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"*Nitens*": A program to predict *Eucalyptus nitens* growth in New Zealand and Tasmania.

C.M. MacLean and A. van Zyl

NZFRI

Report No. 30   March 1997

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1.0 Introduction

Nitens implements the *Eucalyptus nitens* growth model developed by Mr.Steve Candy of Forestry Tasmania. Full documentation of this model, including caveats can be found in:

Candy, S.G. (1997) Growth and yield models for Eucalyptus nitens plantations in Tasmania and New Zealand. Tasforests 9 (in press)

The functions in the Candy growth model have been incorporated in a fully executable application that includes a screen display of results in both tabular and graphical form. A batch processing option to facilitate multiple runs is also available.

2.0 Copyright Statement

3.0 Installation

To install *Nitens* in the default location, insert the disk provided into drive A, and type

A:\Install

This will create the following directory on your hard disk if it does not already exist:

For Windows 95 users
c:\program files\nitens

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For Win 3.1 users
c:\nitens

and will copy the application to the nitens directory. To install *Nitens* to a directory other than the default, you can supply your own path name to an existing directory.

On some systems the following error may occur:

> *"the file c:\win 95\system\CTL3D.DLL is in use and cannot be installed. Please exit all other applications and retry. Press ignore to not install the file and abort to cancel the installation."*

Choose the "IGNORE" option and continue.

The setup program will then create icons in either the program manager (Win 3.1) or the Start Menu (Win 95). You will also be given the option to include *Nitens* on your quick start menu (Win 95).

Included in the directory is the program **UNWISE**. This will uninstall *Nitens* from your hard drive.

> *You do not need to restart your computer following installation of* Nitens.

4.0 General

Nitens will run successfully under Windows 3.1 and Windows 95.
The window can be re sized to accommodate a range of screen sizes.

5.0 Running Nitens

On starting the *Nitens* application a flash screen will appear containing the copyright notice displayed above. This screen will remain active for approximately 5 seconds before moving to the main form (Fig. 1).

Figure 1: Main form for *Nitens* growth model.

5.1 User Input

5.11 Starting Values

Enter starting values for the model in the boxes on the top left hand side of the screen (Fig.2). PlotID contains plot descriptive information and is limited to 255 characters, therefore a great deal of information can be stored here if necessary.

Figure 2: User input

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5.12 Projection Age

Age the user wants the model to predict results to.

5.13 Increment

This enables the user to specify the time increment for which model output will be displayed ie an increment of 2 will display results from every second year from initiation.
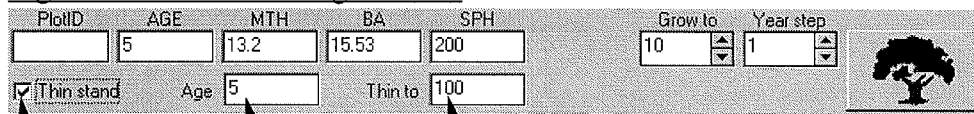
5.14 Calculate

Displayed with the growing tree. "Click" to calculate results of model from starting values.

5.2 Thinning?

A reduction in stocking due to thinning can be incorporated into the model, however only one thinning operation per run is currently possible. To enable this feature, the thinning "check box" must be depressed (fig.3).

Figure 3: Enable thinning function

The user will then be prompted for information on the age the plot will be thinned, and the number of stems remaining after the thinning operation. Results, including basal area and volume removed will be visible at the base of the main window.

The thinning option can also be accessed when batching files (see Batch processing option, below).
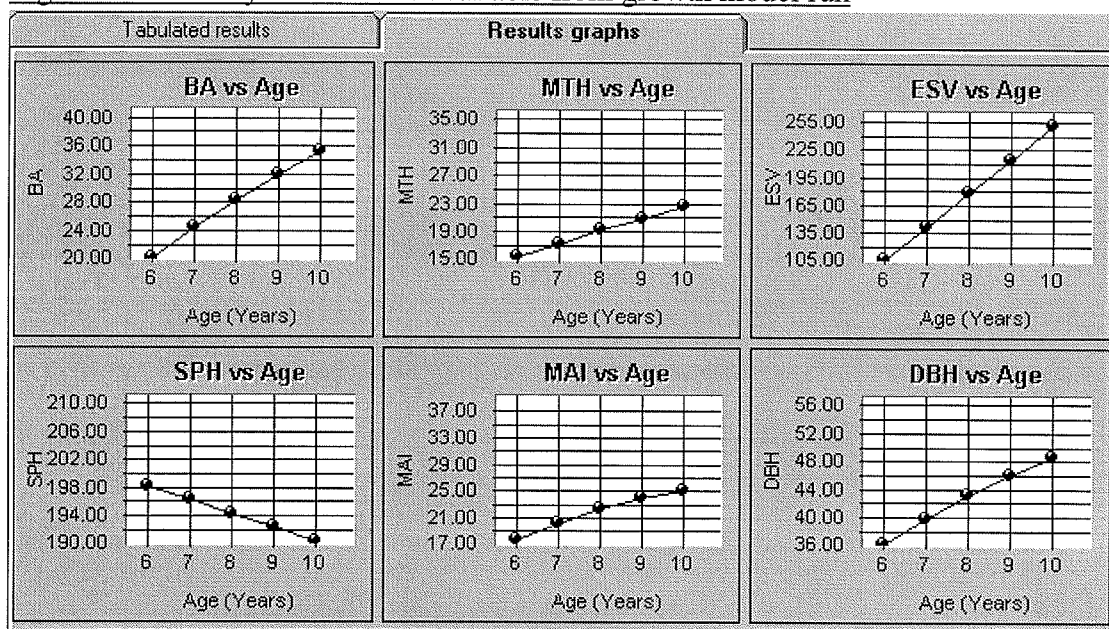
5.3 Tabulated Results

Displays tabular results from the growth model run. Output can be saved to a *.dat (comma delimited file) that can be read into other applications for further manipulation. "Print" will only print the charts visible in the *Results Graphs* window.

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5.4 Results Graphs

Displays basal area vs age, MTH vs age, estimated stem volume (ESV) vs age, mean annual increment vs age, and diameter at breast height vs age (fig.4). To view a number of charts at the same time, hold the shift key while selecting the chart to view. To view only one chart, select the chart required from the *quick chart buttons* in the main form.

Figure 4: Summary of all charts available from growth model run

To print charts, use the print button [icon] found in the main window. This will only print charts that are visible in the *Results Graphs* window.

5.5 Batching Processing

To batch run a number of files within *Nitens,* starting value data needs to be stored as a *comma delimited text file* (can be created using Notepad, MS Excel or other spreadsheet applications) that does not contain a header row ie:

Using Notepad:
　　　　[plot identifier],[starting age],[mth],[ba],[sph],[end age],[increment]
　　　　etc.

　　　　Using this application data will be saved as a *.txt file (which can be read by *Nitens*).

Using a spreadsheet package such as MS Excel:
　　　　Enter data into separate columns. Ensure that when you save you specify
　　　　saving as a comma delimited file type (ie *.csv in excel).

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The batching option is accessed through either file\batch processing [CTRL B] on the file menu, or using the batching button ▣ on the main form.

The user is asked to provide the input file, and specify a name for the output file (also stored as comma delimited). The default file type that is requested is *.NBF (*Nitens* batch file), however any format description (ie *.dat, *.txt) will be accepted.

After the application finishes processing each line of the batch file, a confirmation request will appear requiring a positive response for the run to write to the output file.

To include thinning in batch runs, include thinning age and number of stems remaining after thinning to the end of each line in the input file.
ie...

in Notepad

....,[thin age],[number of stems remaining]

in MS Excel

place thinning age and number of stems in columns at the end of the data

5.6 Saving

Data is stored in a comma delimited *.dat file, and includes starting values and tabulated results. Charts are not saved. Saving can be undertaken either through file\save results on the file menu, CTRL S, or the ▣ button on the main form.

6.0 Acknowledgements

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