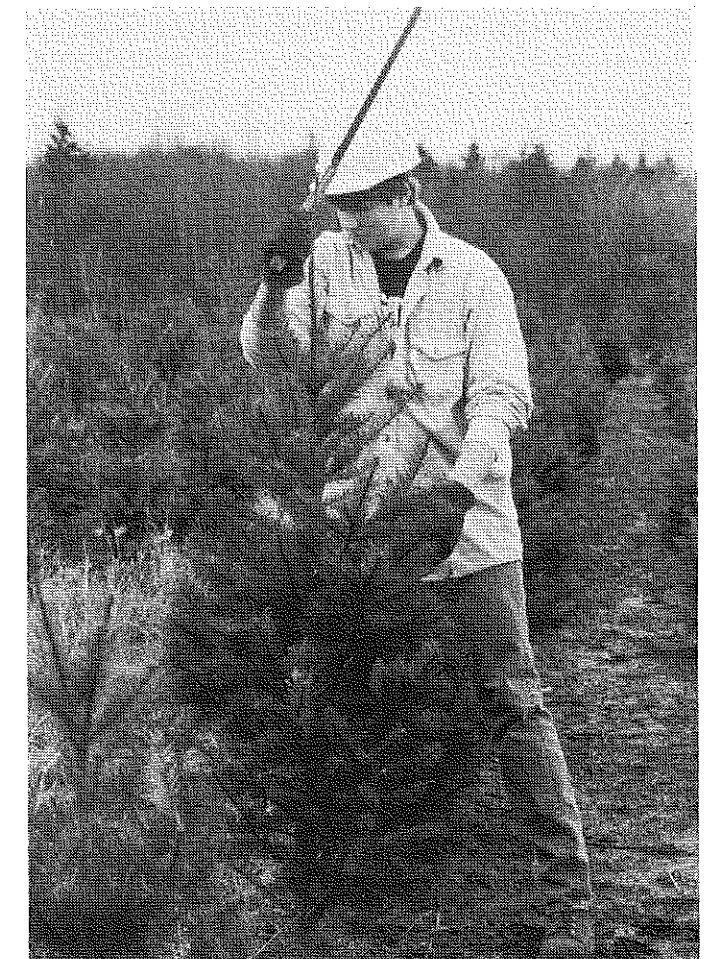
Insurance and Liability

Fair Labor & Standards Act of 1938 (Child Labor Bulletins 101 & 102)

Schools and instructors should be knowledgeable about this legislation. The act establishes a minimum age of 16 for employment. In addition, hazardous occupations are defined and the minimum age for these occupations is raised to the age of 18. A hazardous occupations chart for Orders No. 4 and 5 has been prepared to spell out the terms of the specific occupation in logging, sawmilling, and woodworking occupations.

Agriculture and the Child Labor Requirements under the Fair Labor Standards Act (CHILD LABOR BULLETIN 102) describe child labor requirements applicable to agriculture.

(Continued on Page 16)



Christmas tree shearing with machete on school land laboratory. (Photo courtesy of Owen Sabin, Occupational Skill Center, Milwaukie, Oregon.)

Legal Issues and Concerns Facing Teachers Using the Outdoor Classroom

(Continued from Page 15)

An understanding of these laws is important when placing students in cooperative work experience for pay. Contact the Wage and Hour Division, U.S. Department of Labor, for additional information on these bulletins. A sample Forest Products Work Experience Guideline follows:

Forest Products Work Experience Guideline

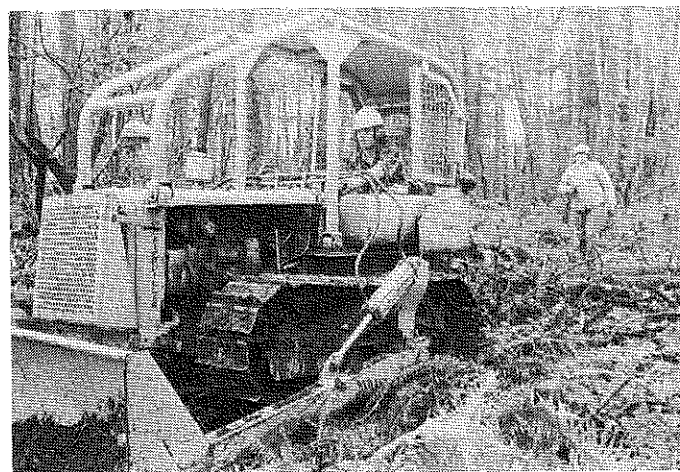
Rationale — Work Experience should be an integral part of a forest products cluster program. Individual work stations should be established to meet the training needs and growth of each student. A formalized training plan to meet the learning objectives should be developed by the instructor in cooperation with both the student and employer considering the many ramifications of legal responsibility pertaining to each training station.

Legal Responsibility — Because of the various restrictions for training that can be done in areas classified as hazardous in the forest products industry, special attention needs to be given to the liability of students on work experience. Instructors should familiarize themselves with the provisions of the Fair Labor Standards Act, U.S. Department of Labor, CHILD LABOR BULLETIN 101. The basic components of work experience are as follows.

1. Paid work experience: The student is on the job being paid as a part of the training program. Under these conditions, the legal responsibility for the student rests with the employer. Parental consent should be obtained. Under no conditions, if under age 18, shall a student be placed for pay in stations declared hazardous according to Fair Standards Act.

2. Non-paid work experience: The student is on a planned training program under the direct supervision of a qualified and experienced person. Students may participate in work experience stations applicable to the training needs if the following requirements are met since there is no employment relationship; therefore, the minimum wage, overtime, and child labor provisions of the law are not applicable: (1) no promise of future employment, (2) work with hazardous areas is incidental to the training, (3) not replacing another worker, (4) no-pay, (5) maximum participation/semester, (6) short duration of time, (7) training is similar to that given in approved vocational program, (8) training is for benefit of trainee or student enrolled, and (9) employer derives no immediate advantage from training activities and occasionally, operation may be impeded.

Students in all non-pay work experience stations must be insured by the school through SIAF (State Industrial Accident Fund) in accordance with ORS 656.033. Rates are \$0.31/\$100 earnings non-manual labor positions



Student using small crawler tractor to learn to operate blade for land clearing at land laboratory. (Photo courtesy of Owen Sabin, Occupational Skill Center, Milwaukie, Oregon.)

and \$3.83/\$100 manual labor positions. Occupations declared hazardous will pay the industrial rates. Assumed earnings are a \$2.50 hourly rate to be applied in determining insurance premiums.

3. School laboratory. Students will engage in extended classroom activities in various functions such as field trips, field laboratory exercises, and other functions under the supervision of the school personnel. Local school insurance policies cover the student the same as any other program activity. Instructors should ascertain that the school does have appropriate insurance coverage.

4. Student learner (for pay): from CHILD LABOR BULLETIN No. 101

"Student-Learners: (1) The student-learner is enrolled in a course of study and training in a cooperative vocational training program under a recognized State or local education authority or in a course of study in a substantially similar program conducted by a private school; and (2) such student-learner is employed under a written agreement which provides: (i) that the work of the student-learner in the occupations declared particularly hazardous shall be incidental to the training; (ii) that such work shall be intermittent and for short periods of time, and under the direct and close supervision of a qualified and experienced person; (iii) that safety instruction shall be given by the school and correlated by the employer with on-the-job training; and (iv) that a schedule of organized and progressive work processes to be performed on the job shall have been prepared. Each such written agreement shall contain the name of the student-learner, and shall be signed by the employer and the school coordinator or principal. Copies of each agreement shall be kept on file by both the school and the employer. This exemption for the employment of student-learners may be revoked in any individual situation where it is found that reasonable precautions have not been observed for the safety of minors employed thereunder.

A high school graduate may be employed in an occupation in which the person has completed training as provided in this paragraph as a student-learner, even though he, the person, is not yet 18 years of age."

Exemptions applicable to Forest Products.

Student learner exemptions.

Order No. 5 Power driven woodworking machine occupations

Order No. 12 Power driver paper products machine occupations

Order No. 44 Occupations in operation of power driver circular saws, band saws, and guillotine shears

A copy of a training agreement should be sent to the appropriate U.S. Department of Labor, Wage and Hour Commission. Put **Student Learner, Hazardous Occupations, Exemption Order No.** on top of the training agreement for clarification.

Conclusion

Hands-on activities are essential in effective skill development and practical application of natural resource occupational preparation. The outdoor laboratory and field experience is often the only place that can replicate the occupational environment to prepare students with the necessary industry skills and competencies. Often these skills and competencies entail some degree of risk or potential danger.

Along with the commitment to provide occupational preparation must also be the commitment of the local school district, administration, vocational instructor, and advisory committee to make that instruction as risk free and safe as possible. Not only must the commitment be in safety equipment and supplies, safety instruction, and attitude, but also in the legal protection of the district, the instructor, and the student.

Individual school districts and states all have different legal requirements, insurance regulations, and insurance protection. The local vocational instructor and school district must individually review not only their safety policies and instruction, but as importantly, the insurance protection of students, instructors, and school districts for injury and liability claims. Adequate protection and preparation starts before the first accident, not as a result of the accident.

THEME

Latest Developments and Technology in Soil and Water Conservation

Soil and water conservation in America entered its 51st year as an organized effort in America in 1986. Those first 50 years were marked by radical change in how farmers and ranchers approach conserving soil and water. And the change will not slow in the near future. Vocational agriculture teachers have a key role on the soil and water conservation team. By keeping current with new technology, you transfer to students a concern and enthusiasm for soil and water conservation. From your classroom, these students will become the researchers, educators, soil conservationists, and future conservation farmers and ranchers of tomorrow.

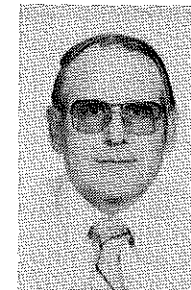
Soil and water conservation cuts across land uses. Whether you talk about rangeland, cropland, or forest land — or whether your job is a researcher, teacher, conservation professional, or a farmer — the focus of soil and water conservation is the same. Good soil and water conservation activities end with something being done to the land to either maintain or improve the natural resource base. Soil conservationists and educators need to continually remind themselves that "accomplishment" is not an exchange of paper, but rather something that gets done on the ground.

To reach that end product — putting soil and water conservation systems on the ground — a farmer or rancher needs four things. First, the farmer needs to articulate specific objectives or strategies for dealing with what are recognized as problems. Then comes inventories to quantify the natural resources in terms of soil, water, and land use. At this point, the objectives may need to be modified to better reflect the real problems the inventories identified. The third thing the farmer needs is alternative approaches that move toward solving the problem. These alternative approaches include an analysis of the costs and effectiveness. And finally, the farmer may need help in applying the conservation practices, systems, or management being chosen.

It is in this area of gathering inventories, developing alternatives, and applying soil and water conservation practices that some of the greatest changes in soil and water conservation are occurring. In the next few paragraphs, I explain three developments that will change how soil and water conservation is practiced in America: new ways to gather resource information, automation in conservation planning, and renewed teamwork for soil conservation.

New Ways to Gather Resource Information

Gathering resource information is one of the first steps in the process of deciding what soil and water conservation practices or systems are necessary. Inventories document characteristics of the resources — the soils, vegetation, and water. Typically, much of this site specific resource infor-



By GLEN LOOMIS

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mation was gathered by walking the land — a time consuming necessity.

Newer technology — remote sensing — now shows promise of speeding up the inventory process without sacrificing quality.

In Montana, a pilot project successfully used remote sensing to identify saline seep. A research associate at Montana State University used low level, color infrared aerial photographs to identify saline seeps in a 200-square mile watershed. Saline seeps are salty areas on nonirrigated cropland caused by water filtering below the roots of plants, hitting an impervious layer of rock or shale and moving laterally until it resurfaces with salts from the soil. In the last stages of development, salt crystals cover the soil surface and the saline seep prevents crop production and degrades water quality.

This project is an example of technology improving both accuracy and timeliness of inventories. The remote sensing project more accurately delineates mature saline seeps. But more importantly, this remote sensing project identifies saline seeps in the beginning stage when the salts are not yet on the soil surface. In this stage, the treatment for saline seep is less complicated because less salt-tolerant plants can be used to lower the rising water table.

Automating Conservation Planning

The Soil Conservation Service enters the computer age in a massive way this year. In the next five years, computers will be installed in nearly all of the 3,000 field offices of the SCS throughout the United States. This new development will help improve the delivery of conservation alternatives with better analysis of cost effectiveness to farmers and ranchers. Farmers and ranchers should be able to expect better information and in a more timely manner.

Computers have been used in some SCS offices for several years. One of the prime reasons for integrating computers into conservation planning is to expand the analysis of conservation alternatives.

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Latest Developments and Technology in Soil and Water Conservation

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Instead of only explaining the benefits of a single farming practice in terms of soil and water saved, computer analysis will include the economic consequences of a resource system and its components. Recently, a computer in an SCS field office helped convince a landlady to let her renters use conservation tillage.

The landlady had resisted changing from moldboard plowing her cropland in a wheat-fallow operation. But a crop-budget computer program convinced her that chisel tillage in a winter wheat, barley, and summer fallow rotation offered both financial advantages as well as soil savings. More and more SCS conservationists will have the opportunity to use computer-run trial budgets to help sell farmers and ranchers on the other benefits of soil and water conservation work. Economic consequences associated with saving soil and water is the real test.

Time-savings for soil conservationists is one of the biggest advantages of automation. SCS automation experts vision a county office in five years that will use a microcomputer to generate resource inventories based on soils and vegetation in the county, plot the site specific inventories on maps, and provide analyses and alternatives to conservation problems — all within minutes.

As automation changes the soil and water conservation business, one point needs to be reinforced. The SCS is a technical assistance organization that works with people. A computer is just one more tool to permit the county staff to spend more time with farmers, provide better analysis of resource conditions, provide alternative solutions to manage those resources, and improve the maintenance of records. All of these efforts are designed to provide better service to the farmers and ranchers of America.

Renewed Spirit of Teamwork

The last development is more intangible, but perhaps will yield the most results. That development is a renewed spirit of teamwork among groups that are working to get more soil and water conservation on the land. A commitment to teamwork should permeate everything we do. Quantum jumps in productivity are associated with any effort where the participants view themselves as making the maximum contribution to the team. Obviously, participants must rise above serving self-ego.

This kind of commitment is happening in the four distinct groups involved in soil and water conservation:

- researchers who are developing the new tools to protect and improve our land,
- educators who share the research results with students and transfer agents,
- transfer agents who take the research to those who put the ideas into practice, and
- farmers and ranchers who make the decision to put the soil and water conservation practices on the ground.

Conservation tillage is a prime example of this teamwork. Work that started and continues with researchers on

minimum and no-till has spread across America more quickly than nearly any other innovation in agriculture. It spread so rapidly because other members of the team - university professors, vocational agriculture teachers, soil conservationists and Extension agents — were bringing the research results to farmers. And the farmers — eager to try new methods that could save fuel and labor costs, as well as soil — brought the team further together in a quest for more information.

Farmers returned to the county agents, vocational agriculture teachers, soil conservationists, and researchers with more questions. And soon the cooperation between the groups expanded. This team effort in the promotion and use of conservation tillage can also be found among team members specializing in range science, forestry, and other disciplines. This teamwork needs to be nurtured and allowed to spread.

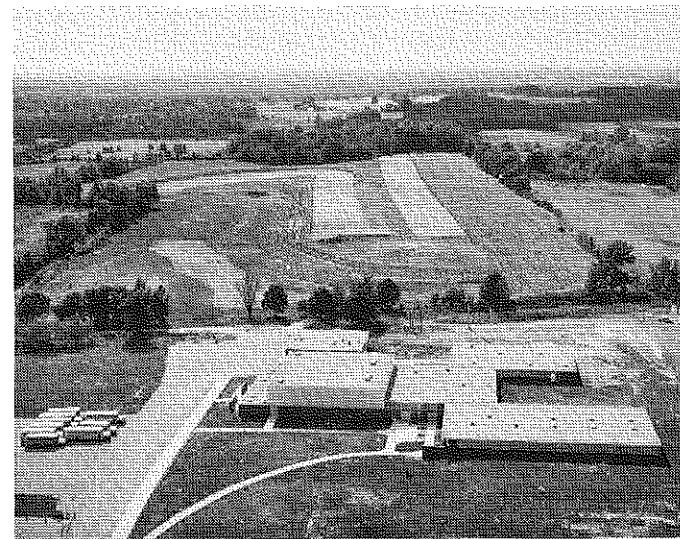
Educators Have a Key Role

In this mix of new technology, educators — especially vocational agriculture teachers — play a key role. It is a role that must at times seem impossible to fill. Vocational agriculture teachers have to know and describe soil and water conservation problems, explain how current research might impact those problems, and detail what existing technology will do to the problems today.

How you present soil and water conservation concerns to your students will have a profound impact on how American farmers will approach the next 50 years of soil and water conservation. Your professionalism and enthusiasm in the classroom will persuade some students to join the soil conservation team.

"I believe in the future of farming with a faith born not of words but of deeds" is the beginning of the Future Farmers of America Creed. Recognition that protecting our nation's resources requires more than words — but words translated into action — is the key to the future of soil conservation.

Some of your students will continue their education and join the team as a researcher, vocational agriculture



Contour strip cropping behind the Central Montcalm High School in Michigan was part of a training exercise for Vocational Agriculture at the school. (Photo courtesy of Glen Loomis.)

teacher, county agent, or soil conservationist working for a state or federal agency. Many more will return to a farm or ranch to practice ideas you shared.

This cadre of soil and water conservation team members leaving your classroom are the future. These team members will be doing the things that impact soil and

water conservation for the next 50 years. Your greatest challenge is to continually remind yourself and your students that the focus of soil and water conservation is to put a practice or a resource system on the land. And the best way to do that is through a committed soil conservation team.

THEME

Range Management: A Plan for Keeping Current

Competent teachers recognize and appreciate the need for maintaining a current understanding in the technical areas they teach. Every effective teacher is aware of the problems associated with keeping current in an era of ever-changing information and technology.

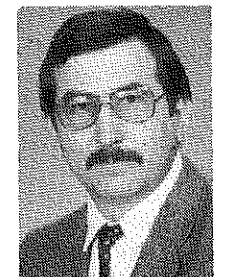
Vocational agriculture teachers who work in areas which have vast amounts of open country should be knowledgeable on range use and management. Currently, a large percentage of land in the western United States is controlled by either state or federal agencies. In these areas, livestock industries rely heavily upon range resources for nutritional care of their animals. Specialized classes in range management are often included in the vocational agriculture classroom. Other departments devote blocks of instructional time to the management of range resources.

It is imperative that vocational agriculture teachers address range management topics when discussing livestock economics and nutrition with students. With the increase in technological advances, it has become difficult to stay current with changes in range management techniques.

One very effective method for staying current with range management techniques is to follow a five point plan. These points include: inservice education, conducting field trips, attending hearings, subscribing to periodicals, and utilizing resource people. Each of the five points will be discussed below.

Education

Anyone contemplating a career as a vocational agriculture teacher needs to include basic range management courses in a preservice program of study. These courses can provide valuable insight for future reference. Education does not end with college. Once you are teaching, take advantage of workshops and inservice training provided within your state. Most universities conduct research and Extension programs in proper rangeland use. Teachers can also update information through range symposiums sponsored by universities or other professional organizations such as the Society of Range Management.



By JIM COONEY AND GEORGE H. HILL

(Mr. Cooney is a Vocational Agriculture Instructor at Elko County High School, Elko, Nevada 89801, and Dr. Hill is Head of the Department of Agricultural Education at University of Nevada - Reno, Reno, Nev 89557.)

Field Trips

A well planned field trip can enhance student understanding and teacher effectiveness in range movement. Trips to experimental or demonstration plots can provide valuable experiences for both students and teachers. Students can utilize these trips to collect and press range samples for identification. Field trips also provide an excellent opportunity to learn about harmful or poisonous plants. They can refresh a teacher's memory of plant names, use, forage value, seeding methods, and range succession.

Another method of keeping current is to visit students' supervised occupational experience projects. Traveling through rangeland gives the teacher an opportunity to see changes in range succession or plant invasion which follow disturbances such as overgrazing, fire, and flooding. School farms can be utilized as effective laboratories for keeping current in range management. Developing small range plots to study the effects of proper management, over-grazing, and fire can be an effective learning tool for both the teacher and students.

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Range Management: A Plan for Keeping Current

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Public Hearings

In most areas where rangeland is controlled by the Bureau of Land Management or the Forest Service, boards which periodically review range trends and proposals are well established. Such boards generally hold public hearings to get additional input on topics such as grazing plans or range management techniques. These hearings can help teachers understand the changes, problems, or successes of rangeland management in their local areas. In addition, these allow teachers to observe differing points of view and policy making procedures in action. These hearings are normally held at times when teachers as well as the general public can attend.

Periodicals and Newsletters

Teachers can keep in step with technology if they have access to professional publications such as the *JOURNAL OF RANGE MANAGEMENT* and *RANGELAND*. The former is a research oriented publication while the latter is a trade journal. Teachers can incorporate this information into the vocational agriculture curriculum. Vocational agriculture teachers should also identify publications that offices of the Bureau of Land Management or the U.S. Forest Service offer for a nominal fee. These booklets often deal with long term range management trends and conditions. Most natural resource departments or land grant university range departments publish newsletters or bulletins about range trials or trends which can be useful in keeping teachers aware of changes at the local level.

Utilizing Resource People

Vocational agriculture teachers have a number of resource people to call upon for range management expertise. A list of possible contacts follows. It is important to rely on more than one person for assistance in order to obtain a more balanced perspective. The list is by no means complete. Resources include:

1. Local livestock operators. Visiting with ranchers about their views on range and management will give vocational agriculture teachers another perspective on range. Progressive ranchers are aware of positive as well as negative impacts on range use.

2. Area resource manager for the Bureau of Land Management. These people can coordinate presentations for you and your classes, set up field trips, or suggest other people within the Bureau of Land Management to assist you in learning experiences for your students.

3. Area Forester for the Forest Service. This individual can assist you with range trends in the upper elevations of national rangeland. The Forest Service generally is responsible for rangeland in the higher elevations where conifers and other tree species are found. Management of these areas is often different than for other range areas.

4. State or district fish and wildlife manager. Major users and benefactors of rangelands are various forms of

wildlife. Representatives of state fish and game departments can be of great assistance in helping teachers incorporate instruction on the impact of wildlife on the ranges. Range utilization by wildlife is often overlooked, causing dramatic problems for both domestic livestock and wildlife.

5. Soil Conservation Service personnel. Personnel from this agency can provide help in evaluation of range trends though soil information. Rangeland potential is controlled by soil types. Many Soil Conservation Service personnel have extensive backgrounds in range management and are able to work well with students.

6. University Extension personnel. All western universities have Extension professionals who specialize in range management. These individuals can update you on teaching materials which are suited to your area and also serve as guest speakers for your classes. They may also be able to set up inservice workshops or range camps for vocational agriculture teacher during the year.

One additional comment. If you are teaching in an area where rangeland utilization is an important economic factor, then strongly consider one of the above resource people as a member of your program's advisory committee.

Summary

Almost all teachers recognize the necessity for keeping current and most do a very admirable job. Keeping current in the latest range management information and techniques is very critical since the range livestock industry is undergoing severe economic problems. It is extremely important that vocational agriculture teachers in these areas keep current and are providing the highest quality information to both students and adults.

If you are concerned that you are not keeping current in rangeland management or any other area, we suggest that you identify possible resources and develop a plan of action to assist you in becoming more current. The agricultural industry is in the midst of major economic trauma. We cannot afford to transmit information that is less than current.



Both instructor and students can be current with well planned field trips. (Photo courtesy of Jim Cooney and George C. Hill.)

THEME

Wildlife — An Awakening Natural Resource

One prominent wildlife biologist has observed that wildlife is everything from elephants to earthworms. The term "wildlife" includes both game (hunted) and non-game (non-hunted) species. Wildlife is considered a renewable natural resource which, if given the opportunity, will repopulate a given area on an annual basis. Wildlife populations are impacted largely by the way in which humans manipulate habitat conditions.

Wildlife habitat is defined as that area which an animal occupies in order to satisfy its life requirements i.e., food, cover (escape and shelter), water, reproduction, and space. Differing wildlife species often require differing habitat requirements. As a consequence, not all habitats are suited to all species. The red-cockaded woodpecker, for example, is very restrictive in its habitat requirements. It prefers old growth, relatively open pine stands of which some of the trees are typically infected with red heart disease, a factor which enhances nest excavation. On the other hand, cottontail rabbits are less selective in their habitat requirements. They commonly inhabit both urban and rural areas which provide the bare essentials to sustain life and reproduction. The flexibility of the cottontail to thrive in a wide variety of habitat types compared to the red-cockaded woodpecker's restrictive habitat requirements helps explain in part why the red cockaded woodpecker is listed by the federal government as an endangered species. Both cottontail and red-cockaded woodpecker could, however, coexist if the habitat requirements for both are met.

Wildlife habitat is dynamic and everchanging, often at the hand of humans. At present, the approximately 482 million acres classified as commercial forest land are expected to shrink at the rate of from one to three million acres per year (Tomlinson, 1985). Much of the land withdrawal has been, and continues to be, for agricultural and suburban development. Such conversions often occur at the expense of existing wildlife populations. Ironically though, it is because of continuing habitat loss that wildlife is rapidly becoming an awakening natural resource. But it is not the wildlife that is awakening; it is the resource-oriented public.

A Broader Focus

Demand for recreation in this country is expected to double by the year 2020. One in every \$8 in America is spent on recreation (Alcock, 1984). In the past, primary emphasis on wildlife and monies available for management focused on game animals. The hunting public has been and continues to be largely responsible for providing the financial support necessary to manage the wildlife resource, including both game and non-game animals. Increasingly,



By BILL TOMLINSON

(Mr. Tomlinson is a Wildlife Manager for Anderson-Tully Company, P.O. Box 38, Vicksburg, Mississippi 39180.)

however, non-game animals (songbirds, snakes, etc.) are receiving increased emphasis. A number of states have a special sales tax or a voluntary "check-off" program aimed at producing revenues for non-game management. The check-off program allows individuals to make voluntary contributions to non-game management by checking a box on their state tax return and designating the amount contributed.

Changing Perspectives

Our nation's economy is based on a system of supply and demand. As the supply of a commodity decreases relative to a strong demand, price for the commodity is often established (if none previously existed), or price (if already established) may increase. Wildlife is increasingly being viewed as a commodity rather than an amenity value.

How is the supply of wildlife resources distributed? Considering strictly commercial forest land, 58% is in private non-industrial ownership and 14% is owned by private industrial owners. Only 28% is publicly owned with 20% of the total being federal ownership and 8% being state and other public ownership (American Forest Institute, 1982). These forested lands provide both wildlife habitat as well as wildlife based recreational opportunities, be they consumptive (to actually remove a part of the resource such as harvesting a deer) or non-consumptive (to view, photograph, or otherwise enjoy the wildlife resource without actually removing the animal itself).

For years, state game management areas, federal refuges, and other state and federal lands have supplied the hunting and wildlife-oriented public with broad based recreational opportunities. However, as crowding becomes more prevalent on public lands, the vast acreage of private industrial and non-industrial private ownership will become an increasingly important and integral part in the overall picture of wildlife management and recreational opportunity for our nation.

Many states already recognize their limitations in meeting future recreational needs on public lands. In

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Wildlife — An Awakening Natural Resource

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response to this awareness, various programs are being developed to encourage public use of private lands or to simply maintain private land in its current condition. For example, Minnesota landowners receive tax credits for maintaining existing wetland or marshy areas. Public access is not required for a landowner to receive those credits. In southern Michigan, the Department of Natural Resources pays rural landowners a fee, ranging from 50c to \$6 per acre per year to allow public hunting on their lands. Other states such as North Carolina and South Carolina have similar programs (Tomlinson, 1985).

In the absence of tax credits or direct payments by state agencies, many private landowners, especially in the southeastern states, are seeking ways of deriving income from wildlife on their lands. Technically speaking, resident wildlife resources belong to the state. However, access to wildlife is controlled by the landowner. If access is not provided, then the wildlife resource cannot be legally utilized by either the consumptive or the non-consumptive user. It is for access to these wildlife resources that users are increasingly willing to pay.

Many of the current programs being pursued by private landowners are oriented toward the consumptive wildlife user. Such programs may include: 1) selling individual hunting permits on a day, season, or yearly basis; 2) commercial hunting ventures such as shooting preserves, guaranteed hunts and/or guided hunts; and 3) leases which are made to individuals or groups for the purpose of hunting a particular area for a specified time and fee. Some of these ventures are developed as off-shoots of the landowners' primary product objective of timber, livestock, or agriculture.

Prices charged for **individual permits** may range from just a few dollars for a one-day dove hunt to several hundred dollars for day or season waterfowl hunting opportunities. **Commercial hunting** operations may charge on a day, trip, or animals harvested basis. Depending on facilities provided and the type and quality of game harvested, prices may range from less than \$100 to several thousand dollars per person. **Hunting lease** prices vary according to such factors as length of lease, species allowed, services provided, location, wildlife population density, etc. In the Southeast, leases for hunting, excluding waterfowl, are typically made for prices ranging from 50c per acre each year to in excess of \$65 per acre per year.

Average prices per acre usually range from \$1.50 to \$8 each year. Waterfowl leases may sell for considerably higher prices per acre.

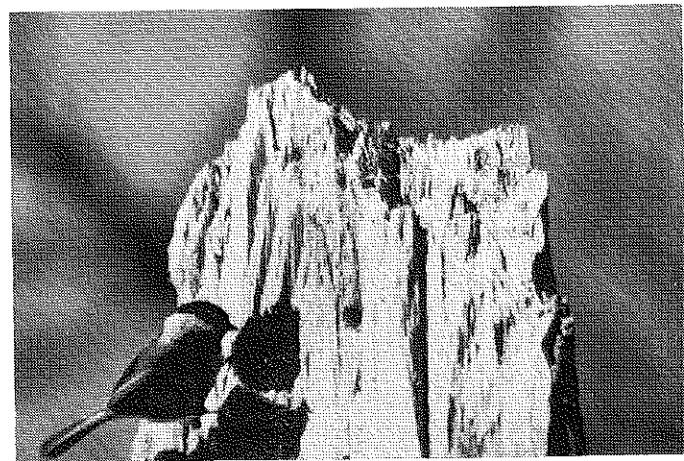
Career Opportunities

Career opportunities in the wildlife field vary from state to state and region to region. Contrary to popular belief, liking to hunt and fish, while admirable, is not always the best reason for pursuing a wildlife related career. Many individuals have been shocked and disappointed to find that upon landing a wildlife job, there is often more time spent working with people than directly with wildlife. It is through people and their interests and understanding that wildlife programs and policies are considered, developed, and implemented.

Attending high school "career days" is helpful in exploring career opportunities in the wildlife area as are contacts with junior colleges, senior colleges, and universities which offer wildlife related degrees. State wildlife agencies are also excellent resource contacts to remember. Remember, career wildlife opportunities are like any other opportunity. They exist only if you are aware of them and have the necessary skills to meet the job requirements.

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A Broader Focus

Non-game animals are receiving an increased management emphasis both nationally and internationally.

Coming in July . . .

Staying Current — Classroom and Laboratory Management

Air and the Environment



By MIKE D. MULLEN

(Mr. Mullen is a Vocational Agriculture Teacher at Montgomery County JVS, Clayton, Ohio 45315.)

Weather

Air quality and weather are closely related, so we monitor the daily changes of temperature, humidity, wind direction, and wind speed. How does weather influence air pollution? There are five major mechanisms:

Transport. Perhaps the most obvious way weather affects air quality is that winds move pollutants from one area to another. This means air pollution does not respect political boundaries. The pollution one city produces may rest downwind of that city and over another area.

Dilution. We rely on winds to continuously mix air until the concentration of pollutants is acceptable. The failure of this mechanism along with the lack of winds can often result in air quality alerts.

Cleansing. Weather mixes the various pollutants so they can react and weather can speed-up reactions by supplying energy in the form of heat or light.

Chemical Reactions. Atmospheric chemical reactions which are affected by weather include the formation of sulfates and nitrates from oxides of sulfur and nitrogen.

Sources of Air Pollution. Students can easily identify various sources of air pollution in their community by simple observation. Smoke and dust released from industry are obvious, but do they stop to look at effects of these such as rust on vehicles or dirt in a snow drift?

The weather-air pollution relationship is an extremely complex one. We know that weather affects our air quality, but it is difficult to quantify the resulting effects.

Summary

In some cases, technology is insufficient to bring community air quality in compliance with standards. In these cases, goals for air quality must become involved with objectives for energy, transportation, land use, and economic development. Our future agriculturists and natural resource developers will be the ones who must make "educated" decisions.

Community air standards have been set for most pollutants. We as educators must do our part to see that "tomorrow's leaders" understand the effects of our technologies and the interrelationship between humans and the environment.

Humans, animals, and vegetation survive in an ocean of air. Humans and most animals can survive a considerable number of days without food and a few without water. But, none can survive more than a few minutes without air. An adult homo sapien must inhale about 400 cubic feet of air each day to obtain the necessary oxygen to sustain life. Air entering the respiratory tract must not menace health.

Air by volume contains 21% oxygen, 78% nitrogen, 0.04% carbon dioxide, 0.9% argon, and traces of other gases. Any other substances in the air, whether solid gas or vapors, are contaminants. Some of these cause economic losses. Others can be detrimental to the health of people, livestock and vegetation. Some interfere with the enjoyment of living and others create no adverse effect at our present stage of knowledge.

The problems encountered in air pollution work are usually more complex than most educators prefer to work with on a regular basis. It is hoped the high school teacher will emphasize the point that measuring air pollution and its effects is not always as simple as some experiments may indicate.

Technical information may be obtained from your state Environmental Protection Agency as well as the U.S. Environmental Protection Agency. At our school, we have worked cooperatively with the Regional Air Pollution Control Agency (RAPCA) since 1975. Two students have been employed either full-time or on a job placement basis since that time.

Our studies focus on four main areas of air pollution: total suspended particulates, pollen, weather, and sulfur dioxide.

Total Suspended Particulates (TSP)

This category includes airborne solid or liquid bodies, including aerosols, fly-ash, soot, bacteria, oil, grease, and metallic substances. Particulate matter can harm body tissues such as tissue in the nose and those that line the throat. Because these materials are potential carriers of undesirable and harmful substances, they may also be carried deep into the lungs creating other health problems.

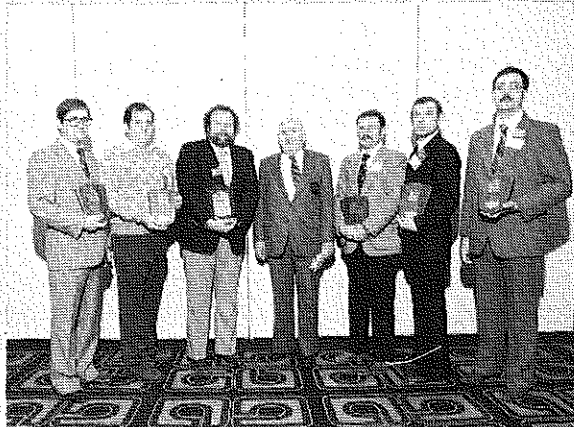
Pollen

Pollen is a small spherical shaped grain which is produced by plants and is necessary for plant fertilization. There are two basic types of pollen: those carried by insects and those transported by wind. The latter is the type most often the culprit of allergies from which about 40 million Americans suffer.

The total amount of pollen varies from time to time by weather conditions and the pollinating seasons of plants. Trees pollinate first from February or March until April or May. The weeds pollinate in late summer from about August until October.

Stories in Pictures

1985 NVATA Award Winners



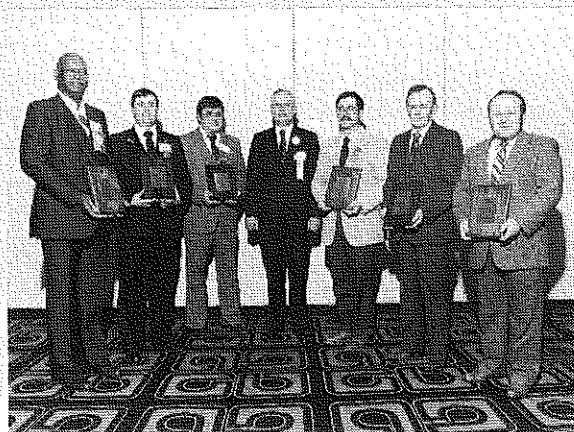
Ideas Unlimited Awards

Left to right: Ronald Harris, Athens, AL (Alabama Association Award); Dean Swafford, Savannah, MO (Missouri Association Award); Ron Stebbins, Newberg, OR (Oregon Association Award-National Winner); Curtis Graham, Coordinator-Program Development, Ruritan National, Dublin, VA; Jim Kerr, Peach Bottom, PA (Pennsylvania Association Award); William Woody, Lorena, TX (Texas Association Award); and Mitchell Hoyer, Sac City, IA (Iowa Association Award).



Outstanding Young Member Award

Left to right: Randy Showerman, East Lansing, MI; Danny Bartlett, Tampa, FL; Jim Vaculin, Tomball, TX; John F. Coy, Manager-Corporate Support Program, Deere and Company, Moline, Illinois; Cynthia L. Shaffer, Beavertown, PA; Charles Parker, Selma, CA; and Craig A. McEnany, Waverly, IA.



Outstanding Teacher of Vocational Agriculture Award

Left to right: Nelson J. Senter, Nashville, TN; Dewayne Siebrasse, Flandreau, SD; Duane A. Van Sickle, Cardington, OH; Michael Balas, Supervisor - Marketing Training Materials, Sperry New Holland, New Holland, Pennsylvania; Martin K. Auville, Dayton, VA; Leonard Hunter, Kingfisher, OK; and Jock Ward, Gillette, WY.



Agriculture Teacher Recognition Awards

Left to right: Max Corbett, Tulare Western High School, Tulare, CA (Dairy Production Proficiency Award); Jerry W. Greer, Barron County High School, Glasgow, KY (Swine Production Proficiency Award); Beth Iannuzzi, Manager-Marketing Communications, Pfizer Agriculture Division, New York, NY; Jack Jacquemin, Hamilton, OH (accepting the Beef Production Proficiency Award for Stewart DeVolld, East Muskingum High School, New Concord, OH); Frank Hall, Pierson, FL (accepting the Poultry Production Proficiency Award trophy for the LaFayette Sr. FFA Chapter, LaFayette, FL); and Carlton Austin, Fennimore High School, Fennimore, WI (Diversified Livestock Production Proficiency Award).