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

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 even 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 linked to the protests. The environmental movement was portrayed as the good folks. The war was on, but a strange twist of fate brought no clear winners 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 among the problems on the agenda, many of these issues have been partially licked or are close to being reined in. It is now fashionable to fish in Lake Erie and many other major lakes and streams. 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 such places look like something other than dumps. 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 roadways.

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 concern about the environment and hazardous waste. These concerns got serious in the late 1960s, appear well founded in 1984, and are expected to continue in the Pacific Northwest. The U.S. Environmental Protection Agency identified 19,000 hazardous waste sites in the U.S. Some $30 billion is needed to restore the sites to a condition that is 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 continueduire of Second World War tragedy in India and near tragedies in West Virginia and Okhlahoma, Americans are rightly 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 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 capable of making the difference in our diets. This rekindled interest in fish products has helped transform catfish, long in deli cans in the eyes of many Southerners, into a national fish of some importance.

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 of the fish. These new income streams can be expected if the lowly catfish can be transformed into 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 apply to other states. But, on a more positive note, if the country can increase the production of its own lumber it can work to improve the standards that it sets. This effort could have even further positive implications for the upper timber industry. This is a very promising area for future research.
Staying current in Natural Resources

By Danny L. Chestham

(Dr. Chestham is an Associate Professor in the Department of Agricultural and Natural Resources Education at Mississippi State University, Mississippi State, Mississippi 35912.)

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 teach our students in our fields 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 issues 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.

Cooperative Extension Service

The Cooperative Extension Service should be your primary link with the research of the land grant university. Extension is the "outreach" arm of the land grant university that "extends" current research and information to those outside the university. Extension 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 of the newsletters which provide current forestry news, meeting notices of events, lists of available publications, and other timely information. In Mississippi, for example, the MAGAZINE is a newsletter written specifically for timber harvesting clientele. The Extension Forestry Newsletter is for a general statewide forestry audience, and the Forest Owners 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.

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 be formidable at first because of the many agencies, organizations, companies, and individuals comprise the forestry community. Many state and federal agencies exist to help private individuals maintain their forest properties. 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 herds, soils, to logging to 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, distant 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 "mem".

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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 Workshops: In many states, Extension foresters conduct workshops and short courses for professional foresters and other clientele groups. These activities are time-efficient means of staying current in forestry. Workshops and short courses range from 1 to 5 days in length. They usually provide detailed information on one or more topics related to forest management, forest regeneration methods, and forest economics. Some workshops and short courses may be available during summer months when soil is not in season.

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 give 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
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.

Audvisual 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 audvisual 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 areas.

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 other publications may 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 faculty and other members of the vocational agriculture-related agencies. MFA’s annual regular 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 (CBE) 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 CBE program.

Forestry Schools and Universities

In addition to the Extension forestry functions of the land grant universities, many other universities also offer forestry-related curricula. The Coordination Directory published by the National Wildlife Federation 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 Gram-Scope, 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 to 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 requiring the fore 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 AGRICULTURAL EDUCATION MAGAZINE

MAY, 1986
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 accounted for the largest amount 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 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 533,095 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 $5,400 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.)

THE AGRICULTURAL EDUCATION MAGAZINE

MAY, 1986

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. The programs 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 leaders in selected states were asked to identify creative programs 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 education. 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, 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 Brookes 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 the Fresno Air Terminal), (2) Bimouo Project (California Department of Forestry grant) — 2 acres eavich Eucalyptus and Monterey Pines for fuel wood, (3) Native plant house, (4) Propagation unit — two greenhouses and lab area, (5) Arboretum being developed with Native Indian Village and natural plant communities, and (6) Equipment for scaling and crating, 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 forestry 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 Snow-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. Strouman is the Forestry Program instructor.

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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 IRA. 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 Reidsville, 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 Moeller. He is assisted by 11 faculty members and receives guidance from a 17-person advisory committee.

Minnesota

Our High School, with Jerry Hovis as the vocational agriculture instructor, has a program which involves harvesting as well as the preparation and planting of seedlings 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 Edwold Wexman 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. Dulyth 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 Dulyth 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 State 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 program. 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 PEA 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 80-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 boardwalks, three pine plantations, a sugar maple grove, two ponds, and one-mile stream of stream.

Hocking Technical College's (HTC) Natural Resource Department, 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 Tallott.

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 Rumyn Show Award Show 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.

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

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

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

Coming in June . . .

Staying Current in Animal Agriculture

MAY, 1986
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 several programs in each of these clusters and is hands-on with hands-on activities and projects using the outdoor laboratory. These projects and activities in both programs involve 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 dozers while 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 woodland 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 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 Responsibility), Where students have this coverage, the school pays for their insurance on an assumed hourly wage earning, generally the 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 for students.

Safety Instruction

Safety instruction is directed by the instructor, the student, and the instructor. Students need to work with instructor in the current safety rules and regulations.

MAY, 1986

THE AGRICULTURAL EDUCATION MAGAZINE

By HOWARD W. BROCK and GORDON GALBAUER

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Insurance and Liability

Fair Labor & Standards Act of 1938 (Child Labor Bulletin 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.

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)
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 goals of each student. A formulated 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 such training experiences.

Legal Responsibility — Because of the various restrictions for training that can be done in some jobs is classified as hazardous in the forest products industry. Special precaution needs to be given to the safety of students on work experience. Instructions should familiarize themselves with the provisions of the Fair Labor Standards Act, U.S. Department of Labor, Child Labor Bulletin No. 95. 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 unable to pay could a student be placed for pay in status detailed hazardous according to Fair Labor Standards Act.

2. Nonpaid work experience: The student is on a paid training program under the direct supervision of qualified and experienced person. Students may participate in work experience stations applicable to the training needs of a specific cluster and not under any employment relationship; therefore, the minimum wage, overtime, and health and safety requirements of the Fair Labor Standards Act do not apply to work experience stations.

3. School labor. Students need only be paid wages for the instruction and examination necessary to obtain the necessary knowledge and experience. The student need not be paid for the instruction and examination necessary to obtain the necessary knowledge or experience. The student need not be paid for the instruction and examination necessary to obtain the necessary knowledge and experience. The student need not be paid for the instruction and examination necessary to obtain the necessary knowledge and experience.

4. Students need 10 years of age or older. Exemptions applicable to Forest Products.

Student Experience Agreement Order No. 16 Power driver paper machine operators Order No. 15 Power paper machines machine operators Order No. 14 Power switchmen, control room operators, hosiery, band saws, and guillotine shears. A copy of a training agreement shall be appropriate U.S. Department of Labor, Wage and Hour Commission. Each student shall sign a training agreement for clarification.

Conclusion

Hand-on activities are essential in effective skill development and practical application of natural resource occupational preparation. The outdoor laboratory and field experience is 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 enjoyable as possible. Not only will students need to 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, equipment, and liability claims. Adequate protection and preparation starts before the first accident, not as a result of the accident.

THE AGRICULTURAL EDUCATION MAGAZINE

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Legends

Latest Developments and Technology in Soil and Water Conservation

By Glen Loomis

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Soil and water conservation entered America's 51st year as an organized effort in America in 1946. Those first 50 years of service have been a major role of the soil and water conservation profession. It has been a role as a soil surveyor and range expert on the soil and water conservation board. 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 conservists, 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 conservatists and educators need to continuously remind themselves that "accomplishment" is not an exchange of paper, but rather something that gets done on the ground.

To reach this 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 working with what are recognized as problems. Then comes inventories to quantify the natural resources in terms of soil, water, and land use. The objectives may need to be better to reflect the real problems the inventories identified. The third thing the farmer needs is alternative approaches for 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 information, 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, a look at developments that will change the way we look at 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 information was gathered by walking the land — a time consuming process.

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 areas. 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, bringing an upper layer of soil salt down by ale 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 saline seep areas. 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 manner this way. In the next few 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.
Latest Developments and Technology in Soil and Water Conservation (Continued from Page 17)

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 landowner to let her renters use conservation tillage.

The landowner had resisted changing from moldboard plowing her cropland in a wheat-fallow operation. But a crop-budget computer, fitted with a database of 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 envision 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 result. This 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 contributions 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
- conservationists 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 are crucial, but you must also sincerely persuade some students to join the soil conservation team.

"I believe in the future of farming with a faith born not of words but 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 teacher, county agent, or soil conservationist working for a state or federal agency. Many more will return to a farm or ranch to practice what 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 your 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.

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 those 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 in-service education, contacting 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 agricultural 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 in-service training provided within your state. Most universities conduct research and Extension programs in proper rangeland use. Teachers should also update information through range symposiums sponsored by universities or other professional organizations such as the Society of Range Management.

By Jim Cooksey and George H. Hill

(Rev. Cooksey 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. 89507.)

Field Trips

A well planned field trip can enhance student understanding and teacher effectiveness in range management. Field 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, uses, forage values, 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, overgrazing, and fire can be an effective learning tool for both the teacher and students.

(Continued on Page 20)
Wildlife -- An Awakening Natural Resource

By Bill Tomlinson
(Mr. Tomlinson is a Wildlife Manager for Appalachian Valley Conservancy, P.O. Box 58, Vicksburg, Massachusetts 02368)

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 improved 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, access to water, shelter, reproduction, and space. Deferring wildlife species often require defer different 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 on the hand of humans. At present, the approximately 442 million acres of national forest land continues to be, for agricultural and urban and suburban development. Such conversions often occur at the expense of existing wildlife populations. Ironically though, in the case of our hunting habitat less than 10% is actually hunting land. wildlife is rapidly becoming an awakening natural resource. 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 moose available (or 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, however, non-game animals (squirrels, snakes, etc.) are receiving even more of state and federal public hunting and non-hunting recreation funds. A national 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, the price for the commodity is often stabilized (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 federal lands provide both wildlife habitat as well as wildlife based recreational opportunities, be it 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 refuge areas, and 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 of 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
Wildlife — An Awakening Natural Resource

(Continued from Page 21)

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 $10 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 at prices ranging from $50 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 the interest and the desire to understand 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.

Literature Cited

Alcock, J.E. 1984 Woodland management and energy values — A forester’s perspective. FOREST ECONOMIST, 44(3):6-7, 8.


A Broader Focus

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

Theme

Air 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 human 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, 0.002% argon, and traces of other gases. Any other substances in the air, whether solid gas or vapor, 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 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. These two 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 dust, smoke, fog, fume, soot, bacteria, oil, grease, and metallic substances. Particulate matter can harm body tissues such as tissue in the nose and those that line the lungs. 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 from February or March until April or May. The weeds pollinate in late summer from about August until October.

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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? what are the weather 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 downsnow 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.

Cleanness. 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 device. 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, governments are 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 our students understand the effects of our technologies and the interrelationship between humans and the environment.
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. Coby, Manager-Corporate Support Program, Deere and Company, Moline, Illinois; Cynthia L. Shaffer, Beaverstown, 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; Deveyne Siebrasse, Sandusky, SD; Dwayne A. Van Sickle, Cardington, OH; Michael Balas, Supervisor - Marketing Training Materials, Sperry New Holland, New Holland, Pennsylvania; Martin K. Auvile, Dayton, VA; Leonard Hunter, Kingfisher, OK; and Joleen Ward, Gillette, WY.

Agriculture Teacher Recognition Awards
Left to right: Max Corbitt, Tulare Western High School, Tulare, CA (Dairy Production Proficiency Award); Jerry W. Greer, Barron County High School, Glasgow, KY (Swine Production Proficiency Award); Beth Iamuzzi, Manager-Marketing Communications, Pfizer Agriculture Division, New York, NY; Jack Jacobson, Hamilton, OH (accepting the Beef Production Proficiency Award for Stewart Devoll, 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).