Agriculture and Natural Resources
University of California Cooperative Extension

FARM BUDGET GENERATOR V.I_2012 WORKBOOK MICROSOFT EXCEL AND VISUAL BASICS APPLICATION

CROP ENTERPRISE BUDGET CALCULATOR FOR
ESTABLISHMENT AND PRODUCTION COSTS
OF PERENNIAL AND ANNUAL CROPS

Update of FARM BUDGET GENERATOR V.I_2008 WORKBOOK

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Farm Budget Generator V. I_2012 Workbook

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Farm Budget Generator V. I_2012 Workbook
Microsoft Excel and Visual Basics Application (VBA)
Update of V.I 2008

The Farm Budget Generator V. I_2012 Workbook is a Microsoft Excel Template developed using Visual Basics Application (VBA) programming for calculating crop enterprises costs of production/budgets. The program has the capability to calculate multi-year establishment and production costs for perennial crops as well as to compare and analyze several years' costs of production of the same crop.

I. SYSTEM REQUIREMENTS:

The Farm Budget Generator V.I_2012 Workbook consists of two files:

1. The User's Guide manual in PDF (Portable Document Format) and
2. The Budget Generator Workbook in Microsoft Excel

You will need:

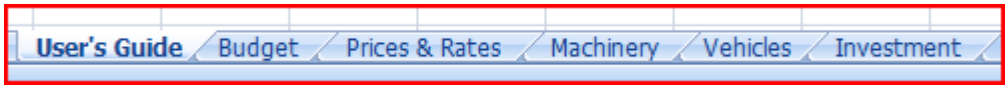
1. Windows 2000, XP or a higher version of Microsoft operating systems; and a 1997 or higher version of Microsoft office applications (Excel) to download and work on ***The Farm Budget Generator V.I_2012 workbook***.
2. Adobe Acrobat Reader Version 4 and above to download the User's Guide operational manual.
3. 1.71 MB of disk space in your hard drive (~886 KB for the Excel worksheets and ~874 KB for the User's Guide in PDF).
4. System Security Level setting at *Medium* enables the macros functions in the program to operate. Set security level as follows: *Click on Tools/then on Macros/then on Security/then on Medium*. Settings for newer versions may be different. Check your version manuals.

WARNING: **The worksheet contains macros formats and formulas needed to perform calculations. Any attempts to change the macro formats and formulas may cause error.**

II. **Downloading and Opening**:

Downloading: Download the ***Farm Budget Generator V.I_2012 Workbook in*** Microsoft Excel 1997 or higher Versions and the ***User's Guide*** in Adobe Acrobat Reader Version 4 or above. You can save the files on your desktop or in your documents.

Opening: *Double click on the* ***Farm Budget Generator V.I_2012 Workbook*** Microsoft Excel file*; you will get the following worksheets.*



Users' Guide: Operational manual.

Budget: Template for developing enterprise budgets/production costs.

Prices and Rates**:** Database for operating inputs such as fuel, lube, labor, interest rate, prices, etc.;

Machinery**:** Economic and performance database for tractors and self-propelled machines;

Vehicles**:** Economic and performance database for farm vehicles (ATV, trucks, etc);

Investment**:** Economic and performance data base for farm assets other than machinery and vehicles (buildings, tools, fuel tanks, etc.).

III. Working on the Farm Budget Generator V.I_2012 Workbook

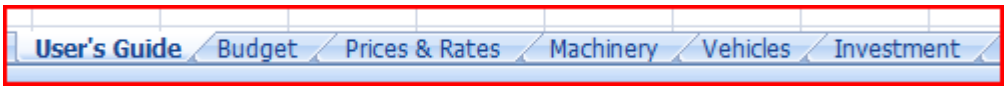
The workbook contains six worksheet:

User's Guide: Double click on the User's Guide link on the User's Guide worksheet, a PDF file of operational manual will open. If the file does not open, you will be getting a message '**cannot open the file',** in which case; you will have to open the separate PDF file entitled: **Farm Budget Generator V.I_2012 Workbook User's Guide**. If you want to link the PDF file to the Excel file, you can create a connection as follows:

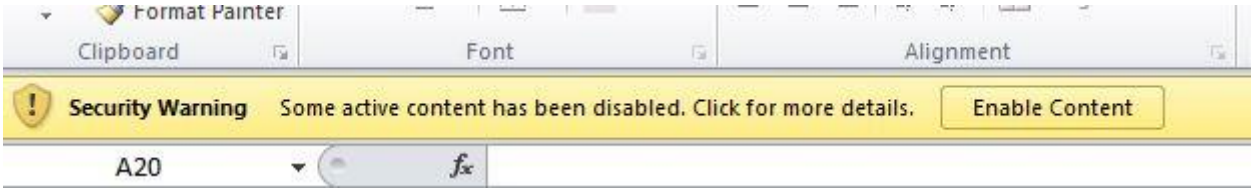
1) From the Excel Introductory worksheet, highlight the USER'S GUIDE and go to:
2) *Insert* in the tools bar and click *Hyperlink*. It will prompt you to the folder where both the Excel and PDF files are located.
3) Click on the PDF file ***(Farm Budget Generator V. I_2012 Workbook User's Guide)***, and then
4) Click *Ok* which will take you to the Excel file.
5) Save the Excel Workbook.
6) The next time you open the Excel Workbook; you can double click on the USER'S GUIDE which will open the linked PDF file.

Budget: The Budget Worksheet is the template for estimating establishment and production costs of perennial and annual Crops.

To open the budget worksheet (double click on *Budget* on the worksheet title bar).



The following window or similar instruction will pop-up.



Select *Enable Macros* or in most current versions of Microsoft Excel '*Enable Content*' to activate the budget worksheet template with all the interactive and spreadsheet functions. If you select *Disable Macros*, you can only display a read only file without the valid macros to perform calculations.

1) ***Components:*** The Budget worksheet is divided into four categories.

A. ***Gross Income***: In this section write/list names of products and corresponding information such as unit, $/unit (prices), Amount/Acre (quantity of product/acre), etc. and the program calculates the Gross income or Revenue.

B. ***Variable Costs***: In this section write/list production practices (cultural operations) and corresponding information such as units, prices, amounts per acre, etc.: the program calculates costs of materials. Also fuel, lube, equipment repairs and machine labor for machinery needed for the operations are calculated in this section. Variable costs are programmed in five sections.

i. Pre-plant: Includes land preparation such as clearing land, discing, subsoiling, preplant fertilizer.

ii. Plant: Includes digging holes, planting, irrigation and other operations that may be needed for planting.

iii. Growing: Includes water/irrigation, fertilization, pruning, pest management, disease control pollination, frost protection and any other operations that may belong to growing.

iv. Harvest: Includes picking, packing, and hauling. Also includes marketing including commissions and fees.

v. Interest on Operating Capital: Includes the cost of borrowed money or the opportunity costs of using own money in the production of the enterprise/crop.

C. Cash Overhead: Includes costs of property insurances (liability, property, etc.), taxes, and interest/opportunity cost of money used in this category.

D. Fixed/Non-Cash Overhead: Includes capital recovery (depreciation and interest on investment) of long-term assets (assets with multiple year life: tractors, implements, irrigation equipment, buildings and tools).

2) **Color codes**: The *Budget* Template (as shown below) is color-coded. Spaces with blue fonts are areas for the user to input data. Black fonts are calculated by the program. In the budget template *we typed* blueberries, lb, 7.50 and 14000 to reflect the crop name, the unit used to measure yield, $/unit (price per unit) and Q/Acre (Quantity/Acre), respectively. The program calculates the gross income as reflected in the **$/A** and **Total $/A** columns.

3) **Workbook Protection**: When you start working on the FBG V. I_2012 Excel Workbook, the file may indicate that it is protected.

To remove protection:

A. Click on *Tools* (on the bar menu) and then *Unprotect*.

B. *Save* the file and proceed to work on the program.

In most current versions of Microsoft, the procedure to unprotect is as follows:

C. Go to *Review* (on the bar menu) and then *Unprotect.*

Occasionally, you may be required to repeat to unprotect the worksheet. For instance, if you exit the program and comeback, you may have to unprotect again.

Budget Template: Worksheet for Estimating Establishment and Production Costs of Annual and Perennial Crops

			Year 1					
			Material		Operation			
	Unit	$/Unit	Q/Acre	$/A	hrs/A	Labor $/A	Equip. $/A	Total $/A
I. GROSS INCOME								
Product								
Bluberries	lb	7.50	14000.00	**105000.00**				**105000.00**
TOTAL INCOME								**105000.00**
II. VARIABLE COSTS								
Preplant								
Total Preplant Costs								**0.00**
Plant								
Total Plant Costs								**0.00**
Growing								
Weed Control		0.00		**0.00**	161.00	1899.80		**1899.80**
Total Growing Costs								**1899.80**
Harvest								
Picking	lb	0.70	14000.00	**9800.00**	0.08	1.32	2.20	**9803.52**
Total Harvest Costs								**9803.52**
Interest on Operating Capital								**132.99**
TOTAL VARIABLE COSTS								**11836.31**
III. CASH OVERHEAD								
Liability Insurance								**0.00**
Sanitation Costs								**0.00**
Office Expenses								**0.00**
Real Estate Taxes								**0.00**
Equipment Taxes & Insurance								**0.09**
Tools, Building, Irrigation Taxes & Insurance								**0.00**
Vehicle Labor, Repairs, Fuel & Lube								**0.00**
Vehicle Taxes & License								**0.00**
Vehicle Insurance								**0.00**
Tools, Building, Irrigation Repairs								**0.00**
Interest on Operating Capital (cash overhead)								**0.01**
Number of years of establishment		**0**						
Interest on accumulated net cost								**0.00**
TOTAL CASH OVERHEAD COSTS								**0.10**
TOTAL CASH COSTS								**11836.41**
NET CASH COSTS FOR THE YEAR								**-93163.60**
ACCUMULATED NET CASH COSTS								**-93163.60**
IV. FIXED/NON-CASH OVERHEAD								
Land Rent								**0.00**
Capital Recovery:								
Fuel Tanks & Pumps								**0.00**
Tools								**0.00**
Buildings								**0.00**
Irrigation system								**0.00**
Equipment								**0.90**
Vehicle								**0.00**
Accumulated tree establishment costs								**0.00**
TOTAL FIXED/NON-CASH OVERHEAD								**0.90**
TOTAL COSTS FOR THE YEAR								**11837.31**
TOTAL NET COSTS FOR THE YEAR								**-93162.70**
TOTAL ACCUMULATED NET COSTS								**-93162.70**
TOTAL NET RETURNS FOR THE YEAR								**93162.70**

4) **Program Tool Bars:** Working on the *Budget* template involves the use of several **program tool bars we created** (similar to the picture below), which are located on the left side margin of the Template. These program tool bars are for add and/or delete information in various categories of the budget worksheet and for accessing and importing data from the source worksheets (*prices and rates, machinery, vehicles and other investments)* to the Budget template for calculating the costs of the various operations.

A. **<u>Add and Delete:</u>** The add tool bar creates new lines (or field) for listing products or operations. The Delete tool bar erases/removes unwanted lines or entries.

i. **Add Product**: Place the cursor on the Product line of the Budget template and click the ***Add Product*** tool bar that would create a blank line. In the blank line, write the name of the product *for example: we typed* blueberries, lb, 7.50 and 14000 to reflect the crop name, the unit used to measure yield, $/unit (price per unit) and Q/Acre (Quantity/Acre), respectively.

ii. **Add Operation**: Place the cursor on the Preplant, Plant, Growing, or Harvest sections where you want to add an operation in the Budget template and click on to the ***Add Operation*** tool bar to create blank lines. In the budget template example, a line was created for weed control in the Growing section and information entered for hrs./acre (hours/acre).

iii. **Add Cash Overhead**: This section has most cash overhead expenses already listed. If adding other expenses is needed, create blank lines by placing the cursor anywhere in the Cash Overhead section and clicking the ***Add Cash Overhead*** tool bar. Then, write the name of the expenses and write the value in the Total $/A section.

iv. **Add Fixed/Non-Cash Overhead**: This section has most Fixed/Non-cash overhead expenses already listed. If adding other expenses is needed, create blank lines by placing the cursor anywhere in the Cash Overhead section and click the ***Add Fixed Overhead*** tool bar. Then, write the name of the expenses and write the value in the Total $/A section.

v. **For all the delete buttons**: Place the cursor on the line you would like to remove and click the respective delete buttons. The program will ask you to confirm if you want to delete before removing the lines.

B. Machinery, Vehicle and Investment: These three tool bars are used to access data from the respective data source worksheets for selecting Machinery, Vehicles and Investment assets that are used in the enterprise. In each case, a series of dialogue windows are programmed to retrieve economic and performance parameters and calculating costs. The following are commonly used to facilitate movement within and among dialogue windows:

Previous Page allows to go one page backward, to check or correct previous entries;

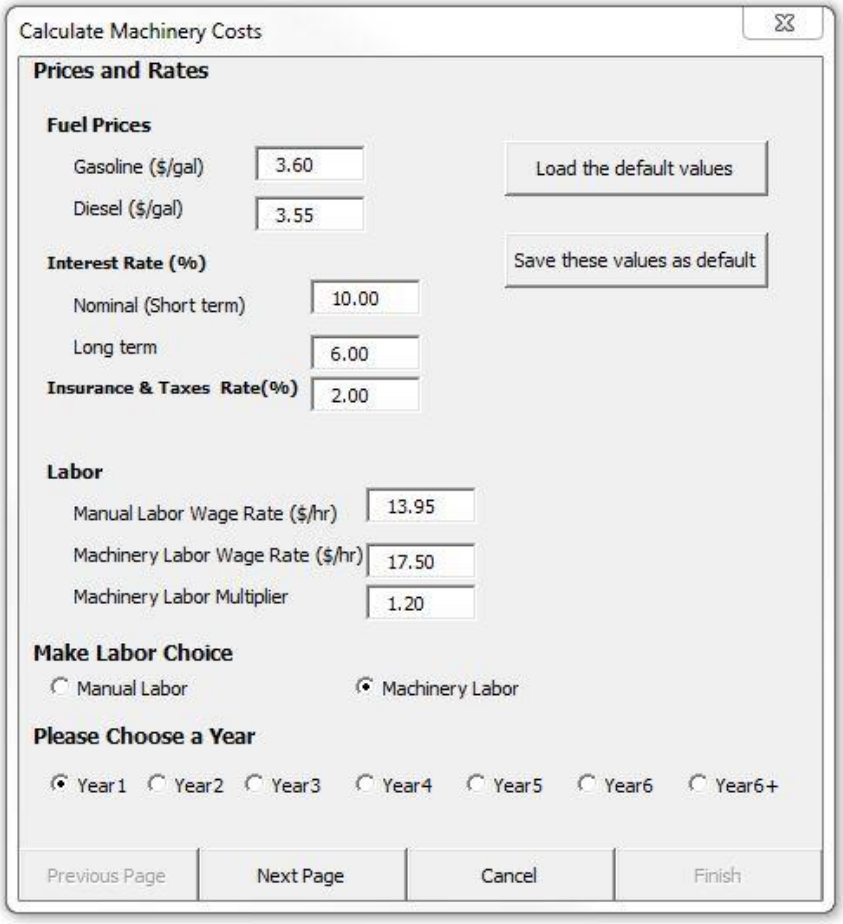
Next Page allows to continue/move forward and open the next window;

Cancel allows to discontinue or erase an entry;

Finish completes the process and save the work in the Budget template

Machinery: If an operation requires machine use, place the cursor on the operation line and click the **Machinery** tool bar which opens the dialogue windows that display parameters from the source data sheets. There will be five dialogue windows involved under the title of *Calculate Machinery Costs.*

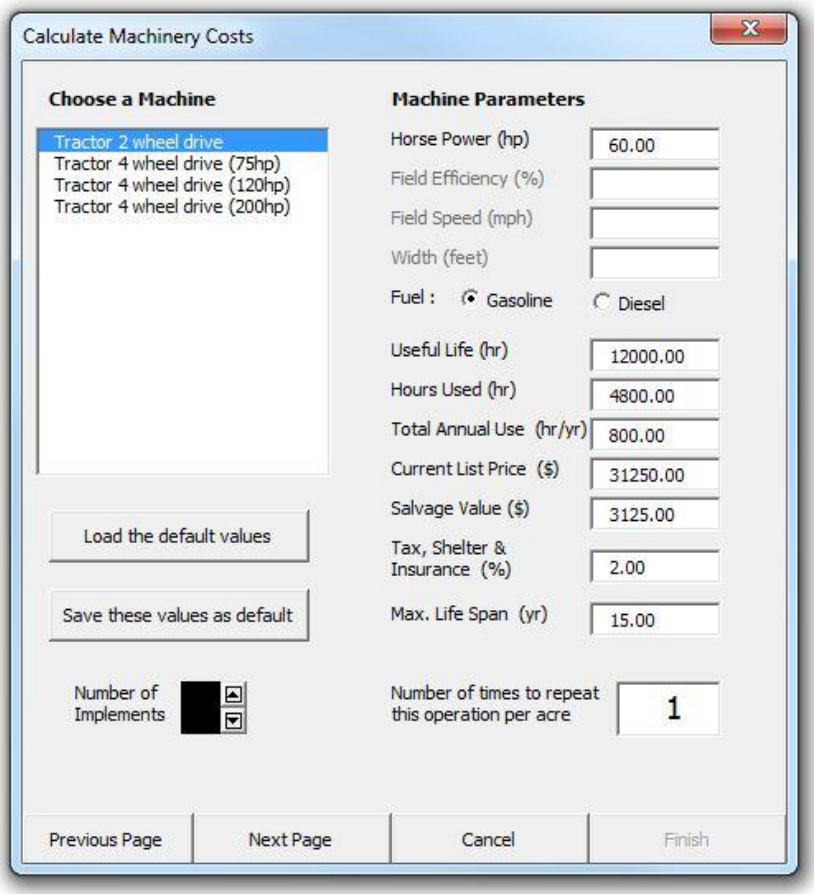
i. ***Prices and Rates:*** Displays operating inputs parameters for fuel, labor, interest rates, taxes and insurances that will be used in calculating machinery operating/variable costs**.**



Click to select:

- The **type of Labor**- manual or machinery. The default is machinery.
- The **year of operation** (Year 1, Year 2, etc). The default is Year 1.
- Check and verify data, update/change if necessary.
- When done click 'Next Page' to:

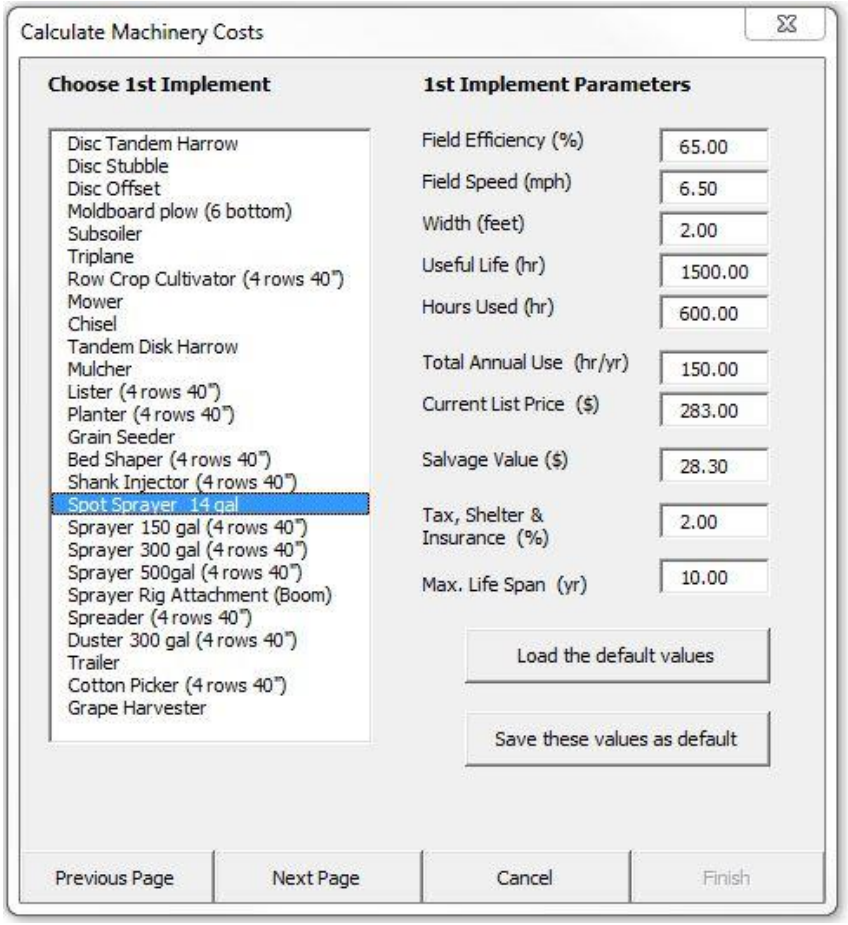
1. ***Choose a Machine***: Displays a list of tractors. Select the one needed to perform the specified operation. As the selection is made, economic parameters for the tractor will be imported from the **Machinery** worksheet to the Budget Worksheet as follows:



Click to Choose:

- The tractor size for the operation; Tractor data can be changed in the dialogue window if needed. New Tractors can be added to the **Machinery** worksheet if needed.
- Write the number of implements pulled together (at the same time) by the Tractor;
- Write the number of times the operation is repeated.
- When done Click 'Next Page' to:

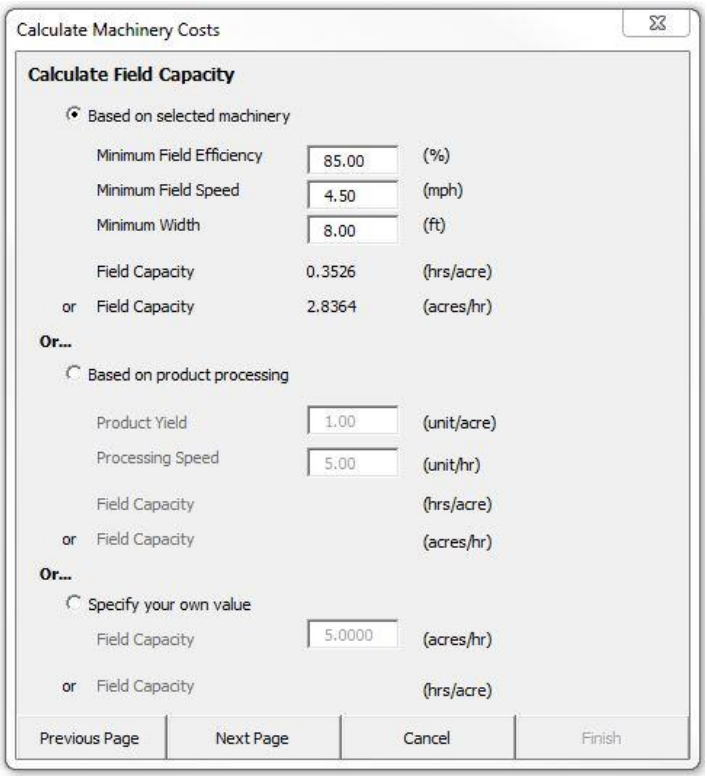
2. ***Choose Implement***. Displays a list of implements/equipment to choose from to perform an operation. As the selection is made, economic parameters for the implement(s) will be imported from the **Machinery** worksheet to the Budget Worksheet.



Click to choose:

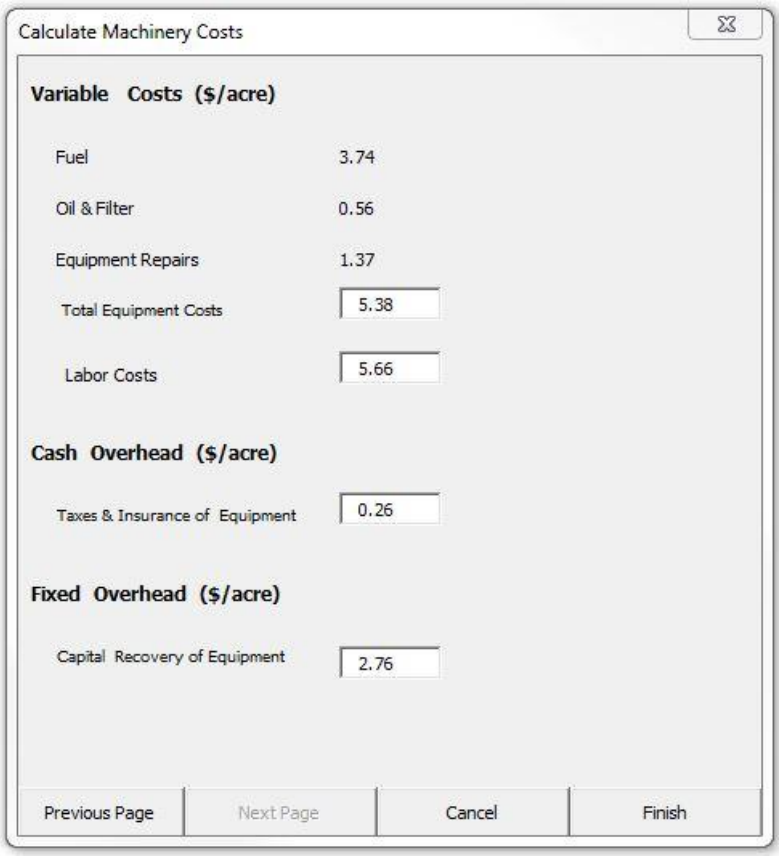
- The appropriate implement for an operation. Equipment data can be changed in the dialogue window if needed. New implement can be added to the **Machinery** worksheet if needed.
- If more than one implement is designated in the previous window, the dialogue window will display again to let you choose the second equipment.
- When done Click 'Next Page' to*:*

3. ***Calculate Field Capacity***: Displays performance parameters for machinery and tillage implements.



- The Field capacity can be expressed in hrs./acre or acres/hr.
- Field capacity calculations can be done in three ways:
  - *Based on selected machinery using its*
    - Field Efficiency;
    - Minimum Field Speed, and
    - Minimum width of the equipment used for the operation.
    - Changes can be made to the default values of field efficiency, minimum field speed and minimum width of equipment if needed.
  - *Based on product processing using*
    - Yield and
    - Processing Speed
  - *Based on your own specifications of acres/hour*
- When done click Next page' to:

4. ***Variable Costs, Cash Overhead, and Fixed Overhead***: Displays calculated costs of the machinery and equipment(s) used in an operation.



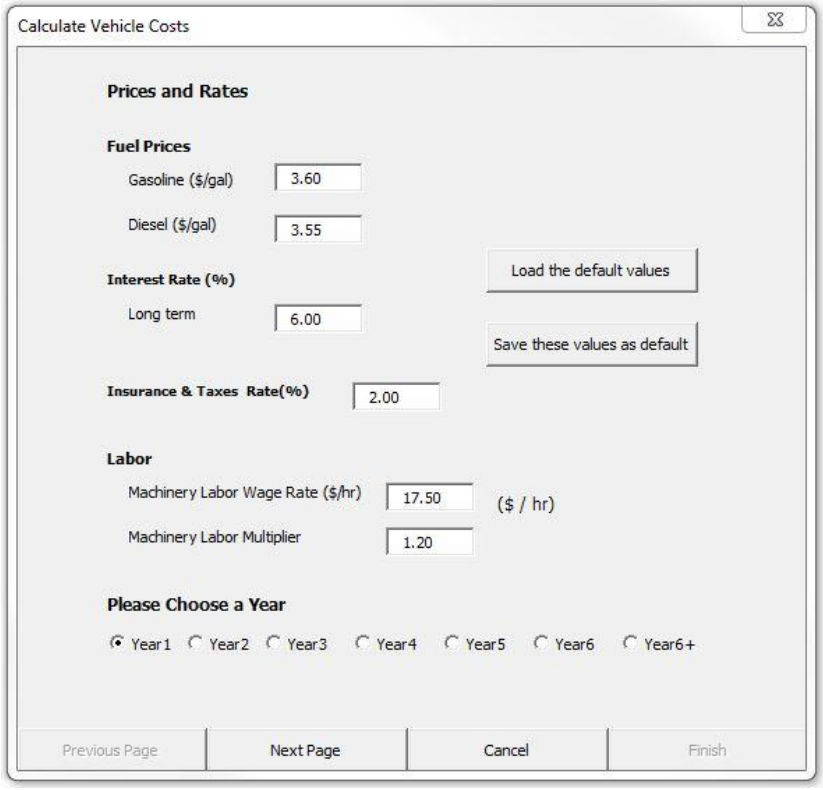
Costs are presented in three categories:

- **Variable** costs (fuel, lube, machinery and implements repairs, and labor);
- **Cash Overhead** (taxes and insurance) and
- **Fixed Overhead** (capital recovery).
- Check and verify costs
- Click 'Finish' to save the calculations.

Note: You can make changes to machine and implement choices even after you have already finished calculating costs. Put the cursor on the line/item you want to change and go back to the process of selecting machines and implements. The new values will overwrite the previous values.

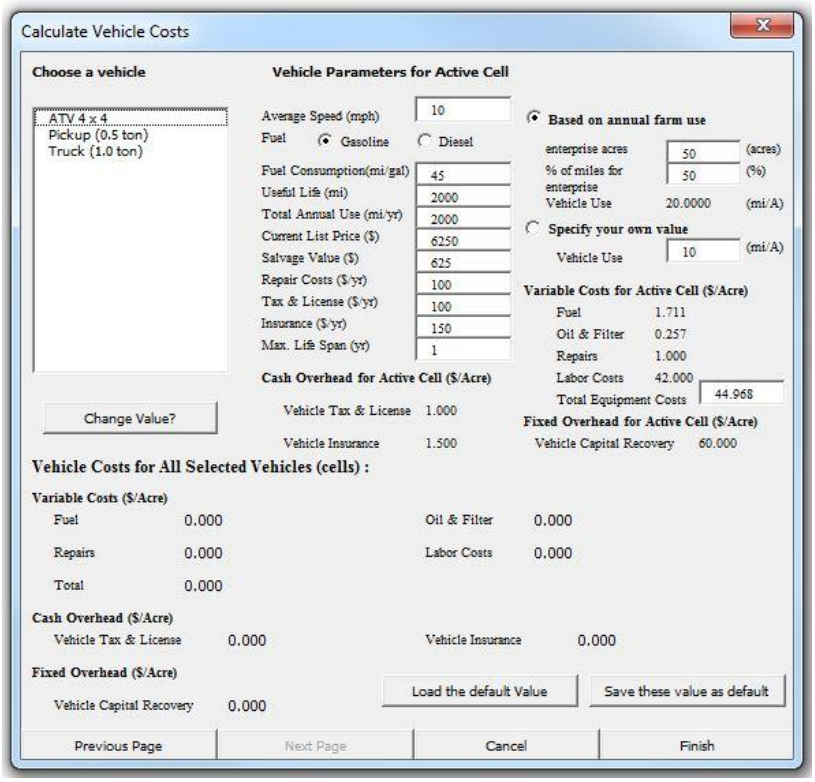
Vehicle: Click the **Vehicles** tool bar to open the dialogue windows and select the vehicles that are applicable to the enterprise or farm. Cost calculations will take place in ***two*** dialogue windows under the title *Calculate Vehicle Costs*.

1. ***Prices and Rates***: Displays prices and rates for operating inputs such as fuel, labor, interest rates, taxes and insurance that will be used in calculating vehicle operating costs**.**



   a. Check and verify data, update if necessary
   b. Click to select the **year of operation** (Year 1, Year 2, etc).
   c. When done click ‘Next Page’ to:

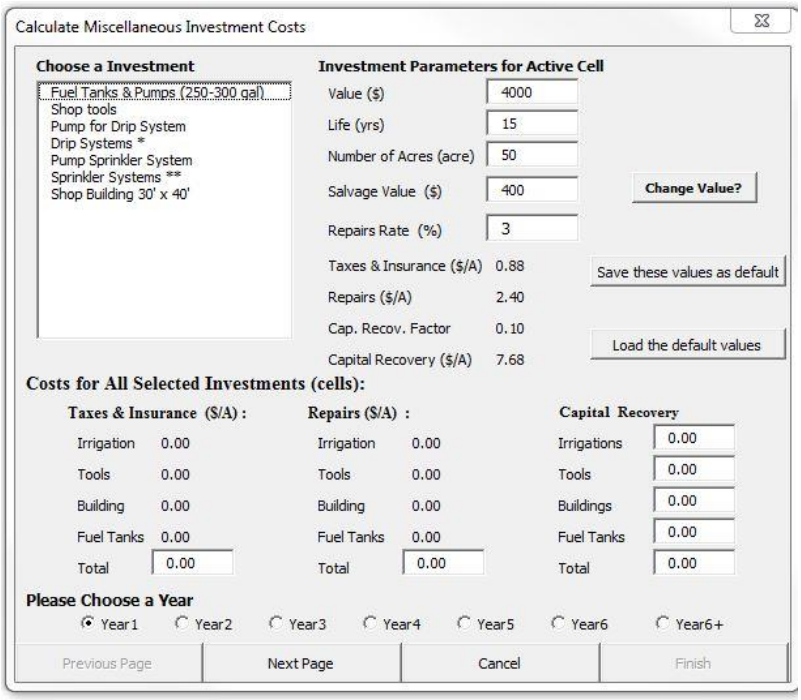
2. **Choose a Vehicle***:* Displays a list of vehicles to select those that are/will be used in the farm or enterprise. As the selection is made, economic parameters for the vehicles will be imported from the **Vehicles** worksheet to the Budget Worksheet.



- Here you can make multiple choices. If more than one vehicle is involved, click and highlight all of them.
- All vehicle costs (fuel, repair, insurances, taxes and capital recovery) are calculated and presented in this window.
- Costs are presented in three categories:
    - **Variable** costs (fuel, lube, vehicle repairs, and labor);
    - **Cash Overhead** (taxes and insurance) and
    - **Fixed Overhead** (capital recovery).
- Check and verify costs

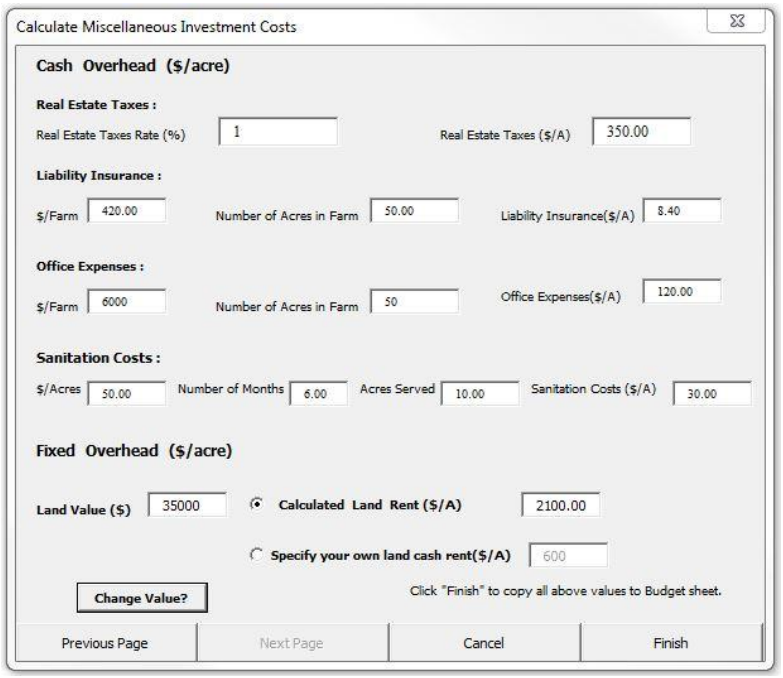
3. **<u>Investment</u>:** Click the **Investment** tool bar to open the dialogue windows and select farm investments that are applicable to the enterprise or farm. Cost calculations will take place in ***two*** dialogue windows under the title *Calculate Miscellaneous Investment Costs*.

    1. ***Choose a Investment*:** Displays a list of investment assets to select those that will be used in the farm or enterprise. As the selection is made, economic parameters for the investment assets will be imported from the **Investment** worksheet to the Budget template. Default investment data can only be changed in the dialogue window if needed. New investment(s) can be added on the investment worksheet.



    - Here again you can make multiple selections in the same window.
    - Click the year of operation (the default is year 1).
    - Costs of investments used in the enterprise or farm are calculated and presented in this window.
        - ***Variable Costs*** (investment repairs, and labor);
        - ***Cash Overhead*** (taxes and insurance) and;
        - ***Fixed Overhead*** (capital recovery).
    - *Check and verify costs.*

2. **Cash Overhead**: Displays additional investment lists and corresponding overhead expenses. Data for this window is imported from the Prices and Rates worksheet.



   a. Check and verify data for insurances, land value, sanitation costs etc. and update if necessary.

4. **Printing and Screen Display:** The Budget Template of the FBG V.I_2012 is a large spreadsheet since it is designed to develop and calculate multiple year establishment and production costs of perennial crops or several years' costs/budgets of an annual crop. The spreadsheet is divided by year as follows:

To display or view only a portion of the spreadsheet, highlight the year(s) you do not want to display. For instance, in the above picture, Year 1, Year 3, and Year 6 will not be displayed. Only years 2, 4, 5 and 6+ can be viewed for working on the template and for printing.

Printing Black and White:

If you are using:

Microsoft Office 97-2003: Go to the tool bar menu of the **Farm Budget Generator V.I_2012 *Workbook*** Excel file and click on *File*, then choose *Page Setup* (a page set up window will open); click on *Sheet*. In the print section (option), mark or click *Black and White*, then press *Ok*.

Most current versions of Microsoft office: Go to *Print* in the main menu/then click on *Print Preview*/ then click on *Preview*/ then on *Page Setup*/then on *Sheet*/then on *Black and White*/ then *Ok.*

Increasing Font Size:

1) Click on File Menu/Page Setup/Margins
2) Then, choose acceptable margins for Top, Bottom, Right, Left, Header and Footer.
3) Click OK

For most current versions: Click on File Menu/Print Preview/Ok/Page Set Up/Margins

5. **Definitions and Help Pop-ups**: There are several help pop-ups with definitions/explanations of several terminologies in the budget worksheet. Cells that have pop-ups display a red flag on their upper right corner. When you move the cursor over these cells, the contents of the pop-up will appear.

6. **Data source worksheets**: There are four data source worksheets that supply the dialogue windows with default prices, rates and economic and performance parameters for calculating machinery, vehicles and investment costs. Default data can be changed only in the dialogue windows if necessary. New machinery, vehicles, and investments can be added to the worksheets.

Prices & Rates: Data source for operating inputs prices and rates

Description	Units	Value
Gasoline Price	$/gallon	3.60
Diesel Price	$/gallon	3.55
Long Run Interest Rate	%	6.00
Nominal Interest Rate	%	10.00
Insurance & Taxes Rate	%	1.00
Manual Labor Wage Rate	$/hr	11.60
Manual Labor Multiplier		0.00
Machinery Labor Wage Rate	$/hr	14.50
Machinery Labor Multiplier		1.20
Land Value	$	35000
Rate for Amortized Establishment	%	6.00
Year(s) for Amortized Establishment	years	25.00
Liability $/Farm	$	560.00
Number of Acres Covered by Liability Insurance	Acre	50.00
Office Expenses $/Farm/Enterprise	$	6000.00
Number of Acres Covered by Office Expenses	Acre	50.00
Sanitation Service: Number of Months	month	6.00
Sanitation Facility Rental: $/Unit/Month	$	50.00
Sanitation Acres Served / Unit	Acres	10.00
	%	1.00

Data source for operating inputs prices and rates

- Gasoline and Diesel Price: U.S. Energy Information Administration: http://tonto.eia.doe.gov/oog/info/gdu/gasdiesel.asp
- Long-term and short-term interest rates: local Production Credit Association for basic loan and USDA long term rate of return for Agricultural assets from current income.
- Labor wage rate and payroll overhead: State of California, Department of Industrial Relations: http://www.dir.ca.gov/iwc/wageorderindustries.htm; labor wage does not include benefits; growers should include benefits.
- Property Taxes: Counties; usually counties charge 1% of property value.
- Land Value: American Society of Farm Managers and Rural Appraisal: http://www.calasfmra.com/trends.php
- Liability Insurance: The Farm Bureau Financial Services, California division: https://www.fbfs.com/

Machinery: Economic and performance data for tractors and tillage implements

Machine Name	Horse Power	Field Efficiency	Field Speed	Width	Fuel	Useful Life	Hours Used	Total Annual Use	Current List Price	Salvage Value	Tax , Shelter & Insurance	Repair Factor		Calculated Life Span	Maximum Life Span	Capital Recovery Factor
	hp	*%*	*mph*	*ft*		*hr*	*hr*	*hr*	*$*	*$*	*%*	RF1	RF2	*yr*	*yr*	
TRACTOR																
Tractor 2 wheel drive	60				G	12000	4800	800	31250	3125	2	0.007	2.0	15.00	15.00	0.10
Tractor 4 wheel drive (75hp)	75				G	16000	6400	800	46250	4625	2	0.007	2.0	20.00	20.00	0.09
Tractor 4 wheel drive (120hp)	120				D	16000	6400	800	93750	9375	2	0.007	2.0	20.00	20.00	0.09
Tractor 4 wheel drive (200hp)	200				D	16000	6400	800	169375	16937.5	2	0.007	2.0	20.00	20.00	0.09
TILLAGE EQUIPMENT																
Disc Tandem Harrow		85	4.5	8		2000	800	200	9939	993.9	2	0.18	1.7	10.00	10.00	0.14
Disc Stubble		85	4.5	20		2000	800	200	19877	1987.7	2	0.18	1.7	10.00	10.00	0.14
Disc Offset		85	4.5	21		2000	800	200	25229	2522.9	2	0.18	1.7	10.00	10.00	0.14
Moldboard plow (6 bottom)		85	4.5	20		2000	800	200	18348	1834.8	2	0.29	1.8	10.00	10.00	0.14
Subsoiler		85	5.0	12		2000	800	200	9939	993.9	2	0.18	1.7	10.00	10.00	0.14
Triplane		85	5.0	14		2000	800	200	28287	2828.7	2	0.18	1.7	10.00	10.00	0.14
Row Crop Cultivator (4 rows 40")		80	5.0	13		2000	800	200	11009	1100.9	2	0.17	2.2	10.00	10.00	0.14
Mower		80	5.0	8		2000	800	200	5505	550.5	2	0.46	1.7	10.00	10.00	0.14
Chisel		85	5.0	15		2000	800	200	12232	1223.2	2	0.28	1.4	10.00	10.00	0.14
Tandem Disk Harrow		80	6.0	20		2000	800	200	5352	535.2	2	0.18	1.7	10.00	10.00	0.14
Mulcher		80	5.0	15		2000	800	200	23700	2370	2	0.16	1.3	10.00	10.00	0.14
PLANTING EQUIPMENT																
Lister (4 rows 40")		65	5.5	13		1500	600	150	9174	917.4	2	0.32	2.1	10.00	10.00	0.14
Planter (4 rows 40")		65	5.5	13		1500	600	150	25076	2507.6	2	0.32	2.1	10.00	10.00	0.14
Grain Seeder		65	5.5	5		1500	600	150	6116	611.6	2	0.32	2.1	10.00	10.00	0.14
Bed Shaper (4 rows 40")		65	5.5	13		1500	600	150	9633	963.3	2	0.32	2.1	10.00	10.00	0.14
OTHER EQUIPMENT																
Shank Injector (4 rows 40")		65	6.5	13		1500	600	150	2752	275.2	2	0.18	1.3	10.00	10.00	0.14
Spot Sprayer 14 gal		65	6.5	2		1500	600	150	283	28.3	2	0.41	1.3	10.00	10.00	0.14
Sprayer 150 gal (4 rows 40")		65	6.5	13		1500	600	150	2477	247.7	2	0.41	1.3	10.00	10.00	0.14
Sprayer 300 gal (4 rows 40")		65	6.5	13		1500	600	150	21406	2140.6	2	0.41	1.3	10.00	10.00	0.14
Sprayer 500gal (4 rows 40")		65	6.5	13		1500	600	150	68806	6880.6	2	0.41	1.3	10.00	10.00	0.14
Sprayer Rig Attachment (Boom)		65	6.5	80		1500	600	150	15290	1529	2	0.41	1.3	10.00	10.00	0.14
Spreader (4 rows 40")		65	6.5	13		1500	600	150	10397	1039.7	2	0.41	1.3	10.00	10.00	0.14
Duster 300 gal (4 rows 40")		65	6.5	13		1500	600	150	6881	688.1	2	0.63	1.3	10.00	10.00	0.14
Trailer		65	6.5	24		1500	600	150	8410	841	2	0.63	1.3	10.00	10.00	0.14
HARVESTING EQUIPMENT																
Cotton Picker (4 rows 40")		65	3.0	13		2000	800	200	15290	1529	2	0.11	1.8	10.00	10.00	0.14
Grape Harvester		65	1.5	13		2000	800	200	114677	11467.7	2	0.11	1.8	10.00	10.00	0.14

Most common data sources for machinery economic and performance parameters include:

- Current list prices: approximate market or factory values.
- Machinery performance (useful life hours, field efficiency, speed and repair factors (RF1 & RF2) values are based on engineering studies as referenced in farm management books.
- Annual use (hours) are arbitrarily picked default values.
- Number of years of life =Useful life hours/ Annual hours of use
- Salvage Value = 10% of current list price.
- Capital Recovery Factors = $i/ [1-(1+i)^{-n}]$; standard formula for capital recovery. Where: i is the long term interest rate and n is the number of years of life of the machinery.

Vehicle: Economic and performance data base for farm vehicle

Vehicle Name	Average Speed mph	Fuel	Fuel consumption mi/gallon	Useful life mi	Total Annual Use mi	Current List Price $	Salvage Value $	Repair $	Annual License & Tax $	Annual Insurance $	Calculated Life Span	Max. Life Span	Cap. Recov. Factor
ATV 4 x 4	10	G	45	2000	2000	6250	625	100	0	0	1.00	1.00	1.06
Pickup (0.5 ton)	32	G	10	100000	15000	18009	1800.9	250	50	250	6.67	6.67	0.19
Truck (1.0 ton)	40	D	12	100000	5000	9478	947.8	200	90	250	20.00	20.00	0.09

The data sources for this worksheet are as follows:

- Current list price, salvage values and capital recovery factors are generated the same ways as for the machinery worksheet.
- Average speed, repairs, annual licenses, taxes and insurance, as well as annual miles of use are estimates based on data collected from farmers for previous farm cost studies.
- Useful life miles and fuel consumption are estimates of farm use for these vehicles.
- Maximum life span (life in number of years) = Useful miles/ Annual miles of use.

Investment: Economic and performance data for investments: farm capital investments and improvements.

	($/Farm)	(yrs)	(acre)	($)	($/A)	(%)	Factor
FUEL TANKS & PUMPS							
Fuel Tanks & Pumps (250-300 gal)	4000	15	50	400	80	3	0.10
TOOLS							
Shop tools	2500	15	50	250	50	3	0.10
IRRIGATION							
Pump for Drip System	4550	15	50	455	91	5	0.10
Drip Systems *	39900	15	50	3990	798	5	0.10
Pump Sprinkler System	12500	15	50	1250	250	5	0.10
Sprinkler Systems **	58300	15	50	5830	1166	5	0.10
BUILDING							
Shop Building 30' x 40'	35000	15	50	3500	700	3	0.10

The data sources for this worksheet are as follows:

- Values or prices (Current prices), salvage values, and capital recovery factors are generated the same ways as machinery worksheet.
- Life of investments and repair factors are estimates based on data collected from farmers for previous cost studies.

7. Additional Information

Additional program tool bars: We also created program tool bars as shown below**.** In some older versions of Microsoft Excel, floating program commands as shown below will pop up when the budget sheet is opened/activated and can be placed anywhere on the worksheet**.** In most recent versions of Microsoft Excel, the program command links will appear when you click **ADD INS** on the tool bar**.** The floating program command links are established to minimize the process of going back and forth to the fixed program command links especially while working with large spreadsheets. Simply drag the **floating bar** and place it anywhere as desired.

Following is the description of the floating tool bars:

- Add Product
- Delete Product
- Add Operation
- Delete Operation
- Add Cash Overhead
- Delete Cash Overhead
- Add Fixed Overhead
- Delete Fixed Overhead
- Machinery
- Investment
- Vehicle

Appendix

Enterprise Budgets/Costs of Production: Uses, Concepts, and Methods of Estimation

Agriculture in the United States faces many challenges. In many cases, factor prices inflate more than product prices. In California, urbanization and increased environmental regulations have been primary causes for escalating production costs in agriculture. Rapid population growth and urban development has increased competition for land and water uses and prices. The urban-rural interface has also resulted in increasing pesticide regulations. Therefore, agricultural producers must evaluate and analyze their costs of production and returns regularly to evaluate profitability and to develop feasibility/risk management strategies.

Costs of production are used in a variety of ways in agricultural business management. To agricultural entrepreneurs (growers, managers, and investors); they provide benchmark for evaluating profitability and sustainability. They also serve financial institutions for analyzing enterprise profitability and loan applications. Appraisers utilize them for estimating property values. Educators use them for teaching and for development of micro and macroeconomic models and analyses. Government agencies use them as background information for developing policies especially for evaluating disaster assistances.

Cost concepts

Economic costs of production account for the following: all direct expenses plus capital recovery of long term assets (factors of production) such as equipment and buildings; the contribution of sometimes unpaid labor such as provided by the farm operator and family members; and the opportunity costs of money used in the enterprise(s).

Enterprise Budgets/Costs of Production

Enterprise budgets/costs of production are made up of several parts, which are generally organized by their method of estimation and/or by the type of factor (input) used in the production process.

Variable Costs: These costs vary with the scale or volume of production for any given enterprise and include costs of inputs that are used only for one production period. Estimation of costs in this category can be straightforward for direct inputs such as water, fertilizer, pesticides, labor, and fuel (amount*

price) but also can be complex in the case of equipment repairs and maintenance that would involve formulas and factors derived from engineering studies. Variable costs also include interest for borrowed operating capital or opportunity cost of using own money.

Cash Overhead Costs: These costs are mostly incurred for the whole farm. Examples of these costs include property taxes, insurances, and office expenses. Property taxes are assessed as a percent of the value of the property including land, equipment, buildings, and improvements. In most counties of California, property taxes are 1% of the property value. Some special districts may assess extra.

Non-Cash Overhead Costs: Costs of assets with multiple year use such as land, irrigation system, machinery and equipment have to be imputed over the years of useful life. The costs include, interest on investment and depreciation for assets other than land (which does not include depreciation), taxes, insurance, and housing. While depreciation accounts for the loss of value of the asset distributed over its useful life, interest on investment accounts for the cost of financing the asset. Interest may be a real cost in the case of borrowed money or an opportunity cost for using own money. An opportunity cost is the return forgone, had the investment been done in other best alternatives. Non-cash overhead costs if calculated on original value shows the costs at the purchase time; and if calculated on the present value will show the replacement cost of the property.

Depreciation can be calculated in various ways depending on the purpose. Fast write-off techniques can be used on the original cost of the asset for income tax purposes. However, for continued production, depreciation can be calculated to reflect the cost of replacing the asset in terms of current value.

Interest on investment calculation may be done in two ways. For original asset value, the nominal interest rate (the real rate plus inflation) is suggested. The rate of inflation will reflect the current value of money of the asset. If the current value of the asset is used, then the real interest rate or the rate of return of the asset from current income can be used.

Depreciation and interest on investment can be calculated independently or can be done in one-step using the capital recovery method. The capital recovery method allows growers to calculate an annual amount of money to charge the enterprise so that the value of assets will be recovered within a specified period at a designated rate of interest. Growers can use the borrowing rate or expected rates of return

from other best alternative investments. In the absence of knowledge of such a rate of return, we use the long-term rate of return on agricultural production assets from current income.

Land Rent: Cash and lease rents are common in annual crop production but not in perennial crops. In perennial crops land rent may be calculated as an opportunity cost of its current value. The opportunity cost reflects the returns forgone for using the land in farming rather than other alternatives.

Formulas used in the FBG V. I_2012 Workbook

Variable Costs

Direct input costs: Costs of inputs (such as fertilizer, water and pesticides), whose application is measured in terms of units/acre is calculated as:

*Costs ($/acre) = Amount of input per acre * Price per unit*

Equipment (Tractors and implements) Operating Costs: The formulas and parameters used to calculate repair, fuel and lube costs are those developed by the American Society of Agricultural Engineers (ASAE) studies.

Repair Costs are calculated based on purchase price, annual hours of use and Repair Coefficients that reflect increasing repairs as machines get old.

*Total accumulated Repair and Maintenance = RF1 * Current Price * ((Accumulated hours of use)/1000)^{RF2},*

Where, RF1 and RF2 are ASAE repair factors/coefficients with RF2 reflecting the increasing repairs as machines get old. In this formula machine age is expressed in thousands of hours.

Fuel and lubrication Costs:

Fuel costs are estimated using fuel requirement (consumption) per hour times the cost of fuel per unit where,

*Gasoline requirement per hour =0.06 *Maximum PTOHP*

*Diesel requirement per hour = 0.044 *Maximum PTOHP*

Therefore

*Fuel cost per hour = Gallons per hour * $/gallon*

Lubrication costs = 15% of fuel costs (reference to survey results cited in many farm management books***).***

Costs of machine use: The per acre machinery costs of an operation are calculated as follows:

1) Per acre time requirement to do an operation:

*Acres per hour = (S *W* F* E)/43,560*

Where,

S is speed of the machine while it is in motion

W is width of the implement

Efficiency is the percent which accounts for machine down time. Typical speed and efficiency factors are given in many farm management books

F is 5,280, the number of feet in one mile

43,560 is the square feet in one acre

2) Hours per acre = 1/Acres per hour
3) Machine cost per acre= machine cost per hour* hours per acre of operation

Interest on Operating Capital= Interest rate per month (interest rate per year/12) times the cash capital used in the operation until the capital is recovered from returns at harvesting/marketing.

Cash Overhead Costs

Property taxes: Property taxes are set to be calculated at 1%, the same as the base rate that most counties assess on land, equipment, buildings, and improvements. Adjustment will be needed if the property is in a special assessment district with different tax rates.

Property insurance: This could be a direct payment. In the **FBG.VI_2012,** property insurances are calculated at 0.5% to 1% of the average value of the investment. Liability insurances are calculated as the charge per farm divided by the number of acres in the farm.

Sanitation: These are rental expenses for sanitation facilities. Usually one system could serve several acres, therefore the budget generator is programmed to calculate the per acre sanitation costs based on the rental cost for the sanitation facility and the number of acres served.

Office expense: Office expense costs are calculated as the annual office expenses divided by the number of acres in the enterprise or farm.

Non-Cash/Fixed Costs:

Depreciation and interest on long-term assets: A capital recovery method is used to calculate the combined depreciation and interest costs of long-term assets such as farm equipment, vehicles, and other investments such as irrigation system, buildings and office tools as well as the accumulated tree establishment costs (values).

*Capital recovery = [(Purchase Price – Salvage Value) * Capital Recovery Factor] + [(Salvage Value) * Interest Rate)]*

Where, Salvage value can be calculated at 10%~20% of purchase price. Default values in the FBG include 10%;

Capital recovery factor is calculated as $i/ [1-(1+i)^{-n}]$ *;*

i is the long term interest rate or the California's long term rate of return of agricultural production asset from current income

n is the number of useful years of the asset

Land Rent:

Land rent = Value of Land i*

Where, 'i' is the long-term interest rate or the California's long-term rate of return of agricultural production asset from current income.

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