

**GIN MODEL WITH WINDOWS-95,
A TECHNOLOGY UPDATE
S. D. Filip To and M. Herbert Willcutt
Agricultural and Biological Engineering
Mississippi Cooperative Extension Service
Mississippi State University
Mississippi State, MS**

Abstract

Advances in computer hardware and software technologies have made it possible for average users to do complex tasks with ease. Cotton ginner can estimate the cost of operating a gin quickly and easily by filling up a table with entries associated with his/her operating environment. This paper presents a user friendly software, GINMO, which is derived from the original GINMODEL program that were developed many years ago.

Introduction

GINMODEL was a computer program originally developed in the 70's, by scientists and engineers from the University of Texas. The program was developed to run on main frame computers. In the early 80's the program was ported into personal computers (IBM PC) by Scientists at Mississippi State University [Wolfe et.al.] in collaboration with the original authors. It was text-based, friendlier program in comparison to its main frame predecessor.

GINMO is like its predecessor, GINMODEL, but with a vastly improved Graphical User Interface (GUI), which makes it much easier to use. The data management and reporting capability have also been improved. GINMO has been developed to run under Microsoft's Windows-95 or Microsoft's Windows-NT environments.

GINMO

The opening screen GUI of GINMO is shown in Figure 1. It shows the main menus and a set buttons in a tool-bar arrangement, located at the top portion of the window. Most of the items in the menus are accessible with a mouse click on the appropriate ICON of the tool bar. Each item (object) on the screen, tool bar icons, menus, etc. has its own "tool tip" - a brief message which appears when the user's mouse pointer is on top of an object on the screen. Tool tips are used to give the user clues that identify the function of the item under his/her mouse pointer. As with any graphical user interface, an extensive help file is included and can be accessed by clicking the HELP menu or the HELP icon on the tool bar.

To start simulating a cotton gin operation the user needs to first open a new or an existing ASSETS file. The program automatically creates and opens a default ASSETS file with pre-filled tables if it is run for the first time. The ASSETS file opens in a window that looks like a booklet with three tabs as shown in Figure 2.

The tabs are clearly labeled and are: GIN CAPITAL ITEMS, ASSETS, and ENVIRONMENT SETTINGS. Clicking any of the three tabs will display a tabulated sheet.

The GIN CAPITAL ITEMS sheet contains sixty entries associated with cost items in operating a gin. This includes items such as: gin capacity, horse power, number of gin mangers, salaries, wages, overtime, benefits, fuel cost, electric cost, etc. The number of items on this sheet are fixed. That is, the user can modify, but cannot add or delete items. The description of each item is pre-filled. The user can customize the descriptions on the sheet to make them suitable to his/her likings. The descriptions of each item are not critical to the computation of the model, they are for explanatory purpose only. The value associated with each item in the GIN CAPITAL ITEMS sheet are critical, the user must enter a proper value in order to have meaningful results. The entries are automatically saved in disk.

The ASSETS tab contains a sheet that lists the values and descriptions of all the assets belonging to the gin, such as land, trucks, tractors, module builders, etc. The user can enter as many asset items as he/she wants, thus creating a database of assets. Each item in the ASSETS sheet can be selected for inclusion or exclusion in the model computation by turning on or off its YES/NO option. This feature is useful to users who are in sales or to ginner who are planning to build new gins. By selectively including/excluding different asset items, the user can find a most likely scenario for a particular gin package. A small help window pops up every time the ASSETS tab is selected. This window displays brief descriptions of all the abbreviations contained on the ASSETS sheet.

GINMO considers three types of assets:

- Type-1, non-depreciable assets such as land.
- Type-2, long term depreciable properties such as buildings
- Type-3, short term depreciable properties such as individual pieces of gin machinery.

The third tabs in the ASSETS window is the ENVIRONMENT SETTINGS. This sheet contains the operating environments of the program. The information contained on this sheet includes the location of files, user notes, name, address, etc. that the user wants to be printed on reports. Changing the name of the file on this sheet will automatically make the current data be save into the new file name.

The contents of GIN CAPITAL ITEMS and ASSETS sheets are automatically saved into a database file under the name specified in the ENVIRONMENT SETTINGS sheet. The resulting database file is in a standard format that can be viewed and modified using most Windows-based software, such as Microsoft's Office, and Corel Office. The information contained on the Environment Settings sheet is also saved automatically, but in a different file to allow automatic loading of the same settings when the program is started the next time.

The user starts the model's computation by clicking the RUN icon or by selecting RUN from the menu. Upon successful execution of the RUN command, an output file will be generated and an output window will be opened. The output window contains a set of tabbed tables as shown in Figure 3. The output file generated is also in the form of a database that can be viewed and edited using other Windows software if necessary.

The output window displays the results in tabular sheets that are divided into categories (matrix). The user can view each output matrix by clicking the desired category tab in the output window.

The output sheets contain multitude of information many of which are not of interest to the user. A custom report generator contained in GINMO allows the user to create a custom report that contains only selective items of interest from the output window. The user selects the item to be included in the custom report by clicking the "row selector" cell - a small cell on the left most column of an output window sheet. Items included in the custom report can also be removed selectively by clicking the associated row selector on the custom sheet. The printing of a custom report is done by clicking the Print Custom Report button or select Print Custom Report from the menu. Before the report is committed to a printer, preview windows are displayed for confirmation or cancellation of the reporting process.

Final Comments

GINMO has a vastly improved user interface which makes it intuitively easier to use than its command line based predecessor. The spread sheet like data entry forms with pre-filled cells take away most of the confusing factors associated with inputting multitude of data. The descriptions of some items on the CAPITAL ITEMS sheet need improvements. Plain English should be used as opposed to economics buzz words.

The current settings, file names, path, comments, etc. are "remembered", and the fact that all user inputs and generated outputs are stored automatically in databases makes repeated use of the software simple. The user does not have to re-enter every data point every time the program

is run and the user does not have to remember where the data files from the previous run are located.

The standardized database format used by GINMO makes it possible to import the generated data into other application software packages for further processing and for other uses.

Some cautions in using GINMO: The saying, "garbage in garbage out" holds true for GINMO as well. Users must know the assumptions made by GINMO in order to understand fully the output it produces. The assumptions made by GINMO are contained in the help file. The computation of energy costs are based on some simplified cost structures that may be out of date by today's standard. The authors are working to incorporate features that allow the user to use historical energy cost data from existing gas/electric bills as the basis in the computation of fuel costs, instead of using the simplified cost structures mentioned above.

Some wish list for GINMO: It would be desirable to have some kind of charting capability in GINMO, where the user can view the outputs both in tabular and graphical formats. It would also be desirable to have GINMO ported into a version using JAVA - a standardized Internet programming language. A JAVA version of GINMO will make it more universally usable by users with any kind of computers with a web browser installed.

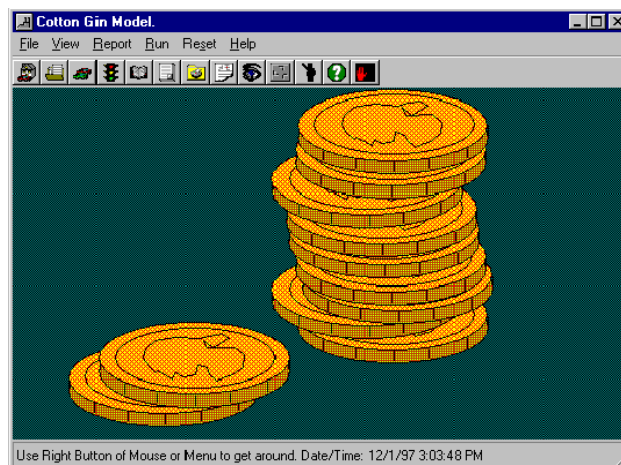


Figure 1. Opening Screen GUI of GINMO

Gin Model Settings: \\Grapevine\home1\lto\ginmodel\default.mdb

File Edit Run Help

Number of Assets to be considered = 5

Gin Capital Items Assets Environment Settings

Gin Capital Items		
Item	Value	Description
1	2	Gin location (region 1 = Texas, 2 = South, 3 = West)
2	24	Rated gin capacity (bales/hour)
3	85	Ginning efficiency (% of rated capacity, whole number, 85% = 85, etc.)
4	1600	Horsepower required (peak monthly demand divided by 0.745)
5	1800	Horsepower available (total connected horsepower)
6	10	Interest rate on capital assets (whole number, 10% = 10, etc.)
7	10	Interest rate on working capital (whole number, 10% = 10, etc.)
8	90	Insurance coverage on capital assets (whole number 90% = 90, etc.)
9	12000	Total insurance premium paid on capital assets + liability
10	0.5	Insurance rate for seed cotton (\$/bale)
11	10000	Total taxes paid on capital assets
12	1	Number of seasonal office employees
13	6	Hourly wage of seasonal office employees (exclude fringe benefits)
14	2	Number of seasonal ginners
15	10	Hourly wage of seasonal ginners (exclude fringe benefits)
16	2	Number of seasonal assistant ginners
17	7.5	Hourly wage of seasonal assistant ginners (exclude fringe benefits)
18	2	Number of head press operators

Figure 2. ASSETS Window of GINMO.

Colton Gin Model

File View Report Run Reset Help

TD-Matrix PB-Matrix T-Matrix TDT-Matrix PBT-Matrix SI-Matrix Summary HOME

PB-Matrix Output Page						
Description	Utilization_100	Utilization_90	Utilization_80	Utilization_70	Utilization_60	Utilization_50
Bales Per Season	20400	18360	16320	14280	12240	
Processing Hours	1000	900	800	700	600	
PB_Depreciation, Fixed	1.253578	1.392865	1.566373	1.790826	2.089237	2.458648
PB_Interest, Build Ec	3.475234	3.861438	4.344118	4.964706	5.792157	6.849608
PB_Working Interest	0.2184681	0.2427424	0.2730852	0.3120973	0.3641136	0.4301471
PB_Insurance, Build	0.5862353	0.6535348	0.7352341	0.8403361	0.9803322	1.1563323
PB_Taxes, Property	0.4301471	0.5446078	0.6126838	0.7002101	0.8163118	0.9623119
PB_Gin Manager, Fr	1.470598	1.633987	1.838235	2.10084	2.45088	2.90092
PB_Superintendent	0	0	0	0	0	0
PB_Officer Manager	0.8823529	0.9803922	1.102941	1.260504	1.470588	1.740681
PB_Ginner's Salary, I	0	0	0	0	0	0
PB_Other Gin Salara	0	0	0	0	0	0
PB_Seasonal Gin Cr	0.5185234	0.5761438	0.6481618	0.7407563	0.8642157	1.0207152
PB_Energy, Fixed	1.960784E-02	2.178649E-02	0.0245098	0.0280112	3.267974E-02	3.921074E-02
PB_Repairs, Fixed	4.742696	5.269662	5.92837	6.77528	7.904493	9.404493
PB_Dryer Fuel, Fixed	2.647059E-02	2.941176E-02	3.308824E-02	3.781513E-02	4.411765E-02	5.294051E-02
PB_Total Fixed	13.68607	15.20674	17.10758	19.55152	22.81011	27.10111

Finish Calculate Successfully! Date/Time: 12/1/97 4:28:25 PM

Figure 3. Output Window of GINMO.