

June, 1947 (Revised)

Club Series No. 8

FORESTRY MANUAL AND RECORD BOOK FOR 4-H CLUB MEMBERS



Name Age

Post Office R. F. D.

Name of Club School

.....
County Agent

County Post Office

Year: 19.....

NORTH CAROLINA STATE COLLEGE OF AGRICULTURE AND ENGINEERING
OF THE
UNIVERSITY OF NORTH CAROLINA
AND
U. S. DEPARTMENT OF AGRICULTURE, COOPERATING
N. C. AGRICULTURAL EXTENSION SERVICE
I. O. SCHAUB, DIRECTOR
STATE COLLEGE STATION
RALEIGH

DISTRIBUTED IN FURTHERANCE OF THE ACTS OF CONGRESS OF MAY 8 AND JUNE 30, 1914

NORTH CAROLINA'S FOREST

ABUNDANCE—WASTE—FUTURE?

Fifty nine per cent or 18,402,400 acres of the land area in North Carolina is in forest. Of this acreage 300,700 acres are in National Parks or otherwise classed as non-productive. Of the productive forest land we find 10,094,743 acres on the farms—this being 55 per cent of all forest land and more than one-half of all farm acreage.

North Carolina has more commercially useful trees than any other state in the Union, including a wide range of species, such as eight pines, twenty-nine oaks, eleven hickories, twelve maples, etc. With a naturally fertile soil and ideal climatic conditions, coupled with a great variety of tree species North Carolina has been able to produce lumber, pulpwood, fuel wood and other forest products in abundance, and more rapidly than in many other sections.

Since white man first set foot on North Carolina soil, he has slaughtered her forest resources, cutting greedily, promiscuously without heed to the future. He has mined her timber with no other thought than to "cut out and get out." Only in the past few years has he become conscious of the fact that where there was once abundance, he now faces a scarcity.

In spite of all the work to promote forest protection and growth and the general development of a conservation consciousness, the destruction of forest resources continues. National defense called for great quantities of timber. North Carolina's forests now have less saw timber-size trees and more smaller trees than before the war. There are more trees in all sizes of less valuable species, poorer quality, and slower growth rates than before. Most forest acres are growing only one-third of a full crop of trees or one-third as fast as is possible with good management. Many small trees are being cut just as they are reaching the age when they are ready to "go to work" for their owners. Fires continue to destroy the woods, insects and diseases to take their toll, and cause North Carolina rivers to run brown with soil washed down from eroding hillsides.

Forests are as necessary to the maintenance of the farm, the State and the Nation, as money is to the bank. The spirit of forest conservation, lying dormant in the minds of so many of our people, must be brought to life. It must be made to express itself in better timber management, in planting trees on denuded hillsides and other idle land, in the many phases of forestry that can be applied to farm woodlands to insure a continuous supply of wood products. The *Future* with both its opportunity and responsibility is now knocking at the door of the North Carolina farm boys and girls. It is the hope that this Four-H Club Forestry Manual and Record Book will help club members to catch the spirit of forestry, as well as instruct them in better woods practices. The future of forests in North Carolina rests largely with the boys and girls of today, and a knowledge of forestry gained and applied as club members will bear fruit in the years ahead.

Forestry Manual and Record Book

For

4-H Club Members

By

R. W. GRAEBER, *Extension Forester*

JOHN L. GRAY, *Assistant Extension Forester*

Project Outline

OBJECT:

1. To promote among club members a broader knowledge of trees, the uses of wood, and the forest wildlife.
2. To impress upon club members the need for conservation and use of idle land through a program of forest planting.



A planted forest—8 year-old Loblolly Pines.

3. To interest club members in the basic principles of forest management as applied to farm woodlands.
4. To encourage better woods practices and promote a better care and utilization of forest products.
5. To create an interest in growing farm timber *as a crop* instead of handling timber *as a mine*.

GOALS:

1. A complete program of land conservation and use.
2. An adequate and continuous supply of wood products for farm use and maintenance.

PLAN OF WORK: PROJECTS:

I. Tree Study

1. Leaf collection and mounts
2. Wood collection and mounts
3. Names of trees and their uses
4. Trees and game

II. Forest Planting

1. Plant a forest
2. Improve a forest
3. Grow Christmas trees
4. Produce nuts and timber

III. Timber Stand Improvement

1. Pines or yellow poplar in pure, even-aged stands
2. Mixed hardwoods of varying ages

IV. Forest Protection

1. For woodland where ground cover is mostly grass



Second growth mixed Hardwoods after a harvest of cull trees.

2. For woodland where ground cover is largely pine straw or other leaf litter
3. For woodland pastures

Record:

Keep a complete record of work done and prepare a financial statement of each project on record form.

Story:

Write a story of 300 to 500 words covering details of your work and its value as a farm practice.

Basis of Awards:

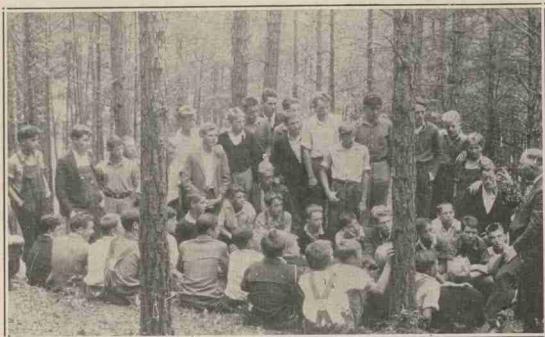
Each project will be scored on the basis of 1,000 possible points. Individual score forms are provided for each project. The County Agent will score each project and sign the report.

Project I

TREE STUDY

When we study trees, their growth, character and behavior, we recognize the handiwork of the great Creator. We love and appreciate trees when we know them, recognize them on sight, and have a definite idea of their use and value. We identify trees by their leaves, buds, and bark, or by their flowers and fruits. We recognize woods by their color, texture and grain, and determine their uses by their strength, hardness, durability and working qualities. A study of trees as a 4-H Club project is divided into four parts:

1. **Leaf Collection and Mounts.** Collect leaf specimens from 20 of the more common trees found locally. Place leaves between folds of newspaper or magazine and press under weight. After 5 to 10 days mount leaves on heavy white paper, 8½ x 11 inches. Use adhesive tape or gummed paper to fasten



Extension Forester discussing trees, their behavior and growth, with a group of farm boys.

leaf on sheet. Print, in lower left-hand corner of each mount sheet, the common and scientific name and the chief uses of the tree. Place all mounts in a folder with name of member and club printed on outside. Leaf prints may be substituted for leaf mounts. Instructions for making leaf prints will be supplied upon request.

2. **Wood Collection and Mounts.** Collect wood specimens from 20 of the more common trees found locally. Specimens should be 2 to 3 inches in diameter and 6 inches long with ends sawed square. Allow wood to season for several weeks, with bark on. Place wood in a vise and saw through middle for about one-third the length of the specimen. Then undercut at an angle of 45 degrees until the first cut is met, showing both annual rings and grain. Sand and shellac cut surfaces. Mount specimens on two 8-inch boards 42 inches long, allowing ten specimens to each board. Fasten specimens with screws from back side of board. Place a label card beneath each specimen bearing the common and scientific name and the chief uses of the wood.
3. **Names of Trees and Their Uses.** Give list of trees in your leaf and wood collections. Show their names—common and

scientific and their chief uses. Indicate with an (x) the trees useful for shade in your community.

[illegible]

4. **Trees and Game.** List from personal observation 10 forest trees that furnish food for game birds or game animals. Show what birds or animals were observed feeding on the fruits or nuts of these trees and the approximate date of observation.

| Name of Tree | Bird or Animal Eating Fruit | Date of Observation |
|--------------|-----------------------------|---------------------|
| | | |
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| | | |
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RECORD

- County in which collection is made:
- Sources of help or information:
- Were collections exhibited? Yes or No:
Where? When?

Financial Statement

- Hours of work: Cost per hour: c Total labor cost: \$
- Cost of materials used: \$

Total cost: \$

Project will be scored by County Agent on following basis:

| | Possible Points | Points Scored |
|--|--------------------|------------------|
| 1. Neatness of leaf mounts..... | 200 | ..... |
| 2. Workmanship and finish of wood mounts.. | 200 | ..... |
| 3. Correctness in names of trees and uses of woods listed | 300 | ..... |
| 4. Accuracy and completeness of information on trees and game | 150 | ..... |
| 5. Record | 50 | ..... |
| 6. Story | 100 | ..... |
| Total | 1000 | ..... |

Date Signed: County Agent

Project II

FOREST PLANTING

North Carolina farms have 1,250,000 acres of idle, eroding crop land, and about 2,000,000 acres of heavily cut-over or burned woods. Four-H Club members have a real opportunity to help in planting forest trees on these idle acres. Four types of tree planting work are open to club members:

1. **Plant a forest**—set pine, black locust, or yellow poplar on at least one acre of idle or abandoned crop land.
2. **Improve a forest**—underplant scattered hardwoods or pines in the upper Piedmont or Mountain section with red cedar, white pine or spruce. Set cedars, pines and spruce to fill open spaces where competition from roots of other trees is not too great.
3. **Grow Christmas Trees**—plant one acre of idle crop land with red cedar, Norway spruce, or red spruce.
4. **Produce nuts and timber**—plant black walnuts:
 - (a) 25 or more seedling trees, or
 - (b) 200 or more nuts.

In waste places such as ditch and stream banks, fence and field corners, around the farm yard, large openings in the woods, where the soil is deep, rich and well drained.

| What to Plant | Where to Plant | When to Plant |
|--|---|--------------------------------|
| Longleaf Pine | Coastal and sandhills | Jan. 1 to March 15 |
| Slash Pine | Coastal and sandhills | Jan. 1 to March 15 |
| Loblolly Pine | Coastal and Lower Pied. | Jan. 1 to March 15 |
| Shortleaf Pine | Pied. and lower Mountain | Jan. 1 to April 1 |
| White Pine | Up. Pied. and Mountains | Feb. 1 to April 15 |
| Spruce | Mountains | Feb. 1 to April 15 |
| Yellow Poplar | Mts. and moist N. slopes of upper Piedmont | Nov. 1 to April 15 |
| Black Locust | Piedmont and Mountains | Nov. 1 to April 15 |
| Black Walnuts a. seedlings b. nuts | State-wide State-wide | Nov. 1 to March 15 December |
| Red Cedar | Piedmont and Coastal | Jan. 1 to April 1 |

HOW TO PLANT

1. Take care not to expose seedling roots at any time. Puddle roots in sloppy mud as soon as removed from packing and take seedlings one at a time from bucket as they are planted.
2. Dig hole with mattock or spade large enough to accommodate the roots when they are well spread out.
3. Set seedling in hole with roots well spread, at same depth as they grew in nursery, place dirt, and pack firmly.
4. Mulch plants with straw, weeds, or other litter.

SPACING

1. For general planting, pines, red cedar, black locust and yellow poplar should be set in rows, spacing the seedlings six by seven feet apart, or 1,000 per acre.
2. Where plantings are made on eroded land or in gullies closer spacing (6 x 6 or 5 x 6) is advisable, requiring 1,200 to 1,450 trees per acre.
3. Black walnuts, generally, should be planted as individual trees not closer than 30 feet apart.

CULTIVATION

1. Keep weeds, briars and grass away from young trees for two years.
2. Cultivation may be done with hoe or plow as conditions permit.
3. To aid in cultivation, a row of soybeans may be planted between trees on smooth land.

RECORD

| | | | |
|------------------------------------|------------------------------------|----------------|----------------|
| Work Done | | | |
| Species:..... | Area in demonstration:.....acres | | |
| Age of seedlings..... | yrs. Number of trees planted:..... | | |
| Financial Statement | | | |
| Cost of seedlings: - - \$..... | Hours required to plant..... | | |
| | to cultivate..... | | |
| Total labor cost: - - \$..... | Total hours - - - - | | |
| Total cost: - - - \$..... | @.....c per hour | | |
| Survival | | | |
| Number surviving: | | | |
| 6 months..... | 12 months..... | 18 months..... | 24 months..... |
| Per cent surviving | | | |
| 6 months..... | 12 months..... | 18 months..... | 24 months..... |
| Average height of trees at end of: | | | |
| | First yr..... | inches | |
| | Second yr..... | inches | |

Project to be scored by County Agent on following basis:

| | Possible Points | Points Scored |
|--|--------------------|------------------|
| 1. Care and uniformity of planting..... | 300 | ..... |
| 2. Protection and cultivation after planting.. | 300 | ..... |
| 3. Survival | 100 | ..... |
| 4. Records | 200 | ..... |
| 5. Story | 100 | ..... |
| Total Score | 1000 | ..... |

Date Signed: County Agent

Project III

TIMBER STAND IMPROVEMENT

When Nature plants a forest she often places many trees to an acre that will never develop into lumber or any other commercial product. As time passes, in the fight for space, many trees are crowded out and die, others become crippled and deformed, and still others are damaged and diseased. Often clean, straight trees are suppressed by crooked, rough trees. The final stand is a mixture of good and bad alike. We can help nature in her process of selection by removing the undesirable and over-crowded trees early in the life of the stand and thus provide sufficient space for the better trees to grow and develop. Such an operation is called Timber Stand Improvement.



A farm boy showing the County Agent his Timber-Thinning Project.

In selecting Timber Stand Improvement as a 4-H Club project, the member has choice of a demonstration in:

1. Pines or yellow poplar in pure, even-aged stands:

Thin one or more acres. Cut dead, crooked and diseased trees. Remove an occasional good tree when necessary to relieve crowded condition. Leave straight, well-formed hardwoods when present in understory, for wind protection and

to improve soil fertility. Leave sufficient trees on the acre to insure a full, evenly-distributed stand.

2. Mixed hardwoods of varying ages:

Make an improvement cutting on one or more acres. Cut over-mature dead-top trees and undesirable species. Remove diseased and deformed trees and an occasional good tree when necessary to release better trees that are over-crowded.

HOW TO THIN

1. After crippled trees are removed, thin according to the tops, leaving just sufficient space around each top so that it will have room in which to develop.
2. Save all sound wood 1.5 inches in diameter and over. Cut this into 4 or 8-foot lengths, and stack in uniform cords or half cords.
3. Cut all small brush low and spread flat on ground.
4. Cut all stumps low, smooth, and sloping.
5. Prune off side limbs on standing trees to a reasonable height. Keep a complete record of your work. Write a story covering details of your work and its value as a farm practice.

RECORD

Work Done

Species: Area in demonstration: acres

Age of trees: yrs. Number of trees left on plot:

Financial Statement

No. cords cut: Value per cord: \$ Total value: \$

Hours required: Cost per hour: \$ Total cost: \$

Return per cord: \$ Total net return: \$

Project to be scored by County Agent on following basis:

| | Possible Points | Points Scored |
|---|--------------------|------------------|
| 1. The Club member's record book showing cost and returns..... | 100 | ..... |
| 2. The Club member's own story of his experience with the project | 100 | ..... |
| 3. Actual work done on the project: | | |
| (a) Completeness and regularity of thinning | 300 | ..... |
| (b) Pruning standing trees ... | 100 | ..... |
| (c) Height and type of stump left | 100 | ..... |
| (d) Completeness of utilization | 100 | ..... |
| (e) Neatness and uniformity of cording | 100 | ..... |
| (f) Distribution of brush | 100 | ..... |
| | 800 | ..... |
| Total score..... | 1000 | ..... |

Date..... Signed:County Agent.

Project IV

FOREST PROTECTION

We can protect our future homes by protecting our woods from fires now. Four-H Club members may use forest protection as a club project by planning and constructing a system of "fire-breaks" to protect ten (10) or more acres of thrifty growing forest. Club members may choose either of the three types of "fire-break" construction or a combination of two or more, according to conditions of his woodland.

TYPES OF CONSTRUCTION

1. **For woodland where the ground cover is mostly grass.** Stake out a straight lane 20 feet wide. Cut out all bushes and scrub trees. Plow furrows along each side of lane or rake narrow strips. Then burn all material between furrows. Trees suitable for future timber should be left.
2. **For woodland where the ground cover is largely pine straw or other leaf litter.** Stake out a straight lane 20 feet wide. Cut all bushes, vines, sprouts, and scrub trees. Cut just enough good trees to allow a wagon or cart road through the center. Rake clean and remove all litter from the entire lane. Litter to be used for stable bedding, or mulch in strawberry fields, potato beds, etc.
3. **For woodland pasture (Coastal Plains only).** Stake out straight lanes 50 feet wide. Clear this space of all trees, bushes, vines, etc. Plow or disk the land. Sow in carpet grass, lespedeza, or a good pasture mixture. Grazing by cattle will maintain this as a permanent "fire-break."

The "fire-break" should extend on all sides of the demonstration area. If desired, cross breaks to divide large areas may be constructed.

TIME

"Fire-breaks" should be constructed during the period October to March. It is best to do this soon after the *leaf fall*.

RECORD

| Work Done | | | |
|---|-----------------------|---------------------------|-----|
| 1. Area in demonstration..... | acres. | | |
| 2. Type of "fire-break"; | 1. Width.....ft. | Length..... | ft. |
| | 2. Width.....ft. | Length..... | ft. |
| | 3. Width.....ft. | Length..... | ft. |
| 3. Total length of all types..... | ft. | | |
| Financial Statement | | | |
| 1. Man hours:..... | Cost per hour:.....c. | Total labor cost: \$..... | |
| 2. Team hours:..... | Cost per hour:.....c. | Total team cost: \$..... | |
| 3. Other expense (such as grass seed, lespedeza, etc.)..... | | \$..... | |
| Total Cost..... | | \$..... | |

MAP

Sketch in the space below a rough map of the area in demonstration, showing: (a) Location and type of "fire-break." (b) Type of trees on different parts of the area (use a circle (o) for hardwoods and star (*) for pines, spruce, cedars.)

Project will be scored by County Agent on following basis:

| | Possible Points | Points Scored |
|---|--------------------|------------------|
| 1. Character and completeness of work done. | 300 | ..... |
| 2. Location and plan of "fire-breaks" in relation to fire danger and type of ground cover | 300 | ..... |
| 3. Map | 150 | ..... |
| 4. Records | 150 | ..... |
| 5. Story | 100 | ..... |
| Total..... | 1000 | ..... |
| Date..... Signed: | County Agent. | |

Story: My Work And How I Did It—Continued

FOREST PLANTING

SAMUEL T. DANA

What do we plant when we plant a tree?
A thousand blessings for you and me—
We plant the lumber to build us a house,
We plant a cover to harbor the grouse;
We plant the fuel to kindle our fire,
When strikes the prices of coal send higher;
We plant for fences the posts and rails,
We plant a shelter to temper the gales.

We plant the pencils to scribble our notes,
We plant the ballots to cast our votes;
We plant the paper in which to read,
The news that o'er wooden poles we speed.
We plant the piles to erect our docks,
We plant the rayon for shirts and socks;
We plant the extract to tan our shoes,
We plant 'most anything you choose!

We plant the barrel, the box, the crate,
In which to ship all sorts of freight;
We plant the cars to carry the grain
The farmers raise on the Western plain;
We plant the sleepers under the track
O'er which we send our products back;
We plant a blanket to hold the soil,
We plant good wages for those who toil.

We plant a forest sponge to check
The menace of the wild flood's wreck;
We plant refreshment, rest and health.
We add our share to the Nation's wealth.
We plant a stately cathedral where
To worship God in the open air;
Beauty, contentment, prosperity,
All these we plant, when we plant a tree.

(Reprinted from *Forest Fires and Other Verse* by John D. Guthrie.)

Fire Prevention

W. H. CURRIE

A tiny camp-fire left aglow—
The kind you thought was out, you know—
May blaze anew a thousand-fold;
Your FIRE'S not out until it's COLD!

“What causes Forest Fires?” you say.
Often the stub you throw away,
Fanned by the idling Summer breeze,
So set your heel upon them, PLEASE.

You like to fish? Of course you do,
And fishing streams are mighty few,
The Forest Fire's the reason why,
For *forests burnt mean streams gone dry.*

You like the hunting in the Fall?
Most fellows do—and if they'd all
PUT OUT THEIR FIRES before they go
The game would have a better show.

GET THE HABIT—Nothing to it—
All the reg'lar fellows do it—
Break your match before you drop it,
FIRE'S our bugbear—help us stop it!

Traveler, please, before you go,
Douse your fire with H₂O.
Pour some more if you're in doubt.
Camp-fires are the best things o-ou-t.

(Reprinted from *Forest Fires and Other Verse* by
John D. Guthrie)

Sources of Information

United States Department of Agriculture, Washington, D. C.
Farmers' Bulletin

- 506 Food of Well-Known Birds
- 755 Common Birds of Southeastern United States in
Relation to Agriculture
- 1117 Forestry and Farm Income
- 1123 Growing and Planting Hardwood Seedlings on the
Farm
- 1177 Care and Improvement of the Farm Woods
- 1256 Slash Pine
- 1453 Growing and Planting Coniferous Trees on the Farm
- 1459 Selling Black Walnut Timber
- 1486 Longleaf Pine Primer
- 1492 Arbor Day
- 1517 Loblolly Pine Primer
- 1567 Propagation of Trees and Shrubs
- 1586 The Southern Pine Beetle
- 1591 Transplanting Trees and Shrubs
- 1628 Growing Black Locust Trees
- 1664 Christmas Trees as a Cash Crop for the Farm
- 1671 Shortleaf Pine
- 1719 Improving the Farm Environment for Wildlife



A woods road provides transportation and serves as a "Fire-Break."

- 1737 Stop Gullies—Save Your Farm
- 1759 Game Management on the Farm
- 1813 Prevention and Control of Gullies

Leaflet

- 29 The Farm Woods—A Savings Bank Paying Interest
- 40 Woods Burning in the South
- 55 Small Trees Wasteful to Cut for Saw Timber
- 84 Planting Black Walnut
- 86 Protect Hardwood Stands from Grazing
- 153 How to Cut Southern Farm Timber for Steady Profit
- 155 Growing Nursery Stock of Southern Pines
- 159 Planting Southern Pines

Miscellaneous Publication

- 162 Forests and What They Mean to Us
- 217 Forest Trees and Forest Regions
- 357 Southern Pines Pay

North Carolina Agricultural Extension Service, Raleigh, N. C.

- 260 Four Steps in The Management Of Farm Woods
 - Aids in Trees Study for 4-H Clubs (Mimeographed)
 - Making Leaf Prints (Mimeographed)
 - Forest Planting (Mimeographed)

OTHER PUBLICATIONS

- Knowing Your Trees**—G. H. Collingwood, American Forestry Association, Washington, D. C.
- Trees of the Southeastern States**—Coker and Totten, University Press, Chapel Hill, N. C.

THE CLUB PLEDGE

I PLEDGE:

My Head to clearer thinking;
My Heart to greater loyalty;
My Hands to larger service; and
My Health to better living for
My Club, my Community, and my Country.

THE CLUB MOTTO:

"To Make the Best Better."