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Research Report No. 22, A Computer Program in Basic for Estimating Yield of East Texas Pine Plantations

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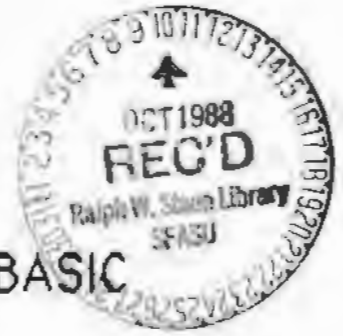
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A
COMPUTER PROGRAM IN BASIC
FOR
ESTIMATING YIELD
OF
EAST TEXAS PINE PLANTATIONS

by

Terry L. Hackett
and
Tom M. Hartz

REPORT NUMBER 22

THE

EAST TEXAS PINE PLANTATION RESEARCH PROJECT

A STUDY OF

LOBLOLLY AND SLASH PINE PLANTATIONS

IN

EAST TEXAS

This is the twenty-second 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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The computer program was written by Mr. Hackett while he was a graduate student in the School of Forestry. Mr. Hartz, a current graduate student in the School of Forestry, updated the program.

Two additional computer programs for yield prediction will be published as ETPPRP reports next year. One will be a HYPERCARD stack for the MACINTOSH and the other yield prediction program will be in FORTRAN also for the MACINTOSH.

J. David Lenhart
Project Director
October 5, 1988

A
COMPUTER PROGRAM IN BASIC
FOR
ESTIMATING YIELD
OF
EAST TEXAS PINE PLANTATIONS

by

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and

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ABSTRACT. A computer program for estimating per acre yield for loblolly and slash pine plantations in East Texas is presented. The program, DIADISD.BAS, is written in BASIC and is designed to run on IBM (and compatible) PC computers. An option in DIADISD.BAS allows the user to impose mortality rates on the pine plantations for both fusiform rust infected tree stems and disease-free stems.

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.

To assist plantation managers in estimating timber production from their stands, a yield prediction program (DIADISD.BAS) written in BASIC for IBM (and compatible) personal computers has been developed as part of the East Texas Pine Plantation Research Project. DIADISD.BAS is a companion yield prediction program to DIAYLDSUR, which is described in

Lenhart, J. D. 1988. A FORTRAN computer program for estimating yield of East Texas Pine Plantations. ETPPRP No. 21. School of Forestry. SFASU. 18 p.

Both programs incorporate identical mensurational information and computational techniques.

DIADISD.BAS is a diameter distibution yield prediction program. Information on plantation age, site index and surviving trees per acre is inputted. If future yield is desired, the number of trees per acre expected to be living at that point in time is calculated. For each combination of age, site index and trees per acre, output from the program presents stand structure (trees per acre and basal area per acre) and yield (volume and weight per acre in total stem) by diameter class.

A free copy of DIADISD.BAS may be obtained by sending a 5.25" floppy computer disk to

Dr. J. David Lenhart
School of Forestry - SFASU
Nacogdoches, TX 75962,

and he will return it to you with DIADISD.BAS loaded on it.

DIADISD.BAS is an interactive program. The user supplies information as requested by screen prompts. After loading and running the program, the user must:

1. Select a species – loblolly or slash.

   NOTE: As the user and the program correspond, DIADISD.BAS checks for illogical values.

2. Select a tree component measure – complete tree, total stem or partial stem.

3. Select a measurement unit – cubic feet or green weight in pounds.

4. Select a plantation age.

5. Select a surviving number of trees per acre.

6. Select a site index value.

At that point, the resulting diameter distribution yield prediction table is displayed.

Then, the user is asked if he wants to project the plantation into the future and estimate yield at that point in time. If he does, the program will ask for:

1. The future plantation age. ‾

2. The percentage of current trees with fusiform rust stem galls.

At that point, DIADISD.BAS displays the future diameter distribution yield prediction table.

MENSURATIONAL COMPONENTS IN DIADISD.BAS

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 Report 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.

MORTALITY

Uses equations developed by Lenhart and Hackett and reported in

> Lenhart, J. D. and T. L. Hackett. 1988. Estimating survival for East Texas Pine
> Plantations. ETPPRP Report No. 19. School of Forestry. SFASU. 12 p.

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 Report No. 15. School of
> Forestry. SFASU. 8 p.

INDIVIDUAL TREE CONTENT

Uses equations developed by Lenhart, Blackard, Wiswell, Hackett (part of his MSF thesis) and Laman (part of his MSF thesis) and reported in

Wiswell, T. J., J. A. Blackard and J. D. Lenhart. 1986. Estimating the cubic foot volume of individual loblolly pine trees planted in East Texas. ETPPRP Report No. 5. School of Forestry. SFASU. 11 p.

Wiswell, T. J., J. A. Blackard and J. D. Lenhart. 1986. Estimating the green weight of individual loblolly pine trees planted in East Texas. ETPPRP Report No. 6. School of Forestry. SFASU. 10 p.

Hackett, T. L. 1986. Estimating the cubic foot volume of individual slash pine trees planted in East Texas. ETPPRP Report No. 8. School of Forestry. SFASU. 11 p.

Laman, C. J. 1986. Estimating the green weight of individual slash pine trees planted in East Texas. ETPPRP Report No. 9. School of Forestry. SFASU. 11 p.

Lenhart, J. D., T. L. Hackett, C. J. Laman, T. J. Wiswell and J. A. Blackard. 1987. Tree content and taper functions for loblolly and slash pine trees planted on non-old-fields in East Texas. So. J. Appl. For. 11(3):147-151.

RECOVERING WEIBULL PARAMETERS

Uses methods and equations developed by Burk, Burkhart and Lenhart and reported in

Burk, T. E. and H. E. Burkhart. 1984. Diameter distributions and yields of natural stands of loblolly pine. FWS-1-84. Div. of For. and Wild. Resources. VPI&SU. 22 p.

Lenhart, J. D. 1987. Stand structure and yield of slash pine plantations in East Texas, update: 1987. ETPPRP Report No. 17. School of Forestry. SFASU. 23 p.

Lenhart, J. D. (in press) Diameter distribution yield prediction system for unthinned loblolly and slash pine plantations on non-old-fields in East Texas. So. J. Appl. For.