

UGA Replacement Female Calculator

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Introduction

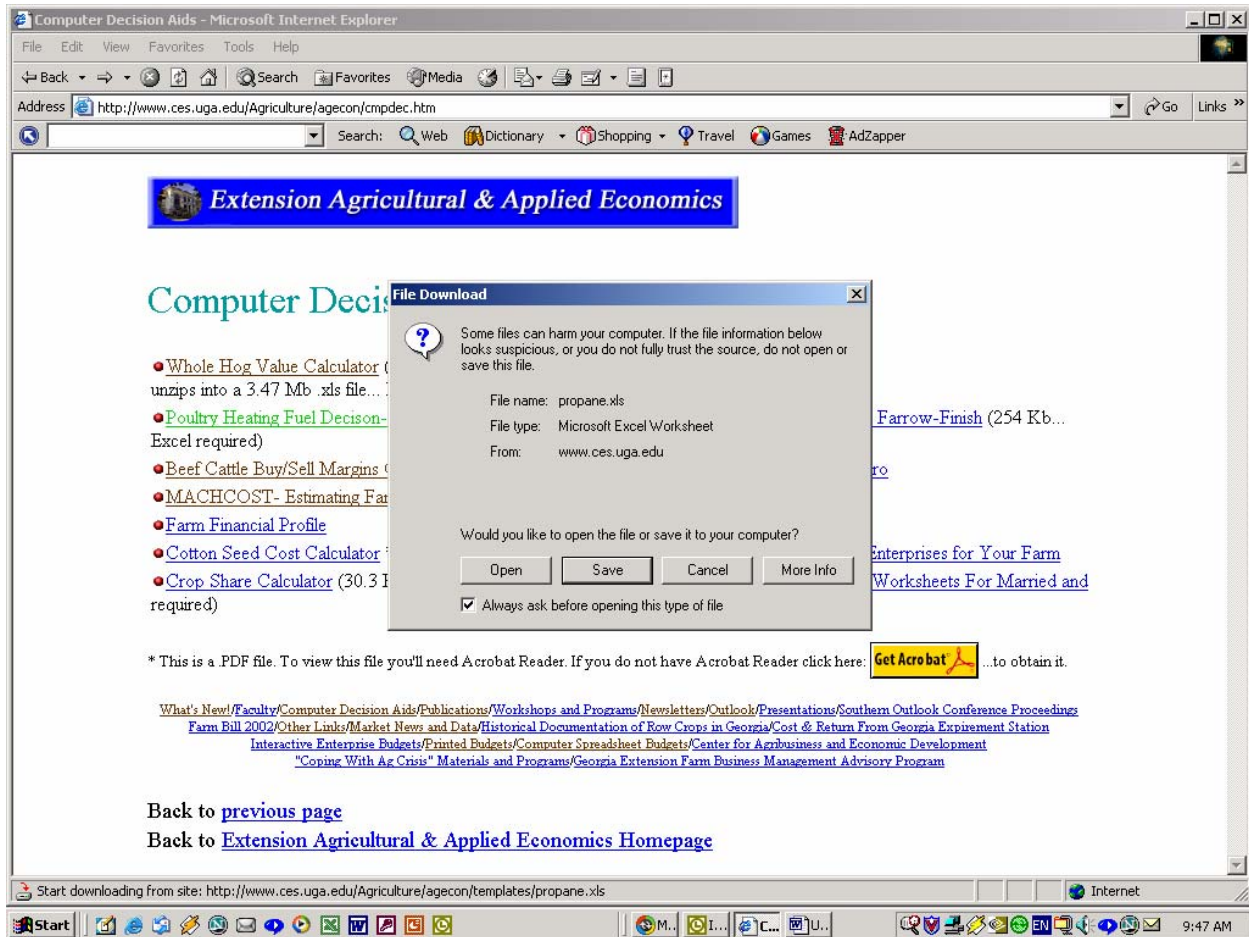
The decision about the best method to replace females in beef herd is one of the most important decisions a cattleman can make. To help Georgia cattle producers, The UGA Replacement Female Calculator (UGARFC) was designed.

The purpose of the UGARFC is to assist beef cow-calf producers in making the decision about the most economical method to replace or add female to their breeding herd. The spreadsheet is in Microsoft Excel and should be easily loaded on virtually all computers using the various Windows operating systems.

Using the UGARFC

To use the UGARFC simply save the file to a disk, open the file using Microsoft Excel and begin using. The file can be located by going to <http://www.ces.uga.edu/Agriculture/agecon/agecon.html> and clicking on Computer Decision Aids. You can also go directly to <http://www.ces.uga.edu/Agriculture/agecon/cmpdec.htm>.

Once you are at the Computer Decision Aids page, left-click once on the link for the UGA Replacement Female Calculator. You should see a window similar to the one below. At this juncture you should select Save.



After you have saved the file, you can now open and use it in Microsoft Excel. You may be asked if you want to enable macros. If so, click Yes. The spreadsheet allows the user to enter many pieces of information to calculate the Current Economic Value, Breakeven Purchase Price, Internal Rate of Return, and Payback Period for four replacement female scenarios. The four scenarios are: 3-in-1 pairs where a bred cow is sold with a calf at her side, bred cows, raised replacement heifers, and purchased bred replacement heifers.

To enter specific information for an alternative simply left-click on the hyperlink to the left of each alternative on the summary page and enter the necessary info.

General Information

All the formulas and calculations are protected. Only those cells with [blue letters](#) can be changed. There is no input verification function in this tool so read very carefully how the data should be entered, otherwise you could make the wrong decision!!

Hyperlinks are used in this workbook to take you to certain worksheets where you may need to enter additional information. Hyperlinks appear in [blue font](#) and will have a pointing finger appear. To follow the link, simply left click once.

Using the Program

Before entering a lot of information, the user should understand what is being calculated. The replacement female decision is an investment decision. As with any investment decision, the information you need is the initial cost of the investment, the expected net cash returns from the investment, the life of the investment, and how long you plan to own the investment.

Because the specific pieces of information vary between alternatives, you should refer to the section below to see exactly what information you need. Obviously if there is an alternative you are not considering, than simply ignore the results of that alternative.

Cost - For bred cows, 3 in 1 cows, and bred heifers use the price you will have to pay plus any shipping, commissions, or other charges to get the animals to your operation. For raised replacement heifers, click the hyperlink [Calculate costs for raised replacements](#) to go to the heifer development budget.

Interest - Use either the interest rate that you will have to borrow money at, could be receiving, or would have to be received for taking similarly risk investments. For instance, if you think buying bred cows is more risky than bred heifers, you may use 10% for the cows and 7% for the heifers. Also, if you had the option to investing a certain amount of money in the cattle business or could make 12% in a mutual fund, you may use 12% for all alternatives.

Years in herd - Enter the number of years you expect the females to be in the herd before they are culled. Use only round numbers. The average herd in Georgia is about 6. Keep in mind that heifers will probably be in the herd longer than cows.

Cull weight (lbs) - What the female will weigh when she is culled from the herd.

Cull price (\$/Cwt.) - What price she will bring when culled. Long-term average prices are about \$45/cwt. Once this information is entered a cull value for the female will be replaced in the appropriate year that corresponds with her years in herd.

Once you have entered this information, you are now ready to begin entering data related to expected net incomes from each of the alternatives.

Year - begin by entering the years you expect to have these females.

Expected weaning weight - enter the expected weaning weights for each year you have the female. **Keep in mind that results will only be calculated for the number of years in herd you specified.** For instance, if you entered 6, for years in the herd, data entered in years 7-15 will not be used. Also, you can increase/decrease weaning weights per year. As such, you can enter lighter weaning weights for heifer and heavier weights for cows. You can also decrease weaning weights as females get older.

Expected calf crop percentage - enter the percentage of females that will WEAN a calf.

Annual cash costs - enter the annual out of pocket expenses for maintaining a cow. These costs include, pasture, feed, vet, interest, labor, etc. Do not include any payments or depreciation as these are is fixed costs and will be there regardless.

Special Considerations

For the 3 in 1 and raised replacement scenarios there are some additional numbers that need to be entered. For the 3 in 1 alternative, enter the sales

INFORMATION FOR CALF AT SIDE									
1									
2	Cost for 3 in1 Cow	\$ 1,100.00							
3	Interest Rate to Use	7.00%							
4	Years in herd	2.00							
5	Cull wt (lbs)	1,100							
6	Cull Price (\$/Cwt)	\$ 45.00							
7	Cull Value	\$ 495.00							
8									
9	Year	Expected Weaning Weight	Expected Sales Price	Expected Calf Crop Percentage	Total Calf Revenue	Annual Cow Cash Costs	Expected Cull value	Annual Net Cash Flows	
10	2005	550	\$ 100.00	90%	\$ 495.00	\$ 252.00	\$ 450.00	\$ 693.00	
11	2006	550	\$ 95.00	85%	\$ 444.13	\$ 252.00	\$ 495.00	\$ 687.13	
12	2007	525	\$ 85.00	85%	\$ 379.31	\$ 252.00	\$ -	\$ -	
13	2008	500	\$ 85.00	85%	\$ 361.25	\$ 252.00	\$ -	\$ -	
14	2009	500	\$ 85.00	85%	\$ 361.25	\$ 252.00	\$ -	\$ -	
15	2010	500	\$ 85.00	85%	\$ 361.25	\$ 252.00	\$ -	\$ -	
16	2011	500	\$ 85.00	85%	\$ 361.25	\$ 252.00	\$ -	\$ -	
17	2012	500	\$ 85.00	85%	\$ 361.25	\$ 252.00	\$ -	\$ -	
18	2013	500	\$ 85.00	85%	\$ 361.25	\$ 252.00	\$ -	\$ -	
19	2014	500	\$ 85.00	85%	\$ 361.25	\$ 252.00	\$ -	\$ -	
20	2015	500	\$ 85.00	85%	\$ 361.25	\$ 252.00	\$ -	\$ -	
21	2016	500	\$ 85.00	85%	\$ 361.25	\$ 252.00	\$ -	\$ -	
22	2017	500	\$ 85.00	85%	\$ 361.25	\$ 252.00	\$ -	\$ -	
23	2018	500	\$ 85.00	85%	\$ 361.25	\$ 252.00	\$ -	\$ -	

information for the calf that is at the cow's side. Enter the expected weight and sales price for the calf when it is marketed. Example, if a 3 in 1 cow is bought with a 200 pound calf at her side but you plan on keeping the calf until it weighs 400 pounds, enter 400 in the cell asking for weight and what price you expect to receive.

For the raised replacement heifer alternative, you will need to enter two types of cull values, one for the heifers that do not breed and another for heifers that go into the herd and are eventually culled as mature cows.

Microsoft Excel - Replacement hfrs - 2004.xls

File Edit View Insert Format Tools Data Window Help

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Year	Expected Weaning Weight	Expected Sales Price	Expected Calf Crop Percentage	Total Calf Revenue	Annual Cow Cash Costs	Expected Cull value	Annual Net Cash Flows
2005	0	\$ 100.00	90%	\$ -	\$ 252.00	\$ 102.00	\$ (150.00)
2006	525	\$ 95.00	85%	\$423.94	\$ 252.00	\$ -	\$ 171.94
2007	545	\$ 85.00	85%	\$393.76	\$ 252.00	\$ -	\$ 141.76
2008	550	\$ 85.00	85%	\$397.38	\$ 252.00	\$ -	\$ 145.38
2009	550	\$ 85.00	85%	\$397.38	\$ 252.00	\$ -	\$ 145.38
2010	525	\$ 85.00	85%	\$379.31	\$ 252.00	\$ -	\$ 127.31
2011	500	\$ 85.00	85%	\$361.25	\$ 252.00	\$495.00	\$ 604.25
2012	500	\$ 85.00	85%	\$361.25	\$ 252.00	\$ -	\$ -
2013	500	\$ 85.00	85%	\$361.25	\$ 252.00	\$ -	\$ -
2014	500	\$ 85.00	85%	\$361.25	\$ 252.00	\$ -	\$ -
2015	500	\$ 85.00	85%	\$361.25	\$ 252.00	\$ -	\$ -

Also, be very careful about making sure you use the correct number for the investment cost. Numbers to use for heifer cull value and investment cost are color-coded to the appropriate blanks in the heifer development budget.

So What Does All Of This Mean?

Each page in the workbook shows an Economic Value, Breakeven Purchase Price, and Internal Rate of Return. The calculated value for each alternative is also reported on the summary page along with a Payback Period.

	A	B	C	D	E	F	G	H	I	J	K
1		WELCOME TO THE UGA REPLACEMENT FEMALE CALCULATOR									
2											
3											
4											
5											
6	Hyperlink to details	Comparison	Purchase Price	Current Economic Value	Breakeven Purchase Price	Internal Rate of Return	Payback Period				
7	Bred Cow	Bred Cow	\$ 550.00	\$ 409.82	\$ 959.82	31.88%	3.00				
8	3 in 1 Cow	3-in-1 Cows	\$ 1,100.00	\$ 147.83	\$ 1,247.83	16.58%	2.00				
9	Raised Replacement Heifer	Raised Replacement Heifer	\$ 1,088.00	(\$286.60)	\$801.40	1.49%	7.00				
10	Purchased Bred Heifer	Purchased Bred Heifer	\$ 1,100.00	(\$6.66)	\$1,093.34	6.83%	6.00				
11											
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The Economic Value as reported is the net profits of a female over her lifetime. In financial literature this number is called the Net Present Value. The EV takes into account annual profits and interest. In the UGARFC, the EV is the total profit of a female over her lifetime adjusted for interest and length of time in service.

An economic value greater than zero indicates a profitable investment while a negative number indicates an unprofitable investment. Economic values can also be compared to each other with the alternative with the highest value being the most profitable.

The Breakeven Purchase Price is the economic value of the investment minus the purchase prices. Basically, what could I afford to pay for this investment and breakeven? If the breakeven price is less than the purchase price you are paying too much for an investment. If the breakeven is more than the purchase price, an investment is “worth the money” .

The Internal Rate of Return is a measure of the return you are getting on an investment. Higher numbers indicate higher returns and lower numbers indicate lower returns. Keep in mind that IRR is affected by years of life and investment value so the alternative with the highest EV may not have the highest IRR.

Payback Period is simply a round number that tells you how many years a female will need to stay in the herd to justify her cost. Realistically, if the payback period is much more than the expected life you are facing a losing proposition. A payback period less than the expected life indicates a good deal.

Summary

The UGARFC is designed to be a decision tool for beef cattle producers. It should be very easy for most producers to use. If you have questions please contact Dr. Curt Lacy at 229-386-3512 or clacy@uga.edu.