



COOPERATIVE EXTENSION SERVICE
UNIVERSITY OF KENTUCKY • COLLEGE OF AGRICULTURE



KENTUCKY'S Useful Forests



AGRICULTURE & NATURAL RESOURCES • FAMILY & CONSUMER SCIENCES
4-H/YOUTH DEVELOPMENT • RURAL & ECONOMIC DEVELOPMENT

Kentucky 4-H offers several forestry projects and interesting related forestry activities such as environmental youth camps and forestry field days for juniors and seniors.

We recommend that 4-H'ers complete 4DD-01PO, Exploring Natural Resources, before starting the forestry projects. Exploring Natural Resources is an interesting study of the different parts of the ecosystem: earth, air, water, plants, and animals. Understanding our ecosystem provides a basis for the study of forestry or any other natural resource.

The first forestry project is a forest tree identification project to help 4-H'ers become familiar with the trees in Kentucky. Members in the sixth grade and up will have fun completing this project. From this basic project members can go on to take other interesting forestry projects such as this one.



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The Woods Are All Around Us!

You may think of forests as places of inspiration, solitude, and beauty that gladden the hearts of all who visit them. Or you may think of forests as home to the countless birds and animals that depend on the woods for a home and for food. The value of forests for some people is recreational: a place to hunt, fish, camp, hike, and picnic. Still others see the forests as contributing to the quality of life itself by filtering and purifying our air and water, and by holding our soils in place. And our forests are all of those things and more.

This project is about another benefit of Kentucky's woodlands: a source for the many beautiful and valued wood products that we see around us every day—our buildings and homes and many of their furnishings, gymnastic equipment, baseball bats, charcoal, toothpicks, tongue depressors, pencils, broom and tool handles, firewood, toys, fencing, poles, musical instruments, coffee filters, computer paper, detective novels, movie tickets, and rock star posters, just to name a few.

Did you know that wood sugars are used in baby foods, imitation bacon, and beverages? And that wood by-products are used in our clothing, plastic packaging, carpeting, telephones, football helmets and hardhats, carbon papers, camera film and flash bulbs, sandwich bags, artificial vanilla flavoring, insecticides, shoe polish, hair spray, deodorants, colognes and cosmetics?

Forests contribute a great deal to our way of life. America grows on trees, and Kentucky's forests contribute to this growth and to the wealth of our nation.

Now, Let's...

1. Learn how trees are harvested.
2. Explore how logs are made into wood products.
3. Find out who buys trees in Kentucky.
4. Become familiar with local wood-using industries and the wood products they buy and sell.
5. Learn about different types of trees growing in Kentucky and how their wood is used.
6. Explore how woodlands can be harvested for the benefit of the environment and to keep them continuously productive.
7. Find out how forest fires threaten the value of Kentucky woodlands.
8. Become familiar with how forest fires are controlled and how they can be prevented.
9. Complete activities that help you explore uses of wood in Kentucky.
10. Share with others what you have learned and accomplished by making displays, giving demonstrations or programs, or writing news items. (Check with your Extension agent about entering your activities in 4-H competitive events.)

Project Requirements

1. Read this project booklet.
2. Complete four of the activities 1 through 33 suggested for this project. Use these activities as guides, expanding or changing them as you and your 4-H agent or leader agree will best suit your needs.
3. Complete the project record sheet and turn it in to your agent or leader.



*Sign on a tree
in Madrid, Spain*

I am the warmth of the hearth on cold winter nights.

I am the shade screening you from the hot summer sun.

My fruits and restoring drinks quench your thirst as you journey onward.

I am the beam that holds your house; the door of your homestead; the bed on which you lie and the timber that builds your boat.

I am the handle of your hoe, the wood of your cradle, the shell of your coffin.

The Process from Tree to Lumber...

Start With the Logging Process

It takes a lot of work to turn a tree into a pencil, desk, chair, newspaper, or door. And it starts with the logging process.

First, loggers buy trees from landowners and then cut or **fell** the trees that have been selected for harvest. Trees are generally cut with chain saws. Some loggers use huge shearers that grasp small-to-medium trees and clip them off.

Once the tree is felled, loggers cut off the branches and **buck**, or cut, the tree trunk into logs. (The branches are used for fuel or other purposes, or they are left in the woods to decay and return to the soil.) Cables are attached to the logs, which are then **skidded** or dragged out of the woods by tractors, rubber-tired skidders, or even by horse or mule. Logs are lifted at one end during skidding to reduce soil disturbance.

The skid trails lead to a **log landing**, an area where logs are gathered until they are loaded onto trucks. A crane with a gripper much like a thumb and two fingers then lifts the logs from the pile onto the trucks. Once loaded, the trucks haul the logs to **log yards**, where logs are selected and processed by sawmills into lumber, posts, poles, wood chips, veneer, and other rough or unfinished products.

Rough wood products are resold by the sawmills to factories or other mills for making into finished wood products such as furniture, cabinets, handcrafts, flooring, pallets, barrels, and paper.



Logger fells red oak that has been selected for harvest.



Logger bucks this red oak into log lengths.



Log being skidded to landing area by rubber-tired skidder.

ACTIVITY 1 _____

Make a logging model or show logging operations by pictures cut from magazines, by drawings, or by photographs, videotape, and/or slides. Show and explain felling, limbing, bucking, skidding, loading onto log trucks, and delivery to a log yard. Set up your model or display in a local business, public/school library, or school bulletin board/display case for all to see and study. Or arrange to show your model or slides at a 4-H club meeting.

ACTIVITY 2 _____

Ask your Extension agent to meet and interview several local loggers for a radio show, or invite a logger to talk with your club. Get names of loggers from the telephone directory, local wood-using businesses, the Kentucky Division of Forestry District Office (refer to page 18) or your Extension agent.

ACTIVITY 3 _____

Arrange to feature a story in your school or local newspaper titled "A Day In The Life Of A Logger." Use some of the visual aids from Activity 1 or an interview with a logger as suggested in Activity 2.



Loading logs at a log landing.

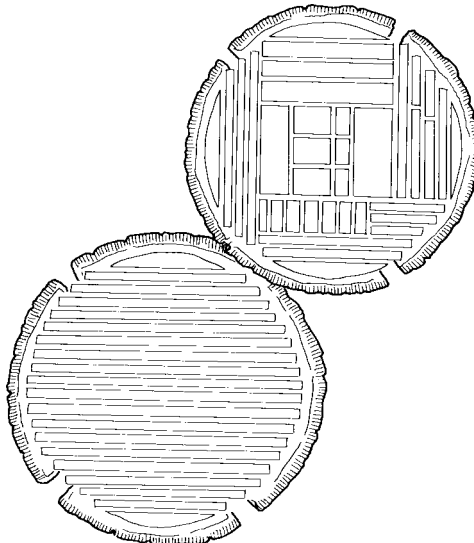


Log yard at a sawmill.

Next, A Stop at the Sawmill

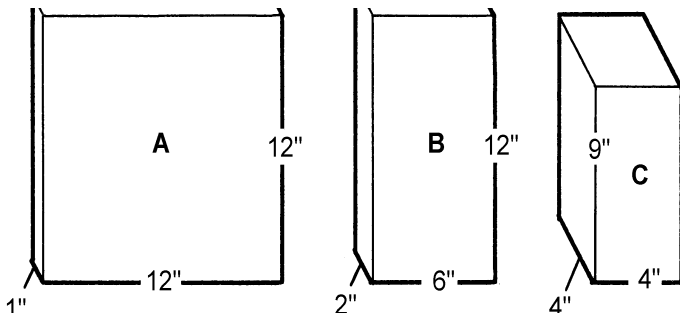
Preparation for Cutting. Once the logs reach the sawmill, they are often washed to remove dirt and stones that might dull the machinery. Then a debarker removes the bark. (see page 6, #2)

Cutting. Next, the clean, debarked logs ride on a moving, toothed chain to the head saw. A skilled sawyer looks at each log carefully, positions it to get the best cuts possible, and then guides it through a large head saw that cuts off slab after slab. After every few cuts, the sawyer again positions the log on the saw carriage to find and cut the most usable and valuable wood of the log. The log ends pictured here show two possible ways of cutting the same log.



Figuring Cost of Lumber. If you go to a dealer to buy lumber for building a storage building you would find that lumber is sold by the **board foot**—a volume measurement equal to a square foot of lumber that is one inch thick

(12" x 12" x 1" = 144 cubic inches). You can determine how many board feet are in a board by multiplying its width in inches by its length in feet by its thickness in inches, then dividing by 12. Each of the pieces shown is 1 board foot.



Can you figure how much an 8-foot 2" x 4" would cost if it sells for \$1.25 a board foot? The answer is on the back cover.

ACTIVITY 4 _____

Make a model of a sawmill or show sawmill operations by pictures cut from magazines, by drawings, or by photographs, videotape, and/or slides. Show and explain debarking, sawing slabs and boards on the head saw, edging boards, lumber drying in a kiln or air-drying stacks with stickers.

Set up your model or display in a local business, public or school library, school bulletin board or display case for all to see and study. Or arrange to show your model or slides at a 4-H meeting. (If you want photos/slides of a local mill, refer to Activity 16 on setting up a visit to a sawmill to meet the owner and view the operations.)

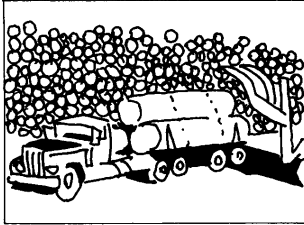
ACTIVITY 5 _____

Ask your county Extension agent to meet and interview several local sawmill operators for a radio program. Or invite a sawmill operator to talk with your club. Get names of sawmills from the telephone directory, the Kentucky Division of Forestry District Office (see page 18) or your Extension agent.

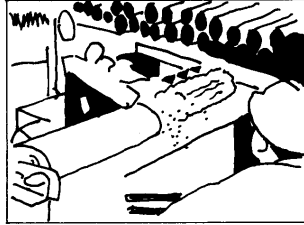
ACTIVITY 6 _____

Arrange to feature a story in your school or local newspaper titled "From Logs to Lumber—The Work-a-Day World of a Sawmill." Use some of the visual aids from Activity 4 or an interview with a sawmill operator as suggested in Activity 5.

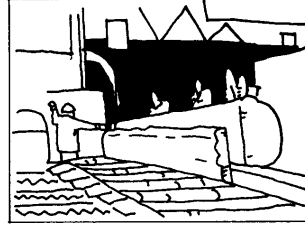
Preparing Lumber



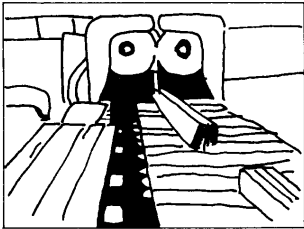
1. Log yard area



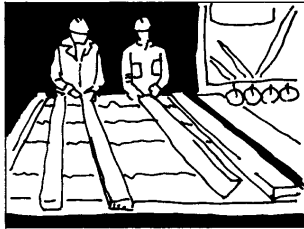
2. Log debarking



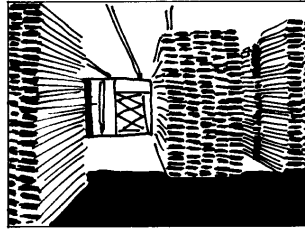
3. Head saw



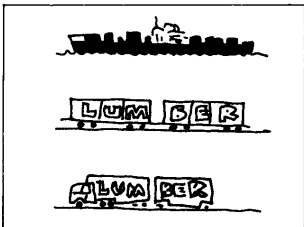
4. Resaw



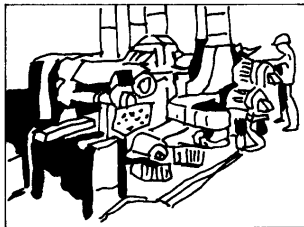
5. Grading



6. Drying



7. Shipping



8. Planing



9. End use

Grading. From the head saw, boards move to an edger where they are trimmed to the desired width. Skilled lumber graders then examine each board to determine its grade and to sort into stacks. Lumber is graded by size and characteristics which determine its strength and appearance.

Rules for grading vary according to tree species and uses of the particular wood. These rules are based on complex formulas that take into account the quality and imperfections of each board.

Drying. Wood must be dried before it can be used. Green or wet wood shrinks as it dries. If it is nailed, glued, or cut into a product while green, it will pull loose, warp, or split as it dries out in use. After cutting and grading, some sawmills send their boards to a **kiln** to be dried. Burners in these huge ovens heat the

wood to drive off its moisture and dry it out. Then the wood is stacked under cover until used. Other sawmills stack lumber out-of-doors in lumber yards, using spacers or **stickers** between the boards to let them dry out in the open air.

Marketing. Rough-cut boards are sold and shipped to various wood users who **plane** the boards to make them smooth and cut them to make the final wood products that consumers buy every day. The waste from lumbering, sawdust, bark, trimmings, and unusable slabs are often marketed for energy. Some manufacturers in Kentucky burn wood fuels rather than coal, oil, or natural gas. Rowan County High School heats its building and water with wood fuels from neighboring sawmills. Slabs and trimmings are also used for making paper.

ACTIVITY 7

Arrange to interview a lumber grader. (Refer to Activity 16 on how to set up a visit to a sawmill where you can meet a lumber grader.) Find out about the various hardwood lumber grades: **FAS** (first and seconds), **Selects**, **1 Common**, **2 Common**, **3A Common**, **3B Common**. Also ask about **F1F** and other "face" finishes. Illustrate boards with these grades by using cut-out pictures, drawings, photographs, videotape, or slides.

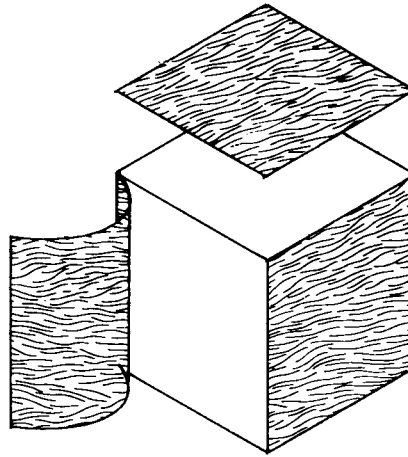
Learn about and illustrate the following grading terms: wane, shake, bow, twist, cup, white speck, honeycomb, decay, stain, checks. Illustrate or get samples of some of the imperfections and tell what causes them.

Make and set up a display or give a talk to your 4-H club about lumber grading. Feature a story in your school or local newspaper titled "Kentucky Lumber Meets the Grade." Ask your county Extension agent to interview a lumber grader for a radio show, or invite a lumber grader to talk with your 4-H club.

ACTIVITY 8

Make a survey of local lumber retailers. Make a chart showing (1) the wood species they sell and in what sizes; (2) the source of their lumber (what part of the country it comes from); (3) whether they sell kiln-dry or air-dry lumber or both; (4) other wood products they sell such as various plywoods; (5) how selected lumber products are priced. Display your chart or give a demonstration explaining it to your 4-H club.

Veneer is a thin slice of wood varying in thickness from 1/4 inch to 1/100 inch. It is made by peeling, slicing, or sawing logs. Veneer is either glued together in layers to make plywoods or used as the outside covering of many beautiful and valuable pieces of furniture.



Reaching Tall

Have you ever thought about the utility poles that reach up to hold the wires carrying electricity, and telephone service to our homes? While many utility poles today are made of steel or reinforced concrete, most still come from trees.

How does a tree get to be a utility pole? First of all, nearly all wooden utility poles come from **coniferous**, cone-bearing, trees (pine trees). These trees generally grow tall and straight, with only a slight taper. Hardwood, **deciduous** trees (those that lose their leaves) such as maples and oaks would make poor poles because their trunks usually are not nearly so straight and cylindrical as those of conifers.

What is the next clue that tells you how a tree becomes a utility pole? Notice that there is no bark; the bark has been shaved off by a machine. Next, drills make holes for the bolts that help hold up the wires. Then the log is cut to specifications so it will be just long enough. The top of the pole is cut on a slant so the rain will run off and the pole won't rot on top.

Finally, have you noticed that utility poles have different colors? The color is caused by chemicals used to prevent rotting caused by insects and fungi. The chemical may be pentachlorophenol, chromated copper arsenate, or creosote. Penta and copper give the poles a greenish color; creosote makes them dark brown or black. These chemicals help poles stay in the ground for years without rotting. Many poles have lasted over 40 years; some may last over 100.

Paper—One of Our Best Friends

- Q.** What product can get you a seat at the Super Bowl, keep your cereal fresh, and provide the morning news?
- A.** You're looking at it. Paper—probably our most useful but least appreciated invention. Let's change that by learning how paper is made.

Tear a piece of paper in two. Look at the torn edge. Look at it with a magnifier if you have one. What do you see? The rough edge on a torn sheet of paper is made up of hair-like pieces, called **fibers**, that were once part of a tree! The tree trunk was chipped into pieces about as big as your thumbnail. The chips were mixed with chemicals and water in a large tank called a **digester**. Here they were broken down into individual fibers like the ones on the torn edge of a piece of paper.

The fibers, chemicals, and water in the digester made a soupy mixture called **pulp**. To make paper, the pulp was sprayed on a flat surface, pressed, and dried. From the many fibers in the pulp came a sheet of paper.

Some high quality papers also contain other fibers. Rice paper, for example, contains fibers from rice, and high quality stationery contains fibers from cotton. Papers that claim a high **rag content** (like the dollar bill) may contain fibers of wool, linen, and cotton. Look at a dollar bill closely; you will see fibers of various colors in it.

ACTIVITY 9

It takes a lot of equipment and know-how to make paper, but the basic process is simple. . . and you can do it!

Equipment and Materials

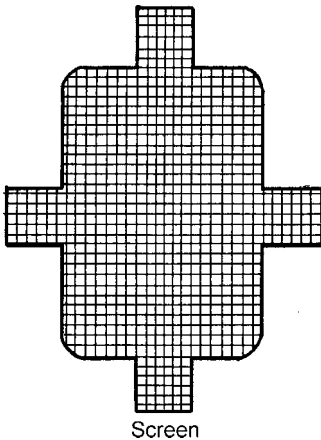
- Two disposable, aluminum roll pans or pie pans; the small sizes (8" x 5" roll pans, or 10" pie pans) work well.
- A piece of fine mesh window screen, 12" x 12"; fiber-glass screen is best because it lies flat and is easy to cut, but wire screen will work.
- A plastic or metal container that will hold two gallons (8 quarts) of water
- 12 sheets of the cheapest white (or soft-white) facial tissues that you can buy
- One roll of paper towels
- Two tablespoonfuls of liquid laundry starch
- One box of paper clips
- One rolling pin
- One electric iron (treated with care and cleaned after use)
- One electric blender (also treated with care and cleaned after use)

All set? O.K., follow these directions. . .

Making the Deckle

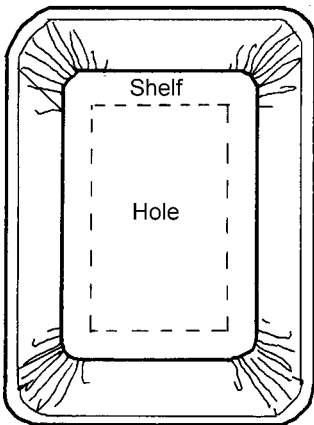
To make paper, you will need a frame called a **deckle**. You can make a deckle by following these directions. *Look at the pictures in each step before beginning the procedure.*

1. Cut a piece of screen the same size as the bottom of your pan and with four tabs on it. To do this, set the pan on the screen and draw a crayon line around the bottom edge. Remove the pan and draw four tabs on the outline.



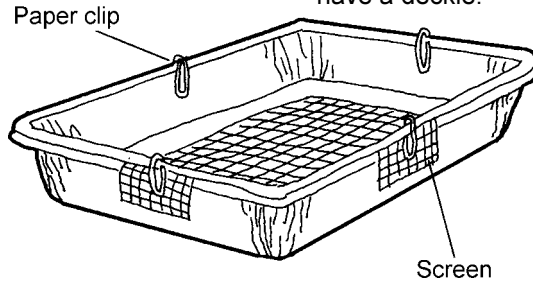
Screen

2. Cut a rectangular hole in the bottom of each roll pan. (If you are using pie pans, cut a round hole.) Leave a "shelf" about one inch wide around the hole. The shelf will keep the screen from falling through the hole.



Deckle

3. Place the screen that you cut into one of the pans. Set the other pan in on top of the screen. Fold the screen tabs over



the outside edge of the lower pan. Clip the pans together at the tabs, using a paper clip at each place. Now you have a deckle.

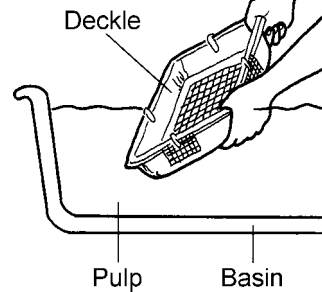
Preparing the Pulp

1. Tear two facial tissues into pieces about the size of a dime. (The facial tissues will provide you with fibers.) Do this six times so that you have six piles of torn tissue.
2. Fill the blender with water to one inch from the top. Add one pile of tissue pieces. Blend at the highest speed until the tissue pieces have broken down into fibers (about one minute). The mixture will look like cloudy water. Pour the mixture—or pulp—into the metal or plastic container.
3. Repeat step 2 with the five piles you have left. If your blender holds one quart, you will have one and a half gallons of pulp when all the piles have been blended. Add two quarts of water to the pulp mixture to make two gallons. (If your blender holds less than a quart, add enough water to the pulp in the container to make two gallons.)

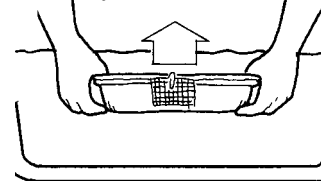
Making the Paper

1. Add two tablespoonfuls of liquid laundry starch to your pulp mixture and stir it with your hands. How does it feel?

2. Now you are ready to make paper. Hold the deckle with both hands and slide it gently into the pulp mixture at a slight angle.



3. Hold the deckle as level as you can near the bottom of the basin. When you have a uniform "cloud" of fibers floating over the screen, lift the deckle S-L-O-W-L-Y and evenly out of the basin.



4. Place the deckle on two paper towels and let it drain. When the towels are soaked, place the deckle on fresh towels. As it drains, carefully disassemble the deckle. (To avoid disturbing the pulp

sheet, remove the paper clips by "pulling them open." When you reassemble the deckle, use new paper clips.) Carefully remove the screen, with the pulp sheet on it, and place it on a fresh stack of towels.

5. The layer of pulp should be fairly solid now. Gently pat it dry with paper towels folded in half. When it is quite dry, peel the pulp sheet off the screen and "sandwich" it between fresh paper towels.
6. Roll a rolling pin over the pulp "sandwich" to remove any remaining water and to pack the fibers together. Do it again with fresh paper towels. (Dry and save the paper towels; they can be used again.)
7. Place the pulp sheet on a flat surface (a piece of wood or desk top) covered with several layers of paper towels. Then iron the sheet dry with an iron set at "rayon." Or, make a fresh "pulp sandwich" and place it between sheets of newspaper. Stack some heavy books on the newspaper and leave it overnight.
8. When the pulp sheet is dry, you'll have lots of individual fibers working as a team in one piece of hand-made paper!

Cleaning Up

Do not pour pulp mixture into a sink; it will clog the drain. Filter the pulp mixture through a deckle. Remove the collected fibers from the screen and dispose of them in a wastebasket. When you are working with pulp at a sink, always keep the drain-strainer in place.

Using Kentucky Woods

Species	Wt.*	Hardness	Strength	Splits Easily	Dimensional Stability	Decay Resistant	Comments
ASH, White	41	Hard	High	Moderate	Good	Moderate	Rollers, handles, long dowels, athletic equipment.
BASSWOOD	26	Soft	Low	No	Good	No	Light-weight use: nails easily; novelties, moldings.
BEECH	45	Hard	High	Yes	Fair	No	Substitute for hard maple; distillation.
CHERRY	35	Medium	High	Moderate	Excellent	Moderate	Furniture, food paddles, printing blocks, patterns.
GUM, Black	35	Soft	Medium	No	Fair	No	Bores nicely; rollers, handles, bushings, implementations.
HICKORY	51	Very Hard	High	Moderate	Fair	No	Heavy-duty tool handles, foundry blocks, wedges.
MAPLE, Hard	44	Very Hard	High	Yes	Good	Moderate	Furniture, bearings, blocks, faucets, handles.
MAPLE, Soft	33	Hard	High	No	Fair	Moderate	Spool hubs, furniture frames, novelties.
OAK, Red	44	Very Hard	High	Moderate	Good	Moderate	Furniture, flooring, warehouse pallets, veneer.
OAK, White	47	Very Hard	High	Moderate	Good	Moderate	Heavy rollers, plugs, furniture, flooring, handles, cooperage veneer.
POPLAR, Yellow	28	Soft	Medium	Moderate	Fair	No	Display fixtures, lamp parts, musical instruments.
SYCAMORE	34	Hard	Medium	No	Fair	Moderate	Butchers' blocks, rollers, scientific instruments.
WALNUT	38	Hard	High	Moderate	Excellent	Moderate	Trophy bases; display veneer and furniture parts.

*Pounds Per Cubic Foot Dried to 12 Percent Moisture

9

ACTIVITY 10

If you hold a piece of high quality paper to the light, you may see a design or trademark on it. These are called watermarks. You can produce watermarks of your own quite easily.

Use a piece of copper, iron, or aluminum wire (about as thick as a mechanical pencil lead) to form the design. Place the piece of formed wire in the center of the deckle screen, and proceed with the paper-making process as usual. The pulp sheet will be thinnest over the wire so when the paper is completed, light will shine through the thin area revealing the maker's personal watermark. Keep the design simple and use only one piece of wire. The wire must not cross itself.

ACTIVITY 11

Make different colors of paper. This is a fine opportunity to experiment with natural dyes. Tree bark, berries, fruit juices—you name it. If natural materials are not available, food colors and water will do as well. Just add them to the pulp mixture.

ACTIVITY 12

Different materials can be added to the pulp mixture to create different textures. Fibers stripped from the stem of a dry weed, pieces of colored thread, dried grass, flower parts, glitter, coffee grounds; almost anything is worth a try.

Activities 9-12 provide you with a basic procedure. What you do with it depends on your imagination. Use the directions as a starting point. Feel free to modify the process and experiment.

Kentucky's Forest Products Industries

You can find some type of wood company in nearly every one of Kentucky's 120 counties. These forest products industries generate thousands of jobs for Kentuckians. The sale of our forest products nationwide and overseas brings hundreds of millions of dollars into Kentucky. Cutting and processing timber is big business in our state. And, not everyone in the industry owns woods.

There are many people who buy the trees that supply wood for the thousands of products we all depend on. Many own their own businesses. They buy trees for delivery to pulp and paper mills, plywood plants, and lumber mills to be manufactured into a variety of valuable wood products. They may buy the machines needed to harvest and haul trees and employ people to operate these machines. Others contract with producers who cut and haul these trees to woodyards and shipping points. Many buyers work for sawmills or lumber companies.

At the time of this writing, Kentucky's forest products industries are producing at a rate equal to any in its history (except possibly a brief period at the turn of the century). Compared with border states, Kentucky outproduces all but Virginia in hardwood lumber production and has been one of the top ten producers every year in the past fifty.

Who Sells Trees?

Many of Kentucky's one-half million private landowners, that's who. More than 90 percent of Kentucky's 12 million acres of woodlands are owned by farmers and private citizens. Only eight states have more privately owned forestland than Kentucky. The average Kentucky woodland owner has about 25 acres of woods.

These woodlands provide more than 70 marketable timber species, 70 percent of which are in demand! More than half of Kentucky's woodlands are in the western Appalachians—recognized as the best investment area for hardwood tracts in the United States. The quality of our hardwood forests is easily equal or superior to surrounding states and much of New England.

Save Our Trees? Yes And No!

With all the forest industries using our trees, shouldn't we be more concerned about saving them? Isn't it bad to cut down trees? Yes *and* No.

Yes!

We need trees to produce oxygen and protect soils, for campgrounds, as shade for woodland picnics, and homes for wildlife. We need trees growing and standing tall to make our forests nice places to visit.

No!

We need our trees for wood and paper products, fine furniture, kitchen cabinets, dog houses, cardboard boxes, tennis rackets, and golf clubs. We need to cut trees to provide more and better homes for wildlife. We need to cut trees to make way for new seedlings, tree sprouts, and younger, more vigorous trees.

This is just a taste of the never-ending debate among those interested in Kentucky's forests.

It may be painful to think about a forest giant that has stood 75, 80, 100 years or more being laid low in a matter of minutes with a chain saw. But looking at it from another angle, it doesn't seem a tragedy at all. If properly selected, the tree was ripe for harvest and is now ready to serve a new purpose in the use of its wood.

Upon growing long past maturity, trees become inefficient in many ways, including the production of oxygen. They start losing limbs, and disease and rot set in. They contain less usable wood as time progresses.

ACTIVITY 13 _____

Make a display of your paper products showing the step-by-step process and some of the equipment used. Set up your display in a local business, public or school library, or school bulletin board/display case for all to see and study. Or arrange to show it at your 4-H club meeting.

ACTIVITY 14 _____

Ask your county Extension agent to meet and interview several pulpwood buyers, suppliers, or papermill operators for a radio program. Or invite one of these people to talk with your club. Get names from your phone directory, The Kentucky Division of Forestry District Office (see page 18) or your Extension agent.

There are two paper mills in Kentucky: (1) Willamette Industries, P.O. Box 130, Hawesville, Kentucky 42348 (Hancock County); (2) Westvaco Corporation, P.O. Box 278, Wickliffe, Kentucky 42087 (Ballard County). There are a number of pulpwood cutters and buyers through the state. Refer to Activity 16 on how to set up an interview.

ACTIVITY 15 _____

Arrange to feature a story in your school or local newspaper titled "Wood Soup and Newsprint—The Story of Paper." Use some of the visual aids from Activity 13 or the interview with a pulpwood buyer, supplier, or papermill operator as suggested in Activity 14.

Just as it can be painful to think about the felling of these forest giants, it can be equally painful to see a forest of dead and decaying trees or to see trees stunted and misshapen from abuse and injuries inflicted long ago. This is especially true when these old and dying trees compete with the growth of younger trees that would otherwise be able to grow freely and quickly to replace the older parents from which they sprang.

Even the older trees that decay and fall in the forest are not totally wasted. They return to the soils from which they grew. However, this decay process becomes a question of "How much is enough?" Literally billions of tons of wood rot and enrich forest soils each year. We can easily harvest a share of this wood for our own needs, leaving the tree tops, branches, and uncut trees remaining in the woods after harvest to replenish forest soils.

Yes to Multiple-Use Management

Fortunately, landowners can practice forest management techniques known as **multiple-use management**. This lets us "have our cake and eat it too." Multiple-use management lets us have our forests with all their beauty and recreational and environmental benefits and still cut trees for making into the many wood products we all depend on. Wise harvesting and use of trees not only keeps our forests young and vigorous, but also keeps the forest environment in good condition.

And Yes to Sustained-Yield Practices

Woodland owners also need to understand a forestry practice called **sustained yield**. Sustained yield practice allows a forest to be harvested for many different products such as fuel, poles, posts, pulpwood, stave bolts, lumber and veneer on a regular basis, every few years, for present and future

generations. Many landowners simply need to know that they and their children can benefit from the very same woods that provided for their fathers and grandfathers.

Many landowners do not see the value of woods to their total farm operation. The woods are considered useful for home needs such as firewood or posts, but not seen as a crop resource to be managed for profit. However, every year Kentucky's forest industries pay many millions of dollars to Kentucky landowners to buy and cut trees from their woodlands. So giving attention to their forests can pay landowners by providing continuous harvests.

In Kentucky, forest surveys show that our trees are growing much faster than they are being cut. This gap between growth and harvest is expected to widen on into the next century. And the timber that is being cut in Kentucky is growing in the same areas from which our fathers and their fathers cut.

So, You Have Trees to Sell!

Where should you start when you have trees to sell? Well, you should always start with the help of a professional forester.



A forester examines a wood core extracted from a tree to determine its age and growth rate.

ACTIVITY 16 _____

Find out how timber is used in your area. For this activity, survey one or two wood processing plants in your county (and/or adjoining counties). Such plants would include producers of lumber, veneer, fencing and posts, poles, handle stock, barrels and staves, pulp and paper, gun stock materials, railroad crossties, flooring, furniture, etc.

Get your 4-H leader or Extension agent to make arrangements for you (and one or two others if you'd like) to visit local wood industries. Be very safety conscious when making your visits. If there is any question about liability, have the Extension agent help you write a liability waiver to be signed by your parents.

Most of these industries will welcome you as an observer and/or interviewer, but you will need to let workers go about their jobs, holding questions until rest breaks or as they have time to talk.

Before you go, prepare a questionnaire to find out:

- the tree species and type of raw materials the plant buys;
- the type of forest products they manufacture for sale;
- the number of people who are directly employed by the industry, plus those whose jobs depend to some degree on the industry (such as hardware suppliers, repair services, utilities, etc.);
- the dollar value of the industry to your area;
- some of the problems facing the wood industry in your area;
- possible solutions to some of these problems.

Record your findings on Worksheet 1.

Professional foresters help landowners put timber on the market. They help them select and measure trees for harvest. Foresters base their selections on timber maturity, health, species, and the spacing between trees. This is done with the idea of having a major crop available for the landowner from the same forest every 15 to 20 years. Their goal is to replace the forest that is cut with what is left: the growing stock, stump sprouts, or the seeding that naturally takes place in every woodland.



Foresters help landowners select and measure trees to market. Landowner spots tree with paint so loggers know what to cut.

The Four "Ws" of Timber Sales

Why sell timber without having a good idea of its volume and value? You wouldn't sell tobacco, corn, cotton, soybeans, cattle, hogs, etc. without a good, educated idea of volumes and value.

What can a forester do for you? If you had legal problems, you would get professional help. Why not see a forester before selling timber? Public, industry, and consultant foresters are all available to help you. A forester can advise you on:

- the best methods for reforestation,
- determining maturity and possible demand for your timber,
- steps to selling,
- tax benefits and cost sharing.

- Sell when you are convinced that good forest management is also good wildlife management based on your interests.
- Sell only after you have talked with a forester.

When to sell your timber is determined by your overall financial plans, cost of regeneration, and other management objectives.

When you sell, consider these points:

- Sell when timber is mature and the market is good.
- Sell when you have a good management plan for reforestation.

Who can help you with selling timber?

- Kentucky Division of Forestry (see map on page 18)
- University of Kentucky Cooperative Extension Service
- Natural Resources Conservation Service
- Farm Service Agency
- Industry Foresters
- Consulting Foresters (Most consulting foresters will be glad to talk with you about your forest opportunities with no charge until actual services are performed.)

ACTIVITY 17

Find out what local wood-using industries buy and sell. For this activity, survey several wood-processing plants as suggested in Activity 16. Request samples or make photographs of wood products they buy or products they produce. Make a display of these items. Explain what they purchase and how they make it into new products. Place your display on your school bulletin board or display case, or ask an interested merchant or business to display.

ACTIVITY 18

Find out what's growing in the woods around you. Do your woods grow clothespins? Or maybe your trees have wooden legs! (Clothespins are made from beech trees, and black willow trees are used for artificial limbs.) Which woods make good fence posts? Which woods are best for firewood? Which carve easily and work well for toy-making?

Collect and display several samples of woods that are bought and sold in your area. Identify them and illustrate their main properties and uses.

To make certain good timber continues to grow, foresters recommend cutting single trees or groups of trees whenever the mature trees or clumps of mature trees are fairly widely scattered throughout the woods. If the entire woodland contains mostly mature timber, they will recommend cutting the entire area. In Kentucky, stump sprouts and natural seeding easily return most cleared areas to quality timber production. The forester's goal is to leave the stand with as good or better a future *after* a harvest than if it had been left alone. They intend to guarantee repeated cuts from the same areas on into the indefinite future.

It is the person with the saw who has the best chance to do what's needed to make up for any past mistreatment of the

woods and to return them to growing quality stock. That is one reason foresters mark culls—trees that are mostly rotten—and recommend the landowner give them away to any logger who can make use of them. Removing culls at the time of harvest is critical to renewing the forest and aiding the growth of quality trees. Otherwise, the culls compete with the very trees needed to replace what was cut.

After measuring and marking trees to be cut, the forester gives the owner a summary of the volume marked, a list of possible buyers, and a sample sale contract—a signed agreement between buyer and seller assuring that everything about the sale and harvest will be fair and square.

Timber Sales—A Step-By-Step Procedure

1. Contact a forester to find out if your timber:

- is economically mature,
- needs salvage due to damage,
- should be cut to release the understory,
- has sufficient volume and quality for a sale,
- is accessible for logging.

2. Have the forester:

- mark the trees to be cut,
- mark sufficient cull trees to be deadened to leave the stand in good condition for future growth,
- estimate volume and quality of timber to be sold,
- list by diameter and number of logs the number and volume of trees marked,
- provide a list of prospective buyers, advise on contract requirements and bidding techniques.

3. Advertise and get competitive bids.

- Send advertisements to newspapers.
- Send timber summary and bid forms to prospective buyers.
- Require sealed bids with good faith deposits returned by a specific date.
- Set a minimum bid you will accept (this need not be publicized).

4. Have a written contract signed.

Require:

- that the buyer cut only marked trees,
- that the buyer cut or deaden cull trees,
- that a performance bond be posted to ensure all provisions of the contract are carried out.

Specify:

- the time limit for cutting to be completed,
- the logger's responsibility for preventing or

suppressing forest fires, conditions for logging roads and skid trails,

- the condition in which the area is to be left,
 - financial penalties for contract violations.
- #### 5. Enforce the contract.
- Conduct frequent on-the-ground inspections of the harvesting operation to be sure the contract is being followed.
 - Charge against the performance bond for any violation of the contract.

6. Follow up.

- After the harvest, request an inspection by your forester for recommendations on future treatment of the stand.

ACTIVITY 19

You can learn much about how to sell timber by watching a forester prepare an area for a timber sale. Get your 4-H leader or Extension agent to help you (and one or two others if you'd like) make arrangements to accompany or "shadow" a forester who "cruises" timber.

In a timber cruise, the forester surveys forestland to locate salable timber and estimates its quantity by species, size, quality, or other characteristics. Most would welcome you as an observer, but you should let the forester go about work as normal, holding your questions and interviews until rest breaks and follow-up of the field trip. You will need to arrange to meet the forester at the landowner's house and have someone pick you up there after your field day. If there is any question of liability, have the Extension agent help you write a liability waiver to be signed by your parents.

You will need to be "woods wise" by wearing good hiking clothing and footwear and staying with the forester; **never wander off on your own or leave the woods without the forester.**

Record your field day by using Worksheet 2.

ACTIVITY 20

Make a photo story of a timber sale by taking pictures during the field trip described in Activity 19. Display your story in a local business, public or school library, or school bulletin board or display case for all to see and learn from. Or arrange to show the story at your 4-H club meeting.

Blazes, Blights & Bugs

So far we have explored how Kentucky's woodlands are important for their owners and for Kentucky's wood-using industries. And, as most of us know, woodlands are important for recreation and fun times, for holding soils in place and keeping our waters clean, for purifying our air, and for making our lives happier by their quiet and restful beauty. These very woods that are important and useful in so many ways face a serious enemy, however. Every year this enemy kills millions of young trees. It wounds older trees so badly that they become unhealthy and sick from insects and diseases which weaken and eventually kill them. This dreaded enemy in a matter of minutes can do more harm to our woods than most people can even imagine. **The Enemy is Fire!**

Kentucky has come a long way from the 1800s and early 1900s when fires burned till they were rained out. Ever since the first fire protection association was started by woodland owners in 1913, fire control in Kentucky has made progress. Kentucky's forest industries have played a large role in developing fire protection. Statewide fire protection was achieved in January of 1966. Kentucky's fire occurrence rate (number of fires per million acres protected) is roughly half of what it was at that time.

The Kentucky Division of Forestry, in the state's Department for Natural Resources, has been charged by law with, among many other things, protecting Kentucky's forestlands from destruction. The Division of Forestry has a network of skilled and highly dedicated professional forest rangers. Each works within local communities to promote fire prevention and to quickly suppress fires when they do occur. This full-time network of 175 guards and rangers expands in time of need by using any of 950 deputy wardens or other emergency labor. The Division of Forestry also works with over 300 rural fire departments. They in turn help the Division in times of emergency.



Fires being located by a spotter; in Kentucky, fire towers are mostly replaced by aerial detection.



Smoke rising from a forest fire.



Trees are subjected to temperatures as high as 1,400°F during a forest fire. This kills or wounds millions of the smaller trees.

ACTIVITY 21 _____

Arrange to feature a story titled "Timber Cruising for Cash" in your school or local newspaper. Use some of your photos and/or information from your interview with the forester or landowner.

ACTIVITY 22 _____

If your Extension agent has a radio show, ask the agent to meet and interview a landowner who is selling timber or the forester who is assisting the landowner. Or invite the landowner or forester to talk with your club.

ACTIVITY 23 _____

Sell some timber products from your family's woods. Or closely follow the sale of timber from the woods of a neighbor, family member, 4-H club member, or some other acquaintance. Keep records showing the various steps followed to (1) select the trees for sale; (2) determine their volume; (3) advertise for buyers; (4) get competitive bids; (5) specify contract requirements regulating the harvest; (6) monitor the harvest. Use Worksheet #2 for reporting on this activity, adapting and adding to it to cover the above information.

ACTIVITY 24 _____

Make a photo story display of your timber sale or give a talk to your 4-H club about it. Feature a story in your school or local newspaper or on your county agent's radio show about marketing timber.

Forest Fires Hurt!

Every year in Kentucky forest fires kill millions of tree seedlings and saplings. This loss of young trees sets the growth of the forest back an average of 20 years. Twenty years just to replace what is burned in a matter of minutes!

The older, larger trees are often not killed by the fire. But the fire scorch at their bases loosens their bark and exposes their wood to attack by insects and diseases. The critters and fungi that enter the tree through fire wounds eat up their wood. They gradually spread within the tree, eating its wood throughout the remainder of the tree's lifetime. This decay process is called **heartrot**. It gradually hollows out the trees. In Kentucky, almost all trees with heartrot got that way through wounds started by fires that injured the trees. It's the "heart-ache" of heartrot that's hurting our trees.

All of Kentucky benefits from the money and the jobs provided by timber sellers, timber buyers, and timber processing industries. So it's not just the buyers and sellers who lose; it's everyone they do business with in local communities who lose. Because of forest fires, less money and fewer jobs are available to Kentuckians.

As Smokey the Bear is constantly reminding us, **only you can prevent forest fires**. Each one of us is responsible for learning and using rules and precautions.

What Causes Forest Fires?

People do! The leading cause of wildfires in Kentucky is unsafe debris burning—fire accidentally escaping while burning garbage, a trash pile, a patch of weeds, or preparing a garden spot. Precautions to prevent trash fires from escaping are listed on page 16.

Careless burning of trash has caused more fires in this state than all other causes combined—with the exception of arson. Arsonists run neck and neck with debris burners as the leading cause of forest acres damaged by fire. **Woods arson** is the willful, malicious, or wanton setting of fire or trying to set fire to



Heartrot caused by forest fires that burned through these woods many years ago.

woodlands. It is a very serious crime that can be punished by a \$1,000 to \$10,000 fine and up to five years in jail, or both. The Kentucky Forest Industries Association helps the fight against woods arson by offering \$500 for information leading to the conviction of a woods arsonist. The wood industries association has awarded this reward several times.

PLEASE!



Only you can prevent forest fires

ACTIVITY 25

Interview the Kentucky Division of Forestry's Forest Ranger assigned to your county. Ask about the forest fire problems in your area and in the state as a whole. Request to see firefighting equipment and detection system. Ask about laws that regulate outdoor burning.

Use **Worksheet 3** as a guide. This activity might be expanded to include interviews with local volunteer fire departments to learn about their involvement with wildfires in the county.

Did you know that . . .

- many people mistakenly believe burning the woods rids them of poisonous snakes? Poisonous snakes—extremely heat sensitive—actually escape fire much more easily than most forest animals.
- some people mistakenly believe burning the woods rids them of ticks, briars, and unwanted underbrush? But next year's crop will be even thicker due to burning. Undamaged roots sprout with new strength and improve conditions for ticks and snakes.
- some people mistakenly believe forest fires improve livestock forage? But woods, burned or unburned, seldom provide good food for livestock. The plants that grow after a fire generally have less nutrition because fire kills the better species.
- arsonists sometimes burn woods for revenge? This is demanding too high a price for a grudge. Too many innocent people in a community and in succeeding generations lose when the woods burn.

Hooray for Our Firefighters!

Fighting fires is not an easy job. It takes a lot of skilled, dedicated, and trained people to control forest fires. They have to know the different ways to contain and put out fires and what each situation requires.

Firefighters generally build a complete break in the fuel around a fire. Fuel refers to the burnable materials on a forest floor—small, dried-out plants and loose vegetation such as leaves and twigs. This break in the flammable materials may be 2 to 3 feet wide, 10 feet wide, or wider depending on fire conditions. When the wildfire reaches this line, there is no fuel there to feed it so it simply goes out.



A fire crew used fire rakes to make a control line around the wildfire.

In Kentucky this fire control line or fuel break is generally constructed by crews using **fire rakes**—a rake with farm-mower type blades on the end for

continued on page 17

Preventing Wildfires

The Division of Forestry depends on the support and assistance of each citizen to help reduce the number of forest fires—especially during fire hazard seasons.

1. **Don't burn crop residues. Shred or turn under** garden spots each fall to return their valuable organic matter to the soil. **Windrow or compost** stalks, weeds, limbs, and leaves so their valuable nutrients and organisms can be used as mulch.
2. If you must burn, **wait until after 4:30 p.m.** or later if the weather has been dry or windy. Winds are generally calmer and fuel moistures increase so fires are easier to contain.
3. Do not burn outdoors until after 1/2" of soaking rain. Then burn only after 4:30 p.m. A trace of rain does not reduce fire hazards.
4. **Burn only when the air is calm** and there is no chance of gusty winds.

5. **Burn only on level ground.** On slopes and in gullies, a fire can escape more easily and make a fast run uphill. If you must burn a slope, burn it from the top down; never start the fire at the bottom.
6. When burning trash, **use a barrel or pit covered by a screen.**
7. **Clear the area** 10 feet around where the fire will be. This creates a fire break. If possible, also plow around the area where the fire will be.
8. Make sure the **area overhead is clear** of flammable material.
9. **Have tools handy:** water hose, buckets of water, rakes, hoes, shovels, wet sacks, etc. These can be used to keep the flames inside the cleared area, to subdue the flames if the wind picks up or the fire grows too big, to smother the fire or to

strengthen the control line around the fire.

10. Be sure **the fire is attended** at all times by more than one responsible person. This is required by law.
11. Watch for **spot fires.** Cinders and sparks can carry through the air and start a "spot" of fire off in the distance.
12. **Feed the fire slowly.** Do not burn everything all at once. This will control the level of burning and the fire's intensity.
13. Stay with the fire **until the last spark is dead out.** Use your hand to carefully feel for heat or embers in the ashes. Carefully **inspect once more** the burned area the next morning.
14. If your fire gets out of control, **report it immediately** to the Kentucky Division of Forestry's local guard or ranger. The local fire department, county dispatcher or state police can help you report a forest fire.

ACTIVITY 26 _____

Make a display of tree cross-sections or small pieces of boards showing the complex decay of wood that results from forest fires. Relate this to loss in lumber grade and volume. Set up your display in a local business, public or school library, or school bulletin board or display case for all to see and study. Arrange to show your display to your 4-H club.

ACTIVITY 27 _____

If there are no local ordinances against outdoor burning, demonstrate a safe burning barrel for trash fires. Use a model, cut-outs, drawings, photos, videotape, or slides showing the type of barrel to use. Show how to vent it and how to keep the area around it clear of flammable materials that could let the fire escape. Exhibit your display as suggested in Activity 26.

ACTIVITY 28 _____

Conduct a public-awareness poll. Determine how aware local landowners, citizens, or students are of the local or state wildfire problem. Base your polling questions on the information you've learned from this project—especially Activities 25, 26, and 27. Share your polling results in your local or school newspaper.

cutting and raking fuels away from the fire. The fire fighters may also use a **back-pack blower** that literally blows fuels out of the path of the wildfire. A fire plow attached to a small dozer is sometimes used to remove fuel by plowing all the way around the fire. A pumper and tanker is sometimes available for driving to the edge of a fire and spraying water to cool the fire down or sometimes to completely put it out.

National Guard helicopters ferry specialized helitank crews to fires and then assist them by scooping up water into huge 200-gallon water buckets that hang below the chopper and dropping the water out onto the fire.

A **linefire** (or backfire) is commonly used by firefighters to widen out the hand-built fire control line. Since crews cannot construct a hand line wide enough to stop a rampaging wildfire, a linefire is carefully set along the control line that has been built 10 to 50 feet or farther from the wildfire. This line fire burns from the control line toward the wildfire, consuming all fuel in its path. With the fuel already burned, the wildfire simply goes out when it meets the approaching linefire. Kentucky law states no one but firefighters working for the Kentucky Division of Forestry can set a backfire due to the danger of trapping firefighters or of starting more wildfires.

After constructing fire control lines, firing them out, and securing and patrolling (mopping-up) the control lines, a fire is said to be **contained**, meaning it can no longer spread. Firefighters will recheck their firelines as time allows till all the fire within the control lines burns itself dead out. This burnout can take days. Only then is the fire said to be finally and completely out.

The End Marks the Beginning

All the forestry folks of Kentucky hope you have enjoyed this study of forestry and learned new ways the woods are useful to us all. Don't leave us now. Keep up your interest and enthusiasm. You may want to get involved in some of the following events; ask your Extension agent about them:

1. Forestry Leadership Program:

Every year the Kentucky Forestry Council sponsors this camp for high school juniors and seniors. The five-day camp, held each summer at the Leadership Center in Jabez, is run by the University of Kentucky Cooperative Extension Service.

2. Senior Forestry Field Day and

National Forestry Invitational: Each September senior 4-H'ers compete in tree identification and measurements, compass and traverse, forest evaluation, forest insect and disease identification, and a forestry bowl. The winners make up a team that competes at the national event in August of the next year.

3. Junior 4-H Forestry Field Day: Four forestry field days are held state-wide for junior 4-H'ers to introduce them to some of the forestry skills they can pursue as seniors.

4. Preliminary Woodland Examination: If you or your family own wooded property, contact your Kentucky Division of Forestry to have a management plan developed for it. This exam is a tax supported service.

5. The American Tree Farm System: If you or your family have ten acres or more of woodland, apply for membership in the American Tree Farm System. This program recognizes forest owners who intend to manage their trees as a crop. It is sponsored in Kentucky by the Kentucky Forest Industries Association.

We look forward to you bringing your energies and ideas with you as you enter the adult world so you can join us in promoting the protection and wise use of Kentucky's woodlands.

Kentucky's useful forests—catch the vision!

ACTIVITY 29

Make and distribute hand-bills or posters promoting wildfire prevention. Encourage safe trash burning; or recommend that people use compost, windrow gardening, and field stubble rather than burning off these sources of nutrients.

Check with your county ranger to coordinate your advertising campaigns.

ACTIVITY 30

During National Fire Prevention Week (the first full week in October), get your school cafeteria's personnel to print the lunch menu with a forest fire prevention theme. Provide them with information and sketches two weeks in advance.

ACTIVITY 31

Write poems, limericks, riddles, or songs promoting wildfire prevention. Or author a children's book that has a wildfire prevention theme. Illustrate your creations. Display them in the public or school library, or distribute copies for all your friends to read.

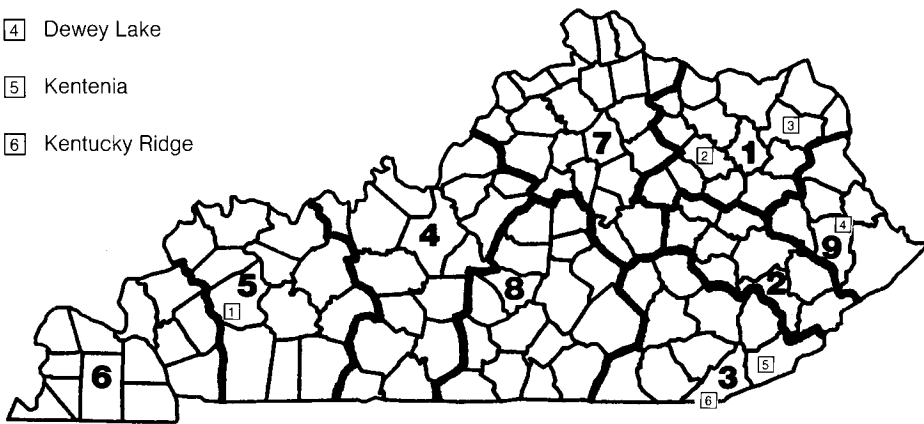
Develop skits with puppets that act out a wildfire prevention message. Arrange to put on your show for kindergarten and preschoolers or appropriate age groups.

Field Offices

Kentucky Division of Forestry
 Department for Natural Resources
 Natural Resources and Environmental
 Protection Cabinet

State Forests

- 1 Pennyrile
- 2 Olympia
- 3 Tygarts
- 4 Dewey Lake
- 5 Kentenia
- 6 Kentucky Ridge

**District Offices**

- | | | |
|---|--|--|
| 1. Northeastern District
255 Redburn Hollow Rd.
Morehead, KY 40351
(606) 784-7504 | 5. Green River District
P.O. Box 465
Madisonville, KY 42431
(270) 824-7527 | 8. South Central District
120 Gaines Drive
Campbellsville, KY 42718
(859) 465-5071 |
| 2. Kentucky River District
P.O. Box 702
Hazard, KY 41702
(606) 439-1385 | 6. Western District
P.O. Box 349
Mayfield, KY 42066
(270) 247-3913 | 9. Eastern District
P.O. Box 189
Betsy Layne, KY 41605
(606) 478-4495 |
| 3. Southeastern District
P.O. Box 130
Pineville, KY 40977
(606) 337-3011 | 7. Bluegrass District
P.O. Box 30
Stamping Ground, KY 40379
(859) 535-7741 | |
| 4. Central District
P.O. Box 663
Elizabethtown, KY 42702
(270) 766-5010 | | |

Final Activities

These last two activities will provide you with a general overview and summary information about your forest-use project.

ACTIVITY 32 _____

Do research of forestry resources. List titles and give summaries of commercial and agency films, videos, slide programs, and books about the processing and many uses of wood. Titles are available from the Kentucky Division of Forestry, University of Kentucky Extension Service, and Department of Forestry, as well as your public and school libraries. Sponsor a filmfest and book fair for your 4-H club.

ACTIVITY 33 _____

Make a "wood-use" scrapbook. Read local newspapers and farm magazines for articles. Cut out or copy any you find. Request pamphlets from forestry agencies. Highlight or summarize the most important parts of each. Place your findings in a scrapbook. Note the source of each (newspaper, magazine, or agency name). Include the publication date for newspaper and magazine articles.

After you have completed your scrapbook, display it. You may want to eventually donate it to your school or public library as part of their permanent collection of resource materials.

Worksheet 2: Timber Cruise Field Trip

Date of field trip: _____

Name of landowner: _____

Is the landowner a certified member of the Kentucky Tree Farm System (sponsored by the Kentucky Forest Industries Association)?

Yes _____ No _____

Total woodland ownership in acres:

Size of woodland being cruised (in acres):

Name of advising forester:

Type of forester:
____ Private consultant
____ Kentucky Division of Forestry service forester
____ Industry forester
____ Other; specify:

Does the landowner have a written management plan for woodlands?

Yes _____ No _____

Attach a copy of the plan and/or summary of the timber management practices recommended for the woodlands and/or a summary of the landowner's goals for the woodlands.

Describe step-by-step how the forester cruises the timber.

Explain how the forester determines which trees need cutting.

Explain how the forester marks them: _____

Explain how the forester determines their volume (the number of board feet that can be cut from the tree).

Did the forester mark "cull" trees?

Yes _____ No _____

How were they marked and why?

How does the forester ensure this timber harvest will help the landowner reach the goals for the woodlands?

How many hours does the forester expect to use in completing this timber cruise? _____

What will the forester do with the field data?

How does the forester determine charges to the land owner for the cruising services? _____

Comment on other things you observed and learned from your field trip: _____

Ask the landowner if he/she is willing to share with you some of the cruise data submitted by the forester. If so, attach a copy of the report or a brief summary of it.

Worksheet 3: Conversation with a Forest Ranger

Date of visit:

Name of forest ranger:

District office to which the ranger is assigned:

Counties the ranger is responsible for:

Number of wildfires the ranger took action on:

Last year: _____

Five-year average: _____

Number of acres burned:

Last year: _____

Five-year average: _____

How do these numbers compare to surrounding counties?

Are numbers on the increase or declining?

Explain the harm to timber values from these fires:

Estimate the number of landowners who have had wildfires burn their property the past year. _____

What are the three main causes of wildfire in the country?

Is there a woods arson problem in the area?

Yes _____ No _____ If there is, give some of the details:

What is the most unusual fire cause the ranger has ever had or heard about? _____

What burning laws regulate outdoor burning, and what punishment can be given for breaking them? _____

What has been the most interesting firefighting experience the ranger has had? Or the worst run of fires he/she can remember? _____

What other forestry projects is the ranger involved with in your area? _____

Comment on other things you learned from this interview:

Project Record

Kentucky's Useful Forests

Name _____ Birth date _____

Address _____
Street & Number/Rural Route Town Zip

School _____ Grade _____ County _____

Parents' Name _____

4-H Club _____

List the activities you completed for this project. Explain how you obtained information and carried out each activity:

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Attach your worksheets, photographs, news articles, or any visual aids from your activities:

Contact:

Deborah Hill, Extension Specialist/Forestry

Originally prepared by:

Richard Green, Kentucky Division of Forestry Training Coordinator and the
Forestry Committee, University of Kentucky Cooperative Extension Service:

Dwight L. Crum, Extension Specialist/4-H

Deborah Hill, Extension Specialist/Forestry

Douglas McLaren, Area Specialist/Forestry

David Cooper, Menifee County Extension Agent/4-H

Answer from page 5:

$$\frac{4''(\text{width}) \times 8'(\text{length}) \times 2''(\text{thick})}{12} = 5.3 \text{ board feet} \times \$1.25 = \$6.62.$$