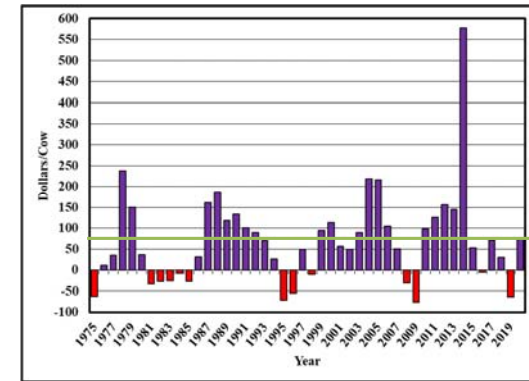


# Determining Cost of Production for Cow/Calf Producers

Robin Reid, K-State Ag. Economics



# Returns over Variable Costs



Average = \$71/cow

KFMA farms, Cow/Calf Enterprise reports 1975-2020



# Variability in Producer Profitability

Table 2. Beef Cow-Calf Enterprise Returns over Variable Costs, 2015-2019 (minimum of 3 years) \*

	All Farms	Profit Category			Difference between High 1/3 and Low 1/3	
		High 1/3 Head / \$	Mid 1/3 Head / \$	Low 1/3 Head / \$	Absolute	%
Number of Farms	77	26	25	26		
Age of Operator	55.8	54.4	54.8	58.3	-3.9	-7%
Number of Operators	0.98	1.05	0.98	0.91	0.14	16%
Labor allocated to livestock, %	30.6	35.8	32.9	23.2	13	54%
Number of Cows in Herd	142	183	137	106	78	73%
Number of Calves Sold	129	170	124	93	77	83%
Calves Sold per Cow in Herd	0.91	0.93	0.90	0.88	0.05	5%
Weight of Calves Sold, lbs.	625	638	628	608	29	5%
Calf Sales Price / Cwt	\$161.45	\$163.11	\$159.36	\$161.78	\$1.33	1%
<b>Gross Income</b>	<b>\$763.66</b>	<b>\$835.34</b>	<b>\$774.69</b>	<b>\$681.38</b>	<b>\$153.96</b>	<b>23%</b>
Feed	\$335.37	\$252.04	\$344.62	\$409.80	-\$157.77	-38%
Pasture	\$184.89	\$183.94	\$183.71	\$186.98	-\$3.04	-2%
Interest	\$30.27	\$21.42	\$35.80	\$33.80	-\$12.38	-37%
Vet Medicine / Drugs	\$38.34	\$31.85	\$40.41	\$42.85	-\$11.00	-26%
Livestock Marketing / Breeding	\$21.69	\$13.00	\$23.09	\$29.02	-\$16.01	-55%
Machinery	\$80.99	\$72.74	\$81.36	\$88.88	-\$16.14	-18%
Labor	\$19.36	\$17.46	\$22.21	\$18.52	-\$1.07	-6%
Other	\$50.03	\$45.94	\$49.68	\$54.45	-\$8.51	-16%
<b>Total Variable Cost</b>	<b>\$760.93</b>	<b>\$638.38</b>	<b>\$780.87</b>	<b>\$864.31</b>	<b>-\$225.93</b>	<b>-26%</b>
<b>Return over Variable Costs</b>	<b>\$2.73</b>	<b>\$196.96</b>	<b>-\$6.19</b>	<b>-\$182.93</b>	<b>\$379.88</b>	

\*Sorted by Net Returns over Variable Costs per Cow

## Economies of Scale

- More cows, more labor allocated to livestock

## Production Efficiency

- More calves per cow

## Cost Management

- Feed Costs



# Where to start?

- Good records are key
- Do one enterprise at a time
  - Ex: Registered vs. Commercial herds, Backgrounding
- Budget on a per head basis
- Can/should do historical cost of production and/or projection



# Replacement Heifers

Two ways to handle this:

1.) Assume the costs of raising replacement heifers within the cow/calf budget

- Feed, Labor, breeding costs, etc. are captured for replacement heifers within the cow/calf budget

2.) Have a standalone “heifer development” budget

- Sell all calves at weaning in your cow/calf budget
- Have a separate budget for growing replacement heifers
- Purchase replacement heifers back into the cow/calf budget



# Potential Income

Revenue:	Price	Unit		Qty	Unit		Per cow %	Total per Year per Cow	Total per Year Entire Herd
Weaned Steer Calves	\$ 200.00	per cwt	x	550	lbs	x	0.45	= \$ 495.00	\$ 49,500.00
Weaned Heifer Calves	\$ 190.00	per cwt	x	500	lbs	x	0.30	= \$ 285.00	\$ 28,500.00
Cull Cows	\$ 70.00	per cwt	x	1300	lbs	x	0.15	= \$ 136.50	\$ 13,650.00
Other Income								\$ -	\$ -
<b>Gross Income</b>								<b>\$ 916.50</b>	<b>\$ 91,650.00</b>

Price:

Forecasting: <https://beefbasis.com/analytics/basis-forecasting/>

Quantity (Weight):

Average weight of weaned calves and cull cows

Percentages:

- 100 Total Cows
- 45 Steer Calves weaned and sold
- 30 Heifer Calves weaned and sold ( 15 kept for replacements)
- 15 Cull Cows sold



# Variable Costs-Feed

- Feed is the largest cost of production and often separates profitable operations from unprofitable
- Spend some time calculating your feed costs!

Feed Costs:	Total per Year per Cow	Total per Year Entire Herd
Pasture	\$ 170.80	\$ 17,080.00
Residue/Cover Crop	\$ 93.00	\$ 9,300.00
Hay and Forage	\$ 169.67	\$ 16,966.69
Grain/Protein/Mineral	\$ 110.13	\$ 11,012.81
<b>Total Feed Costs</b>	<b>\$ 543.60</b>	<b>\$ 54,359.50</b>



# Variable Costs-Feed

Pasture Information:		
Name:	Rent per Acre:	Acres:
Pasture 1- May-Nov	\$25.00	160
Pasture 2- May-June	\$23.00	80
Pasture 3- July-Nov	\$18.00	80
Pasture 4- May-Nov	\$25.00	320
Pasture 5- May-Nov	\$20.00	60
Bull pasture- Nov-Jan	\$15.00	40
<b>Total Pasture Cost:</b>		<b>\$17,080</b>
<b>Total Pasture Cost per Cow:</b>		<b>\$170.80</b>

Residue/Cover Crop Information:		
Name:	Rent per Acre:	Acres:
Corn Stalks 1- Nov-Dec	\$15.00	120
Corn Stalks 2- Nov-Dec	\$15.00	120
Cover Crop 1- Heifers calves Nov-Dec	\$20.00	35
Cover Crop 2- Heifer calves Jan.	\$20.00	50
Cover Crop 3- Jan cows	\$25.00	80
Cover Crop 4- Jan cows	\$25.00	80
<b>Total Cost:</b>		<b>\$9,300</b>
<b>Total Cost per Cow:</b>		<b>\$93.00</b>



## Variable Costs-Feed

Amount of Hay/Forage			
Cows:			
Name:	pounds per day	# of days	Total
Prairie Hay	13.50	90	1215
Corn Silage	46.10	90	4149
Bulls:			
Name:	pounds per day	# of days	Total
Brome	23.50	90	2115
Prairie Hay	23.50	90	2115
Yearling Heifers:			
Name:	pounds per day	# of days	Total
Corn Silage	16.00	90	1440
Prairie Hay	7.00	90	630

Hay/Forage Summary						
Name:	Total Pounds for 100 Cows	Total Pounds for 5 Bulls	Total Pounds for 15 Heifers	Total Pounds Needed	Total Tons Needed	Total Cost
Brome	0	10,575	0	10,575	5	\$423.00
Prairie Hay	121,500	10,575	9,450	141,525	71	\$6,722.44
Corn Silage	414,900	0	21,600	436,500	218	\$9,821.25
				<b>Total Cost:</b>		<b>\$16,967</b>
				<b>Total Cost per Cow:</b>		<b>\$169.67</b>



## Variable Costs-Feed

Name:	Price:	Unit:
Dried Distillers	\$255.00	Ton
Soybean meal	\$350.00	Ton
Corn	\$6.00	Bushel
Mineral	\$850.00	Ton

Amount of Feedstuffs			
Cows:			
Name:	pounds per day	# of days	Total
Dried Distillers	4.50	90	405
Dried Distillers	1.00	60	60
Mineral	0.25	365	91.25
Bulls:			
Name:	pounds per day	# of days	Total
Dried Distillers	1.50	90	135
Mineral	0.25	365	91.25
Heifers:			
Name:	pounds per day	# of days	Total
Dried Distillers	2.00	90	180
Mineral	0.25	365	91.25

Feedstuff Summary					
Name:	Total Pounds for 100 Cows	Total Pounds for 5 Bulls	Total Pounds for 15 Heifers	Total Pounds Needed	Total Cost
Dried Distillers	46,500	675	2,700	49,875	\$6,359.06
Mineral	9,125	456	1,369	10,950	\$4,653.75
				<b>Total Cost:</b>	<b>\$11,013</b>
				<b>Total Cost per Cow:</b>	<b>\$110.13</b>



## Variable Costs-Feed

- Feed is the largest cost of production and often separates profitable operations from unprofitable
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<b>Total Feed Costs</b>	<b>\$ 543.60</b>	<b>\$ 54,359.50</b>



## Variable Costs

Non-Feed Cash Costs:	Total per Year per Cow	Total per Year Entire Herd
Veterinary Care and Pharmaceuticals	\$ 39.90	\$ 3,990.00
Marketing/Sale Barn fees	\$ 13.50	\$ 1,350.00
Annual Bull Charge and A.I.	\$ 57.50	\$ 5,750.00
Hired Labor	\$ 30.00	\$ 3,000.00
Cash Interest	\$ 34.75	\$ 3,475.00
<b>Total Non-Feed Cash Costs</b>	<b>\$ 175.65</b>	<b>\$ 17,565.00</b>
<b>Total Cash Costs</b>	<b>\$ 719.25</b>	<b>\$ 71,924.50</b>



## Variable Costs

Veterinary Care and Pharmaceuticals			
	Cost per Head	Head	Total
Annual Cow Vaccination/Parasite Control Cost	\$15.00	100	\$1,500.00
Annual Bull Vaccination/Parasite Control Cost	\$10.00	5	\$50.00
Heifer Vaccination/Parasite Control Cost	\$10.00	15	\$150.00
Calf Vaccination/Parasite Control Cost	\$6.00	90	\$540.00
Annual Bull Breeding Soundness Exam	\$50.00	5	\$250.00
Misc. Drugs and Emergency Vet Bills (total)	\$1,500.00		\$1,500.00
	<b>Total Cost:</b>		\$3,990
	<b>Total Cost per Cow:</b>		\$39.90

Marketing/Sale Barn Fees (including commission, yardage, insurance, advertising, etc.)			
	Cost	Head	Total
Calf Sales Commission (per head)	\$15.00	75	\$1,125.00
Cull Cow Sales Commission (per head)	\$15.00	15	\$225.00
Other Marketing fees (total)	\$0.00		\$0.00
	<b>Total Cost:</b>		\$1,350
	<b>Total Cost per Cow:</b>		\$13.50



## Variable Costs

Bull Cost	
Average Purchase Price	\$6,000
Average Cull Value	\$1,400
Number of Years Used	4
Yearly cost per bull:	\$1,150
Number of Bulls:	5
<b>Total Cost:</b>	\$5,750
<b>Total Cost per Cow:</b>	\$57.50

A.I. Cost			
Product	Cost per Head	# of Head	Total
Synchronization	\$20.00	0	\$0
Semen	\$30.00	0	\$0
A.I. Tech fee & Chute charge	\$10.00	0	\$0
Other	\$0.00	0	\$0
	<b>Total Cost:</b>		\$0
	<b>Total Cost per Cow:</b>		\$0.00

Hired Labor	
Annual Salary	\$0
and/or	
Hours per year	200
Dollars per hour	\$15.00
<b>Total Cost:</b>	\$3,000
<b>Total Cost per Cow:</b>	\$30.00



## Variable Costs

Interest Costs			
	Current Balance	Annual Interest Rate	Estimated Interest cost
Cattle Operating Loan(s)*	\$30,000	6.00%	\$1,800.00
Cattle Ownership Loan(s)	\$10,000	5.50%	\$550.00
Machinery/Equipment Loan(s)*	\$25,000	4.50%	\$1,125.00
Land Loan(s)	\$0	0.00%	\$0.00
Other			\$0.00
	<b>Total Cost:</b>		\$3,475
	<b>Total Cost per Cow:</b>		\$34.75



## Fixed Costs

Overhead Costs:	Total per Year per Cow	Total per Year Entire Herd
Replacement Heifers*		
Cow Depreciation*		
Machinery, Facility/Equip. Depreciation	\$ 58.75	\$ 5,875.00
Machinery, Facility/Equip. Repairs	\$ 50.00	\$ 5,000.00
Utilities	\$ 14.00	\$ 1,400.00
Fuel	\$ 20.00	\$ 2,000.00
Taxes	\$ 8.00	\$ 800.00
Farm/Livestock Insurance	\$ 13.00	\$ 1,300.00
Other costs	\$ -	\$ -
<b>Total Overhead Costs</b>	<b>\$ 163.75</b>	<b>\$ 16,375.00</b>

\*Used only if replacement heifers are purchased



# Fixed Costs

Replacement Heifer Cost	
Cost of Purchased Replacement Heifer	\$1,000
Number of Replacement Heifers Purchased per year*	15
<b>Total Cost:</b>	<b>\$15,000</b>
<b>Total Cost per Cow:</b>	<b>\$150.00</b>

Cow Depreciation	
Starting Value	\$1,000
Average Years in Herd	6
Depreciation per Year	\$166.67
<b>Total Cost:</b>	<b>\$166.67</b>
<b>Total Cost per Cow:</b>	<b>\$166.67</b>



# Fixed Costs

Machinery/Equipment Depreciation					
	Current Value	Outstanding Loan Balance	% Used for Cow/Calf Operation	Annual Depr. Percentage	Annual Depr.
Tractor	\$20,000	\$15,000	50%	10%	\$1,000
Feed Wagon	\$20,000	\$10,000	100%	10%	\$2,000
Skid Steer	\$20,000	\$0	50%	10%	\$1,000
4-Wheeler	\$5,000	\$0	75%	10%	\$375
Livestock Shed and Corrals	\$30,000	\$0	100%	5%	\$1,500
<b>Total Cost:</b>					<b>\$5,875</b>
<b>Total Cost per Cow:</b>					<b>\$58.75</b>

Repairs, Utilities, Fuel, Taxes, Farm/Livestock Insurance, etc:

A good way to estimate these costs if you do not have records of them directly is to look at the last 3 years of your Schedule F tax return and use an average value that reflects what is the actual cost for the cow herd.



Revenue:	Total per Year per Cow	Total per Year Entire Herd
Weaned Steer Calves	\$ 495.00	\$ 49,500.00
Weaned Heifer Calves	\$ 285.00	\$ 28,500.00
Cull Cows	\$ 136.50	\$ 13,650.00
Other Income	\$ -	\$ -
<b>Gross Income</b>	<b>\$ 916.50</b>	<b>\$ 91,650.00</b>

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Pasture	\$ 170.80	\$ 17,080.00
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Hay and Forage	\$ 169.67	\$ 16,966.69
Grain/Protein/Minerals	\$ 543.60	\$ 54,359.50
<b>Total Feed Costs</b>	<b>\$ 543.60</b>	<b>\$ 54,359.50</b>

\$ 102.41 Breakeven calf sales price over feed costs

Non-Feed Cash Costs:	Total per Year per Cow	Total per Year Entire Herd
Veterinary Care and Pharmaceuticals	\$ 39.90	\$ 3,990.00
Marketing/Sale Barn fees	\$ 13.50	\$ 1,350.00
Annual Bull Charge and A.I.	\$ 57.50	\$ 5,750.00
Hired Labor	\$ 30.00	\$ 3,000.00
Cash Interest	\$ 34.75	\$ 3,475.00
<b>Total Non-Feed Cash Costs</b>	<b>\$ 175.65</b>	<b>\$ 17,565.00</b>
<b>Total Cash Costs</b>	<b>\$ 719.25</b>	<b>\$ 71,924.50</b>

\$ 146.60 Breakeven calf sales price over cash costs

Overhead Costs:	Total per Year per Cow	Total per Year Entire Herd
Replacement Heifers*	\$ -	\$ -
Cow Depreciation*	\$ -	\$ -
Machinery, Facility/Equip. Depreciation	\$ 58.75	\$ 5,875.00
Machinery, Facility/Equip. Repairs	\$ 50.00	\$ 5,000.00
Utilities	\$ 14.00	\$ 1,400.00
Fuel	\$ 20.00	\$ 2,000.00
Taxes	\$ 8.00	\$ 800.00
Farm/Livestock Insurance	\$ 13.00	\$ 1,300.00
Other costs	\$ -	\$ -
<b>Total Overhead Costs</b>	<b>\$ 163.75</b>	<b>\$ 16,375.00</b>
<b>Total Costs</b>	<b>\$ 883.00</b>	<b>\$ 88,299.50</b>

\$ 187.80 Breakeven calf sales price over total costs

Income Over Cash Costs	\$ 197.26	\$ 19,725.50
Income Over Total Costs	\$ 33.51	\$ 3,350.50



# Summary

- Enterprise Budgeting can be an extremely useful tool for evaluating your Cost of Production and Breakevens
- Good to make these budgets before you even start your year to help anticipate profitability (or lack there of), find opportunities to reduce costs or be more efficient
  - Evaluate throughout year to make marketing and insurance decisions

K-State Ag. Economics has done much of the work for you!

<https://www.agmanager.info/farm-mgmt-guides/livestock-budgets/ksu-detailed-cow-calf-budget>





Robin Reid  
robinreid@ksu.edu  
785-532-0964

#### Beef

Title	Author	Date	Downloads
<b>KSU-Detailed Cow Calf Budget</b> This spreadsheet allows a user to develop a detailed beef cow/calf enterprise budget to evaluate potential income, costs, and profitability.	Reid Johnson	September 9, 2021	<a href="#">Downloads -</a>
<b>K-State Feeder Cattle Risk Management Tool</b> An Excel spreadsheet for evaluating feeder cattle risk management strategies.	Tonso		<a href="#">Excel Spreadsheet Tool (943.3 KB)</a>
<b>KSU-Merck Calf Vaccination Program Assessment Tool</b> This spreadsheet is a decision-aid tool for cattle producers to compare expected net profit	Tonso		<a href="#">Input Sheet in Word (84.52 KB)</a>
			<a href="#">Tutorial Video</a>



# Questions?

Robin Reid  
[robinreid@ksu.edu](mailto:robinreid@ksu.edu)  
785-532-0964

