



Forestry, Wildlife & Fisheries Update Newsletter

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

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

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Calendar of Events

Dec 2
Henry Co. Forestry Association
Organizational Dinner

Feb 3 - 4
Tenn. Agricultural Products Assoc.
Contact: Hugh Savoy
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Feb 22 - 24
Annual Meeting of the Southeast Deer
Study Group Meeting
Lexington, KY

Mar 1 - 5
Aquaculture 2004
Hawaii Convention Center, Honolulu
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Mar 3 - 5
Annual Meeting of the Tennessee
Chapter of The Wildlife Society

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Notes From the Web

Samuel W. Jackson, Extension Forestry

This month's spotlight website is the website for the Firewise program, <http://firewise.org/>. A national program, the Firewise initiative is supported through the National Wildfire Coordinating Group, whose membership consists of the USDA Forest Service, the Department of Interior, the National Association of State Foresters, the U.S. Fire Administration and the National Fire Protection Association. The program seeks to help landowners and homeowners living in the wildland-urban interface to prepare and protect themselves and their land from wildfire.

There are many resources available on the website, including video, publications, and links to valuable information. Much of the information deals with educating the homeowner or landowner with principles of wildfire, including fire seasons, risk, and prevention. The site also offers enhanced media, such as interactive quizzes and graphics that let the homeowner "rate" their level of fire preparedness, risk, or understanding of the issues. One activity presents users with the situation of conducting maintenance around a home to reduce the risk of wildfire. The user must choose which actions to take to alleviate the problem. Users can also download checklists for assessing their home's level of fire risk.

Downloadable modules on a wide array of fire topics are available and would be beneficial to educators and those planning to conduct any type of fire safety training for landowners. We often think that wildfire is only a problem in the western United States. We continually hear about large fires burning homes and threatening lives on the news. But did you know that wildfire is a risk in Tennessee? In 2001, the Tennessee Division of Forestry suppressed 2,739 wildfires that burned 68,141 acres. It never hurts to be "firewise" so visit the Firewise website for more information.

Management Calendar for November

Forestry

- > Inventory stand, choosing crop trees based on the following
 - Timber harvesting, crops trees should have high economic value, a dominant or codominant health crown, few or no epicormic branches, no open wounds, no v-shaped or forked splits.
- > Tree planting, tree planting and more tree planting
 - Plant trees and other woody plants in the dormant season from December to March 15
- > Remove dead, dying, broken or loose branches
- > Clear trees of sprout or sucker growth
- > Check property lines, give hunters clear site of boundaries
- > Roads ready for winter? Use Best Management Practices
 - Check bridges and stream crossings
 - Use gravel on mud and to level road edges for truck safety
- > Photograph the landscape. This is a good thing!
 - Do during the winter to see the drainage patterns and future needs for BMPs, especially old logging and farm roads
- > Get ready for taxes, timber sale receipts, expenses, casualty losses, etc.
 - check out new Form T, brand new form, www.IRS.gov
- > Go plant trees and hug your favorite tree!

Wildlife

- > Continue timber stand improvement activities
 - select good mast producers and release their crowns by girdling and spraying competitors
- > Disc firebreaks around fields and woods before the ground freezes
 - winter wheat can still be sown, if desired, or leave fallow
- > Flood waterfowl impoundments
 - a depth of 8-10 inches is ideal for dabbling ducks
- > Build brushpiles
 - put large stems on bottom, small stems on top
- > Spray tall fescue
 - use 1-2 quarts of glyphosate herbicide (e.g., Roundup) per acre
- > Put out bird feeders and keep them full
 - black-oil sunflowers are a favorite of many birds
- > Strip-mow dove fields
 - don't mow it all – leave some for later
- > Begin dormant-season planting of native warm-season grasses
 - don't plant too deep – no more than 1/4 inch!
- > Go hunting!

Fisheries

- > Take pond bottom soil samples, send to Soil Test Lab
 - test need for lime - apply now through February
- > Continue feeding catfish for winter – feed at a reduced rate
- > Where possible drawdown water in ponds to expose aquatic weeds
 - this will help control weeds
- > Repair and renovate ponds where needed
- > Sow grass seed and mulch bare areas on dikes
- > Go fishing!

Controlling Raccoon Rabies in Southeast Tennessee

Craig A. Harper, Associate Professor, Wildlife Management

An oral rabies vaccine targeting raccoons is being distributed once again this year, this time in southeast Tennessee. USDA Wildlife Services is leading the effort to help stop the spread of the raccoon rabies variant into Tennessee along the Tennessee-Georgia/Alabama border. Baits will be distributed aerially by low-flying (approximately 500 feet) fixed-wing aircraft (a yellow airplane) and by automobile in portions of Hamilton, Marion, and Sequatchie Counties. Baits will be dropped in rural areas via airplane, while ground crews will distribute baits in urban/suburban areas. Bait distribution will begin November 14 and should conclude by November 21, 2003, dependent upon weather.

The oral vaccine, Raboral V-RG (Merial, Ltd.), is placed inside fishmeal bait, which consists of square blocks made from a compressed mixture of fishmeal and fish oil that readily attracts raccoons. When the raccoon bites into a bait, the sachet is ruptured, allowing the vaccine to flow into the raccoon's mouth and throat. Most of the baits (about the size of a Fig Newton bar) will be gone within 10 – 14 days after being distributed. The public is advised to leave the baits alone if found, but they may be moved if found where children or pets play. It is recommended to wear gloves or use a rag if handling a bait. The bait may be thrown into a fencerow, woodlot, ditch, or other area where raccoons might occur. The vaccine will not harm pets if consumed; however, if the animal eats several baits, vomiting or diarrhea may occur.

Raccoons will be live-trapped in the vaccination area about 4 weeks after the baits have been distributed to estimate the effectiveness of the program. A blood and tooth sample will be collected from trapped raccoons and tested for antibodies and a tetracycline biomarker. Increased surveillance for sick or dead raccoons will be conducted and continued in the area. If you have questions concerning the oral vaccination project, call USDA Wildlife Services toll free at (866) 487-3297 or the Tennessee Department of Health at (615) 741-7247.

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Important Meeting for Prawn Producers

Tom Hill, Professor, Fisheries Management

The U. S. Freshwater Prawn and Shrimp Grower's Association (USFPSGA) Annual Meeting is scheduled for January 16-17, 2004. Dolores Fratesi, secretary to the association, called last week to let everyone know that an exciting and informative agenda has been planned. The site for the meeting has not yet been finalized, but will likely be in Tunica, MS, as it was earlier this year. For those who have computers available, check on the web page www.freshwaterprawn.org for more details and a finalized site for the meeting. The association is only three years old and needs all prawn producers involved as active members.

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Catfish Need Not Diet in Winter

Tom Hill, Professor, Fisheries Management

For many years, you have heard fisheries biologists tell you not to feed channel catfish during the winter. Since they observed little activity by the catfish when water temperatures were below 60 ° Fahrenheit, biologists assumed that winter feeding would be unprofitable. I am sure that this message was conveyed by me in some of our catfish production meetings.

Some more recent studies have shown when pond raised catfish are not fed in winter, they actually lose weight. Also, they are more susceptible to disease problems, including skeletal deformities from vitamin C deficiency.

On the other hand, they gained 18 percent when fed. Fish received 1 percent of their body weight, either on warmer days when water temperatures were 54 ° Fahrenheit or above in mid-afternoon, or were fed 1 percent every other day. The unfed catfish lost 9 percent of their weight.

Another study indicated that the pounds of catfish per acre affects winter weight gain, as well as does low-temperature feeding. Catfish overwintered at 2,000 pounds per acre gained more weight than others stocked at 3,000 pounds per acre. Both densities were fed similarly during the same cold weather period. This means that ponds with reduced inventories of fish should come through the winter better.

Since feeding activity of catfish is slower in winter, floating feed may be blown to shore by the wind before fish are able to feed. Sinking feed with proper nutritive value may be more desirable.

Fish feed is expensive and accounts for 40-50 percent of the production costs. You certainly do not want to waste it. But, you can expect your catfish ponds to be more profitable by paying attention to winter feeding practices, along with stocking densities.

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Decurrent and Excurrent Crown Forms

David Mercker, Extension Assistant, Forest Management

Have you ever wondered why some trees seem to grow with wide spreading crowns that are as broad as tall? Or why others, found in the same environment, instead grow with very narrow, conical-shaped crowns? These are physiological traits that will remain consistent with tree species.

Trees with spreading crowns, called *decurrent*, include many of the deciduous trees such as elms, oaks and hickories. Decurrent crowns result when lateral (side) branches grow nearly as fast or faster than the terminal leader (main central branch). Often trees with decurrent crowns will have repeated forking of the main stem. Nearly any branch potentially could become the terminal leader. Food stores (called carbohydrates) are not forced centrally, rather dispersed among many main branches, particularly when the tree is openly grown in full sunlight. When grown in the shade, the limb with the most direct access to sunlight will gain dominance, even if that limb is a side or lower limb. Such trees will later assume a crooked appearance. In a forest setting, trees with decurrent crowns are not grown at tight density because of the more open, spreading nature of their crowns.

Trees with more narrow, conical shaped crowns are called *excurrent*. Here the main, central terminal leader controls most of the vertical expansion, growing more rapidly than lateral branches. A distinct central trunk results. Examples of trees with excurrent crown include many northern conifers such as white pine and a few deciduous trees (poplar and sweetgum). If the top of a tree with excurrent growth form is broken, for instance in an ice storm, a new central leader will assume dominance and regain the original tree form. Several years later, only a slight crook will be apparent where the damage occurred. In a forest setting, trees with excurrent crowns are grown at tighter density because of the more narrow nature of their crowns. Of interest, too, is that these trees are often classified as pioneers (the first to invade) on open sites. Their ability of rapid vertical expansion allows them to extend above trees with decurrent growth pattern, shading them, thereby dominating the growing space.

Homeowners should consider a tree's crown growth pattern when planting trees in yard settings. Trees with decurrent crowns will grow broad, occupying more of a horizontal distance than will trees with excurrent growth. Typically they are also longer lived, more storm hardy and will cast more shade to homes than will trees with excurrent crowns.

Ref.

Oliver, Chadwick D. and Bruce Larson. 1996. Forest Stand Dynamics. John Wiley and Sons, Inc.

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Land Clearing Is not Forestry

Larry Tankersley, Extension Specialist, Forest Management

Next time you fly over Tennessee and see open land, consider the difference between land clearing and a forestry operation. I can certainly appreciate the rapid growth and development of many of our communities. It seems everywhere land is being cleared to make way for new neighborhoods, shopping centers, industrial parks and any number of other things that humans need land for.

Often, however, land clearing is confused with a silvicultural clear-cut designed to replace the older trees with a new forest. The resulting land use remains a forest, albeit a short forest, but a forest nonetheless. Where stumps are being pushed into piles, we expect that the landowners' intentions are not to continue forest cover. In most silvicultural clear-cuts the stumps and associated roots often sprout, contributing individual trees to the "new" forest. They also hold the soil in place.

A comprehensive report by the U. S. Forest Service, titled the "Southern Forest Resource Assessment (2002)," concluded that an important threat to Southern forests, including Tennessee, is the conversion of forestland to "other uses." "The South is forecast to lose 12 million acres (8 percent) to developed uses between 1992 - 2020. An additional 19 million forest acres are forecast to be converted to developed uses between 2020 and 2040." The assessment is interesting reading and can be found at the following website:
<http://www.srs.fs.usda.gov/sustain/>.

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Conservation Easements and More!

Larry Tankersley, Extension Specialist, Forest Management

The Tennessee Parks and Greenways Foundation has produced a new publication, “Landowner’s Options – A Guide to The Voluntary Protection of Land in Tennessee.” The booklet contains information about conservation easements, greenbelt registration, conditional titles and potential tax advantages for maintaining your land as green space for Tennessee’s future. Among other helpful information is a listing of land trusts and non-profit organizations operating in Tennessee. These groups assist landowners wishing to ensure that their land stays green on into the future.

The non-profit foundation whose mission is, “to protect the beauty of Tennessee by creating an interconnected system of parks, greenways, and wildlife areas across the state” can be contacted by calling (615) 386-3171 to order a booklet or for additional information.

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Reforestation in the Absence of Cost-Share: Does it Pay?

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

Incorporating cost-share programs when reforestation is an excellent strategy that can increase a landowner’s rate of return on investment. Cost-sharing is so attractive that some landowners may to decide to delay reforestation for a year or more if cost-share money has run out for the current year. This article illustrates the financial impact of key landowner decisions regarding prompt reforestation with and without cost-share, and the effect of delaying reforestation one year due to an absence of cost-share funds.

Assumptions are a necessary part of any financial analysis. Changes in site index, timber prices, management regime, reforestation costs and other factors will all impact the rate of return on investment. The investment returns presented in this article are based on the following management assumptions.

Assumptions

1. This analysis will utilize a loblolly pine plantation with a site index of 60 feet at a base age of 25, typical of most pine sites in Tennessee
2. The tract was site prepared and planted with 600 trees per acre of 2nd generation, genetically improved seedlings. We generally recommend a lower planting density of 430 to 500 trees per acre such that tree diameter is large enough to make a 1st thinning profitable and as a deterrent for southern pine beetle. Genetically improved seedlings will grow faster and create higher quality wood.

3. The management regime utilizes two thinnings before a final harvest for sawtimber. The first thinning is performed at age 18. This timing is due to harvesting limitation that required the thinning to produce a minimum of 26 tons (10 cords) of fiber per acre to ensure an economically viable logging operation. The 2nd thinning is conducted in year 27 and the final harvest occurs at an optimal rotation length of 35 years. This rotation length maximizes the plantation's financial return under the current management regime.
4. A forest finance spreadsheet was used to calculate *Net Present Value (NPV)*, *Land Expectation Value (LPV)*, *Equal Annual Equivalent (EAE)*, and *Internal Rate of Return (IRR)*. Definitions for these terms are below.
 - a. NPV represents the present value of a management regime by discounting future revenues and future costs back to the present for one investment period (rotation). When NPV is positive, the investment project should be undertaken. A positive NPV directly corresponds to a landowner's net increase in wealth for every acre of forest managed under that management option.
 - b. LEV expresses the dollar amount that a landowner can afford to pay for bare land to grow infinite rotations of tree crops if he or she does not already own the land.
 - c. EAE values represent the single annual payment that will equal net present value over the life of the timber investment. EAE allows one to compare periodic returns of different lengths (i.e., forestry rotations of 33 and 40 years) and alternative investments such as forestry vs. agricultural crops to determine the best use of the land.
 - d. IRR represents the average annual rate of return for an investment given the present and future costs and revenues. It is calculated by setting discounted revenues equal to discounted costs and solving for the compound discount rate.
5. Stumpage values, the average price paid for standing timber, represent averages for pine pulpwood (\$8.75/ton), chip-n-saw (\$23.00/ton), and sawtimber (\$34.50/ton) as reported by Timber Mart South for the last three years.
6. Reforestation costs for site preparation and planting are \$75/acre. Herbicide release costs are \$70 per acre.
7. Taxes and land management costs are \$7.50 per acre per year.
8. The discount rate is 6% real (net of inflation). This represents the anticipated return from an alternative investment, such as long-term CD's, bonds or stocks.

Results

Three cases were developed for analysis.

Case 1 represents prompt reforestation without government cost-share assistance. The landowner invests 100% of his or her own money in the future stand (\$75/acre to reforest the stand, followed by \$70/acre within two years for herbicide release treatment). NPV, LEV, EAE and IRR values are all positive (Table 1), indicating that this is a worthwhile investment under the assumed conditions.

Case 2 represent prompt reforestation with cost-share assistance. The landowner is aided with a 35% cost-share payment at the beginning of the year following harvest. The cost-share payment reduced costs of reforestation and herbicide release to \$48.75 and \$45.50, respectively. NPV, LEV, EAE, and IRR are not only all positive, but more attractive than the returns shown in Case 1 (Table 1).

Case 3 illustrates a landowner that postponed stand establishment by one year due to an absence of cost-share funding, or some other factor, such as reluctance to re-invest timber sale proceeds. Reforestation costs increased to \$250 per acre because revegetation from weeds, vines and stump sprouts require more intensive and costly site preparation for allowing the land to remain fallow for one year. Thus, the landowner reforestation costs are \$190 per acre (in this example, maximum cost share is 35% to a \$60 maximum) as opposed to the \$94.25 per acre without the one year delay. Delaying stand establishment by one year means that thinnings and final harvest each occur one year later than in previous cases. The \$32.44 cost in year 0 equals the revenue lost that year for delaying reforestation. Even though the landowner did receive cost-share, delaying reforestation one year resulted in decreased values for NPV, LEV, EAE and IRR (Table 1).

Table 1. Net present value (NPV), land expectation value (LEV), equal annual equivalent (EAE) and internal rate of return (IRR) for timber investments with and without cost-share.

Case	NPV (\$/acre)	LEV (\$/acre)	EAE (\$/acre)	IRR %
Case 1: w/o cost-share	470.32	540.66	32.44	10.5
Case 2: with cost-share	518.37	595.90	35.75	11.6
Case 3: With cost share delayed 1 year	354.46	404.06	24.24	8.8

Results for Case 1 and Case 2 are comparable since the investment horizons are of equal length; but Case 3 is one year longer and adjustments must be made before it can be compared directly with Case 1 or Case 2. Use LEX and EAE to compare results among the three cases since these criteria have a common investment horizon – infinity.

Summary

Results indicate that Case 2 has the most favorable return due to the availability of cost-share assistance. The net present value of Case 2 is \$48.05 larger than the net present value of Case 1. Case 3 illustrates that it is not in the landowner's best interest to delay reforestation if cost-share money has run out. When the landowner postpones stand establishment, he or she loses potential income due to the cost of lost production and the increase in establishment costs.

A timberland owner achieves the best financial results by utilizing existing cost-share programs and reforesting during the first planting season following a harvest. However, the analyses show that keeping forestland productive with or without cost-share assistance is superior to delaying one or more years if cost-share payments are not available. By delaying reforestation, the landowner foregoes income for that year and also realized an increase in stand establishment costs. Establishment costs usually increase proportionally up to three years following harvest. From 3 to 10 years, post harvest reforestation costs remain relatively constant, when one must use herbicide, burn, use mechanical site preparation or some combination prior to planting.

Reforestation should be an integral part of the timber harvesting and marketing decision. To maximize income and provide for future generations, landowners should always reforest with funds generated either from timber harvests, loans or other sources, whether or not cost-share funds are available. ***Prompt reforestation does pay, but don't delay!***

Information for this article was excerpted from Virginia Cooperative Extension Publication No. 420-407 at <http://www.ext.vt.edu/pubs/forestry/420-407/420-407.html>

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Protecting Your Home From Wildfire

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

With many homeowners moving away from the city to more spacious rural settings, the chance of fire destroying homes in these rural-urban interface areas become much greater. Fire departments usually take a longer time to respond to such fires because of greater distances to travel. Water pressure is also reduced in many of these more rural areas. With many homeowners preferring forested settings, wildfire can be devastating to buildings (homes) and property values. The occurrence of wildfire in the western US this year made us all aware how rapidly uncontrolled fires can spread. With the fall season (warm, dry, windy, less humid conditions) in Tennessee rapidly approaching, what can you do to be prepared in protecting your home from wildfire?

A few guidelines for fire-conscious homeowners are:

1. Flammable materials should be cleared from around the house to create a buffer of at least 30 feet and preferably 50 feet.
2. Firebreaks should be provided around your property to stop the advance of a ground fire. Driveways and masonry walls make good barriers to advancing fires.
3. Thinning of forest stands to a spacing of at least 15 feet between trees and pruning to a height of 8 to 10 feet. More flammable evergreen tree tops should not be within 20 feet of the house and each other to prevent crown fires from spreading to adjacent tree crowns.
4. Use fire-resistant roofing material with flammable needles and twigs removed on a regular basis.
5. Know the location of your water resources (water lines, fire hydrants, lakes, ponds, pumps, wells) to obtain water to control a fire.
6. Good access and turnaround space for fire trucks. Sharp turns, locked gates and low-tonnage bridges are detriments to loaded fire trucks.

Advanced planning and preparation by homeowners will aid in the protection of your home from wildfire.

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Choose and Cut Christmas Tree Locations

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

Christmas tree time is upon us again. Thanksgiving is often the time that Christmas trees begin appearing in the marketplace as well as choose and cut farms being open. Many people are interested in gaining the freshest tree possible by cutting their own tree. To find a list of choose and cut growers in your locality, visit the Tennessee Dept. of Agriculture's Pick Tennessee Products website at <http://picktnproducts.org/xmastree/index.html>

The website also contains information on how to select and take care of ball and burlap, (live) Christmas trees and for choose and cut trees. These guidelines make great short informational pieces for local newspaper and radio spots. Merry Christmas from your forestry, wildlife and fisheries colleagues at UT!

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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.

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