

Kentucky Woodlands Magazine

Volume 2 Issue 2
August 2007

Freeze, Drought and Woodland Health
Forestry 101: Firewood
Carbon Credits
Local Forestry Organizations

Kentucky Woodlands Magazine

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Promoting stewardship and sustainable management of Kentucky's non-industrial private forests.

From the Editors of Kentucky Woodlands Magazine:

This has been a rough year for our woodlands. A significant portion of the state was subjected to an early bud break from the warm spell in early April directly followed by several days in the low 20s. This led to significant defoliation in the southern third of Kentucky with milder effects reaching to the Ohio River in northern Kentucky. The entire state was then subjected to a regional drought. All of this combined to create a "perfect storm" that has the potential to affect our trees and woodlands for some time. This issue has special articles by Dr. Jeff Stringer and Dr. John Strang, Cooperative Extension forester and horticulturist, respectively, at the University of Kentucky that directly speaks to these effects and what we can expect this year and next.

We hope that this issue provides you with information to help you better understand and manage your woodlands. On behalf of the Department of Forestry at the University of Kentucky and the Kentucky Division of Forestry, we thank you for the attention you pay to your woodlands.

Jeff Stringer,
University of Kentucky
Department of Forestry

Diana Olszowy,
Kentucky Division of Forestry

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Managing Editors:

Jeff Stringer
Cooperative Extension Service
University of Kentucky
Department of Forestry

Diana Olszowy
Kentucky Division of Forestry

Associate Editor:

Billy Thomas
Cooperative Extension Service
University of Kentucky
Department of Forestry

Assistant Editor, Advertising & Graphic Designer:

Renee' Williams
Cooperative Extension Service
University of Kentucky
Department of Forestry

Proofreading and Web Support:

University of Kentucky
Agricultural
Communications Service

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Change of Address and Other Magazine Business:

Forestry Extension Office,
Department of Forestry,
University of Kentucky,
216 Thomas Poe Cooper Bldg.,
Lexington, KY 40546-0073
859.257.7597
E-mail: billy.thomas@uky.edu
www.ukforestry.org

Duplicate mailings:

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About the Cover: Thomas Barnes, UK Extension Wildlife Professor, an award winning wildlife photographer and author contributed the cover photograph of Gabe's Branch in Harlan County. Gabe's branch is located about 5 miles from the Pine Mountain Settlement School. Gabe's Branch is well visited by local residents. For more information about Pine Mountain Settlement School visit www.pinemountainsettlementschool.com

Photo above courtesy: Paul Wray, Iowa State University, Bugwood.org



Forestry Extension Office
Department of Forestry
216 Thomas Poe Cooper Bldg.
Lexington, KY 40546-0073
859.257.7597
www.ukforestry.org



Kentucky Division of Forestry
627 Comanche Trail
Frankfort, KY 40601
502.564.4496
www.forestry.ky.gov

Spring Freeze, Summer Drought and Our Woodlands' Future

By Jeff Stringer

This year's spring freeze was arguably the most dramatic and widespread disturbance to Kentucky's woodlands that has occurred in the last 20 years. While the effects were most severe in the southern tier of the state, the entire state was effected. The counties along the Tennessee border and those in far western Kentucky were hit the hardest. The unseasonably warm weather in early April caused most of our species to break bud early and at almost the same time. Even oaks that normally never get fooled by a burst of warmth in the spring were affected by the extended and significantly high temperatures this spring. This set the stage for serious damage to occur to many of our species when the temperatures dropped to the low and mid-20s. Many hickories had six to 12 inches of new growth and flowers when the freeze hit (Figure 1). Oaks, both red and white, had flowers and leaves showing (Figure 2). Yellow-poplar had two to eight leaves exposed. Even black walnut, normally one of the last species to leaf out, had some leaves exposed in southern Kentucky. Regardless of species, the young, succulent growth was not capable of holding up to the extreme prolonged cold. In some cases, the buds were also susceptible to freezing and were killed. Once buds on a branch are killed, the branch will eventually die, and these trees will experience top and lateral branch dieback. Some species such as yellow-poplar were very slow to refoliate. In some instances, it took up to a month for them to start to recover. This indicates how significant this freeze was for many species.

Unfortunately, the effects of this freeze were not simply branch dieback, brown hillsides, and delayed refo- liation. Reduction in acorn and nut production over the next two years will be a reality as well as the potential for tree mortality.

Freeze damage. Photo courtesy: Edward L. Barnard, Florida Department of Agriculture and Consumer Services, Bugwood.org

Acorn and Nut Production

The freeze killed not only newly formed leaves but also the flowers of many oaks and hickories. Observations after refo- liation found that white oaks had also created new flowers (Figure 3). However, this flowering was late and this coupled with the drought may reduce viable white oak acorn production this fall. White oak acorns are preferred wildlife food for many species, and the loss of this impor- tant food source will have ramifications for some wildlife populations. Barring a similar situation next year, we can expect a return to normal for white oak acorn produc- tion in 2008. The opposite is true for red oaks. The red oak acorn crop will be normal this year (Figure 4) and a potential reduction in 2008. This is because red oak acorns take two years to develop after flowering, whereas white

oak acorns take just one. White oak flowers are pollinated in the spring. Immature acorns (acornets) slowly develop over the summer with acorns developing quickly in late summer. Red oaks flower and lie dormant for a full year. They finally develop into acorns during mid to late summer of their second year. Red oaks were not suscep- tible to the cold temperatures, and the red oak acorn crop this year will be unaffected by the freeze. Initial observations indicated a significant loss of hickory flowers. However, there have been observa- tions of reflowering and hickory nuts occurring on some trees in the southern tier of Kentucky. Howev-

er, the loss of flowers coupled with the drought conditions may well lead to reductions in both white oak acorns and hickory nuts in the areas where the defoliation was severe.

The effect on acorn and hickory production will be most noticeable in the southern and western regions of the state. The effects will be less noticeable in the northern portions of the state. Species that flower later such as our native black walnut and American beech will be affected to a

(continued on page 2)



Figure 1. Hickory leaves killed by the freeze along with new foliage. Hickory loss was more notable than those of other species. Photo courtesy: Jeff Stringer



Figure 2. Dead white oak shoots and newly produced foliage. All photos courtesy: Jeff Stringer

(continued from page 1)

lesser degree. The reduction in nut production will have an effect on wildlife for the next several years but will be the most severe this fall.

The Combination of Freeze and Drought

Unfortunately, this year's spring freeze and summer drought has set the stage for significant effects to our woodlands. The combination of the freeze and the drought is causing a hidden but significant problem through the reduction in vigor of many of our tree species, particularly oaks. We know from past experience that when oaks lose leaves early in the growing season, they are weakened. Most woodland trees are capable of withstanding one disturbance and can generally regain vigor. However, when trees are subjected to several in the same year, they may reach a point where they are so weakened that normal levels of attack by native insects and diseases can lead to their death. Unfortunately, this year the freeze was followed by drought, and the combination may eventually be lethal to some trees. Nut, acorn, and fruit production in woodland trees will also be severely impacted. In severe drought cases, acorns do not fully develop and will fall early, walnuts can be half full of nut meat, and fruits can abort.

Along with reduced acorn and nut production, there is a real possibility of tree death from the combined effects of the drought and freeze. While there is little that woodland owners can do to change the ultimate outcome of the freeze, owners should be alert to the effects. Be prepared to salvage oak and other species, especially where the freeze was severe and the drought prolonged. Tree death will be apparent this year as the leaves will turn brown over the entire crown. Also, there will be trees that will appear totally healthy going into the winter but never leaf out in the spring. The effects may also be felt for the next several years. If trees are weakened enough they may succumb to unseen insects living in the forest canopy. These small native insects seek out weakened trees and their larva tunnel



Figure 3. White oak acornets in late June that were produced on shoots that sprouted after the freeze.



Figure 4. Normal northern red oak acorn development in June.

under the bark of the branches of the tree ultimately killing the tree. This is typically what causes an oak tree to turn brown in the middle of the growing season. In all cases, this year's weather was not beneficial to the health of many of our woodland trees. Woodland owners should pay special attention to their oaks. If large upper branches of an oak tree die this signals that the tree is under attack and in all likelihood will eventually die within several years. The wood of oak will remain solid for one or two years but eventually the trees that perish will start to rot. Regardless, be vigilant and contact a local forester with the Kentucky Division of Forestry or a consulting forester to seek advice if a number of trees start to die in your woodlands.

Effect of Freeze on Major Hardwood Species

Tree	Short-Term Effects	Long-Term Effects	Area Affected
White oaks	Reduction of acorn crop this fall	Potential mortality the next several years	Lower one-third of Kentucky and Western Kentucky
Red oaks	Reduction of acorn crop in 2008	Potential mortality this year	Lower one-half of Kentucky
Hickory	Reduction of nut crop this fall	Little long-term effect	Lower one-half of Kentucky
Beech	Relatively untouched	Little long-term effect	_____
Black walnut	Localized reduction in nut production	Little long-term effect	Every southern county and extreme southwest Kentucky

Author:
Jeff Stringer, Ph.D.

Jeff is a hardwood Extension Specialist at the University of Kentucky and is responsible for continuing education and research in hardwood silviculture and forest operations. His specialty is hardwood timber production and forestry best management practices. He is also an editor of the Kentucky Woodlands Magazine.

Cooperative Extension Service, Department of Forestry, University of Kentucky, 213 Thomas Poe Cooper Building, Lexington, KY 40546-0073, E-mail: stringer@uky.edu, Phone: 859.257-5994, Fax: 859.323.1031.



Easter Freeze Effects on Fruit and Nut Crops

Photo courtesy: Chris Evans,
River to River CWMA, Bugwood.org

By John Strang

The Easter freeze of 2007, which extended over five nights from April 5 to 9 was a particularly trying freeze for Kentucky fruit and nut growers. Temperatures during the two weeks preceding the freeze often reached 80°F and advanced floral developmental stages two to two and a half weeks ahead of normal. These temperatures also made the new growth particularly tender. Kentucky as well as a good portion of the Midwest experienced a series of advective freezes, when a cold polar air mass moved into the area with considerable wind. It is very difficult to protect flowers from this type of freeze. Because there is no inversion, heat if supplied, will not stay in the orchard, and overhead sprinkling is worthless because of excessive evaporative cooling from the wind. Some strawberry growers who use matted rows raked the straw mulch back over their plants and achieved fairly good protection, and some of the few strawberry growers who use plasticulture covered their plants with a floating row cover, sprinkled over the row cover, and achieved excellent protection.

Temperatures dropped below the critical temperatures for 90 percent kill (see Table 1) for the floral stages of development for the major tree fruit crops often on two and sometimes three nights. Not only did the temperature drop below the critical temperatures, but it stayed there for six to eight hours on some nights, increasing injury. Injury was also increased by the wind, which accelerated the freezing rate.

Average crop estimates across the state are shown in Table 2. Losses varied across the state because floral development in western and southern Kentucky was a week or more ahead of Lexington, and Lexington was about a week more advanced than northern Kentucky. Additionally, a few areas like Owensboro were slightly warmer than other areas of the state. Pollination weather following the freeze was generally good.

Tree Fruit

Apple injury varied by variety from a 100 percent crop loss to essentially no crop loss on very few varieties because some varieties bloom later than others and some varieties had a wide range of floral developmental stages on the tree at the time of the freeze. Growers report that varieties that had better levels of survival were Pink Lady, Arkansas Black, Honeycrisp, Golden

Table 1. Low temperatures (°F) recorded across the state at Kentucky weather stations from the western to the eastern portions of the state for designated evening dates. Note: Orchard temperatures in rural areas are often a degree or two colder than these.

Station	April 5	April 6	April 7	April 8	April 9
Mayfield	30	26	<u>22</u> ¹	24	28
Paducah	33	30	23	23	30
Princeton	30	28	<u>22</u>	<u>22</u>	27
Henderson	31	28	<u>22</u>	<u>22</u>	27
Hardinsburg	28	26	24	27	30
Bowling Green	30	27	24	28	42
Glasgow	28	24	19	<u>22</u>	26
Campbellsville	29	24	<u>20</u>	<u>22</u>	25
Bardstown	28	24	<u>20</u>	<u>22</u>	25
Louisville	28	25	24	24	27
Somerset	30	26	<u>20</u>	21	26
Berea	32	27	<u>22</u>	25	28
Lexington	28	24	<u>22</u>	24	26
Spindletop	27	23	<u>22</u>	24	26
Williamstown	28	24	24	26	28
Covington	27	24	26	28	28
Grayson	30	26	24	28	30
Huntington	30	26	24	28	30
London	30	26	<u>20</u>	21	26
Jackson	28	24	21	25	30
Quicksand	30	26	<u>22</u>	24	28
Cumberland Gap	30	26	<u>22</u>	24	28

¹ Bolded underlined temperatures are generally below the 90% kill level for tree fruit crop flowers.

Delicious, Enterprise, Gala, Jonathan, Grimes Golden, Gold Rush, Granny Smith, and Lodi. Frost marking and ringing is often found on surviving fruit. Pear injury was very serious, and there will be no crop on European and Asian pears. Asian pears sustained serious wood damage on smaller caliber twigs and shoots (Figure 1). A total crop loss occurred for peaches, plums, cherries, and pawpaws. The exceptions are a full peach crop on a few varieties in Daviess and Boone counties along the Ohio River. There is very little variation in bloom time between blooms on the same tree and between varieties with these crops. American persimmons have very few surviving fruit, and wood injury is evident on smaller caliper growth.



Figure 1. Asian pear spring freeze injury to young twigs. Photo courtesy: John Strang

Small Fruit

All grape varieties suffered damage. The extent of the damage was determined by the vineyard location, variety, species, pruning date, and vine management the previous season. Northern Kentucky growers generally fared the best because their vines were less developed at the time of the freeze. Western Kentucky growers, who have largely planted French-American hybrids that have fertile secondary and latent buds, also

Table 2. Projected fruit and nut crops expected following the Easter freeze.	
Crop	Projected Crop (%)
Apples	5%
Pears	0%
Peaches	2%
Plums	0%
Cherries	0%
Pawpaws	0%
American Persimmons	2%
Grapes	50%
Blackberries	40%
Raspberries	90%
Blueberries	10%
Strawberries (matted row)	30-40%
Pecans	5%
Hickories	5%
Black Walnuts	40%
Butternuts	10%
Heartnuts	0%
Persian Walnuts	0%
Chinese Chestnuts	50%

have better crops. Young vinifera vines that had been planted this spring prior to the freeze were seriously injured, and many have been replaced. Blackberries sustained serious flower losses during the freeze, but many surviving flowers set fruit. Cane injury also occurred in blackberries, but cane collapse due to high temperatures and drought has not been as severe as projected earlier. Thus, a moderate blackberry crop is anticipated. Raspberries appear to have come through the freeze with some crop loss to June-bearing varieties and no crop loss to fall-bearing varieties. New shoots arising from the ground have been killed on fall-bearing varieties, but these have regenerated and should produce a full crop. The blueberry crop was severely injured, and this crop is one that rarely fails to produce fruit. Early-maturing varieties such as Duke bloom earlier and, like many other varieties, lost their entire crop. In the UK-Lexington variety trial, there are very few fruit. The leaves on some experimental rabbit-eye and southern highbush blueberries have been killed, and the plants have sustained serious wood injury as well as tip dieback. However, the exceptionally late-maturing and blooming varieties Elliot and Aurora have a full crop. A few growers in the Henderson area and in northern Kentucky had very good flower bud survival due to warmer temperatures and slow floral development, respectively. Some fruit show frost rings. Matted-row strawberries produced only 30 to 40 percent of a full crop. Most primary flowers were killed, and these produce the largest berries, representing about 30 percent of the crop yield. Additionally, many of the secondary flowers were also killed. Thus, berry size was small and picking slow. Later blooming strawberry varieties mature fruit later, and these performed a little better.

Nut Crops

The new shoot tips, which contained the flowers, of pecan and both shellbark and shagbark hickory were killed. Injury is particularly apparent in the southwest and western portion of the state, where trees were very slow to refoliate. Black walnuts fared a little better, and a 40 percent crop is projected. Black walnut bud development is delayed

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Figure 2. Persian walnut limb dieback from spring freeze, Lexington, Kentucky. Photo courtesy: John Strang

(continued from page 5)

compared with other nut crops, and some varieties such as Thomas Myers, which buds out particularly late, have partial crops in central and northern Kentucky. Butter-nuts lost most of their crop, and heartnut flowers did not survive the freeze. Persian (English and Carpathian) walnut trees received serious wood damage to both young growth and older limbs (Figure 2). The one exception is the Allegheny variety that foliates later in the spring, and it has a crop. Chinese chestnuts showed injury to many buds following the freeze; however, many lateral buds survived. Chestnuts flower late; they have produced a lower than normal crop of male flowers, and many of these have female flowers at their bases. Thus, a half crop of Chinese chestnuts is projected.

It will be important this season to provide good weed control and irrigation for those plants that were seriously injured by the Easter freeze. Care this season will enable the plants to produce a good crop for 2008.

Author:

John Strang, Ph.D.

John is an Extension Specialist in the University of Kentucky Department of Horticulture. He is responsible for continuing education and applied research in the areas of fruit and vegetable production. John also edits the monthly Fruit Facts Newsletter, www.ca.uky.edu/fruitfacts/

Cooperative Extension Service, Department of Horticulture, University of Kentucky, N-318 Ag North, Lexington, KY 40546-0091, E-mail: jstrang@uky.edu, Phone: 859.257.5685, Fax: 859.257.2859.

Advertisement



*Damage by two-lined chestnut borer.
Photo courtesy; Steven Katovich,
USDA Forest Service, Bugwood.org*

Extrême weather, defoliation, and attack from insects and diseases can take their toll on trees. All of these factors (stressors) decrease a tree's vigor, sometimes working immediately and sometimes taking several years to fully manifest themselves. Most trees have the ability to weather one drought, one late spring frost, or one defoliation. However, when trees are continually exposed to these conditions year after year or when several of these occur at the same time, the effects can be significant. For example, in 2007, many of our trees have had to face a crippling spring freeze causing defoliation. This was followed by a regional drought. Having to endure multiple stressors can have far-reaching impacts on trees.

To fully understand how stressors affect trees, we must have a good understanding of how a tree works. First, some basic biology. A tree's leaves, like those of all green plants, removes CO₂ (carbon dioxide) from the atmosphere and makes sugar through the process of photosynthesis. During the growing season, this sugar is transported in the inner bark, down the branches into the main stem, and into the roots. Along the way, the tree uses some of the sugar to make wood and bark. Some of the sugar is stored as starch in the sapwood of branches and the main stem. However, a sizable portion of the sugar makes it all the way to the large lateral roots and is converted to starch. Starch is how most trees store sugar for producing new leaves the following year, producing new

Tree Vigor

By Jeff Stringer

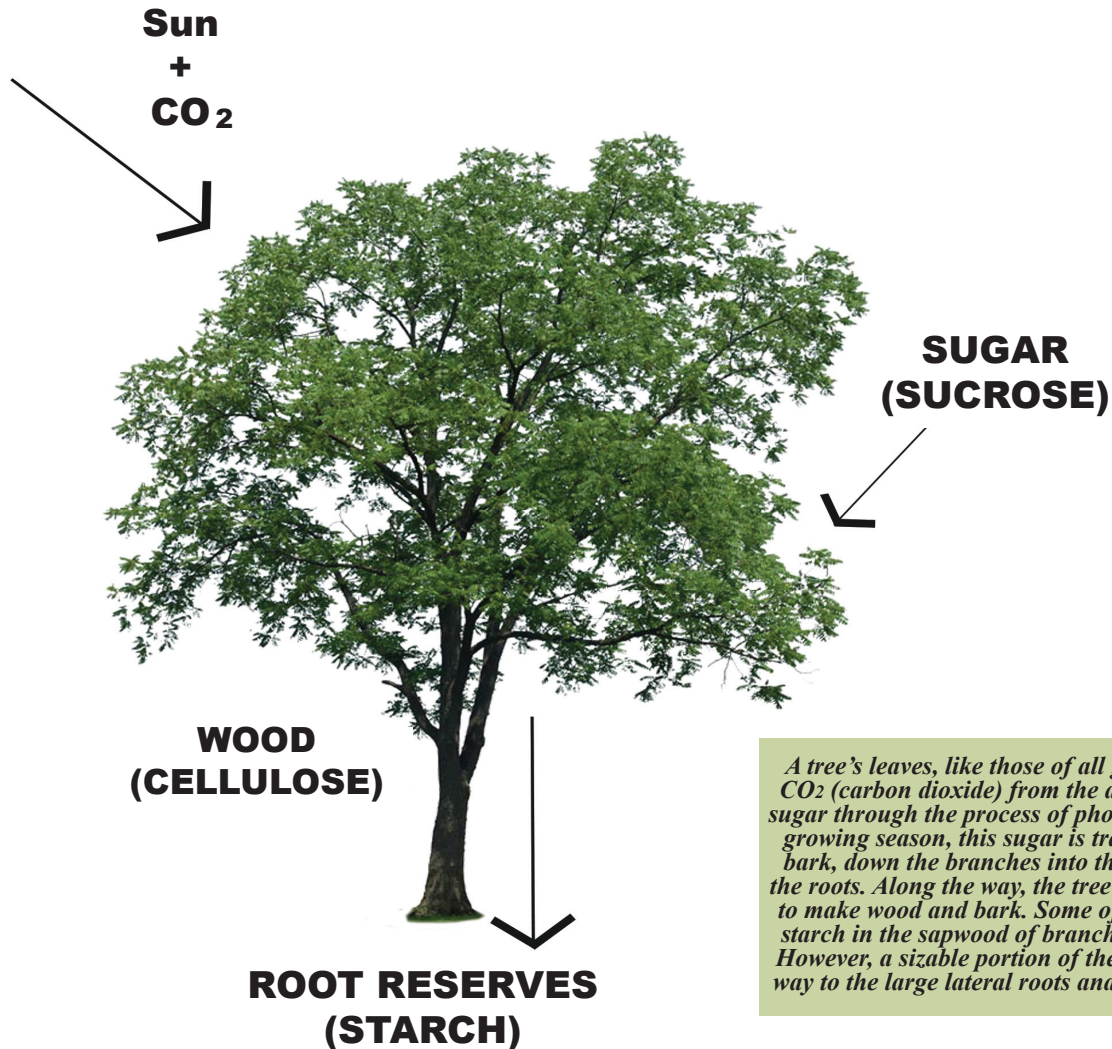
roots during the winter and early spring, and re-foliating itself when something bad happens during the growing season. When stressors like drought occur, they reduce the amount of sugar made in the leaves, resulting in a drop in the energy reserves in the tree. When defoliation occurs either from weather or from insects and disease, it causes the tree to use its sugar reserves to re-foliate. When you combine these stressors or when they keep coming year after year, trees lose their energy reserves, slow their growth, and are susceptible to insects and disease that prey on weakened trees. This is why a bad drought or defoliation or a combination of the two can initiate a downward spiral that may cause trees to die one or more years after a severe drought.

Indications of a weakened tree like branch dieback and small leaves signal that a tree is not in good health. However, because much of the stress effects are internal, sometimes apparently healthy trees can die. For example, the very severe regional drought of 1988 caused many oaks to die that year and for several years after. What directly killed the trees was a small beetle called a two-lined chestnut borer (see photo example above) that lives high in the canopy of the forest. It locates weakened trees because weakened trees literally give off a different scent than healthy ones. The beetles fly to the weakened tree and lay their eggs in the upper branches of the tree. The eggs hatch, and the larva feed under the bark, disrupting sugar flow to the bottom of the tree and, when the larva are large enough, disrupting water flow to the branches. These insects are hardly ever seen at ground level, and in 1988 there were enough weakened trees that the population of two-lined chestnut borer increased and killed trees outright. All of the leaves turned brown in August and the tree died. The problem was not with the borer but with the drought that stressed the trees. Past experience has taught us to watch our trees closely after



*Drought damage to maple leaves. Photo courtesy;
Robert L. Anderson, USDA Forest Service, Bugwood.org*

stressors such as drought or defoliations. In woodlands, once a freeze, drought, or defoliation hits, little can be done to keep low-vigor trees from dying. In some instances, salvaging these trees is the only reasonable option. Woodland owners who actively manage their woods can improve the vigor of the trees, enabling them to weather disturbances such as drought and defoliation.



A tree's leaves, like those of all green plants, removes CO₂ (carbon dioxide) from the atmosphere and makes sugar through the process of photosynthesis. During the growing season, this sugar is transported in the inner bark, down the branches into the main stem, and into the roots. Along the way, the tree uses some of the sugar to make wood and bark. Some of the sugar is stored as starch in the sapwood of branches and the main stem. However, a sizable portion of the sugar makes it all the way to the large lateral roots and is converted to starch.

Sometimes small yard, nut, and fruit trees can be assisted by appropriate watering, mulching, or other practices to make it easier for them to maintain leaf area and photosynthesis. Oftentimes, yard trees are already under some degree of stress due to compacted soils, grass growing under them, and possibly being planted into soils that do not suit them. These factors, when coupled with stressors, often put the tree in peril. Regardless, understanding how trees lose vigor helps you plan for conditions that can weaken your trees. Fortunately, most of our native species have the ability to withstand some disturbance, but too many stressors can weaken a tree to the point where it is prone to die.

Author:

Jeff Stringer, Ph.D

Jeff is a hardwood Extension Specialist at the University of Kentucky and is responsible for continuing education and research in hardwood silviculture and forest operations. His specialty is hardwood timber production and forestry best management practices. He is also an editor of the Kentucky Woodlands Magazine.

Cooperative Extension Service, Department of Forestry, University of Kentucky, 213 Thomas Poe Cooper Building, Lexington, KY 40546-0073; E-mail: stringer@uky.edu; Phone: 859.257.5994; Fax: 859.323.1031.

Forest Health



One of Kentucky's Least Wanted Weeds: Winter Creeper

By Joyce Bender

Kudzu may be known as “the vine that ate the South,” but here in Kentucky a very aggressive evergreen vine called winter creeper or climbing euonymus, *Euonymus fortunei*, is devouring our woodlands. The plant is particularly noticeable in the Inner Bluegrass region, with scattered populations observed throughout central Kentucky and west to McCracken County. You can expect this plant to appear in a woodland near you if it is not there already.

Winter creeper was introduced from China in the early 1900s as an ornamental. Unfortunately, it escaped the confines of the garden and now outcompetes native vegetation for space, light, nutrients, and moisture. The plant is well suited for invasion as birds spread its seeds, and it can also reproduce vegetatively. It forms a very dense ground cover that eliminates native wildflowers. Its thick carpet of leafy vines impedes recruitment of trees and shrubs as well. Winter creeper can grow as a shrub to about three feet. As a vine it can climb vertically for 40 to 70 feet into trees and can overtop small ones, causing decreased vigor or death. Winter creeper is a perennial and can tolerate a wide variety of growing conditions from full sun to deep shade and acidic to basic soils.

Winter creeper is fairly easy to identify. The plant's leaves are opposite, broadly oval, thick, and shiny dark green with very fine teeth on the leaf margins. The veins are often white, and some plants have a light variegation on the leaves. Only the climbing stems produce flowers, and these appear as small clusters of inconspicuous yellow-green blooms in June and July. In the fall, the ripe fruits are reddish capsules hanging at the ends of Y-branched stems. Another plant that might be mistaken for it is periwinkle (*Vinca* spp.) because it too has opposite, glossy leaves. However, periwinkle leaves are more elliptic, and the leaf margins are entire. When periwinkle is in flower, it is unmistakable; its petals are lavender.

Openings in the forest canopy from disturbances such as windfalls, ice storms, or mechanical removal of the overstory can hasten the spread of this vigorous invader. Many folks removing dense thickets of bush honeysuckle have reported a rapid increase in winter creeper stem densities as more sunlight reached the forest floor after the brush clearing. Often, winter creeper is already present as scattered individuals in the low light conditions, seemingly biding its time for its “moment in the sun.” As a cautionary note, scout your woodland for winter creeper prior to initiating any forest management practices. That way you will be prepared to respond to a potential release before it gets out of hand.

There are a number of ways to control winter creeper on your property. If the infestation is small and you don't wish to use herbicides, hand-pulling or grubbing with a mattock may be suitable, especially for environmentally sensitive areas. Be sure to remove the entire plant because any portion of the root left behind can resprout. If you have an extensive infestation and still don't want to use herbicides, the staff at the University of Kentucky Arbo-retum has had success using heavy black plastic sheeting to smother solid mats of winter creeper where there is no chance of harming any native vegetation. The plastic must be kept on the patch for two years to ensure success.

The first order of business with large-scale infestations is to cut all stems that are climbing into trees so that flowering and seed production are eliminated. Glyphosate or triclopyr in a 25 percent solution is effective for preventing resprout of the



Winter creeper

Photo courtesy: James H. Miller,
USDA Forest Service,
www.forestryimages.org



Immediately following treatment with a string trimmer, apply two percent solution of glyphosate or triclopyr for best results. Photos courtesy: Kentucky State Nature Preserves Commission.

Winter Creeper

Kentucky Forest Health Task Force



Using a string trimmer over leaves and stems can increase herbicide absorption. Photo courtesy: Laurie Thomas, Lexington-Fayette Urban County Government McConnell Springs

cut vines. Once the threat of seeding has been eliminated, concentrate on the viney mats. Winter creeper is almost overwhelming for staff and volunteers at McConnell Springs in Fayette County. Techniques for containment of large areas there include mowing accessible patches with a sicklebar and raking up and disposing of the cut material. Re-sprouts can be treated with foliar applications of two percent solutions of glyphosate or triclopyr. Another method showing good results is to run a string trimmer over the leaves and stems so that the leaf surface is injured and its waxy covering is broken open. Absorption of herbicide is greatly increased across the cut surfaces.

Patience is needed to see results from herbicide treatments. The effect is not immediately noticeable and may take months to appear. Retreating will be necessary in the following year because it is hard to get complete coverage with the stem densities typically encountered. If you follow these guidelines, you may be successful in curtailing the spread of this serious threat to Kentucky's forests.

Table 1. List of Some Commonly used Herbicides for Winter Creeper. ¹

Active Ingredient	Common Brands	Treatment	Cautions
glyphosate	Roundup, Accord, and others ²	Cut vines growing up trees allow to resprout and spray new foliage with 25% solution of concentrate (40-50% active ingredient). Weed eat or mow ground mats of winter creeper, allow to resprout and spray new foliage with 2% solution. Or weed eat mats and apply herbicide to damaged foliage.	Winter creeper, typical of many vines is difficult to control and may require more than one application. The waxy nature of mature leaves is one factor that must be addressed either by adding surfactant or by treating newly formed leaves, or damaging older leaves prior to application.
triclopyr - amine	Garlon 3a	Weed eat or mow ground mats of winter creeper, allow to resprout and spray new foliage with 2% solution. Or weed eat mats and apply herbicide to damaged foliage.	Make sure that you follow label directions. Mix and apply the chemical in the proper manner and at the recommended times.
triclopyr - ester	Garlon 4	Volatilization is a serious problem for foliar applications of the ester in summer. Use a 25% solution on the cut stumps during the summer.	Protect your eyes during mixing and application (where necessary) and check label for personal protective equipment and other precautions.
picloram/ 2,4-D	Pathway	On uncut foliage July to October apply 3% solution with surfactant. Repeat applications may be necessary. ³	

¹ Other herbicide brands can be used for winter creeper control. The herbicides that are listed are those that have been commonly used or recommended.

² There are currently a large number of brand names for glyphosate herbicides. Many are for use in fields or fence rows. Few such as Accord are labeled for use inside a forest (see Kentucky Woodlands Magazine Vol.1 Issue 1 for more information on glyphosate herbicides.)

³ From Nonnative Invasive Plants of Southern Forests, USDA Forest Service, SRS GTR-62 by James H. Miller.

Author:

Joyce Bender

Joyce is Branch Manager for Nature Preserves and Natural Areas at the Kentucky State Nature Preserves Commission, she is responsible for managing the state nature preserve system. She and her staff oversee the protection and management of 54 areas encompassing 22,000 acres across the commonwealth. She is active in invasive plant issues, serving as the president of the Kentucky Exotic Pest Plant Council (EPPC) and the vice president of the Southeast EPPC.

Kentucky State Nature Preserves Commission, 801 Schenkel Lane, Frankfort, KY 40601, E-mail: joyce.bender@ky.gov, Phone: 502.573.2886.



The Good, the Bad and the FIREWISE

By Gwen Holt and Diana Olszowy

People love living in woodland communities. They love having trees, wildlife and recreational opportunities accessible from their own back door. Unfortunately, woodlands and wildfires come as a package deal, and each year many homes and businesses are threatened or destroyed. If you live in or are planning to move to areas where homes are intermixed with woodlands, also known as the wildland urban interface (WUI), your home, life and the lives of your family members may be in jeopardy due to increased wildfire risk.

Conditions must be right for a wildland fire to start and spread. Firefighters recognize three factors that can influence fire behavior: weather, topography, and fuels. These components affect the likelihood of a wildland fire starting, the speed and direction of its spread, the intensity at which it burns, and the ability to control and extinguish it. Dry, hot, and windy weather increases the likelihood of wildfires. These conditions make ignition easier, allow fuels to burn more rapidly, and increase fire intensity. Topography, or the lay of the land, plays a major part in how fast a fire spreads. Steep slopes are the greatest topographical influence on fire behavior. As the steepness of slope increases, fire spreads more quickly. A home at the top of a fuel-covered slope is in greater jeopardy than one on flat ground or at the base of the slope. South and southwest-facing slopes usually have more intense fires.

Fuel is required for any fire to burn. Fuels consist of living vegetation (trees, shrubs, and grasses) and dead plant material (pine needles, dead trees, and fallen branches). The amount, size, moisture content, arrangement, and other fuel characteristics influence ease of ignition, rate of fire spread, length of flames and other fire behaviors.

A home in a woodland setting is surrounded by flammable fuels. You can minimize the wildfire threat to your home and family by making your home and property firewise. The following is a short list of simple actions you can take to reduce the likelihood of a wildfire damaging your property.

Action Steps to Make Your Home Firewise

1. Create a defensible space of at least 30 feet surrounding your home by reducing the amount of fuel from shrubs, dead plant material and firewood. This area should have fire-resistance vegetation that is healthy and green for most of the year.
2. If building or remodeling a home, use fire-resistant exterior wall materials that resist heat and flames, such as concrete, plaster, stucco and concrete masonry. Double-pane glass windows can make a home more resistant to wildland fire heat and flames. Although some vinyl will not burn, some vinyl soffits will melt, allowing embers into the attic space.



Homes with nonflammable roofs such as this metal one are more likely to survive a wildfire than those without defensible space and flammable roofs.

All graphics and images courtesy:
Kentucky Division of Forestry.

Photo courtesy: Staff Photographer,
Lexington Herald-Leader



Are you Firewise?



3. Use fire-resistant materials such as Class-A shingles, tile, or metal. Additionally, the inclusion of a fire-resistant subroof adds protection.

4. With fire-resistant landscaping, you can create defensible space around your home that reduces wildfire risk. Large, leafy hardwood trees should be pruned so that the lowest branches are at least six to 10 feet high to prevent a fire on the ground from spreading up to the treetops. Within the defensible space, remove flammable plants such as eastern red cedar, pine, and holly.

5. Identify your home/neighborhood with legible and clearly marked street names and numbers so emergency vehicles can rapidly find the location of the emergency. Include a driveway that is at least 12 feet wide with a vertical clearance of 15 feet to provide access for emergency vehicles.

6. Any structure that is attached to your home such as decks, porches, or fences should be made of fire-resistant material. Do not allow leaves

and other debris to accumulate under the deck or porch. If the attachment is not fire-resistant, then the home as a whole is not fire-resistant.

7. Liquefied petroleum gas (LPG) tanks should be far enough away from buildings for valves to be shut off. Keep area clear of flammable vegetation.

8. Develop a fire emergency plan and discuss what actions will be necessary to ensure the safety of your family.

For more information about Firewise practices, visit the Kentucky Firewise Web site at <http://www.forestry.ky.gov/programs/firewise/>

Authors:

Gwen Holt

Gwen is the Information and Education Supervisor with the Kentucky Division of Forestry and handles media relations for the division. Kentucky Division of Forestry, 627 Comanche Trail, Frankfort, KY 40601; E-mail: gwen.holt@ky.gov; Phone: 502.564.4496; Fax: 502.564.6553.

Diana Olszowy

Diana is the Stewardship and Education branch manager with the Kentucky Division of Forestry. She is also an editor of the Kentucky Woodlands Magazine. Kentucky Division of Forestry, 627 Comanche Trail, Frankfort, KY 40601; E-mail: diana.olszowy@ky.gov; Phone: 502.564.4496; Fax: 502.564.6553.

Forestry 101

Forestry for Woodland Owners

Firewood and Fine Wines

By Doug McLaren



Firewood. Photo courtesy: Doug McLaren

Firewood and fine wines have something in common: both often improve with age. This is why firewood left from last year tends to burn more efficiently than wood bought during the current burning season. It's all a matter of seasoning.

But with daytime temperatures reaching 90 degrees and humidity levels trying to rival the thermostat, it is hard to think about gathering firewood for the approaching home-heating season. The months of August and September are the last months to consider cutting firewood for the upcoming winter. Trees are naturally low in moisture content this time of year, aiding the drying process and it provides three to four months of drying time before the winter heating season sets in. Next year consider getting an earlier jump on the process to provide the full curing time for properly cured or "seasoned" firewood. Cutting, splitting and proper stacking should optimally be done six months prior to your fireplace needs.

Trees are much like the human body. Both are made up of a large portion of water, and if you cut a tree and attempt to immediately burn it in a fireplace, the largest portion of the heat generated will be used to continue the drying process of the wood. If firewood is properly dried, the majority of the heat generated will be used to heat your home.

If you normally purchase firewood for your home-heating needs rather than cutting your own, there are several items to look for when purchasing your properly seasoned firewood for this burning season. First, note whether the wood has been split, providing for more surface area from which to lose moisture. In addition, if the wood has a gray color, you can be reassured that the wood has been drying for a long time. Checking for large cracks and splits on the end surface signifies low moisture content in the wood.

Remember that wood can reabsorb water, so it is important to properly care for it after it has been seasoned. Stacking it in an area so that air can continue to circulate around the stack will continue the drying process. Place a cover only on the top of the wood stack to keep water from running through the stack. Leave the ends free to the sun and air so drying will continue.

Firewood that has not been properly seasoned will cause a fire to smolder and generate creosote buildup in the fireplace and chimney. Creosote buildup in the chimney, over time, can possibly lead to a chimney fire. Inefficient burning of firewood can also lead to poor draft up the chimney, which in turn can cause smoke-filled rooms.

Wood fires are an enjoyable, as well as a sometimes necessary, part of our lives during the cool days of fall and the coldest days of winter. Don't get burnt by having all the heat from your firewood go to drying the wood and not to warming you and your home. For more information about firewood, visit <http://www.ca.uky.edu/forestryextension/Firewood.php>



Only cover the top of the firewood stack.
Adapted from www.woodlanddirect.com.

Author:

Doug McLaren

Doug is an Area Cooperative Extension Specialist with the University of Kentucky Department of Forestry.

Cooperative Extension Service, Department of Forestry, University of Kentucky, 107 Thomas Poe Cooper Building, University of Kentucky, Lexington, KY 40546-0073; E-mail dmclaren@uky.edu; Phone 859.257.2703; Fax 859.323.1031.

Comparison of Properties Affecting Firewood

This list shows tree species according to their value as firewood. Those at the top rank higher than those lower on the list. Those ranked as poor for splitting should be avoided.

Species	Heat Content Per Cord (Million BTU) 20% Moisture Content	Splitting
Osage-orange	30.5	Fair
Hickory	29.3	Good
Black locust	28.3	Good
White oak	27.9	Good
Bur oak	26.3	Good
Beech	26.3	Good
Sugar maple	25.9	Good
Pin oak	25.9	Fair
Red oak	25.9	Fair
White ash	24.6	Excellent
Honeylocust	24.6	Fair
Blue ash	23.8	Excellent
Black walnut	22.6	Excellent
Hackberry	21.7	Good
Slippery elm	21.7	Poor
Sweetgum	21.3	Fair
Virginia pine	20.7	Good
Black cherry	20.5	Good
American elm	20.5	Poor
Sycamore	20.2	Poor
Redcedar	20.2	Fair
Silver maple	19.3	Good
Sassafras	18.9	Good
Yellow-poplar	17.3	Good
Hemlock	17.3	Excellent
Willow	16.0	Fair
Basswood	15.2	Excellent
White pine	15.0	Good

Carbon Credits Yield New Opportunities for Woodland Owners

By David Jackson

Photo courtesy: Jeff Stringer

On June 18, 2007, the Mountain Association for Community Economic Development (MACED) launched a new forest management effort that combines innovative ways of earning revenue and promoting forest health with proven management strategies. Focusing on sustainable forestry as its foundation, MACED's forestry program emphasizes the carbon trading market and ways landowners in eastern Kentucky can participate.

Through a series of steps, MACED will help landowners tap these emerging markets for the storage of carbon through sustainable forest management. Sustainable forestry practices have the potential to increase the rate by which trees pull carbon from the air and store it in their trunks, roots, and other parts. Over the last several years, multiple markets have emerged that pay landowners to promote practices that store more carbon.

Benefits available to participating landowners are practical, straightforward, and diverse. Some landowners will participate in MACED's program due to its ability to help rehabilitate degraded forests. Some will participate as a way to further develop their property's wildlife habitat or recreational value. Others will incorporate MACED's program into their existing management plans as a new tool for producing revenue.

Landowners interested in enrolling in the program must meet four basic requirements. Satisfactory completion of these requirements will require the services of a third-party, professionally trained forester. Enrollment can occur before all the requirements have been completed, but a landowner will not receive payment from the sale of carbon credits until they have been met. The requirements include:

- an acceptable forest stewardship plan,
- a current forest inventory,
- forest certification by the American Tree Farm System, and
- a signed contract with MACED agreeing to participate through December 31, 2010.

Many landowners understand that forests are very resilient, which means they have the capability to withstand both harsh site conditions and poor treatment. These same landowners also understand that even forests have basic needs that must

be met if negative consequences are to be avoided. Forest rehabilitation, improved productivity, and good stewardship that helps create a lasting contribution for present and future generations are objectives considered desirable by most landowners. With those objectives in mind, MACED's forestry program emphasizes:

- knowledge and utilization of sustainable forest management practices,
- operational methods suitable for helping improve ecosystem restoration and health, and
- diversified sources of revenue that combine the sale of selectively harvested wood products and carbon credits.

To help launch its new forestry program, MACED hosted an initial educational meeting in Berea on February 5, 2007, for landowners, representatives of state government, and faculty members from the University of Kentucky. A second meeting was held on June 11, 2007, to educate attendees in greater detail on enrollment procedures, landowner responsibilities, and the mechanism MACED will use to pay participants. Based on attendance and participation, many believed the meetings were successful.

Numerous participants said they had learned about subjects and opportunities they never knew existed. For example, landowners learned about what a carbon credit is and how it is produced, the emergence of carbon trading as an innovative market, and the significance of MACED's role as the only organization in the entire Appalachian region certified officially to sell carbon credits produced by their forests.

Based on the June 2007 market price, landowners who enroll in MACED's program could expect to earn \$4 to \$5 per acre per year depending on the average age and condition of their forest. However, future prices may go up or down as the market dictates. MACED will deduct a management fee from each landowner's gross carbon credit payment in exchange for providing its services. Financial assistance, forestry consultation, and educational outreach will be provided by MACED to all landowners enrolled in its program. Eastern Kentuckians interested in learning more about enrollment in MACED's program are invited to contact MACED toll free at 888.677.2373 or visit www.maced.org.

Author:

David J. Jackson, PhD

David is a consultant with MACED's Forest Opportunities Initiative. MACED, 433 Chestnut St., Berea, KY; E-mail: forestry@maced.org; Phone: 859.986.2373; Fax: 859.986.1299.

The Kentucky Woodland Owners Association (KWOA) promotes economically and environmentally sound forest management and provides technical assistance to its members to improve their forest holdings.

Since 1994, KWOA has provided a forum for Kentucky's private woodland owners to consult with forestry experts, the logging and wood products industry, and professionals in related fields such as wildlife and agriculture.

KWOA is one of 27 state Woodland Owners Associations. Together, we form an affiliated national group, providing members with access to proven resources and successful programs. Nearly 47 percent of Kentucky is forested and 89 percent of that forestland is owned by more than 423,000 non-industrial private woodland owners, contributing over five billion dollars to Kentucky's economy. That translates into a lot of voting power. It also translates into an ability to help each other maximize the use of our land and pass it on to our heirs intact. Won't you be a part of the Kentucky Woodland Owners Association?

Yes! I want to join KWOA!

- Forest Landowner (Only woodland owners have voting rights.)
- Business or Organization
- Professional (trained in field related to forestry or natural resource management)

ANNUAL DUES

- \$10 KWOA Special Mid-year rate (Typically \$30 for a KWOA Annual Membership)

Name _____
Address _____
City/State/Zip _____
Telephone _____
I own _____ acres of woodland in _____ County, Kentucky

Cut out or copy and mail to:

KENTUCKY WOODLAND OWNERS ASSOCIATION, 1483 Big Run Road, Wallingford, KY 41093 or call 606.876.3423 for more information.

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Call 859.257.7597 or e-mail forestry.extension@uky.edu with corrections or updates. Please list addresses when e-mailing. Thanks.

The answers to Test Your Nature Knowledge Quiz on page 21 are:

- A. Ginseng
- B. American hornbeam
- C. Annual cicada
- D. Bradford pear
- E. Praying Mantis



Cattle and pine trees are a common silvopastoral system; however there are numerous other options available. Photo courtesy: National Agroforestry Center

Non-Timber Forest Products

Agroforestry Part Two: Silvopasture

By Deborah B. Hill

The second of the five agroforestry systems that might be practical to implement in Kentucky is silvopasture. In this practice, you have three simultaneous crops: the tree crop, the forage crop, and the livestock crop. As with other agroforestry practices, if you plan to use biocides (pesticides, fungicides, insecticides) and/or chemical fertilizers, you must be sure that all of the component parts of the proposed system can tolerate the additives. Foresters have a long-standing attitude that cattle and trees do not mix (because of soil compaction and rubbing around and on the trees by the livestock), but in this case, you are intentionally putting them together, ideally for mutual benefit.

Cattle and pine trees are perhaps the most common combination in a silvopastoral system, but such a system can be any combination of something from the animal kingdom plus one long-term (tree) plant component and one annual (forage) plant component. Successful combinations could include sheep or goats on grass in fruit orchards or Christmas tree plantations, “weeder” geese in pecan orchards, and even honeybees in a fruit tree orchard with a

clover or alfalfa ground cover.

Classically, silvopasture systems are set up with single or double rows of trees between which are wide alleys of the forage crop for livestock grazing. In the first year or two of establishment of the tree crop while the tree seedlings are still very vulnerable, the landowner could mow the

forage grasses and use that as fodder for livestock rather than allowing the animals into the area. In Kentucky, many cattle farmers have implemented rotational grazing for their livestock which has proven to be beneficial to both the forage crop and the animals. So one possibility of implementing silvopasture on cattle-raising farms is to plant the tree crop along the fence lines that separate the different paddocks for the grazing animals. A single or double line of electric fence on the exposed side of the

Silvopasture is the second in a five-part series of Agroforestry articles. Agroforestry also includes the following practices: alley cropping, riparian buffer strips, windbreaks, and forest farming. See Kentucky Woodlands Magazine Vol. 1 Issue 2 for more information.



Honeybees, reared in a fruit orchard, are an example of silvopasture. Photo courtesy: David Cappaert, Michigan State University, Bugwood.org

seedlings ought to keep the animals from either grazing on or stepping on the small tree seedlings. In time, the tree component would be tall enough to provide shade for the animals, and, depending on what tree crop you have selected, provide short-term crops such as fruits or nuts (or seven-year-old Christmas trees), while allowing the trees to contribute their environmental services such as soil erosion control and diversity. Another option for the trees is to scatter clumps of trees throughout the pastureland. While the tree component provides shade and diversity on the site, the presence of the livestock contributes to the fertility of the forage crop.

Some considerations when selecting the tree component include:

- What do you want to market (fruit, nuts, Christmas trees/greens, timber, fence posts)?
- Do markets already exist in your area for those products, or will you have to create them?
- Is the proposed tree species deep-rooted so that the tree roots will be less likely to compete for moisture and nutrients with the forage crop?
- Does the tree component yield a high-value product in the short term, the long term, or both?
- Is the tree species appropriate for your soil conditions, moisture availability, and topography?
- Does the proposed tree species cast a heavy or light shade (heavy is better for shading the livestock; light is better for the health of the forage crop)?



*Sheep and trees are another example of silvopasture.
Photo courtesy: Linda Hardesty*

To maximize success with this system, remember that the trees will need some special care during their establishment period:

- vegetation control immediately around the seedlings,
- shaping of Christmas trees to maximize their salability,
- insect and disease monitoring for both forage and tree crops, pruning of lower branches of trees grown for timber, and
- accessibility for tree crops if you have fruit or nut crops to gather during the lifetime of the tree crop.

For the forage crop, you want to consider:

- Is the forage crop suitable for livestock grazing?
- Is the particular forage crop suited to the soil, moisture and nutrient conditions of the soil?
- Can this forage tolerate some shade?
- Can it tolerate heavy grazing?

For more information about Agroforestry and Non-Timber Forest Products, contact Deborah Hill at 859.257.7610 or visit www.ukforestry.org, www.unl.edu/nac, or www.centerforagroforestry.org

Author:

Deborah Hill, PhD

Deborah is a forestry Extension Professor and forestry Extension Specialist at the University of Kentucky Department of Forestry, she is responsible primarily for programs in non-timber forest products. She also works with 4-H and youth, and in the areas of urban forestry, agroforestry, and permaculture. She has developed landowner programs in Christmas tree and shiitake mushroom production.

Cooperative Extension Service, Department of Forestry, University of Kentucky, 210 Thomas Poe Cooper Building, Lexington, KY 40546-0073; E-mail: dbhill@uky.edu; Phone: 859.257.7610; Fax: 859.323.1031.

Working together we can make a difference! That statement is true for most endeavors and is certainly true when it comes to forestry issues. Working together to address locally important forestry issues is the primary goal of local forestry organizations (LFOs) in Kentucky. LFOs are local grassroots organizations, with varying levels of structure, created to address woodland and forestry issues in their area. There are several active LFOs in Kentucky. Some have been busy hosting local forestry meetings with invited speakers on subject matter that is important to them, while other LFOs are currently making plans for fall activities.

One of the greatest benefits of belonging to a LFO is that it gives woodland owners an incredible network of other woodland owners and forestry/natural resource professionals eager to meet and work with them. I am constantly amazed at how Kentucky's woodland owners truly care about their land. Most of these woodland owners want "to do the right thing" but are unsure of how to go about it and where to find the necessary assistance.



Bige Hensley of Clay County discusses the benefits of forming a LFO in Clay County with Clay County woodland owners. Bige is Clay County Farm Bureau President and chairman of the Kentucky Farm Bureau Forestry Committee and a strong supporter of LFOs. Photo courtesy: Billy Thomas

Local Forestry Organizations: A Great Opportunity for Kentucky's Woodland Owners

By Billy Thomas

LFO Supporting Organizations:

UK Forestry Extension:

859.257.7597 -- www.ukforestry.org

County Extension Agents:

www.ca.uky.edu/county

KWOA: 606.876.3423

www.kentuckywoodlandownersassociation.com

Kentucky Division of Forestry:

502.564.4496 -- www.forestry.ky.gov

Kentucky Division of Conservation:

502.573.3080 -- www.conservation.ky.gov

Kentucky Farm Bureau:

502.495.5000 -- www.kyfb.com

Kentucky Forest Industries Association:

502.695.3979 -- www.kfia.org

that is important for woodland owners to know, such as where to find assistance in managing their woodlands and what options are available to woodland owners.

If you live in an area that already has a LFO, consider joining it. But if your area does not have a LFO, consider forming one. The relationships you make and the information you learn will help you better manage your woodlands and will have a positive impact on your community and Kentucky overall.

Many reports and surveys have shown that the majority of woodland owners want a variety of interactions with their property. Wildlife, timber, healthy woodlands, and recreational opportunities are high priorities for numerous woodland owners. However, many of them indicate a general lack of awareness in regard to forest management and the benefits it can provide them and their fellow Kentuckians. Fortunately, there are a variety of assistance sources available to every woodland owner in Kentucky—and in every state in the United States, for that matter. Much of this help is available through local offices of state agencies. LFOs typically work with these local offices and are generally more aware of the services and programs they provide.

To get a LFO started, woodland owners and those interested in forestry in a county or multi-county area band together with forestry/agriculture professionals and organizations to discuss and plan a local meeting for the purpose of exploring the formation of a LFO. This has proven most successful in areas where important forestry issues are present and woodland owners and professionals see the need for organization and action and are committed to fostering the development of a LFO. Forestry issues vary from organization to organization, but examples include exploring how to cultivate more markets in an area or to share information

A new Web page has been created to provide general information about local forestry organizations, contact information for assistance in forming a LFO, information about individual LFOs in the state, and more. Check it out at www.ukforestry.org

Author:

Billy Thomas

Billy is a Extension Forester with the University of Kentucky Department of Forestry. He works primarily on non-industrial private forest issues and is the associate editor for the Kentucky Woodlands Magazine.

Cooperative Extension Service, Department of Forestry, University of Kentucky, 213 Thomas Poe Cooper Building, Lexington, KY 40526; E-mail: billy.thomas@uky.edu; Phone: 859.257.9153; Fax: 859.323.1031.

Test Your Knowledge



A.

Do you know me? I can be found on cool-facing slopes throughout much of the state. When I'm ready to be harvested, my roots are ground into many medicinal products, such as vitamins and teas.

Photo courtesy: James Henderson, Gulf South Research Corporation, Bugwood.org



B.

I am a fairly common small tree in Kentucky. My "muscular" trunk is my most easily identifiable feature. I have many other names such as ironwood, blue beech. Do you know me?

Photo courtesy: Richard Webb, Garden Restoration, Bugwood.org



C.

I have a face only a mother can love. You get to see me or my brothers and sisters every year. You may have heard of my cousin that only shows its face every 17 years. Who am I?

Photo courtesy: Susan Ellis, Bugwood.org

Answers to Test Your Knowledge can be found on page 17.



D.

Sure I look pretty now (left), but in a few years, this is what I look like (below). You see, I have branching issues and I have a habit of self-destructing about the time I'm contributing to the landscape. Since I like to grow upright and tight, starlings like me too. What kind of tree am I?



Photo courtesy: Top: Dan Tenaglia, MissouriPlants.com, Bugwood.org Bottom: Rich Mason, U.S. Fish and Wildlife Service, Bugwood.org

E.

Have you seen these attached to the branches of your trees? Well, then your lucky! There are approximately 100 to 200 babies waiting to hatch. The babies will hatch out during late spring and look exactly like mom and dad and be ready to eat - just point me to the nearest aphid! What kind of insects will we become?



Photo courtesy: Whitney Cranshaw, Colorado State University, Bugwood.org



Kentucky Big Tree Program A GIANT Among Kentucky's Heroes

By Diana Olszowy

*American Basswood located in Lexington Cemetery.
Photos courtesy: Kentucky Division of Forestry*

Frequent visitors to the historic Lexington Cemetery are very familiar with the giant basswood sentinel that guards the monument to Kentucky's famous pre-Civil War statesman Henry Clay. Previously recognized by the American Forests Association as a national champion, this American basswood was recently dethroned by a larger specimen in Pennsylvania, but it still holds its state champion title. Rumored to be more than 300 years old, this quiet giant measures 21 feet and seven inches in circumference. It stands a mere 95 feet high (Clay's monument is 120 feet tall), and its massive branches spread out over 82 feet.

It was once rumored that the basswood was planted by Henry Clay himself, but if this tree is indeed 300 years old, it would already have been middle-aged by the time Clay was born. This means that the tree is older than the city of Lexington and the commonwealth of Kentucky.

The American basswood, also known as the linden, is a large and fast-growing tree. It is a common species in the eastern third of Kentucky. It averages 60 to 100 feet high and is frequently found in moist soils of valleys and uplands with yellow-poplar, American beech, and sugar maple.

It is a favorite street tree in urban areas because of its rapid rate of growth, plentiful shade, and fragrant flowers. It blooms in late June and is a preferred tree for beekeep-

ers. During the three weeks that the basswoods bloom, bees forsake most other flowers for the basswood. Its flowers have nectar that attracts bees and produces a strong-flavored white honey that is regarded as high in quality. The flowers, when gathered and dried, can be used to make tea and have even been used to make perfumes.

The wood from the American basswood is soft and creamy tan and is much preferred by woodcarvers because of its workability and its even grain. Thin strips can be bent to make baskets, chair seats, and honeycomb sections for beehives. It is widely used for woodenware, toys, barrelheads, boxes, crates, guitars,



Size comparison of the state champion American Basswood.

and artificial limbs.

The American basswood was a major source of fiber for many Native American tribes. Long strips of bark were peeled from sprouts and saplings and soaked in water for two or more weeks. The long, soft fibers were then twisted into cords and ropes for innumerable purposes: fishing lines, nets, cattail mats, tying the pole framework for wigwams and lodges, and sewing birch-bark together to make canoes or containers.

Big Tree Care

By *Diana Olszowy*

Every community has a neighborhood, a street or maybe just a city block that is the most attractive and desired part of town. Why? – Often because of its large shade trees! In some areas, large oaks, ashes and maples cover the older neighborhoods. Although these large magnificent trees may look invincible, they are mortal and in some point of time, they will die or become a public safety hazard. Each community faces the painful and often controversial decision of losing mature trees. So what can be done?

Similar to our own health, the life of mature trees and their benefits are extended through improved long-term health care, reduction of outside stress, and avoiding unnecessary changes through good common sense. Long-term health care for most mature trees should involve a program of pruning that is timely and concentrates growth on the best branches. Like a forest or garden, thinning can actually stimulate even the oldest trees to improve overall growth.

Trees are not susceptible to heart attacks and only in rare circumstances do mature trees die quickly over a period of several weeks, such as with Dutch elm disease or oak wilt. Trees generally decline and gradually die back due to outside stresses. In native woodlands, the primary stress factors are sunlight availability, insects and extremes of moisture and temperature. In an urban setting, drought is one of the most important stresses for our trees due to severe soil compaction. Stress to trees is an invitation to opportunistic secondary insects and disease that weaken and eventually shorten the tree's lifespan.

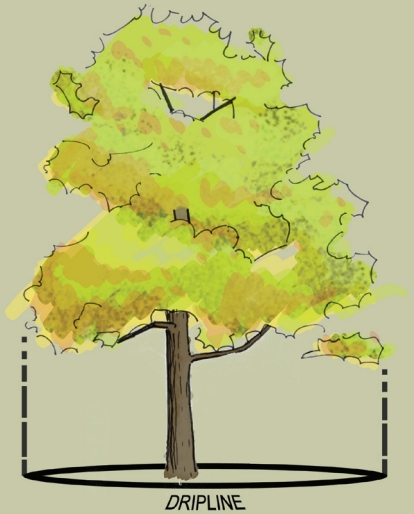
To help alleviate stress, trees should be placed on a program of deep and infrequent watering during droughty periods, and aeration of tight, compacted soils can be done easily by any homeowner, park personnel, or tree care professional (arborist). Trees prefer on average, an inch of precipitation per week to keep them

vigorous. In addition, a two-to-four-inch layer of mulch can provide trees with a stable root environment that is cooler and contains more moisture than the surrounding weeds and turf.

Avoiding accidents is often a matter of luck. Yet, by being defensive, we can survive those narrow escapes that mature trees experience over a lifetime. Protecting the root area beyond the tree's dripline during construction work or tunneling underground utilities rather than trenching can minimize human-caused stress. Fertilization is another important aspect of mature tree health care. A soil test can best determine the correct fertilizer mixture for your tree.

Consult an arborist for advice on application and the best time of the year and blend for each of your trees.

Large mature trees are community assets that have been ignored for too long. With proper care, our stately treasures will be around for our grandchildren to enjoy as well.



The dripline is the area around the tree extending to the exterior edge of the tree's live crown.



Shady Lane in Lexington, KY has mature trees requiring big tree care. Photo courtesy: Terry Conners

Author:

Diana Olszowy

Diana is Stewardship and Education branch manager with the Kentucky Division of Forestry. She is also an editor of the Kentucky Woodlands Magazine. Kentucky Division of Forestry, 627 Comanche Trail, Frankfort, KY 40601; Phone: 502.564.4496; Fax: 502.564.6553.

Kentucky Woodland



Timber Trespass

Timber trespass, the cutting of trees without permission, is a common problem in many rural counties. Sometimes this occurs because boundary lines are difficult to follow or nonexistent. Unfortunately, it also occurs through timber theft where timber is purposely stolen. While these problems are not new, they are receiving more attention. Recent articles in high-profile papers such as the *Lexington Herald-Leader* indicate the severity of the problem. The fact that the state is pursuing felony theft charges in a case in southeastern Kentucky is a hopeful sign that light is being shed on this problem. Trespass laws exist in Kentucky, including one specifically dealing with timber trespass. However, the problem is ongoing due to absentee ownership, the remote setting of many timber stands, and complacency by some law enforcement agencies regarding timber theft. Protect your woods by clearly marking boundaries. If you are an absentee owner, make sure you have a good inventory of your timber and have someone watching your woods.

Firewood Watch

The emerald ash borer, a leading killer of ash trees, is poised at Kentucky's doorstep. Outbreaks in Ohio, Indiana, and Michigan are significant. One way that this devastating insect can move around is by hopping a ride on firewood as it is moved from place to place by campers and commercial firewood businesses. To help prevent an infestation in Kentucky, the Kentucky Forest Health Task Force has requested that all campgrounds ban campers from bringing out-of-state firewood into campgrounds. The Kentucky State Parks have already adopted a policy of asking campers not to bring out-of-state firewood into state parks. The Daniel Boone National Forest has indicated that it will initiate a plan to discourage out-of-state firewood movement into its campgrounds. The Kentucky Forest Health Task Force also sent all 215 private campgrounds in Kentucky posters on the dangers of firewood movement and a letter asking them to voluntarily initiate a safe firewood policy. Right now, moving firewood from one place in Kentucky to another is fine. However, bringing firewood into the state is cause for great concern.



Emerald Ash Borer
Photo courtesy: David Cappaert,
Michigan State University,
Bugwood.org

Dates To Remember

Don't forget to add these important dates to your calendar! Preregistration is strongly encouraged for all events.

Date:	Event:	Location:	Contact:
September 27, 2007	Tree Farmer of the Year Field Day	Hart County	859.257.7597
October 1 - 2, 2007	2007 Governor's Conference on the Environment	Fayette County	502.564.2150
October 4, 2007	2007 Northeast Kentucky Woodland Series Woodland Opportunities	Rowan County	606.784.5457
October 11, 2007	2007 Northeast Kentucky Woodland Series Woodland Pests	Elliott County	606.738.6400
October 18, 2007	2007 Northeast Kentucky Woodland Series Woodland Management	Carter County	606.474.6686
November 15, 2007	Kentucky Woodland Owners Association Board of Directors Meeting	Franklin County	606.876.3423

News To Use

KDF Tree Line Newsletter

In March, the Kentucky Division of Forestry's Urban and Community Forestry program revised their newsletter, *Tree Line*. The quarterly publication will highlight current news and information in the field of urban and community forestry. It is available to citizens, businesses, and government organizations across the commonwealth.

Tree Line will only be available in electronic format. The current newsletter will be available for download on the division's Web site, www.forestry.ky.gov, under the "News and Events" section. Or, if you would like to be added to the electronic distribution list, please send an e-mail to Sarah C. Gracey at sarah.gracey@ky.gov.



UK Department of Forestry Hires New Silviculture Professor

John Lhotka came to the University of Kentucky in June 2007. His duties in the Department of Forestry will be to develop a research program that addresses issues critical to the health and sustainability of Kentucky's forests. He will also teach undergraduate and graduate courses in silviculture and forest management.



John Lhotka, Ph.D.

His primary research interests relate to understanding relationships between stand structure and seedling development. By applying these relationships, he seeks to develop regeneration approaches that meet the diverse needs and values of landowners and society. He plans to set up studies that assess how invasive species influence the establishment and growth of native hardwood species. He will also use field experiments to evaluate regeneration treatments for stands possessing invasive species and/or dense midstory canopies. An example of this research would be to test midstory removal and underplanting as a means to successfully regenerate oak in stands lacking sufficient numbers of oak seedlings. Additionally, he is interested in developing management evaluation tools that help foresters understand how a given cutting treatment may affect the post-harvest response of natural and planted seedlings. John received a Ph.D. in silviculture from Auburn University in 2006. His B.S. and M.S. degrees in forestry are from Southern Illinois University. For further information regarding his research program, please visit <http://www.ca.uky.edu/forestry/>



UNIVERSITY OF KENTUCKY

Forestry Extension Office

Department of Forestry

University of Kentucky

216 Thomas Poe Cooper Bldg.

Lexington, KY 40546-0073

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