



Forestry, Wildlife & Fisheries Update Newsletter

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

April 2005
Website: <http://fwf.ag.utk.edu>

Calendar of Events

- Apr. 28 - Master Logger Cont. Ed. Class -
Farm Bureau Office, Wartburg
Silviculture
- May 5 - Master Logger Cont. Ed. Class -
UT Experiment Station, Crossville
- May 14 - Hickman Co. Forestry Association
Forestry Field Day
- May 16-18 Regional Forestry/Wildlife Contest
- June 16 4-H State Forestry/Wildlife Contest

In This Issue

Notes from the Web - Hunting for Mushrooms	Page 1
Wildlife Management Calendar	Page 2
Forestry for Non-Foresters Shortcourse Scheduled	Page 3
4-H Forestry Update	Page 3
What is the Southern Regional Aquaculture Center? (SRAC)	Page 3
Hardwood Analyze and Trends	Page 4
How Do Acorns Develop?	Page 5
The Consequences of <i>Not</i> Harvesting Timber	Page 6
Logging Roads for Your Forest Property	Page 7
Clearcutting as a Regeneration Method, Not a Harvesting Technique .	Page 8
For Building Houses, Wood Is The Environmental Choice	Page 9
Sudden Oak Death	Page 10
Setting Up a Permanent Plot	Page 11
Quality Warm-Season Forage Plots for Wildlife	Page 12
Plan Now to Keep Wildlife from Raiding Vegetable Gardens	Page 13

Notes From the Web- Hunting For Mushrooms

Samuel Jackson, Web Coordinator

Springtime in the woods brings out a variety of plants and fungi that thousands of us spend time looking for to satisfy our taste buds. Today, I'm specifically talking about hunting for mushrooms!

The most commonly hunted mushroom is the elusive morel. Actually, there are three types, (black, half-free, and yellow) morels that you can find in Tennessee. These mushrooms are known for their delicate taste and are sought after by some of the finest restaurants in the world.

When search for morels or any other edible mushroom in the wild, it is important to know what you are looking for safety purposes. Many mushrooms are not edible and can cause death if ingested. This is not a scavenger hunt for those who don't know exactly what they are looking for.

Mushroomexpert.com is a great place for a budding mushroom hunter to learn some tips of the trade. The website is packed with information on identifying the edible mushrooms, learning the types of mushrooms to avoid, and rules that every mushroom hunter should follow. The website has even haspicking and preparing tips for mushrooms, including several recipes.

This spring and summer, as you go out hunting mushrooms, check out the website of Mushroomexpert.com and be sure you know what you are looking for. It could be the information that saves your life!

For more information contact: Sam Jackson at (865) 974-2946 or
samjackson@utk.edu

Wildlife Management Calendar For May

Craig Harper, Associate Professor, Wildlife Management

Plant native warm-season grasses and associated forbs

- kill existing sod before planting, then burn
- use pre-emergence herbicides
- plant seed **no deeper** than ¼ inch
- be patient!
- see *A Landowner's Guide to Native Warm-Season Grasses in the Mid-South*, PB 1746, for spraying, planting, and management recommendations

Plant firebreaks and other disced strips not left for natural vegetation

- iron-clay cowpeas, re-seeding soybeans, lablab, milo, and various millets provide forage and seed for a variety of wildlife species

Plant warm-season food plots

- see *Growing and Managing Successful Food Plots for Wildlife in the Mid-South*, PB 1743, for planting recommendations

Bushhog and spray perennial forage food plots for weed control if necessary

Collect soil test samples from plots to be planted this fall and lime now as needed

Leave young wildlife alone

- let nature takes it's course; you'll do more harm than good by trying to save "orphans"

Establish salt/mineral licks for white-tailed deer

- best if offered in a metal-lined trough that can be cleaned occasionally with bleach/water solution

Put up chicken-wire fence 2 feet high around vegetable gardens to protect them from rabbits

Put up a 2- or 3-strand electric fence (one strand 6 inches above ground and the other 6 inches higher) to keep groundhogs and raccoons out of vegetable gardens

To repel deer from vegetable gardens, erect a single-strand electric fence (2 ½ feet above ground) with aluminum tabs attached every 3 – 5 feet. Smear peanut butter on the aluminum tabs. Deer are attracted to the peanut butter; however, when they touch the aluminum tabs with their mouths, they learn to stay away.

Plant "alternative" forages for wildlife on the outside of fencing around a garden to satiate the appetite of deer, groundhogs, and rabbits, further helping to keep them out of the garden.

Snakes are beginning appear with warmer days

- clean up around the house (mow, remove piles of wood, brush, and trash) to repel snakes
- there is no reliable "repellent" for snakes; only "snake oil"

Refer to *Managing Nuisance Animals and Associated Damage Around the Home*, PB 1624, for additional wildlife damage management information.

Forestry for Non-Foresters Short Courses Offered in Athens, GA

Samuel Jackson, Web Coordinator

The University of Georgia Center for Continuing Education is offering a unique short course aimed at landowners and those interested in learning more about forestry. Part 1 will be offered in May 17 and will cover the history and importance of forestry in the south, an introduction to forest management, and field activities to reinforce the concepts learned. A more in-depth short course, Part 2 will be offered on May 18-19. This course will cover tree identification, forest ecology, timber cruising, GPS/GIS systems, wildlife management, forest health, and forest markets.

Registration fees apply and lodging is available onsite.

For more information or registration, please contact Ben Jackson (706-542-2194) or visit the website of the short courses at <http://www.gactr.uga.edu/conferences/forestry>

###

4-H Forestry Update

Larry Tankersley, Extension Specialist, Forest Management

The rules will not change for the upcoming regional or state contests. We have reprinted rule books and are now accepting “orders” for up to 10 copies per county. Dates for the Spring contests are:

May 16, Eastern Region, Knoxville Experiment Stat, Alcoa Hwy.

May 17, Central Region, TBA

May 18, Western Region, TBA

The state contest is June 16. I am trying to find a place in the middle of the State for this contest. Let me know how I can help you prepare for the contests. We have CDs available for your use with a lot of very helpful information.

For more information contact: *Larry Tankersley at 865-974-7346*
ltanker1@utk.edu

###

What Is SRAC?

Reprint of Article - Dr. Tom Hill, Professor Emeritus

The Southern Regional Aquaculture Center (SRAC) is one of five regional centers established by Congress about 17 years ago. The centers are administered through the USDA Cooperative State Research, Education, and Extension Service. Mississippi State University serves as the host institution for SRAC and the administrative center is located at the Thad Cochran national Warmwater Aquaculture Center at Stoneville, MS.

Aquaculture is one of the most rapidly expanding agricultural industries both here and in other parts of the world. Domestic aquaculture production is centered in the southeast region where more than 100 species of fish, shellfish, and aquatic reptiles and plants are cultured for food, bait or ornamentals. The total economic value of southeastern aquaculture is over \$5 billion. Understandably, the need for information to sustain growth and development has increased dramatically over the past 25 years.

The need for SRAC is obvious. In simplest terms, SRAC provides an efficient means for identifying and solving aquaculture problems. Here's how it works. Priority research and education needs for the southern region are identified by the Industry Advisory Council, aquaculture representatives from throughout the region. Then there is the Technical Committee which is composed of research and extension scientists who work at universities in the southern region. These two groups recommend project areas to the SRAC Board of Directors. The Board selects priority categories from the recommendations for project development and funding. The best scientific talent in the region is then brought together to address the identified problems.

The impact of these research efforts has been the development of many technologies that have been adopted by the aquaculture industry. Hundreds of high quality peer-reviewed scientific articles, graduate theses, technical papers and extension fact sheets have been published. This information is used by aquaculture producers, lending agencies, and consumers. High schools and colleges use SRAC publications in their classrooms throughout the United States and in other countries of the world.

For further information on SRAC and detailed reports of various projects, visit the SRAC web site at <http://www.msstate.edu/dept/srac>. Also, each extension leader was sent a CD a couple of years ago that has all of the SRAC extension publications (more than 150) that can be printed off in the extension offices. These are also accessible on the website. Additionally, as many of you know because you utilize them, a large number of these extension publications are available in printed form from the mailroom at the University of Tennessee. I know you will find these publications useful as you work with your clients to provide them the best available research based information.

###

Hardwood Analysis and Trends (HAT)– April 2005

David Mercker, Extension Assistant, Forest Management

For several years, the UT Extension Directors, as well as landowners and loggers, have requested a summary of timely trends in hardwood markets. With this issue of the Department of Forestry, Wildlife and Fisheries' monthly Update, we are introducing *Hardwood Analysis and Trends (HAT)*. Using information gathered from primarily the Hardwood Market Report, Memphis, Tennessee, **HAT** summarizes recent lumber market activity for some of the more common hardwood species sold in Tennessee. This not a price report, such as the *Blue Sheet* that historically has been offered by the Tennessee Department of Agriculture Division of Forestry. Instead, **HAT** offers brief comments to aid our readers with forest management and timber sale decisions. **HAT** summarizes regional activity, is meant to show general analysis and trends, and does not reflect local market aberrations. Six of the more commonly sought-after species will be addressed, including: red oak, white oak, poplar, cherry, hard maple, and black walnut. Please send us your comments regarding **HAT**, and suggestions on how it might be more useful.

Red Oak – after experiencing an extended run over the past decade, red oak demand is softening at domestic level, while the China demand continues to improve; the unfinished oak strip flooring for lower grade lumber is presently oversupplied; pricing is under pressure and reductions have occurred.

White Oak – market activity for white oak is mixed depending upon quality; Solid demand exists for the higher grade lumber held up by the European demand and the low dollar value; as with lower grade red oak, the lower grades of white oak that typically go to the strip flooring market, have experienced greater pressures leading to price reductions.

Poplar – prices for poplar have suffered over the past several years, down as much as 60% in some locations; presently the pace of sales and resulting pricing is improving and appears to be tied to the China demand.

Black Cherry – the quality of black cherry within Tennessee varies considerably by region, site, and past land treatment; On poor quality sites, or on locations where livestock pasturing or ground fire were common, black cherry often develops pitch pockets that lower market value; however, demand for cherry as an appearance wood has increased; where good quality logs exist, cherry prices exceed black walnut and out-price red and white oak by 2:1.

Sugar Maple – as with black cherry, the quality of hard maple varies considerably about the state; where fine quality trees with “white wood” are present, prices are favorable; poorer quality trees often have an orange heart, significantly lowering market value; prices for fine quality have experienced a sweltering upward swing that now appears to be leveling.

Black Walnut – again, similar to black cherry and sugar maple, the quality of black walnut is not consistent throughout the state; walnut enjoys a steady market share and fetches prices above oak, yet below fine cherry and maple; prices are holding firm.

Reference: Hardwood Market Report, Lumber News Letter, April 2, 2005.

For more information contact: *David Mercker at 713-425-4703*
dcmercker@utk.edu

How Do Acorns Develop?

David Mercker, Extension Assistant, Forest Management

Each year during the spring months there is harried activity as various organisms - the plants and animals – get about their work. Adequate conditions for growth (temperature, moisture, light, etc.) that have been scarce over the winter months, suddenly become available, and are a smorgasbord for the taking. Each species tries to position itself to benefit from the resources, in order to better perpetuate its kind. Oak trees are no exception, so shortly after the buds begin flushing, energy is directed into flower production in the hopes of a cache of acorns will be available by fall.

Like many trees, the oaks are said to be *monoecious*. This means that both the male (staminate) and female (pistillate) flowers are on the same tree, and that potentially every tree is capable of producing acorns. In contrast, other trees, such as persimmon and white ash, are *dioecious*, whereby the male and female flowers are produced on separate plants. Only those trees with female flowers produce seed.

The male flowers of oak trees are quite noticeable. Normally by late March oaks have produced long, worm-like looking structures that droop downward off of the base of newly forming branches. These structures, called catkins, will have a number of small flowers, resembling bumps, persisting along the stem. From these flowers comes the pollen, that by mid-April affect so many allergy sufferers.

The female flowers are much more discrete, requiring a hand lens for identification. They are also located on newly forming twigs, specifically at the base of emerging leaves, and are easily overlooked because they closely resemble buds. Unlike buds, however, the female flowers will have very small, reddish stigma (which are like small pedestals) that rise up from the ovaries to receive the pollen. There may be 5 or 6 ovaries at the base of each female flower, of which rarely will more than 2 become fertilized.

Year-to-year acorn production is very unpredictable due mainly to external factors. For instance, acorn production can be restricted by: late freezes (damaging the flowers), high wind (affecting pollen distribution and damage to male flowers), insects (such as weevils feasting on the seeds), nutrition, humidity, and soil moisture. Oak trees often abort acorns during periods of stress. Inherently, in an attempt to conserve resources such as water or nutrients, trees will abort seeds, then redirect resources away from seeds and into more critical life-sustaining processes. It is also known that genetics plays a role in acorn production. Certain trees typically produce more acorns than others – a phenomena that deer hunters keenly observe. Trees appear to begin producing acorns at about 20 years old, with peak production from about 50 to 80 years, then tapering off. Healthy trees with dominant crowns (crowns decidedly higher and larger than those of surrounding trees) will produce more acorns than unhealthy, suppressed trees.

There are 20 species of oak trees native to Tennessee, 8 in the white oak group and 12 in the red oak group. White oak acorns taste sweet and mature in one year, whereas red oak acorns are bitter tasting and mature in their second year.

Oak trees are essential to Tennessee for wildlife, aesthetics, and lumber production. It is important to keep oak trees and forests healthy in order to perpetuate this species for future beneficiaries.

For more information contact: *David Mercker at 713-425-4703*
dcmercker@utk.edu

###

The Consequences of *Not* Harvesting Timber

David Mercker, Extension Assistant, Forest Management

Occasionally foresters are asked the question, “What are the consequences of *not* harvesting my timber?” There are both economical and ecological consequences.

Economic

The productivity of Tennessee forest lands varies considerably. Fertile and moist bottomland sites experience much higher productivity than some of the shallow-soiled uplands. However, if we assume the average hardwood forest site is capable of producing 200 board feet of hardwood growth per acre per year, and the value of that growth is \$.25 per board foot, then average forestland will generate approximately \$50 of potential income per acre per year (calculated by $200 \times \$.25$). If we further assume that the value of average forestland is \$800 per acre, a respectable annual return on investment for hardwood forests becomes 6.25% (calculated by $\$50/\800). This return is only realized if and when the timber is sold, which on average occurs on 15 year intervals.

Landowners have options of where and how to invest their wealth, if not in forestland, then an alternative. The point is, money is not made growing timber. It’s made selling it. By not selling timber when appropriate, not only are current revenues sacrificed, but so are future revenues due to tree mortality and suppression of forest growth.

Ecological

Some landowners are indifferent to a financial return on their forestland, stating instead that maintaining forest health and diversification of habitat is the priority. With this, the misconception often is that harvesting timber somehow compromises these objectives.

Most professional foresters and wildlife biologists counter the “no harvest to protect the forest” tenet. Experience confirms that forests should undergo periodic harvesting. Without periodic disturbance, sufficient sunlight fails to reach the forest floor and oak species (that are desirable to many

of Tennessee's wildlife) do not adequately regenerate. Instead, the dynamic of the forest gradually changes to tree species that are more tolerant of shaded conditions – conditions that often persist from no disturbance. Such species include maple, dogwood, beech, ironwood, elm, etc., none of which produce the highly sought after acorns for an array of wildlife.

Trees remaining after a harvest, and those new ones that soon begin, experience rapid growth because the elements needed for healthy tree growth are freed (sunlight, nutrients, water, and space). Life for a tree at this point is plush. Consequently, tree's health during these rapid growth periods is more resistant to diseases and insects. In contrast, overly-dense forests not having experienced thinning or harvesting, often contain stressed trees that are more susceptible to mortality from insect and disease attack. For the last word in forest health, one only needs to consider the Southern Pine Beetle epidemic that killed millions of trees in east Tennessee from 1999 to 2002. Many of those stands, if they had been previously thinned, likely would have contained vigorously growing trees – trees more capable of withstanding the insect invasion.

Further, vegetation that initially flourishes following a timber harvest provides diversity in habitat (both food and cover). Some wildlife requires this early successional cover – something that lacks in more mature, closed-canopy forests.

The reasons for harvesting timber more often outweigh the reasons against it. For private landowners, the decision to harvest is a personal one. There is no definitive answer, only predictable consequences.

For more information contact: *David Mercker at 713-425-4703*
dcmercker@utk.edu

###

Logging Roads for Your Forest Property

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

Roads are a major source of erosion and sedimentation in the forest. Care must be taken during road construction and maintenance to minimize these impacts. Roads divert shallow sub-surface drainage and increase surface runoff. The basic rule for managing surface water is to handle it in small amounts before the water develops sufficient volume and velocity to cause erosion. Turnouts, broad-based dips and out-sloping the road are a few examples of getting water off the road quickly.

Do not build your road when soils are either very wet or very dry. Both conditions contribute to roadbed instability and sediment production. If possible, build your road at least three months before your logging operation begins to allow the road to settle and stabilize. Roads should be built on the ridgecrests, not the top of the ridge, to allow a slight degree of slope for water to drain from the road.

The surface of the haul road may be shaped in three ways: crowned, in-sloped and out-sloped. The choice of surface shaping depends on drainage needs, topography, soil characteristics, slope and expected traffic. In-sloped or out-sloped roads are easier than crowned roads to maintain because they have a flat surface. Out-sloped surfaces need little or no high side ditch. This reduces the cost of road building and makes subsequent maintenance easier. In-sloped roads are generally not recommended unless absolutely necessary because expensive drainage structures such as culverts are required to get water back across the road. Crowned roads usually require double-ditching, a ditch on both sides of the roads. Double-ditching is usually more expensive to maintain than out-sloped roads, but may be required if roads are on the center of the ridge.

On straight stretches, road width should be 12 feet for most log trucks. On curves, road width needs to be greater to allow for the shorter tracking radius of the back wheels of the trailing load. The outside curve needs to be clear to allow tail sweep of long, log loads to pass.

To enhance prompt drainage from the roadbed, the road grade should be at least 2 or 3 % and the road surface should be smooth to prevent water puddling. Conversely, a haul road grade should not exceed 12%. Some haul roads are steeper, but they can become a safety concern during muddy conditions. Steeper grades quickly get torn up with spinning tires. Grade changes should be gradual without binding the load on the tractor or high centering between extended trailer wheels.

Putting gravel on your haul road will greatly increase its utility. Gravel roads are more usable during wet weather and hold up better under load stress. However, adding gravel increases construction costs. A strategy more commonly used is to gravel only where the road is likely to be a problem such as over culverts, across broad-based dips and in soft spots. For safety purposes, gravel the haul road where it meets a public road. The gravel helps keep down the dust at the intersection and also cuts down on the amount of dirt the trucks drag onto the highway.

The haul road should approach the highway at an angle headed in the direction that the trucks will be hauling. This greatly reduces the time it takes for a truck to enter traffic flow. The line of sight of the intersection should be clear for good visibility. The outlet of your haul road should not be in a blind curve or other obstruction that may hinder the view of sight.

Roads can be an asset for your property both during the harvest and for access afterward if they are properly located and maintained. If proper planning is done before the harvest, your roads will give you many benefits at less cost for other forest management activities.

For more information contact: *Wayne Clatterbuck at 865-974-7346 or*
wclatterbuck@utk.edu

###

Clearcutting as a Regeneration Method, Not a Harvesting Technique

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

Recently, I was asked by the Tennessee Department of Agriculture to give a short presentation on the science of clearcutting to both the Tennessee Senate and House Environment Committees. Outlined below are my comments.

- Although most people look at *clearcutting* as a harvesting technique, foresters refer to clearcutting as a method of regeneration.
- A tenet or principle of forest management is sustainability. Forests are dynamic and trees do have definite lifespans, very much like any organism including humans. Trees do die. To ensure sustainability, a forest or trees must be regenerated.
- Clearcutting is a regeneration method to support species that require full sunlight (shade-intolerant species such as cherry, yellow-poplar, most oaks, pine, ash, sweetgum, walnut and locust). Most plants require ample sunlight to grow and survive and will not thrive in the shade.
- Clearcuts support early successional forest development which is important for many species of wildlife. Closed canopy forests do not produce the abundant browse and other ground vegetation that wildlife prefer. To provide the best balance of different habitats for wildlife, the forest should contain a mix of early, mid- and late successional vegetation.
- To maintain forest health, clearcutting is a method of controlling insect and disease outbreaks so these problems do not spread to adjacent forests.

- Clearcutting is one method of regeneration advocated by the Society of American Foresters, the professional forestry organization in the United States. Their position statement on clearcutting is on the web at <http://www.safnet.org/policyandpress/psst/clearcut1202.cfm> and copies of that statement is available to the committee.
- Clearcutting is an unfortunate term. We clearcut when we mow the lawn; harvest an agricultural crop; build a parking lot or road; clear land for pasture; build shopping centers, hospitals, schools and subdivisions. All these land uses to non-forest designations are acceptable to society. But somehow using clearcutting to *regenerate* trees, keeping land in forest designation rather than non-forest uses, is controversial.
- Clearcutting has a sound biological basis, is a sustainable practice and is recommended as one method of regeneration by the University of Tennessee. Clearcutting should not be universally practiced or universally banned. It is one tool in a box of tools that must be used under appropriate conditions to meet landowner objectives without compromising the environment.

For more information contact: *Wayne Clatterbuck at 865-974-7346 or*
wclatterbuck@utk.edu

###

For Building Houses, Wood is the Environmental Choice

Adam Taylor, Assistant Professor, Wood Products Management

It makes sense that building with wood – a renewable, natural resource – would have environmental benefits compared with steel or concrete. This common sense judgment is now being backed up with scientific data.

CORRIM, a non-profit group of university and industry research groups has been examining the environmental costs of many products, including various building materials. CORRIM uses a “cradle-to-grave” approach called Life Cycle Assessment to estimate the total impacts of the manufacture and use of products. For example, for a piece of construction lumber, this would include the gasoline used in the chainsaw to cut the tree in the forest, and all of the other energy “inputs” and pollution “outputs” along the process until that piece of wood is installed at the housing site.

In one study, houses in various areas of the country made with wood, steel or concrete frames were compared for the total energy consumed in the manufacture the house and the total pollution created (including the total carbon dioxide [CO₂ - a “greenhouse gas”], total air pollution, water emissions and solid waste). The results of their research show that wood-frame houses have less environmental impact in almost every category. The table below shows some of the data.

Compared with a wood-framed house...	A steel-frame house ¹	A concrete-frame house
Energy required	17% more	16% more
Carbon dioxide produced	26% more	31% more
Air pollution	14% more	23% more
Water emissions	312% more	Same
Solid waste	<1% less	51% more

¹In this case, a wood-frame, residential house was compared with a similar steel-frame structure in Minnesota. For the concrete-frame/wood-frame example, houses in Atlanta were compared.

Many of us are already aware of some of the many benefits of using wood. It is used to make strong, efficient and durable houses. Wood is an attractive and comfortable material from which we make beautiful furniture and flooring. Wood is also very versatile and abundant and is used in thousands of products necessary to daily life. Perhaps the best thing about wood is where it comes from: the forests of Tennessee are the “factories” that make wood and other “products” such as wildlife habitat, recreational areas and clean air and water. This recent data on the environmental advantages of using wood for housing is providing more evidence for what we already know: Wood is Good!

For more information contact: *Adam Taylor at 865-946-1125*
adamtaylor@utk.edu

###

Sudden Oak Death

Adam Taylor, Assistant Professor, Wood Products Management

Tennessee is one of the nation’s largest producers of hardwood lumber and much of that output is white and red oak. So the news of a contagious disease that is killing oaks in California is certainly a cause for concern. The good news is that the pathogen has not spread to the forests of Tennessee. The bad news is that the disease has been detected in Tennessee plant nurseries and it appears to be adaptable and difficult to contain.

Sudden Oak Death (SOD) is the name that has been given to the various tree and shrub diseases caused by *Phytophthora ramorum*. This fungus-like organism, a relative of the blight that caused the Irish potato famine, has more than 60 known host plants in the United States, mostly in the coastal regions of Northern California and southern Oregon. SOD has killed tens of thousands of oaks on the coast of California and in southern Oregon.

Because SOD can kill its hosts and can infect both ornamental shrubs and forest trees, aggressive quarantine measures have been taken to contain its spread. Infected forest areas and nursery stock have been cut and burned. Nurseries in affected areas in California must have inspections of all known *Phytophthora ramorum* host plants before they can be shipped around the country.

SOD causes leaf blight, tip dieback and bleeding cankers on infected trees and shrubs, but these symptoms are similar to those caused by a number of other diseases such as bacterial wetwood, anthracnose and other fungal pathogens. Laboratory tests are required to confirm that a plant is infected with SOD. *Phytophthora ramorum* only infects plants and it is not harmful to humans or animals. It appears that SOD is often unable to spread from trees to other trees; an alternate host understory plant such as rhododendron or laurel may be required to complete the lifecycle of *Phytophthora ramorum*. However, once infected, the disease can be deadly for trees and there could be serious consequences if this disease spread into the oak forests of Tennessee.

Sudden Oak Death got its name because it has killed many tanoaks and oak species native to California. Other oaks such as the white oaks and red oaks that are so abundant in Tennessee are not yet known to be natural hosts for the disease; however, they have been successfully infected in the lab. Because of a number of factors including a humid climate, a large number of plant nurseries and the presence of potential host plants, Tennessee is considered to be an area at high risk for SOD.

It is too early to tell the impact of SOD on the forests of Tennessee. Monitoring programs are underway throughout the region to detect *Phytophthora ramorum*. In the meantime, we will have to hope that containment efforts are successful and that SOD doesn’t find the forests of Tennessee to be a suitable home.

For more information contact: *Adam Taylor at 865-946-1125*
adamtaylor@utk.edu

Setting Up a Permanent Plot

Larry Tankersley, Extension Specialist, Forest Management

Many people complain that their timber just isn't growing. Maybe it is or maybe it isn't. One way to observe tree growth is to establish a growth plot. This plot will provide an activity for your children, nieces and nephews, or grandchildren.

- > Establish a point using a metal rod painted a conspicuous color. From this point you can establish a circular plot. A radius of 37 feet, 2.8 inches is a tenth of an acre.
- > Paint a ring around the trees within your plot at 4 feet 6 inches from the ground, this is known as breast height.
- > Measure the diameter at breast height and the total height of the tree.
- > Identify the species and number the tree
- > Measure several or all the trees in the plot, red oaks, white oaks, yellow-poplar, sugar maple, pine.
- > Judge the tree crown condition and its dominance. Is the tree above the others? That's dominant. If the tree is part of the main canopy that tree is codominant. Other trees may be intermediate or suppressed.
- > Record these measurements and the date and keep them with your management plan.
- > After time has past revisit the plot and remeasure the trees. Are they bigger? Have any died?

How does the growth compare between an intermediate tree and a dominant tree?

What's the difference in an oak's growth on the top of a hill as opposed to the bottom?

What is the effect of a prolonged drought on tree growth?

This is a very "quick and dirty" method of assessing tree/forest growth but it can be fun if you make it a group activity. Coaching a group of 4-Hers can be a learning opportunity for you and the young folks. Just an idea to get ya'll in woods lookin' at your trees. Enjoy!

(Idea from forest owner Charles Finkbiner in Pennsylvania).

For more information contact: *Larry Tankersley at 865-974-7346*
ltanker1@utk.edu

###

Quality Warm-Season Forage Plots For Wildlife

Craig A. Harper, Associate Professor, Wildlife Management

White-tailed deer are considered browsers because a large portion of their diet is comprised of leaves and twigs of woody species. Their diet, however, changes with the seasons. During summer, the majority of a deer's diet is comprised of various forbs—broadleaf herbaceous plants. Many forbs are considered weeds (e.g., ragweed, pokeberry, and morning-glories), but some are planted (e.g., beans, peas, and clovers). Least preferred at this time of year are grasses. For this reason, grasses should not be included in warm-season forage plots for deer. In addition, some of the worst warm-season competitors are grasses (e.g., crabgrass and johnsongrass). Planting legumes and other forbs allows grass-selective herbicides to be used when managing warm-season forage plots.

Top-quality warm-season forages contain relatively high levels of protein and have a high percentage of total digestible nutrients. To meet the demands of lactating does and rapidly growing fawns, warm-season forages should contain 20 – 25 percent protein and be readily digestible. In addition, warm-season forages should be drought tolerant as they are expected to grow during the hottest part of the year with prolonged dry conditions common in many areas. An ideal forage for warm-season plots also should be resistant to browsing and capable of producing abundant forage throughout the growing season, persisting into the late summer and early fall when naturally-occurring forages have matured and become stemmy, less nutritious, and less palatable.

Iron-clay cowpeas, Quail Haven re-seeding soybeans, and lablab are 3 warm-season forages that meet all of these requirements—nutritious drought-tolerant forbs resistant to browsing pressure and able to produce abundant forage throughout the growing season, including late summer/early fall when they are needed most. Other forages that can be planted with these include buckwheat and sunflowers. Buckwheat germinates extremely quickly, providing soil stability and forage while the cowpeas, beans, and lablab develop. Peredovik sunflowers are included to provide structure for the legumes to climb upon later in the summer, which enables more forage to be produced on a given area.

Recommended seeding rate per acre:

- 20 lbs iron-clay cowpeas
- 10 lbs Quail Haven re-seeding soybeans
- 6 lbs lablab
- 15 lbs buckwheat
- 5 lbs peredovik sunflowers

A major advantage to iron-clay cowpeas, Quail Haven soybeans and lablab is their ability to grow in relatively nutrient-deficient soils. However, in order to grow top-quality forage plots providing deer with maximum nutrition, soil pH should be amended to 6.0 – 6.5 with 75 pounds of phosphorus (P) and 240 pounds of potassium (K) available per acre. Liming corrects soil acidity, improves availability of nutrients, and improves nitrogen fixation by legumes. Nitrogen should not be added to the plot initially, especially if grasses and other weeds are a problem. If weeds are not a problem, warm-season forages may be fertilized after they become established with 100 pounds of ammonium nitrate (34-0-0) per acre just prior to a rain event. This fertilizer application should increase plant growth and available protein. It is important to realize this application will not produce the desired results until the pH has been amended and the appropriate amounts of P and K incorporated into the soil.

To ensure nitrogen fixation occurs, all legumes should be inoculated with species-specific inoculant prior to planting (unless pre-inoculated seed is sown). Properly inoculated seed may allow bacterial growth to produce up to 200 pounds of nitrogen per acre.

The warm-season forage mixture listed above is planted easily. After incorporating the appropriate amount of lime and fertilizer into the soil, the seed may be broadcast and covered approximately 1-inch deep by discing. After planting, it is critical to watch the plot for encroaching weeds, especially grasses. If grasses begin competing with desired forages, 10 ounces of Select (clethodim) per acre may be used to kill problem grasses. If broadleaf weeds (e.g., spurge, pigweed, prickly sida) become problematic, 2 ounces of Pursuit (imazethapyr) per acre may be sprayed over the plot. This herbicide may injure or kill the buckwheat and sunflowers, but will not harm the legumes. If broadleaf weeds are expected to be a problem, 2 pints of Treflan (trifluralin) per acre may be pre-plant incorporated.

Deer are not the only wildlife species that benefit from warm-season forage plots. Rabbits and groundhogs also will feed upon the forage, while wild turkeys and bobwhite quail benefit from the seed and insects present. Food plots are only one component of habitat management and are intended to augment the quality and quantity of naturally occurring vegetation. Managing all available habitat, including woodlands and old-fields, should be a top priority if wildlife is of interest.

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

###

Plan Now to Keep Wildlife From Raiding Vegetable Gardens

Craig A. Harper, Associate Professor, Wildlife Management

Deer, rabbits, groundhogs, and raccoons enjoy your garden as much as you. Keeping these critters out of your vegetables can be challenging. Planning ahead can prevent frustration later and help save your sweet corn, beans, peas, lettuce, and carrots.

Fencing is the most effective method to keep nuisance animals out of the garden. Erecting a fence before wildlife begin feeding will help control the situation before habits form. For best results, erect your fence soon after planting. Small gardens do not require much fencing material, which makes this method quite efficient, especially since the materials can be used year after year. 2-strand electric fences (one strand 6 inches above ground and the other 12 inches above ground) are effective in keeping raccoons out of sweet corn and groundhogs out of leafy vegetables. A chicken-wire fence 2 feet high with the bottom tight to the ground will keep most rabbits out of vegetable patches. For deer, try a single-strand electric fence (2½ feet above ground) with aluminum tabs attached every 3-5 feet. Smear peanut butter on the aluminum tabs. Deer are attracted to the peanut butter; however, when they touch their nose and/or mouth to the tabs, they quickly learn to stay away from the area.

There are many taste and area repellents available for deer and rabbits. Deer Stopper® has been effective keeping deer out of gardens when applied to a “repellent fence.” A cotton rope, strung around the garden approximately 2½ feet off the ground, will “hold” repellent for several days before reapplication is necessary. This method requires less repellent than spraying within the garden.

Shooting can be very effective and efficient when dealing with nuisance animals in the garden. Shooting raccoons, groundhogs, and rabbits is legal outside designated hunting season when the animal(s) is found depredating crops. A depredation permit, however, is necessary to shoot deer outside the hunting season. Requests for depredation permits should be made to the Tennessee Wildlife Resources Agency. Raccoons, groundhogs, and rabbits also can be trapped using cage (live) or Conibear (body-gripping kill) traps. Baits may include the plant(s) that are being damaged, sardines for raccoons, fruits and melons for groundhogs, or fruits and leafy greens for rabbits. There are no toxicants registered for deer, raccoons, groundhogs, or rabbits.

It is important to realize the effectiveness of these methods depends on the number of animals causing damage and the availability/quality of other food resources. When offending animals are not very numerous, a patch of ladino white and red clover or cowpeas grown near the garden will lessen browsing pressure on garden vegetables by groundhogs, rabbits, and deer. Regardless, using a combination of methods will be more effective than using only one method. For additional information, pick up a copy of *Managing Nuisance Animals and Associated Damage Around the Home*, PB 1624 and/or *Using Single-Strand Fencing to Manage Deer Damage*, SP 598, available at your county Extension office.

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

#

Programs in agriculture and natural resources, 4-H youth development, family and consumer sciences and resource development.
University of Tennessee Institute of Agriculture, U. S. Department of Agriculture and county governments cooperating.
UT Extension provides equal opportunities in programs and employment.