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A Comparison of Knowledge of Forestry Concepts With the Adoption of Forest Practices in Two Louisiana Parishes.

Lester Ezra Bradford

Louisiana State University and Agricultural & Mechanical College

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A COMPARISON OF KNOWLEDGE OF FORESTRY CONCEPTS
WITH THE ADOPTION OF FOREST PRACTICES
IN TWO LOUISIANA PARISHES

A Dissertation
Presented to
the Faculty of the Graduate School
Louisiana State University and
Agricultural and Mechanical College

In Partial Fulfillment
of the Requirements for the Degree
Doctor of Education
in Extension Education

by
Lester Ezra Bradford
August 1971
PLEASE NOTE:

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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACKNOWLEDGEMENTS</td>
<td>ii</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>v</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>vii</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td>ix</td>
</tr>
<tr>
<td>CHAPTER</td>
<td></td>
</tr>
<tr>
<td>I. STATEMENT OF THE PROBLEM</td>
<td>1</td>
</tr>
<tr>
<td>Review of Literature</td>
<td>2</td>
</tr>
<tr>
<td>The Hypothesis</td>
<td>13</td>
</tr>
<tr>
<td>II. RESEARCH DESIGN</td>
<td>14</td>
</tr>
<tr>
<td>The Respondents</td>
<td>14</td>
</tr>
<tr>
<td>Selection of Respondents</td>
<td>16</td>
</tr>
<tr>
<td>The Interview Schedule</td>
<td>16</td>
</tr>
<tr>
<td>Measuring Knowledge</td>
<td>18</td>
</tr>
<tr>
<td>Measuring Forest Practices</td>
<td>19</td>
</tr>
<tr>
<td>Interrelationship between Knowledge and Practices</td>
<td>20</td>
</tr>
<tr>
<td>III. ANALYSIS OF THE DATA</td>
<td>22</td>
</tr>
<tr>
<td>Data Relating to the Hypothesis</td>
<td>22</td>
</tr>
<tr>
<td>Looking for Helpful Suggestions</td>
<td>45</td>
</tr>
<tr>
<td>IV. SUMMARY, CONCLUSIONS, AND IMPLICATIONS</td>
<td>55</td>
</tr>
<tr>
<td>Summary</td>
<td>55</td>
</tr>
<tr>
<td>Conclusions</td>
<td>61</td>
</tr>
<tr>
<td>Implications</td>
<td>63</td>
</tr>
<tr>
<td>SELECTED BIBLIOGRAPHY</td>
<td>67</td>
</tr>
<tr>
<td>APPENDIX I. ANALYSIS OF VARIANCE</td>
<td>72</td>
</tr>
<tr>
<td>APPENDIX II. BASIC FORESTRY CONCEPTS</td>
<td>74</td>
</tr>
<tr>
<td>APPENDIX III. THE INTERVIEW SCHEDULE</td>
<td>76</td>
</tr>
<tr>
<td>APPENDIX IV. MAP</td>
<td>81</td>
</tr>
<tr>
<td>VITA</td>
<td>83</td>
</tr>
</tbody>
</table>
# LIST OF TABLES

<table>
<thead>
<tr>
<th>TABLE</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Population Changes in East Feliciana and Livingston Parishes between 1960 and 1970</td>
<td>15</td>
</tr>
<tr>
<td>II. Levels of Adoption of Forest Practices by Owners of Small Woodlands in Louisiana Compared with Their Levels of Knowledge of Forestry Concepts, 1971</td>
<td>25</td>
</tr>
<tr>
<td>III. Adoption Level of Forest Practices and Knowledge of Forestry Concepts by Owners of Small Woodlands in Louisiana Compared with Their Total Acreage, 1971</td>
<td>26</td>
</tr>
<tr>
<td>IV. Adoption Level of Forest Practices and Knowledge of Forestry Concepts by Owners of Small Woodlands in Louisiana Compared with Size of Forest, 1971</td>
<td>28</td>
</tr>
<tr>
<td>V. Adoption Level of Forest Practices and Knowledge of Forestry Concepts by Owners of Small Woodlands in Louisiana Compared with the Primary Use of Their Woodland, 1971</td>
<td>29</td>
</tr>
<tr>
<td>VI. Adoption Level of Forest Practices and Knowledge of Forestry Concepts by Owners of Small Woodlands in Louisiana Compared with Distance between Residence and Woodlot, 1971</td>
<td>31</td>
</tr>
<tr>
<td>TABLE</td>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>-------</td>
<td>-------------</td>
</tr>
<tr>
<td>VII.</td>
<td>Adoption Level of Forest Practices and Knowledge of Forestry Concepts by Owners of Small Woodlands in Louisiana Compared with Length of Tenure, 1971</td>
</tr>
<tr>
<td>VIII.</td>
<td>Adoption Level of Forest Practices and Knowledge of Forestry Concepts by Owners of Small Woodlands in Louisiana Compared with Their Future Plans for Woodlot, 1971</td>
</tr>
<tr>
<td>IX.</td>
<td>Adoption Level of Forest Practices and Knowledge of Forestry Concepts by Owners of Small Woodlands in Louisiana Compared with Occupation, 1971</td>
</tr>
<tr>
<td>X.</td>
<td>Adoption Level of Forest Practices and Knowledge of Forestry Concepts by Owners of Small Woodlands in Louisiana Compared with Age of Owner, 1971</td>
</tr>
<tr>
<td>XI.</td>
<td>Adoption Level of Forest Practices and Knowledge of Forestry Concepts by Owners of Small Woodlands in Louisiana Compared with Family Income, 1971</td>
</tr>
<tr>
<td>XII.</td>
<td>Adoption Level of Forest Practices and Knowledge of Forestry Concepts by Owners of Small Woodlands in Louisiana Compared with Education, 1971</td>
</tr>
</tbody>
</table>
TABLE PACK

XIII. Adoption Level of Forest Practices and Knowledge of Forestry Concepts by Owners of Small Woodlands by Sex. Louisiana, 1971 ............... 41

XIV. Adoption Level of Forest Practices and Knowledge of Forestry Concepts by Owners of Small Woodlands by Race. Louisiana, 1971 ............... 42

XV. Number and Per Cent of Woodland Owners Acquainted with the Cooperative Extension Service as a Source of Help in Forestry, By Race. East Feliciana Parish, Louisiana, 1971 ........... 43

XVI. Comparison of Woodland Owners by Occupation and Their Suggested Reasons Why People in the Area Did Not Apply Better Forest Management. Louisiana, 1971 ................................. 46

XVII. Least-Squares Analysis of Variance, with Unequal Subclasses: Knowledge of Forestry Concepts ... 72

XVIII. Least-Squares Analysis of Variance, with Unequal Subclasses: Adoption of Forest Practices ..... 73
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>FIGURE</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The Relationship between Levels of Forestry Knowledge and the Levels of Adoption of Forest Practices, Louisiana, 1971</td>
<td>24</td>
</tr>
<tr>
<td>2. Some Basic Concepts in Forest Management and Forest Product Marketing</td>
<td>74</td>
</tr>
<tr>
<td>3. Some Basic Concepts of Forest Ecology</td>
<td>75</td>
</tr>
<tr>
<td>4. Outline Map of Louisiana, Showing Location of East Feliciana and Livingston Parishes</td>
<td>81</td>
</tr>
</tbody>
</table>
ABSTRACT

The study was designed to learn more about the forest practices of owners of small woodlands and the variables that affect them. In particular, a comparison was made between levels of knowledge about basic concepts of forestry and the level of adoption of forest practices. This main variable of knowledge was further examined to see what factors were associated with it.

Eighty-one woodland owners, selected at random from tax rolls in two Louisiana parishes (counties), were interviewed.

The answers to questions about knowledge were graded on a scale of depth of understanding. Forest practices were scored on whether or not they had been adopted.

A total score for each owner was given for level of knowledge and another for level of adoption.

These scores and numerical codes for fourteen other variables, such as income and education, were punched into cards and analyzed statistically by computer. Two analyses of variance were made, comparing all variables first with the score for adoption and second with the score for knowledge.

A high level of adoption of forest practices was found to be significantly related to a high level of knowledge of forestry concepts.
Farmers and wage-earners were more apt to adopt good forest practices than were professional or retired people.

Negro woodland owners scored significantly lower in levels of knowledge of forestry concepts, but their levels of adoption of forest practices were not different from those of other respondents.

Significantly lower levels of knowledge were associated with owners whose main use of their land was other than forestry.

Supplemental information was gathered on attitudes of woodland owners. Each was asked to give reasons why other owners do not practice better forestry than they do. The most frequent answer was "Lack of technical knowledge."

It was concluded from the results of this study that reaching owners of small woodlands in Louisiana with a program of educational change is likely to make a significant contribution toward solving the problem of low productivity on these forest lands.
CHAPTER I

STATEMENT OF THE PROBLEM

I. INTRODUCTION

In Louisiana there are over 118,000 owners of forest holdings of less than 500 acres. These holdings add up to 5.8 million acres, which are approximately 40 percent of the 14.6 million acres of Louisiana forest land (13). Unfortunately, annual timber growth on these private woodlands falls far below that of land held in National Forests and by forest industries (31).

With increasing national demand for forest products, there is the obvious need to give attention to finding ways of helping and encouraging better production in these 5.8 million acres.

It is, then, well recognized that the small woodland parcels are in need of better management. Nelson (29) has suggested various solutions to the problem; and their common denominator is better education of woodland owners.

In deriving educational objectives, Ralph Tyler (7) suggests the value of analyzing the subject material and reducing it to its basic components, or, as he says, "into manageable aspects." Following this line of thought a list was compiled of the basic and essential concepts of forestry
that laymen could be expected to understand. These concepts apply to forest ecology, forest management, and marketing. Then, by means of personal interviews, information was obtained in which correlation was sought between woodland owners' grasp of these selected concepts and their actual practice of forestry.

II. REVIEW OF LITERATURE

Investigators have studied many variables that affect the management of small holdings. In reading the discussion below, one can note differences in the findings of various studies. In part these could be explained by genuine population differences; and also one must recognize there is difficulty in measuring "good forestry practices" objectively. Some of the major variables that have been investigated are discussed.

Size of Holding

Most of the studies of southern forests show that the larger the holding, whether of forest land alone or of both farm and forest, the more likely the owner is to practice good forest management.

The Southern Forest Resource Analysis Committee (31) reported that non-industrial private forest land in the South has an annual timber growth below the average of 0.7 cords
per acre. It is these private owners, mostly with small holdings, who are the main target of the Committee's development plans.

Pomeroy and Yoho (5) in North Carolina showed a progression of better "comprehension of forestry" of owners with increasing size of forest holding. They pointed out, however, that the relationship is not causal since large holdings would also be associated with such factors as larger incomes or higher education levels.

Sizemore (15) suggested that one reason why owners of very small holdings do not practice better forestry is that they place an unusually high value on individual trees.

In Louisiana, Folweiler and Vaux (20) found that in the loblolly-shortleaf areas large holdings were in a more productive condition than were smaller holdings.

Also in Louisiana, Jones and McKean (26) recorded that innovators usually had more acres in forest than did non-innovators. Hestbeck (25) showed that innovators adopted far more forestry practices than non-innovators where their holdings were small. In woodlands larger than 500 acres, however, both groups readily adopted practices.

Mignery (22) in Texas found that people whose forest holdings were six times as large as the county average undertook timber management when urged to do so.
McClay (21) working in nine eastern localities found that those with more land had more interest in forestry. South et al. (16) found that larger holdings was one factor among several that was characteristic of woodland owners with high adoption rates. McDermid et al. (14) in St. Helena parish found that "landowners who undertake management programs do so on tracts of above-average size and stocking."

Thus there is unanimity among many investigators in showing that large holdings are apt to be better managed than are small ones.

**Level of Income**

Most investigators agreed that owners with larger incomes are more apt to practice good forest management. This variable is likely to be related to other variables, particularly education and size of holding, and indirectly to age or race. One consideration, as mentioned by Pomeroy and Yoho (5) is that the economic law of "opportunity costs" operates in the case of owners with larger incomes. Such owners can afford to invest money in forest improvements at an expected lower rate of return than can owners with less money who have not yet exhausted all the more profitable investment opportunities available to them.
In Alabama, Martin (28) found in a population of farmers that the level of income was not a significant factor when comparing managers with non-managers of timberland. The most logical explanation for this is again a matter of "opportunity cost", with agriculture giving a greater return than forestry.

In the Louisiana study by Jones and McKean (26) both innovators and non-innovators mentioned that "more rewarding" usages of their time and money were important reasons for their not practicing better forest management.

South et al. (16) found that level of income of woodland owners was correlated with high adopters. McDermid et al. (14) observed also that owners who were "making a start in forestry" had more financial resources.

Thus, like size of holding, level of income has generally been found to be positively correlated with quality of forest management.

Education

Pomeroy and Yoho (5) found education to be the variable most closely related to forestry comprehension. However, as mentioned earlier, education, in their findings, was related to other variables.

South et al. (16) found that high educational attainment was significantly related to high adoption levels of
forest practices in Louisiana. McDermid et al. (14) also found that woodland owners with college education were at a significantly higher level of management than were those with only grammar school education. Their measurement was based on the number of practices adopted.

In Alabama, Martin (28) found that more education did not mean better forest management among the population of farmers he studied.

**Age of Owner**

Usually it was found that older owners were less apt to invest money in forest improvement than were younger owners. This is logical reasoning on the part of older people since they themselves would not expect to receive any return on their investment.

LeVasseur (27) in Louisiana found less innovators among the group above sixty years of age. Hestbeck (25) divided groups at age fifty and found more innovators in the younger group.

Again, the results of studies were not all in agreement. McDermid et al. (14) found to their own surprise no correlation between age and forest practices. They reasoned that a disproportionate number of retired farmers in their sample were practicing good forestry in order to supplement their retirement income.
**Occupation of Owner**

The occupations of forest owners may be classified in various ways. There seems to be some significance in whether or not the owner farms his land, whether or not he is retired, and whether he is a wage earner as opposed to being a member of a profession. It can be seen that one's occupation is related to income and education. Thus, while correlation can be expected between occupation and forest practices, this may be in turn associated with other factors. Pomeroy and Yoho (5) did not find that occupation per se had any significant relationship to the owner's comprehension of forestry. Nor did Folweiler and Vaux (20) find that owning crop land in conjunction with forest land affected the forest management. However, South et al. (16) did find that farmers had a higher adoption rate of forest practices than did non-farmers.

In general one would expect conflicting results with regard to occupation because of big differences in populations in different geographical locations and because of the several other variables related to occupation.

**Distance between Forest and Residence**

For the most part, while several investigators considered this factor worth studying, most did not find it significant.
However, LeVasseur (27) found that innovators were more apt to live on their holding, whereas Hestbeck (25) found that innovators were less likely to live on their land.

**Miscellaneous Variables**

Investigations have been made into the significance of several lesser factors that could influence owners' behavior with regard to forestry.

**Future plans of the owner.** McDermid et al. (14) found this significant, but Pomeroy and Yoho (5) did not.

**Adoptive behavior of owner.** South et al. (16) found that people who were early adopters of any promising practice were also adoptive of recommended forestry practices.

**Length of tenure.** Folweiler and Vaux (20) found that ownership of land for over ten years was associated with better forest productivity, whereas McDermid (14) found the opposite to be true.

**Number of children at home.** South et al. (16) found that having children at home had a positive effect on the adoption of recommended forestry practices. They suggested that this may be related to the age of the owners as well as to new ideas brought home from school.
Main use of the forest land. Folweiler and Vaux (20) found "no significant difference between conditions of forest land owned in conjunction with crop land and that owned independently of farming operations."

Interest in timber growing. Several investigators including Folweiler and Vaux (20) and South et al. (16) found that owners with an interest in timber growing were apt to have more productive forests.

Knowledge of Technical Forestry

This factor is the main variable in the study. While most of the other variables like age, income, and education are easily and quickly determined, finding a knowledge level requires careful questioning. Pomeroy and Yoho (5) examined this variable in North Carolina to see how it correlated with other factors. They found a close relationship between education and the owner's comprehension of forestry. Like others they recognized the difficulty of measuring objectively the "understanding of forestry", but they did classify "comprehension" in six levels for laymen. Their "very low" group was defined as having "little or no idea beyond the fact that trees grow." Their other extreme category of "very high" included those of "highest lay understanding, capable of applying a few silvicultural techniques and partly understanding the fundamentals involved." The forest owners
followed a normal distribution curve with a peak between "low average" and "high average". Their conclusion is as follows:

Although owner education seems to be a likely place for remedial action in attacking the small forestry owner problem, putting knowledge into practice is another problem. However, a close study of the factors shows that a high level of comprehension is not completely associated with the practice of forestry. (Yute's coeff. of assoc. - 0.74).

Jones (26), Hestbeck (25), and Stevens (32) all recorded "lack of technical knowledge" as a major reason given by forest land owners for their not practicing better forestry. We cannot conclude conversely that more technical knowledge would be followed by better forest practices, but there is value in knowing that many owners recognize lack of knowledge as a problem.

McDermid et al. (14) observed in St. Helena Parish, Louisiana, that many owners who were not managing their forest "lacked an adequate concept of what forestry is or what it might bring them."

Sizemore (15) asserts that owners of small (or perhaps one should say very small) land holdings will not necessarily practice good forest management even if they are "educated in the principles of forest management." His reason, as already mentioned, was that the fragmented forest holdings are so small that the owners value individual trees for purposes
other than timber production and thus will not sell them at ordinary market prices.

Nelson (28) tended to agree in part with Sizemore, but he pointed out that the situation can be improved from a wood production standpoint if high economic returns are made available.

Pesson (17) in Asia and Grabert (24) in Louisiana made studies outside the area of forestry which shed light on the problem of correlating knowledge with practices. Grabert, in his interview of sugar cane farmers, questioned them at depth to learn their understanding of the concepts underlying mosaic control. He found a close correlation between such understanding and the adoption of recommended practices. He concluded "More attention to the learning of concepts should be given in planning and executing educational programs."

Pesson specifically investigated the effects of concept-understanding upon four horticultural practices among Malaysian farmers. There were highly significant correlations in three of the four instances. In all cases the farmers in a low-adopter group formed the higher percentage of those classified as having "poor understanding of the appropriate concepts."
Opinions by Woodland Owners Themselves

In Louisiana four separate studies of woodland owners were made by Jones and McKean (26), Hestbeck (25), Stevens (32) and LeVasseur (24). Questions were included to elicit opinions why other people do not practice better forest management. In all 1,116 cases the respondents were asked to rank some cards by priority. The cards listed up to twelve possible reasons for not practicing better forestry. The respondents had been classified as innovators or non-innovators.

The results were consistent. In every case the innovators selected "Lack of technical knowledge" as the first reason for forest owners' not practicing better management. The non-innovators' first choice was divided among three reasons: "Lack of technical knowledge", "Takes too long to grow trees", and "More rewarding use of time and money elsewhere." In fact these three reasons in various order ranked as the first three choices in every study for both innovators and non-innovators.

The next four choices included "Low return on investment": "Cost outweighs benefits": "Plan to clear for pasture": and "Physically unable to do the job."

Reasons not listed on the cards were not sought nor recorded.
III. HYPOTHESIS

As mentioned earlier in this paper, there were conflicting opinions and results in other studies concerning the effect of certain variables that affect forest practices among owners of small woodlands. Generally, however, those with large holdings, more money, more education, and who are not old can be expected to practice better forestry than their counterparts.

Investigation outside the field of forestry and some of the work among small woodland owners likewise indicate that those with a better understanding of the underlying concepts of forest ecology and forest management (including marketing) will practice better forestry than their counterparts.

Therefore the null hypothesis (for the purpose of statistical analysis) is proposed: Among the owners of small woodlots there is no difference between the adoption of forestry practices by those who understand the basic concepts of forestry and those who do not.
CHAPTER II
RESEARCH DESIGN

I. THE RESPONDENTS

Two parishes, East Feliciana and Livingston, located near Baton Rouge in southern Louisiana, were selected for study because of their accessibility and their large number of small forest holdings. (See Figure 4, Page 81.) East Feliciana is classified as having 50 per cent of its forest land in holdings smaller than 500 acres. Livingston Parish has 33 per cent of its forests in small holdings (13).

The major forest type in both parishes is loblolly-shortleaf pine. Hardwoods or mixed pine-hardwood types occur in the southwest corner of East Feliciana Parish; and an oak-gum-cypress type occurs in southern Livingston Parish. Markets exist for pulpwood, sawtimber, poles, and fence posts. Woodland grazing is common.

The latest census figures (11) indicate that East Feliciana Parish lost 12.6 per cent of its population between 1960 and 1970, the present count being 17,657 people. At the same time Livingston parish grew 35.4 per cent; from 26,974 to 36,511 people. The average of the two parishes was a net gain of 8.7 per cent. These data are presented in Table I.

In Louisiana, according to census data (9,10), there has been a large decrease in the total number of farms; from
124,000 in 1959 to 62,500 in 1964. However, between 1960 and 1969 the number of small woodland owners actually increased slightly from 118,051 to 118,516. Gunter (13) has shown that at the same time the number of owners of parcels of forest greater than 500 acres decreased from 2,701 to 2,402.

**TABLE I**

**POPULATION CHANGES IN EAST FELICIANA AND LIVINGSTON PARISHES BETWEEN 1960 AND 1970**

<table>
<thead>
<tr>
<th>Parish</th>
<th>1960</th>
<th>1970</th>
<th>Per cent change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Livingston</td>
<td>26,974</td>
<td>36,511</td>
<td>+35.4</td>
</tr>
<tr>
<td>East Feliciana</td>
<td>20,198</td>
<td>17,657</td>
<td>-12.6</td>
</tr>
<tr>
<td>TOTALS</td>
<td>47,172</td>
<td>54,168</td>
<td>+8.7</td>
</tr>
</tbody>
</table>


Thus there has been no significant trend in Louisiana toward consolidation of small woodlands. In fact, in the two parishes under investigation the average size of small forest holding diminished from 49 acres in 1960 to 35 acres in 1969 (13).
II. SELECTION OF RESPONDENTS

The Louisiana Forestry Commission has defined the small forest land owner as an owner holding less than 500 acres. This determined the maximum size of holding in the study. Woodlots smaller than 20 acres were considered too small to be economically manageable.

All the woodland owners holding parcels of any size between 20 and 499 acres were found in the tax rolls, and each was assigned a number. Distant owners were excluded.

Random number tables were used to select 44 owners from East Feliciana Parish and 37 owners from Livingston Parish. In some instances, such as in unsettled estates or in the continued absence of an owner, a randomly selected alternate was interviewed.

III. THE INTERVIEW SCHEDULE

The interview schedule was designed primarily to test the woodland owner's knowledge of forestry concepts and his application of forestry. At the same time the following common variables were measured: size of holding; size of forest (by types); length of tenure; distance between owner's home and his forest; owner's main use of his forest land; owner's future plans for his forest; owner's occupation, age, family income per year, sex, race, and membership in organizations;
and the number of children from the household in school.

For the most part these supplemental data were easily secured in a few questions.

The owner's knowledge of forestry concepts and his application of good forest practices were difficult to measure. A complete list of basic forestry concepts was compiled as a basis for selection of those which should be of value to a woodland owner. The list was shortened in recognition that laymen should not be expected to understand all the ecological concepts needed by a professional forester. (See Figures 2 and 3, pp. 74 - 75.)

During the pretesting of the schedule some questions proved to be embarrassing, non-contributory or too lengthy. These were either modified or omitted from the schedule.

In the final version the questions on basic forestry and the understanding of concepts were limited to the following areas:

1. Organizations that can be helpful to woodland owners.
2. Forest improvement practices.
3. Forest reproduction.
4. Marginal tree concept.
5. Tree growth rates.
6. Cattle and forestry.
7. Fire and forestry.
8. Sales agreements.
9. Insects and disease.

The questions on forest practices covered the following areas:
1. Tree planting.
2. Use of professional help or advice.
3. Use of cattle.
4. Use of fire.
5. Multiple use of forest.

In addition each owner was given a rating, admittedly subjective, on his attitude toward good forestry.

Some questions were included in order to gather data which would make the total results of additional value in planning an extension education program. In particular, all respondents were asked why others do not practice better forestry. Answers to this question and other thoughts engendered by it were recorded at length.

III. MEASURING KNOWLEDGE

Bloom et al. (1) show a progression in the cognitive domain from the lowest level of recall to comprehension, to application, to analysis and finally to synthesis. These are learning processes and, as emphasized by Woodruff (8), they are "kinds of thinking". However, in some instances he allows that practice of skills is at the application level of learning. Thus one's knowledge about any one subject might lie at any one of these progressive levels. For example, Question 9 of the interview schedule asks, "If you had problems with your woodlands, which persons or organizations could you turn to for help?" Recall of one
agency or more would indicate measurable knowledge at the lowest level and this was the level recorded. A higher level of knowledge could have been indicated by the respondent's having thought over the possibility of consulting an agency's forester. In questions such as the one concerning forest reproduction in which the depth of understanding was sought, a qualitative score was given on the level of knowledge. A respondent who understood the inter-relationships between seed trees, site preparation and the protection of seedlings would exhibit knowledge at the analysis or synthesis level.

A numerical score to knowledge questions was determined by assigning one point for correct answers to recall questions and a graded score of up to five points to the answers that required analysis or synthesis. Caution was used to avoid giving too much weight to any one area of knowledge. The inclusion of eight areas of forestry knowledge in the interview schedule precluded the over-emphasis of any one field.

IV. MEASURING FOREST PRACTICES

Practices were somewhat easier to measure than was knowledge. The practices recorded on the interview schedules were given verbally and were not verified in the
woods. There was no reason to doubt the veracity of the answers.

The areas of forest management considered most important were:

1. Use of available professional services.
2. Compatible use of grazing.
3. Use of fire in silviculture.

One complication in scoring the answers to questions about forest practices arose from the fact that in different situations the same answers do not indicate the same quality of forestry.

Additional subjective scores were given to each respondent for his practices with cattle and fire and for his overall enthusiasm for good forestry. This helped overcome distortion that could have been created by recording all answers mechanically.

Another problem in scoring the practices of woodland owners lay in their not all having sold forest products. Each respondent who had not made a sale was graded on his description of how he would prepare for and carry out a timber sale were he to do so.

V. INTERRELATIONSHIP BETWEEN KNOWLEDGE AND PRACTICES

Bloom (1) discusses the affective realm of learning. A learner's attitude, he indicates, moves through stages
from awareness to response to commitment to internalization. Cognitive learning cannot be effective, i.e., cannot reach the level of application, unless the affective level is at least at the stage of commitment. For example, a woodland owner who changes from distrust of burning to practicing prescribed burning has moved in the affective realm through the awareness level to at least the commitment level. Concurrently in the cognitive realm he must have reached beyond simple knowledge or recall to the level of application or higher.

The foregoing example illustrates that knowledge and practice are linked, and, further, that anyone seeking to change practices must also consider the affective realm, the realm of feelings and attitudes.

In measuring the level of forest practice it must be noted that adoption of a practice is the ultimate level as opposed to trial of a practice. Even after adoption a practice may later be rejected. Innovators mentioned earlier are the venturesome few who see the value of a satisfactory new practice and adopt it early. The term adopter, then, is used to indicate a woodland owner who is practicing good forestry.

Lionberger (4) mentions another factor when he points out that the more complex an idea the more slowly it will be adopted.
CHAPTER III

ANALYSIS OF THE DATA

I. DATA RELATING TO THE HYPOTHESIS

The Comparisons That Were Made

The study was designed primarily to test the relationship between the understanding of basic forestry concepts and the practice of forestry. Every respondent was given two relative scores indicating measures of his level of forestry knowledge and his level of adoption of forestry practices. A low number in each instance represents less knowledge or a less satisfactory level of practice. The relationship between knowledge and practice was thus determined from these numbers.

Other factors that were considered likely to influence the main comparison were recorded. They included:

1. Size of holding.
2. Size of forest land.
3. Main use of forest.
4. Length of tenure of owner.
5. Future plans for the forest.
6. Occupation of owner.
7. Age of owner.
8. Income of owner and his household.
9. Education of owner.
10. Number of children from the household in school.
11. Number of organizations joined by owner.
12. Race of owner.
13. Sex of owner.

The data were analyzed statistically to ascertain
what relationship, if any, existed between each of these independent variables and the adoption of forestry practices by the respondent.

In addition statistical comparisons were made between the same variables and the respondent's level of knowledge of forestry concepts.

The statistical procedure used was a least squares analysis of variance. In this way the effect of each independent variable could be measured while holding the other variables constant.

An "F" test for significance was used. The data were processed on computer cards at the Louisiana State University Computer Center. (See Tables XVII and XVIII.)

Test of the Hypothesis

The scores that represented levels of knowledge of forestry concepts were compared with the scores that represented levels of adoption of forest practices. In the analysis of variance the F value was 11.282 with 3 and 45 degrees of freedom. The F value for significance at the .01 level is 4.25. Therefore the null hypothesis was rejected, and it was concluded that a highly significant relationship exists between levels of knowledge of forestry concepts and levels of adoption of forest practices.

These findings are illustrated in Table II and in Figure 1.
FIGURE 1
THE RELATIONSHIP BETWEEN LEVELS OF FORESTRY KNOWLEDGE AND THE LEVELS OF ADOPTION OF FOREST PRACTICES. LOUISIANA, 1971

(See Table II, Page 25, for explanation of terms.)
Figure I shows the direct relationship between knowledge of forestry concepts and the adoption of forest practices. With higher levels of understanding of the basic concepts of forestry, woodland owners demonstrated higher levels of adoption of forest practices.

**TABLE II**

**LEVELS OF ADOPTION OF FOREST PRACTICES BY OWNERS OF SMALL WOODLANDS IN LOUISIANA COMPARED WITH THEIR LEVELS OF KNOWLEDGE OF FORESTRY CONCEPTS, 1971**

<table>
<thead>
<tr>
<th>Mean level of knowledge of forestry concepts*</th>
<th>Mean level of adoption of forest practices**</th>
<th>Standard error</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.0 (N=21)</td>
<td>10.7</td>
<td>1.59</td>
</tr>
<tr>
<td>17.6 (N=23)</td>
<td>17.4</td>
<td>1.64</td>
</tr>
<tr>
<td>18.6 (N=24)</td>
<td>16.2</td>
<td>1.77</td>
</tr>
<tr>
<td>23.6 (N=13)</td>
<td>18.9</td>
<td>2.13</td>
</tr>
<tr>
<td>Grand mean: 16.1 (N=81)</td>
<td>15.0</td>
<td>1.61</td>
</tr>
</tbody>
</table>

*The level of knowledge was determined by scoring answers to ten questions on basic forestry concepts.

**The adoption score was found by grading each respondent on how many of fourteen forestry practices he had adopted plus a subjective rating of his attitude toward forestry.

***The significance level for F at the .01 level is 11.262 with 3 and 85 degrees of freedom.

The standard errors listed in Table II show that there is increasingly greater variability of adoption of practices among the woodland owners as their level of knowledge increases. This is a normal trend. The coefficients
of variation which indicate the true variability between means would show that the greatest relative variability is with the group with the lowest score.

**TABLE III**

**ADDITION LEVEL OF FOREST PRACTICES** and KNOWLEDGE OF FORESTRY CONCEPTS by OWNERS OF SMALL WOODLANDS IN LOUISIANA COMPARED WITH THEIR TOTAL ACREAGE, 1971

<table>
<thead>
<tr>
<th>Acres of holding**</th>
<th>Mean level of knowledge of forestry concepts</th>
<th>Mean level of adoption of forest practices</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean level</td>
<td>Mean level</td>
</tr>
<tr>
<td></td>
<td>Standard error</td>
<td>Standard error</td>
</tr>
<tr>
<td>Less than 100 (n=36)</td>
<td>10.7</td>
<td>13.9</td>
</tr>
<tr>
<td>100 to 200 (n=22)</td>
<td>7.7</td>
<td>16.3</td>
</tr>
<tr>
<td>201 to 300 (n=7)</td>
<td>8.3</td>
<td>16.0</td>
</tr>
<tr>
<td>More than 300 (n=16)</td>
<td>11.6</td>
<td>13.9</td>
</tr>
<tr>
<td>Grand mean</td>
<td>9.7</td>
<td>15.0</td>
</tr>
</tbody>
</table>

**See Table II, page 25, for explanation of forest practices and knowledge of forestry concepts.**

**Total acreage includes farm and forest land. At least 20 acres are in forest.**

***The significance level for F at the .25 level is 1.40 with 3 and 19 degrees of freedom.***

****The significance level for F at the .25 level is 1.42 with 3 and 45 degrees of freedom.***

**Size of holding**

At the .25 level of significance, the size of holding was found to affect both knowledge of forestry
concepts and level of adoption of forest practices. Table III shows that distribution was unusual in that owners with holdings smaller than 100 acres or larger than 300 acres scored higher than the other two groups in forestry knowledge and lower than the other two groups in adoption of practices.

The low score in adoption of forest practices by the holders of large acreages may be partially accounted for by recognizing that the large acreages include both forest and farm, and farming may be the main pursuit of the owner. In the case of smaller owners their livelihood also came from sources other than forestry, and they usually did not want to invest in their woodland because they considered it too small to return a profit.

Size of Forest Holding

In Table IV one notes that there is a higher adoption level of practices (15.9) for the owners of large woodlands than the average of 15.0. This is in keeping with the findings of Pomeroy and Yoho (5), who observed that owners of large holdings do practice better forestry, but that in smaller holdings the quality of forest management is unpredictable. This difference, however, was not significant at the .25 level.

Again, no significant differences were found in
comparing size of forest holdings with level of knowledge of forestry concepts. The large standard error of 2.7 around a mean of 9.1 and with only nine respondents in the class of "more than 200 acres" indicates that a larger sample of this size class would be desirable.

### TABLE IV

ADOPTION LEVEL OF FOREST PRACTICES* AND KNOWLEDGE OF FORESTRY CONCEPTS* BY OWNERS OF SMALL WOODLANDS IN LOUISIANA COMPARED WITH SIZE OF FOREST, 1971

<table>
<thead>
<tr>
<th>Acres of forest land owned</th>
<th>Mean level of knowledge of forestry concepts</th>
<th>Mean level of adoption of forest practices</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Standard error</td>
</tr>
<tr>
<td>less than 40 (n=18)</td>
<td>8.6</td>
<td>2.5</td>
</tr>
<tr>
<td>40 to 80 (n=31)</td>
<td>10.2</td>
<td>2.2</td>
</tr>
<tr>
<td>81 to 200 (n=23)</td>
<td>10.9</td>
<td>2.1</td>
</tr>
<tr>
<td>More than 200 (n=9)</td>
<td>9.1</td>
<td>2.7</td>
</tr>
</tbody>
</table>

Grand mean: (N=81) 9.7 15.0

---

*See Table II, FACE 25, for explanation of forest practices and knowledge of forestry concepts.

**The significance level for F at the .25 level is 1.40 with 3 and 49 degrees of freedom.

***The significance level for F at the .25 level is 1.42 with 3 and 45 degrees of freedom.

### The Owner's Use of His Forest Land

A test was run to see whether there were any differences in forest practices and in forestry knowledge among
owners with different uses for their land. It could be reasoned that if an owner's main use of his woodland was for grazing or recreation as opposed to timber growing, there might be differences in his forest practices or forestry knowledge.

**TABLE V**

ADOPTION LEVEL OF FOREST PRACTICES* AND KNOWLEDGE OF FORESTRY CONCEPTS* BY OWNERS OF SMALL WOODLANDS IN LOUISIANA COMPARED WITH THE PRIMARY USE OF THEIR WOODLAND, 1971

<table>
<thead>
<tr>
<th>Primary use of woodland</th>
<th>Mean level of knowledge of forestry concepts</th>
<th>Mean level of adoption of forest practices</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean level</td>
<td>Standard error</td>
</tr>
<tr>
<td>-------------------------</td>
<td>------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Timber growing (N=81)</td>
<td>12.8</td>
<td>2.0</td>
</tr>
<tr>
<td>Grazing (N=16)</td>
<td>9.4</td>
<td>2.1</td>
</tr>
<tr>
<td>Wildlife (N=8)</td>
<td>7.0</td>
<td>3.0</td>
</tr>
<tr>
<td>Grand mean (N=81)</td>
<td>9.7</td>
<td></td>
</tr>
</tbody>
</table>

*See Table II, Page 25, for explanation of forest practices and knowledge of forestry concepts.

**The significance level for F at the .10 level is 2.41 with 2 and 49 degrees of freedom.

***The significance level for F at the .25 level is 1.43 with 2 and 45 degrees of freedom.

Table V shows that owners who consider timber growing as the primary use of their woodland scored much higher than the average in knowledge of forestry concepts.
Only four respondents indicated that their primary interest was neither timber growing nor cattle raising. There was also a large standard error of 3.0 around a mean of 7.0 for their level of concept knowledge. This difference was significant at the .10 level.

The differences between various usages of forest land and the adoption of forest practices were less obvious, but they were significant at the .25 level. The lowest mean score fell to timber growers. It can be concluded that those who grow trees and cattle concomitantly do as well as timber growers with their forest practices.

The scores are relative, however, and do not indicate what level of quality is involved. This does not disprove Cline's (12) observation: "A vast majority of those who own small woodlots do not think timber."

Distance Between the Owner's Home and His Woodland

Forty-eight of the eighty-one respondents lived on their land.

In the "F" test significant differences were found only at the .25 level between owners who lived on their property and those who lived away and then only in adoption of forest practices.

As shown in Table VI, those owners who had holdings within a short drive gave better care to their forests
than those who lived on their forest property or those who lived far away. Conceivably such owners held the forest land with deliberate intentions of raising timber.

TABLE VI

ADOPTION LEVEL OF FOREST PRACTICES* AND KNOWLEDGE OF FORESTRY CONCEPTS* BY OWNERS OF SMALL WOODLANDS IN LOUISIANA COMPARED WITH DISTANCE BETWEEN RESIDENCE AND WOODLOT, 1971

<table>
<thead>
<tr>
<th>Number of miles between home and woodlot</th>
<th>Mean level of knowledge of forestry concepts</th>
<th>Mean level of adoption of forest practices</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F = 0.06**</td>
<td>F = 1.71***</td>
</tr>
<tr>
<td>Mean level</td>
<td>Mean level of knowledge of forestry concepts</td>
<td>Mean level of adoption of forest practices</td>
</tr>
<tr>
<td>Standard error</td>
<td>Mean level of knowledge of forestry concepts</td>
<td>Mean level of adoption of forest practices</td>
</tr>
<tr>
<td></td>
<td>Mean level of knowledge of forestry concepts</td>
<td>Mean level of adoption of forest practices</td>
</tr>
<tr>
<td>-----------------------------------------</td>
<td>-------------------------------------------------</td>
<td>-------------------------------------------------</td>
</tr>
<tr>
<td>Less than 1 (n=8)</td>
<td>10.1 1.9</td>
<td>14.5 1.6</td>
</tr>
<tr>
<td>1 to 20 (n=23)</td>
<td>9.7 2.1</td>
<td>16.3 1.7</td>
</tr>
<tr>
<td>More than 20 (n=5)</td>
<td>9.2 3.3</td>
<td>14.3 2.5</td>
</tr>
<tr>
<td>Grand mean (n=81)</td>
<td>9.7 15.0</td>
<td></td>
</tr>
</tbody>
</table>

*See Table II, Page 25, for explanation of forest practices and knowledge of forestry concepts.

**The significance level for F at the .25 level is 1.41 with 2 and 49 degrees of freedom.

***The significance level for F at the .25 level is 1.43 with 2 and 45 degrees of freedom.

Length of Tenure

Answers to the question on tenure revealed that many owners had held their forest for a long time. Forty-five per cent had owned their land for longer than twenty-five years. Many had inherited it. Table VII shows that
owners with shorter tenure scored higher on both knowledge of forestry concepts and adoption of forestry practices. The analysis of variance showed a significant difference at the .25 level between owners when comparing their length of tenure with knowledge of forestry concepts.

**TABLE VII**

ADOPTION LEVEL OF FOREST PRACTICES* AND KNOWLEDGE OF FORESTY CONCEPTS* BY OWNERS OF SMALL WOODLANDS IN LOUISIANA COMPARED WITH LENGTH OF TENURE, 1971

<table>
<thead>
<tr>
<th>Years of tenure</th>
<th>Mean level of knowledge of forestry concepts</th>
<th>Mean level of adoption of forest practices</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F = 2.21**</td>
<td>F = 4.89***</td>
</tr>
<tr>
<td></td>
<td>Mean level</td>
<td>Standard error</td>
</tr>
<tr>
<td>Less than 25 (N=45)</td>
<td>10.7</td>
<td>2.0</td>
</tr>
<tr>
<td>25 or more (N=36)</td>
<td>8.7</td>
<td>2.0</td>
</tr>
<tr>
<td>Grand mean (N=81)</td>
<td>9.7</td>
<td>16.5</td>
</tr>
</tbody>
</table>

*See Table II, Page 25, for explanation of forest practices and knowledge of forestry concepts.

**The significance level for F at the .25 level is 1.35 with 1 and 49 degrees of freedom.

***The significance level for F at the .05 level is 4.05 with 1 and 45 degrees of freedom.

In comparing levels of adoption with length of tenure, a significant relationship was found at the .01 level.
Those with shorter tenure scored higher on level of adoption of forest practices.

Owner's Future Plans

One of the complications of the investigations lay in the fact that some owners who understood a lot of forestry concepts might not be practicing forestry because of their interest in cattle or in other farming. In fact, conversations with several respondents revealed that their knowledge about forestry included the fact that trees probably would yield a lower return on their investment than would cattle. Seventy-two per cent of those interviewed intended to continue growing timber; twenty-three per cent intended to clear their land (usually for pasture); and five per cent intended to sell their land.

Table VIII shows that there was no significant difference at the .25 level between the levels of forestry knowledge of those who planned to clear their land compared with those who planned to continue growing timber. There were only five respondents who had other plans for their forest land than growing timber.

The analysis of variance revealed that there were significant differences at the .25 level between owners with different intentions and their adoption of forest
practices. The ones who planned to leave their land in forest had the highest score.

### TABLE VIII
ADOPITION LEVEL OF FOREST PRACTICES* AND KNOWLEDGE OF FORESTRY CONCEPTS* BY OWNERS OF SMALL WOODLANDS IN LOUISIANA COMPARED WITH THEIR FUTURE PLANS FOR WOODLOT, 1971

<table>
<thead>
<tr>
<th>Intention</th>
<th>Mean level of knowledge of forestry concepts</th>
<th>Mean level of adoption of forest practices</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Standard error</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>------</td>
<td>----------------</td>
</tr>
<tr>
<td>Continue in trees (N=59)</td>
<td>10.0</td>
<td>1.3</td>
</tr>
<tr>
<td>Clear the land (n=18)</td>
<td>11.8</td>
<td>1.9</td>
</tr>
<tr>
<td>Sell the land (n=4)</td>
<td>7.4</td>
<td>3.6</td>
</tr>
<tr>
<td>Grand mean (N=81)</td>
<td>9.7</td>
<td></td>
</tr>
</tbody>
</table>

*See Table II, page 25, for explanation of forest practices and knowledge of forestry concepts.

**The significance level for F at the .25 level is 1.41 with 2 and 49 degrees of freedom.

***The significance level for F at the .25 level is 1.43 with 2 and 45 degrees of freedom.

Three woodland owners indicated some unusual practices. One was growing earthworms commercially under the cover of his mixed forest. Another was clearing land in order to plant holly for Christmas decorations as a cash crop. And one was converting his land to catfish ponds.
Occupation of Owner

It was anticipated that differences in adoption of forest practices would be found among the woodland owners with different occupations. Farming in particular should affect forest practices because the farmer would live near his forest and because he sometimes would see his forest as a supplemental crop.

### Table IX

ADOPTION LEVEL OF FOREST PRACTICES* AND KNOWLEDGE OF FORESTY CONCEPTS* BY OWNERS OF SMALL WOODLANDS IN LOUISIANA COMPARED WITH OCCUPATION, 1971

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Mean level of knowledge of forestry concepts</th>
<th>Mean level of adoption of forest practices</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean level</td>
<td>Standard error</td>
</tr>
<tr>
<td>Wage Earners (n=25)</td>
<td>7.5</td>
<td>2.7</td>
</tr>
<tr>
<td>Farmer (n=13)</td>
<td>8.6</td>
<td>2.3</td>
</tr>
<tr>
<td>Professional (n=9)</td>
<td>13.1</td>
<td>2.2</td>
</tr>
<tr>
<td>Other** (n=3)</td>
<td>9.7</td>
<td>2.2</td>
</tr>
<tr>
<td>Grand mean: (n=81)</td>
<td>9.7</td>
<td></td>
</tr>
</tbody>
</table>

*See Table II, Para 25, for explanation of forest practices and knowledge of forestry concepts.

**The category "Other" includes 12 self-employed and 22 retired people.

***The significance level for F at the .25 level is 1.40 with 3 and 89 degrees of freedom.

****The significance level for F at the .05 level is 2.82 with 3 and 45 degrees of freedom.
In comparing occupations with adoption of practices in the analysis of variance, significant differences were found at the .05 level. The F value was 3.52 when significance was reached at 2.82 with 3 and 45 degrees of freedom.

Table IX shows that farmers had the highest level of adoption and professionals the lowest. As mentioned above, this was to be expected.

Table IX also shows the levels of forestry knowledge for each occupation. It is interesting that in this instance the professionals scored much higher than any of the other occupation groups, and the farmers and wage earners were below the average. The F test showed this to be significant only at the .25 level.

Age of Owner

There was a fairly uniform distribution of ages in the sample, although forty-six per cent were over sixty years of age.

Table X shows that the younger owners had the lower levels of both knowledge of forestry concepts and of adoption of forest practices. Owners in their fifties scored higher than other age groups in knowledge of forestry concepts. The F test indicated the differences to be significant at the .25 level.

In comparing age of woodland owners with adoption of
forest practices, it can be seen in Table X that adoption increases with increasing age. The F test showed this to be significant at the .10 level.

**TABLE X**

ADOPTION LEVEL OF FOREST PRACTICES* AND KNOWLEDGE OF FORESTRY CONCEPTS* BY OWNERS OF SMALL WOODLANDS IN LOUISIANA COMPARED WITH AGE OF OWNER, 1971

<table>
<thead>
<tr>
<th>Age in years</th>
<th>Mean level of knowledge of forestry concepts</th>
<th>Mean level of adoption of forest practices</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Standard error</td>
</tr>
<tr>
<td>---------------</td>
<td>------</td>
<td>----------------</td>
</tr>
<tr>
<td>Less than 40 (N=14)</td>
<td>8.5</td>
<td>2.4</td>
</tr>
<tr>
<td>40 to 49 (N=11)</td>
<td>9.9</td>
<td>2.5</td>
</tr>
<tr>
<td>50 to 59 (N=20)</td>
<td>11.6</td>
<td>1.9</td>
</tr>
<tr>
<td>More than 60 (N=37)</td>
<td>9.8</td>
<td>2.0</td>
</tr>
<tr>
<td>Grand Mean: (N=81)</td>
<td>9.7</td>
<td></td>
</tr>
</tbody>
</table>

*See Table II, page 25, for explanation of forest practices and knowledge of forestry concepts.

**The significance level for F at the .25 level is 1.40 with 3 and 49 degrees of freedom.

***The significance level for F at the .10 level is 2.21 with 3 and 45 degrees of freedom.

**Total Family Income**

There was a fairly even distribution of owners in the different income categories with a peak in the $5,000 to $7,999 bracket. Even though the income groupings were fairly wide, in $4,000 steps, there was reluctance on the
part of some respondents to admit their income. However the data are probably fairly accurate.

**TABLE XI**

ADOPTION LEVEL OF FOREST PRACTICES* AND KNOWLEDGE OF FORESTRY CONCEPTS* BY OWNERS OF SMALL WOODLANDS IN LOUISIANA COMPARED WITH FAMILY INCOME, 1971

<table>
<thead>
<tr>
<th>Annual income</th>
<th>Mean level of knowledge of forestry concepts</th>
<th>Mean level of adoption of forest practices</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean level</td>
<td>Standard error</td>
</tr>
<tr>
<td>Below $4000 (N=17)</td>
<td>10.0</td>
<td>2.7</td>
</tr>
<tr>
<td>$4000 to $7999 (N=21)</td>
<td>9.1</td>
<td>2.0</td>
</tr>
<tr>
<td>$8000 to $11,999 (N=14)</td>
<td>10.1</td>
<td>2.3</td>
</tr>
<tr>
<td>$12,000 to $15,999 (N=15)</td>
<td>8.5</td>
<td>2.5</td>
</tr>
<tr>
<td>$16,000 or more (N=15)</td>
<td>11.0</td>
<td>2.3</td>
</tr>
<tr>
<td>Grand mean: (N=81)</td>
<td>9.7</td>
<td>15.0</td>
</tr>
</tbody>
</table>

*See Table II, page 25, for explanation of forest practices and knowledge of forestry concepts.

**The significance level for F at the .25 level is 1.39 with 4 and 49 degrees of freedom.

***The significance level for F at the .25 level is 1.39 with 1 and 45 degrees of freedom.

The analysis of variance showed no significant differences in forest practices between the different income levels at the .25 level. Table XI reveals that there is a much higher level of adoption of forest practices by those in the $12,000 to $15,999 salary
range. This is a reasonable expectation because such families have enough extra money to invest some in forestry. Those with larger incomes are probably interested in other pursuits.

Table XI also shows the levels of knowledge of forestry concepts. There was no significant difference found at the .25 level in the statistical analysis. Strangely enough, the income group which scored highest on adoption of practices scored lowest in level of knowledge of forestry concepts.

### TABLE XII

ADOPTION LEVEL OF FOREST PRACTICES* AND KNOWLEDGE OF FORESTRY CONCEPTS* BY OWNERS OF SMALL WOODLANDS IN LOUISIANA COMPARED WITH EDUCATION, 1971

<table>
<thead>
<tr>
<th>Years of schooling</th>
<th>Mean level of knowledge of forestry concepts</th>
<th>Mean level of adoption of forest practices</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Standard error</td>
</tr>
<tr>
<td>0 to 8 (N=16)</td>
<td>9.6</td>
<td>2.4</td>
</tr>
<tr>
<td>9 to 10 (N=9)</td>
<td>10.2</td>
<td>2.5</td>
</tr>
<tr>
<td>11 to 12 (N=26)</td>
<td>10.4</td>
<td>2.0</td>
</tr>
<tr>
<td>13 to 15 (N=15)</td>
<td>9.0</td>
<td>2.3</td>
</tr>
<tr>
<td>16 or more (N=16)</td>
<td>9.3</td>
<td>2.3</td>
</tr>
<tr>
<td>Grand mean: (N=81)</td>
<td>9.7</td>
<td></td>
</tr>
</tbody>
</table>

* See Table II, Page 25, for explanation of forest practices and knowledge of forestry concepts.

**The significance level for F is 1.39 at the .25 level with 4 and 49 degrees of freedom.

***The significance level for F is 1.39 at the .25 level with 4 and 45 degrees of freedom.
Education

The literature had indicated that education levels should be associated with both knowledge about forestry and the practice of forestry. In this study no significance was found even at the 0.25 level in comparing education with either knowledge or adoption of practices.

The explanation of this may lie the fact that good forestry relies to a large extent on keen observation and good sense. One of the highest scores was recorded by an illiterate man who had spent his lifetime in the logging business. His illiteracy had forced him to develop an exceptional memory. Another high score was recorded by a farmer with a high school education who said he read everything he could find about forestry. Conversely, a retired professor of biochemistry scored low on forestry knowledge and adoption of forestry practices.

Table XII shows all the scores are close, both in levels of knowledge and levels of adoption of practices.

Sex of Owner

Table XIII indicates that women scored slightly lower in both knowledge of forestry concepts and in adoption of forest practices. The analysis of variance did not reveal these differences between the sexes to be significant.

Women owned 22 per cent of the small woodlands in the sample.
It was observed that some women scored much higher than others in levels of both knowledge and practice of forestry. The standard deviations were higher for women than men in both comparisons.

**TABLE XIII**

<table>
<thead>
<tr>
<th>Sex</th>
<th>Mean level of knowledge of forestry concepts</th>
<th>Mean level of adoption of forest practices</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Standard error</td>
</tr>
<tr>
<td>Male (n=63)</td>
<td>10.3</td>
<td>1.8</td>
</tr>
<tr>
<td>Female (n=18)</td>
<td>9.2</td>
<td>2.2</td>
</tr>
<tr>
<td>Grand mean: (n=81)</td>
<td>9.7</td>
<td></td>
</tr>
</tbody>
</table>

*See Table II, page 25, for explanation of forest practices and knowledge of forestry concepts.
**The significance level for F is 1.35 at the 0.25 level with 1 and 89 degrees of freedom.
***The significance level for F at the 0.25 level is 1.35 with 1 and 45 degrees of freedom.

**Race of Owner**

The literature made references to the effect of race on forestry practices, but, like sex, there was no indication that it would be a significant factor.

In the sample of eighty-one woodland owners, nine were Negro.
The analysis of variance showed no significance by race with regard to adoption of forest practices at the 0.25 level. However, a highly significant difference at the .01 level was found when comparing race with knowledge of forestry concepts.

**TABLE XIV**

ADOPTION LEVEL OF FOREST PRACTICES* AND KNOWLEDGE OF FORESTRY CONCEPTS* BY OWNERS OF SMALL WOODLANDS BY RACE. LOUISIANA, 1971

<table>
<thead>
<tr>
<th>Race</th>
<th>Mean level of knowledge of forestry concepts</th>
<th>Mean level of adoption of forest practices</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Standard error</td>
</tr>
<tr>
<td>Negro (n=9)</td>
<td>6.0</td>
<td>2.7</td>
</tr>
<tr>
<td>White (n=72)</td>
<td>13.5</td>
<td>0.5</td>
</tr>
<tr>
<td>Grand mean (n=81)</td>
<td>9.7</td>
<td></td>
</tr>
</tbody>
</table>

*See Table II, page 25, for explanation of forest practices and knowledge of forestry concepts.

**Significance at the .01 level is attained at 7.18 with 1 and 49 degrees of freedom, so this is highly significant.

***Significance at the .25 level is attained at 1.35 with 1 and 45 degrees of freedom, so this is not significant.

Table XIV shows that the Negro group scored below the average in both practices and knowledge.

There was a wide range of scores among the Negro respondents as shown by the standard deviations in Table XIV.
The lowest scores in all the interviews were recorded for an illiterate Negro man in his eighties who had allowed his forty acres of forest to be clear cut and left in worthless brush.

TABLE XV

NUMBER AND PER CENT OF WOODLAND OWNERS* ACQUAINTED WITH THE COOPERATIVE EXTENSION SERVICE AS A SOURCE OF HELP IN FORESTRY, BY RACE.
EAST FELICIANA PARISH, LOUISIANA, 1971.

<table>
<thead>
<tr>
<th>Race</th>
<th>Number of woodland owners</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aware of CES</td>
<td></td>
<td>33</td>
</tr>
<tr>
<td>Unaware of CES</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>36</td>
</tr>
<tr>
<td>Negro</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aware of CES</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Unaware of CES</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>8</td>
</tr>
</tbody>
</table>

*The range size of forest holdings: 20 to 499 acres.

One of the reasons for including race as a category was to determine whether there was a difference between races in the amount of contact with the Extension Service.

In East Feliciana, where an Extension Forester (white) is posted, thirty-three of the thirty-six white respondents, or 92 per cent, were aware of his services. Of the black
respondents in the same parish, only two of the eight (or 25 per cent) knew about the Extension Forester. These findings are presented in Table XV.

**Number of School-Age Children**

Each respondent was asked how many children from his household attended school. It was reasoned that families with school-age children would be exposed to new ideas that could affect their outlook on forestry. In the analysis of variance no significant relationship was found between number of children and the adoption of forestry practices at the 0.25 level of significance. However, in the relationship between school-age children and knowledge of forestry concepts an F value of 3.31 was found. Significance at the 0.10 level begins at 2.18 with 1 and 49 degrees of freedom. The data were not grouped but were presented linearly from 0 to 6 children. The b value of knowledge of forestry concepts for a unit increase in number of children was 0.36.

**Community Participation**

It is known that "adopters" as opposed to "non-adopters" are characterized in part by wide participation in community affairs. The interview schedule included a question on the number of clubs to which the respondent belonged. The extent of memberships in organizations
should indicate the innovativeness of a woodland owner, and this in turn should affect his practice of forestry.

In the analysis of variance no significance was found at the .25 level in relating the number of organizations either to the adoption of forestry practices or to the knowledge of forestry concepts. In both cases the F value was very low. The data were analyzed linearly rather than in groups.

II. LOOKING FOR HELPFUL SUGGESTIONS

Reasons Given for Not Practicing Better Forestry

As already mentioned in Chapter I, Jones and McKean (26), Stevens (32), Hostbeck (25) and LeVasseur (27) looked for opinions as to why people did not practice better forestry. In their investigations they asked respondents to choose from among twelve suggested reasons why owners in general did not practice better forestry. Three reasons dominated the answers. They were: "Lack of technical knowledge"; "Takes too long to grow trees"; and "Other uses of time and money are more rewarding". The fourth reason chosen was: "The returns from forestry are too low".

In the present study an open-end question was used. Each respondent was asked, "What reasons would you give that
woodland owners do not practice better forestry than they do?"

**TABLE XVI**

**COMPARISON OF WOODLAND OWNERS BY OCCUPATION AND THEIR SUGGESTED REASONS WHY PEOPLE IN THE AREA DID NOT APPLY BETTER FOREST MANAGEMENT**

**LOUISIANA, 1971**

<table>
<thead>
<tr>
<th>Reasons</th>
<th>Wage-earner N=25</th>
<th>Farmer N=13</th>
<th>Krf-son  N=9</th>
<th>Retired N=22</th>
<th>Self-employed N=12</th>
<th>Total N=81</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack tech. knowledge</td>
<td>6</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>22</td>
</tr>
<tr>
<td>Low investment return*</td>
<td>5</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td>4</td>
<td>19</td>
</tr>
<tr>
<td>Area is too small</td>
<td>6</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>5</td>
<td>17</td>
</tr>
<tr>
<td>Don't recognize value</td>
<td>5</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td>Too busy</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>Takes too long</td>
<td>3</td>
<td>4</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Not interested</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Cheated by buyers</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Lack of capital</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Hard to sell timber</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Need emergency cash</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>&quot;Company&quot; monopoly</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Wrong species grown</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Prices too low</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Estate not settled</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Storm or disease</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

*This answer includes the three responses: "More money from raising cattle" (mentioned 11 times); "Return on investment is too small" (mentioned 5 times); and "Land is too expensive for timber growing" (mentioned 2 times)

One hundred twenty-six answers from seventy-five owners were recorded and then grouped into sixteen categories. The answers were then further sorted by occupation.
of the respondent. The replies are tabulated in Table XVI.

**Lack of technical knowledge.** This was the most frequent answer recorded, mentioned twenty-two times. However, it was not the first choice in all occupation groups. Farmers placed it third and retirees gave it no more importance than three other categories. The lack of technical knowledge does merit close attention, however, because of its relatively high ranking in all the studies.

**Low return on investment.** Farmers ranked this reason as first, and the totals revealed that this factor was given as the second most important reason for not applying more forestry practices. Respondents in professional occupations did not list this reason at any level. This can be explained perhaps by the "opportunity cost" principle mentioned earlier. Professionals with larger incomes can be satisfied with lower returns than can farmers who will frequently earn more from their land from agriculture than from forestry.

In the four previous studies "Low returns on investment" ranked fourth among reasons given for not practicing better forestry. The present study combined three allied answers to arrive at the total of 19 for this category. Included were: "More money from cattle raising", with 11
answers: "Return on investment is too small", mentioned 5 times; and "Land is too expensive for timber growing", mentioned 2 times. In the four earlier studies "Clearing land for pasture" was listed separately.

Area is too small. Wage-earners and self-employed woodland owners considered "Small size" of equal importance with "Lack of technical knowledge" as explaining low adoption of forestry practices.

This reason did not rank high among the choices in the four previous studies, but in the present investigation it ranked third in overall score.

This response indicates a belief that it would be profitable to invest money in management practices on large areas of forest. This opinion was frequently expressed separately during the interviews.

People do not realize the value of growing timber. This response was not available for selection by the respondents in the four earlier studies. It was recorded 13 times in the present investigation. It resembles the category "lack of technical knowledge", but is different enough in inference to be listed separately. It implies a judgement that woodland owners would practice better forestry if they were aware of its economic benefits. Respondents frequently
made reference to the difference between the old cotton-growing days when timber was abundant and considered relatively valueless and the present with its new emphasis on the value of timber.

People are too busy. This response is similar to the answer of "Low return on investment" in that woodland owners will tend to be busy at whatever tasks are most profitable.

It is not surprising that wage earners gave this reason more frequently than did others. Most of the wage-earners in the survey commuted to Baton Rouge, which added extra time to their work day.

Tree-growing is too slow. The four previous investigations found this reason to be among the three most often chosen to account for disinterest in forest management. In this study it ranked sixth overall, but it was the second choice of several occupational groups as shown in Table XVI.

Lack of interest. This response was given eight times. It seems self-explanatory, but it must mask other reasons such as lack of time or lack of knowledge.

Cheated at the time of sale. Only five respondents gave this answer to the direct question asking for reasons for lack of better forestry. The topic was brought up by
many other owners earlier in the interview while discussing timber sales. The indications are that this is a real problem. In part is is a result of a lack of knowledge of how to measure or sell timber. In some instances the suspicious attitude resulted from unpleasant experiences in previous sales.

Lack of capital. This was suggested by four owners as a problem. The response indicates an awareness that investing money in certain improvement practices would be profitable if money were available.

Hard to sell timber. Four owners complained that mills had moved away and markets were bad. This response shows a lack of knowledge about buyers. However, there is also a real problem of selling timber in small parcels because of the logger's expense of moving modern harvesting equipment.

Need cash for emergency. Using the woodlot like a bank cannot be called poor forestry. Three respondents mentioned having to make a cut earlier than they wished, probably also cutting more heavily than good practice would dictate.
The price is too low or there is a "company" monopoly. These answers indicate the same feeling that low prices for timber, especially pulpwood, precluded investing in good management practices. A few owners indicated that the low price of pulpwood combined with their dissatisfaction with pulpwood cutters kept them from making thinnings.

Wrong species on the holding. Two respondents who lived in a hardwood area said they would invest money in forest management if they were growing pine, but that such investment would not pay in hardwoods.

Estate is unsettled. This response occurred only twice, but it is not a representative figure. When the sample was drawn, all unsettled estates were discarded because of the uncertainty of whom to interview. This problem of lack of clarity of ownership is important, and no doubt it contributes to a lack of good forest management in many instances.

Storm or insect damage. This conversation revealed that some owners used a short rotation to avoid the risk of loss from hurricanes. Only one owner listed this as an excuse for not applying more forestry practices.
Unsolicited Observations by Forest Owners

Tables and numbers do not easily reveal the personality and feelings of the respondents. Casual voluntary observations by the owners were recorded because of their value as guides in creating effective educational programs.

Professional advice. Several remarks in this area were recorded. One owner merely observed that people need to be "better informed". Another suggested that visits from professionals would be helpful and another asked why forestry students couldn't be used to mark timber for sales on small holdings.

In East Feliciana Parish, where an Extension Forester is posted, eighty per cent of the respondents were acquainted with the Extension Service as a source of professional help. In Livingston Parish, which has no assigned Extension Forester, only twenty-four per cent of the owners mentioned the Extension Service as a source of help with forestry problems.

Fires. Many respondents had strong opinions about fires, usually based on long experience. There was occasional opposition to the usual professional advice on prescribed burning. Some woodland owners felt that soil depletion was an inevitable result of prescribed fires. They would thus be reluctant to accept advice contrary to their beliefs.
There was not a single expression made in favor of uncontrolled woods burning.

**Profitable use of the land.** Some owners pointed out that a working man might not have time enough for taking care of cattle but could find time to grow trees. Two men indicated that the high cost of labor and the cost of clearing for pastures might make forestry more profitable than cattle for themselves.

The 22 per cent who intended to clear their land for pasture did not score low in knowledge of forestry nor in adoption of practices. They usually were aware of the alternative returns from cattle as compared with forestry.

**Timber Sales.** There was much dissatisfaction with the usual methods of selling timber. One man remarked that the buyer usually got more than the seller. Another owner observed that most sales resulted either from an owner needing money or else from being persuaded to sell by a timber buyer.

A constructive suggestion came from one respondent who advocated the posting of a surety bond by the buyer in order to help the small owner enforce a contract with a logger.

**Aggregated management.** Several owners mentioned the possibility of securing joint management of small holdings.
Usually they favored this, but one owner said the restrictions would be too strong to suit him: "You could not cut a tree or graze a cow without permission."
CHAPTER IV

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

I. SUMMARY

The small private woodlands in Louisiana are usually understocked and poorly managed. Holdings under 500 acres in size make up 5.8 million acres, which is forty per cent of Louisiana's forest land. Thus ways must be found to increase forest productivity on small holdings.

The owners, who make the management decisions, are the ones who must acquire the ability and the incentive to increase forest productivity. Educational programs must be based on an understanding of the traits and the problems of the woodland owners, and must also be able to reach them with effective teaching.

The study was conducted to measure how well small woodland owners in two parishes were practicing forestry and to measure the variables that affect that practice. At the same time comments were solicited from the respondents themselves explaining why they thought people were not practicing better forestry.

Review of Literature

Other investigators studied the many variables that affect the management of small woodlands. Although complete
agreement is lacking, the following factors were generally found to be correlated with the adoption of forest practices.

Size of holding. Generally larger holdings are associated with better management.

Level of income. Most investigators found that owners with larger incomes were more likely to practice better forestry.

Education. Higher levels of income were usually found to be correlated with higher adoption of forest practices.

Age of owner. Most owners over the age of sixty were less likely to invest in forest improvements when compared with younger owners.

Occupation of owner. Farming was the only significant occupation that correlated with the practice of good forestry. Other occupations were seemingly tied to too many other variables to be significant.

Knowledge of technical forestry. Most of the investigators were in agreement that woodland owners with more technical knowledge, especially if the holding was not too small, were apt to practice good forestry.

Two studies in other fields showed that an understanding of basic concepts contributed to higher adoption of
agricultural practices.

**Other variables.** Several minor variables were studied by a few investigators. They seemingly had little effect on the management of forests, although in some instances they were important. These variables included distance between the owner's home and his woodlot; the owner's future plans; the adoptive behavior of the owner; length of tenure; and number of children at home.

**Opinions of woodland owners.** When asked to select reasons why other persons did not practice better forestry, the three most common choices were "Lack of technical knowledge"; "Takes too long"; and "Other activities are more rewarding".

**The Hypothesis**

The present investigation was designed to study the relationship between level of knowledge of forestry concepts and the adoption of forest practices.

The null hypothesis proposed was: Among the owners of small woodlots there is no difference between the adoption of forest practices by those who understand the basic concepts of forestry and those who do not.

**The Research Design**

Eighty-one owners of small woodlots in East Feliciana
and Livingston Parishes were selected randomly from tax rolls. The size of holding was restricted to 20 through 499 acres.

The interview schedule was designed to measure the level of adoption of forest practices by the owners of small woodlands and the variables that affect such forest practices. Also the respondents were asked to give reasons why people do not practice better forestry.

The level of adoption of forest practices was measured by scoring answers to questions about the following subjects:

1. Tree planting
2. Use of professional help
3. Use of cattle
4. Use of fire
5. Multiple use of the forest
6. Selling practices

The independent variables measured were: size of holding; size of forest land; main use of forest; distance between home and woodlot; length of tenure; future plans for land use; occupation of owner; owner's age, sex, income, education and race; and, finally, the level of knowledge of forestry concepts.

All the independent variables except the last were easily measured through responses to simple questions. Measuring the level of knowledge of forestry concepts required analyzing the answers to questions relating to the following subjects:
1. Acquaintance with professional organizations
2. Forest improvement practices
3. Forest reproduction
4. Concept of marginal tree
5. Growth rate of trees
6. Cattle and forestry
7. Fire and forestry
8. Sale agreements
9. Insects and disease

The level of knowledge in all subjects was scored on a scale that began at recall then continued through comprehension to application to analysis and terminated at synthesis, the highest level.

The Results

Two analyses of variance were run at the Louisiana State University Computer Center. In the first, each of the independent variables, including the level of knowledge of forestry concepts, was compared with the level of adoption of forest practices. In the second, comparisons were made between each variable and the level of knowledge of forestry concepts. In both analyses F values were compared at significance levels of .25, .10, .05 and .01.

Knowledge of forestry concepts compared with adoption of forest practices. In this comparison, a highly significant relationship was found at the .01 level of significance. This led to a rejection of the null hypothesis and to the conclusion that a greater understanding of forestry
concepts leads to a higher adoption rate of forest practices.

**Other significant results.** The occupation of the owner was found to be significantly related to the level of adoption of forest practices at the .05 level of significance. Farmers scored highest in adoption level of forest practices and professional people scored lowest.

A highly significant relationship was found between race of the owner and his knowledge of forestry concepts at the .01 level of significance. The mean level of knowledge was 9.7; the Negro respondents' mean score was 6.0, and that of the whites was 13.4.

A significant relationship was found between the number of school-age children in the owner's home and his level of knowledge of forestry concepts. Those with more children scored higher in level of knowledge.

**Reasons given why people do not practice better forestry.** Each respondent was asked to give his reasons why other woodland owners did not practice better forestry than they do. The first six reasons given were:

1. Lack of technical knowledge
2. Low return on investment
3. Area is too small
4. People do not recognize the value of growing trees
5. Too busy
6. Takes too long
Other suggestions by respondents. Voluntary observations were recorded during the interviews. In general, remarks indicated that more professional advice would be welcome. Personal visits would appeal to woodland owners. Help with timber sales would be particularly welcome. Much dissatisfaction was expressed concerning dealings with unreliable timber buyers.

II. CONCLUSIONS

The interrelated factors that ultimately affect production on small forest holdings may be summarized as follows:

(1). A high level of understanding of basic forestry concepts was associated with a high level of adoption of forest practices. The level of understanding can be improved by educational methods.

(2). Other factors also were shown to have a positive correlation with the level of adoption of forest practices. These were:

   a. Occupation as farmer or wage-earner.
   b. Intention to grow timber.
   c. Living not too distant from the woodlot.
   d. Total acreage not too small nor too large.

These factors in themselves are not amenable to change by educational methods.

(3) A low level of understanding of forestry
concepts was associated with the following factors of ownership:

a. Principal use of the land for purposes other than forestry.
b. Size of holding between 100 and 299 acres.
c. Tenure longer than 25 years.
d. Non-professional occupation of owner.
e. No school age children in home of owner.
f. Negro race.

These factors indicate which categories of owners are in greatest need of an educational program. Obviously some of these groupings are more logical targets than others for educational change.

The wide disparity in forestry knowledge between Negro and white owners as was shown in Tables XIV and XV indicates that an education program with Negro woodland owners would be valuable.

The correlation between knowledge of forestry concepts and having school-age children at home points out that families without children may be harder to reach. Conversely, one could speculate that educational programs in the schools and 4-H Clubs are effective in influencing adults indirectly.

The groups which were significantly lower in levels of knowledge are not the only ones in need of more education. They are the classes with greatest lack, but their counterparts might be more responsive to teaching.
Although there were average scores given to various groups, each woodland owner is still an individual with unique problems, and he merits individual attention.

Finally, educational change that will increase the adoption of better forest management practices must start with the cultivation of attitudes favoring that goal.

III. IMPLICATIONS

The study offers insight on ways to reach owners of small woodlands with an educational program. The content of such a program should be concept-oriented with concepts at a practical rather than professional level.

The extension educator must initially work with changes of attitude. One important asset is that the owners of forest land, particularly those who choose to live near their woods, are likely to be responsive. They already have an interest in trees and usually want to do a good job of forest management.

There is value in having an Extension Forester available to offer advice to forest owners. The data showed that eighty per cent of the owners were aware of the Extension Forester in the parish where he lived and worked, but that only twenty-four per cent of the owners knew about him in the neighboring parish to which he was not assigned.
The biggest need for professional help seems to be in marketing of forest products. Some of the problems are not easy to solve, such as protecting the seller from unscrupulous or careless loggers.

Personal visits by a forester probably are far more effective than any other means of meeting the problems of woodland owners. Mass media reach more people, and group meetings (if well attended) make good use of an extension teacher's time, but these do not elicit the response that comes from meeting with a man at his own place.

The wide variety of problems faced by the scattered owners cannot be discovered without some interpersonal contact between the agent and his clients. The argument could be put forth that there are too many woodland owners in a parish to allow personal visits. (In the two parishes studied there were more than 2500 owners with forest holdings smaller than 500 acres and larger than 20 acres.) However, if personal visits are the most effective use of an Extension Forester's time, careful thought should be given to allowing time for that purpose.

Negro respondents differed from white respondents in two respects. They were less well acquainted with the Extension Forester, and they scored lower in knowledge of forestry concepts. The problem should be faced and
solutions sought. One possibility is the assignment of a Negro forester to areas where there are Negro clients. In any case an educational program should be designed to reach this minority group.

Some feeling of animosity was expressed toward "the company", the large-scale commercial timber producers. A public relations program by pulp and paper companies could help woodland owners see that company goals and small owner goals in forestry management can be compatible. The views of the small owners need sympathetic reception by representatives of the large companies.

The omnipresent problem of distrust of buyer by seller needs attention. One solution that seems practicable is an expansion in the number of semi-professional timber cruisers. These men can apprise an owner of the amount of timber he has to sell, can arrange for the sale, and then can supervise the cutting with the owner's interests in mind.

Further research is suggested with the attitudes and characteristics of absentee owners. The present study found only six per cent of the owners living more than twenty miles from their forest land.

An unexpected result in the study was the complete lack of correlation between years of education and either knowledge of forestry concepts or adoption of forest
practices. Further investigation of this might be worthwhile.

This study indicates that reaching small land owners in Louisiana with a program of educational change is likely to contribute significantly to solving the problem of low productivity on these forest lands.
SELECTED BIBLIOGRAPHY

A. BOOKS


B. PUBLICATIONS OF THE GOVERNMENT, LEARNED SOCIETIES, AND OTHER ORGANIZATIONS


C. PERIODICALS


D. UNPUBLISHED MATERIALS


APPENDIXES
### APPENDIX I ANALYSES OF VARIANCE

#### TABLE XVII
**LEAST-SQUARES ANALYSIS OF VARIANCE, WITH UNEQUAL SUBCLASSES:** KNOWLEDGE OF FORESTRY CONCEPTS

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>Deg. of freedom</th>
<th>Mean sq.</th>
<th>F</th>
<th>Significance levels for F</th>
<th>.25**</th>
<th>.10*</th>
<th>.05*</th>
<th>.01*</th>
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<tbody>
<tr>
<td>Main use</td>
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<td>2.41 3.18</td>
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<td>1.40 2.20</td>
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**TABLE XVIII**  
LEAST-SQUARES ANALYSIS OF VARIANCE, WITH UNEQUAL SUBCLASSES: ADOTION OF FOREST PRACTICES

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>Deg. of freedom</th>
<th>Mean sq.</th>
<th>F</th>
<th>Significance levels for F</th>
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<td></td>
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</table>


APPENDIX II  BASIC FORESTRY CONCEPTS

The economic situation

Supply and demand  Future prospects

Market requirements

Preferences of buyer

Immediate demands of market

Minimum restrictions on logger

Size and species for each market

Sawlogs  Pulpwood  Plywood

Poles & piling  Specialties:

Christmas trees, handles, etc.

Availability of advice & services

Professional foresters  Public agencies  Industry

Multiple-use of woodlands

Conservation  Wildlife management

Recreation  Watershed protection

Logging

Labor supply  Size of operation  Equipment costs  Family help

Managing the woods

Protection:

Fire  Grazing  Disease  Insects

Adequate stocking  Timberstand improvement

Cutting: Reproductive method

Silviculture

Figure 2: SOME BASIC CONCEPTS IN FOREST MANAGEMENT AND FOREST PRODUCT MARKETING
Silviculture

- Silvicultural practices:
  - planting
  - thinning
  - pruning
  - harvesting

- Sylvicultural systems:
  - clearcut
  - seedtree
  - shelterwood
  - block cut

Genetics:
- phenotype
- genotype

Tree physiology:
- photosynthesis
- tolerance
- dominance

Environment (Forest ecosystem)

Forest ecology

Forest succession:
- primary vs. secondary
- seral stages
- orderly succession
- modification of environment
- climax forest
- tolerance
- individual dominance

Forest community:
- population
- forest type
- stand
- tree

Habitat:
- climate
- light
- diurnal
- seasonal
- moisture
- humidity
- rainfall
- temperature
- air movement
- soil
- nutrients
- texture
- depth
- drainage
- topography

FIGURE 3: SOME BASIC CONCEPTS OF FOREST ECOLOGY
### APPENDIX III

**INTERVIEW WITH OWNERS OF SMALL WOODLANDS**

<table>
<thead>
<tr>
<th>Code</th>
<th>Question</th>
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<tbody>
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<td>1</td>
<td>Parish: East Feliciana</td>
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<td>2</td>
<td>Livingston</td>
</tr>
<tr>
<td>3</td>
<td>Questionnaire number</td>
</tr>
</tbody>
</table>

| 4    | Total acreage of land |
| 5    | Acres of merchantable pine |
| 6    | Acres of hardwoods |
| 7    | Acres of mixed wood |
| 8    | Total forest acreage |

1. **What is the total acreage of your land in this parish?** And could you also break it down by the following?

   - Total farm land
   - Acres of merchantable pine
   - Acres of hardwoods
   - Acres of mixed wood
   - Total forest acreage

2. **What is the main use of your forest land?**
   - Grazing
   - Timber growing
   - Wildlife
   - Other

3. **How far away from your woodland do you live?**

4. **Is any of this holding being farmed at this time?**
   - Yes, by owner
   - Yes, by someone else
   - No

5. **How many years have you owned the land?**

6. **What are your future plans for your woodland?**
   - Continue in trees
   - Clear the land
   - Sell the property
   - Other

7. **What is your occupation?**
   - Wage earner
   - Farmer
   - Professional
   - Other

8. **Have you planted any trees on your land?**
   - Yes, number of trees
   - No
9. a. If you had problems with your woodlands, which people or organizations could you turn to for help?

- Extension Service 17
- La. Forestry Commission 18
- Consulting forester 19
- Company forester 20
- Other 21
- None 21

b. Has any of these been helpful to you?

- Yes 22
- No 22

If "Yes": In what ways? ___________________________ 22 to 25

If "No": What reasons would you list for your not calling on them for assistance? _________________________ 26

c. If you were offered free help in managing your woodland and in selling your timber, would you accept it?

- Yes 27
- No 27
- Don't know 27

10. If you had money to spend for improving your woodland, how would you spend it?
That is, how do you think you could improve your forest?

- Planting 28
- Thinning 29
- TSI 30
- Fire lines 31
- Fencing 32
- Burning 33
- Other 34

(Don't read the list)

Now we come to two difficult questions:

11. What are the best ways, in your opinion, to manage your woodland so that new young trees will replace trees that are cut? ________________________________ 35

12. To what size would you grow sawlogs so that your forest as a whole earns the most money for you? _______ 36

Why is this? ____________________________________________
13. How many years would you say it takes to grow a pine to a 20" diameter in this parish?

Now we want to discuss cattle.

14. Do you or any of your nearby relatives keep cattle?

   a. In what ways do you think cattle can be helpful to woodland?
      (Don't read the list)

   b. Can you mention ways that cattle might be damaging to woodlands?
      (Don't read the list)

Our next subject is fire.

15. Are you familiar with controlled burning? (Describe if necessary)

   a. Could you suggest ways that controlled or prescribed burning may be helpful to woodland?
      (Don't read the list)

16. How many fires have there been in your woods in the last ten years?

17. How many of these were prescribed burns?

18. Do you have fire lines around any of your woodland?
Now we come to the subject of timber harvesting.

19. Which of the following have been harvested from your land in the past ten years?

(If "None", go to question 20)

a. Did you do any of the cutting?  
   Yes  No

b. Was the timber marked for sale?  
   Yes  No

c. Was there a written contract?  
   Yes  No

d. How was payment made?  
   By measurement  By lump sum

e. How did you select the buyer(s)?

f. What professional help or advice did you have in preparing for and making the sale?

20. If you were selling timber, how would you go about preparing for the sale and carrying it out?

21. If you have a written contract between yourself and the man buying your timber, what items would you like included in the contract for your protection?

22. What have you had to do about insects or disease in your woods?
23. What reasons would you give that woodland owners do not practice better forestry than they do?

### Personal data:

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<th>Age group</th>
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<tr>
<td>50-59</td>
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<table>
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<td>8000-12,000</td>
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<td>12,000-16,000</td>
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<table>
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<th>Total family income from all sources</th>
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<td>Highest grade reached</td>
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| Children from household in school | Number | 70|
|-----------------------------------|--------|

| Member of how many organizations? | Number | 71|
|------------------------------------|--------|

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<thead>
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<td>Negro</td>
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<tr>
<td>White</td>
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</table>

31. Interviewer's subjective rating of respondent:

(Scores: 1 is unsatisfactory; 2 is poor; 3 is average; 4 is good; 5 is superior)

- a. Compatible mixing of cattle raising and timber growing. Score | 39|
- b. Sensible use of fire. Score | 44|
- c. Enthusiasm for good forestry. Score | 74|
FIGURE 4
OUTLINE MAP OF LOUISIANA
SHOWING LOCATION OF
EAST FELICIANA
AND LIVINGSTON
PARISHES
VITA
Lester Bradford was born on January 20, 1926 in Greenwood, Maine. He graduated from Hebron Academy, Hebron, Maine in 1943.

He received a Bachelor of Science degree in botany from Yale in 1949 and a Master of Forestry degree from Yale Forestry School in 1951.

He worked for the United States Forest Service in 1951 and 1952. From December, 1952, to September, 1968, he held an appointment by the Board of Missions of the Evangelical United Brethren Church to Sierra Leone, West Africa, as an agricultural missionary.

From October, 1968, till May, 1969, he was employed as an assistant county agent in St. Tammany Parish, Louisiana.

He is married to Winifred Smith of Enid, Oklahoma. They have five children.
EXAMINATION AND THESIS REPORT

Candidate:  Lester Ezra Bradford

Major Field:  Extension Education

Title of Thesis:  A Comparison of Knowledge of Forestry Concepts with the Adoption of Forestry Practices in Two Louisiana Parishes

Approved:

Major Professor and Chairman

Dean of the Graduate School

EXAMINING COMMITTEE:

[Signatures]

Benton H. Box

Paul J. Smera

Edward W. Carson

Date of Examination:

July 14, 1971