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ABSTRACT

Instructional materials are provided for a unit dealing with Christmas tree production and marketing. Unit objectives and a list of visual masters appear first. Content is arranged by four topics: introduction, starting a Christmas tree plantation, maintaining the plantation, and marketing Christmas trees. For each topic, objectives, an introduction, interest approach, teaching procedure(s), and list of activities are presented. Extra suggested activities and a listing of suggested references are included. Other contents include the technical information to be read in conjunction with the topics (with references and study questions) and transparency masters. (YLB)

CHRISTMAS TREE - PRODUCTION AND MARKETING

Instructional Materials Developed

for

Iowa Teachers of Vocational Agriculture

Prepared by:

DEPARTMENTS OF FORESTRY AND AGRICULTURAL EDUCATION

IOWA STATE UNIVERSITY

AMES, IA

June, 1986

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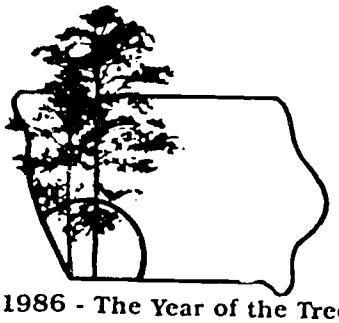

1986 - The Year of the Tree

CHRISTMAS TREE

PRODUCTION AND MARKETING

UNIT OBJECTIVES

Upon completion of this unit the student should be able to:

1. List some advantages for growing Christmas trees in Iowa.
2. Describe what is involved in starting a Christmas tree plantation.
3. Explain the key factors in maintaining a Christmas tree plantation.
4. Know how to determine if a market exists for Christmas trees.
5. Determine several marketing strategies for Christmas trees.

VISUAL MASTERS

1. Steps for Establishing a Christmas Tree Plantation
2. Match Tree Species to the Site
3. Criteria for Matching Species to Site
4. Popular Christmas Tree Species in Iowa
5. Tree Planting Methods
6. 2 Methods for Hand Planting with a Spade
7. Reasons for Shearing
8. Shearing Christmas Trees
9. Three Shearing Tips
   a. Controlling Height
   b. Eliminating Extra Leaders
   c. Developing Uniform Taper and Density
10. Watch Out for Biological Problems.
11. Methods of Selling Trees
    a. Wholesale Marketing Strategies
    b. Retail Marketing Strategies - Lot Sale
    c. Retail Marketing Strategies - Cut and Choose

ACTIVITIES

1 Where Would You Shear This Tree?
2. Matching Species To Site

TOPIC 1 - INTRODUCTION TO CHRISTMAS TREE PRODUCTION AND MARKETING

Objectives

1. To introduce students to the advantages of growing Christmas trees in Iowa.
2. To make students aware of the demand for Christmas trees in their local community.

Introduction

There is potential for more Christmas trees to be grown and sold in Iowa. Currently, 83 percent of the Christmas trees purchased in Iowa are grown outside the state. Iowa growers can gain a larger share of the market and there are those growers who are attempting to do so.

Prepared by:
Reinee E. Hildebrandt
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Much of Iowa's climate, typography, and soils are suitable for the production of some of the most popularly purchased tree species. Farmers interested in Christmas tree production will be glad to know that some of the equipment which they already use in farming can be used for growing Christmas trees. A good portion of the work which must be done on the trees can be scheduled around field work. Income from the sale of the trees comes in at a good time. If managed and marketed properly, a Christmas tree plantation can provide the best returns on investment for certain pieces of land. Other benefits derived from growing trees in the state include:

a. most of the money stays in the state.
b. trees are fresher and will last longer.
c. the trees can compete with trees grown outside the state because of lower transportation costs.
d. for the choose and cut operation, some people prefer picking out their own tree and cutting it themselves.
e. some of the areas planted to trees may be exempted from property tax (see Extension Publication Pm-605, Iowa's Forest Reserve Laws)

Interest Approach

Pick out a student to write the results of the following class survey on the board. Survey the class by asking them the following:
a. Which of you had a natural Christmas tree in your house last year?
b. Which of you had an artificial tree in your house last year?
c. Did your grandparents have a natural or artificial tree last year?
d. If you had a natural tree, how tall was it?
e. Do you remember where you acquired your natural tree?
f. How much did your natural tree cost?
g. What do you feel to be some of the reasons people prefer the artificial tree over the real one and vice-versa?

Teaching Procedure

Bring in a local grower (if available) or the district forester and ask him/her to speak on the pros and cons of growing Christmas trees. Refer to Extension Publications F-340, Forestry Contacts and Organizations in Iowa, and Pm-668, Directory of Christmas Tree Producers in Iowa, for addresses.

Activities

1. Have the class survey 10 households in the community and find out the following:
   a. Did the household use a natural or artificial tree last year?
   b. Why did they use the tree they did?
   c. If the tree was real, how big was it?
   d. If real, where was acquired?
   e. If the tree was not acquired from a cut and choose operation, would they have preferred to get a tree from a cut and choose operation?

From the results of the survey the students should write up a short report about the local demand for natural trees, the preferred height, and the potential for a local cut and choose operation.
2. From the students' personal knowledge and from contacting

the local Chamber of Commerce or other sources, have the students list who sells Christmas trees in town. Have them contact these sellers and try to determine how many trees are sold in their community.

TOPIC 2 - STARTING A CHRISTMAS TREE PLANTATION

Objectives

1. Select appropriate and marketable species for Christmas tree production.
2. Select appropriate sites to plant the trees.
3. Describe the steps to tree planting.
4. Explain how a mechanical tree planter is operated.
5. Explain how to use a tree bar.

Interest Approach

1. Have an experienced Christmas Tree producer or the District Forester visit the class room and talk about what it takes (initial investment, costs, potential profits, cultural needs, intensive management) to start a Christmas tree plantation.

2. Have the class read the technical information entitled "Starting a Christmas Tree Plantation" up through Site Selection. Using the county Soil Survey map and personal knowledge the students should brain-storm in groups of two about possible sites that would be good for growing trees. Tell them to keep in mind possible sites on their own properties. Have them write down the location of the sites and hand it in.

Teaching Procedure

1. Use the visual master "Steps for Establishing a Christmas Tree Plantation" and discuss the steps involved.

2. Have students read the Species Selection section in the technical information entitled, "Planning a Christmas Tree Plantation". Ask students which trees they would choose for planting in a Christmas tree plantation. Refer to the visual entitled "Match Tree Species to the Site" and use the "Match Species to Site" activity sheet. Have the students give reasons for their choices.

3. Discuss pros and cons of site selection: slope, accessability, ease of maintenance, etc. Refer to the visual entitled "Criteria for Matching Species to Site". Discuss the points with the class.

4. Visit one of the sites chosen in #1 of the Interest Approach section. Using information gathered from the soil survey and after measuring off the site, determine as a group the number of trees that would need to be ordered to plant the site. The students will also need to read the section on Planting Design from "Planning a Christmas Tree Plantation" and Extension Publication Pm-661, Christmas Tree Production in Iowa.

5. Use the visual master "Popular Christmas Tree Species in Iowa" and speak on the ways to distinguish between the species as to their identification. Attempt to gather branches of the different trees and have the students study them.

6. Demonstrate the use of a tree bar (tree spud) by consulting Extension Publication Pm-496, Tree Planting in Iowa. These bars can be purchased through nursery companies or built in vo-ag shop class. It may also be possible to get one on loan from the County Extension Office or a local grower. Refer to the visuals entitled "Tree Planting Methods" and "2 Methods for Hand Planting with a Spade".

7. Summarize the key points to consider in starting a Christmas tree plantation.

Activities

1. Inquire of the County Extension Agent, District Forester or other contact person to determine if anyone in the local area is planning to plant Christmas trees. Ask this potential producer if it would be possible to have the class watch or assist in the planting. If so, have the class do it.

2. Determine if anyone in the class would be interested in planting Christmas trees at their home. If so, have them order the trees and the class can plant them. Trees can be ordered via the State Nursery, 2404 S. Duff, Ames, IA 50010 (515/292-0445) or through one of the nurseries listed in Extension Publication Pm-956, Directory of Iowa Nurseries that Deal in Forestry and Ornamental Planting Stock. The district forester can also suggest other nursery sources.

3. Ask the District Forester if there is a tree-planting machine available. Should there be, find out if anyone will be using it and see if this person would be willing to have the class watch it being used on their property.

4. Have students plant a few evergreen trees or establish a small Christmas tree plantation on school property.

TOPIC 3 - MAINTAINING A CHRISTMAS TREE PLANTATION

Objectives

1. Explain what biological problems may affect Christmas tree production.
2. List four methods of weed control.
3. List three animals which could damage Christmas trees and explain how they can be controlled.
4. Given a picture of an unsheared tree show how it should be sheared.
5. Shear a Christmas tree.

Interest Approach

Give students the following situation: "You have $200 invested in your Christmas tree plantation. List 5 things you think you will need to do/deal with in order to get those trees to market in 6 to 8 years." Discuss students' responses and introduce shearing; weed control; diseases and insects; deer, mice and rodents; and fertilizing.

Teaching Procedure

1. Have students read the technical information entitled "Maintaining a Christmas Tree Plantation". Discuss the most important points.

2. Using the visual master "Reasons for Shearing", explain how a tree should be sheared.

3. Using the series of visual masters on shearing Christmas trees, speak on how to shear the trees so that they will have good market shape.

4. Photocopy the Plant Specimen form and hand it out to students. Speak on how growers may use the technical services at Iowa State University to determine how to prevent and control insect and disease problems. Refer to the visual entitled "Watch Out for Biological Problems". Discuss the points with the class.

5. Use Extension Publication F-319, Weed Control for Tree Plantings. Divide students into small groups to discuss which method would be the most appropriate and the least appropriate. Have students re-assemble, present and defend their choices.

Activities

1. Shear some evergreen trees as if they were Christmas trees. Locate evergreen trees in the local area and gain permission to shear them.

2. Have students write an informational composition on maintaining a planting of Christmas trees, to be published at the appropriate time, in the local paper. This would be suitable for the small acreage owner who has a stand of Christmas trees.

3. Help a local Christmas tree grower shear trees.

4. Practice weed control around the school grounds or in a Christmas tree plantation.

5. Ask a local producer to demonstrate cutting and bundling a Christmas tree or conduct a demonstration on bundling a Christmas tree.

TOPIC 4 - MARKETING CHRISTMAS TREES

Objectives

1. Describe and conduct a marketing survey.
2. Determine marketing options available to producers.
3. Develop a marketing and advertising plan.
4. Write an effective radio ad, newspaper ad, or advertising flier.

Interest Approach

1. Conduct a marketing survey in the community. Have students write a survey instrument containing the following: Use of natural or artificial trees, source of natural trees, size of tree preferred, species of tree preferred, price paid last year, where natural trees were purchased.

2. Have students interview 50 - 100 people and record the results.

3. Have class summarize the results and draw conclusions.

Teaching Procedure

1. Have students read the technical information entitled "Marketing Christmas Trees".

2. Help students draw conclusions regarding species, prices paid, most popular size of tree, and where to sell trees.

3. Use the visual masters: "Methods of Selling Trees", "Wholesale Marketing Strategies", "Retail Marketing Strategies - Lot Sale" and

"Retail Marketing Strategies - Cut and Choose" and discuss the information with the class.

4. Have students read the technical information entitled "Marketing Options".

5. Discuss the marketing options open to a producer. Have them list some of the factors which influence a producer's choice of a marketing option.

6. Divide the class into three groups and have each group assume one of the options. Have each group defend its assigned option to the class. List the pros and cons of each option.

7. Have the class assume it has a Christmas tree plantation and that it wants to market its trees "Choose and Cut" directly to the public. Have the class devise a marketing plan. Use the calendar and list goals, ways, and means.

8. Help the class determine what it needs to know to properly plan an advertising campaign. It will need to determine the various media available in the area and determine the accessibility of each. Information on cost of adds in newspapers and spots on the radio would be very important. They should research what the ads would cost, how often they should be run, what audience to target, etc.

9. Have the class plan an advertising campaign and add this to the marketing plan. Include fliers, radio ads, and newspaper ads in the campaign.

10. Have each class member write, and record on tape, a 30 second radio ad. Have the class evaluate each ad and select the top three.

11. Have each class member design and write an ad for the local newspaper or design an advertising flier. Have the class evaluate the ads and select the top three from each type.

Activities

1. Invite a local Christmas tree producer (preferably one who markets choose and cut) to speak to the class about how he/she markets trees. Students should have a list of questions written up beforehand to ask the producer.

2. Invite a person from a local radio station or ask a high school marketing teacher to speak to the class on designing radio ads, when they should be used, and how audiences are targeted. Listen to examples of ads promoting other products, services, or events.

3. Invite a person from a local newspaper to speak to the class on designing effective newspaper ads, when they should be run, and where they should be run.

4. Take a field trip to a local choose and cut operation during the Christmas season and observe how the operation is run, the number of people employed, advertising skills used on the site, etc.

EXTRA SUGGESTED ACTIVITIES

1. Get involved in "Trees for Schools Program".

2. Start a Christmas tree plantation on school land or on private property.
3. As a project, operate a Christmas tree lot this year.
4. If a local organization operates a Christmas tree lot, ask a representative to speak to the class about the enterprise.

SUGGESTED REFERENCES

Hildebrandt, Reinee and Dean R. Prestemon, 1983. Survey of Iowa Christmas Tree Producers. F-310 Coop. Ext. Serv. Iowa State University. Ames, IA 50011. Write to: Forestry Extension, 251 Bessey Hall, Iowa State University, Ames, IA 50011.

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Production of Christmas trees in Iowa can be an attractive investment opportunity. But, contrary to many stories, production of Christmas trees is not a get-rich-quick scheme. It is a planned-production venture requiring money, considerable time, and a willingness to accept risk.

High-quality Christmas trees are not produced by merely planting seedlings and waiting a few years for a harvestable crop. There are several possible combinations of species, weed control, shearing patterns and other decisions that make up the production sequence. The most profitable combination depends on the circumstances of the individual land manager.

High returns can be achieved only if the landowner thoroughly understands the problems of Christmas tree management. A lack of knowledge will usually result in reduced profits or even losses. And there are many situations where Christmas tree production is not a wise investment compared with other land use alternatives.

To produce high quality Christmas trees, the potential grower should understand the environmental factors and their effects on different species. These factors include: site and species selection.

Site Selection.

Slopes that face north and east and have loam soils are the best sites for growing Christmas trees in Iowa. These slopes are protected from hot, dry summer winds, and their soils provide excellent growing media for trees.

Christmas trees will grow on other slope faces and soils, but they will not grow as well. They will not flourish on calcareous (high lime) soils. Slightly acid soils are required for good growth. Avoid soils that are continually wet and those with clay hardpan subsoils. For good growth, Christmas trees need well-drained soils.

The Christmas tree producer has a wider choice of species if planting is done on a good site rather than on a poor site.

Species Selection

When choosing a species for Christmas tree production, you should know if it is adapted to Iowa's climate and whether or not it will be accepted by the consumer.

Species that have possibilities for Christmas tree production in Iowa are: Scotch pine, white pine, red pine, Norway spruce, Colorado blue spruce, Douglas fir, concolor fir, ponderosa pine (for western Iowa), and balsam fir. White, red and Scotch pine account for approximately 90 percent of the Christmas trees grown in Iowa.

Before deciding on the species to produce, investigate local consumer preferences. One species may be more desirable than another in a given locality. Douglas fir, for example, is favored by consumers in Nebraska and Kansas. Balsam fir is the favorite of people in the Lake States, while Scotch pine is most popular in Iowa.

Because of public acceptance and species adaptability, the choice for Iowa Christmas tree production might be narrowed to four: Scotch pine, white pine, red pine, and Norway spruce (as there seems to be a growing interest in short needle trees).

For a general idea of what and where to plant, here are descriptions of the most commonly planted species in Iowa:

Scotch pine (Pinus sylvestris). Scotch pine is the most common Christmas tree throughout the nation as well as in Iowa. Its great variation in straightness, growth rate, branching habit, and winter color characteristics are the major difficulties with the species. A producer has little control over these characteristics when selecting planting stock. Northern varieties tend to yellow before Christmas. However, they are more suited to Iowa's harsh winters and have less winter injury. A dark green to blue-green French seed source produces a most desirable tree. However, they are more susceptible to winter injury. Other varieties include: Scotch Hyland, Austrian Hill, and East Anglia. These are hardy in Iowa and have less problem with winter injury. They are also more resistant to brown spot needle blight and Lophodermium needlecast (both fungi).

Scotch pine needles are medium long, stiff and twisted, in bundles of two. The tree holds ornaments well.

This species needs a fairly well-drained soil. Plant trees on north and east-facing slopes in western Iowa; all slopes in eastern Iowa.

White pine (Pinus strobus). Investigate local market demand for this species before planting. In some areas, white pine Christmas trees are in high demand, while in others demand is lower.

The needles are medium long, thin, in bundles of five, and blue-green in color. White pine foliage has a soft texture. The tree has poor density if not sheared. The branches are very limber and do not lend themselves to heavy ornaments.

White pine is widely adapted on well-drained soils. It also does well in moist sites. It can be planted on all slopes in eastern Iowa and north- and east-facing slopes in western Iowa.

Red or Norway pine (Pinus resinosa). These pines are widely planted in eastern Iowa. Red pine is more difficult to shape than white or Scotch pine. In addition, death of individual trees, 3 to 8 feet tall, in many plantations has been reported. Reasons for this difficulty are unknown.

The needles are long, somewhat flexible, in bundles of two. It grows well on high, well-drained soils, and is adapted to north- and east-facing slopes in eastern Iowa only.

Norway Spruce (Picea sp.). A short needle tree, which prefers medium to heavy soils. It is planted throughout the state for windbreaks and is relatively fast growing for a spruce. This tree is very winter hardy and fairly drought resistant.

Austrian pine (Pinus nigra). A relatively drought-resistant species that is widely planted in Iowa, it is not adapted to close plantings in wind-sheltered locations because of susceptibility to needle blight fungus.

The needles are long, stiff, coarse, and in bundles of two. Austrian pine does best on well-drained soils in open sites. It is well-suited for ridge and hilltop plantings. Set the trees on north and east slopes in western Iowa and on all slopes in eastern Iowa, but only where considerable air movement will occur throughout the stand.

Austrian pine is highly susceptible to dothistroma needle blight and presently is not highly recommended for Christmas tree plantings.

PLANNING A TREE PLANTING

Planting Design

A landowner should have a plan before planting their plantation. Some thought to layout and design of the plantation is needed before you begin planting to avert future problems in maintenance and operation. Here are some suggestions to consider.

Lanes should be planned every 6 to 10 rows for firebreaks, for access during development, and for tree removal at harvest time. The lanes should be 12 to 16 feet wide, located around and through the entire plantation. They should be kept free of vegetation by disking (only on level areas) or spraying with soil sterilants. Mowing is acceptable for steeper areas.

Provide easy access to the plantation for trucks and equipment by avoiding sharp turns and steep slopes.

Plan ahead for harvest time when an area is needed at the front of the plantation for concentrating the cut trees, loading and truck turnaround.

Space rows farther apart on steep slopes to provide clearance for equipment which may slip some on these slopes.

The distance between trees and rows depends largely upon the kind of machinery the landowner plans to use in maintaining the trees. If a garden-type tractor will be used for mowing, disking and spraying, space the trees 5 x 5 feet (5 feet apart, in rows 5 feet apart). If the 5 x 5 spacing is selected, the trees will be smaller than if a wider spacing is used. On the other hand, if a 2- or 3-plow tractor and equipment, such as a 60-inch rotary cutter, will be used, distances of 8 to 10 feet between the rows are more desirable. The most popular spacing has been 5 x 7 feet or 5 feet between trees, with 7 feet between rows. The table below shows the number of trees to plant per acre at various spacings.

Tree Spacing:	5 x 5	5 x 6	5 x 7	5 x 8	6 x 6	6 x 7	6 x 8	8 x 8
Trees per acre:	1,740	1,450	1,244	1,090	1,210	1,037	910	680

Site Preparation and Planting

Fall plowing, followed by disking in the spring, provides ideal planting conditions where the ground is sufficiently level not to erode.

In heavy sod on steep land, strips for planting each row of trees can be plowed and disked. Some tree-planting machines are equipped with a sod-busting blade which facilitates planting directly without prior ground preparation; however, most tree planting machines in Iowa are not heavy-duty enough to provide satisfactory planting in sod.

The best time to plant is in the spring between the time the frost leaves the ground and the new growth first appears. This will be just about oat-sowing time in April.

If possible, go directly to the nursery to pick up the young trees. Sometimes damage occurs in commercial shipments. You can avoid this by picking up your own stock.

If the trees need to be stored for a time, put them in a cooler at 35 to 40 degrees F. If no cooler is available, you must "heel" them in the ground in a protected, shady spot. Dig a trench by pitching the soil to one side, place the roots in the trench with the tops protruding above, then fill the trench with the soil removed originally. Soak thoroughly with water. For best results trees should be picked up when there is time to plant them immediately afterward.

When you're ready to plant, simply dig up the plants as you need them. Be sure to keep the roots moist at all times. Tree roots exposed to drying winds, even for a short time, will be injured or killed. hen planting, carry the seedling trees in a pail containing enough thin soupy mud to cover the roots. For further planting information consult Extension Publication #496, Tree Planting in Iowa.

On level or rolling ground, you can use a treeplanting machine. Two people using a tractor and planter can set 6,000 to 8,000 trees per day. One person can hand-plant about 400 to 600 trees per day. If you want to plant by machine, you may want to contact your County Extension Director or District Forester for help in locating one you can use.

If you are planting several different species of trees, set each species separately in blocks, rather than mixing them in the rows.

<u>*Reference</u>

Iowa State University Extension Publication Pm-661, Christmas Tree Production in Iowa. Excerpts used by permission.

2. Benyus, Janine M., Writer/Editor. October, 1983. Christmas Tree Pest Manual. U.S. Government Printing Office, Washington, D.C.

<u>Study Questions</u>

1. What is the most popular spacing for Christmas trees?
2. When is the best time of year to plant the trees?
3. What might you do with the trees if they cannot be planted immediately?
4. About how many times more trees can be planted with machinery versus by hand?
5. How many species account for about 90 percent of Christmas trees grown in Iowa?
6. What are the species which account for 90 percent of Christmas trees grown in Iowa?
7. Which of the species written about in this unit is not recommended? Why?

The total environment of the tree is a complex interrelation of physical and biological factors. Physical factors include climate and soil. Biological factors are the plant associates, man and his cultural activities, large and small animals, fungi and insects.

Weed Control

The intensity of weed control necessary depends primarily on soil type. Less weed competition occurs on coarse, sandy soils than on rich, loamy soils.

Weed control research by the U.S. Forest Service indicates that Princep (80-percent wettable powder) is an effective control on a prepared soil in early spring. Applications should conform to the manufacturer's recommendations.

Another method of weed control is use of a rotary mower. Mowing three times during the growing season will usually control major weed competition between rows of trees. One difficulty with mowing is that when the competing vegetation is high, the young seedlings cannot be seen, and they often are mowed along with the weeds. A partial solution to this problem is to mark the rows of trees with dye or to use a chemical weed control until the rows can be easily identified. Mowing is the least preferred method since there is still competition for needed water and nutrients as the grass and weeds are not eliminated.

An effective way to control weeds is to cultivate, either by hand or mechanically. Cultivation will probably need to occur at least three times during the growing season. Care must be exercised so that cultivation is neither to deep or close to the tree.

A method for both reducing water loss and controlling weeds around the base of trees is mulching. Mulch should be in 2 to 4 foot strips or circles and a depth of at least three inches. Do not use too coarse of materials as rodents will nest in it and feed on the bark.

Fertilizer

Evergreen trees do not have heavy nutrient requirements. The naturally fertile soils in Iowa generally do not require additional fertilizer. Excessive nitrogen can "burn" young, supple needles. Do not pile manure or other organic materials around the trees after they have been planted.

Animal Nuisances

Rodents, rabbits, and deer can damage Christmas tree plantations. Field mice frequently girdle the young stems of small trees in the wintertime. Rabbits usually chew on the bark. They also eat buds, which can be a serious hindrance. Deer will not bother a plantation, unless there is insufficient winter browse in the area, but often damage trees mechanically by rubbing off the velvet of their antlers against 4 to 6 foot conifers.

Trees may be protected with such commercially available products as Deer Away, Hinder, and Protect. A method which has met with some success is to hang nylon stockings containing human hair from the trees. A temporary fence made of 5 strands of twine and surrounding the trees is recommended by some growers.

Deer do most of their feeding on Christmas trees between November and April. They seem to prefer white pine and will go after this species first. If at all possible, the plantation should be checked daily, for once feeding begins it seems like every deer around will soon be feeding on the trees.

Insects and Diseases

There are numerous insects and diseases which may affect Christmas trees. If a problem arises it is best to contact the district forester or an experienced local grower and have them inspect the site. A specimen which is believed to be affected should be sent to the state extension plant pathologist along with a completed Plant Disease Identification Form which looks as follows:

Plant Disease Identification Form

Submit specimens to: Extension Plant Pathologist
105 Bessey Hall
Iowa State University
Ames, IA 50011

See reverse side of form for instructions on collecting and shipping
plant specimens

County _____ Date _____

Owner _____ Address _____

Collector _____ Address _____

Plant _____ Variety _____ Age _____ Size _____

No. of acres/Distribution of symptoms in planting_____

Site and soil description_____

Previous crop _____ Chemicals used _____

Symptoms:

Diagnosis and control recommendations: (Collector do not write in this space)

Collecting Specimens

1. Examine the plant carefully. Keep in mind that symptoms may appear at some distance from the actual site of the disorder. Look for any irregularities or injuries in lower portions of the plant.
2. Make sure specimen is representative of condition in question.
3. Include enough material to show all stages of the disease from healthy to maximum disease involvement.

4. Wrap specimens in dry paper toweling or clean newspaper (Do not add moisture!) and pack loosely in a plastic bag to prevent excessive drying. Package in a strong carton for mailing.
5. Send only freshly collected specimens by the most rapid transit method-undue delays can result in extensive deterioration of the specimen which makes diagnosis difficult or impossible.
6. Fill out form as completely as possible.

Hints for specific plant materials

1 Small plants - send entire intact plant/plants (gently shake excess soil from roots).
2. Fleshy fruits, roots and tubers. Wrap in enough clean absorbent material such as paper toweling to absorb any leakage.
3. Woody plants-branch specimen should consist of 4-6 pieces, 6-8 inches long from branches 1/2 to 1 inch in diameter. Collect only from branches actively displaying symptoms. Dead, deteriorating branches are often worthless as specimens. Cankers may be sampled by cutting out a rectangular section of bark across the margin of the canker so that some healthy tissue is included with the margin and the central portions of the canker.
4. Turf-lift out a section of turf about 4-6 inches square so that healthy plants are included along with those at the margin and the central portions of the affected area.

Shearing

Shearing or pruning is essential to produce top-quality trees with full, symmetrical crowns having dense foliage and good taper. An ideal tree is about two-thirds as wide as it is tall. This means a tree 6 feet tall would be 4 feet wide at the base. Pines should have a slightly wider base than spruce and firs.

Shearing does three things to make the trees more marketable. First, the trees can be shaped to meet local demands, broad and rounded or narrow and columnar. Most producers may end up with a combination of shapes but tend to shear to match local customer preferences. Second, sheared trees have more branches resulting in a denser, thicker foliage. Third, shearing controls the distance between whorls of branches. This is critical because growth rates vary between years and different species of trees.

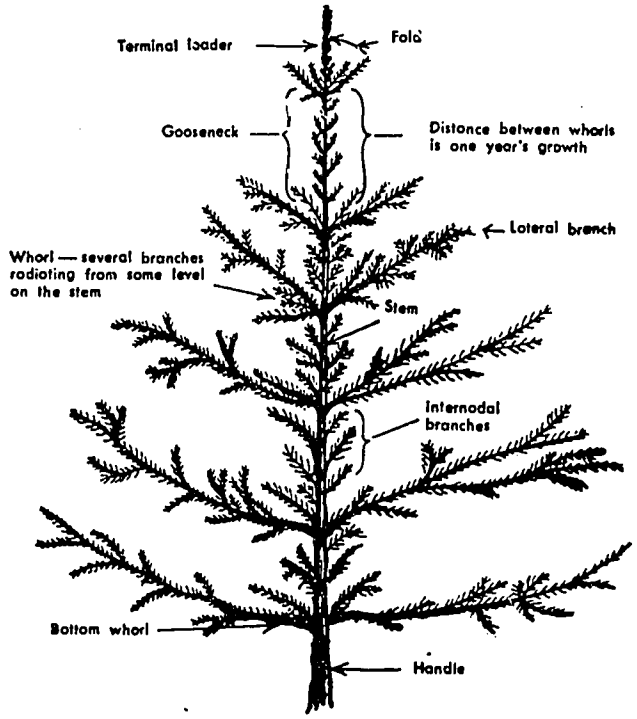
Most consumers in Iowa expect a tree to have uniform spacing between branches, dense foliage and a symmetrical shape. Trees which are not sheared or improperly sheared will not have these characteristics.

Shearing usually starts 2 to 3 years after planting, or as soon as growth of the terminal leader exceeds 10 to 12 inches. Corrective pruning of multiple leaders is done annually until the actual shearing for shape and density is begun.

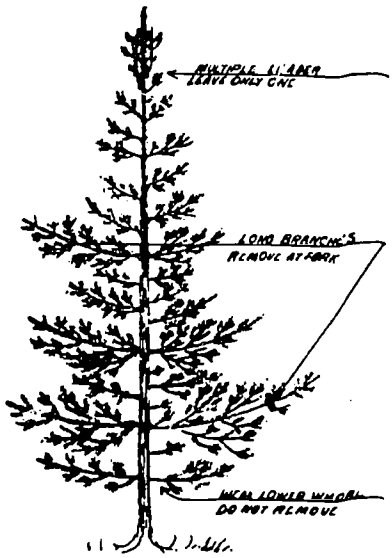
Pines are sheared during the growing season, usually between June 10 and June 20, through mid-July. You may be shearing earlier in southern Iowa or in years with earlier seasons than normal. Clip the terminal leader, on a 45-degree angle, back to a uniform length that conforms to the length of the previous year's whorls. This means not jumping from one spacing to another twice its size. Don't have the length between whorls exceed 10 to 12 inches in length. Shear all lateral branches in the top whorl to 4 to 6 inches in length. Then shape the rest of the tree to conform to a cone. Pines can be sheared back into 1-year-old wood, but do not shear into 2-year-old wood. Healthy, vigorous needle bundles are

needed to set new buds, and they are not present on 2-year-old wood.

Spruces and firs are sheared during the dormant season in late summer and fall, usually after the middle of August. Cut back the leader on a 45-degree angle, 1/2 to 1 inch above a bud. Also cut back the laterals around the leader, leaving at least one bud so the lateral branches fit the desired cone shape.



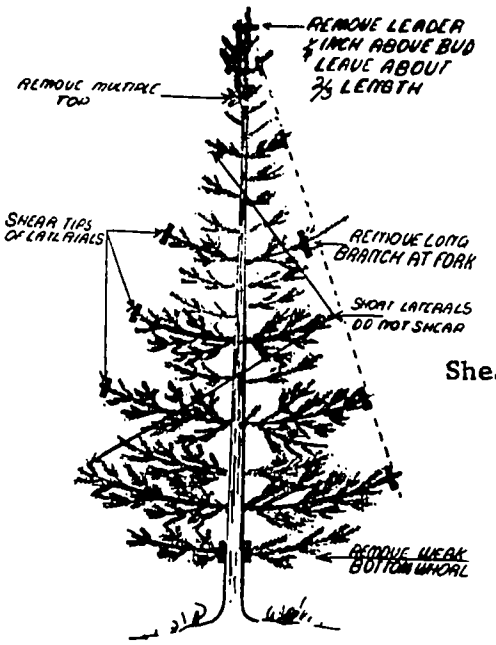
Christmas tree terminology.



Corrective pruning of small trees.

For the first shearing, cut all side branches necessary to give the tree the desired shape and taper. Desired taper varies from 1/2 to 2/3 as wide as the tree is tall. Begin cutting the terminal when it is longer than 10 to 12 inches. Shearing should usually be done only on the current year's growth. Occasionally it may be necessary to cut older growth to correct a shape problem.

Spruces and firs are generally sheared in the shape of a cone while pines may be sheared for a more rounded shape. Pines are more difficult to shape into a tall, slender, conical shape. Long-needled pines should be sheared with a hand clippers or a shearing knife. This is done to avoid cutting off needles adjacent to the sheared branch. Once shearing is begun, it is done annually until the tree is harvested.



Shearing for shape and density.

Shearing for shape and density

Practice and experience is critical to good shearing. Experienced growers will usually produce a higher proportion of top quality trees. Good shearers can shear approximately 60 trees per hour. Shearing is probably the most labor intensive practice in Christmas tree production, but it is necessary for the production of top quality trees.

A Christmas Tree Management Calender

January-February

1. Inventory the supplies unused and carried over from the previous year: herbicides, fugicides, fertilizers, shears, knives, tree tags, etc.
2. Order those supplies or materials, or plan the ordering of any supplies or equipment which must be on hand at a later time.
3. Cut brush in and around plantations as weather and conditions permit.
4. Service and maintenance work on equipment: mowers, sprayers, tractors, small tools, etc.
5. Build those items which will facilitate work during the busy season such as cases and chests to carry equipment in.

March

Depending upon the weather, items for February may be done in March, and items for March may have to be post-poned until April.
1. Prepare planting sites by brush chopping and tree removal if necessary.
2. Construct and/or improve roadways to, from and within plantations.
3. Inspect plantations for winter losses: winter burn, animal and snow damage, etc., taking inventory to determine replanting needs.
4. Herbicide application such as Princep.
5. Planting.

April

1. Planting
2. Insecticide application
3. Herbicide application, preplant

May

1. Planting
2. Herbicide, postplant
3. Insect control

June

1. Tag trees prior to shearing (trees to be sold in current year).
2. Shearing
3. Rogue out insects and insect infested trees while shearing.
4. Spray to control insects not controlled by rogueing out.

July

1. Shear trees to remain in plantation for an additional year or more. Do this until about mid-July.
2. Begin shearing trees to be harvested during the coming fall or winter.
3. Continue to control insects.

August

1. Shear trees to be marketed during the current year.
2. Remove from plantation and destroy insect and disease infested trees.
3. Apply green colorant.
4. Inventory trees to be sold in the current year.
5. Stake up trees.
6. Control brush by chopping.
7. Apply herbicide to control woody plants.

September

1. Continue staking trees.
2. Continue green colorant.
3. Continue brush control (herbicide treatment should be completed before frost).

October

1. Same as above.
2. Same as above.
3. Shake trees to remove debris.

November

1. Cut trees for wholesaling and load trucks.
2. If entire areas are cut, brush cut them.
3. Treat stumps to control insects from harboring in them.

1. Load trucks and semi-trailers.
2. Chop brush and clean up cutover plantations.
3. Continue treating stumps.
4. Summarize sales and income, and approximate tax calculations. Plan purchase of supplies and fertilizer to minimize taxes.

*References (Excerpts from the following publications used by permission)

1. Iowa State University Extension Publication F-348, Christmas Tree Shearing.
2. Iowa State University Extension Publication F-339, Weed Control For Tree Planting.
3. Iowa State University Extension Publication Pm-661, Christmas Tree Production in Iowa.

Study Questions

1. How many trees can be sheared by an experienced grower in a hour?
2. Which method of weed control is least recommended? Why?
3. When do deer do most of their damage?
4. About how wide should a well-shaped tree be?
5. What three things does shearing accomplish?

MARKETING CHRISTMAS TREES*

To market Christmas trees it is also important to know which species of trees sell in your area as well as the price and size. It is equally important to produce a high quality product.

Species

Three species made up 92 percent of the Christmas tree population in Iowa during 1982. Scotch pine was the most popular species followed by white pine and red pine. See the table below:

Percent of total acres planted to different species in Iowa - 1982

Species	Percent of Total Acres
Scotch pine	56
White pine	27
Red pine	9
Other (spruce, fir, Austrian or ponderosa pine)	8

Tree Quality

Don't assume that all surviving trees will be sold as Christmas trees. Some trees will be deformed to the point that they can be sold only as cut greens.

As a producer gains experience in shearing, more trees are saved and the marketability percent increases. Experienced Iowa producers report 90 percent marketability of their sheared trees. New producers should plan for maximum marketability, but realize that they may only get about 60 percent or less marketability for the initial production cycle due to their inexperience.

Price

Christmas trees are sold either on a dollar per tree or dollar per foot basis; with a price per foot being the most popular method. In 1982, the average retail price per foot was $2.63; average price per tree was $11.39. The table below summarizes the ranges and averages for retail and wholesale prices charged by Iowa producers in 1982.

Retail and wholesale prices charged by Iowa Producers in 1982

Type of Sale	Range($)	Average ($)
Retail per foot	1 to 5	2.63
Retail per tree	6 to 18	11.39
Wholesale per foot	1 to 2	1.50
Wholesale per tree	8 to 12	9.00

Size

Prices paid for Christmas trees are related to their height and other quality characteristics. It is important, therefore, to select the most profitable age for harvest. Retailers report that marketable Christmas trees heights range from 3 to 8 feet. They

also indicate that 2 1/2 to 3 foot trees seem to be increasing in popularity relative to taller trees. Most of the Christmas trees sold in Iowa during 1982 were 5 to 6 feet tall. The table below summarizes the data for three different height classes.

Height of Christmas trees sold in Iowa - 1982

Height (feet)	Percent of Sales
3 to 4	11
5 to 6	61
7 or more	28

A producer should have at least 500 trees available to interest wholesale buyers in purchasing them at roadside. A recent producers' survey revealed that for the four species being evaluated, marketability for nonsheared trees ranged from 4 percent for white pine to 30 percent for Scotch pine. The percent of marketable sheared trees is higher but varies depending on the experience and ability of the shearer.

Where to Sell

Nearby towns and neighbors provide the best markets for Christmas trees. Some growers sell standing trees to individuals at retail prices and the buyer does his own cutting. Producers near large urban communities can become affiliated with a retail city lot and sell directly to customers through these lots.

Large wholesalers generally contract for sales well in advance of the Christmas season. Producers may contract the sale of trees on the stump or for cut trees. Consignment sales to wholesalers should be avoided and down payments or "binders" should always be required. Remember, when wholesaling trees you will receive a lower price per tree, but sell a greater volume of them. If you plan to wholesale your crop, begin making contacts for sale of your trees by midsummer.

Christmas Tree Business

It is impossible to determine the exact dollar return per acre per year from a venture in Christmas tree production. The cost of labor, land, equipment, trees, the local markets, tree quality, individual management - all determine economic return, which can fluctuate widely.

Before venturing in to the Christmas tree business, do an economic analysis based on the best information you can obtain. As an example, let's make some assumptions and calculate costs and returns based upon number of trees grown per acre.

Let's assume the species is Scotch pine, to be planted at 6- by 6-foot spacing, or 1210 trees per acre. Ten percent of the acre will be directed to roads and lanes, so that only 1090 trees will be planted. Of these, another 10 percent probably will not reach maturity, and another 10 percent will not be salable. That reduces harvested to 883 and leaves 98 unsalable cull trees to be removed during the 8-year production period.

Land value is assumed to be $1000 per acre. Management costs and taxes are $30 an acre, labor is hired at $3 an hour, interest rate is 6 percent (Table 1). Trees will be sold at $7 per tree. Follow these assumptions through the economic analysis (Table 2). Look also at the actual cash flow for an acre of Christmas trees

following the assumptions previously made (Table 3). A cash flow analysis depicts the actual flow of money during the operation.

Table 1. 6% Compound Interest

Years to end of rotation period	If cost occurs only in this year, multiply by factor below	If cost is a recurring constant cost from a given time period on, multiply by factor below
10	1.791	13.181
9	1.689	11.491
8	1.594	9.898
7	1.504	8.394
6	1.419	6.975
5	1.338	5.637
4	1.262	4.375
3	1.191	3 184
2	1.124	2.060
1	1.060	1.000

Table 2. Economic Analysis of Christmas Tree Production per Acre

Item	Basis	Yrs.	6% Interest Factor[a]	Future value at the end of 8 years	
				Costs	Returns
Taxes management	$30 Yr	8	9 8975	296 92	
Land value	$1000 A	8	1 5938	1593 90	
Planting stock	$55 M x 1 090 = 59 95	8	1 5938	95 55	
Planting cost	$60 M x 1 090 = 65 40	8	1 5938	104 23	
Weed control					
At planting	$20 A	8	1 5938	31 88	
2nd yr	$20 A	6	1 4190	28 38	
3rd yr	$20 A	5	1 3381	26 76	
Mowing between rows	$6 A	8	9 8975	59 38	
Pest control spray	$15 each year	7	8 3938	125 91	
Shearing incl basal pruning	3d yr 4[th] tree = $39 24	5	1.3381	52 51	
	4th yr 2[nd] tree = $19 62	4	1.2625	24 77	
	5th yr 2[nd] tree = $19 62	3	1.1910	24 77	
	6th yr. 3[rd] tree = $29 43	2	1 1236	33 07	
	7th yr. 3[rd] tree = $29 43	1	1.0600	33 07	
Trees sold. 7th yr	½ = 490 x $7 00 = $3430	1	1 0600		3635 80
Retailing cost 7th yr	$ 85 tree x 490 = $416 50	2	1 1236	467 98	
Shearing, 8th yr.	4[th] tree x 393 = $15 72			15 72	
Trees sold 8th yr	393 x $7 00 = $2.751 00				2751 00
Retailing cost 8th yr	$ 85 tree x 393 = $334 05	1	1 0600	354 09	
Clean up cost 98 cull trees	$10			10 00	
Residual land value	$1000				1000 00
Total accumulated returns					7386 80
Total accumulated costs				3378 79	
Net income for 1 crop in 8 yrs					4008 43
Av. returns / tree	($7.386 80 – 883)				8.36
Costs tree	($3.378 37 – 883)			3 86	
Net income / tree	($4.008 43 – 883)				.53

[a] Factors from Table 1.

Table 3. Cash Flow Analysis of Christmas Tree Production per Acre

Year	Item	Expenses	Income	Balance
1	Taxes and management	$30 00		$-30 00
	Planting stock	59 95		-89 95
	Planting cost	65 40		-155 35
	Weed control	20 00		-175 35
	Mowing	6 00		-181 35
	Pest control	15 00		-196 35
2	Weed control mowing pest control	41 00		-237 35
3	Weed control mowing pest control	40 00		-277 35
	Shearing	39 24		-376 21
4	Weed control mowing pest control	40 00		-356 59
	Shearing	19 62		-376 21
5	Weed control mowing pest control	40 00		-416 21
	Shearing	19 62		-435 83
6	Weed control, mowing pest control	40 00		-475 83
	Shearing	29 43		-505 26
7	Weed control, mowing pest control	40 00		-545 26
	Shearing	29 43		-574 69
	Retailing cost	416 50		-991 19
	Trees sold, 490 at $7 00		$3430 00	2438 81
8	Weed control, mowing, pest control	40 00		2398 09
	Retailing cost	334 05		2049 04
	Trees sold, 393 at $7 00		2751 00	4800 04
	Clean up of stand	10 00		4790 04
	Total Income Per Acre		$6181 00	
	Total Expenses		1390 96	
	Cash Income		4790 04	

*References (Excerpts from the following publications used by permission).

1. Iowa State University Extension Publication Pm-661, Christmas Tree Production In Iowa.
2. Iowa State University Extension Publication F-310 (Rev.), Survey of Iowa Christmas Tree Producers.

Study Questions

1. What are the three most popular species for Christmas trees in Iowa?
2. In 1982, what was the most popular height range of Christmas trees sold in Iowa?
3. Where is the most likely place a small producer would find a market for his/her trees?

MARKETING OPTIONS*

There are three basic marketing options open to Christmas tree producers:

1. Producer to wholesaler - the producer sells the product to wholesalers.
2. Producer to retailer - the producer functions as both a producer and a wholesaler.
3. Producer to consumer - the producer functions as a producer and a retailer.

Depending upon the size of the operation a producer may use more than one of the options. The choice depends upon many factors inherent in a particular operation.

Choosing an Option

With each stage of the marketing process which producers assume, they will increase their potential share of the final sale price of the Christmas tree, but each subsequent stage also adds more labor and more risks to compensate for the added potential income.

There is a rule of thumb on pricing in the Christmas tree trade which states that each level of distribution doubles the tree's basic cost. This is not always accurate, but the trend is correct. Some operators of city lots indicate that the first half of their tree sales pay for their trees, the second half pays operation costs and profit.

It would seem then that producers could double their intake by assuming the wholesale function, and that they could double it again by becoming a retailer. There is no question that producers can increase their share of the final dollar if they assume the extra labor and the extra risks of the additional levels of the distribution process. There are several questions producers must ask themselves before assuming additional levels of marketing. Some of these questions are: Do you have additional time? Do you have a source of labor? Are you willing to accept additional risk? Is your location and operation suitable for more than one marketing options? It is difficult to answer these questions without considering additional factors.

Additional Factors to Consider

Here are some of the factors which influence producers in their choice of marketing options. It includes some of the most important factors which apply to many producers:

1. Producers planning for a continuing operation with a more or less uniform number of trees to be sold each year should design their marketing plan for a continuing basis and attempt to establish a long term plan that can use up their entire annual output. Producers with only one crop to sell should consider selling to a wholesaler, another grower, or to a retailer on a one shot basis. The same would apply to a producer with a temporary over supply of trees.

2. What is the size of your operation? How many trees are to be sold? If the quantity is only a few hundred, many

channels are open. Producers with several thousand trees would need to sell at least a portion to a wholesaler unless they are prepared to go into retailing.

3. Where is the plantation located in relation to available markets? Producers who are near their market have a wide choice of channels, but the further away the market, the more the choice is restricted. For example, if the plantation is close to town, a producer could sell retail on his/her plantation. If the plantation is 25 to 30 miles from the market, then retailing becomes more difficult, and the volume which can be sold this way is more limited. The producer then could set up a retail lot in town or wholesale to someone who operates a lot.

4. What is the size of the market in the area? How many trees can nearby markets use? What is the competition for the market? If the only nearby market is a town of 4000 to 5000, it may need 1000 trees. A city of 50,000 persons may use 10,000 trees.

5. How much time and labor can the producer devote to marketing and harvesting? Each stage of the distribution process requires more labor which the producer must do or hire to be done. If the producer plans to operate a lot then someone must set up and operate that lot, whether the lot is on the plantation or on in town. If the producer is wholesaling, then the trees must be harvested and shipped.

6. What facilities and resources are available to the producer? These include: buildings, equipment, space and labor? Some producers may sell their entire crop without harvesting any, but as a wholesaler they may need to cut, grade, bundle and even deliver the trees. As a retailer the producer would need to sell each tree individually and that requires more time and resources.

Marketing Alternatives

Selling on the stump is the most basic way to market Christmas trees. The producer plants and cares for the trees and when they get to marketing size he/she sells them as they stand. The buyer harvests the trees. Choose and cut retailing is one popular method, but for large quantity selling, the producer usually contacts a wholesaler or distributor. Trade magazines sometimes carry ads from distributors wanting to buy entire plantations, or trees on the stump. Some will send in a crew to harvest. Usually they will not consider small numbers of trees (less than 4000) because of the economics. This type of sales is usually made on a contract basis. The contract should specify the trees to be cut, after harvest clean up, method of payment. All details should be carefully written out to avoid misunderstandings.

Some producers sell directly to retail lots, a form of "wholesale choose and cut." Lots operated by civic, service, or school organizations, or other groups who have enough labor available and can borrow equipment, are often interested in cutting and hauling their own trees to increase their profits by doing part of the work. Under this system the producer is usually responsible for spraying with colorants where necessary and for clean up.

Wholesaling is a step further up in the marketing chain. In contrast to "selling on the stump" and "choose and cut" retailing, this system could be described as "cut and deliver" selling. Wholesaling is selling directly to retailers. The producer is usually required to cut and deliver the trees.

Many producers do some wholesaling even if they retail most of their trees, either to increase their sales volume above the available retail market or to keep their own operation in balance and to have an outlet for surplus trees.

Wholesaling is usually considered to be a high - volume operation, in contrast to retailing where trees are sold one at a time. A producer may sell from a few hundred trees up to thousands in this way. The sale price is also higher than for the "on the stump" method because it involves more labor and more risk. Wholesaling provides some flexibility in managing the plantation and in marketing. Location of the plantation is not important as long as all - weather roads are available. Producers can plan their operation to meet their facilities and goals. Wholesaling is also less dependent upon the weather than the other methods of retailing.

Retailing, or selling directly to consumers, is the method which can produce the largest return, but it also involves the greatest risks. Retailing is considered to be a small unit operation. Some producers sell 5000 to 6000 trees per year, but most sell considerably fewer trees. Retailing is one-at-a-time sales, and most lots sell fewer than 1000 trees.

When the producer decides to sell at the retail level he/she assumes all phases of the marketing chain. The producer also assumes all of the labor from production up to the final sale. The producer will have to cut, trim, grade, price and transport the trees. Their are three basic choices in retailing:

1. Sell at a lot or lots in town, away from the plantation.
2. Sell cut trees at a location on or near the plantation. Many retailing problems are minimized this way because the supply of trees is nearby.
3. Choose and cut, where the consumer goes into the field, chooses the tree, cuts it, and hauls it home.

Selection of retailing method varies on several factors including location of the plantation, facilities available, labor available, size of plantation, and producer goals.

*Reference

Gwinner, G. Myron (ed.). 1979. Christmas Trees form Seed to Sale. Pages 64-67. Write to: Christmas Trees Magazine, P.O. Box 107, Lecompton, KS 66050. This reference is a compilation of selected articles from Christmas Trees Magazine.

Study Questions

1. What are the three basic marketing options available to producers of Christmas trees?
2. What are some of the factors which influence the producers decision regarding marketing?
3. What does "choose and cut" mean?
4. What are the three basic choices in retailing Christmas trees?

GLOSSARY

1. Marketability percent - The number of trees that can be sold at the average tree price divided by the number of trees that survived to maturity.

2. Lake States - Those states which border on any of the Great Lakes.

3. Dithostroma needle blight - A fungus which lives almost solely on Austrian pine, attacking and killing needles of all ages.

4. Plantation - A group of trees planted together, allowing for better management.

5. Firebreaks - Open areas within a plantation which help to prevent fire from travelling uncontrolled among trees.

6. Whorls - Several branches radiating from the same level on the stem.

7. Shearing - Pruning a tree to give it a desirable shape.

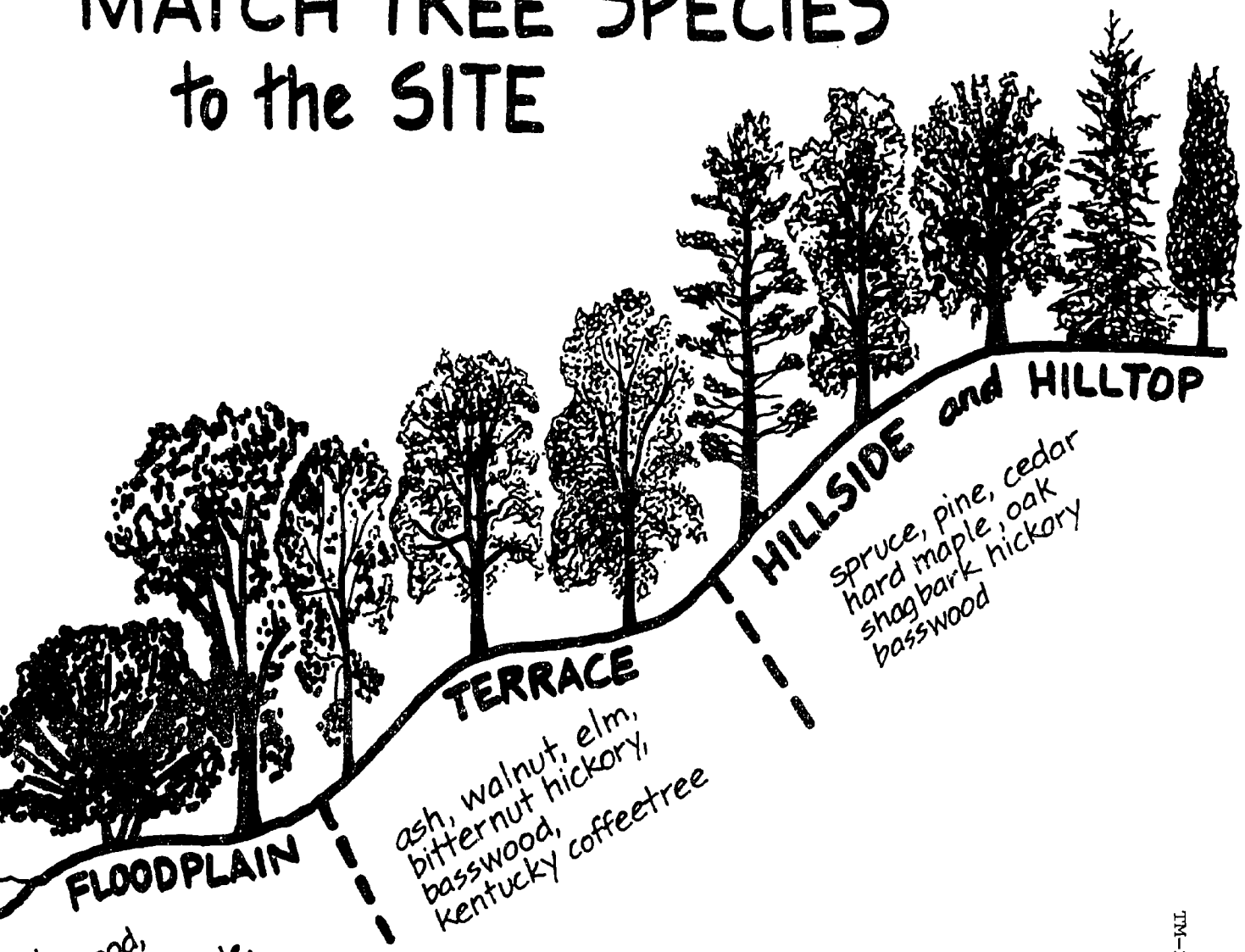
8. Dormant season - The period of time during the year when the tree is not actively growing.

9. Terminal leader - The apex, or the top and center part of the tree.

Steps for Establishing a Christmas Tree Plantation

Step 1. Determine market
Step 2. Obtain funding
Step 3. Select tree species
Step 4. Match species to site
Step 5. Develop planting design
Step 6. Do Site preparation
Step 7. Obtain trees
Step 8. Plant trees
Step 9. Develop Management strategies
Step 10. Shear trees
Step 11. Develop marketing strategies
Step 12. Balance accounting books for tax purposes

MATCH TREE SPECIES to the SITE



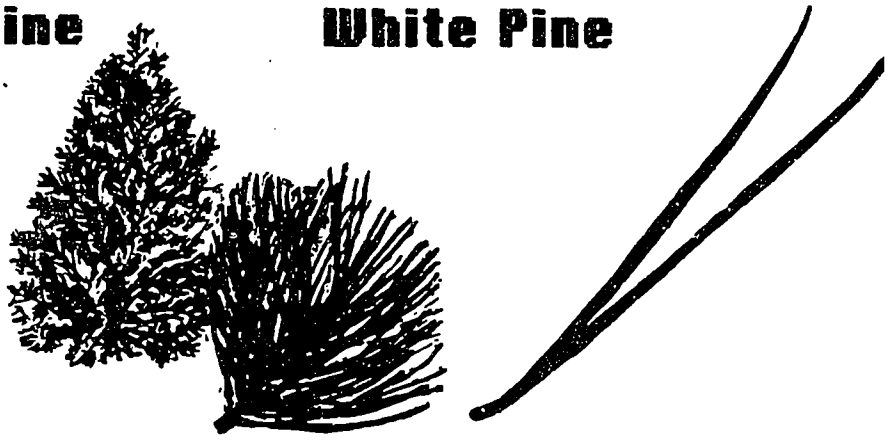
CRITERIA for MATCHING SPECIES to SITE

1. Climate
2. Soils
3. Topography
4. Shade tolerance

Popular Christmas Tree Species in Iowa

Scotch Pine

White Pine

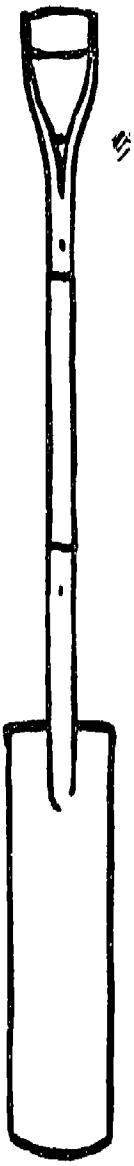


Red or Norway Pine

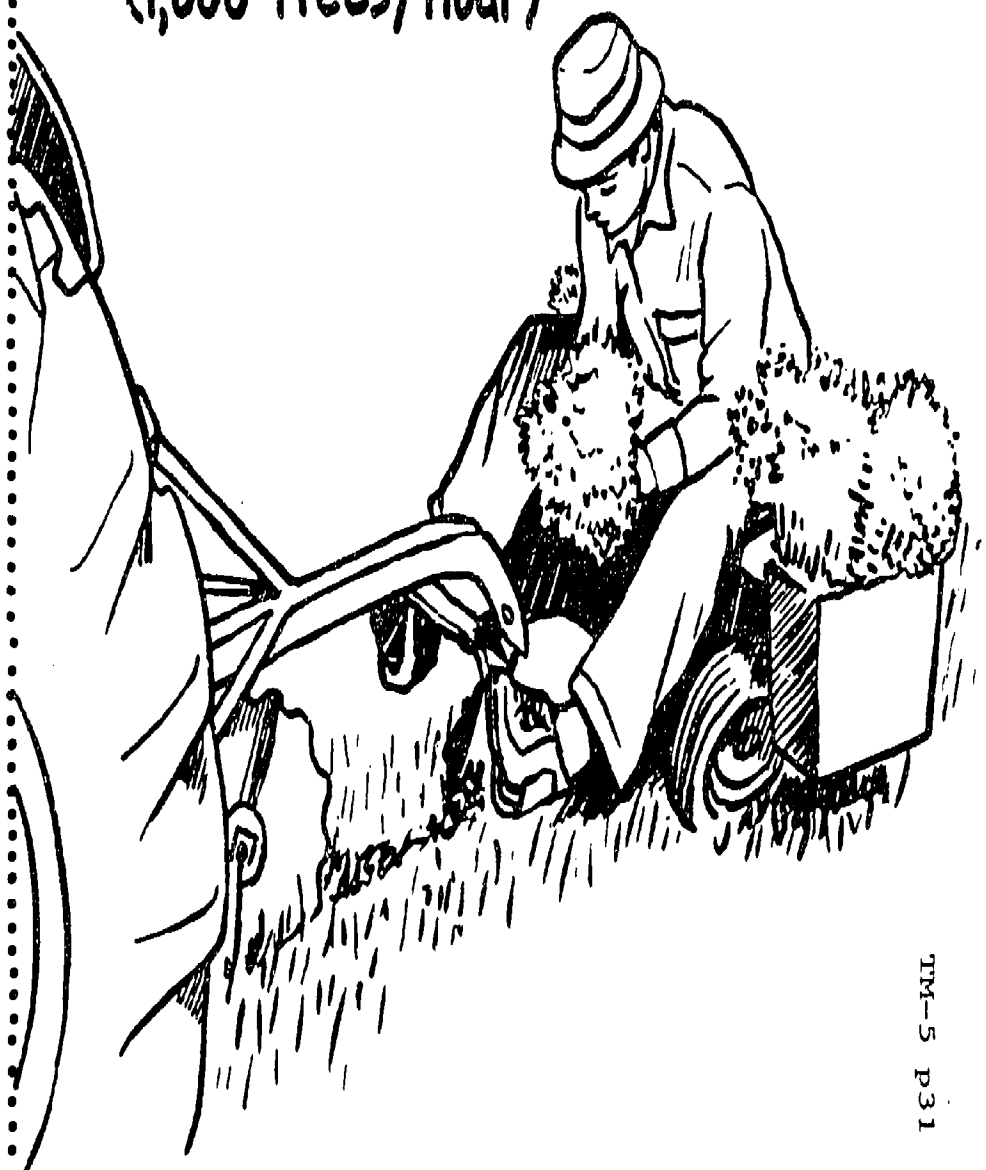
TREE PLANTING METHODS

Tree Spud
(40 trees/hr.)

Spade
(40 trees/hr.)



Mechanical Tree Planter
(1,000 trees/hour)



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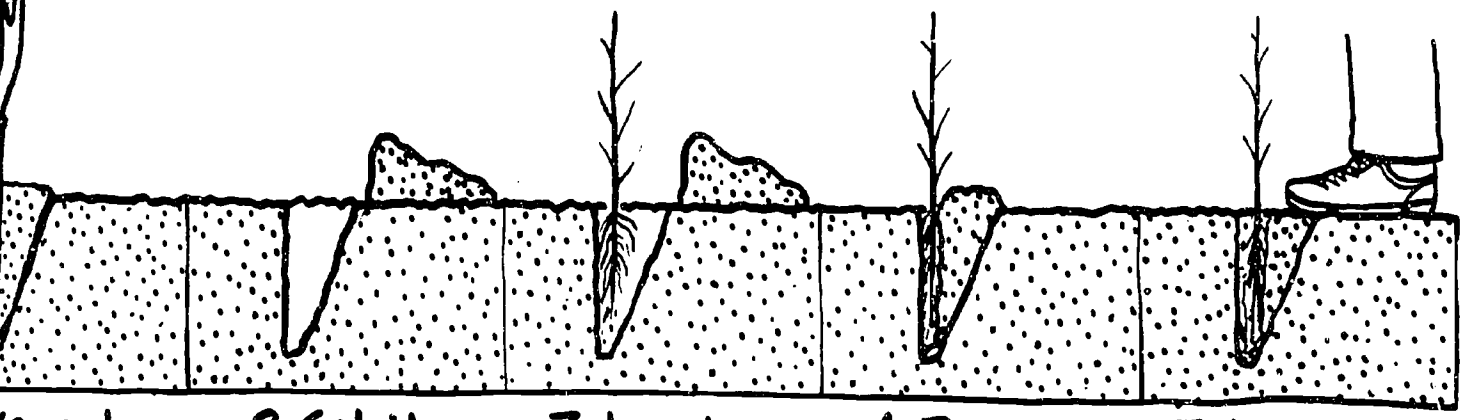
2 METHODS FOR HAND PLANTING with a SPADE



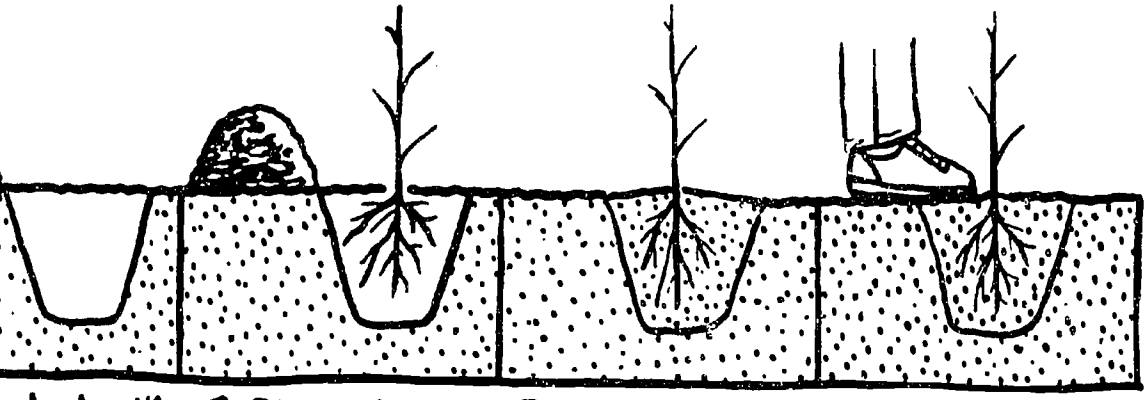
…e out notch …il. *

2. Set it aside.

3. Lay tree in hole.

4. Replace V-notch of soil.

5. Heal in the soil.



…a hole. *

2. Place tree in hole at correct depth.

3. Replace dirt.

4. Compact soil slightly.

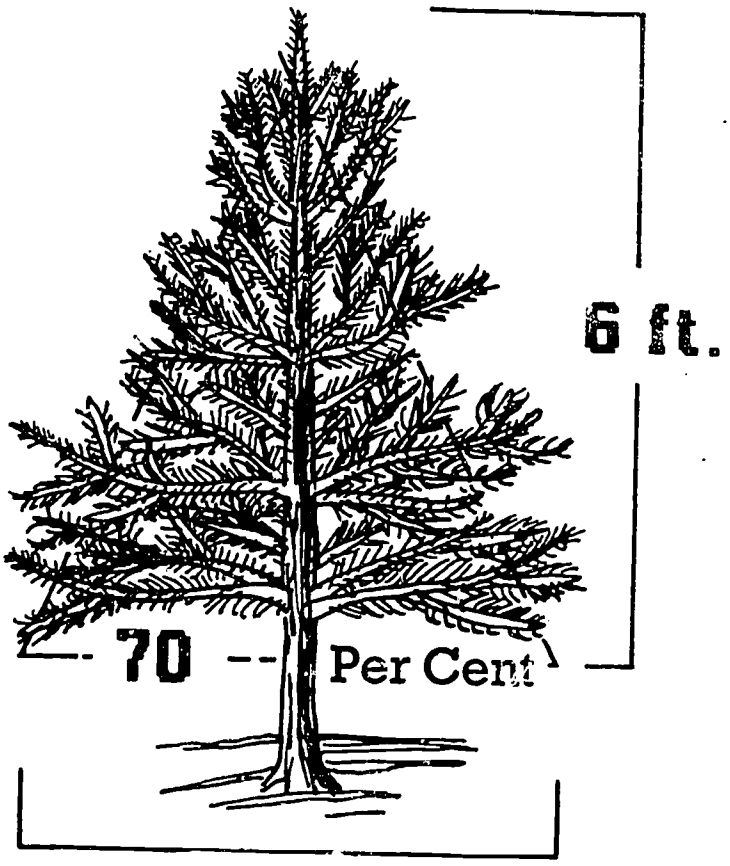
* If soil is clayey, scarify (scratch) sides of the hole.

TM-6 p32

Reasons for Shearing

1. Improves tree quality
2. Improves tree form
   a) Develops uniform spacing between branches
   b) Develops a symmetrical shape
   c) Increases foliage density
3. Increases percent of sellable trees
4. Increases the value of the trees

Shearing Christmas Trees



Try to maintain 60-70 percent taper

Three Shearing Tips

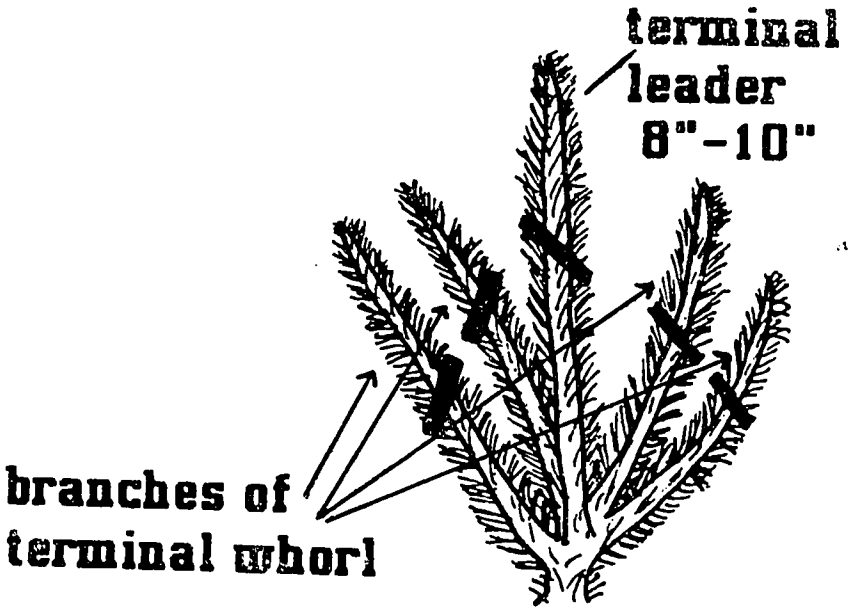
1. Eliminate Extra Leaders
2. Control Height
3. Develop Uniform Taper and Density

Cut terminal leader in half when it has extended 8"-10".

Confine shearing primarily to new growth.

Eliminate extra leaders while trees are young.

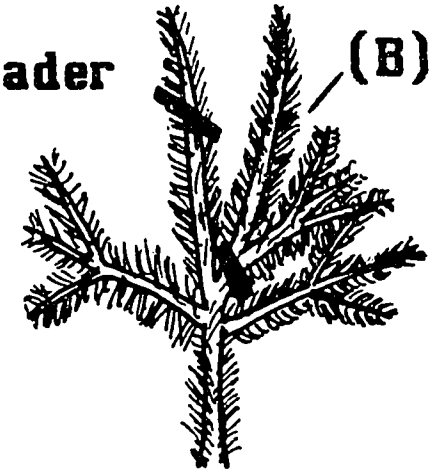
Controlling Height



Cut terminal leader to 8"-10".
Cut branches of terminal whorl to
about 1/2 length of leader.

Eliminating Extra Leaders

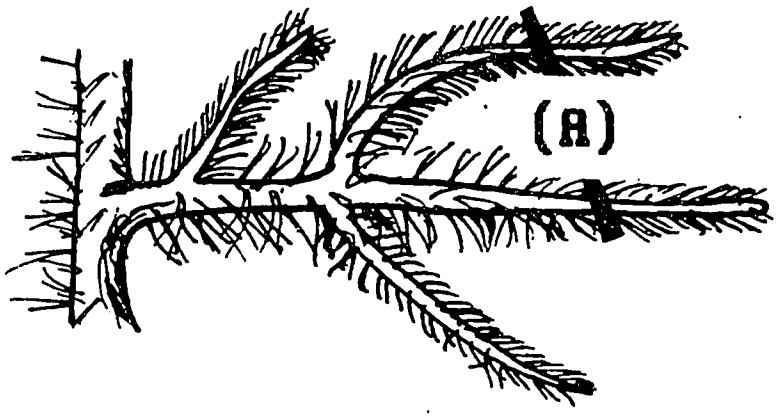
(A) Terminal leader



(B) Extra leader

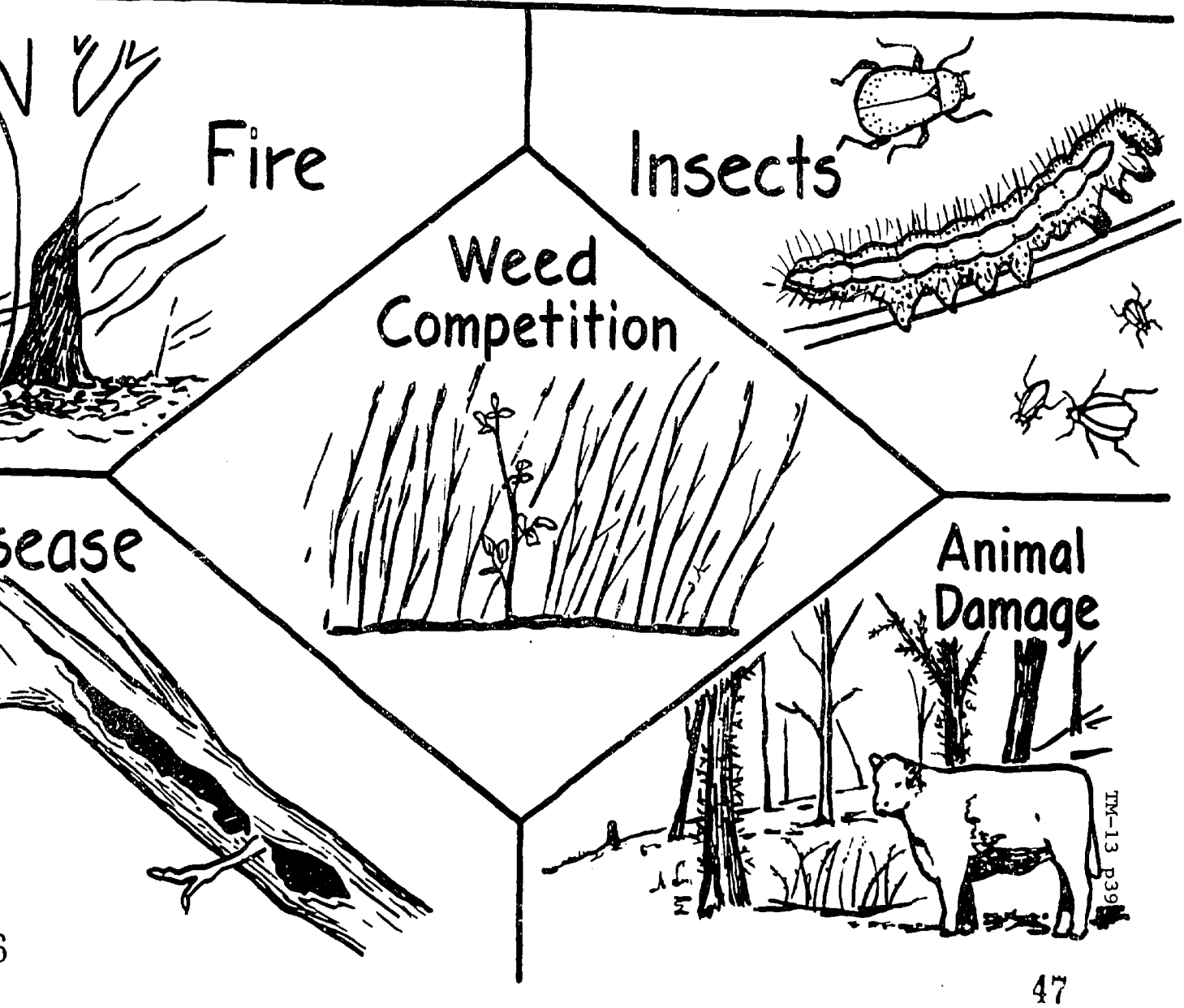
Eliminate extra leaders while trees are young.

Developing Uniform Taper and Density

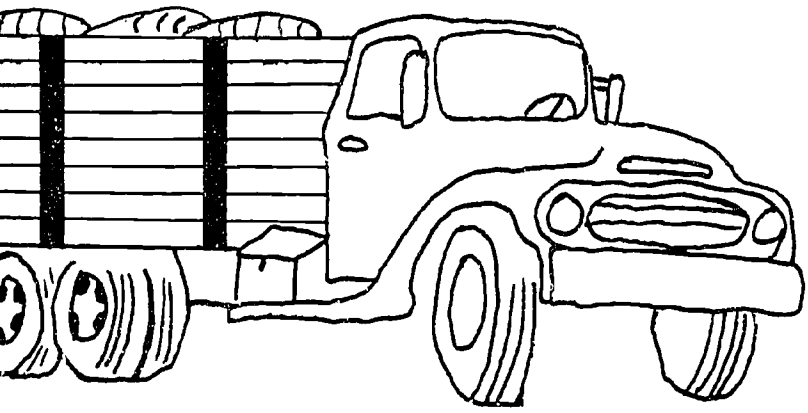


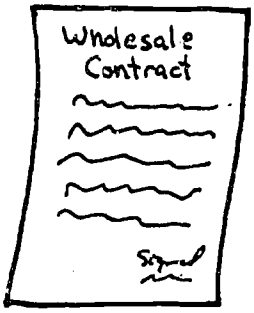
Confine shearing primarily to new growth (A)

WATCH OUT FOR
BIOLOGICAL PROBLEMS



Methods of Selling Trees

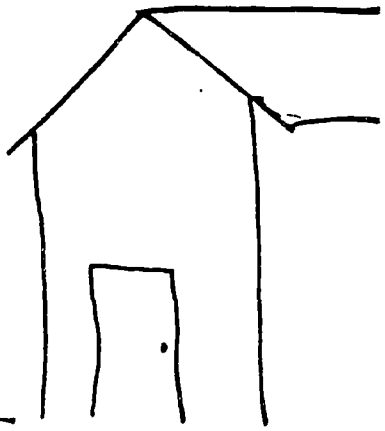




Wholesale

Choose & Cut

Lot Sells



Retail

TM-14 p40

Wholesale Marketing Strategies

1. Have good quality trees
2. Contact buyers directly or through local newspapers
3. Demand a written agreements
4. Provide properly bundled trees
5. Provide freshly bundled trees

Retail Marketing Strategies

Lot Sale

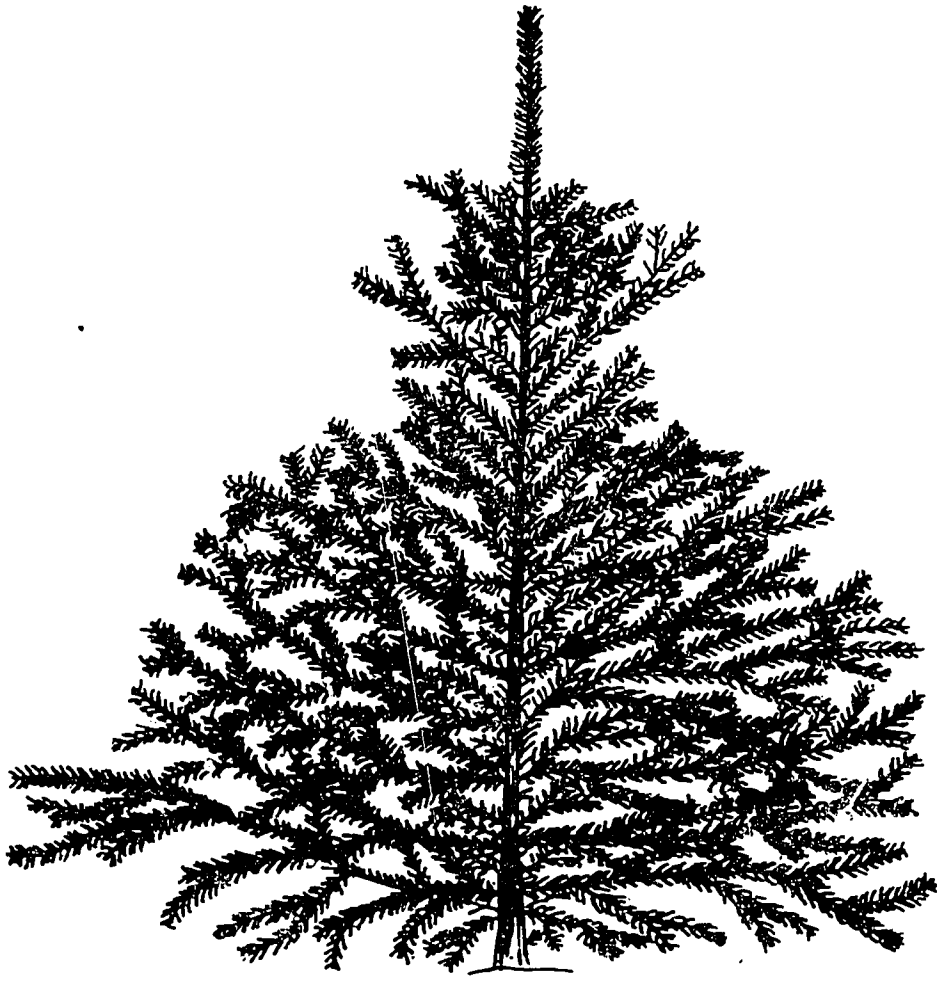
1. Have good quality trees
2. Select a visible lot near a heavily travelled road
3. Select a lot which has easy access and plenty of parking
4. Display a sign or banner (in advance of the driveway)
5. Have an easy pricing system
6. Don't overprice your trees
7. Be a pleasant sells person

Retail Marketing Strategies

Cut and Choose

1. Have good quality trees
2. Tag all trees currently for sale
3. Have a simple and readily understandable pricing system
4. Provide for easy access
5. Advertise in local newspapers (provide directions to tree farm)
6. Display noticeable sign at entrance
7. Provide ample, all weather parking
8. Use imagination and ingenuity in advertising and displaying trees
9. Be a friendly sales person

Where would you shear this tree ?



Matching Species to Site

	Scotch	White	Norway or Red	Austrian
Well-drained soil				
Moist soil				
Somewhat drought resistance				
No close spacing				
West Iowa - north and east slopes				
East Iowa - all slopes				
East Iowa - north and east slopes				
Higher sites				
Affected by dithistroma				