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An analysis of policies and practices in nonindustrial private forestry: a review of educational and technical assistance in North Carolina

Rudolph Wilson
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ABSTRACT

POLITICAL SCIENCE

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M.A. State University of New York at Binghamton, 1978


Advisor: Professor William Boone

Dissertation date: May 1986

This study emanates from the view that educational and technical assistance programs are key variables in woodlot owners', especially farmers', propensity to engage in systematic forest management practices. The dissertation findings indicate that, based upon the medium and quality of communication, the distribution of educational and technical assistance by forestry-related agencies have systematically benefitted large-scale landowners over small-scale and minority landowners. Thus, a structure of inequality exists in forestry-related services which tends to perpetuate a system of discrimination based upon the size of landownership and the race of the landowner.

"Economies of scale" debates play a great role in determining which class of forestland owners will be targeted for educational and technical assistance. The policy issue is whether small-scale woodlots are inefficient and large-scale woodlots are efficient based upon arguments of "economies of scale." The policy consequence of these issues
will largely determine who will control U.S. nonindustrial private forestry as well as much of U.S. agricultural production.

Data were based upon sixty-five face-to-face interviews with woodlot owners who are farmers and fifteen face-to-face interviews with nonfarmers (professionals in agricultural and forestry-related fields). These data, collected during the summer of 1985 in seven selected counties, represent districts where most of Southern Pine forestry production is practiced in the state of North Carolina. Research findings suggest that small-scale woodlot owners/farmers are especially in need of more comprehensive information on systematic forest management and that they believe artificial regeneration provides advantages over natural regeneration regardless of the scale of the farm. Minority farmers largely believed that, although less intensively than in the past, they are continually discriminated against in the provisions of both educational and financial resources to better manage their woodlots. All farmers, regardless of scale of woodlots and racial makeup, prefer a more innovative and comprehensive educational and technical assistance delivery program. They believed that agriculture extension and state forestry are the two primary agencies that should provide more innovative programs but are unlikely to provide such programs in the near future.
AN ANALYSIS OF POLICIES AND PRACTICES IN NONINDUSTRIAL PRIVATE FORESTRY: A REVIEW OF EDUCATIONAL AND TECHNICAL ASSISTANCE PROGRAMS IN NORTH CAROLINA

A DISSERTATION
SUBMITTED TO THE FACULTY OF ATLANTA UNIVERSITY
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

BY
RUDOLPH WILSON
DEPARTMENT OF POLITICAL SCIENCE

ATLANTA, GEORGIA
May 1986
ACKNOWLEDGEMENTS

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I am most happy to acknowledge the kind and continuous guidance of my advisors, especially my chairmen, Dr. William Boone and Dr. Makidi Ku-Ntima, who assisted me in the early conceptualization of this study.

Finally, I would like to thank my family and close friends without whose patience, support and resourcefulness this project would not have been completed.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>LIST OF TABLES</th>
<th>iii</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIST OF CHARTS</td>
<td>v</td>
</tr>
</tbody>
</table>

Chapter

I. INTRODUCTION ............................................ 1
   Statement of the Problem ................................ 1
   Hypotheses .................................................. 4
   Definitions and Operational Indicators .................. 5
   Research Method and Strategy ............................ 9
   Data Collection ............................................ 11
   Limitations of the Study .................................. 18
   Significance of the Study ................................ 19

II. REVIEW OF THE LITERATURE .............................. 21
   The Role of Agriculture ................................... 27
   NIPF and Public Policy .................................... 32
   Extension Service and NIPF Management ................. 38

III. AN HISTORICAL OVERVIEW OF NIPF MANAGEMENT ......... 46
   Economies of Scale ....................................... 54
   Summary ..................................................... 67

IV. NORTH CAROLINA'S NONINDUSTRIAL PRIVATE FORESTS .... 69
   Factors that Influence Forest Management Among
     North Carolina's NIPF ..................................... 75
     State and Federal Incentive Programs .................. 79
     Federal Forestry Incentive Program (FIP) ............... 83
     The Agricultural Extension Service .................... 85

V. DATA INTERPRETATION AND ANALYSIS ...................... 100
   Educational Level ........................................ 103
   Age ......................................................... 103
   Chi Square ................................................. 104
   Characteristics of Landowners by Size of Ownership ... 105
   Sources of Educational Information on NIPF Management. 116
   How Well Has Extension (CES) Provided This
     Information? ............................................... 117
<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awareness of Cost-Share Incentives Programs</td>
<td>123</td>
</tr>
<tr>
<td>Knowledge of Timber Value and Prices</td>
<td>127</td>
</tr>
<tr>
<td>Effectiveness and Accountability of Educational Programs</td>
<td>128</td>
</tr>
<tr>
<td>Alternative Approaches to Education Programs</td>
<td>132</td>
</tr>
<tr>
<td>Community Forestry Projects and Community Colleges</td>
<td>133</td>
</tr>
<tr>
<td>NIPF Owners' Preference by Race.</td>
<td>135</td>
</tr>
<tr>
<td>Black and White Perceptions of Information Mediums</td>
<td>138</td>
</tr>
<tr>
<td>Black Views on Accountability in Educational Programming</td>
<td>143</td>
</tr>
<tr>
<td>VI. CONCLUSIONS AND RECOMMENDATIONS</td>
<td>149</td>
</tr>
<tr>
<td>Primary Hypothesis</td>
<td>150</td>
</tr>
<tr>
<td>Second Hypothesis</td>
<td>152</td>
</tr>
<tr>
<td>Third Hypothesis</td>
<td>153</td>
</tr>
<tr>
<td>Summary of Policy Issues</td>
<td>158</td>
</tr>
<tr>
<td>Recommendations</td>
<td>159</td>
</tr>
<tr>
<td>APPENDICES</td>
<td>162</td>
</tr>
<tr>
<td>BIBLIOGRAPHY</td>
<td>185</td>
</tr>
<tr>
<td>Table</td>
<td>Page</td>
</tr>
<tr>
<td>-------</td>
<td>------</td>
</tr>
<tr>
<td>1. County by incomes under $20,000. Number of farms and number of landowners sampled</td>
<td>12</td>
</tr>
<tr>
<td>2. Area of commercial forestland, by county and stand size class, North Carolina, 1984</td>
<td>13</td>
</tr>
<tr>
<td>3. Number of individuals scheduled to be sampled by landownership class and race for Models A and B</td>
<td>15</td>
</tr>
<tr>
<td>4. Area of commercial forestland, by forest type and ownership class, North Carolina, 1984</td>
<td>71</td>
</tr>
<tr>
<td>5. Area of commercial forestland regenerated annually, by type of regeneration and broad management class, North Carolina, 1974 to 1984</td>
<td>72</td>
</tr>
<tr>
<td>6. Area of commercial forestland, by treatment opportunity and ownership class, North Carolina, 1984</td>
<td>73</td>
</tr>
<tr>
<td>7. Top ten counties by amount of cost-sharing funds received from the N.C. Forest Development Program (July 1978-January 1983)</td>
<td>81</td>
</tr>
<tr>
<td>8. Top ten softwood-producing counties in North Carolina and amount of assistance received from N.C. Forest Development Program</td>
<td>82</td>
</tr>
<tr>
<td>9. Race by size of landowner and by size of forest acres of landowners</td>
<td>102</td>
</tr>
<tr>
<td>10. Percentage of landowners who were aware of tax incentives available to owners by land ownership class (variable 7) and by forest acres (variable 8)</td>
<td>111</td>
</tr>
<tr>
<td>11. Percentage of landowners by ownership class (variable 7) and by forest acres (variable 8) who have harvested timber in the past ten years</td>
<td>112</td>
</tr>
<tr>
<td>12. Percentage of landowners by ownership class (variable 7) and by forest acre class (variable 8) who had received information about forest management through the following communication mediums</td>
<td>121</td>
</tr>
<tr>
<td>Table</td>
<td>Page</td>
</tr>
<tr>
<td>---------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>13. Percentage of landowners by land ownership class (variable 7) and by forest acre class (variable 8) who had received information on forest management by the traditional mediums (variable 31)</td>
<td>124</td>
</tr>
<tr>
<td>14. Percentage of landowners who say traditional mediums need to provide information on forest management by land ownership class (variable 7) and by forest acres of landowner (variable 8)</td>
<td>131</td>
</tr>
<tr>
<td>15. Percentage of landowners who had received information about forest management by race</td>
<td>139</td>
</tr>
<tr>
<td>16. Percentage of landowners who had received additional informational about forest management by race</td>
<td>141</td>
</tr>
<tr>
<td>17. Percentage of landowners who believed traditional mediums of information about forest management was effective by race</td>
<td>145</td>
</tr>
<tr>
<td>A. Trend projections of the number of farms, by size of farm</td>
<td>163</td>
</tr>
<tr>
<td>B. Trend projections of the number of farms, by sales class</td>
<td>164</td>
</tr>
<tr>
<td>C. Cumulative summary of the Forestry Incentives Program from 1975 through 1983</td>
<td>165</td>
</tr>
</tbody>
</table>
### LIST OF CHARTS

<table>
<thead>
<tr>
<th>Chart</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Change in the number of farms in North Carolina between 1978 and 1982</td>
<td>52</td>
</tr>
<tr>
<td>2. Alternative short-run average cost curves (A), derivation of a long-run average cost curve (B), an L-shaped average cost curve (C)</td>
<td>55</td>
</tr>
<tr>
<td>3. Schematic presentation of variables involved in forest management</td>
<td>93</td>
</tr>
<tr>
<td>4. Flow diagram of the growth and distribution of farm income at the community level</td>
<td>97</td>
</tr>
</tbody>
</table>
CHAPTER I

INTRODUCTION

The purpose of this research study is twofold: (1) to gain a more accurate description of forest management practices among farmers who own forestland; and (2) to examine the effectiveness of programs, as viewed by the farm-woodlot owner, that are responsible for providing educational and other types of technical assistance to improve management practices on these woodlots. The study analyzes farmers' views of the effectiveness of traditional mediums of communication with farmers established by agriculture extension, state forestry, the Agriculture Stabilization and Conservation Service (ASCS) and Soil Conservation Service (SCS)--agencies that invariably affect how a landowner may choose to manage his or her woodlot area. It is this researcher's hope that this study will make an additional link in a chain of knowledge that focuses on the problems of managing the nation's natural resources with a sense of equity toward all individuals who are directly involved in this process.

Statement of the Problem

Although all Nonindustrial Private Forestland (NIPF) owners are not farmers or individuals living on agricultural lands, farmers do constitute a large percentage of the owners of NIPFs. According to a recent study, about 70 percent of forestland harvested in the South was owned by individuals having agricultural lands. In addition, 42 percent
of these acres were held by individuals living on a farm and 15 percent of these acres were owned by individuals who said farming was their primary source of income.\(^1\) The majority of NIPFs are therefore structurally tied into the American farming system. Any analysis of these NIPFs, be it from a policy or economic perspective, must be viewed within the context of U.S. agricultural structure and the rural political economy that reflects that structure.

Most of these Southern Nonindustrial Private Forestlands are not producing high-quality, marketable timber to their fullest potential and reflect a pattern of neglect and abuse of the nation's natural resource base. Many forest policy analysts have suggested that the problem of regenerating large acreage of NIPFs, especially those recently harvested, are largely associated with the high cost of site preparation and planting high-volume, high-quality trees mostly of Southern Pine. Recently, there has been a great deal of research concentrating on the need to adjust the technology used in reforestation to meet the need of the average NIPF owner. Despite these research efforts, the cost of regeneration still remains relatively high. As a consequence of these high costs, the federal government and many state governments have instituted a number of incentive programs to induce more landowners to engage in reforestation practices and systematic forest management in general. These programs have usually provided tax relief and cost-sharing

incentives to individuals and corporations to reforest recently cut forestlands.

However, some forest policy analysts have suggested that the problem of reforestation and forest management are more extensive than matters of cost. These analysts suggest that most NIPF owners, and especially farmers, know very little about timber production and the treatment of their woodlots as a substantive component of their agricultural enterprise. These analysts suggest that the average NIPF owner is basically ignorant of all aspects of forestry and this ignorance is reflecting a bias in USDA educational programs that have favored food crop and cotton production to the exclusion of forestland production.

This dissertation assumes that the latter view has been the prevailing case in most of southern agriculture. In addition, the dissertation researcher also believes that most of the research on timber production in the South has been oriented toward large-scale forestry development that are associated with industrial forestry and large-scale nonindustrial private forests. Therefore, much of the neglect and abuse in NIPF is based upon the lack of educational and technical assistance to smaller scale NIPF woodlots. Minority NIPF woodlot owners have been especially victimized by this system of neglect and abuse. In order to effectively combat the mismanagement of NIPF, more research is needed to determine the type of knowledge and the extent of its availability to forestland owners. Research needs to focus more on problems in U.S. agricultural policies associated with providing equity in the allocation of resources based upon the income level and the race of the landowner.
These are, of course, factors that will ultimately affect land tenure and the character of the political economy of the rural sector.

**Hypotheses**

NIPF research efforts have not adequately informed service agencies as well as landowners as to what kind of educational programs are needed in order that landowners might take full advantage of existing incentive and technical assistance programs currently available. Nor has NIPF research adequately served as a guide in understanding how future policies may be shaped to meet the management needs of the majority of NIPF woodlot owners. This dissertation study will specifically address the question of what has been the consequence in NIPF management of current educational and investment (tax and cost share incentives) programs. It is believed that political power at the local level has greatly contributed to the form and extensiveness to which educational and investment incentive programs have reached NIPF landowners. The size of the farm and/or woodlot and the race of the landowner will be used as the most salient indicators of wealth and political power at the local level—consequently determining the formation and direction of U.S. NIPF policies. This is further elaborated upon in Chapter 4 under a discussion of the Gotsch Model.

The researcher suggests the following hypotheses, the first as major and the second and third as minor hypotheses.

1. Traditional educational programs sponsored by agricultural extension agencies, state forest agencies and ASCS offices (as expert) have been insufficient in providing farmers, especially small size and minority farmers, with information and technical assistance related to public incentive programs and other measures that would improve their forest management practices (Model A).
2. Large size farmers have benefitted disproportionately from traditional educational programs; thus, they have taken greater advantage of technical assistance and public incentive programs to improve upon their forest management practices.

3. Conversely, innovative educational programs which include more participatory practices by both extension and other public agencies as well as the farmer and the farming community would be more receptive by all farmers, especially minority and small size farmers. Thus, farmers will demonstrate a willingness to systematically engage in forest management practices (Model B).

Independent Variables: Structure of extension practices, size of farm and race of farmer

Dependent Variables: Propensity to increase awareness and the adoption of systematic forest management practices

Definitions and Operational Indicators

1. Systematic forest management practices may include forestry activities such as:
   a. harvesting trees
   b. site preparations for planning artificial regeneration of pines
   c. site preparation for natural regeneration of pines
   d. direct seeding
   e. clearing and release
   f. conversion
   g. thinning

2. Small size farmer—a farm operator or owner who owns or manages no more than 250 acres.

3. Small size woodlot owner—individual (farmer) who owns less than 100 acres of forestland.

1These activities are standard elements of forest management practices. See George F. Dutrow and H. Fred Kaiser, "Economic Opportunities for Investments in Forest Management in the Southern United States," Southern Journal of Applied Forestry 8 (May 1984), 77-78.
4. Large size farmer--owner or operator who manages more than 250 acres.

5. Large size woodlot owner--an owner of 100 acres or more of forestland.

6. Public incentive programs are those federal and state programs that provide cost sharing for forest management in addition to programs that provide tax relief for participating in forest management practices. In North Carolina these programs include:

(1) The North Carolina Forest Development Program (FDP), administered by the North Carolina Division of Forestry;
(2) The Forestry Incentive Program (FIP), federally funded and available through the county Agricultural Stabilization and Conservation Program (ASCS) and
(3) The Agricultural Conservation Program (ACP), which is federally funded and administered by the ASCS office in each county.¹

7. Tax Relief Programs include: (1) Reforestation Tax Credit and Amortization deduction, a 10 percent investment tax credit against up to $10,000 of qualifying reforestation expenses annually; (2) the exclusion of cost-sharing payments from income; (3) capital gains timber owned for more than twelve months and when sold allows 60 percent of the gain to be excluded from income, and North Carolina does not recognize long-term income capital gains.

and (4) qualifying North Carolina forest landowners can receive, upon approval, property tax relief for management timberland.\(^1\)

8. Public educational programs: programs sponsored by agricultural extension, the N.C. Division of Forestry, local ASCS committees and other agencies who provide either financial or technical assistance to farmers and woodlot owners.

**Operational Index for Model A**

_Agricultural Extension, ASCS, and State Forestry--Frequency of Contact_

1. Mailouts, leaflets, etc. (Example: Woodland Owner Notes.)
2. Newspaper announcements and articles.
3. Phone calls and toll-free information.
4. Demonstration for landowners at local experiment stations.
5. Face-to-face information dissemination with county extension agents or forest rangers.
6. The consulting forester with or without prior knowledge of fees.
7. Forestry associations where dues are required for membership.
8. ASCS informational activities and communications.
9. Voluntary and involuntary visits by county rangers and other state foresters.\(^2\)

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\(^2\)These are standard practices that are part of the traditional process of communicating with woodland owners.
Operational Index for Model B

1. Multi-session workshops in the home or at local churches (church-in-the-woods).
2. Bus tours of farms and other woodlots, both industrial and nonindustrial, where different types of management practices are occurring.
3. The use of para-professionals who have undergone training.
4. Team visits by extension and other agencies.
5. Targeting additional members of the family other than the landowner to serve as information source for the landowner.
6. The provision of films that provide historical information about forest management and timber sales.
7. Case studies on forest management practices in other counties, by film or lecture, to demonstrate how other even lesser developed countries have benefitted from forest management practices.
8. The advantage of cooperatives in forest management.
9. Demonstrate how states with mandatory reforestation laws have improved forest management among both small and large size farmers.
10. The use of interracial teams for forest management demonstrations and workshops.
11. Systematic training of landowners' children or grandchildren in structured programs at the county or community level.
12. The development of more graphic and easier to read resource packets on forest management.
13. Systematically tying in issues of forest management with rural development, rural poverty and the survival of noncommercial farms through filmstrips and other media.
14. Bringing the local community college into forest management teaching courses, providing students as outreach researchers and teaching assistants in forest management.

15. The expansion of the Small Woodlot Research and Development Program to the community college level.

16. The expansion of the one-on-one assistance relationship at A&T State University to reach out to more limited resource farmers and woodlot owners.

17. More women in agricultural extension and forestry extension service.¹

Research Method and Strategy

The research method for this study employs both a historical analysis and a case study. This first section of the study probes into the general history of U.S. agriculture. It examines the structural factors that have shaped U.S. agriculture and forest policies. Secondly, the research examines forestry in North Carolina as a case that shares many of the problems that are indicative of NIPF in the South as a region. The historical overview and related materials, i.e., some aspects of the literature review, represent a macro analysis (deductive) of the current status of NIPF owners. However, the latter chapters, which include data interpretation and analysis on NIPF in North Carolina, represent a micro analysis and are inductive in their orientation. Deductive and inductive

¹This index is based upon ideas and views from a wide range of individuals with whom I consulted in the preliminary stage of this study. They include Joyce Hilliard-Clark, Clyde Chesney and G. L. Carter, faculty members at North Carolina State University (NCSU), Raleigh, N.C. Model (B) involves more participatory oriented activities that are nontraditional and includes landowners on a more systematic basis.
analyses are used in this study at different stages in a single structural approach using historical and case study methods.¹

Research Strategy

The research strategy for this research is twofold. First, the administration of an elite survey with selected individuals knowledgeable of forest resource management at the local and state levels was conducted during the months between September 1984 and July 1985. These interviews totaled fifteen and included a wide range of views and comments on the current state of the art in management of NIPFs (see Appendix 5 for a list of interviews). These interviews were largely unstructured and provided exploratory information in order that the second stage of the research could be conducted more qualitatively. The second and primary component of the research strategy involved (1) a limited content analysis of county tax records to ascertain a sampling frame; (2) an examination of materials at the state level with forestry extension, the North Carolina Division of State Forestry and the United States Department of Agriculture (USDA) Stabilization Conservation Service which was conducted to provide information on forestry and related programs (see Appendix ). These analyses served as an extension of the elite survey and provided important information for both the introductory chapters as well as the sample survey of landowners (mostly farmers)--the central source of data for the overall study.

**Data Collection**

The elite survey data collected over a nine-month period involved unstructured interviews that were on the average two hours each. Nine of the fifteen interviews were with (1) forest economists and agricultural economists; (2) state agricultural extension agents and extension theorists; (3) state forestry data analysts and policy advocates and (4) individuals with expert knowledge of timber companies' practices in relation to NIPFs. Other interviews conducted outside Raleigh, N.C. were with county extension agents, forest rangers and local organizations involved with land lost in the agricultural sector.

The primary study, a statewide survey, was conducted using face-to-face interviews which were conducted by this researcher and a reforestation practitioner over a period of three months. These interviews were administered in seven of the thirteen state forest management districts surveyed (see map of these districts in Appendix 2). These seven counties and districts are in areas of the state where forestry, especially Southern Pine production, are most intensively practiced in the state. In addition, these counties or regions also represent areas where both large and small size landownership are rather extensive as well as where minority farmers are most numerous (see Tables 1 and 2). These data provide an opportunity to conduct both county-by-county comparisons as well as region-by-region comparisons of relevant variables. Sixty-five of the farmers were chosen from a sampling frame of various sizes (see Table 1) in each of the counties in which interviews were conducted. Interviews, as noted above, were collected in Halifax (n=10), Bertie (n=9), Caswell (n=9), Moore (n=9), Robeson (n=9), Bladen (n=10)
Table 1. County by incomes under $20,000. Number of farms and number of landowners sampled.

<table>
<thead>
<tr>
<th>County</th>
<th>No. of farms with earnings of less than $20,000</th>
<th>No. of minority farms</th>
<th>No. of landowners in sampling list</th>
<th>No. of cases interviewed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Halifax</td>
<td>226</td>
<td>159</td>
<td>103</td>
<td>10</td>
</tr>
<tr>
<td>Bertie</td>
<td>330</td>
<td>170</td>
<td>63</td>
<td>9</td>
</tr>
<tr>
<td>Moore</td>
<td>528</td>
<td>22</td>
<td>44</td>
<td>9</td>
</tr>
<tr>
<td>Robeson</td>
<td>1109</td>
<td>850</td>
<td>218</td>
<td>9</td>
</tr>
<tr>
<td>Bladen</td>
<td>568</td>
<td>195</td>
<td>38</td>
<td>10</td>
</tr>
<tr>
<td>Caswell</td>
<td>588</td>
<td>179</td>
<td>87</td>
<td>9</td>
</tr>
<tr>
<td>Hyde</td>
<td>49</td>
<td>18</td>
<td>51</td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td>3393</td>
<td>1593</td>
<td>604</td>
<td>65</td>
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Table 2. Area of commercial forestland, by county and stand size class, North Carolina, 1984

<table>
<thead>
<tr>
<th>County</th>
<th>All Stands</th>
<th>Sawtimber</th>
<th>Poletimber</th>
<th>Sapling Seedling</th>
<th>Nonstock Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Halifax</td>
<td>256,952</td>
<td>134,503</td>
<td>62,160</td>
<td>60,289</td>
<td>--</td>
</tr>
<tr>
<td>Bertie</td>
<td>318,227</td>
<td>174,790</td>
<td>68,099</td>
<td>72,959</td>
<td>2,379</td>
</tr>
<tr>
<td>Moore</td>
<td>335,074</td>
<td>141,210</td>
<td>33,724</td>
<td>37,739</td>
<td>--</td>
</tr>
<tr>
<td>Robeson</td>
<td>278,383</td>
<td>145,440</td>
<td>60,827</td>
<td>62,932</td>
<td>9,180</td>
</tr>
<tr>
<td>Bladen</td>
<td>424,374</td>
<td>124,617</td>
<td>107,706</td>
<td>185,068</td>
<td>6,983</td>
</tr>
<tr>
<td>Caswell</td>
<td>166,954</td>
<td>79,156</td>
<td>49,295</td>
<td>35,294</td>
<td>3,209</td>
</tr>
<tr>
<td>Hyde</td>
<td>221,910</td>
<td>76,702</td>
<td>69,276</td>
<td>52,655</td>
<td>23,278</td>
</tr>
</tbody>
</table>

and Hyde counties (n=9). Beaufort county was also scheduled to be included in the survey; however, because of logistic difficulties, it was eliminated from the survey and thus the original sample size was reduced from seventy-five to sixty-two. It was the researcher's view that sixty-five interviews would provide a sufficient sample size to conduct valid chi-square tests with an average of two to four cells. It was also the researcher's opinion that face-to-face interviews would provide a more qualitative accounting of respondent views on questions that composed the instrument. Therefore, although a smaller sample was used, the face-to-face interview process was chosen over the mail or telephone survey method.

All the counties involved in this study were non-SMSAs, thus providing for an all-rural frame of reference for analyzing the data. All counties had substantial minority populations of at least 25 percent or greater with the number of small farms constituting at least 50 percent of the total for that county. Small farms are defined by 250 acres or less or gross incomes less than $40,000. However, the counties chosen in the study were generally representative of all counties of the eight districts in the state where Southern Pine production predominates. The state Division of Forestry has determined that these districts are those on which it will continue to concentrate most of their cost-share and other management policies to increase Southern Pine production. In addition, private industrial forestry (three of the nation's largest timber companies have vast holdings in these areas) is most active in counties comprising these state-defined districts (see Appendix 2 for map of districts and counties included).
The sample design was scheduled to be composed of 50 percent white landowners and 50 percent black landowners. The final selection of interviewees did not exactly meet these standards; however, there was relatively close matching to the original design with thirty-five black landowners and twenty-seven white landowners (see Table 3).

Table 3. Number of individuals scheduled to be sampled by landowner-ship class and race for Models A and B

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Models A and B</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td>Small-Scale</td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>n=15</td>
</tr>
<tr>
<td>White</td>
<td>n=15</td>
</tr>
<tr>
<td>Large-Scale</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>n=15</td>
</tr>
<tr>
<td>Black</td>
<td>n=15</td>
</tr>
</tbody>
</table>

Between Subjects
- Size of Farm
- Race
- Size by Race
- Error Term

Within Subjects
- Model
- Model by Size of Farm
- Model by Size by Race
These ratios are within the representativeness of the population being sampled. That is, large size farmers are mostly white and most minority farmers are small size farmers. These farmers or landowners were asked to relate to the researchers the quality of current information and technical assistance that they are receiving by various state and federal agencies involved in forestry-related matters. Landowners were then asked to give their preference for more innovative programs representative of "participatory extension" as defined by extension theorists. As the operational indicator noted in the hypotheses, the choice between traditional programs and preference or nonpreference for more innovative programs constitutes the two models for gauging current landowner awareness as well as the propensity to incorporate more intensive educational learning on forest management into the landowners' (farmers') overall management practice.

Face-to-face interviews were designed to explain at length with each landowner interviewed the qualitative differences between the two models. The research literature review recognized that women tended to suffer disproportionately from discrimination in both structural access to information as well as technical assistance. However, because of the small number of women interviewed in the study, they were put into large size and small size categories and analyzed as black or white landowners.

The interview schedule consisted of fifty-three questions averaging about forty-five minutes to conduct and twenty-five or thirty minutes

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1 Information on participatory extension was gathered from research collected by Dr. G. L. Carter, Professor of Agriculture Science, North Carolina State University, Raleigh, 1984.
to explain the nature of some of the more complex questions. Thus, the overall interview time was approximately one and a half hours. This period also included time for gathering other more qualitative data to add to the richness of the overall survey. The interview schedule was devised with the assistance of several persons with forestry-related experience in conducting survey research. These included both forestry economists and agricultural economists as well as professors of agricultural extension and statistics (see Appendix 5 for consultants). The interview schedule was pretested by four individuals, two forestry resource students at North Carolina State University, a forestry extension and management professor and a farmer who owned 250 acres of land or less.

Notwithstanding the fact that this study viewed landowners within the context of the larger structure of U.S. agriculture (macro) as well as providing a specific focus on NIPF landowners at the local level (micro), it is this researcher's view that the classic distinction between structure of research as the inductive approach and the structure of research as the deductive approach should be minimized. The historical overview and two proceeding chapters represent a more macro analysis of

1Questions for the sample survey were taken from a number of sources. These include: R. S. Fecso, H. F. Kaiser, J. P. Royer and M. Weidenhamer, Management Practices and Reforestation Decisions for Harvested Southern Pinelands (1982), Survey Questions, Appendix II, pp. 28-46; T. W. Birch, D. G. Lewis and F. H. Kaiser, The Private Forest Landowner of the United States, Bulletin WO-1, Washington, D.C., U.S. Department of Agriculture Forest Service. Questions were also recommended by Clyde Chesney, G. L. Carter, and Douglas Lewis, faculty members at N.C. State University. Questions were also drafted by Robert Williamson, North Carolina A&T University, Agricultural Extension Program; Joyce Hilliard-Clark, Ph.D., and Mary Young, graduate student, Department of Forestry, N.C. State University, Raleigh, N.C.
the current status of landowners as NIPF owners. However, the latter chapter on interpretation of data represents a more micro analysis and is inductive in its orientation. Deductive and inductive analyses are generally speaking separate stages in a single structural approach to this research.

**Limitations of the Study**

The study faced several limitations of which the most important was the rather small "n" from which the data were analyzed. If time and resources would have permitted, a "n" of 120 or more would have been preferable to the final "n" of 62. This would have permitted more statistically significant findings.

A second limitation of the study was the season of the year in which the research was conducted. Farmers were quite busy during the summer months; therefore, most interviews had to be conducted after the workday was complete. Most landowners did not feel disposed to permit more than an hour to be interviewed. The winter months would have been preferable for conducting a study of this type among landowners. The overall geographic area that the research covered was rather extensive. A smaller geographic area would have been preferable.

Thirdly, obtaining a sampling frame and list from county tax records of residents by township or subdistricts was a detailed process that consumed an extraordinary amount of time. A sampling frame that provided more demographic information on landowners would have been of enormous benefit.
The accessibility of agency information about the administration of both federal- and state-administered cost-share programs was somewhat difficult. Less government red tape on the use of government data would have provided both a more qualitative research as well as a more expedient process of data gathering.

Finally, the research does not include very much information on the role of industrial forestry as a structural component that may influence policies toward NIPF management either positively or negatively. Industrial forestry, this researcher believes, is a rather important area that ties into some of the structural considerations in a changing rural economy.

**Significance of the Study**

The study will hopefully provide additional information on the specific areas of weakness of educational programs which are designed to help landowners improve their forestland. The research findings reveal in a more systematic fashion landowners' perceptions of the crisis they face in the management of NIPF lands. The study is also significant because it suggests concrete alternative and innovative methods to provide educational and technical resources to improve NIPF that landowners agree upon regardless of their socioeconomic status and race. And finally, the study is significant in that it ties the crisis of NIPF into the crisis of U.S. agriculture and suggests that a solution to either component of the crisis is a partial solution to the general crisis. It is hoped that by, focusing on the conflict as part of the crisis, policy makers may take a more critical view of current agriculture
and forestry policies and advocate more equitable policy solutions to the current crisis in agriculture and natural resource management and production.
CHAPTER II

REVIEW OF THE LITERATURE

Over the past decade or so there has been an enormous amount of research conducted on nonindustrial private forestlands and landowner characteristics. Researchers note with increasing alarm that by the year 2000 the nation will face serious shortages of timber, especially in the U.S. South.\(^1\) However, this general view is not shared by all foresters. In *Is Timber Scarce?* by Lloyd C. Irland, the author examines the many conceptual problems related to issues of timber scarcity in the United States. Based upon rough estimates, Irland concludes that the United States can provide adequate quantities of timber and other wood base products for 300 to 400 million people in the year 2000. These projections are based upon improvement in forest practices and in the utilization of more advanced technology. With the use of management and technological innovations, he believes that the U.S. has a timber-producing capacity equal to the needs of a population double its size.\(^2\)

Marion Clawson's *The Economics of U.S. Nonindustrial Private Forest* is

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\(^{1}\)Much of the literature that tends to support increased acreages of reforested timberland especially on NIPF forest will refer to the argument that, by the turn of the next century, most of the virgin timber in the U.S. will have been consumed, thus leaving the timber industry with a general shortage of sawtimber.

\(^{2}\)Lloyd C. Irland, *Is Timber Scarce? The Economics of a Renewable Resource* (New Haven: Yale University, Bulletin/Yale University, School of Forestry and Environmental Studies, no. 83, 1974).
perhaps one of the most widely acclaimed books on the general state of NIPF lands and structural problems associated with their management. Although Clawson covered a wide range of economic and social concerns, he basically concluded that foresters are generally overly alarmed about NIPF production and that in the long run nearly all truly merchantable timber, if good markets exist, will be sold; however, the timing of such sales may be irregular.\textsuperscript{1} Preceding this work, Clawson published in 1977 a book entitled Decision Making in Timber Production. In this work Clawson warned timber producers of the negative consequences of overproduction. He argued that, based upon analysis of NIPF landowners, industrial timber owners and national timber suppliers, if not regulated, overproduction by these ownership groups could have the effect of bringing down timber prices.\textsuperscript{2}

William F. Hyde's book, *Timber Supply, Land Allocation and Economic Efficiency*, provides extensive information on the management of timber resources on national forestlands. It also provides insight into the issue of economic efficiency in forestry. Hyde believes that a timber shortage within thirty to forty years is unlikely if we are willing to accept historical price trends which are likely to call for increases in timber prices. He also believes that industry must be responsive to market incentives without public policy incentives. In short, Hyde envisioned a greater percentage of the natural timber supply coming from national forests and he believed that more attention should be


placed on national forest management and less on private forest management.\textsuperscript{1} Hyde's thesis, of course, suggested more cutting on U.S. forestlands where Douglas-fir is largely grown, but these timber ranges may not affect demand in the southern region of the U.S. where Southern Pine is the predominant specie. It is in the U.S. South where forest economists are predicting greater shortages of timber by the year 2000. Hamlin L. Williamston highlights in a 1979 \textit{Journal of Forestry} article entitled "The South's Pine Reforestation Problem" that it is the most demanded and rapidly growing forest product in the nation. Williamston also stressed the point that much of the NIPF in the South was in a state of neglect; that is, cutting without planned regeneration is converting pine stands to oak-pine stands and oak-pine stands to oak-hickory stands. Williamston, unlike Irland and Hyde, firmly believed that, unless steps are taken to correct the neglect in systematic regeneration of marketable timber (pine), not only the South but also the nation as a whole will face serious timber shortages by the year 2000.\textsuperscript{2} Roger Sedjo expanded upon Williamston's argument and looked at the U.S. production capacity within an international context. In his study entitled \textit{Comparative Economics of Plantation Forestry: A Global Assessment}, Sedjo examined several regions in the world to determine the economic viability of plantation forestry in these regions. The author determined economic viability by using a plantation simulation model:

\begin{itemize}
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model that incorporated information about biological growth as well as management cost of marketable timbers in these regions. The model involved the use of twelve supplying regions worldwide and three consuming regions. Two wood products (bleach kraftwood pulp and lumber), the author believed, were capable of being produced on plantations in the tropics and the temperate Southern Hemisphere as well as the U.S. South. Overall, he believed that worldwide timber production is moving southward and that the U.S. South will play an increasing role in meeting world timber needs through plantation forestry. \(^1\) Sedjo does not dispute the argument that by the year 2000 there may be timber shortages; however, he does believe that with increases in plantation forestry, especially in the U.S. South, these shortages will unlikely be as severe as some forest economists have projected.

The conversion of southern cropland to Southern Pine production has gained increased attention among both forest economists and agricultural economists. Most of the literature on NIPF provides little information on the structural problems that agriculture production and management present on cropland conversion. However, *Conversion of Southern Cropland to Southern Pine Tree Plantings: Conversion for Conservation Feasibility Study*, a USDA publication, examines the advantages of cropland conversion to Southern Pine production and a variety of circumstances. The findings of this study indicated that up to 17 million acres of cropland would yield higher net returns to land

and management through conversion to pine plantations. The report raised the following questions: (1) why do some 9.3 million acres in the Southeast return less than average cost of production under normalized 1979 prices and (2) why are farmers not planting pine trees on the indicated marginal cropland and pasture? The authors concluded that as a primary consideration, the lack of knowledge, information and understanding among some producers about the economic potential of pine trees on marginal croplands and pasture may also be a reason why they do not plant many trees. Inadequacy of information may include lack of knowledge about the availability of trees for planting, how to go about getting a tree planting job done, and where to find vendor services, if needed. Extension education programs are gradually improving and may in time remedy any weaknesses in this area.

The lack of research that focuses on the multifacets of NIPF production such as cropland conversion indicates the lack of a holistic approach by which much of forestry research has been characterized. Many foresters, however, are becoming aware of the need for a more extended range of studies in conducting research in NIPF. One of the more comprehensive works that include a wide range of economic-, social- and policy-related issues is a book edited by Royer and Risbrudt entitled Nonindustrial Private Forests: A Review of Economic and Policy Studies. Many of the studies included in this anthology will be discussed individually in the literature review.


Based upon a general review of the literature, it is increasingly evident that most of the issues expressed by foresters about NIPF reflect views that are limited to forestry production as an aggregate process, i.e., output is the only concern. This research is more tailored toward the needs of the forest industry at the retail level than toward the needs of individual NIPF owners. A case in point is Rumsey and Duerr, *Social Science in Forestry: A Book of Readings*. The authors presented a range of articles on social issues in forestry; however, these issues generally deal with environmental, water resources and industrial management concerns. Very few of the studies in this work dealt with NIPF owners as subjects.\(^1\) James H. Gramann, writing about the lack of critical sociological works in analysis of current problems in NIPF, believed that the lack of a political-sociological approach in analyzing forestry-related issues has hindered attempts to focus on the basic needs of NIPF owners, especially those that own small woodlots.\(^2\) Gramann's concern simply pointed out the limitation of the literature on NIPF that is conducted by foresters. Further analysis of the problems of woodlot management that NIPF face can only be clarified by a larger analysis of the general structure and crisis in agriculture into which much of NIPF is structurally locked. A review of the literature on those aspects of agriculture policy that are related to NIPF is therefore in order.

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The Role of Agriculture

An analysis of the structure of agriculture suggested that a chief concern among many social scientists has revolved around "economies of scale" and the movement away from small-scale family farming to more large-scale commercial farming. Ingolf Vogeler's The Myth of the Family Farm (1981); Flora Rodefeld et al.'s Change in Rural America (1978) and Buttell and Newby's The Rural Sociology of the Advanced Societies: A Critical Perspective (1980) are just a few of the works that explore in depth the structure of American agriculture with a focus on the distributive and redistributive aspect of agricultural policy. Bertrand and Conty's Rural Land Tenure in the United States provided information on landownership that reflects a wide range of interests, including forestry as well as food crop production in agriculture. In this study, efficiency and economies of scale questions in forestry, in part, evolve from traditional issues of land tenure in agriculture, especially in the southern states. Much of the literature on economies of scale, the survival of the family farm and land tenure reflect a


crisis in land tenure and how public policy has and continues to either eliminate or exacerbate this crisis. However, some researchers believe that all corporate control in agriculture is not against the interest of small size and family farming in agriculture. Rodefeld et al. cite in Change in Rural America that groups such as the Institute for Farm Policies suggest that corporate farming as a developing trend will include more family farms but not necessarily small size farms. P. M. Raup, in an article entitled "Economies of Large Scale Agriculture," suggests that economies of scales in commercial agriculture reflect advantages in market control rather than more efficient use of fuel, labor and other operating inputs.¹

Several anthologies that provide for a more indepth analysis of current trends in agricultural policies and the direction of public subsidy programs include Agricultural Policy in an Affluent Society, published in 1969. Structure Issues of American Agriculture (published by the U.S. Department of Agriculture, Economic, Statistic and Cooperative Services in 1979) explores a wide range of issues in the U.S., as well as other Western countries. In "Farm Structure Policy in Other Countries," the authors suggest that studying policy experiences of other developed countries will not provide prescriptions for the issues

in U.S. farm structure. The authors do, however, point out that the structure of agriculture in other Western countries will enable U.S. analysts to better understand market structures and a range of structural policy tools that may be applicable to U.S. agriculture. Rural Policy Problems: Changing Dimensions, edited by William P. Brown and Don H. Hadwiger, represents a collection of recent works by rural sociologists reflecting a multidimensional analysis of rural and farm problems in the 1980's. The same is true of Dillman and Hobbs, Rural Society in the U.S.: Issues of the 1980's. Who Will Control U.S. Agriculture?, published by the North Central Regional Extension Service. This is an anthology of analyses of policies affecting the organizational structure of U.S. agriculture. The analyses range from "Who Controls Agriculture Now?--The Trends Underway" by Kyle, Sundquish and Guither to "Issues in Concentration Versus Dispersion" by Breinger and Barc, "Policies and Choices Affecting Access to Farmland" by Barlowe and Libby, and "Policies Affecting Capital Accumulation and Organizational Structure" by Norbert Dorow. This publication also provides a critical analysis of many of the current issues of scale and control in U.S. agricultural policies. Another Revolution in U.S. Farming (1980) by Lyle P. Schertz et al. provides a lengthy analysis of changes underway in U.S. farming.


The book concentrated on how U.S. production of livestock and crops is organized and managed as well as how resources are likely to be organized and managed in the future. Specific focus is placed on the beef, dairy, poultry and egg, and pork industries. It is a U.S. Department of Agriculture publication. Additional USDA publications specifically related to scale and structure is the Landownership in the United States (1978), a publication by James Lewis which is a statistical update on questions of tenure and ownership. A wide array of charts and tables is presented that document the changing character of land ownership. The data suggest that the overwhelming percentage of America's most productive farmland is concentrated in the hands of increasingly fewer numbers of wealthy landowners.

The National Agricultural Lands Study is a series of reports published in 1980 and 1981 on America's land base. These studies focus on issues such as agricultural land conversions, competition for agricultural lands from urban areas as well as from competition from new nonagricultural opportunities in rural areas.

Cesar Chavez believes that, as agricultural mechanization increases, more farm workers will be put out of work and will be forced

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to seek work in major urban areas where the unemployment rate for minorities is extremely high. In addition, migrant farm workers who have attempted rural revitalization and development projects have incurred continuous hostility from agribusiness and other corporate interests.¹

Black communities throughout the South, according to Professor Manning Marable of the Fisk University Institute on Race Relations, are losing land at an unprecedented rate. Much of this land is being consumed by large-scale farmers, corporate farmers and industrial forestry. Marable as well as Professor William Boone of Atlanta University, believe that efforts to maintain and develop rural communities by a number of black groups throughout the South, such as the Federation of Southern Cooperatives (FSC), The Emergency Land Fund (ELF), Mississippi Action for Community Education (MACE), the Southern Cooperative Development Fund (SCDF) as well as others such as the National Share Croppers Fund (NSCF), have largely failed because of the intervention of large-scale agriculture at both the local and national levels.²

Professor R. S. Browne, in a much-noted report entitled Only Six Million Acres, has vividly demonstrated a continuing decline in areas of black


²Based upon oral interviews with Professor William Boone of Atlanta University, Professor Manning Marable of Fisk University, and Charles Prejaun and John Zippert of the Federation for Southern Cooperatives and Joseph Brooks of the Emergency Land Fund, interviews were conducted in Atlanta, Georgia in April 1982.
farm land in the South. He predicts that by 1990 black small-scale farmers will virtually be extinct.¹

NIPF and Public Policy

The role of public policy in NIPF may be viewed at several levels. These include federal, state and local. The literature that relates to these policy roles centers around public subsidies in forestry production. Analysis of public incentive programs includes the older conservation programs such as ACP as well as the more recent FIP and state-operated incentive programs that reflect much of the interest in this literature. Risbrudt and Ellefson, in a recent study entitled "An Economic Evaluation of the 1979 Forestry Incentive Program," found that federal dollars were being well spent in cost-sharing programs. Although federal allocations have remained constant, sizes of tracts have increased since 1974 and the program will result in (from 1979 efforts alone) an additional 1.3 billion cubic feet of timber.²

In an earlier study by Risbrudt, Goforth, Wheatcraft and Ellefson, the researchers looked at retention rates from 1974-1981. They reported with great enthusiasm that, out of 1,528 cases, overall retention was


²Christopher D. Risbrudt and Paul V. Ellefson, A Economic Evaluation of the 1979 Forestry Incentives Program (St. Paul, Minnesota: Agricultural Experiment Station, Bulletin 552, University of Minnesota, 1983).
93.9 percent with 92 percent in the South. The 3.8 percent of this average that was considered a loss resulted from fire and drought. Mills and Cain, who initiated the study that Risbrudt, Goforth et al. above analyzed for retention rates, also suggested that the incentive program is being implemented with success. Mills and Cain, taking a more conservative approach, have suggested maximum cost-sharing guidelines be well maintained and the program should stay away from investment in smaller tracts.

Other researchers have not been as enthusiastic about allocating public dollars into cost-sharing programs. Richard A. Skok and Hans M. Gregerson believed that the evidence is not convincing that direct public subsidy programs can effectively and efficiently induce increased wood production from NIPF. In an article entitled "Motivating Private Forestry," the authors concluded that, with the REAP-A7 program in Minnesota, 70 percent of the NIPF landowners would have replanted the same amount of trees without incentive cost-sharing programs. Other researchers also disagree that public incentive programs such as FIP and ACP are effective. Lloyd C. Irland, in an article entitled "Forestry

1Christopher Risbrudt et al., Forestry Incentive Programs Investment in 1974: Retention Rates through 1981 (St. Paul, Minnesota: Agricultural Experiment Station, Bulletin No. 552, University of Minnesota, 1983), pp. 1-4.


Cost-Sharing: Lessons for Evaluating Public Conservation Programs," found that evaluation of cost-sharing programs that were conducted by foresters and affiliates were largely reported as successful, but when nonforestry affiliates evaluated these programs, they were generally reported as not successful. Only 14 percent of the programs evaluated by independent researchers were judged as successful. The author believes that the programs were simply designed to generate social change and represent redistributive policy. However, general literature supports the theory that public policy, as reflected in cost-sharing and tax incentives, has been successful in meeting the need to improve forest management practices among NIPF landowners.

Much of the debate about the direction and extensiveness of public programs is still very controversial in forest research circles. Researchers tend to agree that the dollar amount of these programs has been rather low with an annual allocation of $13 million annually for FIP. The Federal Role in the Conservation and Management of Private Nonindustrial Forestlands, a U.S. Department of Agriculture 1978 publication, provides an excellent review of the role and approaches that the federal government has adopted towards NIPF lands. The greater question that researchers are currently faced with about NIPFs is what acreage is minimally feasible to yield an acceptable rate of profit.


Richard P. Thompson and J. G. Jones classified NIPFs into three groups: 1-50 acres, 51-700 acres and 700 and above and concluded that the 51-700-acre group provides the best returns for cost-sharing and other incentive programs; the smaller acreage was inefficient and the larger acreage could be financed by the landowner.\(^1\) Worrell and Irland, in analyzing "Alternative Means of Motivating Investment in Private Forestry," suggest that the general focus of both macro and micro policies should be toward the more efficient larger tract woodlot owner, including industrial foresters.\(^2\) Clark Row's research on "Economics of Tract Size in Timber Growing" provides a good source of primary data that other researchers such as Thompson and Jones have used to provide evidence that larger tracts are substantially more efficient than smaller tracts, especially for artificial regeneration. However, researchers such as William Gardner at North Carolina State University have demonstrated that smaller tract size can be just as efficient as larger tract size, especially between the 25- and 50-acre range.\(^3\) Other researchers such as Lester Holly, School of Forestry, NCSU, suggested that the literature does not at all prove the larger tracts are more efficient to manage than relatively smaller tracts. Dr. Holly pointed out that larger


woodlot tract owners, especially in the South, do not own continuous tracts, but rather scattered tracts with widely varying terrain that reduce economies of scale. Richard Hamilton, a forestry extension specialist at NCSU, further suggested that the amount of profit that smaller tracts can possibly produce, if properly managed, is constantly underestimated by traditional foresters. He also suggested that under-scoring productiveness of small woodlots might reflect the orthodoxy of the researcher's training.

Forest economists such as J. E. de Steiguer of the U.S. Department of Agriculture Forest Service believed that there was a need for more modeling in order that efficiency and other cost-effectiveness measures can be detected with greater precision. More advanced econometric models may provide this precision. Dr. de Steiguer, in a recent study entitled The Influence of Incentive Programs on Nonindustrial Private Forestry Investment, showed that "... changes in the level of investment were significantly influenced by personal income and interest rates. Increased incomes were found to have a positive impact on investment. ... However, incentive programs have no significant effect on the level of autonomous reforestation investment." Also, the researcher found that capital substitution did not seem to be a valid criticism of cost-sharing programs. Dr. de Steiger concluded that more improvement

1Face-to-face interview with Professor Lester Holly and Richard Hamilton of North Carolina State University, School of Forestry, October 1984.
in analyzing the impact of government programs on NIPFs is needed.\textsuperscript{1} Researchers such as E. Carlyle Franklin, director of the North Carolina State University Department of Forestry, Small Woodlot Research and Development Program, believed that public incentive programs retard action to engage in systematic reforestation. Federal and state incentive programs tend to stress highly mechanized regeneration techniques that moderate and small woodlot owners cannot afford. He believed that these woodlot owners should invest in more natural regeneration and use more of the farm equipment in forestry management as opposed to using vendor services.\textsuperscript{2} George F. Dutrow, Forest Economist, Duke University School of Forestry, concurs with Franklin. Dutrow believed that the small woodlot owner tended to behave in a rational manner when investing in forest management. Because the cost of artificial regeneration is so high, he can ill afford to invest. He also believed that not many woodlot owners are aware that natural regeneration of pine can be almost as profitable as artificial plantations. \textit{Managing the Family Forest in the South} by Williamston, Balmer and Sims, USDA Forest Service, provides a cursory analysis of general management practices that woodlot owners may engage in while managing their forestland. Although items such as


\textsuperscript{2} Based on an oral interview with E. Carlyle Franklin, Raleigh, N.C., North Carolina State University, Department of Forestry, October 1984. Also, see E. Carlyle Franklin, \textit{Low Cost Forestry: Effective Strategies for Limit Resource Landowners} (Raleigh, N.C.: N.C. State University, Small Woodlot Forestry R&D Program, Research Note Series No. 20, 1983).
regeneration, site preparation, planting methods, thinning, fire protection and wildlife protection are covered, there is not enough information for rational decision making for the average woodlot owner. The pamphlet may, however, serve as a guide to further inquiry on specific aspects of forest management.

Ronald Beazley and I. Irving Holland, Predicting the Success of Alternative Government Incentive Programs, conducted a study in 1972 using factor analysis to predict the success of alternative government incentive programs. Their study began in 1960 and the researchers concluded that this approach was feasible, offering much more information about the behavior of small woodlot owners and incentive programs than what was currently available. The researchers found that most woodlot owners knew very little of forestry incentive programs (ACP) and consequently did little to systematically manage their forestlands.

Extension Service and NIPF Management

The extensiveness of the U.S. Agricultural Extension Service in NIPF management has been subjected to a great deal of debate. Many extension agents believe that current extension work with NIPF owners

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is qualitatively adequate but there is a lack of essential resources to extend this quality of extension to all landowners. Consequently, a policy of selected extension should be administered.

Paul O. Warner and James A. Christenson's book *The Cooperative Extension Service: A National Assessment* (1984) suggests that on the whole most groups that are serviced by extension agencies are satisfied with the level of service they receive; however, the notable exceptions were minority groups (blacks) and the very poor such as those in the mining and mountain regions of Kentucky. The authors do suggest that there has been a degree of systematic discrimination on the part of agricultural extension towards these groups. Jim Hightower, in his book *Hard Times, Hard Tomatoes*, further clarifies the history of discrimination and racism that has been indicative of U.S. extension practices over the decades.¹

On the other hand, the general history of extension in North Carolina suggests that there has historically been a gap between agricultural researchers and the extension service. *Agricultural Extension Work: A Brief History* by I. O. Schaub, the former Dean of the School of Agriculture and Director of the North Carolina Agricultural Extension Service, pointed out this view in his writing on the development of demonstration practices in the early history of North Carolina.

extension.\footnote{I. O. Schaub, Agricultural Extension Work: A Brief History (Raleigh, N.C.: The North Carolina Agricultural Extension Service, Extension Circular No. 377, November 1953), pp. 17-21.} John M. Bethea suggested that where the researcher and extension officer stand on this issue depends on where they sit. Bethea believed that the attitude of an NIPF owner depends upon what he hears and experiences. The neglect of smaller tracts in systematic management, he thinks, would constitute a mistake in extension policy. Bethea also suggested that extension educational programs must go beyond their traditional method of education if the millions of acres owned by small size landowners are to be properly managed.\footnote{John M. Bethea, "Where You Stand Depends on Where You Sit," in J. P. Boyer and C. Risbrudt, Nonindustrial Private Forests: Review of Economic and Policy Studies (1982), pp. 389-390.} This opinion was also echoed by the state of North Carolina's Small Woodlot Task Force. The 1978 Governor's Task Force on NIPF suggested that additional programs should be developed to fill structural weaknesses that extension is currently suffering from. The Task Force made a series of recommendations to improve the potential for production by small woodlot owners. These recommendations are divided into four major program areas. They include: (1) expanded markets for timber; (2) identifying and developing efficient technology for small woodlots; (3) stimulating owner interest in woodlot improvement--through education and demonstration; and (4) meeting owner needs for on-the-ground forestry assistance.\footnote{Recommendation to Increase the Productivity of Small Woodlots in North Carolina (Raleigh, N.C.: The Governor's Advisory Task Force on Small Woodlot Management, 1978), p. 1.}
Other researchers continue to stress the inadequacies of extension and other public resource agencies in meeting the needs of minority woodlot owners. Clyde Chesney's research on contacting small and limited resource woodland owners in three select counties in North Carolina is an example. The research program involved the use of a forestry extension aide to work with limited resource woodlot owners on a one-on-one basis and proved to be effective in creating more awareness and involving more farmers in forest management. Also, as the proceedings from a symposium entitled, "Increasing the Involvement of Minorities and Women in Natural Resources" suggested, there is a need for more minorities and women in extension services.\(^1\) It is believed that improvement in the minority extension staff will also improve the overall quality of extension outreach. Survey of Black Forest Landowners, one of the more comprehensive studies on black forest management practices, was conducted by Glen Howze, a professor of sociology at Tuskegee Institute in 1974. Based upon data from a survey sample of 151 black farmers in eleven counties in southeastern Alabama, Florida and Georgia, Howze's findings were as follows:

1. Black forest landowners are a relatively old group with the median age of 64.
2. Half of the group had farming as their principal occupation, 23 percent were housewives or widowers, 12 percent were blue-collar workers, and only 5 percent professionals.

\(^1\)C. E. Chesney and Nathaniel B. Brown, Jr., eds., Increasing the Involvement of Minorities and Women in Natural Resources (Greensboro, N.C. symposium, North Carolina Agricultural and Technical State University, Agricultural Extension Program et al., 1983), pp. v-vi.
(3) Three-fourths of these forest landowners resided on their agricultural property.

(4) Fifty-three percent had six or fewer years of education.

(5) The median income was $2,580; 57 percent had income below the 1960 poverty level of $3,000.

(6) Only 11 percent reported any income from the sale of forest products in 1971.

Howze further found that black forest landowners had made little effort to improve their forestland. The vast majority, 95 percent of black landowners (over 50 percent of their land was in forestland), has not engaged in systematic forest management practices. Howze asked farmers if they had participated in federally funded forestry programs such as the Cooperative Forest Management Program (CFM) and the Rural Environmental Agricultural Program (REAP) administered by ASCS. About 49 percent of the respondents had never heard of these programs. Most importantly, Howze found that most of the respondents, 64 percent, had sold forest products in the past ten years and that 42 percent anticipated a timber sale in the future. None of these respondents, however, were engaging in basic forestry practices.¹

Joyce Hilliard-Clark's analysis of demographic factors and social interaction on sources of information and attitudes and forest management of small farm landowners suggested further weaknesses in traditional extension. Hilliard-Clark interviewed small farm woodlot owners in

five selected counties in North Carolina. Her essential conclusion was that the more knowledge an individual has of forestry and forest management-related programs, the more likely the individual will practice intensive forest management. Black landowners, the survey showed, managed their woodland no differently than other groups. The small woodlot owners were basically satisfied with the existing condition of their woodlots.¹

In view of the current inability of traditional extension, educational and technical service programs to meet the needs of many NIPF owners, especially small-scale and minority landowners, an analysis of the structured theoretical constraint that extension operates within is in order. Extension has largely operated out of the diffusion paradigm.

The classical diffusion paradigm, according to Rogers and Shoemaker, in Communication of Innovations, A Cross-Cultural Approach (1971), consists of S-M-C-R wherein source innovators, i.e., scientists pass their innovations, i.e., messages, through communication channels or interpersonally to members of a social system, i.e., farmers, the receivers, in order that the desired effects--new knowledge or attitude changes--are achieved.²

Kevin Gross, in a work entitled "Consequences of Diffusion of Innovation: The Case of Mechanization in U.S. Agriculture," studied


agricultural research and extension practices. He found that mechanization led to concentration and centralization of farm production and sale as well as labor displacement and migration of the population. This finding was in contrast to diffusionist belief that mechanization led to increased productivity per worker, per acre.¹

The diffusion model suggests that economic relations between different sizes of landowner holdings as well as the general social economic status of the landowners is structured in a consensus-oriented rural economy. However, some agricultural economists who believed that the rural economy is more conflict oriented than consensus suggest that the diffusion of resources is directly related to personal income and political power at the local level. This thesis is expounded upon by Gotsch as well as other economists who have examined the impact of diffusion theory in Third World countries.²

In summary, the literature review has explored general debates on scarcity and future demand for timber in the U.S. The predominant view in this literature suggests that the U.S. will face some scarcity in selected areas of the country by the year 2000. The U.S. South is basically perceived as an area where intense forest management in Southern Pine production may ease much of this projected scarcity. Secondly, the literature reviewed structural issues that obfuscate an understanding of why NIPF owners are neglecting systematic management of NIPF woodlots.


Some of these structural issues involved policies that constrained the management of NIPF based on efficiency and "economies of scale" to determine who should have a right to participate in U.S. agriculture in general and NIPF specifically. And finally, the literature reviewed problems that were specific to the education of NIPF owners on systematic management of woodlots. Education programs that were sponsored by agricultural extension were examined and weaknesses in traditional models for diffusing information and technology were explored.
CHAPTER III

AN HISTORICAL OVERVIEW OF NIPF MANAGEMENT

According to a recent study, about 70 percent of the forestlands harvested in the South were owned by individuals who also owned agricultural land. Forty-two percent of forestland harvested was owned by individuals living on a farm of which 15 percent said that farming was their only source of income.\(^1\) The majority of NIPF land in the South is therefore directly or indirectly related to America’s farming system. The treatment that these NIPF lands receive is linked to farm management policies and practices and constitutes a part of the problematics of agriculture production in the 1980s.\(^2\) These problematics reflect the changing character of the U.S. farming system. Although those changes that the system is currently experiencing may be complex and ultimately will require rather extensive policy reorientation to resolve, it is not as difficult to analyze who these changes will likely benefit. Flinn and Buttel have suggested that "social class" predominates much


\(^2\)Problematic refers to both the visible and invisible aspects of a problem or phenomenon. It provides both an historical and structural frame of analysis from which a particular phenomenon should be investigated. See Louis Althusser and Etienne Babibar, Reading Capital (New York: Pantheon Books, 1970).
of the ideological debate on agriculture production, farm size and the family farm.¹

Policy issues in agriculture, at the same time, lend themselves to traditional analysis of the allocation of economic and political power in American society. Theodore Lowi has suggested that the structure of government policy when unraveled revealed vested interest that tends to favor certain economic or ethnic groups. He defines these policies as distributed, regulative and redistributed. Through Lowi's framework for analysis the "group vested interest" dynamic is explained as well as the sphere of social conflict in its greater structural dimension, i.e., the agricultural economy. According to Lowi, distributive policies are characterized by the ease with which they can be disaggregated. They are marked by patronage and the indulged and deprived need never come in direct confrontation. Most of USDA policies, especially subsidies and price support programs, are distributive in character. Regulatory policies, although specific and individual in their impact, are not capable of the degree of disaggregation that marks distributive policies. And redistributive policies are rather different from distributive policies in the sense that their categories of impact are much broader, approaching the social classes.

Redistributive policy generally involves matters relating to the extent of poverty a society is willing to permit.² The history of U.S.


farm policy since the American Revolution has always entertained this redistributive aspect most noted in its advocacy for family farming and in the spirit of the Populist Movement of the 1890s. Yet, as Ingolf Vogeler states in the *Myth of the Family Farm*, U.S. agriculture policy has consistently supported large-scale agriculture to the detriment of small-scale family agriculture and the rural poor.¹

In 1965, 14 of the 35 million Americans classified as poor lived in rural America and 3 million of these 14 million rural poor were black. Although the number of rural poor has decreased in the past fifteen years to nine million, much of this decrease is because of rural to urban migration as opposed to the increased income level of the rural poor.² Rural poverty in many cases has been specifically associated with the size of the farm. Several studies in California have demonstrated that farm size and the overall state of rural poverty may be causally related. The most noted of these studies is the Goldschmidt studies of the 1930s.³

The average farm size continues to increase and it is projected that the number of farms with incomes of $500,000 and over will increase from 11,000 in 1974 to 217,000 in the year 2000. On the other hand, farms with incomes of $100,000 or less will decrease from 2,725,000 in


1974 to less than 1,190,000 by the year 2000. These changes are likely to increase the intensity of rural poverty for those families that continue to live in rural farming communities and small towns.\(^1\) Although land values have doubled since 1950, aggregate farm income has not risen. Agricultural support program resources have been distributed reggressively and have done little to alleviate the severity of rural poverty. Even worse, the structure of agricultural policies have permitted farm incomes to be converted into mortgage obligations and high operating costs. Political commitment tends to protect and guarantee the banks which benefit from the structure of financing landownership and operating costs as opposed to the farm. Programs that are supposedly designed for disadvantaged working farmers have, according to Varden Fuller, established a most claying political commitment; this is likely to be served at the expense of the rural poor, especially working farmers whose primary interest is only occupational.\(^2\)

In addition to factors that affect rural poverty that current changes in agriculture policies seem to be exacerbating, some social analysts insist that these changes are negatively affecting a fundamental aspect of American culture. Wendell Berry firmly believes that the current agriculture crisis is a crisis of culture. He believes that, if we allow another generation to pass without doing what is necessary


in order to reverse current trends toward cultural fragmentation of rural communities, we will lose this culturally rich legacy that these communities possessed.¹

Fuller as well as Berry have suggested that the movement toward corporate farming, especially agribusinesses, share much of the responsibility for current increases in rural poverty and cultural fragmentation. Hightower believes that large farms tend to be ideologically supportive of agribusiness activities while small farms that bear the brunt of exploitation in the agricultural system are most likely to be critical of these institutions.² Large farms tend to benefit as a result of structured interest with nonfarm elements that also support agribusinesses. Corporate farms such as those in California are controlling a number of select markets that tend to further diminish the economic power of low- and middle-income farmers rather severely.

In California, corporate farms account for 90 percent of the melon crop, 46 percent of the cattle sold, 38 percent of the cotton produced and 30 percent of the citrus fruit. Forty-five corporations now own 3.7 million acres or half the farmland in the state. Richard Merrill also suggests that a dominant reason that agriculture is moving from large-scale mechanized operations into corporate operations is that many corporations such as Tenneco consider land as an inventory


that makes sizable profits in produce while waiting for the land to appreciate. The investment of tax-free monies in farmlands that can later be sold with earnings in capital gains (taxed at 25 percent rather than 43 percent) can make the ownership of farmland by a corporation a very lucrative investment. These lands may later be sold as a part of urban development. Merrill notes that between 1967 and 1980 nearly 20 percent of all farmland was subsumed by urban development. Yet the major interest that has pushed corporations into agriculture is probably control of the food marketing process. Every stage of the food and fiber production process including seeds, fertilizer and machinery inputs is controlled by, in many cases, a single corporation.¹

In North Carolina, William Robbins points out that First Colony Farms, owned by a wealthy New York investor, Malcolm P. McLean, totals 380,000 acres on nearly 600 square miles. McLean plans to grow enough soybeans, corn, wheat and other grains to grow one thousand hogs a year as well as thousands of cattle. First Colony was the largest holding of its kind under individual ownership in the country. However, in 1969 First Colony merged with R. J. Reynolds Industries with McLean as director of the corporation. Other corporate enterprises similar to First Colony have emerged throughout North Carolina as well as the South as a whole in the past twenty years or so.² (See Chart 1.)


A closer look at these statistics reveals that the farmers hardest hit are those in the middle—typical, medium-sized family farmers. In fact, the only category of farmers who are increasing in number are those operations with gross annual sales of $100,000 and above. Small farms, with gross annual sales below $20,000 decreased by 12 percent from 1978 to 1982. But farms with gross sales between $20,000 and $99,999 decreased by 22 percent during the same period. These are not "hobby farms" or marginal producers—but efficient, working farmers who have long been the backbone of N.C. agriculture.

Many researchers believed that with the advent of the Reagan administration in 1980 that farm policy has moved further away from the interest of small and family farms into an even greater corporate structure. In a 1984 publication by the Congressional Quarterly Inc. entitled Farm Policies: The Policy of Surpluses and Subsidies, it was noted that, according to the Department of Agriculture, about 5 percent of the nation's farms, (120,000) were in serious financial trouble, at least 50 percent are doing well, 25 percent are getting by and 20 percent are hurting. One cannot be sure exactly what these figures mean, but it appears that high interest rates and declining prices at the farm level have exacerbated the plight of the family and small and middle range farms. Financial agencies such as the FmHA and the Farm Credit Bureau have had to reconstruct their lending policies with stronger austerity measures, thus threatening traditional avenues for both start-up or long-term loans as well as short-term operational loans. The attack on the subsidy program by anti-redistributive advocates in Congress has only served to worsen the plight of poor farmers. These policies, as part of the conservative agenda of the Reagan administration, have angered many farmers both small and middle size throughout the country, Republicans as well as Democrats. Farm subsidies in 1983 amounted to $18.8 billion and were labeled under a network of distributed policies. Yet David Stockman, the former Budget Director, noted that we are spending more farm subsidies than we have for the welfare of the poor.

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entire poverty population. These subsidies, as we have already noted, tend to benefit large-scale (including corporate) agriculture rather than small farmers. Yet it is generally agreed that, without some form of distributive policy, most farmers would not make it in the business--even with increases in prices at the wholesale and farm level. These conflicting policies, that is, those that contain a mix between distributive and regulative and to a very limited extent redistributive, tend to hide large-scale vested interest more than they benefit the overall farming community.

Economies of Scale

The question of efficiency in farming is increasingly used as a criterion to determine if farms are profitable investments by banks and other loaning agencies. The size of the farm has become the most commonly used measure to determine if it is efficient enough to current changes in agriculture.

Edwin Dolan's analysis of "economies of scale" is helpful in understanding how they may ultimately affect agriculture producers. According to Dolan, "economies of scale" exist in any situation where the long-run average cost decreases as output increases. Diseconomies of scale exist in situations where long-run average cost increases as output increases. And constant returns to scale exist when a situation is neither experiencing "economies of scale" or "diseconomies of scale."

Dolan further indicates that the traditional U shaped (see Chart 2) long-run average cost curve is in many cases not the rule but the exception. Instead, the long-run average cost curve for many industries
The position of the short-run average-total-cost curve for a firm depends on the size of the plant. In the long run, the firm has a choice of operating with any size of plant it chooses. Each plant size can be represented by a U-shaped short-run average-total-cost curve. Five such curves are shown in this graph. A new firm might begin with a plant that could be represented by a curve like the first one shown here. Then, as demand for its product expanded, it might move to one of those farther to the right.

A firm can build a plant of any size, and each possible plant size maps a different short-run average-total-cost curve. The box shows a number of short-run average-total-cost curves. As the firm expands in the long run, it moves from one curve to another, always choosing the plant size that minimizes the average total cost for the output the firm plans to produce at any given time. The path along which a firm will expand—the firm's long-run average-cost curve—is the "envelope" of all the possible short-run average-total-cost curves.

Statistical studies have found that long-run average-cost curves are often L-shaped, as shown here. The point at which economies of scale end and the curve begins to flatten out is called the minimum efficient scale for the firm. If a firm continued to expand without limit, long-run average costs would probably begin to rise. However, in many industries there are no firms operating in the range of diseconomies of scale.

is more L shaped than U shaped (Chart 2). This L-shaped curve shows a range of economies of scale followed by a range of constant returns to scale, thus demonstrating a wider variability in establishing economies of scale than is generally recognized by most economists. Dolan points out that because of wider variability the minimum efficient scale, the level of output at which economies of scale stop, can only be approximated. He also reemphasizes the fact that statistical studies which analyze "economies of scale" projections are largely approximations. In short, there is no hard and fast measure such as the size of the plant that uniquely determines economies of scale. In many cases economies of scale are based on multiplant operations--operations that are vertically integrated and are in control of the financing, advertising and marketing aspect of a product as well as its basic manufacture.¹

Bruce Hall and E. Phillip LeVeen provide a more penetrating analysis of the weakness of using size as the only measure of efficiency than Dolan. They suggest that, when decreases in farm size appear to increase inefficiency, the severity of the loss and how policies might moderate it cannot be known without examining the sources of inefficiency associated with decreased size. The author suggests that alternative considerations other than farm size must be included in measuring "economies of scale." That is, if inefficiency results from the structure of relative prices under existing institutional arrangements for marketing a product and if that market can adjust to a new economic environment, then the

efficiency based upon the size of the farm may be only one variable of questionable significance in the overall profitability of the farming unit.¹

A final consideration of economies of scale in agriculture is the matter of who will control the production process. The question of efficiency may very well be outweighed by more important questions of access to markets and other concerns that are structurally related to vertical systems of production. James Rhodes has noted that the widening gap between the "bigs and the smalls" relates in various ways to the problem of access. "Feed companies offer the big feeders discounts and special services, while even the co-op that provides feed to the little feeder wishes he would take his business elsewhere." He also states that agribusinesses and educational agencies who provide information to farmers on how to be effective in the market more often concentrate their efforts on larger farmers and corporate farms.²

The foregoing analysis on the structure of agriculture and economies of scale has served to demonstrate that policy programs and practices that motivate farmers to engage in systematic forestry management are complex and interlinked with many other aspects of the agriculture system. Yet, in their farm operation as a whole, most farmers as well as other woodlot owners must continue to weigh the cost of


investigating additional resources in wood fiber production. Economies of scale in forestry are therefore related to the same technological and managerial questions that are representative of economies of scale issued in food crop production. The cost and reward may vary according to a number of both quantitative and qualitative variables. Ideological and policy considerations in forest management may be reflective of elected officials and other public servants whose vested interests are increasingly removed from the occupational farmer or other types of nonindustrial woodlot owners.

In the early history of forestry, every forester and agricultural agency such as ASCS made more rigorous attempts to integrate crop production and forestry production in the overall farm operation. Issues of economies of scale were not nearly as important as the value of fully utilizing the woodlot. John F. Preston, a leading advocate of farm forestry, noted as early as 1946 the importance of the forest to the overall farm income. According to Preston,

The great weakness of the farm forestry program of the past 20 years has been its failure to recognize the farm in farm forestry. We must build a foundation for farm forestry in agriculture. Forestry for farmers is worthwhile only if it helps them to make a better living—if it contributes to farm income in the same way as do other farm enterprises. Foresters have paid lip service to these principles for years but they have not put them into practice.\(^1\)

Although Preston favored an integrated farm forestry program wherein wood crops are handled by farmers as they handle other crops over

commercial farm forestry and wherein timber is grown on the same basis as industrial forestry, he recognized the value of both.

Most of the focus in nonindustrial private forestry has moved away from the integrated farm forestry that Preston advocated and is more in line with industrial commercial timber production. However, much of government focus (on NIPF) is based upon its belief that the national need for wood fiber is being met. There are two views that tend to guide policy direction. The conventional view is composed of two propositions according to LeMaster. First, that future demands for timber will exceed supply, with the result that relative prices of wood and wood fiber products will rise to an undesirable degree. Second, nonindustrial private forest lands are poorly managed and consequently are producing much less timber than they are capable of. These conventional views are usually challenged by a more conservative view reflective of neoclassical economic theory. This view proclaims that pronouncements of an impending U.S. timber shortage have occurred throughout the twentieth century but no timber shortage has occurred. Another argument used by these theorists is that net volume of softwood and hardwood growing stock on commercial forestland in the United States has increased in the years since World War II. As LeMaster has noted, these conservative views are not without merit but they generally distort the reality of U.S. timber resources. As a case in point, the conservatives point to the constant prices of pulpwood in the long run as a measure of adequate timber resources. According to LeMaster, although their prices have been stable in the long-run period, it reflects the greater reality of the structure of pulpwood markets in which characteristically the
number of buyers is few (primarily because of the large investment necessary to build an efficient plant). In this situation, pulpwood prices tend to be less than they would be under more competitive circumstances.\(^1\) According to LeMaster, Clawson notes in his book on nonindustrial private forestry that surprisingly nonindustrial private land closely resembles forest industry lands. LeMaster notes that, based on Clawson's conclusion, "policy makers must conclude that nonindustrial private lands are managed about as well as forest industry lands or about as badly."\(^2\)

Regardless of the extensiveness of management of industry land in 1974, Congress did decide to attempt to improve management on NIPF land with the initiation of the Federal Forestry Incentive Program (FIP) designed to supplement the ASCS-administered soil conservation tree planting program. Many states such as Virginia, Mississippi and North Carolina have state-operated reforestation programs based on support exclusively from revenues raised within the state. Since these programs have taken the form of permanent policy in the past ten years for FIP and about seven years for North Carolina's state reforestation program (Forest Development Program, FDP), the issue of efficiency of scale for reforestation has become a factor in the allocation of these resources. As in agriculture, food crop production issues of economies of scale and forestry issues of economies of scale largely involve the same considerations. These basic considerations revolve around the number


\(^2\)Ibid.
of acres required to make it profitable (with the degree of profitability always subject to debate) to harvest and replant as well as cultivate a forest. Technological advancement in forestry as well as agriculture in general suggests that larger acreage is required to meet technological efficiency requirements.

Several studies in forest management suggest that the pattern of analysis used to determine economies of scale in forestry is similar to those in agriculture. Most of these studies are conducted by agricultural economists for food crop production and forest economists for tree crop production. Richard M. Alston suggested that much of the philosophical underpinning to modern forest economics lies in neoclassical economic theory. Alston stated that:

In the late 1920's modern American forest economics began to stir, reflecting a decline in dependence on German experience and the adoption of neoclassical economics. Modern forest economics emerged during a long period of ferment which, according to one analyst, was accompanied by a progressive stripping away of the rational content of classical forestry until the nonrational or "sentimental" substratum was left not only exposed but as the last refuge for those who viewed forest management from a classical viewpoint.1

Alston further cites that Worrell's textbook established the essential difference between the early forest economists and their neoclassical counterparts. According to Worrell:

Most of the discussion has been based on the actions of individuals or of individual companies or corporations. Any discussion of the country as a whole or of all the people together has treated these as aggregates of individuals. In physical terms, of course, society is an aggregate of individual people.

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But any attempt to combine industrial cost benefits, satisfactions, or sacrifices into an aggregate cost to society or benefit to society runs into difficulties.¹

It was earlier writings such as those of Bennett, Worrell, Duerr and Marquis that gave much of contemporary forest economics its theoretical base—a base that essentially lies in neoclassical economic theory.²

Thompson and Jones, in a recent study of economics of tract size, found that nonindustrial privately owned forests in eastern Oklahoma were efficient with a range of acreage between 50 and 700 based upon categories of acreage between 50, 50 and 700, and 700 and more. The author concluded that the range of acreage between 50 and 700 seemed to be most receptive to assistance programs aimed at improving forest management. The authors found that beyond the range of 25 to 50 acres there was a rather sharp difference in the extent that profitable management may occur. The Thompson and Jones study appears, however, to have too much range in this receptive management category (50 to 700 acres) to determine a decisive difference in efficiency between small scale (250 acres of forestland or less) and large scale (250 acres or more).³


Previous to the Thompson and Jones study of tract size, Clark Row determined that tract size does make a difference. Based upon cost for five diverse types of treatments, i.e., slash disposal, site preparation, planting, power saw thinning and helicopter operations, the fixed cost may vary from $100 for hand planting to $2,000 for helicopters. Analysis of data from 1,500 sales of timber showed that tract size was important with a constant transaction cost (movement from one tract to another) of about $500.\(^1\) Row concluded from his research that minimum acreage for qualification to receive FIP funds should be established. In addition, Row believes that small woodlot owners should consider not investing in intensive timber management. Yet he does not indicate the distinct disadvantage in the loss in volume of timber per acre by engaging in less capital-intensive management. Row seems to be implying two types of management practices, one for large-scale tracts and one for small tracts without adequately demonstrating differences in the profitability per acre of each type of management.

Fred Cubbage, in his study of economies of forest tract size in Southern Pine harvesting, suggested that small tracts have serious "diseconomies of scale" for regeneration and harvesting. Economies of large size in forestry are achieved by spreading the industrial fix cost for capitalization and transport of machinery over a larger output (i.e., number of acres). Cubbage's conclusions were based upon a modeling procedure to establish a short-run acreage cost curve. The procedures include: (1) stand model, that is, the development of a model forest

with average characteristics; (2) factor productivity to determine productivity of manual and machine operation in harvesting; (3) factor cost to determine cost of all inputs; (4) harvest system—estimate of overhead cost for moving of harvest system to a new tract; (5) harvest simulation—determine harvesting system and cost for a range of tract sizes and mechanization levels; (6) model verification—check simulation results with data from real operation to determine validity of results; (7) analysis and interpretation development and analyzed cost curves.\(^1\)

Based upon this modeling procedure, Cubbage concluded that tract size is important in determining average cost for harvesting. High cost on small tracts suggests that forest management should be concentrated on 40-acre tracts or more in size. Tracts less than 40 to 60 are likely to be economically inefficient to harvest; that is, the level of profitability could be very low. Cubbage believes that overall large tracts of 50 to 125 acres have significant economic advantages over smaller tracts less than 50 acres. Average costs are prohibitive on tracts less than 10 to 20 acres. Forest policy should favor larger tracts as forest incentive programs should set a minimum requirement of between 20 and 40 acres for cost-share funding. Based upon the fact that most economies of scale can be reached at about 100 acres, efforts to aggregate tract size might be successful in reducing average harvest cost.

Unlike Row and Cubbage, who determined that some economies of scale can be achieved on relatively small acreage of 50 to 100 acres,\(^1\)

William Gardner's research indicates that reforestation can be economically profitable on tract size as low as five acres. Based upon data gathered in 1981 from 659 site preparations conducted by North Carolina's Division of Forestry between 1970 and 1976, Gardner drew a number of conclusions that demonstrated advantages in replanting small tracts. Using regression analysis, Gardner determined that

regression of total cost provides an estimate of both the fixed and variable components of production. The intercept and the coefficients of the dependent variable acreage provides an estimate of the variable component. When the regression equation of total cost is divided through by acreage, the average total cost is obtained.¹

In assessing the importance of tract size on the overall profitability of reforestation where size preparation is required, Gardner combined the various site preparation practices into logical packages that constitute a complete site preparation job for tracts of varying difficulty.

Gardner concluded that shearing, piling and planting of five-acre tracts or larger has a positive net present value (NPV) on all tract sizes. Sites which required bedding following chapping and burning will not return 7 percent unless the tract is ten acres or larger. Bedding after shearing and piling is the only combination of practices investigated that does not return 7 percent on ten-acre tracts. He further concluded that

with cost sharing, all tracts as small as five acres have a positive NPV, even with the most intensive site preparation. Tracts as small as two acres are also profitable except where bedding is involved. Although it was determined that large

tracts are indeed more profitable than small tracts, one is also left with the impression that return on investment can no longer be held as an excuse for lack of reforestation on small NIPFs. ¹

Despite the fact that economies of scale in agriculture as well as forestry have failed to clearly demonstrate that the size of the farm or woodlot is an indication of efficiency and profitability, researchers continue to use it as the primary criterion of efficiency from which much of policy is guided. In a recent publication entitled Competition for Land in the American South, Robert Healy suggests that NIPFs suffer from mismanagement not because their owners are not educated but because most of these NIPFs are hampered by small size management units. He noted that 11.4 percent of the forestland in the South was held in units of fewer than 50 acres. Healy later compares NIPF small units to industry large-scale units and concludes that industry forests are capable of producing more volumes of high-quality timber than the small NIPF woodlots. ² Even when soil quality is the same and NIPF woodlots are capable of producing at the same level per acre as industrial woodlots, Healy believes there are additional good reasons that industrial forestry should use intensive management and NIPF owners should not. The reasons Healy gives are rather similar to those given by agricultural economists who favor corporate large-scale farming over family farming. Healy's reasons range from (1) strategic investment as

¹Ibid.

opposed to acre-by-acre investment; (2) the liquid assets of the firm permit it to bear up under hard times better than the small woodlot owner; (3) forest industry will likely have access to more markets than small woodlot owners; and (4) the firm is more likely to be purely interested in wood production rather than the use of the land for other purposes. Healy's views represent the prevailing view in forest management. Yet they are assumptions rather than proven facts. They tend to couch a pro-industrial bias in forestry that in the final analysis may favor corporate control of forest resource production over efficiency and equity in forest resource production.¹ Healy's perspective in many ways is consistent with the view of agricultural economists who argue that large-scale/corporate agriculture is the only efficient system of agriculture manageable in today's rural economy. His view is also consistent with forest economists who argue that the only efficient woodlots in today's forestry system are large-scale NIPFs and industrial woodlands.

Summary

In summary, this historical overview reveals an alarming bias toward large-scale and corporate landowners in U.S. agriculture and forest policies. Much of agriculture and forest economics tends to support an increasing shift toward large-scale corporate control in forestry resource production. Classical and neoclassical economic analysts have used price theory, especially theories of economies of

¹Ibid., pp. 105-107.
scale, to determine efficiency in both agricultural and forestry production. However, less orthodox economists have consistently demonstrated that theories of economies of scale have not proven to be the primary determinant of efficiency. These nonorthodox economists suggest that the structure of the marketing system may be the primary determinant of production profits rather than efficiency based upon arguments of "economies of scale." This level of profit in the last analysis determines who stays in agriculture and who is squeezed out.

However, based upon theories of economies of scale, much of U.S government policies in agriculture and forestry resources have tended to be biased in favor of large-scale and corporate landowners. These policies, which are anti-redistributive, have actively militated against the retention of efficient small- and middle-scale landowners in the agricultural sector.
Forestry and the forest product industries are undoubtedly vital to North Carolina's economy. In 1977 woodbase industries, including lumber, paper allied products and furniture, added some $2 billion to the economy. North Carolina ranks fifth among the fifty states and first in the South in income from woodbase products.\(^1\) These woodbase industries employ one out of every twenty civilians. In 1984, 18.5 million acres of commercial forest made up the state forest natural resource landbase. Demands for timber and other woodbase products nationally are expected to double in the next fifty years. North Carolinians are cutting down more timber than they are replanting and timber demands from the state NIPFs are increasing; yet from 1974 to 1984 overall timber supply on NIPFs has decreased. In this period, more than 2.5 million or nearly 14 percent of the state commercial timber was harvested on NIPFs.\(^2\) In 1984, timberland owned by farmers had decreased by 35 percent from 1974—a reduction from 8.4 to 5.5 million acres. According to the U.S. Forest Service, occupational change, land transaction, clearing for agriculture, and incorporation of small family farms all contribute

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to the reduction of farmer-owned timberland. However, corporate owners (excluding the forest industry) added 0.5 million acres to a previous base use of 1.1 million acres. Miscellaneous private individuals acquired another one million acres and now own 6.9 million acres of commercial forestland. The forest industry harvested only 20 percent of the total acreage harvested in the past ten years (see Table 4).  

Regeneration of forestland by NIPFs drastically trails that of the forest industries. Pine acreage harvested on NIPFs accounted for 68 percent of the total acreage harvested in the 1974-84 period, yet only 26 percent of this acreage was restocked. In contrast, there was a 19 percent increase in acreage artificially regenerated over acreage harvested by private industrial forest. Of the new stands regenerated, approximately 43 percent were pine, 15 percent were oak pine and 43 percent were other hardwood types. However, it should be noted that the past decade witnessed an increase in NIPF replanting of 84 percent over the previous decade (1964-1974). This annual replanting of about 28,000 acres in the 1974-1984 period is largely attributable to federal and state reforestation programs  (see Tables 5 and 6).

Earlier data sources indicate that, as of 1984, the 18.5 million acres of commercially owned forestland are very unevenly distributed among income classes and size of farms. In 1978, according to data provided by North Carolina's Governor's Task Force on Small Woodlots, 89 percent of the commercial forestland owners owned less than 100

1Ibid.
2Ibid.
### Table 4. Area of commercial forestland, by forest type and ownership class, North Carolina, 1984

<table>
<thead>
<tr>
<th>Forest type</th>
<th>All ownerships</th>
<th>National Forest</th>
<th>Other public</th>
<th>Forest industry</th>
<th>Forest industry-leased</th>
<th>Other private</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Acres</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Softwood types:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White pine-hemlock</td>
<td>204,710</td>
<td>24,539</td>
<td>248</td>
<td>11,845</td>
<td>132</td>
<td>167,946</td>
</tr>
<tr>
<td>Spruce-fir</td>
<td>18,457</td>
<td>7,899</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Longleaf pine</td>
<td>389,013</td>
<td>16,437</td>
<td>124,942</td>
<td>43,263</td>
<td>1,558</td>
<td>202,813</td>
</tr>
<tr>
<td>Slash pine</td>
<td>195,365</td>
<td>--</td>
<td>8,933</td>
<td>125,789</td>
<td>23,178</td>
<td>37,465</td>
</tr>
<tr>
<td>Loblolly pine</td>
<td>3,409,207</td>
<td>43,302</td>
<td>127,114</td>
<td>1,044,115</td>
<td>103,562</td>
<td>2,091,114</td>
</tr>
<tr>
<td>Shortleaf pine</td>
<td>502,901</td>
<td>6,899</td>
<td>10,378</td>
<td>21,695</td>
<td>--</td>
<td>463,929</td>
</tr>
<tr>
<td>Virginia pine</td>
<td>780,017</td>
<td>6,800</td>
<td>12,199</td>
<td>18,712</td>
<td>4,338</td>
<td>737,968</td>
</tr>
<tr>
<td>Sand pine</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Eastern redcedar</td>
<td>30,430</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Pond pine</td>
<td>742,850</td>
<td>37,659</td>
<td>123,654</td>
<td>142,627</td>
<td>343</td>
<td>438,567</td>
</tr>
<tr>
<td>Spruce pine</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Pitch pine</td>
<td>61,155</td>
<td>28,684</td>
<td>9,499</td>
<td>1,091</td>
<td>--</td>
<td>21,881</td>
</tr>
<tr>
<td>Table Mountain pine</td>
<td>10,771</td>
<td>7,587</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>3,184</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>6,344,876</td>
<td>179,806</td>
<td>416,967</td>
<td>1,409,137</td>
<td>136,990</td>
<td>4,201,976</td>
</tr>
<tr>
<td><strong>Hardwood types:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oak-pine</td>
<td>2,276,670</td>
<td>137,167</td>
<td>84,216</td>
<td>200,572</td>
<td>4,747</td>
<td>1,849,968</td>
</tr>
<tr>
<td>Oak-hickory</td>
<td>6,600,835</td>
<td>636,314</td>
<td>147,129</td>
<td>219,926</td>
<td>10,906</td>
<td>5,586,560</td>
</tr>
<tr>
<td>Chestnut oak</td>
<td>259,241</td>
<td>91,493</td>
<td>10,571</td>
<td>22,668</td>
<td>--</td>
<td>134,509</td>
</tr>
<tr>
<td>Southern scrub oak</td>
<td>107,141</td>
<td>--</td>
<td>4,973</td>
<td>2,501</td>
<td>--</td>
<td>99,667</td>
</tr>
<tr>
<td>Oak-gum-cypress</td>
<td>2,302,762</td>
<td>14,707</td>
<td>124,087</td>
<td>431,748</td>
<td>11,151</td>
<td>1,721,069</td>
</tr>
<tr>
<td>Elm-ash-cottonwood</td>
<td>401,107</td>
<td>--</td>
<td>13,617</td>
<td>47,556</td>
<td>--</td>
<td>339,934</td>
</tr>
<tr>
<td>Maple-beech-birch</td>
<td>157,637</td>
<td>57,341</td>
<td>3,182</td>
<td>3,216</td>
<td>--</td>
<td>93,898</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>12,105,393</td>
<td>937,022</td>
<td>387,775</td>
<td>928,187</td>
<td>26,804</td>
<td>9,825,605</td>
</tr>
<tr>
<td><strong>All types</strong></td>
<td>18,450,269</td>
<td>1,116,828</td>
<td>804,742</td>
<td>2,337,324</td>
<td>163,794</td>
<td>14,027,581</td>
</tr>
</tbody>
</table>

Table 5. Area of commercial forestland regenerated annually, by type of regeneration and broad management class, North Carolina, 1974 to 1984

<table>
<thead>
<tr>
<th>Type of regeneration</th>
<th>All classes</th>
<th>Broad management class&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Pine plantation</td>
</tr>
<tr>
<td>Artificial regeneration following harvest</td>
<td>53,386</td>
<td>47,341</td>
</tr>
<tr>
<td>Natural regeneration following harvest</td>
<td>100,481</td>
<td>301</td>
</tr>
<tr>
<td>Other artificial regeneration on forestland</td>
<td>18,467</td>
<td>16,539</td>
</tr>
<tr>
<td>Other natural regeneration on forestland</td>
<td>29,957</td>
<td>316</td>
</tr>
<tr>
<td>Artificial regeneration on nonforestland</td>
<td>1,685</td>
<td>1,526</td>
</tr>
<tr>
<td>Natural reversion of nonforestland</td>
<td>19,708</td>
<td>409</td>
</tr>
<tr>
<td>Total</td>
<td>223,684</td>
<td>66,432</td>
</tr>
</tbody>
</table>

<sup>a</sup>Classification after regeneration.

Table 6. Area of commercial forestland, by treatment opportunity and ownership class, North Carolina, 1984

<table>
<thead>
<tr>
<th>Treatment opportunity class</th>
<th>Ownership class</th>
<th>All ownerships</th>
<th>Public</th>
<th>Forest industry</th>
<th>Forest industry-leased</th>
<th>Other private</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Acres</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salvage</td>
<td>59,399</td>
<td>6,620</td>
<td>2,752</td>
<td>--</td>
<td>50,027</td>
<td></td>
</tr>
<tr>
<td>Harvest</td>
<td>1,907,561</td>
<td>176,382</td>
<td>187,011</td>
<td>3,540</td>
<td>1,540,628</td>
<td></td>
</tr>
<tr>
<td>Commercial thinning</td>
<td>868,775</td>
<td>24,643</td>
<td>239,988</td>
<td>37,699</td>
<td>566,445</td>
<td></td>
</tr>
<tr>
<td>Other stand improvement</td>
<td>1,364,701</td>
<td>46,263</td>
<td>155,194</td>
<td>132</td>
<td>1,163,112</td>
<td></td>
</tr>
<tr>
<td>Stand conversion</td>
<td>217,526</td>
<td>7,097</td>
<td>24,042</td>
<td>--</td>
<td>186,387</td>
<td></td>
</tr>
<tr>
<td>Regeneration</td>
<td>2,022,545</td>
<td>236,053</td>
<td>227,198</td>
<td>9,438</td>
<td>1,549,856</td>
<td></td>
</tr>
<tr>
<td>Stands in relatively good condition</td>
<td>9,162,776</td>
<td>662,633</td>
<td>1,292,066</td>
<td>112,976</td>
<td>7,095,101</td>
<td></td>
</tr>
<tr>
<td>Adverse sites(^a)</td>
<td>2,846,986</td>
<td>761,879</td>
<td>209,073</td>
<td>9</td>
<td>1,876,025</td>
<td></td>
</tr>
<tr>
<td>All classes</td>
<td>18,450,269</td>
<td>1,921,570</td>
<td>2,337,324</td>
<td>163,794</td>
<td>14,027,581</td>
<td></td>
</tr>
</tbody>
</table>

\(^a\)Areas where management opportunities are severely limited because of steep slopes or poor drainage.

acres, 10 percent of the owners owned between 100 and 500 acres and the remaining 1 percent owned 5,000 acres or greater (timber industries and corporations).

North Carolina has the greatest number of forest owners in the Southeast. As North Carolina's farming population decreased the amount of timberland owned and/or managed by farmers also decreased. In 1985, the number of farms in North Carolina had decreased by 12 percent for small farms (income less than $20,000), by 22 percent for middle range farms (income between $20,000 and $99,000) but was up by 29 percent for larger farms (income over $100,000).  

Blacks have consistently been losing in large numbers both farms and forestlands over the past three decades or so. In 1978, there were over 8,000 black-operated farms in the state and by 1982 that number had decreased to 5,352. The 8,000 farms in 1978 represented about 580,000 acres of which nearly 200,000 acres were in farmland. In addition, in 1978 the black farm operator represented about 8.3 percent of the woodland in the state. These figures continue to decrease in 1982 when black farm acreage was put at 405,756 acres of which about 201,297 acres were used for cropland. Over 204,000 of these acres were therefore used as woodland and pasture range.


The above figures show losses in black forest lands both statewide and nationally. Control of timber resources for many purposes, including energy, constitutes a key linkage in blacks' strategy for survival in the U.S., yet if current trends of black land lost continue, it is predicted by the 1990s that black landownership will be virtually nonexistent. Unfortunately, there has been little research on black forest management NIPF owners. The most extensive study was conducted over ten years ago (Howze's Survey of Black Forest Landowners), and very little has been done to update this research on a southern regionwide basis. As mentioned in the preceding chapter, much of black forestland loss is part of the changing character of U.S. agriculture and represents structural problems that are issues of the national political agenda on land reform in the U.S.¹

Factors that Influence Forest Management
Among North Carolina's NIPF

Muse and Finger notes that the three major managers of North Carolina's forests are the forest industry and the North Carolina Forest Service, which includes state and county rangers and consulting foresters. The forest industry has replanted about 1.25 million of their 2.33 million acres. Professional foresters usually operate on a fee basis. Their main task as professional foresters is estimating timber value or "timber cruising" and there are about forty-two located in the

¹See Glen Howze, Survey of Black Forest Landowners (1973). Also, see Peter Barnes on issues of national land reform in the U.S. in Peter Barnes, "Land Reform" (three articles), New Republic (June 5, 12, and 19, 1971) ("The Great American Land Grab," "The Vanishing Small Farmers," "The Case for Redistribution.")
state (as of 1981).\(^1\) Industrial foresters have made some attempts to work with NIPFs to improve timber management on NIPF lands. According to Muse and Finger, Weyerhaeuser, International Paper, Champion International, Federal Paper Board and Union Camp all offer some form of management services to NIPF owners. Weyerhaeuser's Tree Farm Family programs in 1981 had enrolled 643 landowners owning 217,534 acres of land or about 320 acres per woodlot owner. Weyerhaeuser, in exchange for offering consulting services usually asked the woodlot owner to permit Weyerhaeuser to have the right to bid on a tree farm family member's timber when it was ready for sale. The timber industry is, of course, aware that it is heavily dependent upon NIPFs for wood so all efforts are usually made to keep good public relations with all NIPFs.\(^2\)

The N.C. Forest Service by regulation can give a landowner up to five days of management assistance per year; however, it will not do volume estimates or serve as a timber broker for a private landowner. County managers and state foresters draw up to about 3,600 plans per year covering more than 237,000 acres of the state NIPF. A record of the number of landowners that actually implement that plan is not kept according to Muse and and Finger. Yet, state foresters and other professionals believe that the system works pretty well; without records of implementation, one cannot be very sure how well the system is in fact working.


\(^2\)Ibid.
In 1978, it was determined by state forest economists that the
system was not working very well when the amount of individuals and
acreage that were undergoing management was compared to the total number
of woodland owners in the state. This determination led to the creation
of the Governor's Advisory Task Force on Small Woodlot Management.
Governor Hunt established this task force to improve management on
small woodlots (there are over 218,000 owners of less than 100 acres of
woodland). The task force found that: (1) markets for some types of
timber are poor or nonexistent in some parts of the state; (2) small
woodlot owners generally lack an adequate awareness and understanding
of the investment and income opportunities in growing timber; (3) small
private woodlots are tending to revert to low quality hardwoods; (4) costs
of intensive site preparation have escalated greatly in recent years,
especially on small tracts; (5) regulatory legislation to require
reforestation and improvements of forest stands is neither appropriate
nor likely to be effective in North Carolina at this time; (6) the
logging industry is geared to mechanized systems designed for large
tracts, thus providing both financial and technical disadvantages for
owners of small tracts. The task force consequently decided to structure
major program focuses on the following areas: (1) expanding markets
for timber; (2) identifying and developing efficient technology for
small woodlots; (3) stimulating owner interest in woodlot improvement;
and (4) meeting owner needs for more on-the-ground forestry assistance.

1Recommendations to Increase the Productivity of Small Woodlots
in North Carolina (Raleigh, N.C.: The Governor's Advisory Task Force

2Ibid., p. 1.

3Ibid.
Guided by task force recommendations, the state General Assembly has since done the following: (1) funded four new service foresters and six technicians; (2) purchased 100 additional acres of land to boost seed production; (3) established a small woodlot forestry research and development project; (4) excluded state and federal cost sharing from state income tax; (5) allowed small woodlot owners to spend income from timber sales over a three-year period; and (6) allowed reforestation expenses to be amortized over five years. In addition, Governor Hunt established a state interagency committee on small woodlots chaired by the state director of forestry.¹

Muse and Finger believe, however, that after four years (1983) of state and administrative actions as a consequence of the task force: (1) the state forest development program needs evaluation; (2) these programs are being hampered by federal budget cuts, especially FIPs; (3) interagency efforts at the state and local levels are expanding; and (4) the N.C. Forestry Association is lobbying to expand the currently used valuation tax provision to include corporate holdings, a measure that would decrease the tax base for many local towns and counties.²

Despite the many efforts that the task force and other state agencies have been implementing, there is still generally a lack of research that clearly demonstrates that NIPF lands are in any small way being categorically improved. It is still difficult to grasp the extent of improvement on NIPFs that have undergone some treatment. Again, state data on implementation appear to be somewhat inadequate to determine the level of effectiveness of actions geared at improving management of NIPFs as a consequence of the Governor's task force.

²Ibid.
State and Federal Incentive Programs

North Carolina is one of six states that have state-financed and administered cost-sharing programs. The others are Mississippi, California, Minnesota, South Carolina and Virginia. Under the State Forestry Development Act of 1977, a $500,000 annual state appropriation for a forest development fund was created. The fund was designed to provide matching funds at a one-to-two ratio with a tax on processed timber, paid by wood processors to replant some of the 60,000 to 100,000 acres that go unplanted each year. In 1982, this ratio was changed to one-to-three and in 1983 the annual fund for reforestation was about $2 million as opposed to $1.3 million in 1979, 1980, 1981 and 1982.  

The state cost-sharing program, unlike the federal FIP, permits corporations, i.e., industrial forestry, to participate in it. Although data are not currently available to determine the exact ratio of acreage reforested under the program by corporations as opposed to NIPF acres, it is acclaimed by state foresters that far more acres of NIPF than those of corporations are undergoing some type of treatment. The number of acres regenerated does not appear on the state computer printout nor does the acreage owned by each applicant. The division does have aggregate data for acreage approved by county, but it does not have individual data on the total size of the woodlot or the total size and race of the woodlot owner nor does it show whether or not he or she is a farmer. In order to determine the actual number of acres regenerated as well as the other demographics listed above, one would have to

1Ibid., p. 32.
review every application in the central division files and also attempt to arrange meetings with district foresters or country rangers in all relevant counties. This process is unlikely to receive the ready cooperation of state officials. This information, however, is vitally important in providing additional data to improve woodlot management among limited resource farmers. It cannot be generally assumed as many state officials do that, because there is a 100-acre limit per year on the amount of acreage an applicant can have replanted or treated under the state programs, the applicant is a small woodlot owner.¹ In short, the equitableness in the program because of current data shortage is extremely difficult to obtain. Between 1978 and 1983, the state committed $5.9 million to subsidize regeneration.²

In addition to the possible inequity in the program based upon race and size of the farm or woodlot, the program seems to be concentrated in a few counties. According to Muse and Finger, the first-come-first-served method that the program is structured by allows the more aggressive ranger and woodlot owner to take disproportionate advantage of the program. Therefore, counties that incur a high degree of harvesting and need for regeneration may not be the counties that receive reasonable amounts of state funds for regeneration (see Tables 7 and 8).³ Both state and federal programs are geared toward Southern Pine production

¹This information is based upon the personal experience of this researcher as well as that of Muse and Finger in efforts to obtain data from state and federal agencies on forestry.

²Based upon information obtained in interviews with officials of the North Carolina Division of Forestry.

³Muse and Finger, "Small Woodlot Management," p. 34.
Table 7. Top ten counties by amount of cost-sharing funds received from the N.C. Forest Development Program (July 1978-January 1983)

<table>
<thead>
<tr>
<th>County</th>
<th>Funds Committed for Project (60% of total project cost)</th>
<th>Total Cost of Project (60% state funds plus 40% private funds)</th>
<th>No. of Acres Approved for Regeneration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Bladen</td>
<td>$296,533</td>
<td>$494,221</td>
<td>5,534</td>
</tr>
<tr>
<td>2. Franklin</td>
<td>$245,976</td>
<td>$409,960</td>
<td>4,921</td>
</tr>
<tr>
<td>3. Edgecombe</td>
<td>$244,650</td>
<td>$407,750</td>
<td>4,927</td>
</tr>
<tr>
<td>4. Moore</td>
<td>$233,462</td>
<td>$389,103</td>
<td>5,142</td>
</tr>
<tr>
<td>5. Pender</td>
<td>$221,576</td>
<td>$369,293</td>
<td>3,745</td>
</tr>
<tr>
<td>6. Chatham</td>
<td>$218,195</td>
<td>$363,658</td>
<td>3,483</td>
</tr>
<tr>
<td>7. Halifax</td>
<td>$217,165</td>
<td>$361,941</td>
<td>4,562</td>
</tr>
<tr>
<td>8. Nash</td>
<td>$202,758</td>
<td>$337,930</td>
<td>3,391</td>
</tr>
<tr>
<td>9. Pamlico</td>
<td>$197,444</td>
<td>$329,073</td>
<td>2,682</td>
</tr>
<tr>
<td>10. Jones</td>
<td>$192,935</td>
<td>$321,558</td>
<td>2,186</td>
</tr>
<tr>
<td>Total for Top Ten Counties</td>
<td>$2,270,694</td>
<td>$3,784,490</td>
<td>40,573</td>
</tr>
<tr>
<td>Total for All 100 Counties</td>
<td>$5,931,116</td>
<td>$9,885,191</td>
<td>116,324</td>
</tr>
</tbody>
</table>

Table 8. Top ten softwood-producing counties in North Carolina and amount of assistance received from N.C. Forest Development Program

<table>
<thead>
<tr>
<th>Rank in Production</th>
<th>Top Ten Counties in Production of Sawtimber, Veneer/Plywood (1979)</th>
<th>Amount of Forest Development Program (FDP) Funds Received (1978-83)</th>
<th>Rank Among 100 Counties in FDP Funds</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Craven (59,968)</td>
<td>$103,511</td>
<td>20</td>
</tr>
<tr>
<td>2.</td>
<td>Sampson (44,675)</td>
<td>85,718</td>
<td>25</td>
</tr>
<tr>
<td>3.</td>
<td>Columbus (40,382)</td>
<td>83,366</td>
<td>26</td>
</tr>
<tr>
<td>4.</td>
<td>Montgomery (38,484)</td>
<td>92,121</td>
<td>22</td>
</tr>
<tr>
<td>5.</td>
<td>Beaufort (36,343)</td>
<td>80,749</td>
<td>28</td>
</tr>
<tr>
<td>6.</td>
<td>Bertie (34,508)</td>
<td>87,341</td>
<td>24</td>
</tr>
<tr>
<td>7.</td>
<td>Gates (32,870)</td>
<td>61,854</td>
<td>35</td>
</tr>
<tr>
<td>8.</td>
<td>Chatham (32,757)</td>
<td>218,195</td>
<td>6</td>
</tr>
<tr>
<td>9.</td>
<td>Bladen (32,040)</td>
<td>296,533</td>
<td>1</td>
</tr>
<tr>
<td>10.</td>
<td>Wake (30,913)</td>
<td>24,782</td>
<td>48</td>
</tr>
</tbody>
</table>

and are, therefore, largely limited to the eastern half of the state. However, the state and federal cost-sharing programs have permitted greater acres to be regenerated since their inception. There was an increase from 27,000 acres annually in the late 1960s to 44,000 acres replanted in 1980 and 46,000 acres replanted in 1982. Only Virginia, Mississippi and Alabama, respectively, led the states in acres regenerated. Virginia is the only state in the nation that NIPF regeneration exceeds that of the forestry industry, largely because either natural or artificial regeneration is mandatory after clear-cut harvesting.\(^1\)

**Federal Forestry Incentive Program (FIP)**

In 1973, as a consequence of Public Law 93-86, Section 4, Congress created the Forestry Incentive Program (FIP). The program has been under increased criticism since its inception because many conservative foresters, legislators and other public officials believe that it is redistributive and constitutes a sort of welfare giveaway to the farmer. The program is jointly administered by two U.S. agencies, the U.S. Forest Service and the Agricultural Stabilization and Conservation Service (ASCS). The Forest Service, through cooperation with county and state foresters, provides technical assistance in determining type of treatments. In addition, the Forest Service develops and maintains the procedure to determine the allocation of cost-sharing to each state.\(^2\)

\(^1\)Ibid.

\(^2\)Information obtained through an interview with Alex Dowell of the North Carolina Division of Forestry and Natural Resources, March 1985.
The program is dependent on county ASCS committees to determine applicant eligibility, approve applications, administer agreements and issue cost-sharing payments to landowners. Program participants are restricted to those who own between 10 and 1,000 acres of forestland. The Secretary of Agriculture may grant a waiver to move the maximum up to 5,000 acres. Nationally speaking, the FIP has been rated as a very successful program. In 1979, Christopher Risbrudt evaluated the program and found that program efficiency has increased as the federal cost per acre treated has held constant in real dollars. At the same time, the average 1981 reforestation cost-share tract has increased by 118 percent to 41 acres since 1974. Retention of treated acres is high; nearly 94 percent of the acres cost-shared through FIP in 1974 are still in place.1

This evaluation, much like North Carolina's state cost-share program evaluations, does not speak to the issue of equity in distribution of funds, especially based upon size of farm or woodlot or to race. North Carolina has received a relatively large proportion of the annual allocation of FIP funds, which have been about $14 million a year. In the ten years prior to 1983, North Carolina had been receiving around $900,000 annually in FIP cost-share funds. However, in 1983, the fund as a result of the Reagan administration's domestic policies, was cut back to about $613,000 and was at $ ,000 in 1984.2


2Information obtained through an interview with H. V. Mangum of the North Carolina ASCS State Office, Raleigh, N.C., November 1984.
In addition to the federal cost-share program, the state receives federal financial assistance under the Agricultural Conservation Program (ACP) administered by the ASCS. ASCS tends to operate the FIP and ACP programs jointly with funds that are needed to replant less than ten acres allocated from the ACP revenues. Again, the availability of data from ASCS does not permit a breakdown or allocation of resources to individuals by race, size of farm or total size of woodlot. Only the amount of cost-share funds and the number of acres treated per applicant are available. Basic questions of equity in the distribution of the program based upon scale of operation are, therefore, rather difficult to determine. Again, as in the case with state divisions of forestry, access to files to attain more detail as to how equitable the programs are being administered is subject to bureaucratic mazing.¹

The Agricultural Extension Service

The forest resources extension system has a staff of twelve state specialists based in Raleigh, two area forestry agents and an agent with forestry responsibility in each county. The agency is centrally responsible for training and informal education in forestry, the transfer of new technology and information. It is also responsible for providing feedback to researchers and other academicians on problems associated with forest management by landowners. Extension maintains demonstration plots for both short- and long-term forestry studies. It is essentially responsible for all the research education and informational

needs of NIPF landowners. The extension service has traditionally relied upon newsletters, publications, meetings, news media and county forestry associations to provide comprehensive educational and informational resources to the state woodlot owners, especially farmers.¹

The extension service does not initiate a critical or rather public evaluation of itself in relation to forestry education. However, national extension has recently undergone some evaluation of effectiveness that may be somewhat generalized to specific states. Paul Warner and James Christenson, in a study completed in 1984, noted that

One of the striking aspects of the body of literature on extension was its absence. If you go to the agricultural library of a land grant university, you will find a number of classics on extension philosophy and methods written in the 20's and 30's. Since that time, most of what is available could be referred to as fugitive literature. It is in the form of memos, research reports, theses, and papers often available only from the author. Therefore, there is a need for more permanent additions to the body of knowledge on extension.²

Warner and Christenson sought to determine how many people extension was reaching, who was its clientele, what proportion of the population it is expected to serve and does the present mix of clientele include an adequate number of such groups as low-income individuals, minorities and limited resource farmers.

When a sample of the national population was asked if they had ever heard of the extension service, only 40 percent responded that they had. The study essentially concluded the following: (1) extension

¹Ibid.

clientele are predominantly middle class—they are middle to upper income, high school and college educated, white, married, employed and are homeowners; and (2) there was an underrepresentation of clientele who were poor, single, divorced, with less education, unemployed, retired, nonwhite, students and renters (as opposed to homeowners).¹

According to Warner and Christenson's findings, nationally large-scale farmers were more frequent users of extension than small-scale farmers. Their findings suggested that there was greater dissatisfaction among young people, low-income persons, individuals with lower levels of education, and operators of small farms (under 269 acres). Warner and Christenson's research conclusion indicated that large-scale farmers believed that extension was serving their needs well. Small farmers were, however, less pleased with service they had been receiving. Extension needs to examine its service to operators of small farms.²

As noted earlier, these findings may not be generalizable to all states or regions in the country. It is, however, the most recent and most comprehensive study currently available on the cooperative extension service.

Other research more directly related to forestry extension shows that many professional foresters are generally ignorant about small woodlot owners. Albert C. Worrell conducted a research survey with fifty-two people in state forestry offices, state extension organizations in thirty-four states and the TVA. He found that about 10 percent of the small properties may be managed intensively. Worrell concluded

¹Ibid., p. 66.

²Ibid., p. 84.
that, after forty-five years of extension forestry and thirty-two years of cooperative management, almost two-thirds of the land serviced by these programs are still without any conscious management. He also found that most of the agency personnel interviewed knew very little about the questions he asked and these individuals were probably the most informed of the agency staff.¹

The general reluctance of most NIPFs especially to engage in more extensive reforestation practices and his willingness to adopt, is attributable to a number of causes which include the attitude of the farmer, the income level of the woodlot owner, his education, institutional constraints, the nature of the technology and the politics behind the distribution of the technology. Most of these factors are often put under the rubric of diffusion and adaption theory. Most research that suggests that the reason why the woodlot owner or farmer does not engage in a certain practice or innovation is internal and tends to incorporate some aspect of classical diffusion theory.

Diffusion theory largely developed in agriculture in the late 1950s and 1960s. The theory usually focused on three variables: (1) those who adopt; (2) the rate of adoption; and (3) those who do not adopt. Kevin Gross suggests that the single most important group of diffusion studies came from rural sociology research, most of which were done in the U.S., particularly in the midwest land grant universities. He noted studies such as Wilken, 1958; Lionberger, 1960; Bohlen, ¹

Generally described, diffusion of innovation, according to Gross, is a multidisciplinary theory of planned social change, change that is brought about by the spread of new ideas or new technologies throughout a social system.

The theory as classically defined by Rogers suggests that diffusion adoption has four essential elements: (1) the innovation; (2) communication from one individual to another; (3) a social system; and (4) a time variable. Although the theory has been very popular in the U.S. and other more developed Western countries, it has not had the popularity in Third World countries where structural and socioeconomic differences in farmers' rank in society are more pronounced. In developing countries, such as those in Latin America, diffusion theory has been almost categorically rejected by most theorists who favor a more progressive governmental and socioeconomic structure.

The works of Andre Gunder Frank, an economist, and Susanne Bodenheimer, a sociologist, are radical critiques of diffusion theory as an explanation for modernization or rather the lack of modernization in developing countries. Frank suggests that the problematics of development or modernization be moved from negative attitudes of individualism

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and slow rates of adoption—psychological variables endemic to diffusion theory—to that of structural dependency between center-developed countries and peripheral underdeveloped countries. There can be no diffusion of technology to the poor and disadvantaged in these countries because the developed countries must keep them dependent, poor and underdeveloped in contrast to maintaining an acceptable rate of continuing development and modernization. Frank's theory suggests that center and peripheral are in conflict. Diffusion theory must at least implicitly assume that there is consensus between donor and receiver. Many of the critiques such as Frank's have led to general reforms of diffusion theory as it is applied both in the developing countries as well as in the United States.\(^1\) Gross noted that other social theorists who are less inclined to condemn diffusion theory criticizes its insensitivity to contextual and structural factors.

These reformist theorists include Beltran, 1976; Roger, 1973; Bostian, 1974; and Havens, 1975. Beltran believes that "the problems with diffusion theory lie in the historical development of communication as a new academic discipline in the United States. Undue attention was placed on the individual as the unit of analysis as opposed to the relationship between sources and receivers. Caplan and Nelson suggest that diffusion theory is oriented toward psychological research. Reductionism, in theoretical psychological research, focuses on person-centered variables which create a person-blame causal attribution bias

\(^1\)For a critical analysis of diffusion theory, see Andre Gunder Frank, Sociology of Development and Underdevelopment of Sociology (London: Pluto Press, 1971), pp. 27-44.
when applied to social change. Person-blame is the tendency to hold the individual responsible for their problems; the alternative is system-blame which the social structure is held accountable for the problem.¹

Most forestry extension education makes use of diffusion theory. It is generally assumed that innovative forest management practices will first be adopted by the larger, more educated, wealthier farmers and then it will gradually trickle down to the smaller, less educated, poorer farmers. John M. Bethea believes that where you "stand" on this issue depends upon where you "sit." He believes that much has been said about landowner attitudes toward harvesting, but the attitudes of an individual depend on what he hears, sees and experiences and it is always subject to change.²

Joyce Hilliard-Clark, using the diffusion model as a framework for analysis, provides a series of insightful explanations as to why forest management among North Carolina's NIPF landowners is deficient. Her basic thesis is that forest management is based upon a decision to adopt (act on given forestry practices). Factors that influence adoption are: (1) personal; (2) social; (3) situational; and (4) attitudinal. She noted personal factors as demographics, age, race, level of education, etc. (see Chart 3). Social factors include the degree and frequency of contact with forestry and professional personnel in addition to

membership in agricultural organizations. Thirdly, she noted that situational factors involved land tenure, income and size of land ownership. Attitudinal factors on management included values, goals, traditionalism, conservatism, familism and debt avoidance, i.e., risk (see schematic presentation of variables in Chart 3). ¹

Based on diffusion frame of analysis, Hilliard-Clark hypothesized the following:

1. for small landowners, the family is the primary source of information on forestry
2. personal characteristics strongly influence forest management, especially age, level of education, occupation, race and sex
3. social interactions are different based upon contact with forestry personnel, membership in formal agricultural organizations, and media usage
4. land tenure factors determine the practices of forest management
5. the owner's attitude and behavior towards the forestland determines the extent of their forest management.

Based on data from 147 private landowners in five North Carolina counties, Hilliard-Clark concluded the following:

1. most of the owners surveyed were giving their forestland little more than rudimentary care
2. the age of the forestland owner appears to be a serious deterrent to forest management

Chart 3. Schematic presentation of variables involved in forest management

(3) for 67 percent of the respondents, their primary source of income was from sources other than the land

(4) children may have serious influence on the parents' action in forest management

(5) the level of comprehension and application of technical data was very low for most woodlot owners

(6) low educational level of the small farm forestland owner limited chances to read and communicate ideas with professionals

(7) all policy measures currently recommended to stimulate productivity of small NIPF lands seem to be of little use.¹

The conclusion and recommendation of Hilliard-Clark's research strongly suggest that more research needs to be conducted on situational factors in order to improve NIPF practices, especially among small farm-oriented woodlot producers. She notes that "an expanded, improved educational program could induce landowners to adopt methods of increasing productivity of their forestland if they coincided with the landowner's goals and objectives for his land."² Also, resource agencies should use the more participatory approach with forest landowner programs. Programs of education and technology transfer should be carried to worksites, churches, and social gatherings. And, generally, many NIPF landowners are not fully aware of the services available to them from state and federal government agencies. Even though the name of the respondent interviewed came from the ASCS list, the majority of the respondents never mentioned the ASCS as a source of information.

¹Ibid., pp. 99-100.

²Ibid., p. 25.
Hilliard-Clark's findings indicate that situational factors, coupled with source of information and knowledge, largely determine farm woodlot owners' decisions to practice forestry management. More detailed studies of the specific informational needs and mediums that are effective in meeting these educational and informational needs are needed. However, it seems that before extension and other forestry-related researchers can improve educational programming an overall assessment of what innovations in education are preferable by woodlot owners would be beneficial. Changes that affect educational and information programs may be better explained within the overall structure of agriculture which this researcher argues is more determined by wealth than any other single variable.

The classical diffusion model used as a framework of analysis tends to be biased in favor of larger, wealthier, and more politically powerful landowners. The model may not adequately explain factors that will militate against an even more improved innovative, educational program designed to improve the rate and extensiveness of adoption of systematic forest management techniques. Institutional constraints that may present extension and other forestry-related agencies from delivering a more effective (innovative) educational program to smaller NIPF landowners may be better explained within the context of the Gotsch model of technical change and distribution of income at the local community level. Although Gotsch explained his model within the use of the developing countries, there is nothing structurally designed in the model that prevents its use in any country, including the United States.
Gotsch's basic premise is that the distribution of institutional services such as extension, local credit, and FmHA involves the incentive operating within the local organization serving agriculture. He states that "experience has shown that much of the discrimination between large and small cultivators arises out of the motivations and attitudes forced on local officers by the structure and goals of the bureaucracy."¹ In addition, when the structure for effective organization of the lower income farmer is lacking, it will prove difficult to build new organizational structure to represent their interest. The lack of farmers' unions in counties in North Carolina serves as a case in point. Forestry associations tend to be biased toward middle and upper middle class woodlot owners. Family, kinship, tribe, and caste factors play a role in the way institutions function locally. Therefore, gaining an understanding of the social and cultural framework within which community decisions are made is important in judging the ability of various social classes to organize institutions that would serve their interests.²

According to Gotsch, with the schematic design illustrated in Chart 4, the characteristics of technology in the agricultural sector (a), the distribution of technology (B) and the distribution of productive assets (C), produce an estimate of the workable surplus available from the rural community and a measure of the personal distribution of income.


²Ibid.
Taken together with the nonwealth attributes of local customs and traditions (D), the result is a distribution of personal income and power.

Three feedback loops complete the structure. The first (E) involves the familiar process of capital accumulation: Larger farmers with savings will probably attempt to purchase more land regardless of technology. The second loop (F) relates to changes in income and power back to the institutions that serve rural communities (banks, ASCS, FmHAs, extension services). It determines (1) the scope of agricultural growth and the extent of conflict between those who do not have access to technology because of institutional constraints and (2) the current recipients of institutional services who wish to maintain or enhance their organizational control, i.e., economic power-wealth. There is a feedback (G) from the effects of technology and asset distribution on the social and cultural tradition of the society. If property relationships permit technology to go largely undiffused, there may be a substantial lag in any changes in local customs and traditions.¹

The model, unlike the diffusion model, demonstrates that the process of adoption of innovative technologies such as those in forest management, i.e., artificial regeneration, may not be based upon an implied consensus of all the actors in the game but structurally may inherently be in conflict. The central conflict as Gotsch noted largely lies between "those who do not have access to the technology because of institutional constraints and the current recipient of institutional services who wish to maintain or enhance their organizational

¹Ibid., p. 330.
control. . . . The desire to improve one's access to the services of institutions is by implication a desire to participate more effectively in the political decision making of the community.  

Guither, Krause and Bottom note in an article entitled "Effects of Access to Technical Knowledge and Commercial Inputs" that there are several major issues of access to knowledge that affect control. These include: (1) how will new knowledge be discovered and disseminated; and (2) how widely available will the benefits of the educational systems be to all producers. Management requires knowledge. Policies that affect access to this knowledge are just as important as the access to the latest technology concerning feed or fertilizers. Based upon the Gotsch model, which assumes conflict as opposed to consensus between landowners of various size and income levels and the research hypotheses of this dissertation, it is hoped that more will be learned about the nature of conflict and consensus in extension (CES) practices as they relate to forest management. It is hoped that the survey data analysis will show which CES programs are weakened by a structure of conflict and which programs may be strengthened by a structure of consensus in policies and practices of CES and other forestry-related agencies.

1Ibid.

CHAPTER V

DATA INTERPRETATION AND ANALYSIS

The interpretation and analysis of the data from the survey conducted among 65 farmer/woodlot owners are divided into four basic sections. The first section provides baseline demographic data on the respondents. The second involves an analysis of information related to NIPF woodlands as well as technical assistance actually received to manage these woodlands. The third section relates more specifically to educational and informational designs and NIPF owner perceptions of the quality of these program designs. The fourth section examines information related to NIPF lands by race. The three comparative variables that these interpretations will be conducted within are: (1) variables that relate to the size of the overall size of landownership (question 7); (2) variables that relate to the overall size of the woodland ownership (question 8); and (3) variables that relate to the race of the farmland owner (question 54). The value of these farmlands (question 50) supplements the concepts of the size of ownership and race as the two strongest indicators of wealth and power in this study.

Size of farmland is divided into two categories: (1) 250 acres or larger as an operational indicator of large-scale size farms and 249 acres or less as an operational indicator of small-scale farms. One hundred thousand dollars total value or more of land is used as an
indicator of large-scale farmland ownership and $99,999 or less as an indicator of small-scale landownership. In order to obtain a more precise understanding of specific economic relationships to acreage of woodland owned, harvested and reforested, woodlands was divided into 100 acres or more as an operational indicator of large-scale NIPF lands and 99 acres or less as an indicator of small-scale woodlands. These are collapsed categories; further breakdown of variables 7, 8 and 50 is available with data in frequencies and percentages (see Appendix 4).

Thirty-five of those interviewed (56 percent) were black and twenty-seven of those interviewed (44 percent) were white. There were only four Native Americans interviewed, I have decided to place them into the minority/black category.

Fourteen percent of the blacks interviewed in this study were categorized as large-scale landowners and 86 percent of the blacks interviewed were categorized as small-scale landowners. Sixty-seven percent of whites interviewed were categorized as large-scale landowners and 33 percent were categorized as small-scale landowners. These data probably accurately represent the ratio of black to white small-scale landowners but tend to overrepresent the ratio of black to white large-scale landowners in the counties interviewed in this study (see Appendix 3 and Table 9).

Research findings were rather similar for forestland ownership classes and for landownership classes. Twenty percent of blacks interviewed were categorized as large-scale forest landowners (100 acres or more) and 80 percent of blacks interviewed were categorized as small-scale forest landowners (99 acres or less). Seventy-four percent of the
Table 9. Race by size of landowner and by size of forest acres of landowners

<table>
<thead>
<tr>
<th>Race</th>
<th>Variable 7 Land Ownership (Percentage of)</th>
<th>Variable 8 Forest Acres of Landowner (Percentage of)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Large-Scale</td>
<td>Small-Scale</td>
</tr>
<tr>
<td>Black</td>
<td>14%</td>
<td>86%</td>
</tr>
<tr>
<td>White</td>
<td>67%</td>
<td>33%</td>
</tr>
</tbody>
</table>

*Statistical Significance N = 62 *P = .0001

*Statistical Significance N = 62 *P = .0001
whites interviewed were categorized as large-scale forest landowners and 26 percent categorized as small-scale landowners. Twenty-six percent of all large-scale forest landowners were black and 74 percent were white. Eighty percent of all small-scale forestland owners were black and 20 percent were white.

**Educational Level**

Twenty-two percent of large-scale farmers had less than a high school education, 7 percent had completed high school and 61 percent said they had more formal education beyond high school. Forty-four percent of small-scale farmers had less than high school education, 21 percent said they had completed high school and 36 percent reported educational training beyond high school. Fifty-four percent of blacks had less than high school formal education compared with 11 percent of whites. Nine percent of blacks had completed high school compared to 33 percent of whites interviewed. Thirty-seven percent of blacks had more than twelve years of formal education compared to 57 percent of whites interviewed. These research findings show that small-scale and minority farmers generally have educational levels that are lower than large-scale farmers. However, these landowners showed a great deal of willingness to learn about NIPF management. Therefore, extension educational programs need to be sensitive to these facts.

**Age**

Eighty-eight percent or fifty-eight of the sixty-two landowners interviewed in this study were married. Landowners' ages ranged from a low of twenty-six years old to a high of seventy-eight years old.
Seventeen landowners were in the fifty to fifty-nine years old age cohort. Fifteen landowners were in the sixty to sixty-nine age cohort and seven landowners were in the seventy to seventy-nine age cohort. Over 66 percent of the landowners interviewed were fifty years and older. There were only three landowners in the twenty to twenty-nine age cohort, seven in the thirty to thirty-nine age group and ten in the forty to forty-nine age group. It is significant that over 66 percent of the landowners are fifty years and older. This information indicates that these landowners' incentives to reforest recently or future harvested timber stands may largely depend upon how they feel about land retention and sound forest management that will mostly benefit heirs of these properties.

Chi Square

The data interpretation for this study was conducted through a series of bivariate analyses, with most of the data at the ordinal level. The tool that was used was the cross-classification table. Since the observations in the sample were classified according to their value on two or more categorical variables, it was believed that cross-classification tables would represent an adequate quantitative and graphic construction for data analysis. From the cross-classifications that are used to interpret the data, conditional distribution of percentages on the size of landownership, the size of forestland ownership and race are used as independent variables against a series of dependent variables in the survey.
In addition to present conditional distributions, the data also compared percentages that are relative frequencies of occurrences for cells in different rows and columns. That is, large-scale landowners were compared with small-scale landowners and black landowners were compared with white landowners, thus making use of joint distributions. Since the conditional distribution is not the same for variables in all rows and columns and a symmetric property between the two variables measured does not exist, variables in this study are generally statistically dependent.

In addition, statistical dependence is presented only to provide some indication of the strength of the variables that are being measured in this study. It does not totally represent the importance for research purposes of the variables that are not statistically significant at a probability level .05. Many of the cross-classifications in this study will therefore be used to expound the research significance of the findings supplementing those findings that have statistical significance.¹

**Characteristics of Landowners by Size of Ownership**

Farmland values were divided into two categories of $100,000 and above representing large-scale farmland values and $99,999 or below representing small-scale values. These values are approximate representations of real land values and are used to gauge the index of wealth. Farmland values, of course, differ from county to county as well as

within counties. Fifty-seven percent of blacks reported farmland values of $100,000 or more and 87 percent of whites reported farmland values of $100,000 or more.

The research examined difference by race on the period which land was acquired. These periods were divided into periods before 1960 and periods after 1960. Seventy-one percent of blacks and 70 percent of whites acquired most of their land before 1960. In addition, most landowners purchased their land as opposed to inheriting it. Seventy-four percent of blacks purchased their land and 59 percent of whites purchased their land.

When variable 7, the size of small landownership, was measured against the means that land was acquired, it was found that 60 percent of the large-scale landowners had acquired their land from relatives, wherein 70 percent of small-scale landownership was acquired from nonrelatives. Approximately 40 and 30 percent, respectively for large-scale and small-scale farmlands was acquired from relatives and through gifts. However, using chi-squares as a measure of association between variables 7 and 10, no significant statistical relation was found. The data showed that all large-scale farmers believed that the most important value of their woodland was for timber sale to improve the overall value of their farm and personal wealth. Eighty-nine percent of small-scale landowners also believed that the value of their woodland was in the improvement of the value of their personal wealth. Twelve percent of small-scale farmers, however, did believe that the major value of the woodland was recreational, largely hunting and aesthetics.
Large-scale farmers had only 13 percent of their woodland in prime stands and even more decreased small-scale woodland owners interviewed had only 2.5 percent of their woodland in pure pine stands. Most NIPFs are in mixed hard- and softwood stands or they are all hardwood stands. These data were not shown to be statistically significant at the .05 level of significance; however, these percentages as measures of Southern Pine cultivation by NIPF owners are very significant. Measures of variable 8 tend to confirm this finding. Large-scale woodlot owners (100 acres or more) owned 11 percent of their woodlots in pure pine stands and small-scale woodlot owners owned only 2.9 percent of their woodlands in all pine stands. Again, these findings were not found to be statistically significant at the .05 level of significance. However, as an indication of their propensity to regenerate Southern Pine, this finding has a great deal of research significance.

It is generally believed that forest management plans improve the quality and quantity of production on NIPF. Therefore, forest management plans tend to serve as an indicator of conscience and educated efforts to convert more woodland acreage into all pine stands. The data showed that the number of large-scale farmers ranked substantially higher than small-scale and minority farmers who had forest management plans (62 percent of large-scale woodland owners compared to over 17 percent of small-scale woodland owners). This finding was statistically significant at the .01 level of significance. However, as variable 13 indicates, when cross-tabulated with size of overall land ownership as well as with size of forestland ownership, the research indicated that, although 62 percent of large-scale forestland owners have forest management plans,
only about 10 percent of these forestlands are currently planted in all pine stands. This is a major finding. Both the scale of landowners who had management plans as well as the scale of forest landowner, more specifically, who had forest management plans was found statistically significant at the .01 level. Ten percent of forestlands planted in all pine stands is a rather low amount and suggests a lack of attention given to planned regeneration of marketable timber.

Private sources of information on designing forest management plans included family members, personal friends, neighbors and consultant foresters. Public sources of information included agricultural extension agencies, ASCS agents as well as state and local foresters. The data showed that large-scale landowners as well as large-scale forestland owners received about 60 percent of information about forest management plans from public agencies and about 40 percent from private sources, wherein only 22 percent and 14 percent, respectively, for small-scale landowners and forestland owners received information about forest management planning from public agencies. This tends to indicate that most small-scale landowners as well as forestland owners have received most of their information on establishing management plans from personal friends and relatives. These findings for both scale of overall landownership as well as scale of forestland ownership proved to be statistically significant at the .05 level.

A general indicator of a willingness to put more acres of land into Southern Pine management are the incentives that are available to do so. A major incentive is tax relief. Information on awareness of tax benefits serves as a measure of overall knowledge of NIPF management
as well as an indication that either a public agent or private consultant has provided some rather detailed NIPF management advice. It may be possible that in some cases the farm owner tax advisor will have some knowledge of tax incentives to engage in systematic forest management practices; however, income tax consultant knowledge of timber management is likely to be limited to capital gains and is likely to enter as a point of awareness of management only after a tract of timber has been harvested.

Landowners were asked to indicate the awareness of tax incentives available. The tax incentives programs include: (A) a reforestation tax credit and amortization deduction; (B) an exclusive cost-share payment received from FIP, FOP or ACP exemption from taxable income; (C) a capital gains exclusion; and (D) a forestry present-use valuation property tax relief. The research showed that large-scale landowners were by far more aware of these tax incentive programs than small-scale landowners. Seventy-three percent of large-scale owners were aware of tax incentive (A) compared to only 23 percent of small-scale landowners. Seventy percent of large-scale landowners were aware of tax incentive (B) compared to only 23% of small-scale landowners. Seventy-eight percent of large-scale landowners said they were aware of tax incentive (C), whereas only 22 percent of small-scale landowners said they were aware of it. And 62 percent of large-scale farmers said they were aware of tax incentive (D) in comparison with 21 percent of small-scale landowners.

Incentive (D) is a relatively new incentive program and generally it has been less publicized than the other incentive programs. This
may in part explain why the overall awareness of this tax incentive was slightly less than the other three programs. All tax incentive programs with the exception of (B) were statistically significant at the .01 level. Table 10 offers a breakdown of percentages by comparing landowners overall and their woodland ownership categories. Even in cases where the landowner's major use of land might be in forests, their level of awareness of these incentive programs were about the same as those whose major use might be for food crop production.

The general time range for information on timber harvest was ten years. This range was set in part to represent financial and technical assistance by public agencies in conjunction with federal forestry incentive programs which have been operational for ten years as of fiscal year 1984. In addition, it was believed that a ten-year period provided a range of time that most farmers would have decided to substantially act on improving their management of harvested tracts—although it should be done within twenty-four months of harvest. The data showed that most landowners had in fact harvested some timber in the past ten years; however, a majority of small-scale landowners had not harvested timber in the past ten years. Forty-seven percent of large-scale landowners had harvested more than 100 acres, 30 percent of them had harvested less than 100 acres in the past ten years and 22 percent had not harvested.

Among the small-scale landowners, 8 percent had harvested 100 acres or more, 43 percent had harvested 100 acres or less and 49 percent had not harvested. This finding proved to be statistically significant at the .01 level of significance. Table 11 gives a comparison
Table 10. Percentage of landowners who were aware of tax incentives available to owners by land ownership class (variable 7) and by forest acres (variable 8)

<table>
<thead>
<tr>
<th>Ownership Class</th>
<th>Variable 7</th>
<th>Level of Awareness</th>
<th>Variable 8</th>
<th>Level of Awareness</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tax Incentive A (Percentage)</td>
<td>Tax Incentive B (Percentage)</td>
<td>Tax Incentive C (Percentage)</td>
<td>Tax Incentive D (Percentage)</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Large-Scale</td>
<td>74%</td>
<td>26%</td>
<td>70%</td>
<td>30%</td>
</tr>
<tr>
<td>Small-Scale</td>
<td>27%</td>
<td>73%</td>
<td>23%</td>
<td>77%</td>
</tr>
<tr>
<td>*Statistical Significance</td>
<td>*p = .0001</td>
<td>*p = .0003</td>
<td>*p = .0002</td>
<td>*p = .0006</td>
</tr>
<tr>
<td>Variable 8</td>
<td>LARGE-SCALE</td>
<td>74%</td>
<td>26%</td>
<td>70%</td>
</tr>
<tr>
<td></td>
<td>SMALL-SCALE</td>
<td>18%</td>
<td>82%</td>
<td>17%</td>
</tr>
<tr>
<td>*Statistical Significance</td>
<td>*p = .0001</td>
<td>*p = .0001</td>
<td>*p = .0003</td>
<td></td>
</tr>
</tbody>
</table>
Table 11. Percentage of landowners by ownership class (variable 7) and by forest acres (variable 8) who have harvested timber in the past ten years

<table>
<thead>
<tr>
<th>Ownership Class</th>
<th>Harvested more than 100 acres (Percentage)</th>
<th>Harvested less than 100 acres (Percentage)</th>
<th>Have not harvested at all (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable 7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large-Scale</td>
<td>48%</td>
<td>30%</td>
<td>22%</td>
</tr>
<tr>
<td>Small-Scale</td>
<td>7%</td>
<td>44%</td>
<td>49%</td>
</tr>
<tr>
<td>*Statistical Significance</td>
<td>*P = .0001</td>
<td>*P = .0001</td>
<td>*P = .0001</td>
</tr>
<tr>
<td>Variable 8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large-Scale</td>
<td>44%</td>
<td>37%</td>
<td>19%</td>
</tr>
<tr>
<td>Small-Scale</td>
<td>0%</td>
<td>46%</td>
<td>56%</td>
</tr>
<tr>
<td>*Statistical Significance</td>
<td>*P = .0002</td>
<td>P = .0002</td>
<td>P = .0002</td>
</tr>
</tbody>
</table>
of landowners and forestland owners who have harvested in the past ten years. It should be noted that the reasons that many small-scale landowners have not harvested in the past ten years often indicate a lack of adequate management information as opposed to the lack of mature timber to cut or other reasons such as the retention of forestland for hunting and recreational purposes. Variable 7 indicates the percentage of landowners by large- and small-scale who have harvested in the past ten years. Variable 8 indicates the percentage of landowners of small- and large-scale woodlots who have harvested in the past ten years. Both variables 7 and 8 show that the majority of woodlands on both small- and large-scale farms have been harvested to some extent in the past ten years; less timber has been harvested on small-scale tracts than on larger scale tracts.

A concern that many NIPF owners continue to express is who can they trust to harvest their timber. They are concerned that they may not receive the fair market value of their timber. In addition, they are concerned that the timber logger will cheat them by not reporting the accurate amount of timber cut and sold if they have partnership contractual arrangements (usually 50 percent to the owner of the timber tract and 50 percent to the logger). And finally, they are concerned that if they contracted the tract of timber to the highest bidder that the overall price received will not represent the maximum allowable given opportunities to assess the overall value of the timber.

When those NIPF owners who had harvested in the past ten years were asked what type of contractual arrangement they had entered into to harvest their timber, 8 percent of the landowners had harvested
themselves and 32 percent of the landowners had used an independent logger to harvest their timber. The majority (60 percent), however, had used a timber company to harvest their timber. Eighty-nine percent of large-scale landowners had used timber companies and 58 percent of small-scale landowners had used independent loggers. More specifically, forestland owners who owned 100 acres or greater had used timber companies in 77 percent of the cases. Small-scale landowners who had harvested had used independent loggers in 53 percent of the cases. In short, the overall statistic that 60 percent of all landowners had used a timber company to harvest their timber is somewhat offset when examined by scale. Large scale landowners more often use timber companies to harvest their timber. The growing trend is away from independent loggers toward timber companies as the primary source for harvesting timber on NIPFs. However, timber companies may in return hire independent loggers to cut their recently NIPF acquired timber. When asked if their land was left in good condition after the harvest, just about all those interviewed believed that it was. The data showed that 77 percent of large-scale forest landowners and 60 percent of small-scale landowners believed that their woodland was left in good condition after the harvest.

Regarding the type of consultation or timber prices as well as other aspects of harvesting, when asked if they received consultation before harvesting, 83 percent of large-scale landowners and 58 percent of small-scale landowners said that they had received some form of consultation before harvesting. The percentages were significantly different for large-scale forestland owners and small-scale forestland owners, with 77 percent for large-scale and 60 percent for small-scale
forestland owners. The overall percentage of large-scale landowners use consultant foresters before harvesting. Again, an important consideration when analyzing the percentage of landowners who used private consultation is that more landowners, especially large-scale owners, are using timber companies to harvest their timber. These companies have their own timber cruisers and in the process of competing for a tract may be providing equitable assessment of the gross value of timber tracts. This, however, may not be the case when the demand for timber is low, as in the case of the 1984-85 period.

Much of the concern about NIPF management revolves around the willingness to replant after a tract of timber has been harvested. This inclination to reharvest is to a large degree dependent upon the quality of information received from consultation. The research finding indicates 60 percent of small-scale landowners had received some advice on management of timber land before harvesting. In addition, 75 percent of large-scale landowners had received information from private consultants on forest management and timber prices before harvesting. Fifty-five percent of large-scale forestland owners (question 8) had not replanted after harvesting. The larger contrast, however, is that 86 percent of small-scale forestland owners had not replanted after harvesting.

This finding is very consistent with previous findings on NIPF. The overwhelming majority of NIPFs are not replanted when harvested. Only 14 percent of the small-scale forestland is replanted after harvesting. In addition, of the large-scale forestland owners who have harvested only 25 percent of their replanted acres have been more than
100 acres. On the other hand, small-scale forestland owners have replanted less than 25 acres. Thus, 80 percent of all acres replanted was done by large-scale forestland owners.

The small number of acreages that receive treatment after harvesting suggests that many landowners are not firmly convinced that sound management of these woodlands demands that they return resources or investment into these woodlands for the regeneration of quality stands of high-volume marketable timbers. This lack of sound management may reflect the absolute inability of the landowner to allocate scarce resources for regeneration of timber stands. It may also reflect a lack of substantive information through an extension and communication process that is truly effective.

Sources of Educational Information on NIPF Management

The availability of current relevant information as we noted in Chapter 1 is believed to be a primary determinant of the degree and quality of reforestation that NIPF owners will engage in. Variable 27 inquired as to whether NIPF owners had received information on systematic forest management in the past two years from public or private sources. The two-year period was used because the researcher believed that information packages, whether monthly newsletters, annual reports or occasional meetings, would have been actually received and interacted upon by NIPF within a two-year period. In short, if information were being systematically supplied to NIPF owners, most of them would have had an opportunity to examine it in one form or another in a range of two years. "Have you received information about how to systematically manage your
forestland for maximum timber yields in the past two years" (question #27) was measured against size of landownership. The data showed that only 45 percent of small-scale landowners compared with 78 percent of large-scale landowners said they had received information from public agencies. A point of interest is that 55 percent of most small-scale farmers said they had not received any information at all on forest management practices in the past two years. This is an alarmingly large percentage. These comparisons were found to be statistically significant at the .05 level.

When variable 27 was compared to the size of forestland owned (variable 8), the data confirmed the above finding. Seventy-eight percent of large-scale forestland owners had received some information and only 41 percent of small-scale forestland owners had received information. Fifty-nine percent of small-scale forestland owners said that they had not received any information from public agencies in the past two years. This finding was statistically significant at the .01 level. However, its research significance is more important. It demonstrates that these owners are not getting rudimentary information on woodlot management in a system where sound management practices require constant quality information that is sometimes complex.

How Well Has Extension (CES) Provided This Information?

Of those NIPF owners who had received information, 42 percent of the large-scale landowners and 40 percent of the small-scale landowners had received information from county forest rangers. Thirty-two percent of large-scale landowners said they had received information from state
and county extension and 46 percent of small-scale landowners said they had received information from state and county extension. Twenty-six percent of large-scale owners indicated that the primary source of their information was from consultant foresters. When compared with forestland ownership (variable 8), 45 percent of large-scale forestland owners said they received their information on forest management primarily from county rangers, 27 percent from state and local extension and 27 percent from consultant foresters. In contrast, most small-scale forestland owners who said they had received information said that the primary source (58 percent) was from state and county agricultural extension, 33 percent from county rangers and only 8 percent from consultant foresters. These findings indicate that the majority of small-scale woodlot owners as well as small-scale landowners in general depend upon extension services as the primary source of their information on NIPF management. Large-scale farmers and forestland owners depend heavily upon consultant foresters as the primary source of information but they depend most heavily upon county rangers. In short, county rangers tend to concentrate their educational efforts on larger scale forestland owners. However, this finding was not found to be statistically significant at the .05 level of statistical significance although comparative indications from the data are quite significant.

Variable 29 was designed to obtain to what extent county agricultural extension provided some information to landowners and NIPF owners. This operation differs from variable 27 in that variable 27 sought to obtain the primary source of information whereas variable 29 seeks to obtain any information at all having been provided by county extension
specifically. The research showed that 87 percent of large-scale landowners had received some information from county extension compared to only 57 percent of small-scale landowners. Statistical significance was proven at the .05 level.

The statistics were somewhat similar for large- and small-scale forestland owners (variable 8) as it was for total landownership. Eighty-five percent of large-scale forestland owners had received some information and 55 percent of these small-scale owners said they had received some information in the past two years. Statistical significance was valid at the .05 level.

The majority of all ownership categories, i.e., both variables 7 and 8, believed they had received some forestry-related information in the past two years. Variable 30, however, sought to determine in what form most landowners had received information. They were asked if they had received information: (A) by mail; (B) by personal visit to farm by extension agent; (C) by attendance at a local meeting; (D) by radio or television; and (E) by visit to local farm club, church or lodge. Sixty-five percent of large-scale landowners said they had received some information by mail compared to 55 percent of small-scale landowners. Only 43 percent of large-scale landowners said they had received information by personal visit to their farm compared to less than 34 percent of small-scale landowners.

Whereas 30 percent of large-scale landowners said they received information by attending meetings arranged by extension on farm management, only 16 percent of small-scale landowners said they had received information by attending meetings. Variable 30-D asked if farmers had
received information by television or radio talk show. Thirty percent of large-scale owners said they had received some information by this medium, whereas only 21 percent of small-scale owners said they had received information through radio or television. Extension agents seem to invest very little time and resources in reaching out to landowners in their immediate social environment, especially locations such as churches or lodges. Twenty-two percent of large-scale farmers said they had received some information by this means; however, only 11 percent of small-scale landowners had received information from extension service visits to local churches and lodges. Statistics were rather similar when this question was cross-tabulated with variable 8 (see Table 12). The greatest form of information used by extension was by mailouts. These include newsletters, bulletins and regular letters. The weakest form of communication was through the use of personal contact at entertainment and other socially related locations which include churches, farm and hunting clubs and community lodges. Except for information received by mail, most landowners had not received information through the other mediums listed above. Unfortunately, low income (small-scale) landowners tended not to rely on information received by mail. It is ironic that where most landowners are likely to be more open to receiving information about forest management, i.e., their social environment is where extension has placed the least effort at reaching these landowners.

These questions were followed by a series of additional questions specific in their nature that were designed to determine the impact of extension information in less institutionalized situations. Variables
Table 12. Percentage of landowners by ownership class (variable 7) and by forest acre class (variable 8) who had received information about forest management through the following communication mediums

<table>
<thead>
<tr>
<th>Ownership Class</th>
<th>Mailouts Medium A (Percentage)</th>
<th>Personal visit Medium B (Percentage)</th>
<th>Local meetings Medium C (Percentage)</th>
<th>Radio &amp; television Medium C (Percentage)</th>
<th>Visit to local churches &amp; lodges Medium D (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes (Percentage)</td>
<td>No (Percentage)</td>
<td>Yes (Percentage)</td>
<td>No (Percentage)</td>
<td>Yes (Percentage)</td>
</tr>
<tr>
<td>Variable 7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large-Scale</td>
<td>65%</td>
<td>35%</td>
<td>43%</td>
<td>57%</td>
<td>30%</td>
</tr>
<tr>
<td>Small-Scale</td>
<td>55%</td>
<td>45%</td>
<td>34%</td>
<td>66%</td>
<td>16%</td>
</tr>
<tr>
<td>*Statistical Significance</td>
<td>( P = .1765 )</td>
<td>( P = .2987 )</td>
<td>( P = .1758 )</td>
<td>( P = .4000 )</td>
<td>( P = .2363 )</td>
</tr>
<tr>
<td>Variable 8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large-Scale</td>
<td>63%</td>
<td>37%</td>
<td>44%</td>
<td>56%</td>
<td>33%</td>
</tr>
<tr>
<td>Small-Scale</td>
<td>56%</td>
<td>44%</td>
<td>35%</td>
<td>65%</td>
<td>12%</td>
</tr>
<tr>
<td>*Statistical Significance</td>
<td>( P = .5776 )</td>
<td>( P = .4526 )</td>
<td>( *P = .0410 )</td>
<td>( P = .4154 )</td>
<td>( P = .4600 )</td>
</tr>
</tbody>
</table>
31A through 31D asked landowners and forestland owners by size of ownership whether extension had provided information through: (A) newspaper articles and briefings, (B) the toll free telephone service, (C) visitation to extension property that was currently undergoing reforestation to demonstrate types and degree of management; and (D) their children who brought home information that been circulated through the school (vocational/agricultural classes) on systematic forest management.

The percentages were quite similar to those for questions 30A-30E. In response to 31A, 78 percent of large-scale landowners had read some information on management in newspapers compared to only 35 percent of small-scale landowners. Variable 31B indicates that only 26 percent of large-scale landowners had knowledge of or had used the toll-free phone information service on forestry marketing and management. Eight percent of small-scale landowners had knowledge or had used the number. Fifty-two percent of large-scale landowners compared to less than 21 percent of small-scale landowners had visited a demonstration of reforestation through extension services. Some farmers appeared reluctant to say that they had visited these sites without the assistance of county rangers of extension. Their reluctance probably reflects a concern about the legitimacy of visiting sites, especially those owned by timber companies without express permission of a public official. This is also reflective of the perceived power that timber companies have in many rural communities. Very few landowners had at any point received information through the public schools passed on by children or through other means. In fact, two of the landowners interviewed in the study were vocational agriculture instructors and their knowledge of timber
management was not substantially beyond that of other landowners interviewed in this study. Only 9 percent of large-scale landowners and 5 percent of small-scale landowners had received information through high school vocational agriculture programs (see Table 13).

**Awareness of Cost-Share Incentives Programs**

Awareness of incentive programs was used as a measure of the penetration of information on technical and financial assistance that landowners may avail themselves to improve tree production on their farms. It also was used to further confirm question. That is, if landowners believed that forest management is important, they would have sought out information on management such as incentives. This question may, however, not be true among all categories of ownership, especially minority landowners. The research showed that 89 percent of large-scale landowners were aware of state and federal forestry cost share incentive programs whereas only 34 percent of small-scale landowners were aware of these incentive programs. This finding was statistically significant at the .01 level. Again, the research significance of this finding is also important. Small-scale landowners appear to consistently suffer from inadequacies of information to the extent that decisions based upon the possibility of obtaining financial assistance for forestland management are almost impossible to make.

Knowledge of the existence of two financial incentive cost-share programs, one state and the other federal, was rather consistent with general knowledge of cost-sharing programs mentioned above. Eighty-three percent of large-scale landowners compared to only 24 percent of
Table 13. Percentage of landowners by land ownership class (variable 7) and by forest acre class (variable 8) who had received information on forest management by the traditional mediums (variable 31)

<table>
<thead>
<tr>
<th>Ownership Class</th>
<th>Newspapers Medium A (Percentage)</th>
<th>Toll-free telephone Medium B (Percentage)</th>
<th>Visit to demonstration reforestation site Medium C (Percentage)</th>
<th>Receive information through local high school or 4-H club Medium D (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Large-Scale</td>
<td>74%</td>
<td>26%</td>
<td>19%</td>
<td>81%</td>
</tr>
<tr>
<td>Small-Scale</td>
<td>30%</td>
<td>70%</td>
<td>12%</td>
<td>88%</td>
</tr>
<tr>
<td>*Statistical Significance</td>
<td>*P = .0035</td>
<td>P = .0522</td>
<td>*P = .0121</td>
<td>P = .5997</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variable 8</th>
<th>Newspapers Medium A (Percentage)</th>
<th>Toll-free telephone Medium B (Percentage)</th>
<th>Visit to demonstration reforestation site Medium C (Percentage)</th>
<th>Receive information through local high school or 4-H club Medium D (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large-Scale</td>
<td>74%</td>
<td>26%</td>
<td>19%</td>
<td>81%</td>
</tr>
<tr>
<td>Small-Scale</td>
<td>30%</td>
<td>70%</td>
<td>12%</td>
<td>88%</td>
</tr>
<tr>
<td>*Statistical Significance</td>
<td>P =</td>
<td>P =</td>
<td>P =</td>
<td>P =</td>
</tr>
</tbody>
</table>

*Data unavailable.
small-scale landowners were aware that the state of North Carolina operated two cost-share programs. These research findings were consistent for both landowners and woodlot owners with statistical significance at the .01 level.

When asked whether the primary source of information about cost-sharing and tax incentive programs was from public agencies or private consultants, 76 percent of large-scale landowners responded that they received most incentive information from public sources. Also, 92 percent of small-scale farmers received information on incentive programs for public sources. This finding, 76 percent for large-scale farmers, is surprising given the finding that many large-scale landowners use consultant foresters for marketing and reforestation advice. Eighty percent of large-scale forestland owners also acquire from public agencies (extension mainly) information on incentive programs.

A primary thesis that this research expounds is that information is a very important aspect of decision making and without adequate information it is difficult to determine the exact reason that landowners have not been more consistent in using systematic forest management practices. The above research sought to determine if landowners by scale of ownership (size) had knowledge of financial assistance available to them. Landowners were asked if they had in fact applied for financial assistance through these federal- and state-sponsored cost-share programs. Those large-scale landowners (84 percent) who had knowledge of cost-share incentive programs had applied for cost-share incentives in 61 percent of their cases. However, small-scale landowners who said they had knowledge of incentives (34 percent of the cases) had only
applied for cost-share incentives in 8 percent of their cases. Large-scale landowners were both more informed and had actually utilized these cost incentive programs much more often (63 percent) than small-scale landowners. These findings demonstrate a strong bias in the information delivery system that favors the larger landowners. These findings are consistent with Warner and Christenson's finding of extension on a national basis. Farmers are more satisfied with extension delivery if they own more than 260 acres. And there is greater dissatisfaction among young people, minorities, low-income persons, and individuals with a lower level of education as well as small-scale farmers (less than 260 acres).¹

A similar comparison was made for forestland owner variable 8. The finding indicated that 51 percent of large-scale forestland owners (100 acres or more) compared to 9 percent of small-scale forestland owners had applied for incentive financial resources since 1974. Again, statistical significance was found at the .01 level. All respondents who had applied said that their application for financial assistance was approved without unreasonable delay.

The small number of small-scale landowners indicates that they had no knowledge of the program or they had not applied for a number of reasons. A that some landowners do not apply is that they are not encouraged to apply. Some landowners said they feared that they would be put on a waiting list. These landowners suggested that the reasons

they had not more actively sought out cost-share benefits were structured and endemic to the organizational and political nature of the cooperative extension service.

Knowledge of Timber Value and Prices

An important question, perhaps the most important of the questions asked in this survey, is whether landowners are aware of the value of a high-volume stand of mature (30-35 years) Southern Pine timber. Some foresters have determined that landowners can earn as high ($30,000 to $40,000) per five-acre stand on this timber. This question was also designed to determine if landowners were fully aware of the investment potential of timber as opposed to putting investment in saving or money market funds. The strongest emphasis was, however, on the investment of reforestation on recently harvested timber stands, especially those landowners who intend to maintain their land for future generations of family members.

Landowners were more uninformed about timber prices than cost-share incentives. Most landowners were not aware of recent timber prices and had no knowledge of what future timber prices would likely be. In addition, they had very little knowledge of volume increases when intense natural regeneration or artificial regeneration is used to reforest timber stands. These volume increases may be as high as ten times stands that are left to regenerate Southern Pine with no planned management. Only 40 percent of large-scale landowners were aware of the potential of timber market prices for Southern Pine stands and less than 13 percent of small-scale landowners were aware of the potential
of timber prices. Forestland owners who were aware of the potential of timber prices were slightly lower than those of the landowner categories. Large-scale forestland owners, the research indicated, were in 37 percent of the cases aware of potential market values of pine stands, and with small-scale forestland owners it was reported that 12 percent were aware. Both landownership by farm size as well as ownership by woodlot size were found to be statistically significant at the .05 level.

Effectiveness and Accountability of Educational Programs

Much of what is expected to be revealed from educational and other communication materials that landowners receive from extension and other public agencies is based on what they feel is the responsibility of these agencies to provide. The researcher was interested in knowing if landowners believed agencies had a responsibility to provide basic information. Seventy percent of large-scale landowners said they believed it ought to be the responsibility of public agencies to provide them with the full range of forest management information while about 90 percent of small-scale landowners said they thought this to be the case (statistically significant at the .05 level).

The county-based effectiveness model of Warner and Christenson has four major components: (1) county inputs; (2) county program operations; (3) public impact; and (4) the county environment. These components are drawn from the system effectiveness model. However, this research draws upon Warner and Christenson's analysis of the cooperative extension service (CES) on a national basis.\(^1\) Effectiveness here

\(^1\)Ibid., pp. 102-106.
is used to determine the systemic impact of information delivery as opposed to the systems impact of such an educational organization as CES.

A major hypothesis in this research is whether landowners believe that traditional educational programs are effective and, secondly, whether they believed basic innovations in these traditional programs should occur in order to ascertain how landowners viewed current programs as well as more innovative programs. Variables 43A-43G were used to gauge opinion of the effectiveness of traditional programs. Forty-eight percent of large-scale farmers believed that mailouts such as occasional letters and bulletins were effective whereas only 24 percent of small-scale farmers believed that this medium was effective.

When asked if visits to their farm by CES agents and county and state foresters was an effective medium, only 57 percent of large-scale landowners and 32 percent of small-scale landowners believed it was an effective medium. The low percentage of landowners who believed that visits or face-to-face conversations with forestry agents were effective may reflect the infrequency that agents talk about forestry. However, many landowners had no knowledge of the agent who served their region or county and therefore believed that face-to-face visits by agents had been ineffective because there had been no such visits. Nevertheless, the fact that only 32 percent of small-scale landowners believed these visits were effective shows a serious lack of visibility of CES as the primary source of information to these landowners.

Newspaper articles and other media such as radio and television used to communicate with woodlot owners were also believed not to be
very effective by these owners. Only 35 percent of large-scale landowners and 13 percent of small-scale landowners believed that these media sources were effective. When asked if they believed that the state toll-free telephone services that provide information on timber prices and management was effective, most landowners expressed an extreme dislike for this system. Only 17 percent of large-scale landowners and hardly any small-scale landowners, 5 percent, said they thought it was effective. Information about forest management passed on through the high school by vocational agriculture and other natural resource-oriented programs was also rated as noneffective with only 22 percent of large-scale landowners and 3 percent of small-scale landowners believing this medium to be effective. It should be noted, however, that CES does not have systematic programs designed to reach high school students. During the course of vocational instruction, there are subjects that deal with natural resource management and it is through these subjects one would have expected more student/parent awareness of Southern Pine management.

Table 14 indicates the percentage of landowners that believed traditional CES programs and media were effective.

These research findings indicate that large-scale farmers as well as forestland ownership classes believed traditional agricultural extension and other forestry-related agency programs are more effective than small-scale landowners and forestland ownership classes. However, it is clear that both large- and small-scale ownership classes for both variables 7 and 8 show a generally low confidence in traditional educational programs. Just about all the cells show that the majority of
Table 14. Percentage of landowners who say traditional mediums need to provide information on forest management by land ownership class (variable 7) and by forest acres of landowner (variable 8)

<table>
<thead>
<tr>
<th>Ownership Class</th>
<th>Mailouts</th>
<th>Newsletters</th>
<th>Personal visits</th>
<th>Newspapers</th>
<th>Visit to church or clubs</th>
<th>Toll-free telephone</th>
<th>Children in high school or 4-H club</th>
<th>Children in church or clubstelephone</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Large-Scale</td>
<td>48%</td>
<td>52%</td>
<td>30%</td>
<td>70%</td>
<td>57%</td>
<td>43%</td>
<td>35%</td>
<td>65%</td>
</tr>
<tr>
<td>Small-Scale</td>
<td>24%</td>
<td>76%</td>
<td>18%</td>
<td>82%</td>
<td>32%</td>
<td>68%</td>
<td>13%</td>
<td>87%</td>
</tr>
<tr>
<td>*Statistical Significance</td>
<td>*P = .0500</td>
<td>*P = .2795</td>
<td>*P = .0594</td>
<td>*P = .0496</td>
<td>*P = .0081</td>
<td>*P = .1232</td>
<td>*P = .0152</td>
<td></td>
</tr>
<tr>
<td>Large-Scale</td>
<td>48%</td>
<td>52%</td>
<td>30%</td>
<td>70%</td>
<td>59%</td>
<td>41%</td>
<td>30%</td>
<td>70%</td>
</tr>
<tr>
<td>Small-Scale</td>
<td>21%</td>
<td>79%</td>
<td>12%</td>
<td>88%</td>
<td>26%</td>
<td>74%</td>
<td>15%</td>
<td>85%</td>
</tr>
<tr>
<td>*Statistical Significance</td>
<td>*P = .0228</td>
<td>*P = .0197</td>
<td>*P = .0097</td>
<td>*P = .1574</td>
<td>*P = .0358</td>
<td>*P = .2242</td>
<td>*P = .0424</td>
<td></td>
</tr>
</tbody>
</table>
farmers do not believe that public agencies are providing effective educational and other informational resources.

**Alternative Approaches to Education Programs**

A third hypothesis that the research explored is whether landowners are receptive to innovative educational programs that are structurally more participatory as a process. Landowners were asked (variable 44) if they believed that participatory workshops involving comprehensive interaction on the part of both the landowner and the extension agent would serve as a better educational method to improve their knowledge of forest management. In the face-to-face interview process, landowners received at-length explanations of the concept of participatory workshops. The primary ingredient of these workshops is group consensus with specific courses of action agreed upon by the landowner, public agents and other individuals or groups that are a part of the workshop. The key factor that was explained to landowners was the desire to build in accountability measures to assure both the landowner and the agent that both parties would sincerely endeavor to meet the obligations agreed upon.

Seventy-eight percent of large-scale landowners and 68 percent of small-scale landowners favored such an alternative approach if it was done at a time and location convenient to them. Landowners seemed not to be concerned about the amount of work that might be involved in such an educational and action program as the participatory workshop. They were, however, concerned about the quality of information they would receive. Large-scale landowners favored this process more than
small-scale landowners. This is partly explained by the fact that large-scale landowners have traditionally believed that any informational medium is designed to meet their needs in and above those of small-scale landowners. Small-scale landowners generally believe the opposite. They tend to believe that they will understand very little or gain materially very little from such efforts as workshops. It is therefore surprising that as many small-scale landowners responded favorably to this proposed alternative approach. A factor that might have led to increased positive response rate is the belief that action with accountability would derive from these workshops.

Thirty-five percent of large-scale landowners said they would attend eight or more hours of workshops, 35 percent said they would attend between four and eight hours of workshops and 30 percent said they would attend a single two-hour session. Research findings were similar for small-scale landowners. Thirty-five percent said they would attend eight hours or more of workshops; 45 percent said they would attend between four and eight hours of workshops and 24 percent said they would attend a single two-hour session.

Community Forestry Projects and Community Colleges

Landowners were asked if they favored more innovative field projects sponsored by CES and other public agencies. These projects involve more interaction with the local community. Landowners were asked if they thought the following would be effective (questions 45A-46C): (1) participation on bus tours to reforestation demonstration sites; (2) the employment of a full-time paraprofessional from the local
community to advise farmers on forest management; and (3) greater involvement of community colleges as centers of outreach. Eighty-four percent of large-scale landowners and 67 percent of small-scale landowners said they thought bus tours to demonstration sites undergoing reforestation would be effective. Eighty-two percent of large-scale landowners and 62 percent of small-scale landowners said they thought the use of community-based paraprofessionals would be effective. Landowners seemed to have been somewhat unaware of the role the community college could play in their communities. They revealed very little knowledge of the fact that community colleges could serve as a source of information and technical assistance in forestry and other agriculture-related areas. Thirty-one percent of large-scale landowners and 44 percent of small-scale landowners said they believed community colleges could be an effective source of information and technical assistance for the improvement of forest management.

Landowners were also asked to give their opinion of neighborhood efforts to improve landowners' forest management practices. These efforts include environmental issues such as fire prevention, damming of streams by trash dumping and other matters that landowners as neighbors would share a common concern. Sixty-one percent of large-scale landowners and 69 percent of small-scale landowners believed that, if properly organized, neighborhood efforts of this sort could improve NIPF lands. Local timber companies' involvement with NIPF owners was generally perceived as effective. Timber companies have on a number of occasions set up free family farm programs wherein they have provided technical assistance to landowners in exchange for the right to purchase timber
when mature. Fifty percent of large-scale landowners and 59 percent of small-scale landowners said they believed that timber companies have been effective and should expand their role in NIPF management. However, some large-scale landowners who had had more extensive relations with timber companies expressed some reservation about their effectiveness. One landowner expressed his doubts that timber companies were genuinely interested in following through with technical assistance for the thirty to thirty-five year period required for a plantation of Southern Pine to mature. Many small-scale landowners may have more confidence in timber companies because they have not had the long-term experience that many of the established large-scale landowners have had.

Finally, landowners were asked if they thought the inclusion of more racial minorities and women would improve the quality of information they received from agencies such as CES and state forestry. Only 35 percent of large-scale landowners compared with 58 percent of small-scale landowners believed the more women and minorities would improve the quality information they received. Minority landowners, as indicated in the next section, favored the inclusion of more minorities and women over both white males and white females interviewed in this study.

**NIPF Owners' Preference by Race**

This section of the data analyzes landowners' opinions and preferences of NIPF educational and technical assistance by race. Traditional CES programs, especially in the South, have been extremely biased against blacks. However, recent attempts to improve this standing have received little evaluation. It is hoped that this section will illuminate how
minority landowners have perceived recent efforts by extension and state forestry services to improve their image in the minority community. Minorities comprised 86 percent of small-scale landowners in this study. This represents a substantial overlap between small-scale and minority landowners. Therefore, the following data analyzing race will not in many cases substantially differ from that previously examined based upon scale of ownership. Yet, because of the saliency of institutional racism in the general society, an exclusive analysis by race is required.

When asked what were the major species of trees on their woodlots, black landowners reported 6 percent all pine stands and 94 percent mix stands composed mostly of oak and other hardwoods. These data compare with 33 percent all-pine stands reported by white landowners. Very few blacks reported that they had forest management plans to effectively manage their timber. Eighty-five percent of all minorities interviewed said they did not have a forest management plan and had no knowledge of how to go about constructing such a plan. Yet most blacks said that the most important benefit of their woodland is the future value of timber. All whites, 100 percent, said that the most important benefit of their woodland was for the sale of timber as a means of improving their personal wealth.

Those black landowners who said they had forest management plans report that in 40 percent of the cases these plans were developed with the use of private consultants. Sixty percent said they developed their plan with the assistance of state forestry or CES. However, because of the small number of blacks who said they had planned, it is difficult to determine if they prefer private consultants over
public-sponsored consultation on forest management. Because only 15 percent of blacks said they had plans, no significant management exists on these NIPF lands.

A comparison between minorities and whites in reference to knowledge of tax incentives showed a dramatic difference in knowledge of tax incentive programs between the two groups. Only 11 percent of black landowners compared to 85 percent of white landowners were aware of these tax benefits (see Appendix 4). CES and other forestry-related agencies have largely failed to communicate this information to minority landowners.

When asked about contractual arrangements used to harvest timber (question 20), 12 percent of blacks said they harvest their own timber, whereas no whites said they harvest their own timber. Forty-seven percent of blacks used independent loggers as opposed to 25 percent of whites to contract and harvest their timber. Forty-one percent of blacks and 75 percent of whites said they contracted their harvest with a timber company. As noted earlier, many timber companies are turning to independent loggers to harvest timber purchased from NIPF owners.

The research findings showed that a majority of landowners received some sort of consultation on the value of their timber before selling it. Eighty-five percent of white landowners and 53 percent of black landowners said they had received some form of consultation. However, consultation to landowners did not frequently include information about reforestation. Only 12 percent of blacks compared to 50 percent of whites had artificial replanted pine since their most recent harvest or in the past ten years. Black landowners who had replanted (n=2) had
planted less than twenty-five acres, whereas 25 percent of white landowners who had replanted (n=12) had planted between 200 and 250 acres.

**Black and White Perceptions of Information Mediums**

Landowners were asked what form of information they had received from public agencies. They were asked to respond to five categories: (30A) by mail; (30B) personal visits; (30C) attendance at local meetings; (30D) radio or television; and (30E) agent visit to local church, lodge or farm club. The differences between black and white responses were substantially different. Forty-five percent of black landowners said they had received information by mail compared to 78 percent of white landowners. Twenty-three percent of black landowners said they had received some information through personal visits by county rangers or county extension whereas 56 percent of whites said they had received some information through this medium. Only 11 percent of the blacks said they had received some information by attending meetings sponsored by local agencies, while 33 percent of white landowners said they had received forest management information by attending such meetings. Radio and T.V. talk shows rated rather low as a medium. Twenty percent of black landowners and 30 percent of white landowners interviewed had received information on forest management through this medium. The rating was found, however, in extended community outreach by extension and other public agencies. Only 8 percent of black and 22 percent of white landowners said they had received information at their local churches, lodges and other neighborhood social meeting areas (see Table 15).
Table 15. Percentage of landowners who had received information about forest management by race

<table>
<thead>
<tr>
<th>Race</th>
<th>Mailouts Medium A (Percentage)</th>
<th>Personal visits Medium B (Percentage)</th>
<th>Local meetings Medium C (Percentage)</th>
<th>Radio &amp; television Medium D (Percentage)</th>
<th>Meeting at local churches &amp; lodges Medium E (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Black</td>
<td>46%</td>
<td>54%</td>
<td>23%</td>
<td>77%</td>
<td>11%</td>
</tr>
<tr>
<td>White</td>
<td>70%</td>
<td>22%</td>
<td>56%</td>
<td>44%</td>
<td>33%</td>
</tr>
<tr>
<td><em>Statistical Significance</em></td>
<td><em>P = .0107</em></td>
<td><em>P = .0082</em></td>
<td><em>P = .0357</em></td>
<td>P = .3800</td>
<td>P = .1303</td>
</tr>
</tbody>
</table>

* indicates statistical significance.
In addition, respondents were asked if they had received information by: (1) newspaper article; (2) the use of toll-free forest management information telephone service; (3) by visit to demonstration project on reforestation and management and (4) had they received information passed on to their children through high school vocational agriculture or 4-H clubs. Table 16 provides responses to this question by percentages. The data in this table show that whites said that they had gathered much more information on forest management from newspapers than blacks (78 percent for whites and 29 percent for blacks). Information received from blacks on toll-free phone service, demonstration projects of reforestation and materials passed on through high school vocational agriculture and 4-H was very low, 6 percent, 14 percent and 3 percent, respectively. Although slightly higher for whites—26 percent, 56 percent and 11 percent, respectively—overall percentages for both race groups were still substantially low, much lower than ownership by size of land holding.

Ratings as to whether it was important to be well informed on forest management practices were equally high among both race groups. Fifty-seven percent of blacks said knowledge of forestry was very important, 37 percent said it was moderately important and only 6 percent said it was not at all important. By contrast, 81 percent of white farmers said knowledge of practices was very important, 15 percent said it was moderately important and 4 percent said it was of no importance. It should be noted that the percentage of respondents reporting moderate importance tended to have either very small amounts of woodlands or felt the woodland production capacity, i.e., swamp land, was marginal
Table 16. Percentage of landowners who had received additional information about forest management by race

<table>
<thead>
<tr>
<th>Race</th>
<th>Newspapers Medium A (Percentage)</th>
<th>Toll-free telephone Medium B (Percentage)</th>
<th>Visit to demonstration sites Medium C (Percentage)</th>
<th>Information passed on thru high school or 4-H clubs Medium D (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Black</td>
<td>29%</td>
<td>71%</td>
<td>6%</td>
<td>94%</td>
</tr>
<tr>
<td>White</td>
<td>78%</td>
<td>22%</td>
<td>26%</td>
<td>74%</td>
</tr>
<tr>
<td>*Statistical Significance</td>
<td>*P = .0002</td>
<td>*P = .0215</td>
<td>*P = .0006</td>
<td>P = .1896</td>
</tr>
</tbody>
</table>
for the production of Southern Pine. This overall finding was statistically significant at the .01 level of significance.

Respondents were then asked if they were in fact aware of financial assistance to conduct reforestation, that is, cost-share programs. The data showed a dramatic difference between knowledge of these programs by blacks and whites. Only 29 percent of blacks reported knowledge of such programs and 85 percent of whites reported knowledge of cost-share programs (FIP, FDP and ACP). All blacks said they received information about these programs from public agencies and 82 percent of whites said they received primary information about these programs from public agencies. Of those blacks who had harvested since 1973, only one individual (6 percent of those who had harvested since 1973) had received reforestation funds. Eleven whites or 55 percent of those interviewed who had harvested since 1973 had received financial assistance to reforest woodlands (statistical significance was at the .01 level).

The reason that more black landowners have not applied for and received more cost-share funds may be related to the structure of information dissemination. Many minority landowners simply are not aware that cost-share programs for reforestation exist. Other landowners who say they are aware of cost-share programs say that the cost that must be provided by the landowner (about $60 per acre) is prohibitive. Yet in many cases, knowledge is action and the data gathered in this research show that landowners are willing to invest if more information and technical assistance were available.
When asked if they believed it ought to be the responsibility of public agencies to provide information on reforestation and other management practices, more blacks believed these agencies ought to be responsible than whites did. Eighty-six percent of blacks as compared with 78 percent of whites said it ought to be the responsibility of public agencies such as CES to provide management information and technical assistance. These differences are not substantially large and indicate that the larger majority of both black and white landowners favor more accountability on the part of public agencies to provide management information to local woodlot owners.

Landowners were asked to compare methods or mediums of communication dividing them into largely traditional and nontraditional or more innovative categories. Landowner views as to effectiveness of traditional program mediums were first obtained. Only 9 percent of black landowners said they thought occasional letters and other mailouts were effective compared to 63 percent of white landowners. Six percent of black landowners said they thought monthly newsletters were effective mediums as compared to 44 percent of white landowners. Seventeen percent of black landowners said they thought visits to farms by extension agents were effective as compared to 70 percent of white landowners. Nine percent of black landowners said they thought newspaper articles were an effective medium as compared to 37 percent of white landowners.

Six percent of blacks felt that discussion at local farm clubs or churches was effective as compared to 33 percent of white landowners.
Six percent of blacks believed that toll-free telephone service on management was effective; however, only 15 percent of whites believed that this service was effective. As to information received by children in school and 4-H clubs, only 3 percent of blacks believed that schools and 4-H clubs were effective in providing forestry-related information and that was largely limited to forest fire prevention. Only 6 percent of whites also believed that vocational agricultural and 4-H clubs were effectively providing information (see Table 17 for a comparison of percentages).

Landowners were asked to indicate whether the following innovative techniques were effective in providing more comprehensive management practices. These include more case studies through films and lectures on how management is occurring in European countries as well as Third World countries such as Brazil. Twenty percent of black landowners said they thought this medium would be effective compared to 30 percent of white landowners, a very low rating overall. Black landowners (11 percent) said that they thought a low cost ($10.00) home study information packet would be effective and 26 percent of white landowners said they thought such a packet would be effective (question 47B).

However, 71 percent of black landowners and 59 percent of white landowners said they believed more community involvement in forestry management would be effective. That is, more neighbors being informed of the advantages of reforestation and fire prevention. Twenty-five percent of black landowners and 56 percent of white landowners also said they believed a more cooperative effort by neighborhood farmers would be beneficial toward efforts to effectively manage forestlands.
Table 17. Percentage of landowners who believed traditional mediums of information about forest management was effective by race

<table>
<thead>
<tr>
<th>Race</th>
<th>Mailouts (Percentage)</th>
<th>Newsletters (Percentage)</th>
<th>Personal visits by extension agents (Percentage)</th>
<th>Newspapers, television and radio (Percentage)</th>
<th>Information obtained at local churches or lodges (Percentage)</th>
<th>Toll-free telephone (Percentage)</th>
<th>Information passed on thru high school or 4-H clubs (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>9% 91% 6% 94% 17% 83%</td>
<td>9% 91% 6% 94% 17% 83%</td>
<td>9% 91% 6% 94% 17% 83%</td>
<td>9% 91% 6% 94% 17% 83%</td>
<td>9% 91% 6% 94% 17% 83%</td>
<td>9% 91% 6% 94% 17% 83%</td>
<td>9% 91% 6% 94% 17% 83%</td>
</tr>
<tr>
<td>White</td>
<td>63% 37% 44% 56% 70% 30%</td>
<td>37% 63% 33% 66% 15% 85%</td>
<td>15% 85% 11% 89%</td>
<td>15% 85% 11% 89%</td>
<td>15% 85% 11% 89%</td>
<td>15% 85% 11% 89%</td>
<td>15% 85% 11% 89%</td>
</tr>
</tbody>
</table>

*Statistical Significance:*
- *p = .0001* for Mailouts
- *p = .0003* for Newsletters
- *p = .0001* for Personal visits
- *p = .0063* for Newspapers
- *p = .0048* for Toll-free telephone
- *p = .2295* for Information passed on thru high school or 4-H clubs
- *p = .7371*
These efforts involved farmers working together in joint ventures to help reforest one another's woodlots.

Both black and white landowner views were similar on the increased involvement of timber companies. Fifty-one percent of black landowners and 50 percent of white landowners said they thought timber companies should be more involved in working with farmers on improving reforestation practices. Sixty-three percent of black landowners said they favored the inclusion of more women and minorities in providing assistance on forest management. Thirty-three percent of whites said they favored the inclusion of more women and blacks.

Landowners were asked to compare variable 43 on the traditional medium of providing education and technical assistance with variable 47, the more innovative approach. Eighty-three percent of black landowners favored the more innovative approach and 56 percent of white landowners favored the more innovative approach. This finding was statistically significant at the .05 level. It is also substantially significant that a majority of both white and black landowners favored a more innovative participatory approach to teaching forest management practices.

Both white and black landowners favored a more participatory medium to provide comprehensive forestry management information and technical assistance. When asked if landowners believed that innovative participatory workshops would be effective, 66 percent of black landowners said they thought they would be and an even larger percentage of white landowners (78%) favored a more innovative medium such as comprehensive workshops on management. The majority of both black and white farmers
favored four or more hours of workshop time, and 87 percent of black landowners and 59 percent of white landowners favored four or more hours of workshop time to learn more about forest resource management, especially how to convert more woodland to pine stands through improved reforestation practices. This finding, however, was not statistically significant at the .05 level with probability placed at .0617.

Landowners were then asked if they thought the following more innovative approaches would be effective in forest management practices. These include (a) more extended bus tours on demonstration sites; (b) a full-time paraprofessional in each county; (c) more involvement by community colleges. Findings were not statistically significant at the .05 level.

Most blacks believed that some racism still exists in providing information and technical assistance on the management of forest resources. Sixty-three percent of black landowners said they thought race or age made a difference, while only 11 percent of white landowners said they believed race or age made a difference in the quality of information received about systematic forest management of NIPF woodlots.

These differences, by race, about knowledge of woodlot management and practices can in large part be attributed to the traditional channels of information dissemination and the ability of landowners to decode the information in a manner that is functionally understood. Both the medium of information dissemination and decoding of the information received is believed to be a product of the structure of racism and discrimination in addition to ownership class. The above findings, of course, do not mean that most landowners, including blacks have not
received some information or consultation about management of woodlots as the data presented above indicate. What these findings do, however, suggest is that quality information presented in such a manner that it can be easily decoded and effectively used is lacking. The lack of this quality information reflects racism in the structure of public agencies that are responsible for disseminating information to landowners. Again, the allegation that many minority landowners are inefficient and the size of their woodlots do not meet the required economies of scale are reasons that are frequently given by public agencies for not providing extensive and quality information to these landowners. Inefficiency and lack of economies of scale, however, may be viewed as terms used to couch racist attitudes toward minority landowners.
CHAPTER VI

CONCLUSIONS AND RECOMMENDATIONS

Increasingly, government policy makers are favoring nonintervention policies for both annual and perennial crops in agriculture. The removal of subsidies is a general case in point and the refusal to implement special legislation designed to help limited resource farmers is a specific case in point of the nonintervention or a return to classical laissez-faire economic theory. These conservative shifts in agricultural policy invariably affect the implementation of U.S. forest policies in the NIPF sector. A case in point is the increased attacks on the Federal Forestry Incentive Programs (FIP) and implicitly the limited use of FIP funds to aid mostly large-scale landowners. These policy directions have exacerbated minority and other limited resource landowners' access to educational and financial assistance to convert both marginal croplands as well as harvested woodlands to high-volume Southern Pine through artificial regeneration. Thus, the primary hypotheses of this research with regard to both research significance and statistical significance were generally not proven to be false. These hypotheses stated that:

1. Traditional educational programs sponsored by agricultural extension, state foresters and ASCS offices (as experts) have been insufficient in providing farmers, especially small size and minority farmers, with information and technical assistance related to public incentive
programs and other measures that would improve their forest management practices.

2. Large size farmers have benefitted disproportionately from traditional education programs; thus, they have taken greater advantage of technical assistance and public incentive programs to improve upon their forest management practices.

3. Conversely, additional educational programs which include more (participatory) practices by both extension and other public agencies as well as the farmer and the farming community would be more receptive by all farmers, especially minority and small size farmers. Thus, farmers will demonstrate a willingness to systematically engage in forest management practices.

Dependent Variable: Attitude toward and adoption of systematic forest management practices.

Independent Variable: Educational programs, size of farm or woodlot (wealth), and race.

**Primary Hypothesis**

Within the specific context of the hypotheses, the findings tend to strongly confirm the overall hypothesis with some variations depending upon the emphasis placed upon research significance and statistical significance. Data supporting the primary hypothesis, that is, traditional programs have been insufficient in providing farmers and other NIPF owners with minimal information and technical assistance, was strong. Based upon landowner opinions, the data findings show that most landowners (63 percent) believed that traditional educational
programs do not provide sufficient information to effectively establish limited reforestation plans. Statistical significance was at the .05 level.

Other survey responses tend to confirm this finding. These include: 1) knowledge of tax incentives—57 percent of all landowners said they had no knowledge of tax incentive programs that are available to increase reforestation and other practices to improve NIPF lands (statistical significance at the .01 level); 2) consultation before harvesting and marginal profits for reforestation—30 percent of all landowners who harvested timber did not get consultation before they harvested (not statistically significant but research significant); 3) 42 percent of landowners said they had not received any information at all on forest management, especially reforestation information, in the past two years.

A more detailed analysis of traditional programs on forest management tends to further confirm the research hypothesis. With the exception of information received by mail, most landowners had not had access to any information at all on forest management. Only 37 percent had received information by personal visit to farms or the home, only 21 percent had attended agency-sponsored meetings and only 24 percent had received information by radio or television. Although these findings were not found to be statistically significant, their research significance is very important. Additionally, research findings showed that (1) information provided by newspapers—49 percent of landowners had not obtained information by this medium; (2) the use of toll-free phone service—85 percent of landowners had not received information by the use of this medium; and (3) agency-sponsored visits to sites that are
undergoing reforestation—68 percent of landowners had not received information by this medium. All of these findings suggest that traditional information is not effective in providing NIPF landowners with basic reforestation information (statistically significant at the .05 level).

Knowledge of the potential of prices that well-managed Southern Pine crops may produce was found to be severely inadequate among most landowners. Although the research showed that 39 percent of large-scale landowners had relatively accurate knowledge of the potential price increases that well-managed Southern Pine plantations are capable of producing, only 13 percent of small-scale farmers had knowledge of potential prices. However, when knowledge of the potential of timber prices was measured across racial lines, blacks showed a severe lack of knowledge (only 9 percent of blacks said that they were aware of the price potential of plantation forestry whereas 41 percent of whites said that they were aware of the potential). Knowledge of the potential of timber prices plays a rather important role in landowner decisions to maximize the production potential of his woodland.

Second Hypothesis

Although most landowners generally agreed that the information and technical assistance received is largely inadequate, the data tend to consistently not disprove the second hypothesis. That is, large-scale landowners have benefitted disproportionately from traditional educational programs and have taken greater advantage of technical assistance over small-scale landowners.
Almost all of the variables in this study consistently demonstrated that large-scale farmers were (1) better informed through a wider range of communications than small-scale farmers; (2) had used technical assistance programs more often than small-scale landowners; (3) had received more financial assistance than small-scale farmers; and (4) had actually replanted more acres into Southern Pine than small-scale landowners. Only 17 percent of small-scale landowners had replanted since 1973 as compared to 50 percent of large-scale landowners and only 12 percent of minority landowners as compared to 50 percent of white landowners (statistically significant at the .05 level). Large-scale landowners tended to be more aware of the tax benefits than small-scale and black landowners. On the average, of the farm tax programs included in this study (reforestation tax credit, cost-share, capital gains and present-use valuation), large-scale landowners were aware of these programs in 72 percent of their cases as compared with only 26 percent of the cases with small-scale landowners. The contrast was even stronger with comparison of these tax incentive programs between races.

Only 12 percent of blacks said that they were aware of tax incentives as compared with 83 percent of whites (findings statistically significant at the .01 level).

Third Hypothesis

The second secondary hypothesis, that is, both large-scale and small-scale landowners (farmers) would be more receptive to changes in current extension practices was also not disproved. Tests of statistical significance were not as strong with this hypothesis as with the previous
two. The findings were somewhat surprising, however, in that large-scale
landowners tend to be more favorable toward both quantitative improvement
in traditional programs as well as expanding traditional educational
programs to include more innovative education programs. Seventy-eight
percent of large-scale landowners and 67 percent of small-scale land-
owners said that they thought workshops to expand knowledge of reforesta-
tion based upon innovative learning approaches would be useful and that
they would participate in these workshops. White landowners also approved
of these more innovative programs over blacks, but both groups registered
high approvals; 78 percent of whites approved and 66 percent of blacks
approved.

In addition, 34 percent of large-scale landowners said they
approved attending workshops on innovative educational techniques toward
forest management of eight hours or more and 31 percent of small-scale
landowners said they would attend workshops of eight hours or more.
The majority of landowners said they would attend four hours of workshops;
35 percent of large-scale landowners and 46 percent of small-scale
landowners said they would attend four hours of workshops. Black
landowners tended to favor longer time periods for innovative workshops
slightly more than white landowners; 37 percent of blacks in comparison
to 26 percent of whites said they would favor eight or more hours of
innovative workshops and 49 percent of blacks in comparison to 33 percent
of whites said they would favor or attend at least four hours of these
innovative workshops.

Although these findings on innovative workshops (an indication
for more qualitative educational programming in forest management) were
not disproved to be statistically significant at the .05 level, their research significance is very important. Both large-scale and small-scale landowners as well as a consensus among both black and white landowners showed a strong interest in learning how to convert more of their woodlots to high-volume Southern Pine plantations by use of more diversified systems of knowledge on forest management.

A second series of questions further confirms this research hypothesis that landowners prefer more innovative approaches toward learning about and managing their woodlands. These approaches include more group bus tours to sites that are undergoing reforestation. Eighty-three percent of large-scale landowners and 67 percent of small-scale landowners approved of more group tours to see demonstrations of reforestation. The expansion of community colleges to include outreach or innovative educational programs to landowners on forest management was generally approved as an effective means by 30 percent of large-scale landowners and 44 percent of small-scale landowners.

In addition, many landowners did not know very much about what roles community colleges would perform in regards to forest management. Fifty-two percent of large-scale landowners and 44 percent of small-scale landowners wanted to learn more about the possible involvement of community colleges as a service agency for forest management. Both black and white landowners showed very close approval of the above approaches; 74 percent of black landowners and 70 percent of white landowners believed that group tours as an innovative method would improve their knowledge and propensity to engage in forest management. Forty percent of black landowners and 37 percent of white landowners believed that community
colleges could be a source of outreach for innovative programs for forestry management and 46 percent of black landowners and 48 percent of white landowners said that they would like to know more about the possibility of community colleges as a service agency for educational and technical assistance in forest management. These findings as well as the previous findings have strong research significance although they did disprove the hypothesis at the .01 level of significance.

Landowners also said that they favored more approaches that involved community acts to improve forest management when asked if they approved of innovative programs that involved the whole community in forestry practices that relate to environmental and social-related issues (fire prevention, trash dumping and clean water resources on woodlots). Sixty-one percent of large-scale and 69 percent of small-scale landowners said that they approved of innovative programs that would foster these practices. Also, 71 percent of black landowners and 60 percent of white landowners said they approved of and would participate in an effort of this sort.

A second component of this question addressed the approval and participation in community forestry efforts to ensure that farmers as a neighborhood group or community would directly assist one another in reforestation efforts. With the assistance of governmental agencies such as Agricultural Extension, 61 percent of large-scale landowners and 69 percent of small-scale landowners said they believed an innovative program of this sort would be effective and they would participate in such a program. Seventy-four percent of black landowners and 56 percent of white landowners approved of the innovative community approach
discussed above and finally as an innovative approach the inclusion of more women and racial minorities tended to have the approval of small landowners who believed that the inclusion of women and minorities would improve forest management practices more than large-scale landowners and blacks approved more than whites. Fifty-nine percent of large-scale landowners approved and 35 percent of large-scale landowners approved. Sixty-three percent of blacks approved and 33 percent of whites approved. Many blacks were somewhat skeptical of the time and quality of information they would receive from other black extension agents. They were overall more interested in the quality of information received than the agent's race although they generally believed more white extension agents to be racially discriminating in the provision of information and other technical assistance on forest management.

Overall, landowners said they would favor more innovative approaches to forest management as opposed to more traditional approaches to forest management. Seventy percent of large-scale landowners and 72 percent of small-scale landowners said they favored more innovative approaches over more traditional approaches to forest management. Eighty-three percent of blacks compared with 56 percent of whites favored more of the innovative approaches over traditional educational programming in forest management.

The research conclusions tend to support the Gotsch thesis that a central conflict exists between those who do not have access to the information and technical assistance (small-scale and minority landowners) and those who wish to maintain or enhance their control (large-scale landowners). The flow of forestry extension services, the
use of state and federal cost-share dollars, the structure and use of tax incentives and the scale of technology used in artificial reforestation all suggest that current reforestation practices will invariably improve the wealth and political power of an increasing number of large-scale landowners (see Chart 3). These practices will continue to reinforce the current pattern of land tenure and customs and social behavior in the rural sector.

Summary of Policy Issues

Policy shifts in forestry as well as policy shifts in agriculture in general currently reinforce a structure that is uneven in its allocation of resources and distribution of privileges. Large-scale landowners benefit from current forestry resource policy and white landowners benefit from these resources in far greater proportion than black landowners. However, the conflict that exists in current forest resource policies can be diminished with changing attitudes on the part of state agencies that shape tax policies, extension policies, banking policies and other technical services that are related to rural development and growth.

The findings from this research show that many landowners are willing to work closer together in understanding and practicing forest management that has the potential to reduce this conflict. NIPF landowners prefer more innovative educational programs to learn more about forest management practices. These innovative programs could have the effect of reducing the current state of unevenness in systematic NIPF forest management as well as increasing production of Southern Pines.
Southern Pine production, however, can never be a value-free process. Invariably increases in production will determine who will have added resources to increase wealth and political power, thus influencing the direction of rural development and growth in the natural resource sector.

**Recommendations**

These findings suggest that North Carolina state forestry programs need to concentrate more resources toward the conversion of small-scale woodlots to high-volume Southern Pine plantations if it is going to achieve an acceptable measure of nondiscrimination in the administration of these programs. The structure of current educational programs needs a reexamination in order to make them more effective in communicating information on reforestation. Almost all landowners interviewed preferred a more innovative process for communicating forest management information, thus suggesting a need for a statewide concentrated effort to share knowledge of forest management with NIPF landowners. The extended workshop from where both experts and landowners may learn and reconceptualize the problematic in forest management under increasing austere economic conditions at the county level could serve as a beginning for new relationships between landowners and experts in service agencies.

There needs to be a reexamination of current allocation practices for cost-share programs on a county-by-county basis to ensure that counties where more intensive harvesting is occurring receive additional cost-share funds in order to prevent the beginning stages of selective deforestation. If current cost-share programs are going to achieve a minimal degree of equalitarianism, they must be expanded to include
more small-scale landowners, especially racial minorities. Special legislation addressing the needs of small-scale woodlot owners especially pertaining to cost-share allocations may be required. The state current small woodlot research and development program could serve as the research and dissemination basis of any expanded policy focus on small-scale landowners. However, other less institutionalized or more community-oriented programs are needed to communicate the weaknesses in the state small woodlot research and development program. Black small-scale landowners must organize a more effective lobbying process to ensure more educational, financial and other technical resources in order to improve forest management practices and the conversion of more acres to Southern Pine production.

If the average rate of timber harvesting for the eighties does not equal or exceed that the state incurred in the seventies, then a new consideration should be given toward the use of mandatory reforestation for clear-cut woodlot sites with an emphasis toward artificial regeneration. The total structure of public relations at both local and state levels need reorganization if both landowners and the rural community as a whole are to substantially improve the attitudes toward comprehensive management of forest resources as a source of income and employment for this state as well as a public good. Public relations goals must stress the need to create more egalitarianism between both industrial private forest owners and nonindustrial private forest owners in order to reduce some of the current political conflict in Southern Pine production as well as in agriculture in general. These public relations efforts must stress the point that small-scale landowners
regeneration of small woodlots can be as efficient as large-scale landowners and woodlots given the proper infusion of technical and financial resources. This message especially needs to be targeted toward minority landowners with small woodlots of twenty-five acres or more.
APPENDICES
APPENDIX 1

Projections of Number of Farms

Table A. Trend projections of the number of farms, by size of farm

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>1,000 farms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-99 acres</td>
<td>1,190.4</td>
<td>1,060.8</td>
<td>945.3</td>
<td>842.4</td>
<td>750.6</td>
</tr>
<tr>
<td>100-219 acres</td>
<td>558.1</td>
<td>477.7</td>
<td>409.0</td>
<td>350.1</td>
<td>299.7</td>
</tr>
<tr>
<td>220-499 acres</td>
<td>456.3</td>
<td>406.0</td>
<td>361.3</td>
<td>321.5</td>
<td>286.1</td>
</tr>
<tr>
<td>500-999 acres</td>
<td>212.6</td>
<td>210.5</td>
<td>208.9</td>
<td>207.1</td>
<td>205.3</td>
</tr>
<tr>
<td>1,000-1,999 acres</td>
<td>96.3</td>
<td>99.3</td>
<td>102.2</td>
<td>105.3</td>
<td>108.4</td>
</tr>
<tr>
<td>2,000 acres and over</td>
<td>60.9</td>
<td>60.9</td>
<td>60.9</td>
<td>60.9</td>
<td>60.9</td>
</tr>
<tr>
<td>All farms</td>
<td>2,574.6</td>
<td>2,315.4</td>
<td>2,087.5</td>
<td>1,887.2</td>
<td>1,711.0</td>
</tr>
</tbody>
</table>

Table B. Trend projections of the number of farms, by sales class

<table>
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<tr>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
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<td></td>
<td>1,000 farms</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than $2,500</td>
<td>951.4</td>
<td>795.6</td>
<td>665.3</td>
<td>556.3</td>
<td>456.2</td>
</tr>
<tr>
<td>$ 2,500-$ 4,999</td>
<td>264.3</td>
<td>212.8</td>
<td>171.3</td>
<td>137.8</td>
<td>110.9</td>
</tr>
<tr>
<td>$ 5,000-$ 9,999</td>
<td>247.7</td>
<td>192.2</td>
<td>149.2</td>
<td>115.8</td>
<td>89.8</td>
</tr>
<tr>
<td>$10,000-$19,999</td>
<td>293.2</td>
<td>253.6</td>
<td>219.5</td>
<td>189.9</td>
<td>164.3</td>
</tr>
<tr>
<td>$20,000-$39,999</td>
<td>366.2</td>
<td>388.5</td>
<td>408.5</td>
<td>426.6</td>
<td>443.2</td>
</tr>
<tr>
<td>$40,000-$99,999</td>
<td>316.9</td>
<td>373.7</td>
<td>429.6</td>
<td>484.8</td>
<td>539.4</td>
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<tr>
<td>$100,000-$199,999</td>
<td>90.1</td>
<td>113.3</td>
<td>137.4</td>
<td>162.5</td>
<td>188.3</td>
</tr>
<tr>
<td>$200,000-$499,999</td>
<td>36.0</td>
<td>46.3</td>
<td>57.2</td>
<td>68.8</td>
<td>81.0</td>
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<tr>
<td>$500,000 and over</td>
<td>11.4</td>
<td>14.9</td>
<td>18.7</td>
<td>22.7</td>
<td>27.0</td>
</tr>
<tr>
<td>All farms</td>
<td>2,577.1</td>
<td>2,390.9</td>
<td>2,256.6</td>
<td>2,165.2</td>
<td>2,109.2</td>
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</table>

Table C. Cumulative summary of the Forestry Incentives Program from 1975 through 1983

<table>
<thead>
<tr>
<th>State</th>
<th>Total (Regular &amp; Long-Term)</th>
<th>Regular</th>
<th>Long-Term Agreements</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Number of participants</td>
<td>Acres</td>
<td>Cost-shares</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ala.</td>
<td>2,967</td>
<td>200,445</td>
<td>10,828,361</td>
</tr>
<tr>
<td>Ark.</td>
<td>3,708</td>
<td>180,491</td>
<td>6,605,274</td>
</tr>
<tr>
<td>Calif.</td>
<td>604</td>
<td>11,396</td>
<td>1,377,337</td>
</tr>
<tr>
<td>Colo.</td>
<td>133</td>
<td>1,037</td>
<td>118,121</td>
</tr>
<tr>
<td>Conn.</td>
<td>126</td>
<td>16,966</td>
<td>2,508,058</td>
</tr>
<tr>
<td>Del.</td>
<td>68</td>
<td>2,966</td>
<td>210,991</td>
</tr>
<tr>
<td>Fla.</td>
<td>3,068</td>
<td>102,541</td>
<td>9,100,006</td>
</tr>
<tr>
<td>Ga.</td>
<td>3.563</td>
<td>153,235</td>
<td>9,750,562</td>
</tr>
<tr>
<td>Neb.</td>
<td>119</td>
<td>1,867</td>
<td>183,275</td>
</tr>
<tr>
<td>Nev.</td>
<td>966</td>
<td>194,339</td>
<td>522,215</td>
</tr>
<tr>
<td>La.</td>
<td>1,670</td>
<td>50,638</td>
<td>1,021,228</td>
</tr>
<tr>
<td>Iowa</td>
<td>398</td>
<td>7,162</td>
<td>365,447</td>
</tr>
<tr>
<td>Kans.</td>
<td>205</td>
<td>272</td>
<td>42,272</td>
</tr>
<tr>
<td>Ky.</td>
<td>1,464</td>
<td>67,766</td>
<td>121,482,10</td>
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<tr>
<td>La.</td>
<td>2,166</td>
<td>104,746</td>
<td>4,896,155</td>
</tr>
<tr>
<td>Ohio</td>
<td>1,583</td>
<td>30,403</td>
<td>717,369</td>
</tr>
<tr>
<td>Miss.</td>
<td>686</td>
<td>21,321</td>
<td>646,724</td>
</tr>
<tr>
<td>Mont.</td>
<td>1,916</td>
<td>20,712</td>
<td>108,493</td>
</tr>
<tr>
<td>N. C.</td>
<td>1,116</td>
<td>22,544</td>
<td>714,178</td>
</tr>
<tr>
<td>N. T.</td>
<td>1,137</td>
<td>12,790</td>
<td>222,202</td>
</tr>
<tr>
<td>N. Y.</td>
<td>162</td>
<td>6,463</td>
<td>187,040</td>
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<tr>
<td>N. Z.</td>
<td>5,783</td>
<td>171,016</td>
<td>6,492,136</td>
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<tr>
<td>Okla.</td>
<td>2,311</td>
<td>38,955</td>
<td>1,974,268</td>
</tr>
<tr>
<td>Ore.</td>
<td>953</td>
<td>29,850</td>
<td>2,142,394</td>
</tr>
<tr>
<td>Pa.</td>
<td>2,320</td>
<td>30,083</td>
<td>1,375,741</td>
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<tr>
<td>S. C.</td>
<td>143</td>
<td>2,073</td>
<td>95,746</td>
</tr>
<tr>
<td>S. D.</td>
<td>162</td>
<td>4,245</td>
<td>136,679</td>
</tr>
<tr>
<td>Tenn.</td>
<td>725</td>
<td>26,896</td>
<td>26,906</td>
</tr>
<tr>
<td>Tex.</td>
<td>2,767</td>
<td>137,164</td>
<td>5,356,351</td>
</tr>
<tr>
<td>Utah</td>
<td>7,457</td>
<td>132,011</td>
<td>3,702,158</td>
</tr>
<tr>
<td>Wash.</td>
<td>608</td>
<td>22,235</td>
<td>1,274,492</td>
</tr>
<tr>
<td>W.</td>
<td>2,535</td>
<td>12,900</td>
<td>1,244,205</td>
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<tr>
<td>Wis.</td>
<td>1,861</td>
<td>40,861</td>
<td>1,328,279</td>
</tr>
<tr>
<td>Wyo.</td>
<td>62</td>
<td>3,599</td>
<td>120,926</td>
</tr>
<tr>
<td>Total</td>
<td>72,193</td>
<td>2,180,128</td>
<td>101,815,603</td>
</tr>
</tbody>
</table>

NOTE: All participant state totals are net totals and may not add.

Dear Sir,

The Atlanta University Department of Political Science, Land Use and Forestry Policy Research Project is currently conducting a nonindustrial private forest ownership (NIPF) survey in North Carolina. Rudolph Wilson, our field representative, will be conducting a series of interviews with farmers and other woodlot owners throughout the state.

Your cooperation in facilitating this research survey is greatly appreciated and we assure you that your identity and responses will be held in absolute confidentiality.

Again, thank you very much for your cooperation.

Sincerely yours,

Dr. William Boone, Chairman
APPENDIX 4

April 1985

North Carolina NIPF Ownership Survey

Sponsored by Atlanta University Department of Political Science
Principle Investigator: Dr. William Boone, Chairman
Department of Political Science
Atlanta University
404-681-0251

Administered By: Rudolph Wilson, Field Representative
The Atlanta University Department of Political Science, Land Use and
Forestry Policy Research Project, Raleigh, NC

Contact:
Rudolph Wilson #458
3939 Glenwood Avenue
Raleigh, NC 27612
April 1985

North Carolina NIPF Ownership Survey

Sponsored by the Atlanta University Department of Political Science and
Land Use and Forestry Policy Research Project
Atlanta, GA
Raleigh, NC

1. Name and Address of Respondent

____________________________________

____________________________________

____________________________________

2. Marital Status:
   ___ Single
   ___ Married
   ___ Widowed
   ___ Divorced

3. Age of Respondent:


4. County of Residence


5. ___ Single Proprietor
   ___ Jointly Owned With:
       ___ a. Spouse
       ___ b. Relatives - Number ___
       ___ c. Other - Number ___

6. a. Number of children living at home ___
    b. Number of children living away from home ___
20. Which of the following best describe the contractual arrangement for harvesting your timber?
   ____ a. I harvested the timber myself.
   ____ b. I contracted to an independent logger.
   ____ c. I contracted to a timber company.

21. Did you receive consultation on the value of your timber stand before you harvested it?
   ____ a. Yes
   ____ b. No

22. If yes, who provided consultant advice to you?
   ____ a. A private consultant forester
   ____ b. A person from the State Forest Service
   ____ c. A county agricultural extension agent
   ____ d. A timber company representative
   ____ e. A friend or relative
   ____ f. Other

23. Since your most recent harvest, has all or part of the forest land been replanted (reforested) to pine?
   ____ a. Yes
   ____ b. No

24. If yes, which of the following best describes the number of areas reforested?
   ____ a. 500 acres or greater
   ____ b. 250 to 500 acres
   ____ c. 100 to 250 acres
   ____ d. 25 to 100 acres
   ____ e. 25 acres or less

<table>
<thead>
<tr>
<th>Activity</th>
<th>Acres</th>
<th>$Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Replanting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spraying</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Road Construction and Fire Prevention</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
7. How many acres of land do you own?
   ____ a. 500 or greater
   ____ b. 250 to 500
   ____ c. 100 to 250
   ____ d. 25 to 100
   ____ e. 25 or less

8. How many of those acres are forest land?
   ____ a. 500 or greater
   ____ b. 250 to 500
   ____ c. 100 to 250
   ____ d. 25 to 100
   ____ e. 25 or less

9. Which of the following periods did you acquire your land?
   ____ a. 1980 until now
   ____ b. 1970 until 1980
   ____ c. 1960 until 1970
   ____ d. 1950 until 1960
   ____ e. Before 1950

10. How did you acquire most of your land?
    ____ a. Purchase from non-relative
    ____ b. Purchase from relative
    ____ c. Inherited
    ____ d. Gift
    ____ e. Other

11. What are the major species of trees on your woodland?
    ____ a. Longleaf - Slash Pine
    ____ b. Loblolly - Shortleaf Pine
    ____ c. Oak - Pine
    ____ d. Oak Gum - Cypress
    ____ e. Elm - Ash - Cottonwood
    ____ f. Other (specify, i.e., Christmas trees)
12. Which of the following do you feel will be the most important benefits you will derive from your woodland?
   ___ a. Increase land value
   ___ b. Income from sales of wood products (timber)
   ___ c. Farm use of wood products
   ___ d. Asthetics (enjoyment, wildlife, personal satisfaction)
   ___ e. Hunting
   ___ f. Other

13. Of the acres of forest land you own, how many are pine?
   ___ a. 500 or greater
   ___ b. 250 to 500
   ___ c. 100 to 250
   ___ d. 25 to 100
   ___ e. 25 or less

14. Traveling by road, which of the following distances describe the number of miles your timber tracts is from your home?
   ___ a. Line on tract
   ___ b. Less than one mile
   ___ c. Between one and five miles
   ___ d. Between five and ten miles
   ___ e. Beyond ten miles

15. Do you have a forest management plan for your woodland area?
   ___ a. Yes
   ___ b. No
   If yes, answer question #16, if no go to question #17.

16. Who helps you to manage your forestland? That is, which of the following has provided the most assistance?
   ___ a. Friend or relative
   ___ b. Consulting forester
   ___ c. County ranger
   ___ d. County extension agent
   ___ e. U.S. Soil Conservation Service Agent
f. Agricultural Stabilization and Conservation Service person

g. FmHA agent

h. Industry forester (i.e., Georgia Pacific)
i. Other
j. No one

17. Are you aware of the following tax incentive to North Carolina woodlot owners?

Yes  No

a. Reforestation Tax Credit and Amortization Deduction

b. Exclusive cost-share payments received from FIP or FDP or ACP from taxable income

c. Capital Gains Exclusion, i.e., income from sale of standing timbers owned for more than twelve months qualifies as long term capital gains for federal tax purposes (60%)

d. Forestry Present-Use Valuation Property Tax Relief (twenty acres in size or any size if part of a farm qualifies for special agricultural or horticultural present use valuation)

18. Have you harvested any timber since 1973, or within the past ten years or so? If so how much?

a. 500 acres or greater

b. 250 to 500 acres

c. 100 to 250 acres

d. 25 to 100 acres

e. 25 acres or less

If no, go to question 27.

19. Which of the following best describes the type of timber you harvested?

a. All saw timber

b. All pine

c. All hardwood

d. All pulp wood

e. Mixed pine and hardwood

f. Mixed pulp wood and saw timber
25. Was the land after harvesting left in good condition or was there damage to the soil, i.e., large holes, water beds and damming of streams?
   ___ a. Yes, it was left in good condition
   ___ b. No, there was damage

26. If no, which of the following best describe the extent of damage?
   ___ a. Heavy
   ___ b. Moderate
   ___ c. Light

27. In the past two years or so, have you received information about how to systematically manage your forest land? This information would include, practices such as replanting, when to harvest based on age of timber, thinning, insect prevention, etc.
   ___ a. Yes
   ___ b. No

28. If yes, which of the following sources provided this information?
   ___ a. County forest ranger
   ___ b. County agricultural extension agent
   ___ c. State agricultural extension agent
   ___ d. Local agricultural Stabilization and Conservation Service person
   ___ e. Local agricultural instructor at county high school
   ___ f. Consulting forester
   ___ g. Neighbor
   ___ h. Other

29. Has your county agricultural extension agency provided you with any information about forest management practices in the past two years or so?
   ___ a. Yes
   ___ b. No

30. If yes, what form has the county extension service used to provide this information?
   ___ a. Did you receive information by mail?
   ___ b. Did an agent come out to your farm and discuss forest management practices with you?
   ___ c. Did you get an invitation to come to a local meeting to become more informed on forest management practices?
31. In the past two years or so, have you attained information about forest management from the following?

Yes  No

a. Read newspaper article on practicing good forest management (includes fire prevention).

b. Used toll free numbers to telephone to obtain information on forest management including timber prices.

c. Visited demonstration projects on how to properly manage forest including regenerating pine timber stands.

d. Received information from your local high school or 4-H on forest management.

32. How important is it to you to be well informed on forest management practices?

a. Very important

b. Somewhat important

c. Of little importance

d. No importance at all

33. Are you aware of financial incentive programs to help woodlot owners to engage in better forest management practices?

a. Yes

b. No

34. Did you know that in North Carolina there are two programs of this type? One federally sponsored and the other state sponsored.

a. Yes

b. No
35. If yes, who informed you of those foresting incentive programs?
   ___ a. County extension agent
   ___ b. County ranger
   ___ c. State forestry agent
   ___ d. Local ASCS person
   ___ e. Local high school agricultural teacher
   ___ f. Neighbor
   ___ g. Other

36. Have you applied for financial assistance from the county forestry ranger or ASCS office to replant or thin or engaged in some other type of forest management in the past ten years or so?
   ___ a. Yes
   ___ b. No
   If no, go to question #41.

37. If yes, was your application approved?
   ___ a. Yes
   ___ b. No

38. Have you since then received financial assistance to do reforestation?
   ___ a. Yes
   ___ b. No

39. If your application was not approved tell us why not.
   ___ a. Too few acres i.e., ten or less
   ___ b. I was put on a waiting list
   ___ c. Other

40. If you were put on a waiting list, how long have you been on this list?
   ___ a. One to two years
   ___ b. Two to three years
   ___ c. Three years or longer
41. How knowledgeable do you feel you are about timber management and market prices? Example, did you know that at recent market prices, it is possible to earn up to $30,000 or more for a five acre tract of mature (40 years old) Southern Pine timber if it were well managed?

   a. Yes
   b. No

42. Do you feel that it ought to be the responsibility of the county agricultural extension agent, county ranger and other agencies such as ASCS and FMHA to provide you with a full range of information on the potential of your woodlot?

   a. Yes
   b. No

The next few questions will require that you compare methods that are sometimes used to inform and educate farmers and woodland owners about forestry practices and related matters.

43. How effective do you believe the following information methods have been? That is, do you believe they have been very effective, little effective or not effective?

   a. Mailouts or occasional letters that inform you of forest management practices and related matters by county extension, the N.C. State Division of Forestry?

       Very effective
       Little effective
       Not effective

   b. Monthly newsletters by county extension or the state division of forestry which has provided information on forestry management practices and related matters?

       Very effective
       Little effective
       Not effective

   c. Visits to your farm or woodland by county extension agents, county rangers or persons from an agricultural related agency in providing information on forestry management practices or related matters?

       Very effective
       Little effective
       Not effective
d. Newspaper articles and other briefings that relate to forest management practices?
   ___ Very effective
   ___ Little effective
   ___ Not effective

e. Discussions at your local farm, club or church on forest management practices or related matters?
   ___ Very effective
   ___ Little effective
   ___ Not effective

f. Information about, as well as, the use of the toll free telephone number that you may call to obtain information on forest management practices or related matters?
   ___ Very effective
   ___ Little effective
   ___ Not effective

g. Information passed on to you or your children by agricultural instructors in your local high school?
   ___ Very effective
   ___ Little effective
   ___ Not effective

Some methods used to inform farmers and other woodland owners about forest management practices are used more often than others.

44. How effective do you believe the following method to improve forest management practices would be?

Conducting a series of workshops either in a home, church or local school to teach farmers or other woodland owners how they can improve forest management practices as a team or community.
   ___ Very effective
   ___ Little effective
   ___ Not effective
b. The development and distribution at an low cost of information a packet with visual aids on how the individual woodlot owner can in a self-help model improve his forest management practices?

____ Very effective
____ Little effective
____ Not effective

c. The development of a community forestry program when:

(1) All residents in the rural area, i.e., county or community will become to some extent more involved in forestry practices? That is, they will become more aware of environmental and other social issues related to forestry.

____ Very effective
____ Little effective
____ Not effective

(2) All woodlot owners in the community working with one another to make sure that the long range interest of each owner is assessed and monitored on a year by year basis?

____ Very effective
____ Little effective
____ Not effective

(3) More systematic program set up between local timber companies and local woodlot owners to expand resources and technical assistance to you as a woodlot owner?

____ Very effective
____ Little effective
____ Not effective

d. The further inclusion of more women and minorities into a county wide forest management program to improve woodlots?

____ Very effective
____ Little effective
____ Not effective
45. How many evening or weekend sessions would you be willing to attend?
   a. (six) two hour sessions
   b. (four) two hour sessions
   c. (two) two hour sessions
   d. (one) two hour session

46. Do you believe that the following methods sponsored by county extension or
   the N.C. State Division of Forestry would be effective in improving your
   ability to engage in better forest management practices?
   a. Participate in a bus tour with other farmers to look at
      an demonstration on forest management conducted by an
      agricultural extension or state forestry?
         Very effective
         Little effective
         Not effective
   b. Hiring of a full time local resident as a paraprofessional to
      provide specific information on how your woodlot could be better
      managed?
         Very effective
         Little effective
         Not effective
   c. Bring the local community college in as a source for
      information and assistance on forest management practices?
      (that the local college would provide courses technical
      assistance or regeneration as well as information on how to
      gather financial packages to cover the cost of forest
      management)?
         Very effective
         Little effective
         Not effective

47. How do you feel about the effectiveness of the following as measures to
   improve forest management practices among local farmers such as yourself?
   a. The provision by either the local community college or
      agricultural extension of case studies on forest
      management problems and practices in other countries, by
      film or lectures, to demonstrate how even in lesser
      developed countries individuals benefit from forest
      management practices?
         Very effective
         Little effective
         Not effective
48. Do you believe that current information and methods such as those mentioned in question #43 (mailouts, toll free telephone information and newsletters) are adequate in providing information about forest management practices?
   ___ a. Yes
   ___ b. No

49. Would you favor other methods to improve your knowledge of forest management such as the items just covered in questions #46 and #47?
   (repeat a few of these items if it is necessary).
   ___ a. Yes, I would favor items in questions #46 and #47 over items in question #43.
   ___ b. No, I would not favor items in questions #46 and #47 over items in question #43.

50. How much do you believe is the general value of your farmland?
   ___ a. One million or above
   ___ b. 500,000 to 1,000,000
   ___ c. 100,000 to 500,000
   ___ d. 50,000 to 100,000
   ___ e. 20,000 to 50,000
   ___ f. less than 20,000

51. What is your educational level?
   ___ a. 1-8 years
   ___ b. 8-12 years
   ___ c. 12 years (high school graduate)
   ___ d. 12-14 years
   ___ e. 14 years (college or junior college graduate)
   ___ f. 12-16 years
   ___ g. 16 years (college graduate)
   ___ h. more than 16 years

52. Do you believe that your race, sex or age has made a difference in the quality of information and assistance you received from agencies such as cooperative extension, FmHA, ASCS and soil conservation, on how to get financial and technical assistance in managing your woodland areas?
   ___ a. Yes
   ___ b. No
If yes, has the difference been:

___ a. Strongly favorable
___ b. Favorable
___ c. Disfavorable
___ d. Strongly Disfavorable

53. Do you feel that a private countywide association of woodlot owners would be of benefit in your efforts to maximize your forest resource production?

___ a. Yes
___ b. No

THANKS VERY MUCH FOR YOUR TIME AND PATIENCE AND I HOPE THIS INFORMATION WILL BE OF BENEFIT TO YOU.
APPENDIX 5

Individuals Included in Elite Interview

(1) Professor Jack Royer, Forest Policy Analyst, Duke University, Durham, N.C.

(2) Professor Edmond de Steiguer, Forest Economist, North Carolina State University and U.S. Forest Service, Southeastern Forest Experiment Station, Research Triangle Park, N.C.

(3) Professor Mike Levy, Director of Forestry Extension, State of North Carolina, USDA Extension Service, Raleigh, N.C.

(4) Professor Lester Holly, Instructor of Forestry, North Carolina State University, School of Forestry.

(5) Professor Carlyle Franklin, Forest Economist, North Carolina State University, School of Forestry, Division of Small Woodlot Research and Development.

(6) Professor George F. Dutrow, Forest Economist, U.S. Forest Service, Southeastern Forest Experiment Station, Research Triangle Park, N.C.

(7) Professor Marion Clawson, Forest Economist, Resources for the Future, Washington, D.C.

(8) Professor Clyde Chesney, Natural Resource Specialist, USDA, Extension Service, Raleigh, N.C.

(9) Professor Joyce Hilliard-Clark, Forestry Management Specialist, North Carolina State University School of Forestry.

(10) Professor Douglas Lewis, Agricultural Economist, USDA, North Carolina State University, Raleigh, N.C.

(11) Professor Robert Williamson, Forest Management Specialist, USDA Extension Service, A&T State University, Greensboro, N.C.

(12) Mr. Richard Hamilton, Forestry Extension Agent, USDA, North Carolina State University, Raleigh, N.C.

(13) Mr. Alex Dowell, North Carolina Division of Natural Resources, Forestry Services, Raleigh, NC.

183
(14) Mr. James Magnum, USDA, Agricultural Stabilization and Conservation Service (ASCS), State of North Carolina, Raleigh, N.C.

(15) Forest Ranger, Tyrell County, N.C.

* The researcher spoke with numerous other individuals at the federal, state, and county levels; however, the above list represents individuals who were formally interviewed face-to-face.
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