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Conservation and Management
Of Natural Resources



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Conserving and Managing Natural Resources—The Challenge to Extension

Cooperative Extension has long been recognized for its major role in developing the agricultural production system which so many of us take great pride in today. This recognition is richly deserved.

Cited by many as a model for technology transfer programs, the Cooperative Extension System is unique in its effectiveness and cooperation. A three-way Federal, state, and local partnership supports Extension, gives direction, and provides volunteer leaders who contribute greatly to the effectiveness of the programs and efficiency of the system. The tie to our land-grant universities also provides for interdisciplinary and research-based educational approaches to assist people in solving problems.

We can look to the past and find many accomplishments by Extension. By its nature, the Extension System is forward looking. The achievements have been great, and the challenges ahead are greater.

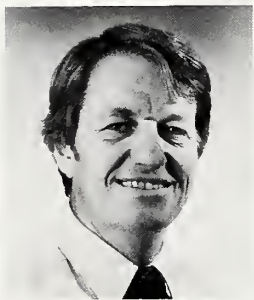
One such challenge is to recognize and understand the impacts which our educational programs have upon some of our most basic natural resources—soil, water, forests, rangelands, and wildlife. How can the Cooperative Extension System develop and deliver programs to educate and influence citizens to conserve and manage wisely the use of these basic resources?

As the educational arm of USDA, Extension has an important responsibility in the conservation and management of renewable natural resources. In carrying out that educational responsibility, it complements the roles of three other USDA agencies in natural resource conservation—the Agricultural Stabilization and Conservation Service, the Forest Service, and the Soil Conservation Service.

In response to the conservation challenge, the Extension Committee on Organization and Policy has recognized the need for strengthening its educational programs and has established, as one of its nine national initiatives, that of *Conservation and Management of Natural Resources*.

I commend the Cooperative Extension System for selecting this priority as it moves into the future. We need Extension's educational programs in natural resource conservation and management. As I reflect on the extraordinary success of the Extension system in the development of U.S. agricultural productivity, the question arises: What would happen if Extension mounts an all-out educational response to the challenges of conservation?

Results from such an emphasis would likely be as remarkable as those we see in our agricultural production programs. I personally believe that Extension will make a difference in conservation as it rises to the challenges it has set for itself in this important initiative. ▲



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Extension And Environmental Ethics

Mankind is slowly and painfully learning a very basic lesson: we cannot set ourselves apart from the natural world that sustains us. We know that when we do this we are only sowing the seeds of our destruction. Acceptance of our role as cooperative members of the "land organism" (comprising soil, water, air, and all biologic species) considerably brightens our future.

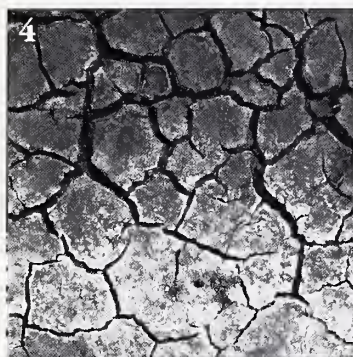
A key to this cooperative attitude is the development of an ethic of conserving and managing natural resources—an ethic that considers the long-term, as well as the short-term, the biologic as well as the economic. Such an ethic can only be built from the respect for and understanding of our natural environment. Such an ethic will require a level of biological and environmental awareness that has not yet been demonstrated by the whole of society.

Extension has an important role to play both in the development of an environmental ethic and in helping the public make enlightened decisions on conserving and managing natural resources. These critical decisions must be based on input from a wide array

of disciplines, from ecology to economics, and from crop management to game management.

Who else is better able to provide this interdisciplinary input than the Extension arm of the land-grant system? ▲

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Drought—Nationwide Extension Network Rallies Resources

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As *Extension Review* goes to press, a top issue of national concern is the drought and its impact on American agriculture and our Nation's natural resources. From the East Coast to the West, the Cooperative Extension national educational network is rallying its staff and resources to work with farmers, ranchers, families, and communities.

Weekly reports from State Extension Services to Extension's electronic mailbox—DROUGHT—are quickly summarized by Extension Service-USDA staff and dispatched via the nationwide DIALCOM electronic network to agriculture program specialists and USDA offices. Of primary interest is information on drought conditions and established and planned drought-related programs. Critical concerns focus on management, economic, and social hardships facing farm families.

Extension federal, state, and county staff are actively participating in the USDA electronic HAYNET operation, which lists hay surpluses and shortages across the country. Statewide HAYNET operations are also available in many drought-affected areas. Calls to both the USDA drought hotline and several state hotlines find Extension staff busy answering questions and dealing one-on-one with the issues and concerns of callers directly impacted by the drought.

Electronic Technology Front and Center

Live satellite videoconferences, news conferences using today's technology, electronic bulletin boards, computers that transmit news releases to print and broadcast media—are just a few of the innovative ways the Cooperative Extension System is getting information to farmers and others.

On July 13, the Iowa State University (ISU) Extension staff aired a 2-hour drought update at

a videoconference and sent it, live, by satellite to thousands of viewers at 79 county Extension sites and to others with home satellite dishes in Iowa and out-of-state locations.

The program, produced by the Extension staff, focused on how the drought is affecting cattle and pigs, with information for farmers from Extension agronomists, economists, and animal science specialists. Experts from USDA's Agricultural Stabilization and Conservation Service and the Iowa Department of Natural Resources also participated.

North Dakota Extension also used new technology to expand their news coverage of the drought. Staffers held a July 1 news conference in Fargo and, upon request, sent a news release, weather map, and charts by telefax machine showing crop and other losses to Governor George Sinner in Bismarck and to Representatives Byron Dorgan, Quentin Burdick, and Kent Conrad in Washington, D.C.

ND Extension staff also developed an interview series of four 15-minute videotapes on the drought and its effect on families. Copies of the series, "From Field to Family," will be available to the public through county Extension offices.

Other state Extension Services in the Midwest using modern communication equipment to update their public on the drought include:

- Missouri, where staffers use computers and electronic bulletin boards to transmit drought information to 114 counties.
- Minnesota, where Deputy Secretary of Agriculture Peter C. Meyers appeared live via satellite from Washington, D.C. on a drought special aired on WCCO-TV in Minneapolis.

- Indiana, where the Purdue University Extension staff provides weekly satellite video drought updates for agricultural

producers, agribusinesses, marketers, and county Extension agents.

Other State Developments

In Kentucky, nine Extension agricultural specialists were featured on a 3-hour evening radio call-in show. The program was put together by WHAS Farm and Garden Director Fred Wiche and Jefferson County Extension Agent Dean Wallace.

In Pennsylvania, a hay and grain information network—PA HayNet is available on the Extension statewide computer network, PENpages, available to all county Extension offices.

Ohio staffers are using a "loop" system to supply information to county agents. Agents relay client questions for technical information to the Agriculture Industry Office. That office directs these questions to appropriate specialists, who immediately respond via electronic mail to ALL counties.

Georgia Extension's drought response team has released information packets related to forages, alternative feeds, heat stress and related subjects. Another packet released through county offices targets urban residents. Topics include water conservation in homes and survival strategies for outdoor landscape plants—all in anticipation of a total outdoor watering ban because of a low reservoir level.

Human Element

In all of these cases, it's that human element—of farmer helping farmer—that prevails. In North Carolina, two Extension agents are contacting 500 area cattle producers requesting them to donate hay for shipment to drought-stricken Midwest farmers. It was these Midwest farmers who shipped tons of hay to North Carolina producers during the 1986 Southeastern drought situation. ♣

A mix of traditional and nontraditional methods have contributed to the success of two Extension efforts in Nebraska to save soil and curb groundwater pollution. Some Nebraska fields show an annual loss to erosion exceeding 100 tons per acre, compared to an average allowable soil loss of 5 tons per acre for the same soil.

With soil being lost to erosion at an alarming rate, and subsequent sedimentation identified as a major water quality problem, the need for a specific, locally targeted Extension education program became apparent.

First Project

While not yet complete, separate projects initiated in 1983 and 1985 are already paying off by saving substantial amounts of soil.

The first major effort to enhance the adoption of soil, water and energy conservation practices in the state began in 1983. Funding of over \$1 million came from the State of Nebraska, energy over-charge funds, and the University of Nebraska Foundation.

The 5-year Agricultural Energy Conservation Project (AECP) began with a goal of reducing energy requirements while conserving soil and water. It included, in addition to the conservation tillage emphasis in the east, an ecofallow program in the west, and an irrigation water management project in central/north central areas.

The conservation tillage program includes three target areas encompassing 540,000 acres in portions of seven eastern Nebraska counties.

Its goals are to increase the use of conservation tillage by 20 percent and no-till planting by 10 percent.

Second Project

The second educational program, initiated in 1985, is the Logan Creek Special Study (LCSS). This target area includes approximately 50,000 acres in portions of three Nebraska counties. The



LCSS, funded by the Soil Conservation Service, is supported by the Lower Elkhorn Natural Resources District.

The Logan Creek area is characterized by steep, irregular hills. Conservation land treatment is not an accepted practice in the area. Less than 15 percent of the cropland had adequate erosion protection at the outset of the project—with a resulting annual erosion of approximately 14 tons per acre. In addition to conservation tillage and no-till, the LCSS actively promoted practices such as terraces, grassed waterways, and contour farming in these areas.

At the outset, tradition was an obstacle. How do you talk to a farmer about erosion control when the erosion on his/her land has caused no significant productivity losses? How do you convince a farmer to adopt conservation tillage practices when he or she is concerned about possible yield losses or increased weed control requirements?

Targeting Priority Areas

An important and unique aspect of both projects was selection or targeting of high priority areas. Criteria for selection of the target areas included estimated soil erosion losses, farmer use and interest in conservation tillage, and the local Extension agent's desire to make conservation tillage a major educational thrust in the program.

Extension programming methods such as meetings, field days, and demonstration plots were used extensively in both projects, but the nature of the problem and program goals called for additional, more nontraditional approaches.

Local committees were formed to provide guidance in defining and determining educational needs and methods best suited for target areas. We tailored programs to meet the specific needs of target areas. Committee membership included farmers, business reps, and personnel from local Natural Resource Districts, SCS, and Extension offices. Local media and farmers not using conservation practices were also included to ensure success.

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Agricultural engineer Robert Grisso (right) of the University of Nebraska-Lincoln instructs farmers in calibrating a sprayer. Proper sprayer calibration plays an important role in management of conservation tillage systems. Hands-on experience is an important part of this educational program.

Contributions and ideas from farmers not using conservation tillage proved valuable, and activities were designed to overcome concerns and myths often expressed by non-users.

Project Activities

Three Extension assistants began working in the four target areas—two for AECF and one for LCSS. These assistants conducted day-to-day project activities and worked directly, often one-on-one, with producers.

meetings for each target area. Nearly 50 farmer cooperators provided sites for conservation tillage demonstration plots. Area farmers could inspect equipment used, follow the growth of the crop, and determine yield and production costs.

Comparing plots gave us evidence to dispel the perceptions that conservation planting reduces yields and increases costs. In all cases, yields were the same or better with conservation

about one-fourth, or 130,000 acres, of cropland in the AECF area has been directly impacted by the program, for an estimated annual savings of 700,000 tons of soil, 100,000 gallons of fuel, and 21,000 hours of labor. In the LCSS, 266,000 feet of terraces have been installed for an estimated annual soil erosion reduction of 27 percent.

We expect to meet our project goals or exceed them. Most importantly, these two Nebraska



Farmers gather at a no-till demonstration that is part of Nebraska's Agricultural Energy Conservation Project. This 5-year project has as its goals the reduction of energy requirements and the conservation of soil and water.

Early in both projects, we collected information to evaluate farmer perceptions regarding conservation tillage and the existing use of conservation practices through mail surveys, field residue measurements, and personal consultations.

Local committees recommended field demonstrations, plot comparisons, and informational

methods and in most cases, costs were the same or lower than with conventional tillage.

Local small group, or "coffee house" meetings, were held where Extension personnel answered specific questions regarding individual operations. Press releases and fact sheets were frequently used, and in the LCSS a quarterly newsletter, kept producers and landowners in the target areas informed.

Progress To Date

Neither project has been completed, but we are well on the way to achieving our goal. So far,

projects are proof that conservation education programs targeted to specific audiences can make substantial impact in a short period of time. Δ

For additional information on these projects, contact: Elbert C. Dickey, Extension Agricultural Engineer, Conservation, University of Nebraska-Lincoln Agricultural Hall, Lincoln, Nebraska 68583-0918. Phone: (402) 472-2966

Why Trees Are Important



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As part of a forestry school enrichment program developed by the National 4-H Council, County Extension Agent Terry Mathis (right), Aiken County, South Carolina, role-plays with students. This skit is intended to show youth why planting trees will benefit them in the future.

Will the next generation of Americans be affected by a shortage of wood products? Currently, the South supplies 45 percent of the Nation's demand for softwood (pine). By 2030, forecasts predict a doubled demand for softwood. The South will be expected to meet 55 percent of this total.

In South Carolina, a major timber supplying state, planned regeneration on private forest lands is occurring on less than half the number of acres being harvested. In addition, much of the marginal acreage which needs to be reforested with pine trees has been idled because of the poor farm economy.

Because the next generation may be most affected by a shortage of wood products, 4-H in Aiken County, South Carolina, has developed a forestry school enrichment program for youth: "Why Trees Are Important." The 1-hour program, targeted for grades 6 to 8, has as its objectives increased knowledge about trees, awareness of their importance, and the ways reforestation will affect the students' future.

Program development begins with a slide/tape presentation developed by the National 4-H Council: "Why Trees Are Important." 4-H'ers re-recorded the tape with assistance from a local communications company. A skit and a handout were developed to accompany the slide/tape program.

Instructive Role-Playing

In the skit, which follows the slide/tape program, five students role-play as two landowners, a tax col-

lector, a tree planter, and a tree buyer. The skit is intended to show the class why planting trees can benefit them in the future. One landowner plants an imagined stand of pine trees and manages his land; the other landowner allows his land to lie idle, thereby reaping weeds and "undesirable" trees.

The role-playing students then use YIELD, a computer program developed by the Tennessee Valley Authority, to generate examples for a 30-year pine rotation on average land. The computer program's results for the pine rotation shows the students that a return of \$766 per acre can be expected by growing trees. This contrasts with the landowner who let the land lie idle and received no income.

After the skit, the students receive a handout to take home to their parents. The handout informs parents that their child's class participated in a 4-H forestry school enrichment program and encourages them to contact Extension for information on forestry. Parents also receive several pine seedlings, provided by a local forestry company, to plant where they desire.

Program Impact

During 1986 and 1987, approximately 900 students attended the forestry school enrichment program. A 1987 statistical test of significance evaluated the impact the program had on 573 students. There was an observed improvement among students in both knowledge and attitude in regard to the importance of trees. A.

BROOK—Tool For Watershed Management



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BROOK, a "mainframe" computer model, adapted for use in Connecticut and Massachusetts, is a planning tool designed so forest managers can predict the effects of proposed changes on forested watersheds. Figures 1, 2, and 3 are based on watershed data from the Ashley Reservoir, part of the Pittsfield municipal water system.

Many communities across the nation are taking positive steps to solve their water supply problems, including conservation measures. However, until recently, forest management specialists rarely sought solutions to the supply problem at the source itself—the watershed.

This approach, which can be used to supplement other conservation measures, seeks to increase water supplies by managing the watershed's forests. Research studies have demonstrated that available water from forested watersheds in the Northeast can be increased by decreasing the forest cover. This decrease serves to reduce the evaporation from tree canopies and transpiration losses through the foliage and thus increases streamflows. In the Northeast, the primary benefit is during the low-flow period, generally in August and September, when water supplies are most highly stressed.

BROOK— Important Planning Tool

Until recently, the complex, interactive processes taking place in the forest ecosystem have been extremely difficult to translate into forest management practices which could be quantitatively predictable regarding their effect on water yields.

BROOK is changing all that. BROOK, a U.S. Forest Service hydrologic "mainframe" computer model adapted for use in Connecticut and Massachusetts, is allowing the forest manager a new predictive capacity to view the impacts of changing relationships between soil, water, and

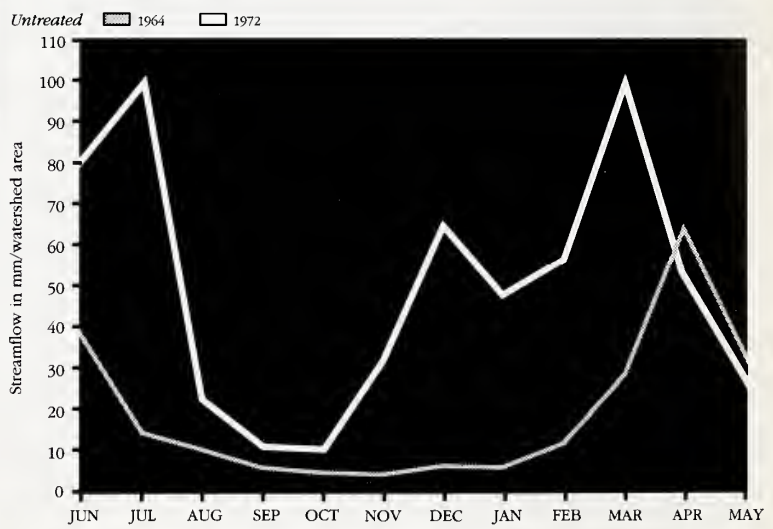
management prescriptions. BROOK is a planning tool and not a model that can yield detailed engineering data such as culvert sizes.

Testing

To test the model, the Northeast Center For Rural Development at The Pennsylvania State University provided joint funding to Cooperative Extension at the Universities of Connecticut and Massachusetts. Also planned was the development of a user-friendly manual to aid in the use of the model in the Northeast.

A second year of funding allowed refinement of the model and promotion of the concept in other northeastern states.

FIGURE 1
Streamflow - Ashley Watershed
 Pittsfield, MA Municipal Water Supply



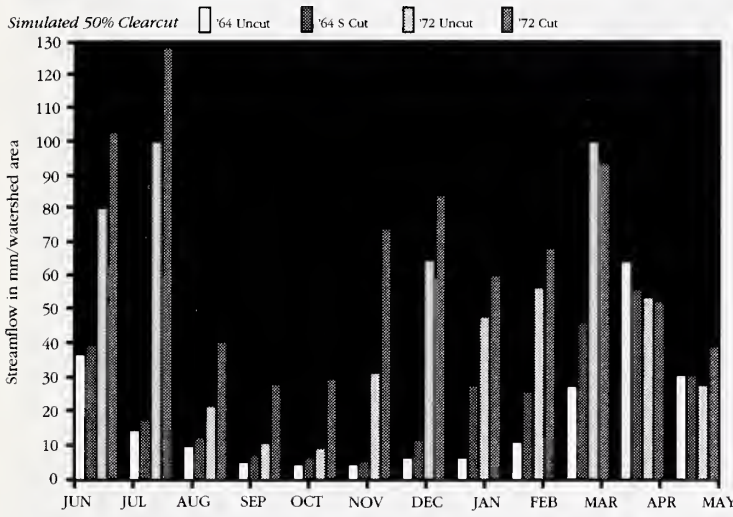
vegetation *before* any changes are made in the forest.

The current version of the model (BROOK-6) is designed to be employed by land use managers to predict the effects of proposed changes on the land surface. The model is designed to simulate daily fluxes of streamflow, soil moisture, groundwater flow, evapotranspiration, snowmelt, and other water cycle processes for any period for which data is available. The model can be used to predict the quantity and timing of streamflow changes resulting from a variety of forest manage-

Watershed

The Ashley Reservoir watershed, part of the Pittsfield municipal water system, was used as a test case. Watershed data were entered into the computer and the driest year of record (1964) and the wettest year of record (1972) were used to establish the extremes of precipitation. (See figure 1.) Therefore, any treatment of the forest which has an effect on the fate of precipitation, such as streamflow, could be measurable between those extremes.

FIGURE 2
Streamflow - Ashley Watershed
Pittsfield, MA Municipal Water Supply



The precipitation extremes may be used to predict the range of effects of forest cutting on streamflow. A forest manager wishing to predict the minimal or most conservative gains in streamflow through vegetative manipulation would look to the dry year simulation as shown in figure 2. When the untreated dried year condition (64 UN) is contrasted with the 50 percent clearcut condition (64 CUT), modest but definite gains in streamflow during the growing season can be identified. This is because after the forest canopy is

reduced less water would have evaporated and transpired to the atmosphere.

The range of streamflow differences—associated with varying forest treatments—can guide the management strategy of the forester.

Another method of reducing evaporation and transpiration is to minimize the amount of coniferous forest species. Conifers retain their foliage all year and intercept and evaporate water before, during, and after

the growing season of deciduous hardwoods.

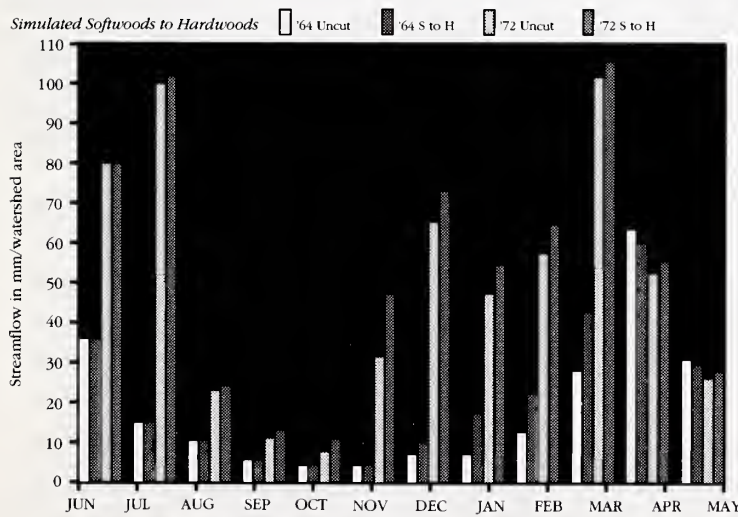
Figure 3 depicts the results of a simulated conversion of conifers to hardwoods on the Ashley watershed. Virtually no streamflow change is in evidence during the growing season as hardwoods and conifers are evaporating and transpiring water nearly equally.

Simulation Lessons

The simulations showed that the effect of forest cover on hydrologic processes can be modeled on a microcomputer to provide a predictive capability for land managers.

- The simulations indicated that “clearcutting” can substantially affect streamflow, but this will necessitate increased attention to erosion control strategies.
- Conversion of conifers to hardwoods will result in greater streamflows, especially when the ratio of conifers to hardwoods is high. These streamflows will occur in seasons when it is least needed.
- The simulations in this modeling exercise were “wet/dry year extremes” and applications will show model outputs somewhere between these extremes.
- Timber cutting as a water conservation measure is a valuable concept and constitutes one more option among many to conserve water. These conservation measures include water system rehabilitation, leak detection, and water conservation education. ♣

FIGURE 3
Streamflow - Ashley Watershed
Pittsfield, MA Municipal Water Supply



Buried Treasures—Michigan's Bottomland Preserves

10 Extension Review



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More than half the state of Michigan—38,000 square miles—lies submerged beneath the surface of the world's largest system of freshwater—the Great Lakes. The depths of these “sweetwater seas” shelter natural, geologic and historic treasures—unique resources that require conservation and management if they are to be preserved for future generations.

Since the lakes—Superior, Michigan, Huron, Erie, and Ontario—assumed their current shape 11,000 years ago, people have travelled aboard watercraft of all descriptions along their shores and across their vast surfaces.

Shipping played a particularly significant role in the settlement of Michigan, and much of the history of the state is closely linked to the ships that have plied its Great Lakes waters.

However, during the past 300 years, more than 6,000 boats have failed to reach their destinations, ending their journeys at the bottom of the lakes before reaching port.

For years some treasure-seekers have sought out shipwrecks in hopes of salvaging articles of value known or believed to have been aboard the vessels when they sank. Although Great Lakes shipwrecks had not been plundered to a significant degree, there was increasing concern in the early 1970s that these resources needed special protection. A 2-year study produced an inventory of the thousands of vessels lost on the lakes. By 1977, Donald F. Holecek, a Michigan State University professor in the Department of Park and Recreation Resources, initiated a Sea Grant-sponsored study and began promoting the concept of underwater preserves in the Michigan waters of the Great Lakes.

Bottomland Preserves

Holecek's finding of significant concentrations of recognizable shipwrecks in certain accessible areas

of the coast attracted the interest of historians, archaeologists, recreation planners, scuba divers, Extension agents and many others. In 1980, their efforts spurred the legislature to enact Public Act 184, which enables the Michigan Department of Natural Resources to establish bottomland preserves “to preserve and protect property of historical, cultural, or recreational value...” This Act regulates the types of artifacts and related resources which may be taken by divers from protected areas.

A bottomland preserve is simply an area set aside for the protection of natural and, in this case, historical/archaeological resources. It is not a state park in the sense that other areas operated by the Department of Natural Resources are. It has no entry fee, personnel, physical facilities or developed attractions. It is more like a wilderness area, protected yet accessible to those with the interest and necessary skill.

So far, seven Michigan Great Lakes state bottomland preserves have been permanently established: The Alger Preserve in Lake Superior at Munising and the Thunder Bay Preserve in Lake Huron at Alpena (1981); the Straits Area Preserve in the Straits of Mackinac (1983); the Thumb Area Preserve in Lake Huron (1985); the Whitefish Point Preserve in Lake Superior (1987); and the Sanilac Shores in Lake Huron and Manitou Passage in Lake Michigan (1988).

The July 1986 discovery of the remains of the Canadian package freighter *Regina* discovered in Lake Huron near Port Sanilac stimulated interest among sport divers and those interested in bottomland preserves. In an unprecedented move, the state created, on an emergency basis, a preserve in a square mile area around the wreck to prevent salvage activity and to allow for investigation of a potentially larger preserve area. Sea Grant Extension assisted in the transition from emergency to permanent designation in May 1988 of what is now called Sanilac Shores.

Manitou Passage

Already the site of a national lakeshore, the Manitou Islands area in Lake Michigan will soon become the location of the first preserve located entirely within that lake. Assisted by Extension personnel, both diving and maritime history enthusiasts in the northwest Lower Peninsula have been working since late 1986 on the proposal which is now in the final stages of approval.

Maritime historians believe that there about 60 undiscovered wrecks in Manitou Passage waters. The prospect of finding one or more of these wrecks could be a powerful attraction to divers.

Legislation Updates

In early 1988, legislators consulted Sea Grant Extension personnel about drafting amendments to Michigan's bottomlands preserves law. The agents

Sites of the seven permanently established Great Lakes state bottomland preserves.

provided valuable insights to these lawmakers as they attempted to improve the protection of these buried treasures and offer greater recreational pleasure to thousands of Great Lakes divers.

Each of these preserves has a special character, and the key to the initial designation, development and subsequent conservation, management and economic benefits has been local citizen involvement and organization, assisted in almost all instances by Cooperative Extension Service staff. Detailed in the following are some examples of Cooperative Extension's involvement.

Alger Attracts Divers and Dollars

The 113-square-mile Alger Bottomland Preserve, with its ten known wrecks and proximity to the Pictured Rocks National Lakeshore, is the best known and developed of the preserves. With wrecks like the 230-foot wooden hull steam barge *Smith Moore* and 150-foot wooden hull schooner *Dreadnaught* or *Granada* (the name is still in dispute), the site has become a prime diver destination. The Alger Underwater Preserve Committee has buoyed several of the wreck sites to increase divers' ease in locating them, and has conducted diving expeditions to find additional wrecks (discovering more underwater caves than wrecks, incidentally). The group has also published a brochure providing such information as diving precautions, preserve rules, a diver emergency action plan, and a map of dive sites and boat launching facilities.

Extension staff assisted the local committee in obtaining both local and state financial support, including a \$7,000 "Yes Mich!gan" grant, to promote the preserve. The community is now experiencing some of the economic benefits of the committee's marketing efforts. As documented through Sea Grant and Cooperative Extension research work, an estimated 6,000 divers and associated tourists spent approximately \$3.5 million in the community in 1984, compared with about \$700,000 spent by about 1,500 divers in 1980.

Thunder Bay

The 288-square-mile Thunder Bay Preserve holds approximately 85 shipwrecks and at least two "sinkholes"—cylindrical depressions 300 feet wide and 20 and 70 feet deep.

Local interest, supported by Extension staff, initiated the designation of the preserve in 1981. A reactivated local committee, also assisted by CES personnel, has, during the past few years, developed the preserve as a tourist-diver destination. Shipwrecks such as the semi-submerged German "saltie" (seagoing) *Nordmee* and the freighter *Montana* are now visited by dive charter boats.

A 1986 Sea Grant Extension survey of visiting divers found that "friendly people, the charter service, and water clarity" were nearly as important as the shipwrecks and variety of wreck and dive sites.

This preserve area is also the site of one of two of Michigan's operating multi-place hyperbaric chambers. Through efforts of the local Sea Grant Extension agent, and with the financial support of Michigan Sea Grant and the National Undersea Research Program of the National Oceanic and Atmospheric Administration (NOAA), Alpena General Hospital was able to reactivate this piece of life-saving equipment. It is now a treatment center for sick and injured divers, and the lives of several divers have already been saved there.

Sea Grant Extension sponsored a series of dive accident management seminars throughout the state during the spring of 1985 to alert hospital and emergency medical service personnel to the availability of the equipment and to encourage the development of dive accident management plans in all the preserve areas. These plans were then developed and implemented through an effort involving Sea Grant Extension staff and emergency medical personnel throughout the upper Great Lakes region.

Coordinating The Effort

Extension has provided a consistent source of information and support to the local groups that have successfully proposed and promoted designation of Michigan's Great Lakes bottomland preserves. District Extension Sea Grant agents and county Extension directors have worked hand-in-hand with the variety of interest groups which have coalesced around this concept. Extension staff facilitated contact among local communities.

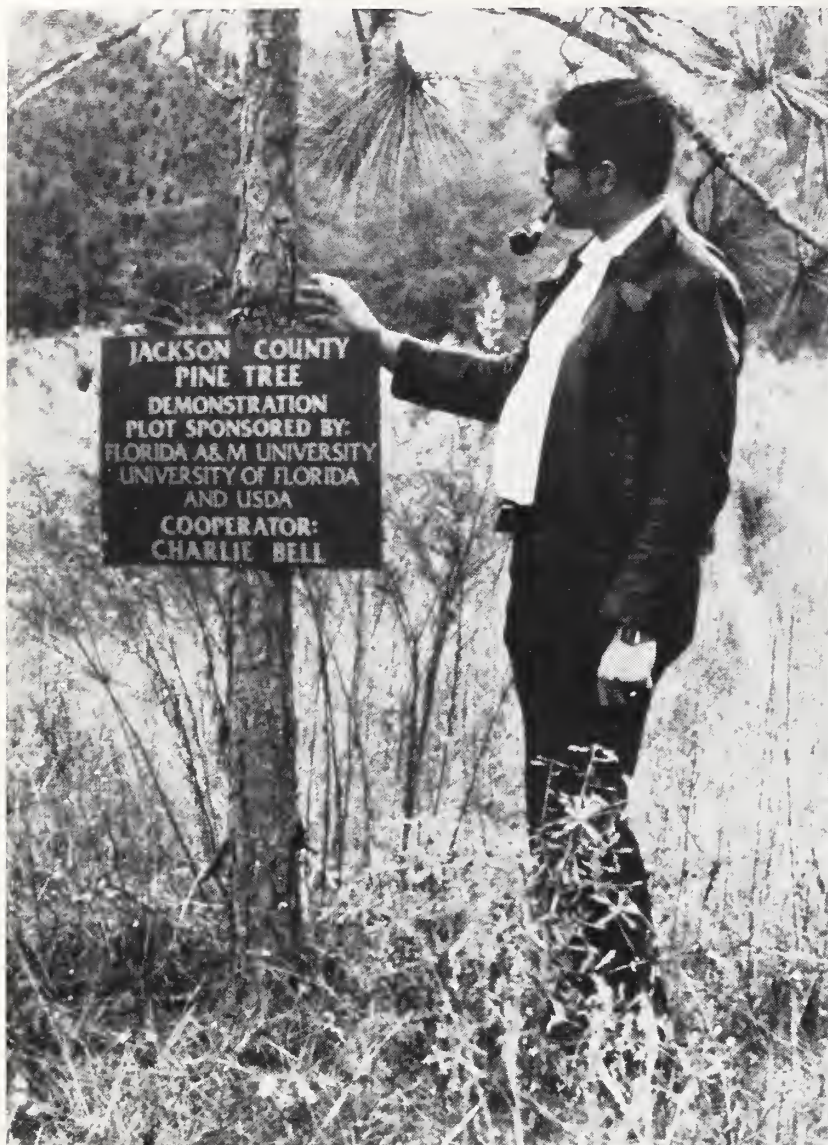
This coordination climaxed in December 1986, with a meeting at which local representatives agreed to form the Michigan Bottomland Preserves Council as an umbrella organization to enhance their effectiveness in promoting preserve tourism.

Extension has also contributed to the council's marketing efforts by collecting some important data. With the assistance of the Michigan Travel, Tourism, and Recreation Resource Center at MSU, Sea Grant Extension supervised two statewide surveys during the summer of 1986 and the winter of 1987. Divers visiting all the state bottomland preserves in 1986 completed a questionnaire, which resulted in an analysis of recreational diving activity in those areas.

Are there more bottomland preserves in Michigan's future? Will they eventually become underwater parks? These questions remain to be answered. However, it seems fair to say, at this point, that wherever there's a bottomland preserve in Michigan's Great Lakes waters, you'll find Cooperative Extension assisting the effort to conserve and manage this important aspect of Michigan's natural resources. ♪

New Forests For Florida

12 Extension Review



James C. Edwards
Extension Rural
Development
Specialist,
Florida A&M
University, Tallahassee

This demonstration plot was part a comprehensive Extension education program to encourage landowners in seven counties to plant pines and manage their forest resources.

In Florida, 45 percent of the total land area (over 1 1/2 million acres) is commercial forest land. In 1986, the forest industry employed 57,000 persons and received \$8 billion in revenue. Yet, 60,000 acres of land are being lost each year to urbanization and accelerated growth.

Three-fourths of the forest land is located in north Florida, which is close to lumber mills and markets, has good soil quality and abundant rainfall, a long growing season, and flatlands. Many of the private landowners have been turning these advantages into profits; others are unaware of such opportunities.

Nonindustrial private landowners own 50 percent of the state's commercial forest land, of which 76 percent could carry more with trees. For every 4 acres harvested, only 1 is replanted. Landowners

often own idle or marginal farmland that could be planted with trees to improve the land's productivity. Therefore, in 1984, two Cooperative Extension Service programs were developed and implemented to improve the productivity of nonindustrial private forest land in Florida. These are (1) the seven-county reforestation program and (2) the limited-resources landowners program.

Seven-County Reforestation Program

The Department of Forestry Extension faculty at the University of Florida worked with county Extension faculty to develop and implement a reforestation program for landowners in Washington, Gulf, Taylor, Levy, Duval, Clay, and Putnam Counties. The first objective was to improve productivity of nonindustrial private land by giving owners information on reforestation and forest management practices. The idea was to inform and motivate them. The second objective was to develop a comprehensive educational program that would encourage landowners to plant pines and manage forest resources.

University forestry Extension specialists and county Extension faculties developed and set up a multifaceted educational program that included many methods of information dissemination. "Extension Forestry Update," a monthly newsletter with a circulation of 3,500, provides information on such topics as the Forest Products Price Report, upcoming courses and workshops, new publications, and tips on forest practices that were useful to landowners. Four of the seven counties developed their own newsletters, with circulation ranging from 92 to 450.

Extension staff produced 23 publications to aid landowners in reforesting and managing their produce. Topics included Florida's forest soils, site preparation, forest regeneration methods, planting southern pines, and forestry investment. In addition, landowners can use a series of computer programs, entitled the "Forestry Information System" (FORINSY), to manage their forest lands.

Each year in the 4-year program, forestry Extension specialists held an inservice training session for county Extension faculty. Topic sessions included "Planting Southern Pines," "Forestry As An Investment," "Impacts of Silvicultural Practices on Water Management," and "Use of FORINSY In Forestry."

Extension in the seven counties organized and held 16 workshops and 13 field demonstrations for landowners. Many persons, including Extension forestry specialists and staff from USDA's Agricultural Stabilization And Conservation Service and Soil

Conservation Service, assisted the counties in conducting these workshops and demonstrations. Landowners received forestry information and hands-on experience for reforesting their land, and they participated in discussions on forestry practices.

Other activities included news releases, one-on-one conferences and discussions, announcements at farm meetings, demonstration plots, and radio and television programs. Duval County's television program entitled "Hi Neighbor" covered such topics as the advantages of growing timber, planting and transplanting trees, and tree care. Clay County established a forestry and natural resources advisory committee to help with Extension programming. Department of Forestry Extension office staff answered telephone and written requests for forestry information.

Results

During the program years (1984-87), nearly 25 million seedlings were planted, compared with 15.8 million seedlings in the pre-program baseline years (1980-83). In each program year the number of trees planted exceeded the yearly average for the baseline years. Based on average yields for slash and loblolly pine plantations in north Florida, the expected yield at the end of a 20-year pulpwood rotation is 30 cords per acre. In 1984-87, the average price for pulpwood stumpage has been \$28 per standard cord. Using real prices with no inflation factors, we see that the value of the planting made during the program years in the seven counties would be a gross annual revenue of \$7,233,245 (in 1987 dollars) for the years 2004-2007. This figure is a 58-percent increase over the annual harvest revenue for the planting during the baseline years, projected at \$4,584,636 for the years 2000-2003. If the landowners elected to increase the rotation length and change their harvest objectives to more valuable products such as chip-'n-saw or sawtimber, the dollar returns could easily increase 200 percent.

The intensity of the Extension program in the seven counties had a significant influence on whether there was an increase in tree planting in the program years. The more workshops and demonstrations held, landowners contacted, and newsletters circulated, the greater the results in tree planting. Florida Extension, then, is strongly impacting forestry in the counties. As previously mentioned, in the last decade, Florida lost 60,000 acres of forest land each year. The increasing trend in tree planting seen in these seven counties and in the state is helping to combat this decrease. The Florida Cooperative Extension Service is working effectively with other public agencies and organizations to maintain our forest resources in Florida.

Limited-Resources Landowners Program

In 1984, about 5 percent of Florida's nonindustrial private forest landowners were classified as landowners with limited resources. They were faced with problems in maintaining their farming operation. They were decreasing the number of acres of traditional row crops that they would normally plant and leaving the land idle. If the landowners could use these lands to plant pines for timber, they could maintain agricultural tax assessments for their land and generate additional income.

Our long-range objective for 1984-87 was to increase planting of idle or marginal cropland to pine trees or Christmas trees to help provide additional income for limited-resources landowners. The approach was to develop an educational program which would provide information on forestry practices and on technical and financial assistance available to landowners. The targeted audience was limited-resources landowners in the following counties: Jackson, Gadsden, Jefferson, Madison, Suwannee and Columbia. Limited-resources landowners were defined as persons having a gross annual farm income of less than \$20,000.

An educational program was developed by county Extension faculty and Extension specialists at Florida A&M University and the University of Florida. The major teaching tool was field demonstrations to teach farmers tree planting techniques. Eleven timber production and 10 Christmas tree production demonstrations were established in the 6 targeted counties in 1984-87. Besides showing landowners how to plant and manage pines, Extension staff provided information about financial and technical assistance.

At the beginning of the 4-year period, an inservice training program, "Encouraging Limited-Resources Farmers to Plant Pine Seedlings on Idle land," was held for the agricultural technicians and agents participating in the program. Topics highlighted at this session were "Why Plant Trees?", "Cost Sharing Program," and "How to Get Started."

Two publications were produced to address the needs of the limited-resources landowners: (1) "Growing Christmas Trees: Florida A&M Demonstration Project," which reviews the steps for establishing and managing a Christmas tree operation and (2) "Planting Southern Pines," which shows how to plant and manage a pine plantation for timber production.

Other forms of information dissemination included news releases, farm visits, newsletters, and television programs. The monthly newsletter "Extension Forestry Update," published at the University of Florida, was sent to limited-resources landowners. Extension staff made 150 farm visits in the 6 program counties during 1984-87 to provide technical assistance and one-on-one education.

Three television programs with a potential viewing audience of 30,000 were produced and shown.

At the beginning of the impact study, the 88 limited-resources landowners surveyed in the six-county program owned 7,058 acres. Eighteen percent of this land (1,249 acres) was considered idle and available for planting with pine trees. Sixty-four percent of the landowners were interested in planting pines, and 53 percent were familiar with the agencies and assistance programs available to them.

At the end of the 4-year program period, the 88 landowners surveyed owned approximately 5 percent fewer acres. At this time, 17 percent of their land was considered idle, compared with 18 percent at the beginning of the program in 1984. At the end of the program, 228 acres had been planted to pines; 18 percent of the original idle acres. A landowner who had planted 10 acres of idle land in these program years could harvest the forest stand in 20 years. At 30 cords per acre and \$28 per cord, the projected gross revenue would be \$191,520.

Twenty-two percent of the limited-resources landowners had attended a workshop on planting trees. In addition, 70 percent of those surveyed responded that they had learned about the assistance and support programs for planting trees, an increase from 47 percent at the beginning of the program. At the end of the program, 30 percent of those surveyed were interested in planting pines, down from 64 percent in 1984. This decrease may be due to interest in other crops, the need for understanding the new tax laws, or the need for one-on-one contact with clientele. In 1988-1991, efforts will be implemented to improve our contacts with limited-resources landowners.

Conclusions and Recommendations

The two educational programs discussed here encouraged and aided landowners in reforesting their harvested forest land, poorly stocked forest land, and idle cropland. In the Seven-County Reforestation Program, 58 percent more acres were planted with trees than before. In the Limited-Resources Landowners Program, 18 percent of the landowners' idle acres were planted and the number of landowners aware of assistance programs grew from 47 to 70 percent. Coordination with other state and federal agencies which offer technical and financial assistance continues to be successful.

The next logical step in our Extension program appears to be to promote multiple forest resources management in addition to reforestation. In the next 4 years we will provide information regarding additional forest resources alternatives to the landowner. Some of these resources include wildlife habitat, fee fishing, harvesting pine straw, and recreation. These resources may provide additional income to the landowners and, at the same time, help to maintain and enhance Florida's forest resources. A

From Nuisance To Cinderella Tree

Tropical forests cover less than 10 percent of the earth, yet they are home to nearly half of its plant and animal species. Alarm over their loss was once confined to environmentalists and scientists. This is no longer the case. Environmental, ecological, and social concerns about deforestation have claimed the attention of more and more residents of Hawaii.

In addition, scientists are concerned about the effect of deforestation on medical research. One quarter of all prescription drugs are biological in origin, and many of their sources are found only in tropical forests. Will tropical forests become extinct, scientists ask, before they can be studied for other possible cures?

Breakthrough Research

James L. Brewbaker, Extension horticulturist and plant geneticist at the College of Tropical Agriculture and Human Resources, University of Hawaii at Manoa, is conducting fundamental and adaptive research on leucaena trees of great importance in the struggle against deforestation. His breakthrough research allows a new perspective both in Hawaii and in developing tropical countries. Because of its strategic location in the Pacific Rim area, research at the University of Hawaii has a strong international as well as local commitment.

The first leucaena in Hawaii was a common shrub imported from Mexico and called Koa Haole. Found as a weed in pastures and roadsides, it was once viewed as a nuisance and shunned by both farmers and foresters.

But that was before Brewbaker developed the Koa Haole into a tree he calls the Giant Hawaiian. These "Cinderella trees" grow to heights of over 15 feet in a year, stop erosion, increase soil fertility, and furnish protein-rich cattle feed, fertilizer, paper, liquid fuel, firebreaks, and even building materials. In 3 years, Giant Hawaiian trees are large enough to supply the building materials, furniture, and utensils for a house.

International Linkages

Developing countries share Hawaii's concerns about deforestation, soil erosion, and the rising cost of cattle feeds. In addition, these countries have major needs for wood fuel and building materials.

To date, more than 50 tons of seeds of the Giant Hawaiian Leucaena trees (one billion of them) have been distributed by Indian seed sellers to farmers and foresters. Seeds of the Giant Hawaiian have also been distributed in the Philippines, Taiwan, and many other countries through the support of the United Nations' Food and Agricultural Organization (FAO) and the U.S. Agency for International Development (AID).



Brewbaker, who heads the Nitrogen Fixing Tree Association, with members in more than 100 countries, has been dedicated to creating linkages with local and world agricultural organizations. He hopes to reverse the dangerous trend of "too many people depending on too many trees" with the consequent destruction of tropical forest ecosystems.

Brewbaker points out that "super trees" like the Giant Hawaiian have not had an easy time gaining acceptance by farmers and foresters. But attitudes are changing as Brewbaker and his Extension colleagues educate others in the versatility of this former "weed."

Recognition

At a 1986 ceremony in Stockholm, the King of Sweden, HRM King Carl Gustav, recognized the scope and impact of Brewbaker's contribution when he presented Brewbaker and two of his colleagues with the prestigious International Inventors Award. The citation is awarded for outstanding achievements through research in forestry, industry, energy, and water. A

June V. Gibson
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James L. Brewbaker, Extension horticulturist at the University of Hawaii At Manoa, displays leaflets of leucaena. Leucaena was once viewed as a common shrub and a nuisance in Hawaii. Brewbaker's research helped to develop the leucaena into a "Cinderella tree" he named the Giant Hawaiian.

Natural Resources For The Next Decade

Extension Review

Marianne E. Krasny
Extension Program
Leader, 4-H Natural
Resources,
and

Daniel J. Decker
Senior Extension
Associate,
Department of Natural
Resources,
Cornell University,
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As we project the future of 4-H, we are aware of two current trends that are likely to affect us in the 1990s: the "research base" for Extension programs are become increasingly more specialized and complex; more and more urban and suburban youth are expressing an interest in 4-H.

These trends pose a dilemma for 4-H programmers. Since the late 1980s, 4-H has found itself in the midst of a rapidly changing academic and demographic environment. How can 4-H create educational programs, based on the latest "cutting edge" of research from our land-grant universities, that remain attractive to a diverse youth audience? In addition, 4-H natural resources programming faces further challenges:

- To develop programs that span a diversity of subjects such as wildlife, forestry, fisheries, and environmental quality.
- To develop programs that are not traditional to 4-H.

Extension specialists in the 4-H Natural Resources Program at Cornell University believe three factors are essential to address these challenges: There must be a meaningful integration of the 4-H program into Cornell's Department of Natural Resources; open communications must be established between county 4-H agents and faculty program leaders; and cooperation must be fostered between 4-H and agencies, private organizations, and industries with an interest in natural resources education.

Natural Resources—A Continuum

James P. Lassoie, Extension leader and associate professor, Department of Natural Resources, Cornell University, views natural resources education in New York State as a continuum.

"We should begin with our 4-H audience," Lassoie points out. "Some of these youths become our undergraduate and graduate students and later continue their education through the adult Extension programs. Therefore, our Extension faculty needs to be concerned with the undergraduate curriculum just as our teaching faculty needs to be concerned with 4-H. At each level—youth, student, and adult—the implications of our department's research program should be fully understood."

To promote the integration of the 4-H program into department teaching, adult Extension, and research programs, Extension at Cornell and the Department of Natural Resources have decided to hire a 4-H

natural resources program leader who would be a member of the research faculty in the department. This has led to discussions of how research results might be included in 4-H Extension programs.

New Concepts, New Audiences

Many believe that conservation biology—new to wildlife research—is an area where youth, college students, and adults can benefit from information. Conservation biologists are developing methods for the protection, maintenance, and restoration of life on earth based on ecological and genetic principles.

In a new wildlife habitat enhancement program, aimed at urban and suburban youth, research findings from conservation biology are helping youth understand how land-use strategies can help or harm our natural environment.

Science Interns Program

The Cornell Science Interns Program provides another opportunity for linking 4-H with the Department of Natural Resources. This program allows high school 4-H'ers to work with Cornell faculty and graduate students on research projects during the summer months.

In 1987, science interns participated in two research projects. One project involved the effect of acid rain on fish populations. The other concerned the relationship of sugar maple leaf area to sap production. A science intern from the Akwesasne Indian Reservation in northern New York state wrote the following in his final report: "I learned there are no shortcuts while conducting research. Research data must be very detailed and precise. This summer experience gave me a better understanding of many new and interesting career opportunities."

Cooperative Programming

A 1986 survey of 40 4-H agents with natural resources responsibilities in New York State revealed that over two-thirds of these respondents identified both "fisheries" and "environmental quality" as areas in need of program development at Cornell.

Master Anglers

Specialists in 4-H Natural Resources at Cornell, motivated to develop an aquatic resources education program, noted that several New York counties had already pioneered an innovative and successful fisheries education program known as Master Anglers.

Master Anglers is based on the Master Gardener concept and provides 25 hours of instruction in fisheries ecology and management, sportsmanship and ethics, handling of fish and seafood preparation, angling techniques, and teaching techniques. Upon completion of the course, Master Anglers become volunteer sportfishing educators. They then proceed to teach basic angling skills and conservation principles to adults and youth in their communities.



"Our strategy is first to get young people interested in fishing," says Robert Kent, 4-H agent in Suffolk County and one of the initiators of Master Anglers. "After we teach them how to be successful anglers, we get them concerned and involved with fisheries conservation issues."

Even as the Master Anglers program was achieving statewide and national recognition, it still had two important needs: a manual that could be used in Master Angler training and by Master Anglers in their teaching activities, and a way of promoting the Master Angler program throughout the 57 New York counties and New York City.

Aquatic Resources Education

Recent cooperative efforts between the New York State Department of Environmental Conservation (NYSDEC), County 4-H agents, and the Department of Natural Resources at Cornell are making a Sportfishing/Aquatic Resources Education Program a reality.

NYSDEC has provided initial funding to underwrite the costs of producing a manual and conducting six statewide training sessions. NYSDEC fisheries managers will also provide technical expertise. 4-H agents have contributed their experience from the Master Anglers program and their enthusiasm for working with volunteer leaders in their communities. Faculty in the Department of Natural Resources at Cornell are coordinating this program, including the production and evaluation of educational materials.

Sea Grant is making additional contributions to the program by providing financial support for the manual and technical expertise. The Sport Fishing Institute is donating 1,000 quality rods and reels to the program.

The 4-H program is vital to accomplishing Extension's goal of improving the environmental well-being of our communities. Through such "hands-on" experiences as improving wildlife habitats, participating in scientific research, and sportfishing, youth learn basic biological, ecological, and resource management principles. And they become better equipped to make important decisions regarding their personal role in the conservation and management of natural resources. *A.*

Natural Resource Organizations Schedule Fall D.C. Conference

Betty Fleming
Public Affairs Specialist,
Extension Service, USDA

Outstanding experts from government, universities, and the private sector will address participants at the "Natural Resources For The 21st Century" Conference to be held November 14—17 at the Twin Bridges Marriott Hotel in Washington, D.C.

The conference will be sponsored by many natural resource organizations, including the American Forestry Association, Society of American Foresters, and the Wildlife Management Institute. Among the USDA agencies represented are Extension Service, Soil Conservation Service, Fish and Wildlife Service, and Forest Service. This is the first time that so many natural resource groups have banded together for a combined meeting.

Broad topic areas include: status and trends of America's major renewable resources; factors affecting resource availability and use; challenges, opportunities, and choices; and integrating resource understanding and management.

Extension Service and Forest Service, USDA, and the American Forestry Association will sponsor wrap-around meetings for their personnel and members during the week, and after the conference closes. Meetings and tours are scheduled for November 17 and 18.

For more information, contact:
American Forestry Association
P.O. Box 2000
Washington, D.C. 20013
Phone: (202) 667-3300



Natural Resources and the 21st Century

The New Fungus Among Us

18 Extension Review

Scott Turner
Associate Extension
Editor,
The Ohio State
University,
Columbus

Centuries ago, Europeans traveled to the Orient to bring back the secrets of the Far East. They returned with soy, silk, jade—and fungi.

Shiitake mushrooms had come into the light.

The taste, some say, is a cross between meat and vegetable. Sautéed or fried, its texture is similar to lobster. Shiitake is Japan's chief export crop.

Look for shiitake in your local grocery stores and restaurants. The United States imports more than \$1 million worth each year. Most of that is in dehydrated form. Now, Americans are growing and marketing fresh shiitakes.

Ohio Shiitake

In 1984, specialists at Ohio Extension first discussed growing shiitake in Ohio. The reasons: Ohio oak trees are similar to the trees used to grow shiitake in Japan. Ohio climates are similar to those where shiitake grows in Japan.

In the spring of 1985, Ohio Extension decided to study shiitake's feasibility as an Ohio

crop. Ohio Extension received the blessing of the Ohio Department of Agriculture as well as a 2-year, \$25,000 grant to research shiitake.

Steve Bratkovich, Extension district forestry specialist, was tagged to head the project. He set up a test site at Canter's Cave 4-H Camp north of Jackson. His objectives were to see if the mushroom could grow outdoors in Ohio's climate, determine good management practices for the climate, document potential production costs, and study marketing opportunities.

Research Project

Bratkovich and seven volunteers—who agreed to try growing shiitake on private sites—began log piling, hole drilling, spawn inoculation, watering, and waiting. But the wait wasn't long. Although shiitake literature says the first harvest is usually a year or two after inoculation, the Canter's Cave oak logs produced a small crop in the fall of 1985. In 1986 and 1987, the same logs fruited continually, from spring through fall.

For 2 years, Bratkovich and the volunteers experimented and identified the best logs, tools, and spawn strain for shiitake production in Ohio. Thousands of holes were drilled, filled with spawn, then sealed.

Bratkovich had the best results from a shiitake spawn strain from a company in Virginia.

"But we found that growing shiitake is site-specific," he says. "A type of shiitake strain or a production technique that works for me may not work for the person down the road. Each new shiitake-growing venture will be experimental."

After 2 years of collecting and compiling data, Bratkovich completed a technical summary of his research. It's available by mail to those interested in growing shiitake.

Marketing Information

But getting out marketing

information is as important to Extension as giving production tips.

"Education is the key to marketing shiitake in Ohio," says Greg Passewitz, Ohio Extension specialist in community and natural resources development. "We've shown people how to grow it, but most Ohioans have never heard of the mushroom. Most growers will probably only grow small amounts of shiitake. They'll need the marketing power that an association or cooperative can offer."

Passewitz recently finished a 2-year study called "Marketing Ohio's Shiitake Mushrooms." He says that hundreds of Ohioans are interested in shiitake, but only 30 are active growers and about 10 sold shiitake in Ohio in 1987. The smallest producers sold 5 to 10 pounds of shiitake. The largest producer sold 350 pounds of shiitake in 1987 to a Columbus produce distributor.

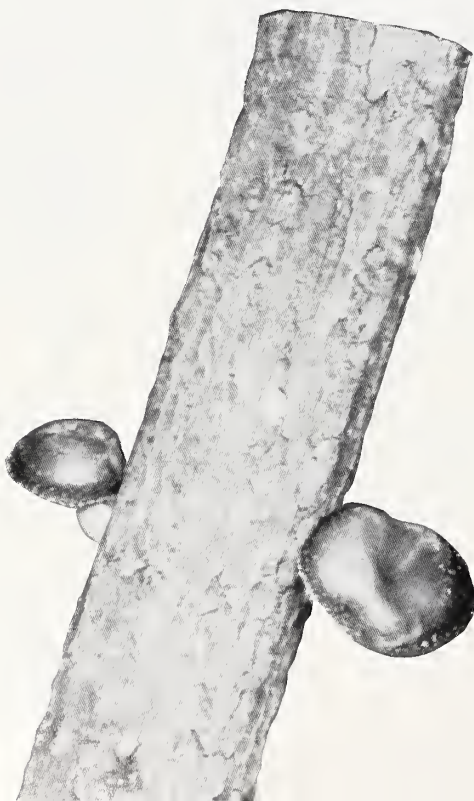
The study contains interviews with shiitake buyers and information on everything from proper packaging to advertising and promotion.

Computer Consultant

Currently, Bratkovich is developing a computer program to analyze the potential return for prospective growers.

"I'll be able to plug in all the cost variables, from those for wood to those for spawn," Bratkovich says. "I'll also be able to account for price fluctuations. This will help Ohioans understand the economics of growing a product that presently has a low demand and is fairly labor intensive."

"Growing the mushroom sounds romantic to some people," Passewitz comments. "But shiitake is still a very new product. Most of it in Ohio is still imported and it costs up to \$12 a pound in the supermarket. Ohio markets can't absorb many mushrooms at this point. For this infant industry to take off, we need publicity and united growers." (Continued on Page 20)





Steve Bratkovich, Extension district forestry specialist in Ohio, who led a shiitake mushroom research project in that state, kneels to examine an oak log sprouting with this exotic foodstuff from the Orient. This research by Ohio Extension has prompted small-scale shiitake production at sites across the state.



Extension forestry specialist injects shiitake spawn into hole drilled in oak log. At Canter's Cave 4-H Camp near Jackson, four spawn strains from three commercial suppliers were used to test the mushroom.

Passewitz says that while some Ohio growers sell directly to retailers, such as grocery chains and restaurants, businesses prefer to deal with someone who can guarantee consistent quality and quantity. In the next few years, he expects to see three or four "shiitake brokers" become established. They'll be able to offer consistent quality and quantity to meet what he hopes will be a growing demand.

Association Formed

In 1987, Passewitz and Bratkovich helped form the Ohio Shiitake Mushroom Association, a group of growers or potential growers interested in strengthening the market for shiitakes in Ohio and spreading the word about the mushroom across the state.

"The association has already conducted several programs on shiitake growing," Bratkovich says. "As growers, they have a great perspective and can educate Ohioans about the mushroom."

Mike Omler is president of the 50-member association. He grows shiitake and several other mushroom species in a large building near his tobacco fields in Hillsboro. Omler emphasizes the importance of marketing. "Our biggest problem is being sure we can sell it once we've grown it," Omler says. "We need to unite growers to strengthen selling power and make growers 'price makers' not 'price takers'."

Since 1985, Bratkovich has provided basic information to those interested in growing shiitake. He's given many talks across Ohio about the shiitake experiment. Hundreds have attended the programs.

So far, Bratkovich has answered more than 2,000 information requests, one from as far away as Singapore, on starting a shiitake-growing operation. Currently, he has a mailing list of more than 400 names. For a one-time fee of \$2 people receive a packet of information plus periodical mailings of research, production, or marketing updates. ♣

Classroom In The Woods

"A Classroom in the Woods" is a fitting title for the 4-H club program that is educating youth in conservation in Coosa County, Alabama. To date, 46 4-H'ers have literally gone into the woods to learn firsthand about wildlife, forestry, and soil conservation.

For the program, developed by Extension 4-H County Agent Roger Vines, Auburn University, 4-H'ers are fortunate enough to have their own woods, a 46-acre plot with fish ponds, trees, and wildlife. Air Force Colonel Jack Walls, a former Coosa County resident, presented the 4-H'ers with a long-term lease on the land.

For almost 3 years, 4-H'ers have worked on this acreage. They have cut brush, planted pines, restocked the ponds with bass, bream, and catfish, and planted cover crops to stop erosion. They have also established food plots for wildlife and built nesting boxes for wood ducks.

"We foresee the land becoming a model forestry-wildlife-conservation area," Vines says. "But the real value is that the boys and girls are participating in a hands-on educational experience that develops an appreciation for wildlife, forestry, and conservation."

Mosley Awards Program

Vines did not get involved in this educational project by chance. He became enthusiastic when the project was awarded a \$2000 development grant by The W. Kelly Mosley Environmental Awards Program in Alabama. This awards program not only provides grants to advance knowledge and development of forestry, wildlife, and related resources, but also provides \$500 achievement awards.

For almost a decade, the W. Kelly Mosley Environmental Awards Program has sought to recognize those who encourage the use of sound forestry and multiple-use practices.



In 1978, W. Kelly Mosley, a dedicated environmentalist, first approached Alabama Cooperative Extension at Auburn University, to express his concern for the wise use of forest resources. "Wise development and use of forestland has brought me much joy and happiness," he stated. "I would like to do everything I can to help others have the same pleasure."

Motivation: Better Conservation

Mosley believed an awards program might be the best motivation to encourage 200,000 Alabama landowners to conserve and manage natural resources. Motivational research has shown that recognition induces efforts that otherwise would not have been made. By spotlighting the achievements of those who are either outstanding practitioners of multiple-use forestry or whose work contributes to that practice, this recognition encourages wise use of forest resources.

The program is financed by W. Kelly Mosley and the John and Mary Franklin Foundation through an annual gift of \$15,000 to the Auburn Generations Funds. An Extension forestry specialist

spends about 2 months coordinating the program within the natural resources community. An 11-member committee, composed of university and nonuniversity officials who represent natural resources organizations, meet quarterly to review nominations and confer awards.

The committee's actions are governed by a set of rules, regulations, bylaws, and criteria for selecting recipients. The availability of the program to the natural resources community is continuously promoted through three brochures, news articles, and other means.

Award Recognition

After 8 years of Mosley Awards recognition programs there have been 140 award recipients from 45 of Alabama's 67 counties. Each recipient receives a framed reproduction of a forestry-wildlife painting, a plaque recognizing his or her achievement, and a \$500 achievement award check.

The press coverage following the program usually amounts to more than 425 news and magazine articles. Approximately 150 radio and TV programs report about the recipients and their natural resources achievement.

Recognition does produce results! ▲

Larkin Wade Head, Extension Natural Resources, School of Forestry, Auburn University, Alabama

Roger Vines, Coosa County Extension agent, Alabama, (kneeling, far right) relates information about wildlife food plantings to 4-H club members. His "Classroom In The Woods" project teaches youth firsthand about conservation, forestry, and wildlife.

The Conservation Planning Crunch

22 Extension Review

Doug Peterson
Extension
Communications
Specialist,
University of Illinois,
Urbana

During the next 2 years, Soil Conservation Service (SCS) personnel in some states will help develop the same number or more conservation plans than they helped develop over the last 53 years.

In Illinois, for instance, SCS estimates that 70,000 conservation plans will have to be developed by 1990, which is roughly the same number that has been developed since SCS began in 1935.

The reason for the sudden flood of conservation planning is the Food Security Act of 1985, which introduced what has become known as "the conservation provisions." Essentially, the provisions say that a large number of producers who have highly erodible cropland fields will have to develop conservation plans by 1990. Otherwise, they risk the loss of many USDA program benefits. In addition, the plans must be fully implemented by 1995.

To handle the workload increase, conservationists realized that one-on-one work with producers was no longer practical. Therefore, in late 1986, Robert Walker, retired University of Illinois

Extension natural resources specialist, and Raymond Herman, SCS state resource conservationist in Illinois, came up with a proposal: Develop a program for teaching producers, in a group setting, how to construct conservation plans.

Conservation Package

The result was the Conservation Systems Workshop, a package of materials tailored to an array of conservation planning needs across the country. The package includes a 162-page manual, 98 overheads, five slide programs, seven work sheets, and one video.

"The manual is aimed at instructors who will be conducting conservation planning workshops," says Richard Farnsworth, a University of Illinois agricultural economist. He directed the program along with Walker and Herman. Communications support was provided by the University of Illinois Office of Agriculture, Communications, and Extension Education.

Herman notes that the new conservation planning materials serve a dual purpose. "Not only will they be used to teach producers how to develop conservation plans," he says,

"but several states have expressed an interest in using them to train SCS employees."

Workshop Units

The *Conservation Systems Workshop* manual is broken into six units:

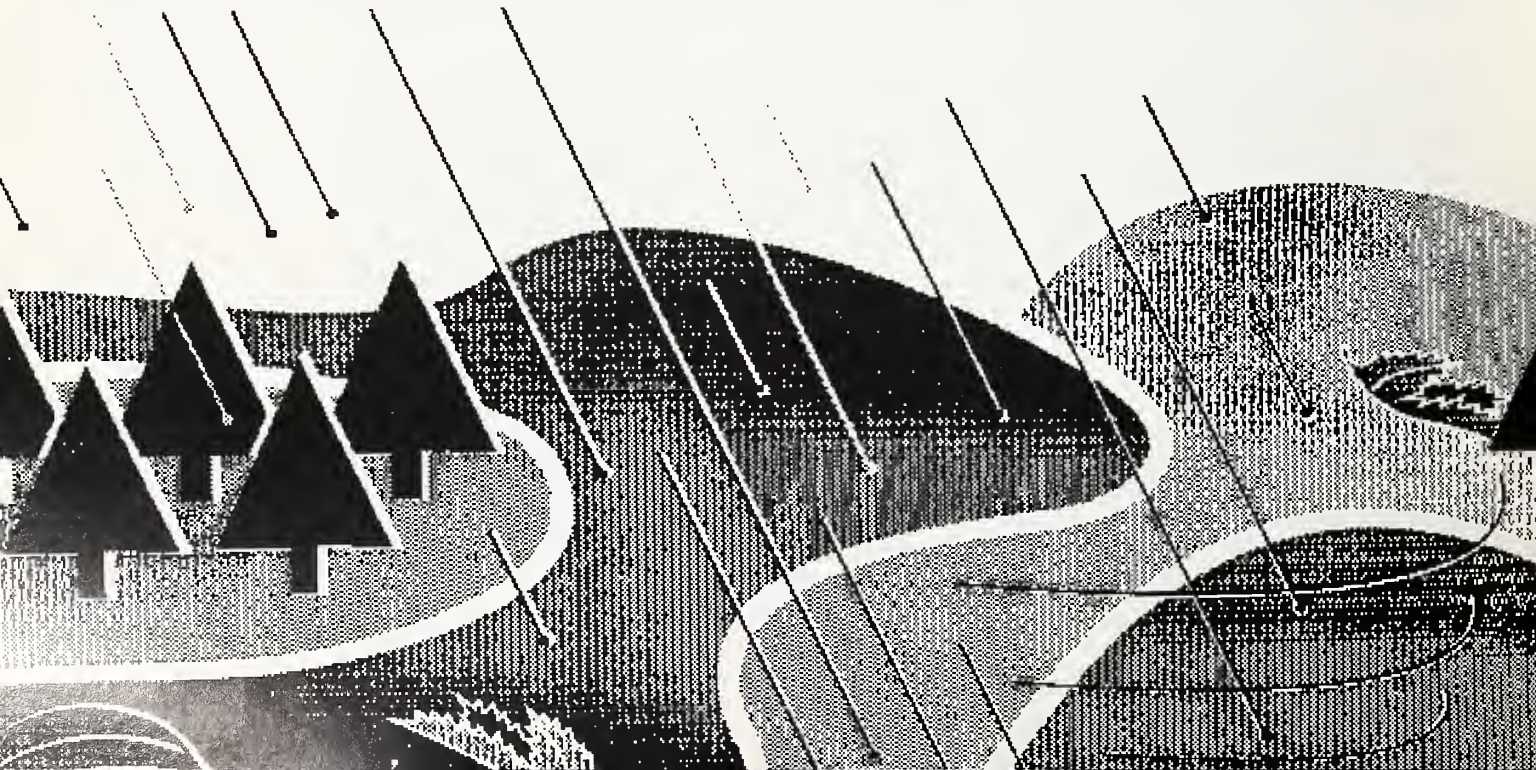
Unit 1: Understanding the Conservation Provisions explains the conservation provisions of the 1985 Food Security Act.

Unit 2: Determining the Need for a Conservation Plan explains how producers use aerial photos and soil maps to determine whether they have highly erodible fields and whether they are affected by the conservation provisions.

Unit 3: Examining the Erosion Processes explains both the water erosion and wind erosion processes.

Unit 4: Completing the Resource Inventory explains how to take an inventory of management practices, land use, and resource problems. Included are instructions on how to identify water and wind erosion problems.

Unit 5: Controlling Erosion and Related Problems helps producers select one or more alternative



strategies that reduce erosion to acceptable levels and control other resource problems.

Unit 6: Completing the Conservation Plan helps producers evaluate the economics of their alternative strategies, choose one strategy, write a conservation plan, and outline an implementation schedule.

The five slide-tape programs accompanying the manual provide an introduction to conservation planning, with descriptions of water and wind erosion.

"To satisfy the variety of approaches throughout the country, we divided the manual into what we call the 'Comprehensive' and 'Short' options," Farnsworth points out.

With the Comprehensive option, he explains, producers follow a detailed path through the planning process; and with the Short option, they take one or more short cuts.

For example, in the unit in which producers select strategies that control erosion, the comprehensive instructions explain how to estimate the rate of erosion with various management systems. With the Short option, producers

do not have to estimate erosion. They simply refer to locally produced guide sheets, which list all of the management systems that reduce erosion to acceptable levels on certain soils.

Another goal, Herman points out, was to provide a manual that meets the needs of producers in both water erosion and wind erosion areas. To produce the wind erosion materials, Illinois relied on the assistance of specialists in Nebraska, Texas, Colorado, and at the national SCS office in Washington, D.C.

In addition to receiving assistance on wind erosion information, the materials went through an extensive review process that included representatives from 14 states. The project's funding agencies were the Soil Conservation Service, the Agriculture Stabilization and Conservation Service, the Cooperative Extension Service, Farmers Home Administration, the Federal Crop Insurance Corporation, and the Forest Service.

"When farmers take a major role in developing their own conservation plans, as they do with

these materials, there is a greater chance they will be committed to the plan and to conservation in general," says Peter Bloome, assistant Extension director at the University of Illinois. "Also, they may decide to apply conservation practices to land that isn't affected by the Food Security Act but is still eroding excessively."

Achievement Through Cooperation

But do producers have the technical expertise to develop their own conservation plans in a workshop setting?

"Pilot workshops held in 1987 showed that, with assistance from experts, producers can handle the task," Farnsworth comments. "In addition, early tests of conservation planning in groups indicate that any farmer who needs or wants a plan can have one by 1990 if he or she attends group meetings in the county.

"The Conservation Systems Workshop shows the joint commitment of agencies and conservation groups. It demonstrates that we can cooperate in accomplishing a task mandated by Congress and supported by the public." A



From Confrontation To Cooperation

24 Extension Review

Lora Minter
Extension Publications
Writer,
University of Nevada-
Reno

J. Wayne Burkhardt, Extension range management specialist and associate professor at the University of Nevada-Reno, awoke early to make the 205-mile drive that separated him from his 8 a.m. meeting.

Armed with a thermos of steaming black coffee and a down vest to chase away the morning chill, the College of Agriculture scientist headed his aging Ford pickup northward toward Susanville. He drove onto the two-lane highway that sliced through the millions of acres of federal land designated "north-eastern California" along one side of the invisible state line, and "northwestern Nevada" along the other side.



Wayne Burkhardt, Extension range management specialist at the University of Nevada-Reno, indicates rangeland typical of the 2 million acres he and colleagues are improving by coordinated resource management planning (CRMP).

Burkhardt, and others converging on the meeting site at Cedarville, California, had a special interest in the more than 2 million acres of California's Modoc and Nevada's Washoe counties. Working together, they would hammer out resource management plans for this vast area of sagebrush rangeland.

An Alternative To Lawsuits

Burkhardt and his associates are involved in a "participatory management" experiment known as Coordinated Resource Management Planning (CRMP). Their goal is to foster better management of rangeland resources by bringing the people who are interested and affected into the planning and decisionmaking process.

"With CRMP," Burkhardt points out, "we get better land management plans because all interested land users and involved agencies work together. Conflict resolution is one of the group's major focuses."

And so, once every few months, CRMP members meet at Cedarville, California, to sit down and "participate" in range management at the grassroots level.

These people make up the Modoc/Washoe Steering Committee. The committee is one example of a Nevada CRMP group; however, it is also different from other CRMP groups in the state. This committee is one of only three, congressionally mandated, "experimental stewardship programs" undertaken jointly by the U.S. Forest Service and Bureau of Land Management (BLM) to provide incentives to livestock grazing permittees to improve the condition of public rangelands.

Because this stewardship committee has chosen to utilize CRMP strategies, Nevada's participatory management program has received national attention.

Why Coordinated Planning?

"During the 1970s, public interest in natural resources was at a peak," Burkhardt explains. "Special interest groups actively used political and legal processes to challenge significant natural resource management decisions.

"The once, almost mundane job of resource managers and users had evolved into a center-stage caldron of litigation," he remembers. "People believed that the local folks who were directly affected or interested should be involved in making the decisions."

It was at this point that Burkhardt and other Nevada Cooperative Extension range specialists began experimenting with new approaches to public land conflict resolution.

"Extension took a major lead in the effort of promoting CRMP," reports Burkhardt, "but we couldn't have gotten anything accomplished without the support of some of the federal agency leaders. Nevada was pushing for CRMP harder and faster than many states because there was so much controversy here."

How CRMP Works

A typical CRMP group functions as follows:

- The group is organized and the planning area is defined. Any organization or interested individual can be represented at meetings.
- The group defines the resource issues, problems, and opportunities. The concerns and objectives of all participants are clearly recognized and planning begins.
- Management plans are forged in an on-the-ground process of compromise and consensus.

- Plans are implemented and monitored on a periodic basis, and, if necessary, reevaluated and revised.

Memorandum Of Understanding

In 1980, five federal and five state agencies signed a "Memorandum of Understanding" agreeing to participate in and support local requests for coordinated plans

"At the present time, some form of participatory land use planning is being used to resolve rangeland conflicts throughout Nevada," Burkhardt says, "and similar approaches are being tried in all Western states." The use of CRMP, however, is most widespread in Nevada.

"Conflict resolution is one of the group's major focuses."

The concepts used in CRMP are also gaining wider acceptance in the settlement of disputes over issues involving wetlands protection, airport expansion, park management, off-road vehicle use, and sewer construction.

Beginnings

The meeting of the Modoc/Washoe Stewardship Committee began early at the Cedarville BLM area office.

The people who gathered were from all walks of life. A rancher volleyed questions from a wild horse enthusiast. A representative from the Audubon Society joked with BLM and Forest Service representatives; and a county supervisor swapped stories with a California Fish and Game representative.

These people were known to have strong beliefs on how range and natural resources should be used, and their beliefs are not always in line with one another's convictions. But, they would that day, as they had for the past 8 years, work together to solve mutual problems on Nevada and California rangeland.

The group was formed after the BLM issued an Environmental Impact Statement regarding the Modoc/Washoe area. Of approximately 70 grazing decisions that were a part of the statement, virtually all were appealed.

Accomplishments

Since CRMP has been in effect, all of the Environmental Impact Statement decisions have been reevaluated and new allotment management plans designed and implemented. As a result, only one appeal action remains and the CRMP committee is still hoping to resolve the issue out of court and bring the entire 2 million acres under allotment management plans.

Other committee accomplishments include:

- Acreage, used for intensive grazing management to provide periodic growing season deferment from livestock, expanded from 669,400 acres in 1980 to 1,123,000 in 1985.
- Land treatments on 23,000 acres resulted in immediate range improvement. Treated areas went from sagebrush-dominated communities to areas with a good mixture of grasses and shrubs.
- Wildlife in the area is on the increase. Antelope numbers have risen from 2,700 to 3,175; deer from 7,100 to 8,000; and bighorn sheep from 14 to 41.

The committee has also achieved: recommendations by technical review teams on seven wilderness study areas; designation of an area of critical environmental concern; and, development of an experimental, wild horse management process to determine the best methods for producing highly adoptable animals. Recommendations have been made for wilderness and off-highway vehicle use areas. Several allotment management plans been put into effect.

Jeannie Schadler, a rancher and committee member, notes, "Our goal isn't to create one showcase, but to put 2 million acres under intensive management for resources. We want to make CRMP a household word and make people realize that it costs to manage land."

To quote the stewardship's most recent report to Congress: "The most significant result of the program was a change in attitude from confrontation to cooperation in rangeland management as a result of more intensive communication and coordination."

That cooperation is evidenced in the dedication of many CRMP members, just like Extension's Burkhardt, who devote their time and energy to making the process work. *A*

Extracted from an article in AGFORUM, a quarterly newsletter published by the Agricultural Information Office, College of Agriculture, University of Nevada-Reno.

National Initiative: Conservation and Management Of Nature Resources

Situation

Profitability of rural enterprises and revitalization of rural communities depend on natural resource-based crops, products, and services. Enlightened management and use of natural resources are also vital in efforts to improve environmental quality and the health and well-being of families and communities.

The Cooperative Extension System will strengthen its commitment to conserving and managing natural resources in its educational programs. The need to use natural resources to benefit people will be united with the need to conserve and protect these same resources for future generations. Profitability will be addressed in both dollar values and non-market benefits that reflect the goals and values of landowners and communities. These include protecting wildlife, preserving aesthetic beauty, and assuring clean air and clean water.

Critical Issues :

Extension efforts in conserving and managing natural resources will focus on three critical issues.

ISSUE 1: Sustaining a Productive Natural Resource Base

Underlying the quality of life and economic viability of our communities and our Nation is a sustainable base of natural resources. Our needs for food, clothing, shelter, economic opportunity, recreation, aesthetic surroundings, and renewal of spirit are rooted in these resources. We are all shareholders along with future generations. If these natural resources are spoiled or lost, we are diminished.

Natural systems are highly interdependent. Costs and benefits of management decisions are distributed between resource owners and their neighbors and between present and future generations. Individuals and communities have responsibilities to make choices that not only provide immediate personal benefits, but are also in the best long-term interests of society. At stake are the biological diversity found in natural systems and the long-term sustained productivity of the Nation's forests, grazing lands, wetlands, and croplands, as well as air and water quality

Owners and managers of natural resource-based enterprises face an increasingly complex and competitive operating environment. They need greater knowledge of biological systems as well as more sophisticated technical and financial skills.

Extension Goals and Objectives:

- Sustain and enhance the quality, abundance, and diversity of the resource base.
- Increase the capacity of this base to produce multiple goods and services that diversify and strengthen rural economies.
- Improve soil and water quality.

ISSUE 2: Marketing Natural Resource Products and Services

Demand for products of natural resources continues to increase. With improved management, the natural resource base is capable of contributing more to the economy and to the well-being of individuals and communities than it does now. There are opportunities to expand markets for existing products, develop new markets, create new products, and provide new alternative enterprises through natural resources.



Rural economies and communities, more than those of urban areas, depend directly on natural resources. In rural areas, opportunities exist to create new jobs and markets in value-added activities related to traditional timber, crop, and livestock products, as well as in recreation and other enterprises based on wildlife, fisheries, and aesthetics.

Extension Goal and Objective:

- Increase income-generating opportunities and profit margins from the natural resource components of production enterprises through expanded marketing education programs.


ISSUE 3: Natural Resources Public Policy Education

The many contributions of natural resources give rise to competing interests. Future management decisions must involve choices that meet societal as well as personal goals. Conflict resolution requires the pursuit and free flow of objective knowledge. It also requires informed decisionmaking at all levels of policy formulation and implementation.

Public interest in issues, such as land use, soil erosion, sedimentation, pesticide use, water quality, and rare and endangered species, is resulting in policy initiatives at local, state, and national levels. Public policy has become increasingly focused on regulating in the public interest—management decisions on forestland, grazing lands, wildlife habitat, cropping systems, and water use.

There are no simple answers to the question of how to best manage resources for the greater public good. Improved processes for formulating and implementing policy are essential. Extension will strengthen and increase its efforts in policy education. The key is to form policies *with* people rather than *for* people.

Extension Goals and Objectives:

- Develop and provide objective information to ensure that policies are fair, coherent, and dynamic.
- Ensure that responses to policies are positive.
- Provide for early definition of emerging policy questions.
- Evaluate impacts of existing and proposed policies. 

Seeing Things Differently

28 *Extension Review*

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National Program
Leader,
Forest Land
Management,
Extension Service,
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Assistant Director,
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Resources, and CRD,
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We have a favorite saying from an unknown source: "You can't *do* things differently until you *see* things differently!"

A review of the editorial comments in this issue by Neil Sampson, Bob Reber, and Deputy Secretary Peter Myers suggests that Extension must "*see* things differently and *do* things differently!" The emphasis of the past on production and quantity must give way in the future to an emphasis on quality.

Many events of the past few years reenforce this message: the Renewable Resources Extension Act of 1978, the Conservation Provisions of the 1985 Food Security Act, the amendments to the Clean Water and Endangered Species legislation, and broad-based, growing interest in low-input or sustainable agricultural systems.

Untapped Potential

In our view, the Cooperative Extension System has the greatest untapped potential of any organization in existence today to help owners and managers wisely conserve precious natural resources. At the same time, it has the potential to expand the economic opportunities associated with those resources: to instill in people, beginning with youth, a conservation ethic and the insight that with ownership rights come stewardship responsibilities. Stewardship can represent an ultimate act of charity when it meets the needs of the generations that follow. We must teach people that resource use and conservation can go together in perpetuity.

Can we *see* things differently so that we can *do* things differently? The selection of Conserving and Managing Natural Resources as a National Initiative by the Cooperative Extension System was, I believe, an important first step in that direction.

The second step has been the development of an Initiative Task Force Report that spells out Extension goals, objectives, and actions specific to conserving and managing natural resources. The previous article is a shortened form of that Task Force Report. It contains innovative approaches to youth education efforts. We strongly encourage you to obtain a copy of the full-length, original report and incorporate the suggestions into your educational programs.

A third step will be the "Natural Resources For The 21st Century" conference to be held this November in Washington, D.C. (See article on page 17 of this issue.)

The step that remains will be the most difficult: To implement the National Initiative nationwide.

Commitment At All Levels

The national focus on Natural Resources poses a set of challenges for Extension. The commitment to

conserving and managing natural resources and a conservation ethic must permeate all program areas and all levels. In fact, a good measure of the success of this initiative will be how well the conservation principles contained in it are incorporated into other Extension National Initiatives. This is particularly true of the Competitiveness and Profitability, Alternative Agricultural Opportunities, Rural Revitalization, and Water Quality initiatives.

We must begin to address hard questions regarding resource interdependence and equity.

More specifically, we will need to take a closer look at our existing advisory mechanisms at national, state, and county levels to ensure that natural resource interests are represented. As a basis for future program development and staffing we will need to cooperate with other agencies to compile state and county data describing natural resources and the characteristics of resource owners, including their goals and objectives.

States and counties will need to examine programming and staffing levels to see if they are consistent with the needs and opportunities of their natural resource base.

Special Skills Necessary

This may also mean recruiting staff with special knowledge and skills in biology, natural resource management, policy, and economic development, especially in counties with an abundant natural resource base. It will also mean seeking out opportunities to deliver natural resource messages and programs to or through such other audiences as women's groups, teachers, retirees, and volunteers.

There will be a need to recruit and assign interdisciplinary teams with cross-training in natural resource topics. Also, there will be a need to train existing staff in integrated natural resource management and ecological principles.

More attention must be focused on including natural resource products more regularly in USDA and state commodity reporting systems.

This initiative provides us with an opportunity to reenergize our system and make a vital contribution to the future. We must make stewardship of the land and its resources an integral part of our personal and organizational ethic and educational programs. The next step for all of us in Extension is to move forward and *see* and *do* things differently! ♣

Find The Forest Via Video

"A chicken in every pot." (1932)
"A television in every home."
(1975)
"A videocassette player in every living room." (1990)

During the depths of the Great Depression, President Franklin D. Roosevelt coined the phrase, "A chicken in every pot," to dispel despair among Americans fearful of going hungry.

During the 1970s, the prophecy of a "television in every home" sounded like an extravagant claim. Now television is accepted as a common medium for information and entertainment.

By 1990, forecasters predict that every American home will be equipped to both record and play videocassettes. Extension is responding to these changes in the way we deliver educational programs. This article describes how Maine Cooperative Extension Service got involved.

During a tour of forest lands in Northern Maine in 1980, several participants expressed an interest in forestry practices (or lack thereof) on privately owned forest lands in Maine and the United States. Contrary to popular notions, much of the United States private forest (about 60 percent of the total) is owned by individuals in relatively small tracts that average about 43 acres in size.

Forest landowners (nearly 8 million of them) represent a cross section of occupations and interests. However, a large percentage of all woodlot owners have an interest, perhaps latent, in forest conservation and natural resources. This group represents an educational class that calls for action. In Maine, one of our responses to this need started with a video program.

In 1982, Maine Public Broadcasting Network, in cooperation with Maine Extension, produced a 10-part television series, "Yankee

Woodlot," for distribution via public broadcasting stations in Maine, and in other parts of New England. The series was rebroadcast in Eastern Canada, Alaska, and New York with supplemental home-learning material provided to requesting viewers.

The "Yankee Woodlot" series increased forest owners' awareness that their lands had potential yet untapped. This led to increased activity for Maine Extension in the area of forestry and natural resources. Five Yankee Woodlot Demonstration Areas now operate across the state, along with a week-long intensive training course for landowners, an emerging woodlot volunteer program. Results include an increased interest in the forest by both existing and new Extension students.

Series: Great American Woodlots

This is a 13-part series that profiles forest owners across the United States. Additionally, it includes some how-to-do-it tips on a wide range of subjects, from chain saws to maple syrup to wildlife. Each program closes with a statement by a national leader on an important matter of forest policy.

Both the video productions were directed by James Bisson of the Maine Public Broadcasting Network. His professional skills provided the crucial elements that give the series a broad appeal. His selection of original music in our first series, led to runner-up recognition in the New England "Emmy" awards for that category.

The message is clear—quality television is more than a "do-it-yourself" enterprise.

A highlight of these video productions has been the extraordinary cooperation received from many forestry segments, private and public, in significantly tangible and intangible ways. The list of

helpers is a long one and includes: the American Forestry Association, Project Learning Tree of the American Forest Council, the Harvard Forest at Harvard University, the Maine State Planning Office, the Minnesota Forestry Association, the National Wildlife Federation, and the U.S. Forest Service.

Other help came in the form of television footage provided by International Paper Company, the Tilton Equipment Company, Western Maine Nursery, and the Weyerhaeuser Company, and many state Extension Services that were working with video. Financial underwriting came from the U.S. Fish and Wildlife Service, the U.S. Forest Service, Great Northern Nekoosa Corporation, Ruffed Grouse Society, Society of American Foresters, and the Northeastern Loggers Association.

Widely Viewed Series

The "Great American Woodlots" series has played on Public Television stations in 38 states, with an estimated viewing audience of a half million people. The series was also shown on cable television networks and in many homes on videocassette recorders. There is great demand for the series. Videocassettes sell at cost, and five sets have been placed in the Interlibrary Loan System.

Extension has placed Videocassettes of "Great American Woodlots" and "Yankee Woodlot" in their offices in Maine and other states.

As a television critic suggested many years ago, "the medium is the message." It is also a medium for the Extension message nationwide. Extension Services across the country are actively using video technology to deliver educational messages. This is a description of just one effort. It resulted from cooperation among many to provide Extension education about natural resources, forests, and woodlots. A.

Bud Blumenstock
Extension Forestry Specialist,
University of Maine,
Orono

Getting The Word Out

30 Extension Review



John Hickman
Extension Specialist,
Soil and Water
Conservation,
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University, Manhattan

Kansas Extension, working with SCS and ASCS personnel, contacted 23,000 people at 260 meetings to explain aspects of the 1985 Food Security Act and the Conservation Reserve Program (CRP). This was part of a massive educational campaign requesting producers to voluntarily stop growing crops on erodible cropland and, instead, grow vegetative cover crops.

The Food Security Act of 1985 became law on December 23, 1985, giving birth to the Conservation Reserve Program (CRP).

Extension professionals in agronomy and soil conservation recognized immediately that Extension would be facing a massive educational campaign. While not particularly a new concept in American agriculture, CRP differed from the Soil Bank of the fifties and sixties. Besides, many producers and agency professionals had forgotten the old Soil Bank and similar land-idling efforts. For most, CRP was a new ballgame.

CRP was to be voluntary. The U.S. Department of Agriculture (USDA) would ask producers to stop growing crops on highly erodible cropland and create on that land, instead, vegetative cover crops of a permanent nature. USDA would provide rental payments for the 10-year duration of the program and pay half the cost of establishing the covers.

Our task was and is to explain that reducing crop production on poor land would have multiple beneficial effects, not the least of which would be reduced soil erosion. We are to provide basic program information: eligibility requirements, methods for achieving CRP goals, and materials to help them make appropriate bid decisions.

One obvious key to the success of these major efforts would be excellent cooperation and coordination among USDA, state, and local agencies and organizations.

The First CRP Signup

USDA announced the first signup 70 days after President Reagan signed the 1985 Farm Bill. In Kansas, we formed an interagency and interdisciplinary team to provide immediate, decisive action.

The Kansas CRP team spearheaded action groups of people from Kansas State University, the Agricultural Stabilization and Conservation Service (ASCS), and the Soil Conservation Service (SCS), including the county level. At the state level, we began to provide county personnel with the latest detailed information, decisionmaking aides, seeding specifications, and news releases.

We tried various means of transmitting information. We used the Kansas Telenet system (55 broadcast locations) to train 300 county Extension, SCS, ASCS, and other professionals. Another Telenet conference attracted over 1,800 farmers. We conducted the conferences about a month ahead of the signup.

County Extension agents, working closely with SCS and ASCS personnel, conducted 62 CRP meetings for 2,720 people. Extension and other agency personnel met with 23,000 people at 260 meetings to explain the multiple aspects of the 1985 Food Security Act. The Extension agents provided over 100 radio programs, served as members of county conservation review groups, and gave the public untold thousands of handouts, news releases, bulletins, worksheets, and consultations.

Choosing An Appropriate Bid

We heard this question often: "At what price could I afford to idle CRP acreage for a 10-year period?" USDA had decided to base acceptance of a CRP application on a competitive bid process. That meant applicants would bid against one another to participate in the program. A low bid could mean money lost; a high bid could mean exclusion from the program. County Extension agents worked carefully with landowners to help them arrive at an appropriate bid.

"Some of our producers had no idea where to start in developing bids," recalls Kurt Roe, Extension director and agricultural agent, Ellsworth County, Kansas. "They tended to think of short-term costs. But there would be labor, fertilizer, and other costs in the future."

Roe says he "used a worksheet from our Kansas State Extension ag economists to help my producers make these key decisions. I plugged in some of my county figures and the farmers could then go home and fill in the blanks. I did not tell them what to bid—that had to be a personal decision."

Was this assistance helpful? "I think it was pretty remarkable that Ellsworth County had 33 accepted contracts out of 44 submitted bids for the first

signup," says Roe. "That was the best record in the state. It was the goal of Extension, SCS, and ASCS in this county to get the most acres possible in the program. We accomplished that because we worked together."

As Kansas producers have gained experience working with the CRP, the bid acceptance rate has improved. In the first signup, the bid acceptance rate was only 30 percent. By the fifth signup, the acceptance rate had improved to 98 percent. We believe this occurred because the maximum "pool" rental limits remained level during the last five signups.

Most producers wanting land accepted into the CRP are bidding within \$1 of the maximum pool limit used during previous signups. This is true even without guarantees that future rates will remain the same. These producers now wonder if the current going rate is economically sound for each individual situation.

Show-N-Tell Tours

Over 90 percent of the Kansas CRP acreage will be in native grass. Compared with pre-CRP years, this share represents a tremendous increase in such plantings. As expected, producers have flooded Extension specialists and county agents with questions about managing their cover crops over the coming decade.

"Show-n-Tell" tours have become the way to demonstrate effects of CRP plantings over time. Paul Ohlenbusch, Extension range and pasture management specialist at Kansas State University, is the architect. "This is a multi-year program," explains Ohlenbusch. "We attempt to go back to the same location year after year to see how the planting is progressing. This helps because many producers have never observed a new native grass seeding."

A typical tour would include observation of a 1988 cover crop as well as grass planted in 1988, 1987, and 1986.

"It's important to have problem plantings as well as successes included in the tours," advises Ohlenbusch. "We often learn more about planting native grass by observing people's problems than by touring successful plantings. CRP participants must treat their CRP acres as they would their crop acres, giving them the same careful planning and careful management."

The CRP Success In Kansas

As of the sixth signup, Kansans had enrolled over 2.3 million acres into the program. Some of the program benefits include annual rental payments to producers of \$120 million, a cropland base reduction of 1.65 million acres, and an annual savings of 38 million tons of soil. The erosion savings alone have reduced the annual cropland erosion rate in Kansas by 23 percent. The CRP will go a long way toward implementing the conservation compliance provision of the 1985 Food Security Act. A



Profiles To Target Clientele

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Success for many New York small businesses that rely on natural resources is dependent on their becoming competitive in today's rapidly changing economic climate. Small business managers face a variety of difficulties in their quest to remain competitive. Often they don't have the technological or managerial skills necessary to make informed decisions.

Various programs have been developed and implemented through the Cooperative Extension System to reduce deficiencies of small business managers. But it's difficult to design a program to meet the needs of all small businesses. The characteristics of a convenience store differ from those of a tourism or natural resource-related industry. A necessary first step is to identify the needs and characteristics of an industry and the individuals who comprise that industry. Success or failure depends on developing an accurate profile.

Energy Efficiency Program

Cornell University's Department of Natural Resources (DNR) Extension Program has identified several small businesses with potential for helping to revitalize rural New York. The operating environment of these small businesses is directly related to the uncertain energy cost of the 1980s.

The New York State Energy Office (NYSEO) and Cornell Cooperative Extension implemented the Small Business Energy Efficiency Program (SBEEP) to teach small businesses how to evaluate and manage their energy consumption. Funded by NYSEO, the SBEEP tries to improve the economic well-being of small businesses and not-for-profit organizations by reducing energy costs. Through free on-site energy surveys, data are collected on combustion efficiency of furnaces, hot water usage, lighting levels and requirements, and other energy-consuming equipment. A report listing energy consumption patterns, various energy efficiency recommendations, and payback periods is provided to the manager of the small business and not-for-profit organization.

Profiling Clientele for the SBEEP

An educational program designed for all small businesses in New York must be adaptable to address the wide range of issues of such a diverse audience. Our first step in modifying this program for a particular industry is development of a profile of the industry and its various businesses in order to better understand target clientele.

This includes identifying demographic variables about the industry and the individuals who comprise it and obtaining answers to such questions as:

- How can one identify the manager of the business?
- What is the manager's level of education and management ability?

- Where does the manager learn about industry advances?
- Who supports the industry through services?
- Are there any government regulating bodies involved?
- How complete is the government/association/manager/consumer/service networking system?

The New York Campground Industry

Implementation of a joint SBEEP-DNR profiling process began in October 1987 with site visits of campgrounds near Ithaca. These site visits produced information on the types of energy-consuming equipment campgrounds typically use, government regulations, consumer characteristics, service groups, internal communications, the state campground association, generalizations of demographic variables, and management styles.

The site visits were followed by contact with the Executive Director of the Campground Owners of New York (CONY) Association. These meetings gave us an opportunity to estimate the need and potential of the SBEEP in the campground industry, discuss other industry characteristics, and identify avenues within the industry to promote and advertise the SBEEP to the managers. We received an invitation to verify industry needs and characteristics and to present the SBEEP to the campground industry membership at the fall CONY meeting in November 1987.

Results and Expectations

We finished the profiling process by the 1987 fall meeting of the CONY organization. Our profile confirmed industry's needs, legitimized the SBEEP, and established the importance of energy savings to the industry.

Training

In March 1988, we conducted technician training to prepare for the approaching camping season. The profiling process helped us develop information for the energy technicians on sub-metering technology. It emphasized what type of energy consumption data was necessary to collect for the campground industry.

SBEEP's success for the campground industry is enhanced by profiling. Potential energy savings from implementing SBEEP is estimated at over \$1,000 annual savings with a payback period of less than 18 months. These savings are equivalent to the profit a business would obtain by starting a new product line or service that grossed over \$30,000 per year.

The benefits of profiling and the SBEEP offer natural resource-related industries a real future and role in the revitalization of New York's rural economy. ▲

Hawaii Focuses On Forestry

Most mainland Americans think of Hawaii as a place of beautiful beaches, palm trees, and pineapple fields. However, not many people are aware that forests cover nearly half (48 percent) of the land in Hawaii, and that almost a million acres are productive enough to be classified as commercial forest.

The uses of forest land and its products vary widely in Hawaii. State lands are largely in watershed preserves; other state and private forests supply sawlogs, fuelwood, and craftwood to local industries. For example, in 1986, tropical hardwood chips produced over 16 percent of the electricity used on "the big island." Minor forest products are an important part of Hawaiian forestry and culture, and include tree ferns, kukui nuts, and, surprisingly, Christmas trees.

The University of Hawaii, like most land-grant institutions, has focused its Extension programs on the traditional areas of agriculture and home economics. Recently, the Renewable Resources Extension Act has allowed the university to expand its programming to include some emphasis on forestry and related resources. These efforts have been modest, but important, to a state with natural resources that are truly unique and vital to its residents.

Training Program

Extension at the University of Hawaii has no forestry agent or specialist on staff. However, Extension is a potentially important source of forestry information and referrals.

In the summer of 1987, Extension organized a 2-day training program for nearly 20 county agents, and other staff, to improve their understanding of local forestry principles and options. Instructors included foresters with the Hawaii Division of Forestry and Wildlife (HDFW), the Pacific Islands foresters of the U.S. Forest Service, and other local forestry experts. Extension staff at the

University of Hawaii invited these instructors with the primary objective of identifying and developing a network of key forestry contacts.

Closely coupled with staff training was the development of a forestry resource notebook that can be used by Extension staff to respond to landowner needs and inquiries. The notebook is tied in to the topics in the training program. As an aid to decisionmaking, one section describes a number of forest management alternatives and lists major advantages and disadvantages of each option, important questions for landowners, and references and sources of technical support.

Brochure For Landowners

Because many landowners in Hawaii are unaware of the forestry options and assistance available to them, a brochure was developed to briefly describe these options and to list the addresses and phone numbers of Extension at the University of Hawaii and the HDFW offices. The options included in the brochure match those covered in the staff training and forestry resource notebook.

Cooperation

Cooperation between Extension at the University of Hawaii and the HDFW is essential in improving forest management on private lands in Hawaii. The HDFW offers vital technical support—such as management plans, cost-share program assistance, and tree seedlings—while Extension has an established rapport with landowners. HDFW staff have been kept well informed about recent forestry activities by Extension and the training and brochure previously described enlisted their direct cooperation and support.

Future Focus

Private landowners in Hawaii, like their mainland counterparts, have very diverse interests and needs related to forestry.

If energy prices increase significantly in the future there will be renewed interest in bioenergy plantations. On the best soils,



forest biomass production in Hawaii is among the highest in the world. Better soils are now widely planted to sugarcane, but this crop is becoming less and less competitive in the world market. For this reason, cane growers are already seeking alternative land uses.

However, with limited resources for Extension forestry expected for the near future, programming must focus on a few high priority areas where needs and opportunities currently seem greatest: windbreaks, hardwood culture, Christmas trees, and forestry economics. A.

Paul W. Adams
Extension Forest Watershed Specialist, Oregon State University, Corvallis

Hawaiian farm operator checks tropical forest plant of the taro family from which poi is made. Forests productive enough to be classified as commercial cover nearly half of Hawaii. Extension at the University of Hawaii is expanding its programming to emphasize forestry and related resources.

Pine Straw Means Profit

34 Extension Review



Dave Caldwell
Extension Writer,
Department of
Agricultural
Communications,
North Carolina State
University, Raleigh

Opposite: Pine straw, sold for use in landscaping as a decorative mulch, has become a lucrative agricultural enterprise in North Carolina. Here, workers bale the pine straw prior to sale. Above: workers collect pine straw in a stand of longleaf pine.

Terry Bryant, a North Carolina farmer from Moore County, walks through a stand of North Carolina longleaf pine trees, kicking at a seemingly worthless layer of pine needles covering the forest floor. Bryant makes his living collecting and selling this forest floor debris. "This is an industry in its infancy," he says.

Bryant and other North Carolina farmers have found that pine straw, as the pine needles are known, can be a valuable crop. "Sales of North Carolina pine straw have risen rapidly in recent years," says Rick Hamilton, Extension forestry specialist at North Carolina State University. Hamilton estimates that the state's farmers and landowners earn from \$15 to \$20 million each year from the sale of pine straw.

Garden and hardware stores sell the needles, which are used in landscaping as a decorative ground cover and mulch, for anywhere from \$4.50 to \$5 per bale. For some farmers pine straw represents a part-time supplemental farming activity. But others, like Terry Bryant, make a living collecting and selling it.

Unconventional Farming

As Bryant's situation illustrates, collecting pine straw can be an unconventional farming activity. A former tobacco farmer, Bryant lives in Moore County. Yet he collects pine straw on roughly 25,000 acres in Pender and Brunswick Counties located on the North Carolina coast over 120 miles from inland Moore County.

Bryant does not own any of the land from which he makes his living. He has agreements with landowners under which he pays the landowner 35 to 50 cents per bale for the pine straw he takes off the land. The price depends on the quality of the needles.

Bryant sells about 90,000 bales of pine straw a year at wholesale prices ranging from \$3.40 to \$3.60 per bale. A good stand of longleaf pine, Hamilton says, will yield from 70 to 100 bales of pine straw per year.

Sealed bids are usually submitted for pine straw collection on public land. Bids have ranged as high as \$225 per acre for a 6-month raking period, reports Mark Megalos, Extension area specialized assistant agent who concentrates on forest resources.

Pine straw theft has become a problem in some areas. "In an effort to combat such thefts," Megalos says, "several counties have adopted ordinances requiring companies that buy and bale pine straw to keep records detailing from whom they purchase needles."

Longleaf pine, which has needles longer than the more prevalent loblolly pine and thus is easier to bale, has proved the best straw producer. Extension specialists like Hamilton and Megalos are excited about the possibility pine straw holds for providing an annual income from timber land.

Some Drawbacks

Pine straw collection is labor intensive. In stands where the trees are thick, hand raking is the only way to get straw out. Pine straw that is free of leaves, limbs, and other debris is the most salable and valuable. It may be necessary, using herbicides or by burning, to remove undergrowth.

"A thriving pine straw industry might shift the preference of timber growers from loblolly to longleaf," Hamilton believes. Loblolly grows to timber size in 30 to 40 years versus 60 to 70 years for the same growth from longleaf pine.



Because it has been preferred as a timber producer, more research has been done on loblolly than on longleaf pine. "This is beginning to change," Hamilton points out. "Demonstrations are planned from which specialists hope to learn more efficient ways to grow longleaf pine."

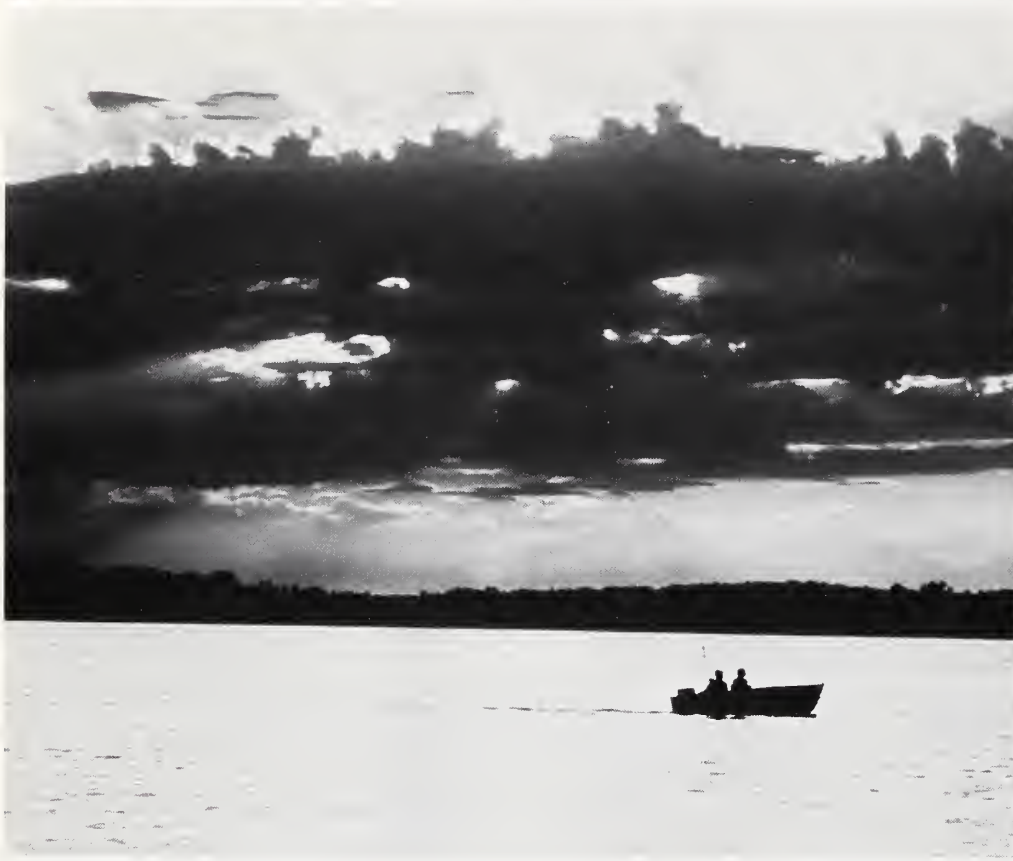
Proving A Valuable Commodity

Vast stands of longleaf pine once stretched across North Carolina but they dwindled in the face of development and loblolly preference. The emergence of pine straw as a valuable commodity is proving an economic boon in North Carolina, especially in the eastern and south

central areas of the state. In addition, farmers are placing greater emphasis on proper management and conservation of the natural resource that provides the commodity—the longleaf pine. A.

Strategies For Minnesota's Future

36 Extension Review



A. Scott Reed
Extension Specialist
and Acting Program
Leader,
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Cloquet Forestry
Center,
University of
Minnesota

Opposite. Future issues in the state's economic development involve increased production of timber and forest products. Above. Minnesota's lakes and rivers attract over \$2 billion tourist dollars annually.

For Minnesota, as in many states, soil, water, forests, fish, and wildlife are key ingredients for economic prosperity and quality of life. To delineate the mission and program priorities that will guide program development in natural resources over the next decade, Extension at Minnesota has developed a series of strategic plans that focus organizational energies on four central issues: economic development, environment and natural resources, human development, and community leadership.

Economic benefits from natural resources means new products and industries, more jobs, and stable local economies. But consumptive use of our resource base can eliminate options for future generations. Minnesota's approach seeks to increase the economic return from natural resource industries, while balancing these gains with long-term management efforts so that people will continue to enjoy these resources.

Big Resources Mean Big Business

Minnesota soil provides the foundation for the annual \$3.8 billion forest-based income and \$7 billion farm income. About one-third of the state's residents work in jobs related to these industries.

Nearly 12,000 lakes and 93,000 miles of rivers and streams help attract over \$2 billion tourist dollars annually. Half of all state residents have fishing licenses. One out of every six Minnesotans is a boat owner—the nation's highest ratio. Recreation and tourism depend heavily on Lake Superior, the largest fresh-water body in the world, and the Boundary Waters Canoe Area Wilderness.

Future issues in economic development involve increased production of timber and forest products, new uses of water resources, and expanded

regional, national, and international markets for natural resource products. Future conservation and environmental concerns involve water quality, waste management, continuing education of professionals and private owners in forest management, and understanding of natural resource management by the general public.

Goals And Strategies

Major goals for Minnesota Extension in natural resources during the next 10 years are:

1. Provide programs that build a productive, profitable natural resource base. These programs will help develop new products and industries, create jobs, and contribute to a stable economic base for rural and urban communities.
2. Promote management of our natural resources to address environmental concerns. This means having a sustainable harvest of natural resource products while preserving our air, water, and soil quality for future generations.
3. Increase people's understanding and enjoyment of natural resources. Minnesota Extension seeks to promote responsible use of natural resources as a major contributor to "quality of life."

Strategies for helping to achieve these goals are:

- Anticipate critical problems in the natural resource area by monitoring trends and listening carefully to community leaders, business people, researchers, and consumers.
- Use all available university research and faculty to respond quickly to the critical problems. Encourage county-based faculty to specialize to provide depth in programming. Promote research in areas where it is required.
- Use information technology—videotapes, computer software, and teleconferences—to make programs available to a wider audience.

- Multiply the efforts of Extension staff by selecting and training volunteers.

- Strengthen relationships with natural resource agencies and industries by sharing information, sponsoring joint programs, and eliminating duplication.

Scenarios For The Next Decade

Minnesota Extension is taking a new look at its educational programs in natural resources. What are the future accomplishments that will be achieved as a result of this re-evaluation? Here are three scenarios—hypothetical projections into the future—which describe clientele, issues, and impacts a decade from today.

Time: 1999

Place: Northern Minnesota

Extension's application of research will help create new products and industries based on natural resources.

New Fiber Fuel Sources

Most schools and businesses will save on heating costs by using fiber fuel. Wood is one familiar source, but two new items—peat from Minnesota bogs and agricultural leftovers such as cornstalks—will prove to be economical choices. Significant economic contributions from heretofore unused natural resources will begin to make their mark.

Wood Ash For Fertilizer

Extension research will find a new use for the ash which remains after burning wood for fuel: it makes excellent fertilizer. A former waste product will provide Minnesotans with jobs and income.

Databanks For New Markets

Information from Extension databanks will be critical in developing new national and international markets for these and other products.



Extension natural resources strategies will make a difference in Minnesota's economy.

Time: 1999

Place: Any Minnesota Home

Consumers will be convinced that Extension Natural Resources specialists provide reliable, objective information and that Extension provides invaluable help in analyzing and applying that information.

Trained Volunteers

Whether the problem concerns a diseased tree or moisture problems in the home, a trained Extension volunteer, after making a home visit and consulting a portable computer, will find answers and treatments that will provide successful solutions.

Communities will be able to make informed decisions on such problems as waste management

or water quality after Extension specialists have analyzed the problems in light of special community needs.

Time: 1999

Place: A Minnesota Farm

Many farm ponds, formerly used as watering holes for cattle, will produce a profitable crop of trout readily sold to both the midwest

and northeastern markets. Extension will help develop successful techniques for "farming" this trout. Extension will provide farmers with software programs that will help with recordkeeping and management decisions. In addition, Extension information on preparation and nutritional value of trout will increase consumer interest in it.

Extension specialists will assist farmers in exploring other uses for their land. Farmers will be directed to such alternative agricultural opportunities as growing Christmas trees or allowing hunting for a fee.

The future is bright. Extension expertise on natural resource products and their management will open up new choices for Minnesota landowners. A

Extracted from "Focus On Natural Resources - A Statement of Direction And Priorities For The Minnesota Extension Service."

The Wonders Of Wood



Conservation and Management of Natural Resources begins with these words: "The profitability of rural enterprises and the revitalization of rural communities depend on crops, products, and services based on natural resources." Within this initiative, the issue on marketing natural resource products and services contains the concepts that opportunities exist to expand markets for existing products, develop new markets, create new products, and provide new alternative enterprises through natural resources. Wood, a renewable natural resource and one of many sources of products and services, represents a major industrial raw material. It provides much of our housing and home furnishings, considerable energy, most of our paper, and many other products.

The total wood industry involves from 7 to 10 percent of total national industrial employment, payroll, value added, and capital expenditures in plant and equipment. This share does not include the wood portion of construction and sales. Much of this economic activity is located in rural America, and the wood to support it comes from the tree-growing areas of rural America.

Wood is a complex, modern material whose properties and uses we have just begun to explore. Only a few land-grant universities have adequate teaching and research to provide strong support to wood products Extension programs. How, then, can the Cooperative Extension System respond to the exciting challenges of wood?

New Extension-Forest Service Program

Thanks to a cooperative agreement between ES-USDA and the Wisconsin Cooperative Extension Service with support from the Forest Service Forest Products Laboratory at Madison, we have built in the last 3 years the strongest link ever between Extension and Forest Service wood products research. The National Wood Products Extension Program (NWPEP) has the purpose of delivering wood products technology to Extension audiences through the traditional Extension delivery system. Extension personnel work at the U.S. Forest Service Forest Products Laboratory (FPL) with researchers to translate research findings into everyday language for use by Extension. Next will be a joint venture in which NWPEP and Extension will team with Forest Service Research, Forest Service state and private forestry, and state forestry services to transfer wood products technology to users.

NWPEP has demonstrated that the Cooperative Extension System can be used to get wood products research information to local users. Through the project's newsletter *EXTEND*, staff send new research information quickly and effectively to over 500 professionals.

Practical Research Applications

In the Midwest and Southeast, NWPEP promoted the Saw-Dry-Rip (SDR) process, which results in lumber for houses from under-utilized hardwoods. FPL researchers developed a color test procedure to separate white oak from red oak. This test now facilitates export trade with European Economic Community (EEC) countries, eliminating costly fumigation requirements. NWPEP also provided timely updates on revised federal regulations.

The financial gains or savings from applying the technology of wood use are impressive. Proper drying of wood has prevented huge losses wherever dry kiln operators have been trained by Extension. For example, the 1985-86 attendees of Pennsylvania hardwood lumber drying workshops saved the industry \$271,000 though improved lumber quality. Four North Carolina nonwood businesses capitalized on the latest technology from Extension, of using wood residues and they are now saving \$450,000 per year in fuel costs.

Although individual homeowners do not save large amounts from better use of wood, the collective saving of groups of homeowners through proper painting, refinishing, rehabilitation, and do-it-yourself, is likewise impressive. A sample of just 336 of 12,000 Texans showed they saved \$35,000 from applying information received from Extension. If this average savings of over \$100 each could be projected to all 12,000 receiving the training, collective savings from application of this technology would be over \$1 million in Texas alone.

The importance of the direct link to research cannot be underestimated. For 75 years the U.S. Forest Products Laboratory (FPL) has been a world leader in all aspects of fundamental wood products research. FPL has helped extend the world's supply of wood through more efficient raw material use, through increased product longevity, and through creative product development. Wood products research information from FPL and from other agencies and universities can help achieve the objectives of the "Conservation and Management of Natural Resources" initiative, as well as aspects of the National Initiatives on Revitalizing Rural America and Competitiveness and Profitability.

Future Emphases

We are planning to build on our past successes to develop stronger programs in the next 3 years, thanks to a remarkable set of events coming together at the same time:

- 1) The Extension Service and the Forest Service have agreed to continue this wood products technology transfer program for 3 years, so we can better plan and execute long-range projects.
- 2) FPL has taken its responsibilities in technology transfer seriously, so cooperation with researchers

in developing Extension information could not be better. FPL wants to become a more "user-friendly" research laboratory.

3) The State and Private Forestry branch (S&PF) of the Forest Service is developing an integrated and expanded technology transfer plan and will staff an organization at FPL that will work closely with our Extension program there. S&PF thus brings its own national and regional wood products specialists into technology transfer, as well as the state forestry wood utilization and marketing specialists. At the state level, Extension and state forestry specialists will work together on projects of mutual interest.

4) FPL has welcomed greater S&PF, Extension, and industry feedback of research needs to researchers, including some regional workshops specifically for this purpose.

5. Extension is playing a stronger role than before as the Forest Service develops its individual, inter-agency technology transfer plans. A current example is the timber bridge technology transfer plan, which will provide the information needed by local decisionmakers to consider relatively inexpensive timber bridges, some using local materials and labor, as an alternative to other kinds of bridges for rebuilding rural transportation systems.

6) Our own National Initiatives.

In summary, we are developing a strong wood products Extension program in support of the "Conservation and Management of Natural Resources" initiative, other Extension national initiatives, and several Forest Service initiatives as well. The National Wood Products Extension Program, located at the FPL, facilitates the transfer of wood products technology developed at the FPL and elsewhere, through the nationwide Cooperative Extension System. In this way, Extension is linked closely with important national wood products technology transfer efforts of the Forest Service, other federal and state agencies, and industries.

For further information contact: Theodore A. Peterson, Program Leader (608) 264-5730 or Gerald E. Sherwood, Visiting Scientist (608) 264-5727, National Wood Products Extension Program, Forest Products Laboratory, One Gifford Pinchot Drive, Madison, Wisconsin 53705-2398. A

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4-H = Fishing + Families + Fun

40 Extension Review

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Opposite: Baiting a handline is easy when dad shows daughter how it's done at the Michigan 4-H leader-youth Fishing Weekend Workshop. Right: Father and son learn about fishing and family ties during workshop.

Michigan's Indian name means "place of great waters." With its two peninsulas set among four of the five Great Lakes, Michigan has shorelines longer than those of any other state, except Alaska. Over 35,000 inland lakes dot the state and over 36,000 miles of streams and rivers wind their way through the greenery.

For many of Michigan's citizens, especially the youngsters, this plentitude of water represents a quick and easy trip to a "fishin' hole." The state is graced with many active fishing organizations such as Trout Unlimited, Michigan Steelhead And Salmon

Fishermen's Association, B.A.S.S., and others that offer workshops to teach adults about fishing.

Bait For A 4-H Workshop

In 1985, with the goal of increasing 4-H'er involvement in the Michigan 4-H Fish, Fun, Food and Fellowship Project, Extension fisheries specialists at Michigan State University began planning for a special leader training workshop. Early in the planning, Extension Fisheries Specialist Donald Garling recognized the need for a new approach to leader workshops in fishing.

The challenge to Extension was to design a different leader training event to specifically attract those adults most interested in sharing their knowledge

with young people. In 1987, with this goal in mind, Extension fisheries and wildlife specialists conducted the first Michigan 4-H Leader-Youth Fishing Weekend Workshop. Every adult attending this workshop was encouraged to bring a youth, and every youth that attended was required to be accompanied by an adult.

Workshop Benefits

Extension specialists soon recognized that this innovative workshop design offered many advantages over traditional "adults only" formats. Most importantly, beginning volunteers were able to put their teaching skills into immediate use. The weekend workshop culminated in a teaching session where adults taught their youngsters hand-line fishing. Specialists had provided prior instruction to the adults and attended this session to offer tips on coaching and teaching.

Some leaders reported that being able to bring their youngsters to the workshop was "the deciding and most important factor" affecting their attendance. Today's busy parents, many of whom are single, are less able to spend an entire weekend away from children to attend a training session.

Fishing Workshop

In May 1987, over 60 workshop participants met at the W. K. Kellogg Biological Station in





southwest Michigan for a Fishing Weekend Workshop. An equal numbers of youths and adults attended.

During some sessions, adults received instruction on teaching methods and club organization, while youths learned tackle preparation. Most fishing "how-to" sessions included both youth and adults.

Participants travelled to the nearby fish hatchery at Wolf Lake operated by the Michigan Department of Natural Resources. There, a tour led by a naturalist, offered insights into the biology and management of fishes of the Great Lakes region.

At the workshop a fly-tying expert and a local bait-and-tackle retailer gave demonstrations. Glen Dudderar, Extension wildlife specialist, taught participants everything from hooking a fish to cleaning the catch. Chuck Pistis, Michigan Sea Grant Extension agent, concluded the workshop with demonstrations in fish preparation.

At the last session, the anglers dined on a meal which included samplings of smoked fish, grilled fish, and a "Great Lakes Fish Boil."

Results

Following the workshop over 90 percent of the adult participants reported an increase in knowledge about fish and fishing. Sixty-three percent of the

participants reported improved teaching techniques, and 75 percent felt the workshop was "useful" or "very useful."

For 92 percent of the adult participants the inclusion of youth at the workshop positively influenced their decision to attend. One parent thanked workshop coordinators for "an opportunity for parent-child quality time."

The presence of youth at the workshop did not detract from the adults' experiences as some workshop organizers believed it would. Instead, over 90 percent of the adults reported that having the youth there enhanced their own experience. "The enjoyment of fishing as a youth," said one adult, "is still remembered."

The leader-youth workshop model received "rave reviews" from both adults and youth alike. Since the workshop, several attendees have been involved in local 4-H fishing program activities. 4-H programs can not only teach life skills gained from constructive use of leisure time, but also can ensure a sound future for our fisheries and aquatic resources. A

New Markets For Low-Grade Wood

42 Extension Review

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In New Hampshire, where more than 87 percent of the land area is covered by forests, the issue of balanced utilization of wood has been one of the major concerns of Extension at the University of New Hampshire, the New Hampshire Department of Resources and Economic Development, and a number of industry associations.

Historically, higher quality trees, prized for the production of lumber, furniture, boats, veneer, and other products, have always been sought after while low-grade trees and undesirable species saw little or no demand. For many years, the lack of economic markets for these poor grade materials served as a rationalization for not applying sound forest development practices recommended by professional foresters.

New Hampshire's forest resources are nearly evenly distributed between softwoods like pine, spruce, fir, and hemlock, and hardwoods like red oak, sugar maple, yellow and white birch, ash, and red maple. "High-grading" harvesting practices—the removal of higher quality trees leaving the rest behind—has led in the past to the gradual degradation of forests and a product mix with an increasing percentage of low-grade material.

However, in recent years, educational programs in the state, coupled with strong private initiatives and favorable economic trends, have contributed to a significant improvement in the development of marketing opportunities for all grades of wood. Technological advances and new concepts in wood use have created new marketing opportunities in the pulp and paper, industrial plywood, and composite board industries.

Effects Of The Energy Crisis

The energy crisis of the 1970s encouraged the use of wood for residential heating in many areas of the Nation.

In addition, the energy crisis spotlighted the benefits of generating electric power using forest biomass fuel. In 1978, the Public Utilities Regulatory Policy Act set up regulations to establish and operate small independent energy plants using biomass, hydro, solar, and wind as alternate energy sources.

The Act mandated that small power producers be paid by the utilities at a rate equal to the utilities' "avoided" cost—the cost that utilities avoid by buying power rather than expanding their own generating capacity. Prompted by this legislation, a number of plants were built in the state and thus provided long-term demand for large volumes of formerly "unmarketable" low-grade materials.

Markets For Low-Grade Hardwoods

In the mid-1960s, a study conducted by the Agricultural Experiment Station at the University of

New Hampshire, under a grant from the U.S. Department of Commerce, identified opportunities for growth in the state's pulp and paper industry.

In subsequent years, technological advances permitted the use of hardwoods in the pulping process. The ample supply of low-grade hardwoods made possible a 50-percent increase in pulping capacity and, in turn, established a new market for some 350,000 cords of pulpwood per year.

Structural Board Industry

In the late 1970s, projected growth in the housing industry encouraged investment in the developing structural board industry. Abundant low-grade softwoods and aspen—unsuitable for lumber and plywood production—were ideal materials for composite panel production.

Biomass Harvesting

In 1984, a study—"Assessment of Biomass Harvesting On Small Woodlots In New Hampshire"—was conducted by Extension at the University of New Hampshire and the New Hampshire Division Of Forests And Lands under a grant from the U.S. Forest Service. The study, which documented an annual surplus of 2 to 3 million tons of wood available for biomass fuel, concluded that low-grade tree harvesting and chipping, when practiced properly, was not only feasible but desirable.

Whole tree harvesting and chipping, coupled with proper techniques of forest care and development, constitutes an economic tool that upgrades the quality of the forests.

Balanced Demand

The current timber quality in New Hampshire is such that 20 percent of the total harvest finds markets in solid wood manufactured products, 20 percent in pulp and paper and reconstituted wood products, 20 percent in residential fuelwood, and 40 percent in biomass energy.

A major benefit of achieving balanced demand for all qualities of wood produced in the region is the unique opportunity for landowners to apply recommended forest management practices. These practices will lead to the gradual upgrading of timber quality with an increasing percentage of future crops going to higher value markets in the manufacturing sector.

The projection for the annual value of products from the forest industries in the state—assuming improvements in timber quality—are for a rise over the current \$1.5 billion level, as it continues to be an important component of the gross state product. *A*

(Continued from page 2)

Extension's Role In Conservation— A Proposal

Technical, economic, and social changes have been sweeping through agriculture and natural resources. We have been caught in a revolution that has changed almost every aspect of our work. This revolution has not only made it difficult to keep current with agricultural science, it has also altered the basic premise that supports a public education and information agency in agriculture. The historic mission of Extension, then, has to be examined and changed, perhaps, if the Cooperative Extension System's future is to reflect its past glory.

What, then, are priority needs for Extension?

We have too much soil erosion. We need strong public voices stating that profitmaking this year must be balanced with long-term stability of the land base. We need public voices stating that a society that destroys its soil destroys itself.

We have too much monoculture. We need strong public voices pointing out that complex ecosystems are more stable than simple ones. Further, they need to state that mixtures of crops, pastures, woods, brush patches, and odd areas are not only consistent with the physical needs of the land, but they also create more complex ecosystems than monocultures. Such systems can be more resilient under the stress of weather and pest population cycles. Complex ecosystems that flex under pressure are more resilient to economic tidal waves too, so there is a strong hint of "farmer survival" as well as "land survival."

How do these different needs change the requirements for public information and education? We need Extension to teach educated farmers how to survive—how to live with the

natural world instead of fighting it. Extension needs to articulate the conscience that drives the use and management of the country's lands. This conscience role includes:

1. Constant recognition that the land is more than an inanimate structure that can be rebuilt if the current owner treats it badly. Rights of the current owner do not include destruction of the land or its productivity. Land ownership is a privilege granted by one of the most generous societies in history regarding property rights. That privilege has limits. Public agencies must articulate the limits, make these part of the public policy dialogue. Then, if society wishes to change policies it can do so, based on knowledge, not ignorance.

2. The conservation message. Conservationists are descended philosophically from great thinkers such as Bennett, Pinchot, and Leopold. It is important to live up to that heritage, to speak out about using the land with consideration of a balance of economic, ecological, and aesthetic impacts. It is not unethical to use the land; it is unethical to abuse it. We must communicate the reasons for that judgment and help people understand how to identify the line between use and abuse. If Extension does not help to identify that line, and communicate it well, others will. Extension stands to lose one of the major purposes for its existence.

3. Recognition that land use does not exclude ecological and aesthetic values. Recent years have seen Americans make great strides in articulating ecological values; communicating aesthetic considerations seems tougher. A place well tended is far more beautiful than a place abused. Often, as Rene Dubos has

reminded us, a place well tended is more beautiful than one in its natural state. Extension workers know this, yet may not want to share these beliefs, fearing they will be accused of being impractical.

In fact, consideration of beauty is practical. People are moved by what they see on the land, and when they are moved, they act. Extension workers may find that these aesthetic issues are key in how the public judges Extension's program and value. You can tell people you are saving soil or growing better timber, holding the costs of food down, or improving rural life. But if, in the process, you help or encourage the creation of ugliness, you have a problem. Ask foresters about clear-cutting, if you have any doubts.

Extension workers must strive to create or encourage beauty as well as function, if they are to earn public support. Wendell Berry has argued that ecological harmony leads to pleasure. I believe that and think that Extension staff do, too. If public programs "please" the public by the way they operate and look, then these programs will have taken a great step toward earning (perhaps re-earning) the respect of the American people. With that respect, programs, technologies, and agencies will remain vital, alive, and able to adapt to whatever change affects agriculture and forestry. Without that respect, some of these programs may be only a few steps from extinction. *A.*



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