

Unit D: Forest Products

Lesson 1: Identifying Forest Products and Uses

Student Learning Objectives: Instruction in this lesson should result in students achieving the following objectives:

1. Describe forestry.
2. Identify forest products.
3. Identify the uses of forest products.

Recommended Teaching Time: 2 hours

Recommended Resources: The following resources may be useful in teaching this lesson:

- A PowerPoint has also been developed with use of this lesson plan
- <http://mff.dsisd.net/Balance/UseWood.htm>
- http://forestry.about.com/od/forestandtreeuses/Using_the_Forest_and_Trees.htm

List of Equipment, Tools, Supplies, and Facilities

Writing surface

PowerPoint Projector

PowerPoint Slides

Transparency Masters

Small piece of lumber, plywood and paper

Terms: The following terms are presented in this lesson (shown in bold italics and on PowerPoint Slide #2):

- | | |
|---|--|
| <ul style="list-style-type: none">• Flitch• Forestry• Longwood• Multiple-use forest• Piling• Poles | <ul style="list-style-type: none">• Pulpwood• Shortwood• Single-use forest• Timber• Veneer |
|---|--|

Interest Approach: Use an interest approach that will prepare the students for the lesson.

Teachers often develop approaches for their unique class and student situations. A possible approach is included here.

Ask students to list some important things that come from forests. Have them share their list with the class. Show the students a piece of lumber, plywood, and paper. Ask students where the items came from. Direct the discussion to introduce the lesson.

Summary of Content and Teaching Strategies

Objective 1: Describe forestry.

**** Before starting this objective ask the students what they think of when they hear the term forestry. Have students share their ideas before giving them the definition.**

(PowerPoint Slide #3)

I. **Forestry** is the science and art of managing forests so they continuously yield a maximum quality and quantity of forest products and services.

(PowerPoint Slide #4)

- A. Forestry includes logging and the manufacturing, marketing and use of wood products.
 1. Objectives include protection of watersheds, production of timber, provision of wildlife habitat, recreation, regulation of stream flow, control of erosion, and general aesthetics.

Objective 2: Identify forest products.

(PowerPoint Slide #5)

II. More than 10,000 different products, ranging from lumber to plastics, paper, and fabrics, are manufactured of wood.

(PowerPoint Slide #6)

- A. Each timber product is important in the total picture of timber management because each product allows the grower to remove timber, to receive payment for it and to improve the productivity of the stand.

(PowerPoint Slide #7)

1. **Timber** is wood used for lumber, paper, building boards, poles, piling and fuelwood.

(PowerPoint Slide #8)

2. Each timber product has its own specifications. Generally, the higher the value of the product is, the more the stringent or limiting are the specifications.
 - a. With softwood, the acceptable limits for pulpwood are quite broad, whereas the limits for poles and piling are quite narrow.

(PowerPoint Slide #9)

- b. With hardwood, the range of material suitable for making railroad cross-ties is very broad, whereas the range suitable for veneer logs is very narrow.

(PowerPoint Slide #10)

3. Forest products.
 - a. **Pulpwood** is the raw material of a myriad of paper products. Virtually all softwoods and hardwoods are now acceptable to pulp and paper mills.
 1. No two pulp or paper mills have identical pulpwood specifications.

(PowerPoint Slide #11)

2. Pulpwood is classified as **shortwood** if less than 3 meters in length and **longwood** if it is 3 meters or more in length.
3. Some paper mills purchase tree-length pulpwood, that is, the whole tree is harvested instead of being cut up before being loaded or stacked.

(PowerPoint Slide #12)

4. All trees must be cut fairly close to the ground, and limbs must be trimmed close to the surface of the stick.
5. Sticks must be cut from sound, live trees that are unmarred by charred or pitched wood or that contain metal.

(PowerPoint Slide #13)

- b. Fence posts provide good outlets for small timber, especially the timber cut in the thinning of softwood plantations.

(PowerPoint Slide #14)

1. Pines are the preferred species for posts because of the ease of treating pine with preservatives, but some hardwoods, such as sweetgum, are increasingly being used for posts.

(PowerPoint Slide #15)

2. Trees for posts must be reasonably straight and have fairly dense wood to provide adequate post strength.

(PowerPoint Slide #16)

- c. Mine timber is the timber used in mines to support the construction of tunnels, shafts, openings and chambers.
1. Hardwoods, principally oak, and the southern pines are the main species used as mine timber.
2. The species used for this purpose must rate high in bending and column strength.

(PowerPoint Slide #17)

- d. Railroad cross-ties are used to support steel railroad tracks.
1. Larger-sized, low grade southern pine, Douglas fir and other softwoods and virtually all species of low grade hardwood are suitable for making railroad cross-ties.
2. Generally, trees that are not suitable for other uses are best sold for use as cross-ties.

(PowerPoint Slide #18)

- e. Sawtimber trees are generally trees that are large enough and of sufficient quality to cut into sawlogs that produce lumber, veneer and plywood.
1. Nearly all softwoods can be harvested for sawtimber. Virtually all species of hardwood of adequate quality can also be used to produce lumber.

(PowerPoint Slide #19 shows examples of wood products)

(PowerPoint Slide #20)

- a. Lower grades of hardwood can be used to produce board road, a lowgrade lumber used to build roads for oil-well drilling rigs.

(PowerPoint Slide #21)

- f. **Poles** are round timbers most often used to support utility lines.
1. Most utility poles are produced from pine, Douglas fir, cedar and western larch timber.
2. The specifications for pole timber are very high.

(PowerPoint Slide #22)

Poles must be free of defects, such as crossbreaks or cracks, bird holes, hollow butts or tops from red heart or other decay, or splits in butts or tops; they must also be free of metal.

(PowerPoint Slide #23)

- g. **Piling** are round timbers, generally driven into the ground to support other structures and generally pressure-treated with creosote.

(PowerPoint Slide #24)

1. Piling is used for the construction of bridges, docks, wharves, foundations, and in other heavy general construction.
2. The same requirements used in selecting poles are used in selecting piling.
Additionally, piling must be shock resistant and usually straighter than poles.

(PowerPoint Slide #25)

- h. **Veneer** is a thin sheet of wood of uniform thickness produced by peeling, slicing, or sawing logs, bolts, or flitches.

(PowerPoint Slide #26)

1. A **flitch** is a thick piece of clean wood, usually squared.
2. Sliced veneer is usually confined to very valuable furniture or panel stock.
3. Veneer may cut thick enough to be used as is, or it may be glued together in thin sheets to form plywood.

(PowerPoint Slide #27)

4. The portion of the tree used for veneer must be free of defects, including rot and limbs. Frequently, veneer logs are cut from the lower portion of the tree stem, and a sawlog is cut from the remaining merchantable portion.

****Use TM: D1-1 and TM: D1-2 or PowerPoint Slide #28 as review over the material covered from the lecture and discussion. Ask the students where they see these types of forest products.**

Objective 3: Identify the uses of forest products.

(PowerPoint Slide #29)

III. Forests provide important and widely used products.

(PowerPoint Slide #30)

- A. Numerous products are made of and from wood.
 1. A **single-use forest** is a forest managed for one purpose.
 2. A **multiple-use forest** is one managed for more than one purpose.
 - a. More emphasis is placed on multiple-use forestry and its role in ecosystem management.

(PowerPoint Slide #31)

3. The roots of the tree provide tea, oil and turpentine.
4. The stump provides veneer, distillation products such as resin, turpentine and pine oil.

(PowerPoint Slide #32)

5. The trunk provides wood products such as pulpwood, poles, pilings, posts, lumber, ties, veneer, bolts, and mill wastes, such as particle board.

(PowerPoint Slide #33)

- a. Other uses of forests include: fuel, charcoal, tannin, drugs, oils and dyes from bark, sugar, storax, and syrups for sap, excelsior and products of distillation, such as wood creosote and wood alcohol.

(PowerPoint Slide #34 shows examples of uses of wood.)

(PowerPoint Slide #35)

- 6. The crown provides decorations, nuts and fruits and oils.
- 7. Most woods have some specific purposes. The following are a few of the common woods and their uses.
 - a. Pecan is used for bent wood parts.

(PowerPoint Slide #36)

- b. Ash is used to make baseball bats and tool handles.
- c. Oak is used in furniture, cabinets, tight cooperage and flooring.
- d. Basswood is used to make fruit baskets.

(PowerPoint Slide #37)

- e. Maple is used in gym floors, bowling pins, and furniture.
- f. Birch and sweetgum are used in veneer.

(PowerPoint Slide #38)

- g. Sycamore is used to make butcher blocks.
- h. Cypress is used to make water tanks, boat docks and oars.
- i. Persimmon is used in golf clubs.
- j. Dogwood is used in looms.

(PowerPoint Slide #39)

- k. Black walnut can be found in gun stocks and furniture.
- l. Holly is used in cabinets.
- m. Hickory is used in agricultural implements and tool handles.

****Use TM: D1-3 and TM: D1-4 or PowerPoint Slide #40 as material for lecture and discussion. You are going to ask the students to come up with a product that comes from the trees grown in Afghanistan. When they have their product they wish to share they need to stand up. Call on each student separately. They will tell the class a product. Each student needs to come up with a different product without repeating what another student said.**

Review/Summary: Use the student learning objectives to summarize the lesson. Have students explain the content associated with each objective. Student responses can be used in determining which objectives need to be reviewed or taught from a different angle. The objectives on PowerPoint Slide #41 can also be used as review.

Application: Students will be able to identify the different uses of trees in their area.

Evaluation: Use the following sample test to evaluate the students' comprehension of the material covered in this lesson.

Answers to Sample Test:

Part One: Matching

1. f
2. g
3. d
4. h
5. b
6. a
7. c
8. e

Part Two: Completion

1. higher
2. veneer
3. forestry
4. piling
5. shortwood, longwood
6. timber

Part Three: Short Answer

1. include protection of watersheds, production of timber, provision of wildlife habitat, recreation, regulation of stream flow, control of erosion, and general aesthetics.
2. Poles must be free of defects, such as crossbreaks or cracks, bird holes, hollow butts or tops from red heart or other decay, or splits in butts or tops; they must also be free of metal.
3. Each product allows the grower to remove timber, to receive payment for it and to improve the productivity of the stand.

Sample Test

Name _____

Test

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Part One: Matching

Instructions. Match the term with the correct response. Write the letter of the term by the definition.

- | | | |
|-----------------|-------------|---------------|
| a. flitch | d. piling | g. single-use |
| b. forestry | e poles | h. veneer |
| c. multiple-use | f. pulpwood | |

- _____ 1. Raw material used in a myriad of paper products.
- _____ 2. Forest managed for one purpose.
- _____ 3. Round timbers, generally driven into the ground to support other structures and generally pressure-treated with creosote.
- _____ 4. Thin sheet of wood of uniform thickness.
- _____ 5. Science and art of managing forests so they continuously yield a maximum quality and quantity of forest products and services.
- _____ 6. Thick piece of clean wood, usually squared.
- _____ 7. Forest managed for more than one purpose.
- _____ 8. Round timbers most often used to support utility lines.

Part Two: Completion

Instructions. Provide the word or words to complete the following statements.

1. Each timber product has its own specifications. Generally, the _____ the value of the product is, the more the stringent or limiting are the specifications.
2. _____ may cut thick enough to be used as is, or it may be glued together in thin sheets to form plywood.
3. _____ includes logging and the manufacturing, marketing and use of wood products.
4. _____ is used for the construction of bridges, docks, wharves, foundations, and in other heavy general construction.
5. Pulpwood is classified as _____ if less than 3 meters in length and _____ if 3 meters or more in length.

6. Wood used for lumber, paper, building boards, poles, piling and fuelwood is referred to as _____.

Part Three: Short Answer

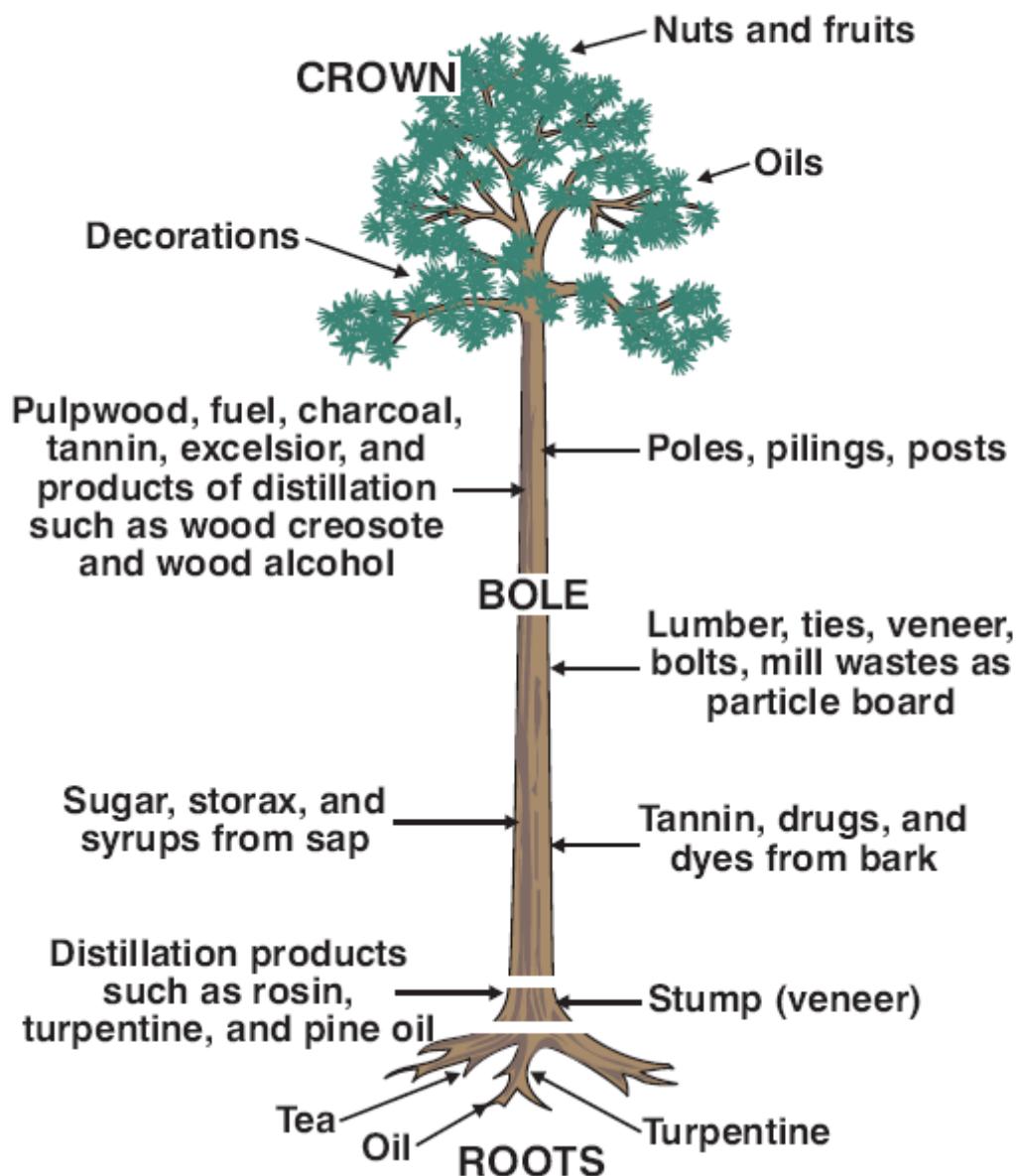
Instructions. Provide information to answer the following questions.

1. What are the objectives of forestry?

2. The specifications for pole timber are very high. What are the specifications?

3. Why is each timber product important in the total picture of timber management?

PRODUCTS FROM TREES



TM: D1-2

WOOD PRODUCTS



(Courtesy, Interstate Publishers, Inc.)

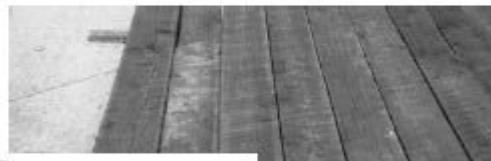
FOREST PRODUCT SPECIFICATIONS



Air-seasoned hickory wood handle stock



Hardwood veneer logs before veneer slicing operation



Pressure treated railroad cross-ties



Hardwood flitches, or cants, before slicing into veneer stock



Fence posts ready for pressure treating with preservative

(Courtesy, Interstate Publishers, Inc.)

WOOD USES

