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Research Report No. 26, Hyperstand 2.0: Estimating Yield of East Texas Pine Plantations (Update to Hyperstand 1.0)

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HYPERSTAND 2.0: ESTIMATING YIELD OF EAST TEXAS PINE PLANTATIONS (UPDATE TO HYPERSTAND 1.0)

by

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REPORT NUMBER 26

THE
EAST TEXAS PINE PLANTATION RESEARCH PROJECT

A STUDY OF
LOBLOLLY AND SLASH PINE PLANTATIONS
IN
EAST TEXAS

CENTER FOR APPLIED STUDIES
SCHOOL OF FORESTRY
STEPHEN F. AUSTIN STATE UNIVERSITY
NACOGDOCHES, TEXAS 75962

JANUARY, 1990

This is the twenty-sixth in a continuing series of reports describing results from the East Texas Pine Plantation Research Project.

Subject and content of each ETPPRP report is regional in scope and of particular interest to loblolly and slash pine plantation owners in East Texas.

Any suggestions, ideas or comments will always be welcomed.

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Support from the participating companies...
Champion International Corporation,
International Paper Company,
Louisiana-Pacific Corporation and
Temple-Inland Forest Products Corporation
is gratefully appreciated.

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HYPERSTAND 2.0 (update to HYPERSTAND 1.0) was developed by Mr. Holley and Mr. Taylor, graduate students in the School of Forestry, SFASU.

As additional new ideas and technology are determined, further updates to HYPERSTAND will be constructed.

J. David Lenhart
Project Director
January 17, 1990

HYPERSTAND 2.0: ESTIMATING YIELD OF EAST TEXAS PINE PLANTATIONS (UPDATE TO HYPERSTAND 1.0)

by

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ABSTRACT. An update to a computer program for estimating per acre yield for loblolly pine (*Pinus taeda* L.) and slash pine (*Pinus elliotti* Engelm.) plantations in East Texas is presented. The program, HYPERSTAND 2.0, was written utilizing HYPERCARD and is designed to run on MACINTOSH personal computers. In order to run, HYPERSTAND 2.0 requires the application program HYPERCARD 1.2.2 and HYPERCARD HOME STACK.

INTRODUCTION

Yield information is useful to East Texas pine plantation managers. Data on tree production can be combined with other resource information, such as wildlife and recreation, and included in appraisal analysis to determine management plans for the pine plantations that maximize specific measures of utility. HYPERSTAND 1.0, a computer program for the Macintosh computer, was initially developed to meet this need and is described in

Taylor, E. L. and A. G. Holley. 1989. HYPERSTAND 1.0: A hypercard computer program for estimating yield of East Texas Pine Plantations. ETPPRP Rep. No. 24. School of Forestry. SFASU. 16 p.

Since the publication of the original HYPERSTAND yield prediction program, it has been enhanced and improved. The updated version is HYPERSTAND 2.0 and is presented in this paper. Modifications and enhancements include

1. Projected age - allows for change in stand structure over time from initial age.

2. Mortality - predicted reduction in trees per acre between initial age and projected age.

3. Fusiform rust - infection level at initial age.

4. Stand library - provides for saving stand structure for later reference.

A free copy of HYPERSTAND 2.0 may be obtained by sending a 3.5" 800 K floppy computer disk to

Dr. J. David Lenhart
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INPUT TO HYPERSTAND 2.0

The user supplies information, as requested by screen prompts. HYPERSTAND 2.0 requires the user to input

1. Species - loblolly or slash.

2. Site index value.

3. Initial number of trees per acre.

4. Initial plantation age.

5. Projected plantation age.

6. Mortality - to be considered or not. If it will be considered, than fusiform rust infection level at initial age must be listed.

MENSURATIONAL COMPONENTS IN HYPERSTAND 2.0

All mensurational systems were developed by the ETPPRP, using data from ETPPRP permanent plots throughout East Texas, except for the Weibull parameter recovery procedure, which was developed at VPI&SU.

SITE INDEX

Uses equations developed by Blackard as part of his MSF thesis and reported in

Blackard, J. A. 1985. Estimating site index. ETPPRP Rep. No. 3. School of Forestry. SFASU. 10 p.

Lenhart, J. D., E. V. Hunt, Jr. and J. A. Blackard. Site index equations for loblolly and slash pine plantations on non-old-fields in East Texas. So. J. Appl. For. 10(2):109-112.

INDIVIDUAL TREE HEIGHT

Uses equations developed by Dixon and reported in

Dixon, C. R. 1987. Predicting individual tree height of planted loblolly and slash pines in East Texas, update: 1987. ETPPRP Rep. No. 15. School of Forestry. SFASU. 8 p.

OUTPUT FROM HYPERSTAND 2.0

After calculations are completed, a picture of a flip chart with tabs appears on the screen. The tabs are

1. Squirrel - click on it and information about HYPERSTAND 2.0 is listed.

2. Characteristics - describes the parameters of the plantation.

3. Stem Content - presents stand structure and the volume and weight of the content of the total stem.

4. Complete Tree Content - lists stand structure and the volume and weight of the content of the complete tree (stem and branches).

5. Exit - allows the user to leave the flip chart with the option to save stand structure information to the Library or compute the yield of another plantation. After a save to Library, there is an option to calculate another stand or quit HYPERSTAND.