



Forestry, Wildlife & Fisheries Update Newsletter

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

August 2002

Home Page - <http://fwf.ag.utk.edu>

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Calendar of Events - 2002

August 26 **Time 6:00 p.m.**
 Fayette County Forestry Association
 Timber Tax Discussion
 Summerville, TN
 Contact: Jamie Jenkins, 901-465-5233

November 6 & 7
 Tennessee Vegetation Management Association
 Annual Meeting - Marriott Hotel
 Knoxville, TN

Faculty:

Brian Bond, Forest Products
Wayne Clatterbuck, Forest Management
Craig Harper, Wildlife Management
Thomas Hill, Fisheries Management

George Hopper, Natural Resources
David Mercker, Forest Management
Larry Tankersley, Forest Management
Sam Jackson, Coordinator, Natural Resources

Welcome Aboard!*George Hopper, Professor & Department Head*

Welcome aboard Sam Jackson to our Forestry, Wildlife and Fisheries Extension group. Sam will provide leadership in the development of a center for web-based learning for forestry education. We are glad to have Sam as part of the FWF Extension team.

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Update on the Tennessee Partner's Project*Craig Harper, Assistant Professor, Wildlife Management*

The Tennessee Partner's Project is an assistance program for Tennessee landowners who are interested in providing waterfowl habitat. Landowners enrolled in the program flood crop fields in winter with a few inches of water using water control structures. Flooding is usually initiated in November and the water drained in February. The response from wildlife to these areas is tremendous. Large numbers of waterfowl and other wetland-associated wildlife are attracted to these areas. As you might imagine, this is a popular practice for landowners who like to duck hunt or just "watch" wildlife. In addition, it has enabled some landowners to make additional income by leasing the hunting rights to these fields to duck hunters.

Flooding crop fields in winter does not affect crop production. In fact, winter flooding may reduce spring weed pressure. In addition, preliminary results from an ongoing water quality study conducted by Ducks Unlimited show impounding soybean fields during winter using water control structures reduces sedimentation significantly. During the month of December 2001, the mean sediment load per liter of water was 808 mg/L for samples taken in non-impounded fields and 22 mg/L from fields impounded using water control structures. This represents a 97% reduction in the amount of suspended solids in the water exiting these soybean fields. The month of January showed a 57% reduction with 223 mg/L from non-impounded soybean fields and 96 mg/L from impounded fields.

Undoubtedly, flooding crop fields in winter provides positive benefits. For information concerning enrollment in the Tennessee Partners Project, contact Bob Dew, Ducks Unlimited Regional Biologist, at (731) 668-0700 ext. 107. To learn additional information about the positive effects program, refer to *Flooding Harvested Crop Fields in Winter: Effects on Crop Production and Opportunities for Waterfowl Management*, SP 597. The Tennessee Partner's Project is a cooperative effort between Ducks Unlimited, Tennessee Wildlife Resources Agency, USDA Natural Resources Conservation Service, US Fish and Wildlife Service, TN Department of Agriculture, and the UT Agricultural Extension Service.

For more information contact: *Craig Harper at (865) 974-7346*
caharper@utk.edu

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Pond Construction and Renovation*Tom Hill, Professor, Fisheries Management*

Many ponds are built or renovated this time of year. Likely the best reason for this is because it is dry and equipment can be gotten in and used in places that are too wet most of the year.

We have several publications with very good information that could be worthwhile for anyone who plans to either build or renovate a pond. "*Watershed Fish Ponds- - Site Selection and Construction*", SP374-J, has been around for ten years, but the principles are still very appropriate. Other publications with information that could be very helpful are "*Repairing Fish Pond Levees*", SP374-X, and "*Renovating Leaky Ponds*", SP374-Y.

In instances where an existing pond does not need physical repairs, but the fish population is out of balance and re-stocking is required, “*Farm Pond Renovation*”, PB1103, has information on how and when to use rotenone. Once the fish population is eradicated, “*Management of Farm Fish Ponds in Tennessee*”, PB1231, provides guidance all the way from stocking the pond through the harvesting process. Other useful information can be found at www.utextension.utk.edu/aquafish.

Fish for stocking either new or renovated recreational ponds can be obtained from Tennessee Wildlife Resources Agency. Bluegill and redear are supplied in the fall and largemouth bass the following spring. A fee is charged for the fish, based on the acreage stocked. An application blank completed and postmarked by September 30 will assure the fish will be received. An application form and information about the program can be obtained at any TWRA office or by visiting the website at www.tnwildlife.org.

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Get Ready for Fall Food Plots Now

Craig Harper, Assistant Professor, Wildlife Management

Late August/early September is the ideal time to plant cool-season food plots. By planting now, plots will have plenty of time to get established before the onset of cold weather. If not completed already, soil samples should be collected from the plot and sent to the testing lab to determine the amount of lime and fertilizer needed. It is highly recommended to spray and kill the existing ground cover with a multipurpose herbicide (e.g., Roundup) before preparing the seedbed. This is especially true if tall fescue, crabgrass, Johnsongrass, or bermudagrass are currently growing on the site.

Following are some recommended mixtures for both annual and perennial cool-season food plots. Rates are per acre.

Annual:

- | | |
|------------------------------|------------------------------|
| 1) 12 lbs. Crimson clover | 2) 7 lbs. Arrowleaf clover |
| 15 lbs. Austrian winter peas | 15 lbs. Austrian winter peas |
| 15 lbs. Oats | 8 lbs. Rye |

Perennial:

- | | |
|-------------------------|--------------------------|
| 1) 5 lbs. Ladino clover | 2) 10 lbs. Alfalfa |
| 6 lbs. Red clover | 4 lbs. Birdsfoot trefoil |
| 2 lbs. Dwarf essex rape | 15 lbs. Oats |
| 15 lbs. Oats | |

Note that no perennial grass (e.g., orchardgrass, brome, or fescue) is recommended. That is because these grasses offer poor forage for wildlife and will out-compete perennial legumes planted within the second growing season. In addition, plots dominated by these grasses harbor significantly fewer insects—important food for wild turkey, ruffed grouse, and bobwhite quail chicks. If these grasses volunteer into the plot, they should be sprayed with a grass selective herbicide (e.g., Vantage , Select , or Fusilade).

Also note that an annual cool-season grain or ryegrass is added to all mixtures. This is very

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important because oats, rye, and wheat are quick to germinate and provide ground cover, reducing the chance for soil runoff and erosion. As a result, they provide a “nurse crop” while the legumes germinate and get established. Because cool-season grains are annuals, they die in late spring, leaving a lush stand of legume forage (when perennials are planted).

When planting, it is important that small seeds (e.g., clovers, alfalfa, rape) are not planted too deep (i.e., not over 1/4-inch). They should be cultipacked after seeding. Discing is not necessary! Discing will cover these seeds too deep and not provide firm seed-to-soil contact. An exclusion cage (approximately 4 feet in diameter) should be placed in all forage plots to monitor planting success, growth, and use by wildlife. Watching the vegetation in the exclusion cage grow tall while that in the surrounding plot is browsed off can be quite enlightening! For additional information, refer to *Planting Chart for Wildlife Food Plots in Tennessee* (SP 550-A).

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Feed Catfish Economically

Tom Hill, Professor, Fisheries Management

With production costs climbing and depressed market prices that are prevalent, any practice that promotes good catfish growth with less expense should be considered. This is a worthwhile consideration whether a single pond is managed just for home use or it is a commercial venture of several ponds.

An important reason usually given for using floating catfish feeds - - rather than pelleted sinking feeds - - is the advantage of being able to watch the fish eat. The health and general well being of fish can be evaluated by how much feed is eaten and how vigorously it is consumed. This is an important issue, but there may be alternatives that are less costly.

Floating diets of comparable nutritive value usually cost 10 to 20 percent more than pelleted sinking feeds. These increased costs are the result of greater processing costs. The increased bulkiness of floating feeds can restrict food intake and result in lessened growth. Further, catfish fed floating feed may have larger viscera and greater dress-out losses during processing. For these reasons, development of ways to feed pelleted feed that sinks - - and yet know that it is eaten - - should prove to be economically worthwhile.

Some experiments have shown comparable catfish production figures between a diet combining 15 percent floating feed with 85 percent sinking feed and a diet that is 100 percent floating feed. Fish ate the sinking feed first and then surfaced to eat the floating feed. They also consumed the combination diet much quicker. The combination feed cost is less than the all floating feed.

Some catfish farmers feed 100 percent sinking feed. They check routinely to see if all the feed is consumed by placing part of it in either a metal or plastic tray. A clean tray indicates the fish are not being overfed. When good estimates of fish weights can be made, an experienced feeder can get a good production with sinking feed as with floating feed.

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Herbaceous Weed Control in Young Forest Plantations

David Mercker, Associate Extension Forester, Forest Management

Most professional foresters will recommend weed control in young forest plantations during the year of establishment and for 1 to 3 years thereafter. Early years are critical to the survival of the seedlings. The shock of being transplanted from a controlled nursery bed to the harsh natural environment can cause mortality.

Unwanted weeds and grasses aggravate seedlings by competing for often-scarce moisture. Further, by robbing sunlight, weeds slow the photosynthetic process, necessary not only for top growth, but also for carbohydrate production and storage in tree roots. Without these vital energy supplies, the growth rate during the next growing season will be suppressed.

Herbicides should be applied early in the growing season, timed to provide control of competing weeds and grasses through mid summer. Most of the foliar growth occurs during this period. Some weed growth in late summer and early fall is desirable if deer browsing will likely be a problem during the dormant season. The weeds will serve to “camouflage” the tree seedlings, making them less obvious to browsers.

Grasses are normally more competitive than are weeds. This is particularly true with fescue. Heavy grass cover can also be a fire hazard in early spring, on warm days with high winds, prior to the growing season while the grass is still dry. As such, it is best to broadcast herbicide for complete control of grasses prior to planting trees.

Cost-share assistance is often available for landowners to help offset the costs associated with herbicide applications. Contact your local Division of Forestry Area Forester for details.

For more information contact: *David Mercker at (731) 425-4717*
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Toxicity of Black Walnut Toward Other Plants: Allelopathy

Wayne Clatterbuck, Associate Professor, Forest Management & Silviculture

Black walnut is highly-valued for its wood and nuts. However, black walnuts are poor trees for many home landscapes. Not only do walnuts produce messy fruits and nuts, they also create difficult growing conditions for many other plants.

Black walnut produces a toxic substance call hydrojuglone, which when exposed to air or soil compounds, is rapidly oxidized into the allelopathic compound juglone that can be harmful to nearby plants. Allelopathy is the plant’s secretion of biochemical materials into the environment to inhibit germination or growth of surrounding vegetation. Juglone enhances the survival and growth of black walnut at the expense of or by inhibiting the growth and development of other plants. This toxin restrains respiration in susceptible plants.

Generally, the highest concentration of juglone occurs in the soil within the dripline of trees where there is greater root density and accumulation of decaying leaves and nut hulls. The walnut roots produce the highest concentration of juglone in the summer. Emerging leaves can produce large amounts of juglone in spring and the maturing fruit (hulls) do so in the fall. The constant production of juglone prevents some plants from performing well in the vicinity of black walnut. Juglone is poorly soluble in water and thus does not move very far in the soil. Butternut, English walnut, pecan and hickories also produce juglone, but much less than black walnut.

To reduce the allelopathic effects of juglone:

Regularly clean up all fallen leaves and fruit from the black walnut tree, keeping debris away from desired landscape plants.

Compost plant debris at least 6 months to degrade any toxins present in the compost pile. If composting is impractical, do not use any part of the walnut tree as compost or mulch for other plants.

Maintain high organic matter levels in the soil because organic matter encourages healthy soil microbial populations than can metabolize toxins.

Plant juglone tolerant vegetation underneath and near walnut trees.

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Cubic Feet, Board Feet and Cords

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

- A cubic foot is 1 foot by 1 foot by 1 foot.
- Besides talking in cubic feet, foresters also talk in board feet: that's a piece of wood 1 inch thick by one foot long and one foot wide. Sawtimber is commonly measured by the thousand board feet (MBF). This is equivalent to 160 cubic feet.
- A cord is a stack of wood (logs) 4 feet by 4 feet by 8 feet. That is 128 cubic feet, but since trees are round and irregular, there are air spaces between the sticks. Thus a cord of wood actually has only 80 to 90 cubic feet of solid wood.
- A cord of air-dried dense hardwood (oak, hickory, etc.) weighs about 2 tons and has the heating value of about a ton of coal or 200 gallons of fuel oil. Water composed 15 to 20% of the weight of the wood.
- About 20% of a cord is bark. Bark and wastewood (slabs, sawdust, etc.) provide more than half of the energy needs for U.S. forest industries. Bark is also a source of many chemicals and is used for mulches and soil conditioners.
- ▶ Building an average 1,800-square-foot home uses 10,000 board feet of lumber, equivalent to 20 cords.

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From One Thousand Board Feet, You Could Make

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

- 15 million toothpicks
- 2,000 to 4,000 pounds of paper depending on the pulping process
- 1,900 one-pound books
- 123,000 No.10 envelopes
- 8.8 million commemorative size postage stamps
- 950,000 personal checks
- 180,000 sheets of letterhead bond paper
- 2,400 copies of National Geographic
- 60 Boston rockers
- 24 dining room tables (seating 8)

Source: American Tree Farm System

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Forest Fertilization

Larry Tankersley, Extension Assistant, Forest Management

Fertilization is a fundamental aspect of all agricultural enterprises. Why not forestry? Fertilizing would likely assist “weeds” as much as crop trees. Fertilization can also be a significant cash outlay with delayed returns depending on when you plan your next harvest.

Fertilization is common in regions of the country with active pulp and paper industries and plantation production systems. In these areas, the trees/forests are intensively managed and markets are strong and diverse enough to support the “economic” decision to fertilize.

Forest fertilizer applications as in crop or forage production is based on soil tests. A common system in the south Atlantic coast is the identification of phosphorus deficient soils. These areas are fertilized at planting to get the young genetically selected pines out of the ground. Other systems give the trees a nitrogen “boost” within five years of harvest.

In Tennessee, our forests are diverse with many sites and species of trees. Favoring “valuable” species over those less so would seem to be a good start on effective nutrient management in most situations. Discussions of improved nutrient use in your forest should include vegetation management before we start adding P and K.

For more information contact: *Larry Tankersley at 865-974-7346*
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Tree Stand Improvement, Continued

Larry Tankersley, Extension Assistant, Forest Management

We have mentioned before, using herbicides to release crop trees for Timber Stand Improvement with the crop tree release method. We continue to endorse this method for a variety of reasons including development of a more open and picturesque feel to the woods, improved sunlight to the forest floor encouraging forbs and grasses (I just saw a rabbit in ankle deep grass, he thought he was hidden) and improved vigor of our “best” sawlogs.

Research in West Virginia continues to fine tune this silvicultural practice. Chemical crop tree release treatments were applied at three locations in West Virginia. These treatments included: glyphosate as Accord , imazapyr as Arsenal AC and Chopper , triclopyr as Garlon 3A and 4 . Application methods included “hack ‘n squirt” injection and low volume stem bark banding. The forest type was primarily black cherry with American beech as the primary competitor.

After twelve months almost complete control was achieved with the injection of Accord , Garlon 3A and Arsenal AC . The low volume bark applications were **not** effective. Of special note: the imazapyr treatments adversely affected several crop trees and is not subsequently recommended. Some damage was reported using Accord but not enough to withdraw from use. As with all herbicides strict adherence to label recommendations is required to limit damage. No crop tree damage was noted with Garlon 3A .

This study also considered future stand composition and dollar value projections. The cost of the injection treatments in terms of dollars per square foot of basal area (\$/ft²) were: Accord \$0.91, Garlon 3A \$1.04, and Arsenal AC \$0.84.

Using a computer growth simulator to predict future stand conditions and dollar values, the injection treatments more than doubled the growth of the black cherry. Real rates of return for the various treatments averaged 8.77%.

The authors concluded that, at least under their conditions, chemical crop tree release treatments using stem injection with label recommended solutions of Accord or Garlon 3A are effective ways to increase future value of Appalachian hardwood stands.

(Prices and products are provided for information purposes only and are not intended to discriminate or endorse.)

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