



Forestry, Wildlife & Fisheries Update Newsletter

Department of Forestry, Wildlife and Fisheries
George Hopper - Professor and Head

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Website: <http://fwf.ag.utk.edu>

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Calendar of Events - 2003

Oct. 27	Humphreys County Forestry Association Meeting
Oct. 30	Master Logger Continuing Ed., Bowater Credit Union, Calhoun
Oct. 30	Lauderdale County Forestry Field Day
Nov. 1	Cumberland/Montgomery/Hickman Counties Forestry Field Day
Nov. 5-6	Tennessee Vegetation Management, Embassy Suites, Nashville, TN Association Annual Conference - Contact Larry Tankersley
Nov. 13	Extension Agent Training, West Tennessee Experiment Station, Jackson
Nov. 13	Forest Owners Meeting, Timber Taxes, Livingston, TN - Contact Ron Johnson
Dec. 2	Henry County Forestry Association Organizational Dinner

Faculty:

Wayne Clatterbuck, Forest/Silviculture Mgmt.
Craig Harper, Wildlife Management
Thomas Hill, Fisheries Management
Sam Jackson, Web Coordinator

George Hopper, Natural Resources
David Mercker, Forest Management
Larry Tankersley, Forest Management

Notes from the Web.....

Samuel W. Jackson, Web Coordinator, Extension Forestry

This month's spotlight website is the Southern Regional Extension Forestry (SREF) program, <http://sref.info/>, serving the entire southeastern United States. Thirteen universities, including the University of Tennessee, sponsor this valuable program. The mission of SREF is "to identify, prescribe, and implement a mix of educational and technical services that increase the efficiency of forestry programs in the southern United States." The website provides up-to-date news, information, and links concerning forestry and natural resource management in the Southeast.

Some of the most well-known programs that SREF promotes are the Master Tree Farmer and Master Wildlifer programs. The website allows you to view all the video from the Master Tree Farmer I, Master Tree Farmer II, and Master Wildlifer Workshops for free. You can also download the slides and handouts provided in the workshops. The site also has video, handouts, and slides from the Forest Certification Workshop. This workshop introduced forest certification to landowners, professionals, and educators. The downside to all of this information is that you cannot ask questions of the presenters and watching the videos does not qualify you for a certificate. Nonetheless, This is a great resource for developing workshops, other programming, and/or reference material. Remember, video can be shown to large groups, just as easily as one person.

SREF provides an online library of valuable publications as well. A large volume of publications are available in online formats while others can be ordered for delivery. There is also a directory of online resources for forestry information. By navigating to the Forestry Index part of the site, you can gain access to a broad range of information that is organized into an easy-to-find system.

The site also provides links to information regarding Forestry Best Management Practices (BMPs) along with wildfire program information and urban forestry resources.

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Responsible, Sustainable, "Award-Winning" Timber Sales

David Mercker, Extension Assistant, Forest Management

Several years ago I was handling a timber sale for a landowner, and a sawmill manager showed up to place a respectable bid on the trees. He was an honorable, second generation mill manager and he quipped, "When dad ran the mill, log procurement was a whole lot easier. If the mill was low on logs, dad would spend a day meeting with landowners. By days end he'd have enough timber purchased to run the mill for months." Apparently at that time, timber was plentiful, cheap, and "in the way!"

Times have changed. Our forests have changed. Sawmills are changing. Forest landowners are transforming the way they do business too. Nowadays, landowners don't just sell their timber. They *market* it. Landowners must engage in a series of succinct, deliberate steps, that at a minimum takes several months to complete. Here's a generalized look at some of those steps.

1. First, See a Forester - and perhaps several. A good source of initial contact is your local Division of Forestry Area Forester. Though their services are limited, they can offer an unbiased opinion of the condition of your timber and determine if a commercial harvest is possible and warranted. They can also discuss cost-share forestry incentive programs for follow-up management after the harvest. They will likely stress the importance of your forest management plan too.

2. Inventory Your Timber - Other farm products are not sold on guesswork, neither should timber. Your local University of Tennessee Extension Office normally maintains a list of private foresters whom are capable of determining the board foot and/or tons of wood to be included in your sale.
3. Don't Hi-grade Your Forest -When selecting trees for sale, be sure to include more than just those with highest present value. Certain species have traditionally been undesirable, lower-value trees. Every harvest is an opportunity to improve your stand by removing the undesirable and suppressed trees. It's advisable designate sawlog trees chosen for sale by marking them with long-lasting, high visibility paint (both at chest height and again at ground level).
4. Have an Estimate of Value Before Selling - Your forester is capable of establishing a fair market value for your trees. You can check out the Division of Forestry's web site <http://www.state.tn.us/agriculture/forestry/tfbp.html> for recent price averages for delivered sawlogs and pulpwood in Tennessee.
5. Advertise to a Broad Market - Here's where the marketing pays off. Expose your timber to all reasonable markets, including: Master Loggers, timber buyers/brokers, industry foresters, sawmills and pulp and veneer mills if your sale includes these products. The TFA website has a list of Master Loggers by county at: <http://www.tnforestry.com/loggers.html>.
6. Seek Sealed Bids - In most cases, it's recommended to accept lump sum sealed bids for your timber rather than pay-as-cut or cut-on-shares. Exceptions include low-quality sales, including pulpwood.
7. Get Paid up Front - Payment in full, before tree felling begins, is normally advisable. Your personal tax implications may suggest otherwise. For timber tax info, visit: <http://www.utextension.utk.edu/pbfiles/pb1691.pdf>.
8. Prepare a Contract - This protects your interests, highlights conditions of the sale, addresses liability and insurance issues, BMP requirements and more, all while being reasonable with the purchaser. The University of Tennessee Department of Forestry, Wildlife and Fisheries (Clatterbuck and Tankersley) has a sample contract for your guide located at: <http://www.utextension.utk.edu/pbfiles/pb1607.pdf>.
9. Monitor the Logging - This allows for communication with the logger and addresses potential problems while the logger is still on-site. Be sure that Tennessee BMPs are being followed. To learn more, visit: <http://www.state.tn.us/agriculture/forestry/bmpmanual.html>.

Remember too, your timber sale project has an impact on those other "bundle of rights" benefits enjoyed by society. The air, water and wildlife passing through your forest are co-owned by you and them. If we are to be successful in comforting society and in shunning efforts to regulate our right to practice forestry, we must engage in responsible, sustainable, "award-winning" timber sales.

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Common Wildlife Diseases in Early Fall

Craig A. Harper, Associate Professor, Wildlife Management

It is common this time of year to get calls from hunters who have found “grubs” or “wolves” in squirrels or from landowners who have found dead (or dying) deer near creeks or ponds. These wildlife health problems are common throughout the South and the vectors are native to this area. They are not new diseases and there is no need for unnecessary concern.

Squirrels are often parasitized by the larvae of flies in the genus *Cuterebra*. The process occurs after adult flies deposit their eggs around the den or nest of a squirrel. The eggs become attached to the squirrel and later hatch. Upon hatching, the fly larvae enter the squirrel through the nose or mouth (they are extremely small at this time). The larvae then migrate through the body of the squirrel to a subcutaneous location, where it cuts a hole through the skin (from the inside) for respiration and continues to develop. It takes larvae 3 – 7 weeks to develop. Lesions appear swollen and are usually ½ to 1 inch in diameter. After developing, larvae exit the squirrel through the lesion and overwinter in the pupal stage in the forest litter layer before emerging as flies the following spring.

Multiple lesions on an individual squirrel are not uncommon. The actual fly larvae do not harm the squirrel and there is certainly no effect at the population level. Although hunters commonly discard squirrels infected with “wolves,” the meat is not affected and the squirrel is edible.

Outbreaks of hemorrhagic disease (HD) in white-tailed deer are common through late summer and early fall. Hemorrhagic disease is caused by either epizootic hemorrhagic disease (EHD) viruses or bluetongue (BT) viruses. The viruses are spread only by biting midges in the genus *Culicoides*. Neither EHD or BT viruses are spread by deer contact. Symptoms vary greatly among individual deer. Infected deer may exhibit depression, fever, respiratory distress, and swelling of the head, neck, or tongue. Ulcerations may be present on the palate. Depending upon the virulence of the virus and duration of infection, hemorrhages or congestion may occur in the heart, rumen, and intestines. Sloughing of the hoof walls also occurs with some animals. Some deer die shortly after the onset of clinical signs, however, most animals live longer, and some survive.

In order to confirm diagnosis of EHD or BT, the virus must be isolated from a sick or freshly dead deer. A fresh specimen is necessary because the virus is killed as the animal decomposes. Preferred samples for testing include unclotted blood and refrigerated tissue from the spleen or lymph nodes. Successful samples are seldom collected from deer that have been dead for more than 24 hours. If you find dead or dying deer in an area and suspect a disease outbreak, contact the Tennessee Wildlife Resources Agency (615-781-6500).

Outbreaks of EHD and BT occur annually, but the distribution and severity of the outbreaks are highly variable, with only scattered mild cases in some areas and more noticeable cases elsewhere. Interestingly, EHD and BT outbreaks do not appear to be related necessarily to deer density, but to the density of *Culicoides* populations. Although the vectors disappear after the first hard frost, surviving deer with chronic lesions may be found through winter. Deer that have developed secondary bacterial infections from the lesions may not be edible. EHD and BT viruses may infect a number of animals, both wild and domestic, but they are not infectious for humans. Cattle, while susceptible, seldom show symptoms and cases are usually very mild.

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Nutritional Needs of Catfish

Tom Hill, Professor, Fisheries Management

While it is true that channel catfish do not eat as much food in winter, paying attention to their diets will mean more potential profits from brood fish, fingerlings and harvestable sized fish that must be carried over.

Brood catfish spawn once a year in the summer and the females begin right away to form eggs for the next year. It is especially important that they receive proper nutrition during the cooler months to produce a good crop of eggs. Research has shown that many more viable eggs are produced when fish is included in their diets. An effective way to do this is to stock fathead minnows in with the brood fish. Along with the fish flesh, a supplemental diet of pelleted catfish food, fed at the rate of 1 percent of their body weight on alternate days, will keep brood fish in good condition and enable them to spawn successfully.

Catfish fingerlings are much more active in cooler water than adult catfish and may take some food even when ice is around the edges of ponds. Their performance in production ponds the following summer will depend to a large extent on the way their nutritional requirements are met during the cooler winter months. Unless they are fed adequately in the winter, they will become emaciated and more susceptible to parasite and disease problems. Skeletal deformities from vitamin C deficiency may be particularly prevalent.

Food-size catfish held over during winter months in production ponds without feeding lose about 9 percent of their weight. When fed 1 percent of their body weight either on alternate days or on days when surface water temperatures are 54⁰ F or above in mid-afternoon, you should see a gain of about 18 percent body weight during winter months. They will be in good condition and ready to go to market at the proper time. Fish food is expensive and certainly does not need to be wasted, but by using good feeding practices catfish farmers can expect much better performance by all their fish. The ends results will be worth it.

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Winter is the Time to Lime Ponds

Tom Hill, Professor, Fisheries Management

For both freshwater fish and freshwater prawn production, water pH of 6.5 - 9.0 is the desirable range. To avoid extreme fluctuations either above or below these levels, it is very important that the alkalinity of the pond water be above 20 ppm.

Phytoplankton are microscopic aquatic plants which are responsible for most of the oxygen (through photosynthesis) and primary productivity in ponds. Ponds with alkalinity levels below 20 ppm do not usually support good phytoplankton blooms and do not commonly experience dramatic pH changes.

Total alkalinity in ponds can be raised by adding agricultural limestone. A quick way to determine if a pond needs to be limed or not is with a simple water testing kit that measures total alkalinity. Ponds with water less than 20 ppm total alkalinity usually need lime and the farther below 20 ppm the water is, the more lime will be needed. However, even though the alkalinity test indicates lime is needed, it does tell how much. To determine the need and how much to add, send a pond bottom sample to the University of Tennessee Soil Test Lab in Nashville and the results with a recommendation will be returned.

Lime should be added to ponds in the winter, because it will cause phosphate in the water to precipitate and be unavailable for growing phytoplankton when applied in the summer. Liming your ponds in the winter will help you avoid water quality problems next summer.

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Free Forestry Education Materials

David Mercker, Extension Assistant,

The Forest Resources Association, Inc., is offering educational materials directed to individuals of grade school age and older. Entitled, "Life of the Forest," the materials are created to excite imagination and provoke discussions. Included is a set of 10 full-color, full-size posters, each representing an essential element of forests, their maintenance, their preservation, their history, and how they are utilized to give us the products needed in our everyday lives. Poster topics include: tree bark, endangered species, tree history using growth rings, wood uses, forest benefits, leaf and needle identification, tree seeds and more.

There is no cost for the material, and it can be ordered at www.iplefeoftheforest.com/ or by contacting Rick Ouellette at 912/238-6399 (rick.ouellette@ipaper.com).

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Timber Harvest and Nutrient Budgets

Larry Tankersley, Extension Specialist, Forest Management

Timber harvest is a major avenue for loss of nutrients from forests. Estimates of losses have been monitored for many years and they are known for many species and sites. A forest annually absorbs a similar amount of nutrients from an acre of soil as some crops. Only a third however remains in the tree, the rest is returned to the soil in foliage, branches, fruit and roots.

The removal of nutrients during conventional logging from even the most productive sites are relatively small on an annual basis. Rennie(1955) studied nutrients removed in harvest timber in British forests. He reported 29 percent of the calcium, potassium, and phosphorus in the harvested tree was in the trunk of 50 year old pines, with an additional 17 percent in the trunk's bark. The remaining amounts were in the needles and slash which typically remained on the site. He concluded that most soil could replace the nutrients in the harvested timber without a long-term decrease in productivity.

In Quebec, a study in harvesting spruce-fir detected four times as much of each element was removed in the full-tree as in the short-wood method of harvesting. Another study in Monterey pine reported that the removal of whole-trees in a 26-year old plantation about doubled the nutrient depletion over that experienced by the harvest of stem and bark only. Essentially the same conclusions were made in the harvesting of mixed hardwoods in Wisconsin. Research in Southern pines supports the conclusion that whole tree harvesting about doubles the removal of essential elements from the site as are removed in conventional removal of the stems and bark. Whether timber harvesting will eventually deplete the soil of nutrients depends on soil reserves, the recuperative nature of weathering and natural inputs, i.e. dust and other precipitation.

Amounts of nutrient inputs from precipitation and dust and from nitrogen fixing organisms are highly variable among sites and are largely unknown in many areas. It appears that atmospheric inputs are greater than losses by leaching from forest areas and they may largely replace nutrients removed in harvested trees during a rotation period. Nitrogen fixation is generally considered low in forest communities., but it may amount to several hundred kilograms per hectare during a rotation.

Considering all factors, it appears that most temperate forest soils have the capacity to recover from natural disturbances and timber harvests by nutrient replacements through mineral weathering and natural inputs. Consider that North American Indians burned large areas of forest and that most of these areas now support timber. A sizeable portion of the eastern US was once used for agriculture. The forests that have re-vegetation areas demonstrate the capacity of soils to supply nutrients to new forests after the removal of the

original cover. One can be awed by the resilience of most soils and the essentially conservative nature of forest ecosystems. Large biomass, development of protective humus layers, their intensive and often deep root system and their effective retention and cycling of absorbed nutrients are characteristics of forest systems which “conserve” essential elements. *Adapted from Pritchett, W.L. and Richard Fisher, “Properties and Management of Forest Soils, 2nd edition, (1987)*

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How Hard is the Wind Blowing?

Larry Tankersley, Extension Specialist, Forest Management

Just take a look at the trees. When leaves rustle, the wind is considered a light breeze, moving 4-7 miles per hour, but if a small tree sways the breeze is fresh moving 19-24 miles per hour. All this is based on the **Beaufort Wind Scale**, used by meteorologists to describe wind speed.

First developed by Britain’s Admiral Sir Francis Beaufort (1774-1857), the Beaufort Wind Scale was one of the first scales to estimate wind speeds. He developed the scale in 1805 to help sailors estimate the winds via visual observations. The scale starts with 0 and goes to a force of 12. The Beaufort scale is still used today to estimate wind strengths. It is interesting for tree people to note the organism used to describe the wind.

Speed (mph)	Designation	Description
1-3	light air	smoke drift indicates wind direction
4-7	light breeze	weather van moves, leaves rustle
8-12	light breeze	leaves and twigs in constant motion
13-18	moderate breeze	dust and loose paper raised, small branches move
19-24	fresh breeze	small trees sway
25-31	strong breeze	large branches move, wind whistles wires
32-38	moderate gale	whole trees move, walking affected
39-46	fresh gale	twigs break off trees, walking difficult
47-54	strong gale	slight structural damage occurs, branches break
55-63	whole gale	trees uprooted, considerable structural damage
64-74	storm	widespread damage
75+	hurricane	severe and extensive damage
Remember to report any wind damage to NOAA National Weather Service at www.wrh.noaa.gov		

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Trees for Tennessee Landscapes

Wayne K. Clatterbuck, Associate Professor, Forest Management and Silviculture

Eight new publications have recently been printed and added to this publication series on the selection, care and maintenance of trees in urban landscapes.

- SP 576 Protecting Trees during Construction
- SP 609 Insect Defoliators of Ornamental Trees and Shrubs
- SP 610 Tree Susceptibility to Salt Damage
- SP 611 Trees to Plant under Power Lines
- SP 614 What Are Those Plants Worth?
- SP 615 Why Do Trees Die?
- SP 616 Fast-Growing Trees
- SP 617 Mulching Your Trees and Landscapes

Special thanks to the authors of these publications: David Mercker, Frank Hale, Jerome Grant, Tom Simpson, Stephen Garton, Larry Tankersley, and George Hopper.

Four new publications are scheduled for release in spring, 2004. Tentative titles include: Common Natural Enemies of Pests of Ornamental Trees and Shrubs; Lightning Protection for Trees; How to Grow Trees from Seed and The Use of Exotic Plants (pro and con) in Your Landscape.

During the past five years, 34 publications have been developed for the *Trees for Tennessee Landscapes* publication series. The publications are available at your local Extension office or on the Internet at <http://www.utextension.utk.edu/publications/forestry/default.asp>. Choose the “Trees for Tennessee Landscapes” subheading on the webpage.

If you have subjects or topics on urban tree landscapes that could be addressed in this publication series, give Wayne Clatterbuck a call or e-mail.

The publication series was developed by an annual grant through the Tennessee Dept. of Agriculture, Forestry Division with the support of the USDA Forest Service, the Tennessee Urban Forestry Council and University of Tennessee Extension.

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Steps to Minimize Your Forest from Gypsy Moth Attacks

Wayne K. Clatterbuck, Associate Professor, Forest Management and Silviculture

Silvicultural treatments can be used to minimize gypsy moth impacts on hardwood forests. Two strategies should be utilized together: (1) to decrease susceptibility to defoliation by gypsy moth and (2) to strengthen the stand against mortality and encourage stand growth after defoliation. Treatment guidelines for forests that might be vulnerable to gypsy moth attacks as suggested by Kurt Gottschalk, a research scientist working on gypsy moth with the USDA Forest Service, are outlined below.

Maximize Tree Growth and Vigor --- Maintain trees and stands in a vigorous, healthy condition through thinnings and pest control to minimize the probability of defoliation. Healthy, vigorous trees are more likely to survive and recover from gypsy moth defoliation and resist secondary organisms. Trees under stress from

drought, nutrient deficiencies, fire, grazing, ice storms or defoliation from other insects will have higher mortality rates. Thinnings can increase the vigor level of residual trees by increasing both crown and root growing space.

Eliminate Gypsy Moth Habitat --- To reduce stand susceptibility, decrease the number of trees in stands that are the favored by gypsy moth. For example, gypsy moth prefers oak over yellow-poplar, maples, ash and most conifers. By reducing the percentage of stand basal area in oaks to 15 to 20 percent, the probability of defoliation decreases from moderate to low. This strategy works best in mixed species stands where a variety of species are available and where management goals are flexible. It also works well in oak-pine mixtures by favoring the pine and by reducing the amount of oaks. On many poor sites, an option would be planting pine and controlling the hardwoods. On high quality sites, mixed hardwoods should be favored over oaks using regeneration cuts and intermediate treatments.

Increasing Forest Diversity --- Presently, the Central Hardwood Forest has stands with similar stand structures, ages, sizes, species compositions, and under low levels of management offering a huge, favorable habitat for the expansion of gypsy moth. By creating more diverse age classes, stand structures, species compositions, and management systems, we may be able to reduce the potential for large gypsy moth outbreaks. Smaller, more limited outbreaks occurring in scattered stands would be less catastrophic and easier to manage.

Remove High Risk Trees --- Intermediate and suppressed trees are highly susceptible to gypsy moth. Tree vigor, as measured by crown class, is an important factor in predicting mortality. Trees with poor crowns are likely to succumb after defoliation. Intermediate and suppressed trees are more likely to die than dominant and codominant trees.

Reducing the Habitat of Secondary Organisms --- Defoliation-stressed trees are often invaded by two secondary mechanisms, the shoestring root rot and the two-lined chestnut borer. By decreasing the habitat of these two organisms, you can reduce tree mortality. Remove unhealthy trees and borer-infested trees before new generations of borers emerge. Root rot habitat is much more difficult to eliminate. Be pro-active and thin your stands well ahead of the invading front of the gypsy moth.

Despite your efforts, some trees will probably die from gypsy moth. These trees should be salvaged quickly. The longer a tree has been dead, the lower its utility and the price it brings. In spite of potential gypsy moth outbreaks, and as the front moves closer to Tennessee, there are opportunities to manage forests proactively without sacrificing management objectives or allowing the insect to dominate management actions. Look at the vulnerability of your future forest and plan ahead to make your forest less susceptible to gypsy moth.

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###

New and Revised Guide to Forestry Best Management Practices

Wayne K. Clatterbuck, Associate Professor, Forest Management and Silviculture

A revision of the 1993 *Guide to Forestry Best Management Practices in Tennessee* was recently published and distributed by the Tennessee Department of Agriculture, Forestry Division. Hard copies are available at any of the Division's offices. The guide is also available on the internet at <http://www.state.tn.us/agriculture/forestry/bmpmanual.html>. A reference copy will also be mailed to each county Extension office with the next couple of weeks.

As reported in the Tennessee Dept. of Environment and Conservation's 305(b) water quality report (2002), forestry operations do not contribute significantly to soil erosion and water pollution in Tennessee. However, poor road location, construction and logging practices can result in unnecessary environmental problems. Only where roads, skid trails, log landings and stream crossings expose mineral soil does the possibility exist for the transport of sediment in streams. Enforcement actions for water quality violations by forestry operations have been issued by the Tennessee Dept. of Environment and Conservation, Division of Water Pollution Control. With proper attention and implementation of Best Management Practices (BMPs), these water quality violations could have been avoided. BMP guidelines are forest management practices developed as practical and effective means to minimize or prevent non-point source pollution.

Although many aspects of the 2003 guidelines are similar to the 1993 manual, there are several substantial revisions. These are outlined below.

1. A table is provided to recommend spacing of water bars based on road gradients.
2. An expanded table is presented for diameter of culverts based on area drained in mountain, rolling, and level topography
3. The definitions of perennial, intermittent and ephemeral streams are presented and clarified. Of particular interest are the factors and considerations when an ephemeral stream becomes an intermittent stream. An SMZ (streamside management zone) is required for intermittent streams, but not for ephemeral streams. However, care should be taken to insure that sediment is not transported from ephemeral drains downstream.
4. Emphasis in using temporary crossings structures when crossing streams.
5. Avoid skidding across streams, drains and other wet areas or sensitive areas. Logs should not be skidded or dragged across streams. Use culverts or temporary crossing structures. Do not use fords to skid across streams.
6. Recommended seeding mixtures to use on roads, skid trails and log landings
7. Best Management Practices for wetlands in Tennessee
8. Sections expressing how Federal Water Quality Legislation and State Water Quality Legislation affects forestry operations in Tennessee. The Silvicultural Activity Stop Work Order, implemented by the Tennessee Legislature in FY 2000 is also presented.

If you have any questions about forestry BMPs or water quality concerns as affected by forestry operations, contact your local Division of Forestry office or Extension office. In conjunction with the Tennessee Forestry Association, the Division of Forestry and Tennessee Extension conducts the Tennessee Master Logger Program that informs loggers about Best Management Practices and water quality concerns. More than 2,700 loggers have participated in the five day training program in the last 10 years.

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Tennessee Forest Products Market Report
2nd Quarter 2003

	<u>East</u> <u>Tennessee</u>	<u>West</u> <u>Tennessee</u>	<u>Statewide</u> <u>Average</u>
<u>Stumpage</u>			
Pine Sawtimber \$/MBF Doyle	203	262	233
Oak Sawtimber \$/MBF Doyle	308	306	307
MXD HDW Sawtimber \$/MBF Doyle	220	150	185
Pine Pulpwood \$/Ton	4.59	8.00	6.29
HDW Pulpwood \$/Ton	4.62	4.94	4.78

Delivered

Pine Sawtimber \$/MBF Doyle	349	4.99	424
Oak Sawtimber \$/MBF Doyle	481	451	466
MXD HDW Sawtimber \$/MBF Doyle	400	328	364
Pine Pulpwood \$/Ton	21.50	24.25	22.88
HDW Pulpwood \$/Ton	21.00	23.75	22.38

Note:
This information is for educational use only by the University of Tennessee Agricultural Extension Service. Price information is adapted by permission from *Timber Mart-South*, a copyrighted publication by F.W. Norris, Highlands, NC. and is not to be copied for public distribution.

Explanatory Notes:

Prices: Prices given in this report are average prices in the current issue of *Timber Mart-South*. Prices for specific timber stands or products may vary significantly from the average prices listed due to location and accessibility of the timber, volume per acre, area included in the sale, restrictions placed on the harvest, size, quality and species of the stand or delivered product, and local demand.

Stumpage price is the price of timber standing in the woods.

Delivered price is the price of harvested products paid at the mill or the loading point (with no freight included).

Prices for sawtimber are given in dollars per thousand board feet (\$MBF) based on the Doyle log rule. The Doyle rule is the predominate rule for measuring tree and log volume in Tennessee. To convert prices to International rule, multiply the price by .61. This rule is for average values and cannot be used to convert individual log or tree volumes.

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The Agricultural Extension Service offers its programs to all eligible persons regardless of race, color, national origin, sex, age, disability, religion or veteran status and is an Equal Opportunity Employer.
COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS
The University of Tennessee Institute of Agriculture, U.S. Department of Agriculture,
and county governments cooperating in furtherance of Acts of May 8 and June 30, 1914.

Agricultural Extension Service
Charles L. Norman, Dean