NORTH CAROLINA AGRICULTURAL EXTENSION SERVICE

ANNUAL REPORT

AGRICULTURAL PRODUCTION
MANAGEMENT AND NATURAL RESOURCE USE PROJECT (III)
Title of Project

Forestry
Section

1967
Annual Year

Name and Title of Worker	Percentage of Time Devoted to Entire Project by Each Worker
W. M. Keller In Charge, Forestry Extension Project Leader	100 %
Extension Forest Management Specialists	%
J. C. Jones, Head	100 %
E. M. Jones	100 %
F. E. Whitfield	100 %
W. M. Stanton	100 %
Ross S. Douglass	100 %
William B. Stuart 1/	100 %
Leonard Hampton 2/	100 %
L. Wayne Haines 3/	100 %
	%
	%
	%
	%
	%
	%
	%
	%
	%
	%
	%
	%
	%

1/ Resigned, effective 8/31/67
2/ On study leave 11/1/67 - 12/31/67
3/ Employed 11/1/67

Signed _____ Date Submitted _____
Project Leader

Signed _____ Date Recommended _____
STate Director of Extension

Signed _____ Date Approved _____
Administrator, Fed. Ext. Service

ANNUAL REPORT

FARM FORESTRY EXTENSION WORK

NORTH CAROLINA

January 1, 1967 - December 31, 1967, Inclusive

Walter M. Keller, In Charge, Extension Forestry
J. C. Jones, Head, Extension Forest Management Section

George Hyatt, Jr., Director

N. C. Agricultural Extension Service
N. C. State of the University of North Carolina
at Raleigh
and
U. S. Department of Agriculture, Cooperating

State College Station
Raleigh, N. C.

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ANNUAL REPORT

FOREST MANAGEMENT SECTION

AGRICULTURAL PRODUCTION, MANAGEMENT AND NATURAL-RESOURCE USE (III)

1967

Walter M. Keller, In Charge, Forestry Extension
J. C. Jones, Head, Forest Management Extension Section

I. Introduction

Changes in technology, market structure, industry expansion, cost and labor have dictated changes in forest management. With these changes has come some redirection in program emphasis. For example, changes in pulpwood harvesting techniques and equipment have brought about change in spacing recommendations for planting seedlings. Escalating cost and labor problems, along with better equipment and available capital, have changed timber harvesting systems. The woodland owner, logger, pulpwood producer and professional worker must be advised and assisted in meeting and adjusting to these changes. The Extension forestry staff must also improve its professional competencies to develop its programs.

Staff members are continuing to take every opportunity to improve their competency through enrollment in formal subject-matter courses, symposiums, seminars, published research findings

and discussions with knowledgeable people in their own and related areas of interest.

Changes in program emphasis have been in the areas of timber harvesting, Christmas-tree cultural practices and fertilization, and upland hardwood production.

Programs have been reviewed, changed and improved to fit the needs of the Extension forestry clientele.

II. Program Accomplishments

A. The Extension forestry staff has conducted training meetings with Extension agents, industrial personnel, held demonstrations and used all methods of mass media communications to instruct and assist people involved in the production and harvesting of timber products and users of forested areas.

This report will deal with the following major objectives:

1. Developing new techniques for, and efficiency in, the harvesting of all forest products and implementing a safety program with the logging industry.
2. The production of quality hardwood through better management practices.
3. Developing outdoor recreational enterprises where the criteria for successful operations can be met.

4. The relationship between soil quality, tree growth, and a sound business approach to forest management.
5. Increasing production of quality Christmas trees and developing Christmas-tree marketing techniques.

Developing new techniques for, and efficiency in, the harvesting of all forest products

The methods of harvesting forest products are going through a revolutionary period, brought on by changes in the labor force, capital investment, wage and hour laws, and harvesting equipment. The problems are many, and the solutions are difficult to implement when there is an inherent resistance to change. Similar harvesting operations may require different solutions to their problems if they are to maximize their profits. Efforts are being made to assist this segment of the wood-producing spectrum.

Assistance has been given the American Pulpwood Association in developing and conducting short courses.

Continued support and cooperation have been given to Albemarle Paper Company in furthering their studies and training programs with company personnel and contractual operations.

Assistance has been given in developing a course of study in selected departments of vocational agriculture in

North Carolina high schools. The purpose of the course is to develop the competence needed at the senior high school level for occupational entry into selected service occupations connected with pulpwood production and for eventual advancement into the occupation of pulpwood producer.

Other programs reported on in the 1966 annual report are being continued and broadened wherever needed.

This phase of the program has been given leadership by Mr. W. B. Stuart.

The production of quality hardwood through better management practices

Work has continued on the hardwood demonstration areas along the Roanoke River. Additional hardwood studies have been started in the mountain area with the establishment of several demonstration sites.

The deer exclosure areas of the Roanoke River basin reported on in the 1966 annual report have been maintained for additional study. Graduate students are collecting data from these areas to be used in advanced-degree studies. The installation of additional deer exclosures has been planned for more intensive result demonstration programs.

As a result of the deer exclosure studies and the cooperation of the State Wildlife Commission, local landowners and hunt-club members, a second year of either-sex deer hunting

was conducted in some areas. In areas where either-sex deer hunts were held in 1966, the deer taken this year were nicer and had larger antlers.

The summer meeting of the Appalachian Section, Society of American Foresters, included a tour of the hardwood demonstration areas along the Roanoke River. Work being done in stand improvement, natural regeneration, and the effect of deer on hardwood reproduction was shown to the 175 members making the trip.

Mr. Bill Griffin, of Pollocksville, in Jones County has been a long-time cooperator with the Agricultural Extension Service. A number of method and result demonstrations have been held on his property. This year, a 30-acre yellow-poplar natural regeneration demonstration was established on his land. To prepare the demonstration, all the merchantable timber was removed and the unmerchantable hardwoods pushed over with a bulldozer at a cost of $12.00 per acre. At the end of the first growing season examination of the area indicated satisfactory stocking of yellow-poplar and other desirable hardwood seedlings. Continued surveillance of the area will be made to determine survival and growth of the new reproduction.

With the cooperation of industry an extensive hardwood

seed collection program was conducted in the Roanoke River basin area. Seed was collected from four different species: green ash, sweet gum, sycamore, and cherry-bark oak. Trees to be used in the seed collection program were carefully selected. Large seed traps were designed and erected for the collection of cherry-bark oak acorns, since they are high on the desirable-food list of deer and other wildlife. Information as to the time of seed fall, percent of viable seed and number of seed damaged by insects was also obtained.

In Mitchell County a young stand of yellow-poplar was thinned, leaving only the final crop trees. Other stand improvement practices will be carried out on this result demonstration area.

This phase of the program was given leadership by Mr. E. M. Jones.

Developing outdoor recreational enterprises where the criteria for successful operations can be met

The quality and variety of North Carolina's outdoor recreation resources are possibly matched only by those in California. Wintertime opportunities range from golfing in pleasant, sunny New Hanover County to skiing down the snow-covered mile-high slopes in Avery County. Summertime activities are tempered by ocean breezes and cool mountain atmosphere. An extensive ocean shore line, numerous mountain

ranges, the sandhills, many lakes and rivers are all attractions to many millions of our recreating public. These areas attract patrons from within and without the state who contribute a large segment of North Carolina's total income. Whether contributing or receiving, Extension's clientele are all part of the state's outdoor recreation phenomenon.

Much of forestry Extension's efforts in outdoor recreation have been user-oriented. Nine television features were presented to better inform the public of the outdoor recreation opportunities in North Carolina. Publications and pamphlets relating to the many public and private recreation areas were offered to the viewers. Responses to these offers were very good.

An appreciation and wise use of our natural areas are also part of outdoor science classes. Extension foresters serve as instructors in many of these educational programs.

Many private landowners have hesitated to enter the private recreation business because of fear of possible liability claims. There are also many who offer recreation opportunities for a fee who are not aware that their liability is greater when their guests pay for this opportunity. Liability claims on private outdoor recreation areas have been negligible in number in North Carolina. However, the

landowner should be aware of his liability obligations to the various classifications of visitors on his property. Extension forestry put out a publication, "Your Guests, Your Liability Risks," to better inform recreation enterprise operators of their liability and how to limit this risk. The state attorney-general's office cooperated in checking the publication for accuracy and validity.

North Carolina's national parks, national seashores and national forests attract visitors to many areas in the state. These public lands provide an increasingly greater number of recreational facilities and opportunities. In many instances, these public recreation areas offer income to many in the private sector. This is already in evidence by the numerous private campgrounds which cluster on the fringe areas of North Carolina's public lands. These enterprises offer goods and services not found on public areas. Extension forestry has made a survey of the more than one hundred private campgrounds in the state to assist in publicizing and to offer assistance where needed.

Because of the wide range of outdoor recreation activities, requests for Extension assistance have been just as varied. Technical assistance and sources of assistance information have been given to golf course developments, turf

problems, real estate development where recreation areas are provided, swimming areas, play areas, riding stables and trails, tree and vegetative establishment and care.

Where there was in-depth competency in certain areas in other Extension departments, requests for assistance were referred to these resource people.

In recent years much interest has been promoted in the income potential to private landowners who enter the outdoor recreation business. In most cases, the interested landowner needed assistance in evaluating his opportunity and risk. Extension forestry provided individual counseling and assistance to landowners in Washington, Martin, Beaufort, New Hanover, Jones, Bladen, Union, Caldwell, Madison, and Avery Counties. Those who chose to investigate further or those who established a recreation enterprise will be given assistance when needed.

Leadership in this phase of the program was taken by Mr. W. M. Stanton.

Soil quality, tree growth and a sound business approach to forest management

Recognizing the important relationship between soil quality and tree growth, the Extension forestry staff has continued its efforts to stimulate landowners to carry out

recommended forest management practices that take into consideration this relationship. During the past decade the industrial landowners began to improve large acreages of their lands and as a result of their activities, along with the educational efforts of the Extension Service, many small landowners became convinced that these practices were worth the investment.

However, many landowners, and some professional agriculture workers and foresters, failed to realize that these investments can exceed the capacity of the soil to pay off the investment in timber growth. Some soils presently devoted to timber production have such a low capacity for tree growth that even average cost for improvement practices can not be economically justified.

Several years ago Extension foresters began to alert landowners and professional workers to the dangers of overlooking soil productive capacity. These activities have been continued. Emphasis has been on improving the skills of professional workers who make forest management recommendations. A total of 62 North Carolina Forest Service personnel doing forest management work with small landowners were given three days' training in four separate groups. The goal was to improve skills in determination of soil capacity and evaluation

of costs of improvement practices as investments balanced against expected returns.

Several television programs included information on forest management practices as investment.

The main emphasis of this phase of the educational program will continue to be on improving the knowledge and skills of professional agricultural workers. Through their contacts with individual timberland owners we expect to influence landowners toward a more businesslike approach to forest management.

Considerable time and effort were spent in assisting Christmas-tree growers with fertilization and weed-control problems. These growers have repeatedly stated that these are perhaps their two most important problems. Fertilization shortens the time required to produce marketable trees. It also greatly increases weed-control problems. Adequate weed control is essential to the production of high-quality trees. Many growers are realizing this more fully now that their first crop of trees is reaching marketable size with far too-high percentages of low-quality trees. Numerous demonstrations and tests of weed, briar, and brush-control chemicals, methods and time of application were established. Tests were also run on several materials for greening up

off-color trees for marketing and for reducing wilting after cutting. There is considerable interest among growers in chemicals for these purposes.

Fertilization tests of past years have pointed toward specific problems. Three new tests were established this year. It is hoped that these will provide at least a few of the answers that are needed. As a result of past tests the recommendations for fertilizing Christmas trees have been changed considerably.

There is an increasing number of requests for help with fertilization problems. Christmas-tree growers are now using fertilizers more.

This department started demonstrating weed-control chemicals about five or six years ago as a new practice. During the first year less than 500 pounds of these chemicals were used by the growers. In 1968, at least twenty tons will be used.

These practices shorten the time required to grow marketable trees and help to improve quality. Extension foresters believe that such practices will mean more profit to the growers.

This phase of the program was given leadership by Mr. R. S. Douglass.

Increasing production of quality Christmas trees and developing Christmas-tree marketing techniques

Interest in growing Christmas trees is increasing rapidly. Many plantations that were established a few years ago now have trees ready for harvesting. Some redirection of program emphasis in Christmas trees has been toward marketing. With the cooperation of the North Carolina Division of Forestry, a buyers' guide was published from information obtained from a questionnaire sent to known growers. Interest in the buyers' guide was excellent.

To strengthen the program of assisting growers in producing premium and high-quality trees, demonstrations in cultural and management techniques were held in Avery, Alleghany, Ashe, Buncombe, Burke, Caldwell, Cherokee, Clay, Graham, Haywood, Jackson, Macon, McDowell, Mitchell, Polk, Swain, Transylvania, Watauga, and Yancey Counties. At these demonstrations, shaping and shearing was the main subject, but other cultural practices necessary to produce high-quality trees were emphasized.

For prospective growers, "A Costs and Returns Guide for Producing Fraser Fir Christmas Trees in North Carolina" was revised and published.

Assistance was given the North Carolina Christmas Tree

Growers' Association in establishing fair exhibits at the Dixie Classic Fair in Winston-Salem and the North Carolina State Fair in Raleigh.

Assistance was also given the Association in providing trees to be displayed in the Governor's Mansion, the legislative building, the administration building, and the Capitol. The Association was assisted in locating a fifty-foot tree to be displayed on top of a downtown office building in Raleigh. Widespread publicity was given the North Carolina Christmas-tree industry by having these high-quality, fresh trees exhibited.

A feature article was published in a farm magazine, "Carolina Grower," as a result of assistance given the editor. In this article the editor encouraged new participation in the Christmas-tree industry, yet urged caution lest the novice try to buy into the business without proper background.

Quality Christmas-tree production, marketing, and safe use in the home were stressed on educational and commercial television, radio, and in newspaper articles.

Christmas-tree variety test plots have been established in eight counties in the Piedmont and Coastal Plains.

The Christmas Tree Growers' Association was assisted

with a two-day meeting at Western Carolina University.

Leadership in this phase of the program was taken by Mr. F. E. Whitfield.

B. Other Activities

A forestry club was organized in Edgecombe County with thirty-five active members. Through the club interest in forest management will be stimulated among the county's woodland owners. One of the club's first goals was to increase the number of acres converted from low- or non-productive woodlands to productive woodlands. A "Show Me Tour" was conducted with forty-five landowners, A. S. C. Committee members, and heavy equipment operators. After the group was shown how understocked and non-merchantable hardwood stands were converted to productive stands, 300 acres were placed under contract to be site-prepared with rolling-chopper equipment. An additional 200 acres were signed for 1968.

Assistance was given the County Agricultural Workers' Council in organizing a forestry club in Watauga County. Staff members presented the first club program. The second meeting was a field day and tour of demonstration areas with the cooperation of the North Carolina Division of Forestry, the U. S. Forest Service, the Tennessee Valley Authority,

Appalachian State University faculty, and the North Carolina Agricultural Extension Service.

Forestry emphasis weeks were held in Wilkes and Polk Counties. Staff members appeared on radio, talked to civic clubs and school classes. Four-H and F. F. A. Clubs erected forestry exhibits.

Members of the staff participated in Science Camps in Rockingham, Randolph, and Wake Counties. These camps are made up of fifth- and sixth-grade students from certain city and county schools.

The thirteenth annual 4-H Forestry Camp, co-sponsored by Southern Bell Telephone and Telegraph Company and the North Carolina State University, Agricultural Extension Service, was held in June. Sixty-nine 4-H Club boys and twelve county agricultural Extension agents attended the camp for a week of forestry training and enjoyment.

A southern pine beetle epidemic subsided in some areas of the state, with increasing intensity in others. New outbreaks were also reported. Agents were given assistance in advising woodland owners on control and preventative measures to take. Bark beetle leaflets are being prepared to help agents with their program of keeping landowners informed of

the dangers of the pest.

Training was given agents in the control of the balsam woolly aphid and the Dutch elm disease. Both of these pests continue to spread in the state.

To improve professional competence, the Southern Forest Insect Work Conference was attended, where useful research information was presented on important phases of insect activity. Also attended was the Southwide Forest Disease Workshop, where research information on tree diseases was presented.

In addition to direct assistance to county Extension personnel in control of insects and diseases, assistance was given to American Telephone and Telegraph Company right-of-way personnel. Contractors clearing right of way through pine stands triggered a bark beetle outbreak that spread over a large area and became difficult to control.

Assistance was given agents with problems caused by a severe ice storm. A glaze storm covered many forested areas of the state, with disastrous results. The Rockingham Extension chairman asked for forestry specialist assistance for a woodland owner who felt he was particularly hard hit. A meeting was held to discuss steps to be taken as a result of the storm damage. About twenty woodland

owners attended the meeting.

Assistance was also given two paper companies with seed orchard insect problems. Particular attention was given the Dioryctria which causes so much trouble.

COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS, N. C. STATE UNIVERSITY AT RALEIGH, 100 COUNTIES AND USDA COOPERATING

COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS STATE OF NORTH CAROLINA

Exhibit A

EXTENSION SERVICE

Farm Forestry Facts

Extension Forestry Department N. C. State, Raleigh, N. C. May, 1967

FISHING $1.00 - HUNTING BY PERMIT ONLY - NO TRESPASSING YOUR GUESTS - YOUR LIABILITY RISK

There have been increased efforts made in the past few years to get landowners to share their property with the recreating public. The federal government under the Cropland Adjustment Program has initiated a subsidy payment to landowners who open their property for public hunting and fishing. There has also been considerable interest shown in the opportunities for landowners to enter the private outdoor recreation business. Regardless of how the landowner welcomes those who enter his property, he should consider the possibility of injury occurring to them.

Ownership of land creates a potential liability. Expressed or implied invitation to use the premises further increases the liability for injuries occasioned by failure to use ordinary care in keeping the premises safe. In general, liability claims have tended to be negligible in number. However, landowners should be aware of the obligations owed to the three categories of visitors on his premises: the invitee, the licensee, and the trespasser.

The Invitee

Usually an invitee is considered to be a person who has paid a fee to enter upon the land. A hunter or fisherman who pays a fee for permission to hunt or fish on the possessor's property is an example of an invitee. Those who place money in an "honor box" for the privilege of using a facility, though not under supervision, are also classed as invitees.

The possessor of the land has a duty to exercise ordinary care to prevent injury to the invitee. He is liable for certain acts of negligence which result in injury to the invitee. The possessor is also responsible for the behavior of the invitee as it relates to other invitees.

The Licensee

The licensee is a person who enters the premises for his own purpose and with the implied or expressed consent of the possessor. The possessor is under no duty to make the premises safe or to warn of dangerous conditions unless he

knows they exist and they are concealed. The licensee assumes the risk of injury from the normal activities when he enters the land.

The Trespasser

A trespasser is a person who comes upon the possessor's property without permission. His action constitutes a trespass.

The possessor generally owes a trespasser no duty to discover, remedy or warn of natural conditions. However, in respect to all trespassers, the possessor may not arrange his premises intentionally so as to cause death or serious bodily injury to a trespasser. The trespasser may be evicted from the premises at the absolute discretion of the possessor of land so long as no more than normal force is used.

The Attractive Nuisance Doctrine

This doctrine applies when there is an attraction and children are induced to come upon the land because of this attraction. Examples of attractive nuisances are swimming pools, beehives, wells, machinery, and recreation facilities. A landowner's duty to a child trespasser involves the duty of care or removal of an attractive nuisance. Where child trespass is foreseeable, it is negligence to leave inviting things accessible to them.

Limiting Liability

North Carolina has enacted "liability reducing" legislation to encourage landowners to permit free public use of their lands. This statute is not applicable if an owner charges an entrance or use fee. It also does not nullify nor limit the doctrine of attractive nuisance, nor does it absolve a person if he owes a duty to keep the premises safe or to warn of danger. This "liability reducing" law was passed in 1963, and thus far has not been tested in the courts.

A landowner may limit the possibility of liability claims by promoting safety and by posting warnings of hazards and unsafe conditions.

He may transfer the liability risk by obtaining adequate liability insurance or incorporating the enterprise. Liability insurance does not eliminate risks but rather shifts them, to the extent of the policy limits, to a professional risk bearer. Incorporation limits recovery for a liability claim to the extent of the value of the corporate assets. There may be some problems involved in incorporating the enterprise, and the advice of an attorney and a business analyst is desirable.

The public should be aware that rights to enter upon private property are a privilege and constructive cooperation will benefit all.

Very truly yours,

County Extension Chairman

Prepared by W. M. Stanton, Extension Forestry Specialist

Published by

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North Carolina State University at Raleigh and the U. S. Department of Agriculture, Cooperating. State College Station, Raleigh, N. C., George Hyatt, Jr., Director. Distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914.

Exhibit B

NORTH CAROLINA CHRISTMAS TREE GROWERS ASSOCIATION

Annual Summer Meeting
August 11 and 12, 1967
Cullowhee, N. C.

In Conjunction with Christmas Tree Growers Associations
of Tennessee, West Virginia, Georgia, South Carolina, and Virginia

Friday, August 11

8:00 - 10:00 A. M.	Registration
10:00 A. M.	Business meeting 1. Committee reports 2. Treasurer's report 3. Board of Directors' meeting
12:00 Noon	Lunch - Cafeteria
1:30 P. M.	Welcome remarks - Dr. Paul Reid
2:00 P. M.	Tour Wolf Creek Nursery operations, conducted by Thomas Beutell, owner and manager Nursery operations Plantation management Cook out

Saturday, August 12

7:00 A. M.	Breakfast - Cafeteria
8:30 A. M.	Chemical Weed Control - Mr. Max Reynolds, Geigy Agricultural Chemicals
9:30 A. M.	Christmas Tree Research - Dr. Evyind Thor, Professor of Forestry, University of Tennessee
10:30 A. M.	Marketing Christmas Trees - Mr. W. F. Cranfill, Southgate Brokerage, Raleigh

(Over)

11:30 A. M.	Nursery Stock Prospects - Mr. D. L. Brenneman, Nursery Superintendent, Edwards State Forest Nursery
12:00 Noon	Lunch - Cafeteria
2:00 P. M.	Tour Lem Woods plantation White pine and Fraser fir Weed control demonstration Shearing demonstration Site preparation

Exhibit C

COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS, N. C. STATE UNIVERSITY AT RALEIGH. 100 COUNTIES AND USDA COOPERATING

COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS STATE OF NORTH CAROLINA

EXTENSION SERVICE

Farm Forestry Facts

Extension Forestry Department N. C. State, Raleigh, N. C. Revised January, 1968

A COSTS AND RETURNS GUIDE FOR PRODUCING FRASER FIR CHRISTMAS TREES IN NORTH CAROLINA

The attached budget estimates for producing Fraser fir Christmas trees in North Carolina have been prepared as a guide for producers who are contemplating a planting of Christmas trees. These figures were based upon grower reports, and it is suggested that adjustments be made to suit the individual farm situation being considered. Production practices, yields and prices vary widely in western North Carolina where Fraser firs can be successfully grown.

The budget is based on a one-acre planting over a growing period of seven years. Trees are planted five feet apart each way in a cross-check pattern to allow mowing in each row at right angles. Fertilizer is applied each year. Ammonium nitrate is applied in late summer before harvest to improve color of the foliage. Although some growers are not using weed-or insect-control chemicals, these are recommended.

It should be noted that some growers may need to spend up to $200 per acre for land clearing prior to planting. Growers with reasonably level land may also wish to plow or disc land before planting seedlings. Construction and maintenance of all-weather access roads and fire lanes may be expensive in some situations.

Some growers are able to market trees with balled-and-bagged roots at premium prices. The opportunity to sell balled-and-bagged trees for replanting at premium prices may be reduced as production exceeds the demand.

(over)

Christmas Trees: Estimated revenue, variable expenses, fixed expenses and net revenue per acre; producing Fraser fir trees over a seven-year period

Item	Description	Unit	Quantity	Price	Amount	Per tree
Total revenue	6-foot trees, 80% of seedlings planted are marketable[1]	ea.	1394	$ 2.75	$3,833.50	
Variable expenses						
Planting stock	4-5 yrs. old, 8-12" high					
	3-2 nursery stock[2]	thou.	1.742	$100.00	$ 174.20	.1110
Fertilizer	10-10-10[3], 1-7 yrs.	cwt.	44	3.12	137.28	.0875
Ammonium nitrate[4]		cwt.	4.5	3.90	17.55	.0112
Weed control	4-G Simazine	lb.	200	.35	70.00	.0444
Insect control	20% Lindane	gal.	1/4	9.50	2.37	.0015
	Kelthane, 18.5%	gal.	1/4	8.50	2.12	.0014
Tractor operating cost		hr.	169	.20	33.80	.0216
Christmas Tree Ass'n dues[5]					2.00	.0013
Roads and fire lanes					45.00	.0287
Total variable expenses					$ 484.25	.3088
Net revenue over variable expenses					$3,349.25	
Fixed expenses						
Equipment depreciation, insurance, taxes, repair, interest[6]					$ 114.66	.0731
Return to land, labor and management					$3,234.59	
Charge for land ($125 x 6% x 7 years)[7]					$ 52.50	.0335
Total fixed expenses					$ 167.16	
Return to labor and management					$3,182.09	
Charge for labor (487 hours at $1.30)					$ 633.10	.4038
Total cost					$1,284.51	
Return to management					$2,548.99	1.6256
Return to management per year					$ 364.14	

1/ Some non-marketable trees may be sold as boughs.
2/ Some growers may use collected wild stock.
3/ Mixtures containing sulfate of potash are advisable if obtainable.
4/ Applied late summer before harvest.
5/ Prorated over five acres.
6/ Assumes initial cost of $546.00 for garden tractor with mower, 2 hand sprayers, large knife and hand pruner; all prorated over five acres.
7/ Around $100. additional per acre may be required for clearing brush and stumps.

Christmas Trees: Total labor and power inputs per acre; producing Fraser fir trees over a seven-year growing period

Month	Type of operation	Equipment used	Labor Total hours	Power hours
March - April	Disc and harrow		1	1
	Planting		25	
	Apply weed control	Hand shaker	7	
	Spray insect control	Hand sprayer	14	
	Distribute fertilizer		20	
May - June	Mowing	Garden tractor and mower	56	56
July - August	Mowing	Garden tractor and mower	56	56
	Distribute nitrogen		4	
September - October	Mowing	Garden tractor and mower	56	56
November - December	Pruning	Knife ans shears	200	
	Cut and haul		46	
	Market		2	
Total hours			487	169

Very truly yours,

County Extension Chairman

Prepared by:
Fred E. Whitfield, Extension Forestry Specialist, and
D. G. Harwood, Jr., Extension Economist, Farm Management

Published by
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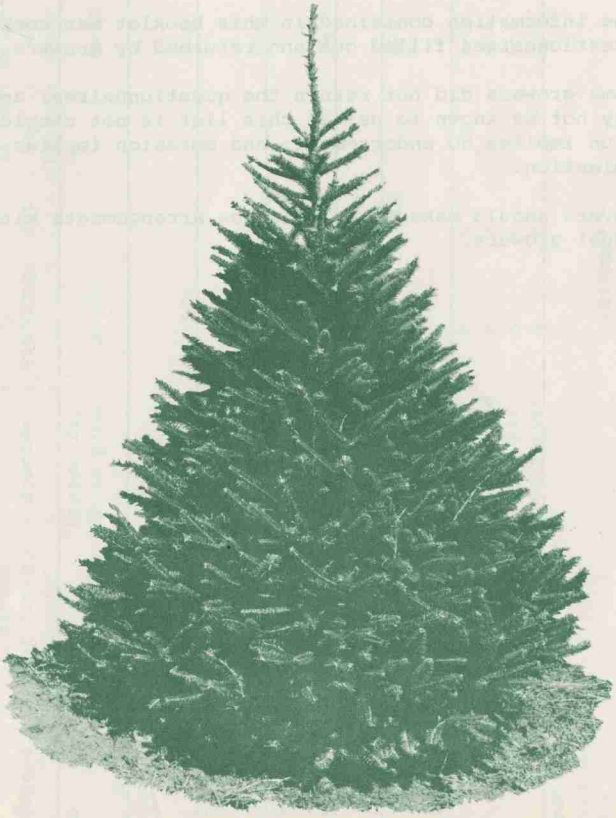
North Carolina State University at Raleigh and the U. S. Department of Agriculture, Cooperating. State College Station, Raleigh, N. C., George Hyatt, Jr., Director. Distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914.

Exhibit D

Buyers' Guide For North Carolina Christmas Trees

1967



The North Carolina Agricultural Extension Service
and
the North Carolina Department of Conservation
and Development

Division of Forestry

The information contained in this booklet was compiled from questionnaires filled out and returned by growers.

Some growers did not return the questionnaires, and some may not be known to us; so this list is not complete. Inclusion implies no endorsement, and omission implies no discrimination.

Buyers should make detailed sales arrangements with individual growers.

CHRISTMAS TREES AVAILABLE FOR SALE, 1967

Name and address	Location of trees (County)	Species	No. of trees to be sold: Standing	Cut	Balled and bagged	Height of trees	Number sheared and number of times sheared		Number unsheared
A. T. Davison		Fraser fir							
Box 74	Alleghany	White pine	2,000			5-10	2,000	4 - 6	
Hillsborough, N. C.	Ashe								
Claude Edwards									
Route 4									
Sparta, N. C.	Alleghany	White pine	500			4-8	500	4 times	
Fraser Tree Co.									
424 Lawndale Drive									
Winston-Salem, N. C.	Alleghany	White pine	300			6-8	300	4 times	
Emory L. Wilson									
111 Keeling, W.									
Greensboro, N. C.	Alleghany	White pine	10,000			2½	5,000	1 time	5,000
F. L. Barker									
West Jefferson, N. C.	Ashe	White pine							
J. D. Boone		White pine		2,000		6-9	2,000	7 times	
Box 24		White pine							
West Jefferson, N. C.	Ashe	Fraser fir							
Fred W. Colvard		White pine	x	x	x	4-8	30,000	5 times	
Jefferson, N. C.	Ashe	Scotch pine	x	x		4-6	5,000	4 times	
		Fraser fir	x	x		4-6	4,000	3 times	
		Blue spruce	x	x		3-5			1,000
Sidney B. Gambill									
747 Union Trust Bldg.									
P. O. Box 2009			(Either)						
Pittsburgh, Pa.	Ashe	Scotch pine	25,000			4-6	25,000	3 times	

Name and address	Location of trees (County)	Species	No. of trees to be sold: Standing	Cut	Balled and bagged	Height of trees	Number sheared and number of times sheared	Number unsheared
J. T. McLaurin and		White pine	1,500	800	200	6-7	1,000 5 times	500
J. A. Starling		White pine	13,000			3-4	9,000 1 time	400
Box 1		Fraser fir	100		100	4-5	100 1 time	
West Jefferson, N. C.	Ashe							
Mrs. Herbert Moretz								
Todd, N. C.	Ashe	White pine	6,000			4-7	5,900 5 times	100
Dale M. Shepherd								
West Jefferson, N. C.	Ashe	White pine	8,000			2-7	8,000 2 - 5	
William Sonner and Cleon Harrell Harrelson Hall N. C. S. U.								
Raleigh, N. C.	Ashe	White pine	1,000			4-7	1,000 2 - 4	1,200
Walter A. Worth		White pine	x	x	x	5½-7	5,000 4 times	
Jefferson, N. C.	Ashe	Scotch pine	x	x		5-6½	500 4 times	
		Austrian pine	x	x		5-6½	300 4 times	
		Blue spruce	x	x	x	4½-5½		200
J. W. Buchanan		Fraser fir	50,000	2,000	2,000	4-12	10,000 2 times	40,000
Minneapolis, N. C.	Avery	White pine	5,000	2,000	1,000	4-12	8,000 6 times	
		Norway spruce	1,000			4-5	1,000 1 time	
Grandview Nursery								
Pineola, N. C.	Avery	Fraser fir	50,000	300 +	400 +	2-8	50,000	
Hawshaw Gardens, Inc.		White pine	13,000			4-7	13,000 4 times	
Box 581		Scotch pine	1,500			4-6	1,500 4 times	
Boone, N. C.	Avery	Fraser fir	3,000			3-5	3,000 4 times	
J. Myron Houston								
Route 2		Douglas fir	75		75	4-5		75
Spruce Pine, N. C.	Avery	Norway spruce	75		75	4-5		75

Name and address	Location of trees (County)	Species	No. of trees to be sold: Standing	Cut	Balled and bagged	Height of trees	Number sheared and number of times sheared	Number unsheared
S. W. Vance		Fraser fir	3,000			5-10		
Pineola, N. C.	Avery	White pine	1,000			4-6	1,000 4 times	
Alex Wiseman		Norway spruce	5,000			3-7	5,000 sheared	
Route 2		Concolor fir	in			3-6	and unsheared	
Spruce Pine, N. C.	Avery	Balsam	all			3-7		
		Colorado blue spruce				2-8		
Wiseman's Nursery		White pine	2,500	200	500	4-8	2,500 3 - 5	
Route 2, Box 58		Fraser fir		800	200	4-6	1,000 4 times	
Newland, N. C.	Avery	White spruce			200	3-5	200 3 times	
		Blue spruce						
Charles F. Speers		White pine				?-10	Every year	
108 Lakewood Drive		Scotch pine				?-10	Every year	
Asheville, N. C.	Buncombe	Fraser fir				?-10	Every year	
		Norway spruce				?-10	Every year	
John Heneveld		Norway spruce	2,000			2-4		2,000
Route 1		Colorado blue						
Hayesville, N. C.	Cherokee	spruce	2,000			2-4		2,000
		White pine	2,000			2-4		2,000
George Bidstroup		White pine	200	500	200	7-9	1,000 7 times	
Brasstown, N. C.	Clay	White pine	2,000			4-5	2,000 2 times	
		Norway spruce	1,000			4-5		
Pat Hoyle								
Route 2, Box 5								
Hayesville, N. C.	Clay	White pine	600	200	200	6	1,000 3 times	
R. L. Gifford		White pine	3,000			4-6	3,000 3 times	
Alpine Farm		Scotch pine	1,000			4-5	1,000 2 times	
Hiawassee, Ga.	Clay	Norway spruce	400			2-3	400 1 time	
J. R. Neller								
Route 3		White pine	400			3-4	400 3 times	
Hayesville, N. C.	Clay	White pine	100			8-12		100

Name and address	Location of trees (County)	Species	No. of trees to be sold: Standing	Cut	Balled and bagged	Height of trees	Number sheared and number of times sheared	Number unsheared
Fred G. Smith		White pine	500			5	500 4 times	
Brasstown, N. C.	Clay	Norway spruce	500		500	4-5	500 8 times	
Russell Beutell		White pine		10,000		5-12	10,000 3 - 7	
Tuckasegee, N. C.	Jackson	Fraser fir		3,000		5-25	2,000 3 - 5	1,000
Thomas C. Beutell		White pine		15,000		5-12	15,000 3 - 6	
Box 2		Fraser fir		1,500		6-12	1,500 2 - 4	
Tuckasegee, N. C.	Jackson	Concolor fir		300		5-9	300 3 - 5	
		Blue spruce		100		5-9	100 1 - 2	
J. R. Buchanan								
Box 875								
Sylva, N. C.	Jackson	White pine	500			6-8		500
J. L. Stewart		Fraser fir		125		5-7	125 1 time	
Cashiers, N. C.	Jackson	White pine		125		4-6	125 1 time	
A. C. Barefoot								
3401 Hampton Road	Macon							
Raleigh, N. C.	Harnett	Red cedar	50			5-8		50
Charles S. Slagle								
Route 1	Macon							
Franklin, N. C.	Clay	White pine	5,000			5	5,000 3 times	
Robert Glass		White pine	500			5-6	500	
201 Berry St.		White pine	1,000			4-5		
Spruce Pine, N. C.	Mitchell	White pine	300			3-4		
		Fraser fir	400			3-5		
L. B. Gibson		Norway spruce				4-5		
Saluda, N. C.	Polk	Scotch pine				3-4		
R. R. Johnson, Jr.								
Bryson City, N. C.	Swain	White pine	4,000			3-6	2,000 3 times	2,000
Herbert Aldridge		White pine	1,000		600	4-8	1,600 4 - 6	
Route 1		Fraser fir	200		600	4-6½	800 4 times	
Banner Elk, N. C.	Watauga	Scotch pine	300		200	4-5½	500 4 times	
		Douglas fir) Norway spruce)			400	2-3½	400 2 times	

Name and address	Location of trees (County)	Species	No. of trees to be sold: Standing	Cut	Balled and bagged	Height of trees	Number sheared and number of times sheared	Number unsheared
R. G. Farthing		White pine	300			5-6	300 3 times	
Vilas, N. C.	Watauga	Fraser fir	500			4-5	500 2 times	
C. H. German								
Route 1, Box 8								
Boomer, N. C.	Wilkes	Scotch pine	2,200			5	2,200 1 time	
Dr. D. L. Pressley								
1109 Davie Ave.		Arizona						
Statesville, N. C.	Wilkes	cypress	8,000			3-8		
E. L. Briggs								
P. O. Box 801		White pine				4-6	150,000 3 times	5,000
Burnsville, N. C.	Yancey	Scotch pine				4-7	4,500 3 times	4,500
Tull Mace								
Route 5								
Burnsville, N. C.	Yancey	Fraser fir	15,000			2½-8		15,000
Dick McIntosh								
Box 126		Scotch pine	300			3-4	300 2 times	
Burnsville, N. C.	Yancey	Fraser fir	100			3-4		100
Bert Sutton		White pine	500			6-7	500 4 times	
Burnsville, N. C.	Yancey	White pine	3,000			5-6	3,000 4 times	
W. M. Woodruff's								
Son, Inc.		White pine	70,000					
Lowgap, N. C.	Yancey	Balsam	30,000					
Harry Koontz								
Jefferson, N. C.	Ashe	White pine	1,000				1,000 3 times	
Dr. C. E. Miller								
West Jefferson, N. C.	Ashe	White pine	1,000				1,000 3 times	