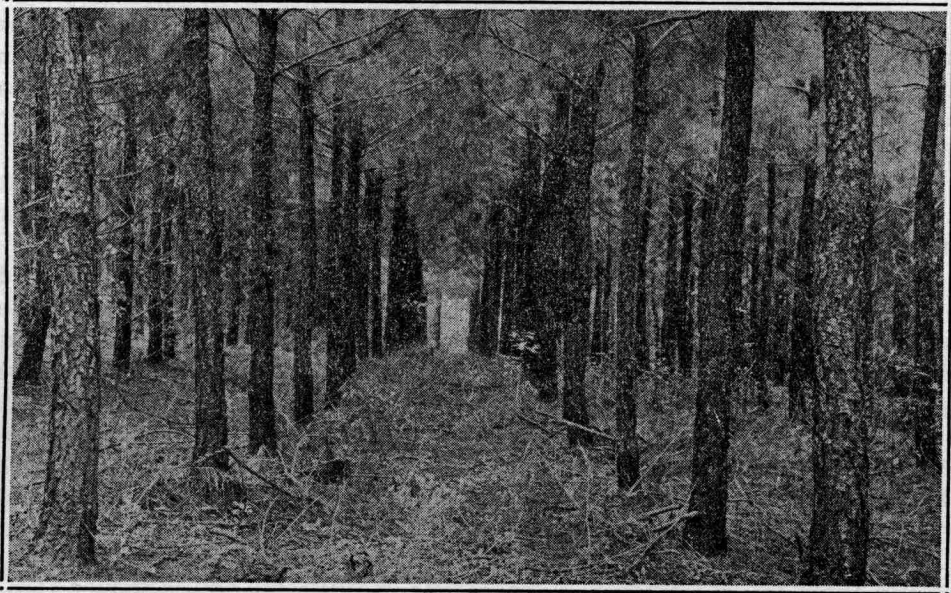


FORESTRY
MANUAL AND RECORD BOOK
 FOR
4-H CLUB MEMBERS



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
 and
 U. S. DEPARTMENT OF AGRICULTURE, CO-OPERATING
 I. O. SCHAUB, Director
 State College Station
 Raleigh

Distributed in Furtherance of the Act of Congress of May 8, and June 30, 1914

FORESTRY
MANUAL AND RECORD BOOK

NORTH CAROLINA'S FOREST

ABUNDANCE—WASTE—FUTURE

The Old North State is blessed with a greater variety of trees than the whole of Europe, and grows more different commercially useful trees than does any other State in the union. Forty-two oaks alone are found within her boundaries, and nine native pines lend their beauty and fragrance to grace her hills and valleys.

Not only does North Carolina boast an abundance of tree species, but here lumber, pulp and cordwood can be grown as fast as in any other state, and more rapidly than in the majority of states.

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, there is now scarcity.

During 1935, in many of the larger tobacco counties in the State, individual farmers bought cord after cord of wood to heat their homes, cook their food, and to cure their tobacco crops. In some instances this wood was hauled as far as fifty miles to the farm. Many of these men, forced to pay their hard-earned money for fuel, still clearly remember when they helped their fathers clear new ground and with the assistance of their neighbors piled the logs high, fired the wood and watched, with mute indifference, hundreds of cords turn to ashes.

Forests are as necessary to the maintenance of the farm 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 placing trees on denuded hillsides, in the many phases of forestry that can be applied to farm woodland to insure a continuous supply of wood products. It is the hope that this Four-H Club Forestry Booklet will help club members to catch the spirit of forestry, as well as to 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.

NORTH CAROLINA STATE COLLEGE OF AGRICULTURE AND MECHANICAL ARTS
U. S. DEPARTMENT OF AGRICULTURE
BUREAU OF FORESTRY
WASHINGTON, D. C.

FORESTRY MANUAL AND RECORD BOOK

FOR

4-H CLUB MEMBERS

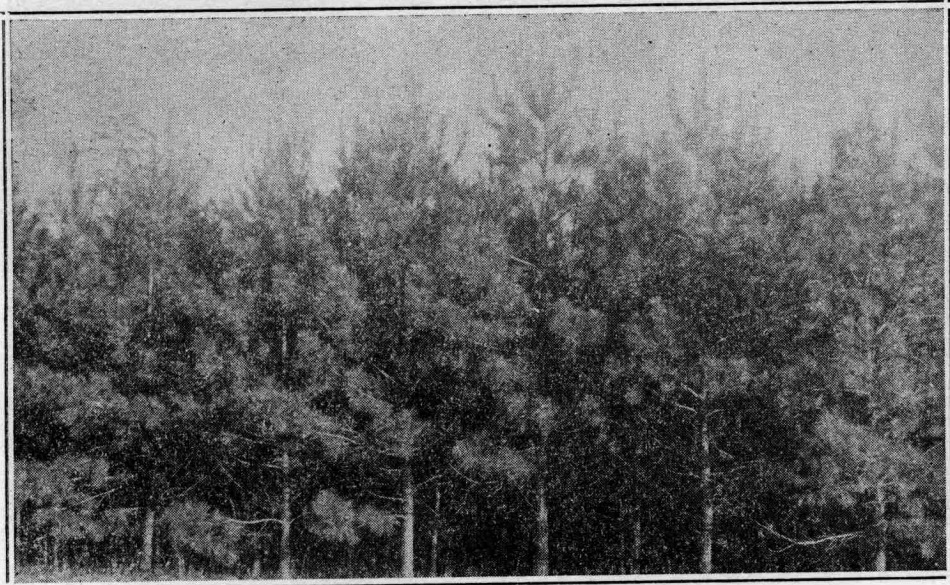
By

R. W. GRAEBER, *Extension Forester*
R. H. PAGE, JR., *Assistant Extension Forester*

PROJECT OUTLINE

OBJECT:

1. To promote among club members a broader knowledge of trees, the uses of wood, and the forest wild life.
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 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:

1. 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



Second growth mixed Hardwoods after a harvest of cull trees.

IV. Forest Protection

1. For woodland where ground cover is mostly grass
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:



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

- 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, $8\frac{1}{2}$ " x 11". Use adhesive tape or gummed paper to fasten 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,

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

RECORD	
1. County in which collection is made: _____	
2. Sources of help or information: _____	
3. Were collections exhibited? Yes or No: _____	
Where? _____	When? _____
Financial Statement	
1. Hours of work: _____ Cost per hour: _____¢ Total labor cost: \$ _____	
2. 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 Score - - - - -		-----
		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 white pine or spruce. Set 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) 100 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 accomodate 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 eroding 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 soy beans 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: - - - \$ _____	@ _____ ¢ per hour _____
Survival	
Number surviving:	
6 months _____	12 months _____ 18 months _____ 24 months _____
Percent 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 overcrowded 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.

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



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

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 overcrowded.

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" 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. Completeness and regularity of thinning - - -	150	-----
2. Trimming standing trees - - - - -	100	-----
3. Height and type of stump left - - - - -	100	-----
4. Completeness of utilization - - - - -	200	-----
5. Neatness and uniformity of cording - - - - -	100	-----
6. Distribution of brush - - - - -	150	-----
7. Record - - - - -	100	-----
8. Story - - - - -	100	-----
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:_____¢. Total labor cost: \$_____
2. Team hours:_____	Cost per hour:_____¢. Total team cost: \$_____
3. Other expense (such as grass seed, lespedeza, etc.): - -	\$_____
Total cost - - - -	
\$_____	

STORY: MY WORK AND HOW I DID IT—Continued

A series of horizontal dashed lines for writing.

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.)



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

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!

Traveller, please, before you go,
Douse your fire with H₂O.
Pour some more if you're in doubt.
Camp-fires are the best things o-u-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

No.	
506	Food of Well Known Birds
630	Birds Useful to the Farmer
1071	Making Woods in South Pay
1117	Forestry and Farm Income
1123	Growing Hardwood Seedlings
1177	Improvement of Farm Woods
1234	Gullies, How to Control
1256	Slash Pine
1453	Growing Coniferous Trees
1459	Selling Black Walnut Timber
1486	Longleaf Pine Primer
1492	Arbor Day
1517	Loblolly Pine Primer
1567	Propogation of Trees and Shrubs
1586	The Southern Pine Beetle
1591	Transplanting Trees and Shrubs
1628	Growing Black Locust Trees
1664	Christmas Trees—a Cash Crop for the Farm
1671	Shortleaf Pine
1680	Farmers in Northern States Grow Timber as Money Crop.
1719	Improving the Farm Environment for Wildlife
1737	Stop Gullies—Save your Farm

Leaflet

No.	
29	The Farm Woods—A Savings Bank Paying Interest
32	Planting Southern Pine
35	Producing Pine Nursery Stock in the South
40	Woods Burning in the South
55	Small Trees Wasteful to Cut for Saw Timber
57	Pulpwood Production in the Northeast
84	Planting Black Walnut
86	Protect Hardwood Stands from Grazing

Miscellaneous Publication

No.	
45	Forestry Clubs for Young People
87	Profit From Farm Woods
217	Forest Trees and Forest Regions

Department Bulletins

No.	
863	Forestry Lessons in Home Woodlands

OTHER PUBLICATIONS**Common Forest Trees of North Carolina—How to Know Them**

N. C. Department of Conservation and Development, Raleigh, N. C.

Trees of the Southeastern States

Coker and Toten, 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."