FORNUTS

FORest NUTrients Simulation

User Manual

Version 1.1

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1. Using This Document

The purpose of this document is to help the users get started using the FORNUTS software. This will layout the process of Installing the software for Windows XP, Vista and 8, Mac OS 10.6-10.8 and

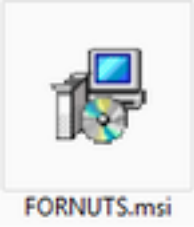
how to install for some of the Linux distributions. This document will also briefly go over how to use the software for each of the different operating systems. And provide some troubleshooting help and answers to frequently asked questions.

2. Using FORNUTS

2.0 Installing

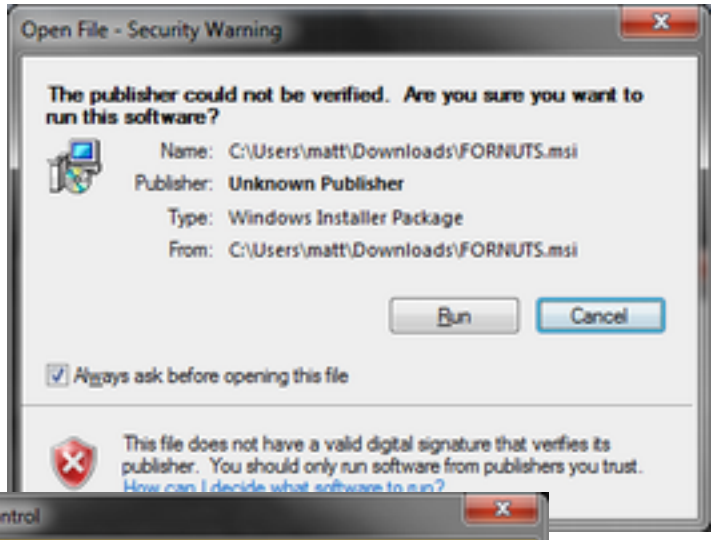
NOTE: The installer for Windows and Linux both require Administrator Privileges in order to install the software, if you do not have Administrator Privileges contact your system administrator to install this program.

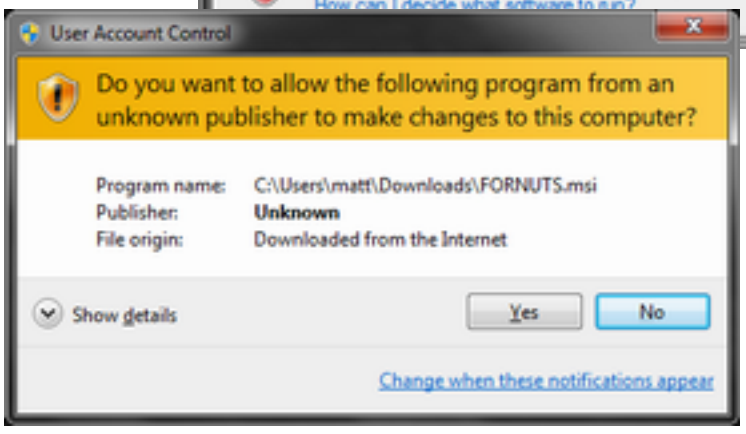
2.0.1 On Windows



To install first download the Windows Installer FORNUTS.msi file from this site: http://code.google.com/p/fornuts/downloads/list. Simply Click on this and the download will start automatically.
Once the download is complete navigate to the location of where the file was downloaded to and run (double click) the FORNUTS.msi file.

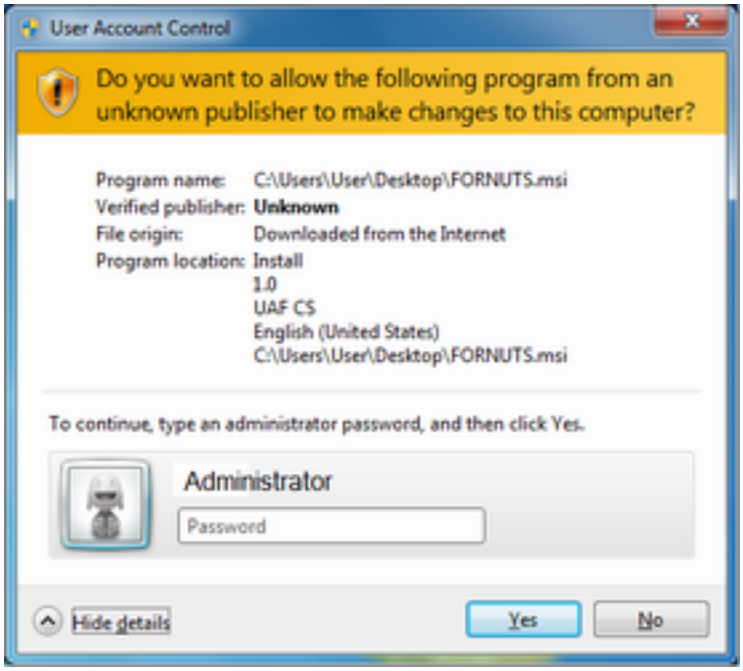
A security warning will pop-up in you are installing this on a Windows Vista, 7 or 8 computer. Simply click the Run button to start the installation process. We promise that this software is safe.



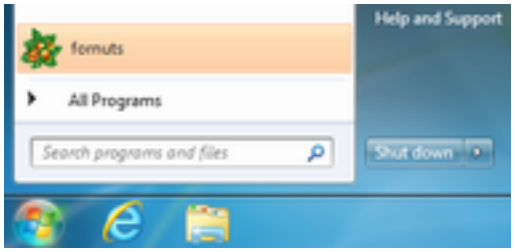


Before the software is to be installed on any Windows Vista, 7 or 8 computers it needs access to make changes to the hard drive. If you do not have Administrator privileges the install will fail at this

point. Simply click the Yes button to start the installation process if you are currently logged in as an Administrator. If you are not logged in as an Administrator, simply provide the admin credentials and the install process will start.



After that the installer will start and will place a folder under the Program Files directory called FORNUTS where the command line and GUI version of the program will be placed. It will also place shortcuts to the application on the Desktop and create a Start Menu entry.

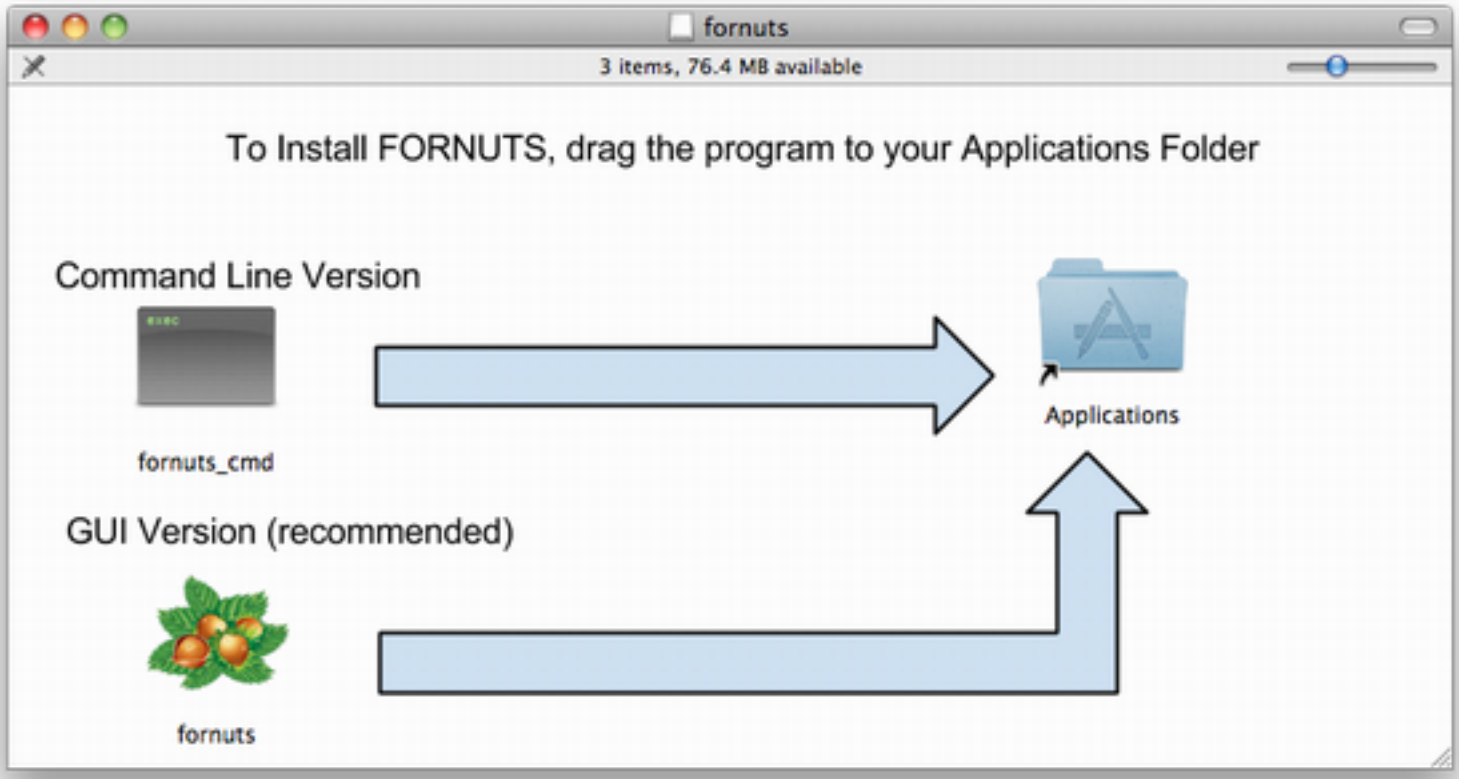


2.0.2 On Mac OS X

To install first download the Mac OS X installer fornuts.dmg file from this site: http://code.google.com/p/fornuts/downloads/list . Simply Click on this and t download will start automatically.

Once the download is complete the dmg file should open itself and place a disk called fornuts on the desktop. If it does not open itself simply navigate to the location of where the file was downloaded to and run (double click) the fornuts.dmg file. The dmg file will place the fornuts disk on the desktop and open itself. If it does not open just double click the disk icon.

This will open up a window which will look like this:



To install command line version of FORNUTS, simply drag the fornuts_cmd program to your Applications folder. To install the GUI version of FORNUTS, simply drag the fornuts program to your Applications folder.

2.0.3 On Linux

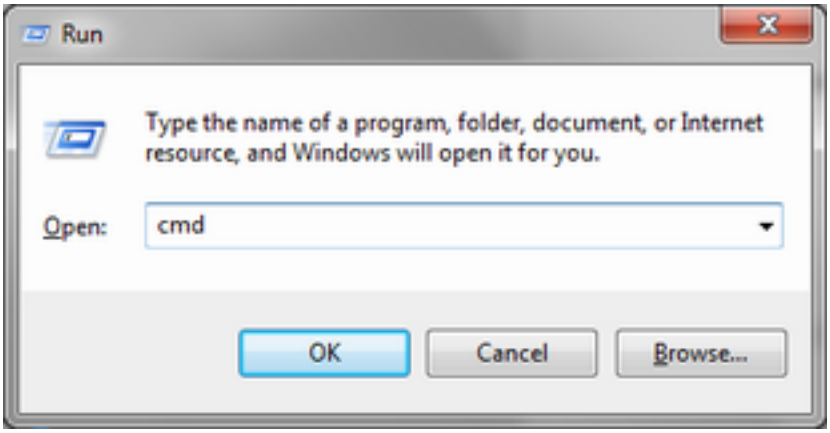
To install first download the Linux package fornuts.tar file from this site: http://code.google.com/p/fornuts/downloads/list. Simply Click on this and the download will start automatically.
Once the download has been completed navigate to the download you will need to install the Qt Framework which can be downloaded here: http://qt-project.org/downloads simply run the installer for linux. Once the Qt Framework is installed untar the fornuts.tar file and move into the fornuts directory and compile the fornuts.pro file by following these commands:

```
$ qmake fornuts.pro        (This will generate the makefile)
$ make                     (This will compile the software)
```

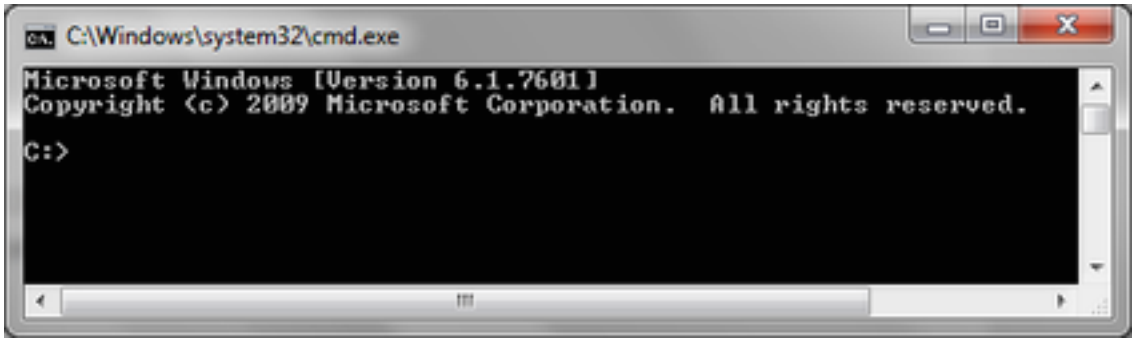
2.1 Through the Command Line

2.1.1 On Windows

To start open the a Command Prompt window
Hit the Windo ⊞ Win + R en R to bring up the Run window.



Type in cmd and press enter, this will bring up a command prompt window.



From there navigate to the FORNUTS folder located in the Program Files folder of the Program Files (x86) folder if you are on a 64-bit machine. This can be done using this command:
`C:>cd C:\Program Files\FORNUTS` or `C:>cd C:\Program Files (x86)\FORNUTS`
Once there run the fornuts_cmd.exe program with any of these options:

```
C:\Program Files (x86)\FORNUTS>fornuts_cmd.exe
Usage:
 -i interactive mode
 -f [input file] [-o [output file]]
 If no output file is specified it will print to the screen
```

From here the program's -i option make the program run the same as the old version of FORNUTS. Using the -f and -o options will make the program run like the old file input and output method of FORNUTS<INPUT0>OUTPUT0.

2.1.2 On Mac OS X

Open the Terminal Application which is located in your Utilities Folder under the Applications Folder. From there navigate to the Applications folder. This can be done using this command:

```
-bash-3.2$ cd /Applications/
```

Once there run the fornuts_cmd program using this command:

```
-bash-3.2$ ./fornuts_cmd
```

with any of these options:

```
-bash-3.2$ ./fornuts_cmd
Usage:
 -i interactive mode
 -f [input file] [-o [output file]]
 If no output file is specified it will print to the screen
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From here the program's -i option make the program run the same as the old version of FORNUTS. Using the -f and -o options will make the program run like the old file input and output method of FORNUTS<INPUT0>OUTPUT0.

2.1.3 On Linux

Open the Terminal which is located where the desktop environment keeps it. With Unity this can be accomplished by hitting the Windows key and typing in Terminal.Once the terminal is open simply run the fornuts_cmd program using this command:

```
$ fornuts_cmd
```

with any of the options:

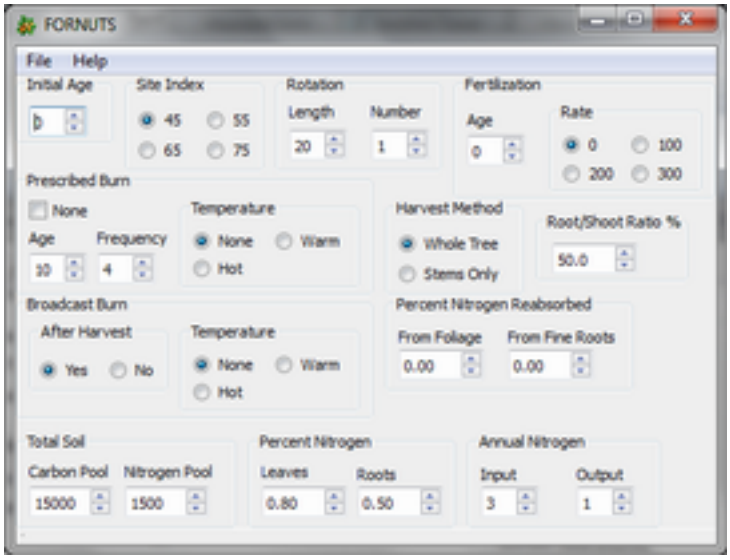
```
$ fornuts_cmd
Usage:
-i interactive mode
-f [input file] [-o [output file]]
If no output file is specified it will print to the screen
```

From here the program's -i option make the program run the same as the old version of FORNUTS. Using the -f and -o options will make the program run like the old file input and output method of FORNUTS<INPUT0>OUTPUT0.

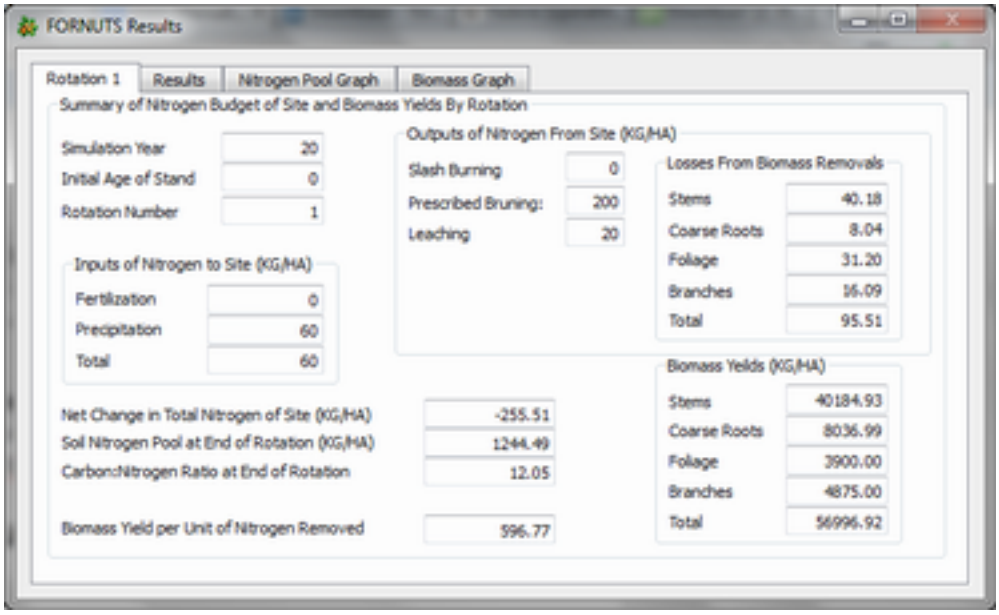
2.2 Through the Graphical User Interface

2.2.1 On Windows

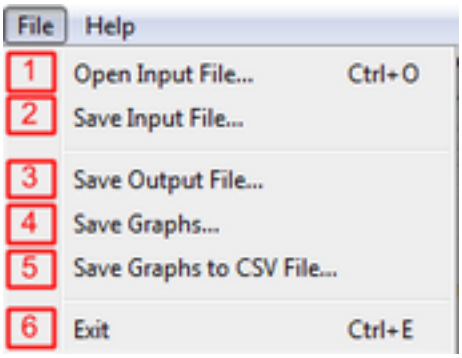
To start the FORNUTS program simply click one of the shortcuts or click on the fornuts.exe file in the Program Files\FORNUTS folder. This will bring up two windows, an input window and a results window.



This is the input window where you can change the values directly by clicking on the radial buttons or by increasing or decreasing spin boxes. Changing any of these values will automatically update the result window. This window also has two drop down menus, File and Help.



This is the results window. This window will display the results of the simulation by rotation, final results, and graph the Nitrogen Pool, and Biomass per rotation. As the number of rotation increases the number or rotation tabs will increase.



The File menu gives you several options:

1 Open Input File...

This option will bring up a dialog box where you can then navigate to an ini file which will load variables into the program.

2 Save Input File...

This option will bring up a dialog box where you can save your variables to an ini file for later use.

3 Save Output File...

This option will bring up a dialog box where you can save the results of the program to a text file.

4 Save Graphs...

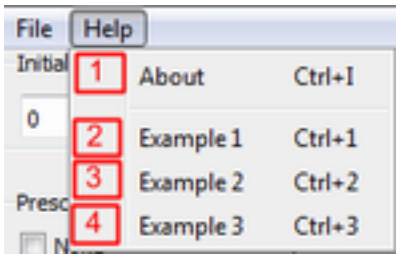
This option will bring up a dialog box where you can save the graphs that the program generated to either a JPEG, PNG, or BMP file.

5 Save Graphs to CSV...

This option will bring up a dialog box where you can save the graphing information that the program generates to a comma separated value file.

6 Exit

This option will close the program.



The Help menu gives you several options:

1 About

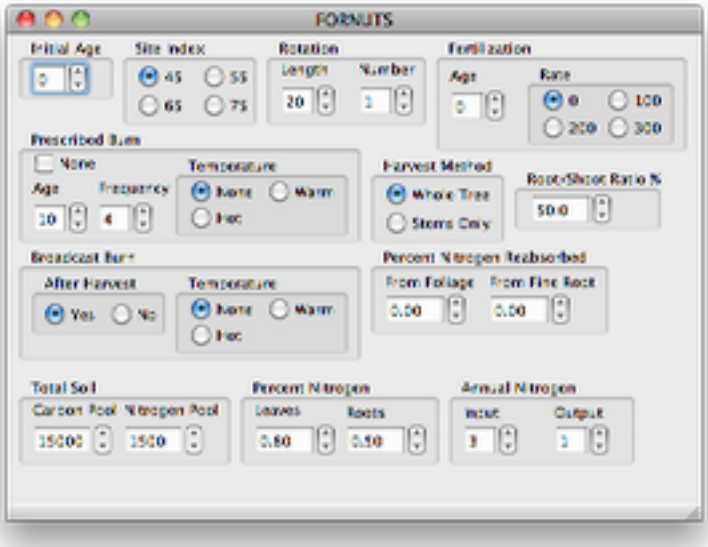
This option will bring up a window giving you information about the FORNUTS software.

2,3,4 Example 1,2,3

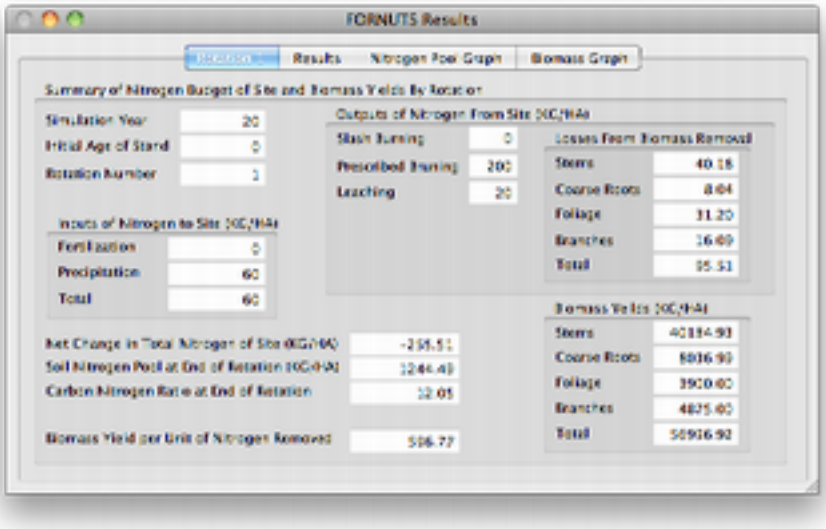
These options will load an example input files into the program to show the you how it works.

2.2.2 On Mac OS X

To start the FORNUTS program simply navigate to the FORNUTS Application and double click to run the software. This will bring up two windows, an input window and a results window

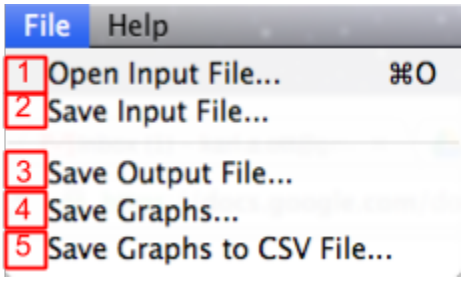


This is the input window where you can change the values directly by clicking on the radial buttons or by increasing or decreasing spin boxes. Changing any of these values will automatically update the result window.



This is the results window. This window will display the results of the simulation by rotation, final results, and graph the Nitrogen Pool, and Biomass per rotation. As the number of rotation increases the number or rotation tabs will increase.

This is the file menu bar, which is located at the top of the screen this includes two drop down menus, File and Help.



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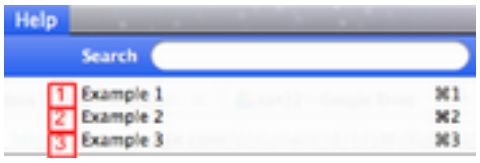

The Help menu gives you several options:

1,2,3 Example 1,2,3

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2.2.3 On Linux

To start the FORNUTS program simply navigate to the FORNUTS Application and double click to run the software. This will bring up two windows, an input window and a results window.

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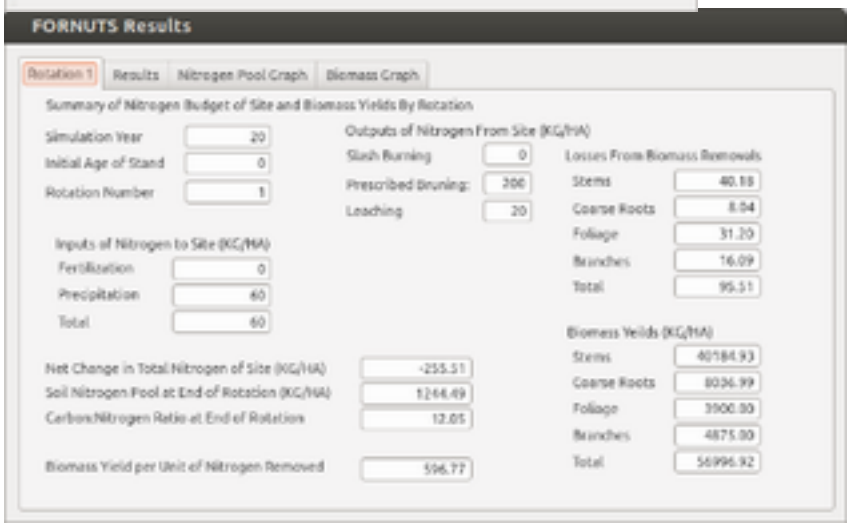

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The Help menu gives you several options:

Example 1,2,3

This option will load an example input file into the program to show the you how it works.

3. Troubleshooting

Using Mac OS X or Linux and the command line program won't run, check to make sure that the file can be executed and if not run this command.

```
-bash-3.2$ chmod +x fornuts_cmd
```

Windows Error Missing D3DCompiler_43.dll. Install or update DirectX. You can download this free from this site: http://www.microsoft.com/en-us/download/details.aspx?id=35

4. FAQs

Q) What does FORNUTS stand for?
A) FORest NUTrient Simulation

Q) Where Can I donwload the FORNUTS software?
A) Here: http://code.google.com/p/fornuts/downloads/list

Q) Can I see the source code of the FORNUTS software?
A) Yes, you can view it here: http://code.google.com/p/fornuts/source/browse/

Q) Can I modify the source code?
A) Yes, the software is under the MIT Licence, you can do whatever you want with the source code.

Q) How should we give you credit?
A) Simply place a comment in your code with something like:

From FORNUTS project written by Matt Van Veldhuizen, Syler Clayton and Karl Ott.
Source: http://code.google.com/p/fornuts/

or anything similar to this would be fine.

Q) If I find a bug in the software who do I contact.
A) Report the bug on the issue tracker system here: http://code.google.com/p/fornuts/issues/list We cannont garrantee that the bug will be fixed in any ammout of time, due to scheduling but we will attempt to fix the bug.

A. Appendix

A.1 Revision History

Date	Version	Notes
02/07/13	1.0	Setup basic outline for document
05/02/13	1.1	Added How to install for Windows and Mac and added how to run for Windows and Mac