Forestry Project for 4-H Clubs

First Year — Tree Planting

CIRCULAR NO. 334

Beginners in Forestry.

UNIVERSITY OF KENTUCKY

COLLEGE OF AGRICULTURE

Extension Division

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Lexington, Ky.
June, 1939

Published in connection with the agricultural extension work carried on by co-operation of the College of Agriculture, University of Kentucky, with the U. S. Department of Agriculture, and distributed in furtherance of the work provided for in the Act of Congress of May 8, 1914.

FIRST YEAR—TREE PLANTING

OBJECT

The object of this project is to teach boys and girls the methods of planting forest trees and how to maintain them.

REQUIREMENTS

1. Boys or girls 12 to 18 years old, inclusive, may enroll in this project.
2. Each member must plant 1000 or more trees of commercial value.
3. The plantation must be protected from damage by fire and livestock.
4. A complete record must be kept, of the work done, including species of trees planted, number of each kind, number of hours worked in planting, cost of trees and labor, and care after planting.
5. A narrative report on blank form must be submitted to the County Agent on or before December 1, containing the following:
   a. A map of the plantation, showing its location on the farm in relation to member's home and any roads leading to or by it.
   b. The record of work done, including items in paragraph 4 above.
   c. The reasons for selecting the planting area, the nature of the work done and the kind of trees planted, the reason for the choice of species and what final results were obtained.
6. As the projects are progressive, new project members undertaking the work must start with the first-year project.

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FORESTRY PROJECT FOR 4-H CLUBS

First Year — Tree Planting

By WILLIAM E. JACKSON

Land which will grow annual crops or maintain pasture without appreciable erosion, is considered agricultural land and should be kept in such crops and pasture as long as it is profitable. Well-planned forest-tree crops should occupy every acre of poorer soil and all land found unprofitable for cultivation. In restoring a piece of gullied or worn-out land to productiveness by tree planting, constructive work is accomplished, which gives the workers a feeling of inspiration and satisfaction, that their task has been worth while.

CHOOSING THE PLANTING SITE

Before ordering trees, the club member should make a careful study of the farm, so that the most suitable planting site may be found. Sites should be confined to abandoned fields or pastures, which are usually the poorest soils of the farm. Badly gullied and eroded areas in open fields should be given consideration first. Do not select a site in existing woodland, no matter how open the woods may be; if stock and fire are kept out of the woods, nature will usually take care of reforestation.

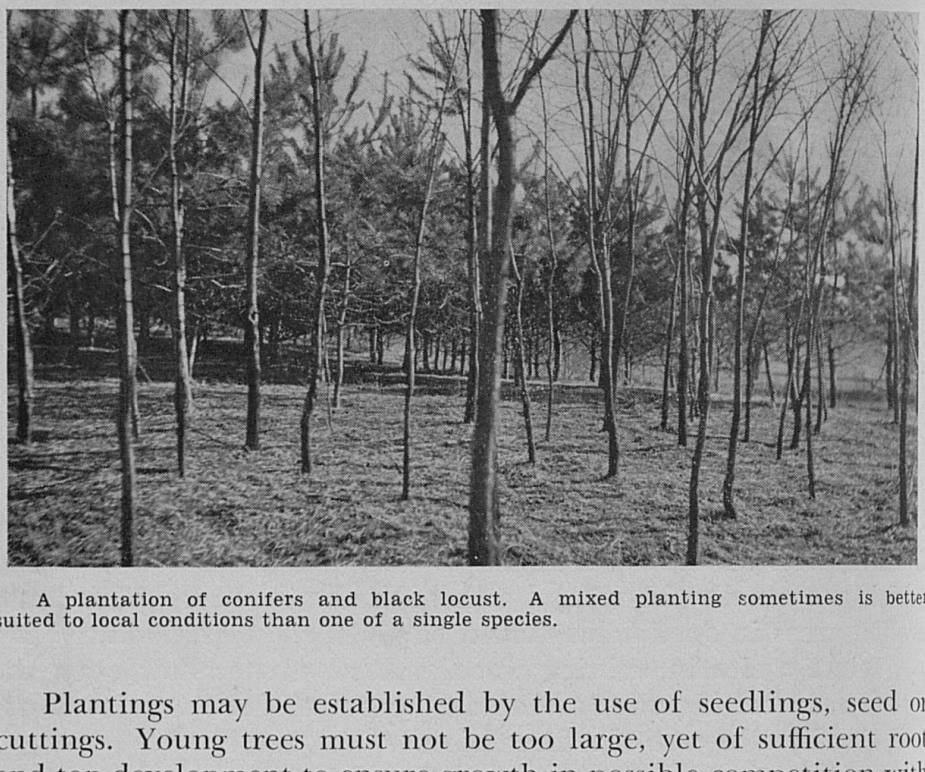
PURE AND MIXED PLANTATIONS

A pure plantation is made up of only one species of tree; a mixed plantation is made up of two or more species. In nature, several kinds of trees grow together and it has been found that, for many reasons, this kind of stand is best. Mixed plantations are to be recommended as a precaution against insect and fungus enemies, which may attack one species and not others, and mixed plantation will more completely utilize the area planted; therefore club members should try to plant mixed forest.

SELECTING THE PLANTING STOCK

Forest trees may be divided roughly into two groups; conifers (the pine family, evergreens) and deciduous or broad-leaved trees,

that drop their leaves each year.* Because most species of the latter group have hard, durable wood, the term, hardwoods, is used here for that group, as distinguished from the conifers. Trees of both groups are used for reforestation. The choice of individual species of either group depends on the character of the planting site because trees should be planted in places best suited to their growth.



A plantation of conifers and black locust. A mixed planting sometimes is better suited to local conditions than one of a single species.

Plantings may be established by the use of seedlings, seed or cuttings. Young trees must not be too large, yet of sufficient root and top development to ensure growth in possible competition with weeds and grass. For planting on the poorer soils usually found in abandoned fields, species of the conifer group are recommended. The pines are especially suitable, as they are less soil demanding than are hardwood species. The well-known black locust of the hardwood group is more adaptable to poor soil than any other species in this group, and is recommended for planting where badly gullied areas are to be reclaimed. The black walnut should only be planted in fertile soil, as it makes slow growth in poor soil. Do not plant the two or three desirable oak species in old-field soil. These hardwood species are just as soil demanding as the walnut and do not make satisfactory growth on the poorer soils.

* Conifer means cone bearing but all members of this group do not bear cones (red cedar, for example), and all broad-leaved trees do not drop their leaves each year (holly, for example); nor are all cone-bearing trees evergreen (the bald cypress is an example).

A mixed planting of conifer species (pines) with locust is a desirable combination but at the present, conifer stock is not available in quantity to club members, in Kentucky, and until such stock is available in quantity, the project must be confined to planting the locust and other hardwood species.

Sizes of Planting Stock

In the conifer group, trees are classified at the nursery as seedlings and transplants. A seedling is a tree which has grown in a seed bed until it is ready to be shipped to the planting site. Seedlings are usually one, two or three years old. Hardwoods may be planted when one year old but two- or three-year-old conifer seedlings are generally used.

A transplant is a tree which having been grown in a seed bed for one or more years, is removed to another place in the nursery, where it remains for further growth, before being lifted and planted permanently. Transplants cost more than seedlings and are used only where planting conditions are very unfavorable, such as in extra heavy sod or where weeds and brush would kill younger plants.

Nursery age classes are designated according to the following manner:

Seedlings, 1-0, 2-0, 3-0, etc., signifying that the trees are 1, 2 or 3 years of age and have not been transplanted.

Transplants, 1-1, 1-2, 1-3 or 2-1, 2-2, designating by the first figure the age of the seedling before it was transplanted and by the second, how long the tree has been in the transplant bed.

When To Plant

Hardwood trees may be planted when the soil is in planting condition, any time during the dormant season; that is, after the leaves have fallen in the Fall and before the swelling of the tree's buds in the Spring.* As project planting work will be undertaken only on open-field sites, spring planting is exclusively recommended. Conclusive tests over a series of years have proved that small trees planted on bare, eroded sites during the Fall, are liable to be loosened in the soil by "heaving" brought about by alternate freezing and thawing of the soil. The "heaving" of the little tree from its original position in the soil, generally causes it to fall over, thereby resulting in a crooked tree stem or possibly causing it to die outright because of drying of the roots. The hardwood species should

* Some oaks retain their brown, dried leaves almost thru their entire dormant season.

be planted only while in a dormant condition. The conifers do not become entirely dormant during the winter altho the rate of growth is lessened, but sufficient food is produced to keep the foliage green.

Where To Get Trees

Trees for forest planting may be obtained from two sources.

1. The State Forest Service, Frankfort, Kentucky.
2. Private nurseries.

If unable to get planting stock from either of these two sources, forest planters should write the Extension Forester for further information.

How To Order

Order blanks can be obtained from the club leader, the County Agricultural Agent, or the Extension Forester. Orders for trees should be sent well in advance of planting time and enough trees should be ordered to conveniently fill the project area.

Wild Planting Stock

Wild seedlings do not usually have a stocky form and are likely to have insufficient root systems, which handicaps them in withstanding the shock of transplanting. From the standpoint of expense, nursery stock is cheaper if the planter considers quality of stock and the added advantage of quicker growth.

Members Can Grow Their Own Seedlings

Locust seedlings, if desired, may be produced at home with as little trouble as ordinary garden crops. The seed bed should be located in the near-by garden area, preference being given to a northern exposure. A light, sandy loam in a fine, workable state, is the most satisfactory soil; heavy soil may be lightened by the addition of sand and well-rotted humus.

Locust seed should be soaked in lukewarm water for about 24 hours, before planting. The seeds should be dropped about ½ inch apart in shallow drill rows, which should be about 18 inches apart. The seeds are then covered to a depth of about one-half inch with the soil well-firmed down to prevent drying out. After the seedlings show thru the ground, the soil should be lightly cultivated. The seeded area should be kept free of weeds and watered if necessary. If the seeds are planted in late April or early May and have a normal growing season, the seedlings should reach a height of two or three feet by the Fall planting season.

Marketing Locust Seedlings by Members

A small nursery for growing locust seedlings for sale, might well prove a successful financial project for members to undertake. A community nursery plot could be established and run by two or more members for profit and at the same time meet project work requirements. This type of cooperative club work has already been undertaken in a few counties in the State. The nursery work has been found instructive and profitable by the club members undertaking it, as well as establishing a near-by source from which farmers could purchase seedling trees.

A severely gullied area on which further soil erosion may be stopped by planting a fast-growing species of tree, such as black locust.

PLANTING OPERATIONS

Preparation of the Site

The planting site should be prepared in advance of the receipt of the trees. The condition of the planting site will determine how it should be treated before the trees are planted. Abandoned fields, in the hilly sections, may contain scattered brush and trees of inferior species, such as sassafras, briars and sumac. Where it is not dense and the planted trees are likely to grow ahead of the brush, the latter will do no harm and may in some cases prove beneficial.

Plantation sites on level or medium sloping ground may be prepared by plowing shallow double furrows or back furrowing,

the soil thus forming a ridge or mound in the center of which the tree is planted. Deep, single furrows are also excellent for planting, the tree being set against the side wall of the furrow and the loose dirt pulled in and well firmed around its roots. These furrows, besides acting as planting guides, serve to keep grass and weeds away from the little trees for at least two years, until they become better established; they also serve to collect and hold soil moisture. Such furrows should always be run in line with the contour of the planting site that is, as nearly level as practicable.

Special Preparation of Gullies Before Planting

Where the area to be planted is severely gullied, it may be advisable or even necessary to plow off the gully banks to a more even slope, and to build brush or other temporary dams in the gully bottoms before planting is undertaken. The use of plowed furrows is not advisable for planting in gully areas. Club members should consult their county Agent if they contemplate planting on badly gullied land.

Black locust seedlings received from the nursery are being "heeled in." If the trees cannot be planted immediately, this care is necessary to prevent drying of the roots.

Care of Planting Stock

The success of a plantation depends largely upon the care taken by the planter in handling the trees prior to planting, and upon the care taken in the actual planting work. Trees should be unpacked immediately upon arrival. If immediate planting is not possible, the trees should be "heeled-in" in trenches dug with sloping sides. If the trees are tied in bundles, the bundles should be opened, the roots carefully spread out and completely covered with fine earth, the earth should be firmed about the roots and watered. A light, sandy loam soil, located in a cool, shady place, should be selected for the heeling-in site. It is particularly important that conifer species be carefully protected at all times, for if the roots once be-

come dry enough to cause the resinous sap to "set", no amount of soaking in water will save them. Young conifer stock may be killed in a few minutes by exposure to drying wind and sun. Many conifer plantations have been failures because of careless handling of the stock before it was planted. Hardwood seedlings are not so sensitive to drying as the conifers but they are injured if not properly "heeled in" and protected.

Spacing Trees In Plantation

An approved spacing for forest plantations is six feet by six feet, which requires 1200 trees per acre. To meet a specific condition of soil, such as in gully areas, some other spacing may be better. By all means, definite arrangement of the spacing distances to be used should be determined in advance. Close setting gives the trees better form and quality and, in general, best results are obtained from close planting, but the corresponding higher cost may make this inadvisable.

A temporary brush dam constructed across a gully after the sides have been sloped. Quick-growing trees such as black locust are planted in the gully banks to help hold the soil.

If furrows have been plowed six feet apart, it will not be difficult to maintain a uniform spacing. Where furrows have not been plowed, guide stakes placed at the end of each row may be used for alignment. It is scarcely worth while, however, to spend much time and effort in keeping the squares exact.

Care Of Trees While Planting

Trees are best carried, while planting, in a three-gallon galvanized iron bucket containing about two quarts of water. The water

in the bucket serves to keep the roots moist while being carried along the row. Trees **should not be distributed along the row ahead of the planter,** but should be taken from the bucket, one at a time, and then not until the hole for the tree is ready to receive it. If the little trees have extra long roots, it is advisable to prune the roots, such procedure being best acomplished while the trees are still in the bundles. **Do not cut off more than one-fifth of the root system in this operation.** The removal of too much of the root system will retard the tree in getting established in its new location.

Planting Tools

The most satisfactory tools for planting are the mattock, or grub-hoe, and the spade or shovel. The mattock is best used in a two-man planting crew, while the shovel requires only one man. A twelve or fourteen quart bucket should be provided for each planting crew.

Method Of Planting

The species of tree, the size of the planting stock, the character of soil to be planted and previous preparation of the planting site, should determine the method of planting to be used. Whatever method is decided upon, extra care should be taken to place the tree well in the ground. Planting too deep is as disastrous as not planting deep enough. Best results are obtained by setting the tree about one-quarter inch deeper than it stood in the nursery. The tree must be set upright, with its roots well spread out in a normal position. The planting hole should not be too shallow, nor the tree roots too long, or the roots will curve upward. This item of carelessness in planting is one of the greatest causes of loss. After due care has been taken in preparing the planting spot and placing the tree correctly therein, tamping the soil firmly about the roots is the last detail, and one of the most important.

DIRECT SEEDING

Certain trees of the hardwood group can be best grown by planting the seed where the tree is to stand. Walnut, oak, pecan and hickory trees grown by this method, develop more rapidly than seedling plants from the nursery. Planting spots are prepared by digging up the ground about twelve inches in diameter. The soil should be stirred sufficiently to form a good seed bed. The spots are spaced the same distance apart as for planting seedlings, and three or four nuts or acorns should be planted in each spot. As a rule,

depth of planting, depending on the soil, should be three to four times the diameter of the seed planted. After the sprouts have attained about one year's growth, each seed spot should be thinned, taking out the weaker sprouts and leaving the strongest and most sturdy one. The time for direct seeding may be either in the Fall, as soon as the nuts or acorns have fallen, or in the Spring. If the latter time is decided upon the nuts or acorns should be kept over winter in a shallow pit in the ground and covered with leaves and earth. The nuts should be arranged in the pit by placing alternate layers of nuts and earth. Layers of seed and sand in about equal parts may be placed in boxes and stored in a cool cellar or building, or the boxes may be buried in well-drained soil until planting time in the Spring. Protection from rodents is necessary. If an outdoor storage pit is made, it should be in a shady place in well-drained soil.

A good, strong, stock-proof fence should be maintained around the tree plantation.

Care And Protection Of Plantations

Plantations do not require much attention after planting, but protection against fire must not be overlooked. Heavy stands of dry grass and broom sedge in the plantation area are always a fire menace. Fires originating from outside the planted area may be guarded against by plowing two or three furrows completely around the plantation. The land owner is sometimes tempted to graze the planted area, but this should never be done as browsing and trampling of the young trees by livestock will damage or destroy the plantation. There should be a strong, stock-proof fence around the plantation at all times.

MAP OF THE PLANTATION

(The top of the page is north.)

STORY—HOW I PLANTED MY FOREST TREES

The story must be in the club member's handwriting.

Be sure to tell why you selected the species of tree that you planted; how you kept the rows level; why it is necessary to keep livestock out; how you kept heavy grass and brush from shading out the little trees, and the method used in planting.

STORY—continued

STORY—continued

FIRST YEAR FORESTRY PROJECT OF

Name ..... Age .....

County ..... Date .....

Post Office ..... R. F. D. .....

Years in Club Work ..... In this project .....

Approved .....
(County Agent)

Date .....