Grass Fed Beef Operations: Economics and Considerations

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Questions to be answered

- How do I feed animals forage 365 days a year?
- What forages or feedstuffs am I going to use throughout the year?
  - Perennials (cool and warm season)
  - Annuals (winter and summer)
  - Mechanically harvested forage (hay and haylage)

Questions to be answered

- How much is it going to cost to operate a grass fed beef business?
  - It depends!

Cow/Calf Operation

- 30 cows (spring calving)
  - 1,200 lbs average weight
- 90% calf crop (27 calves)
- Grazed forage
  - 2 ac per cow/calf pair
- Hay (fed 120 days)
  - Fed @ 2.5% of bodyweight = 30 lbs/head/day

Variable Expenses at Weaning

Variable Expenses					
Pasture Production	acre	2.00	$ 130.54	$ 261.08	$ 7,832.52
Hay Production	acre	0.72	$ 201.18	$ 144.85	$ 4,345.53
Bull (Pasture and Hay)[2]	$	1.7	$ 405.94	$ 23.00	$ 690.09
Salt and Mineral	lb	91	$ 0.35	$ 31.94	$ 958.13
Vet & Med	head	1	$ 31.45	$ 31.45	$ 943.40
Other Expenses	head	1	$ 1.00	$ 1.00	$ 30.00
Labor	hours	8	$ 10.00	$ 80.00	$ 2,400.00
		Production Expenses		**$ 573.32**	**$ 17,199.67**
Interest	$	$ 573.32	6%	$ 17.20	$ 515.99
Marketing	head	0.86	$ 30.88	$ 26.56	$ 796.76
		Total Variable Expenses		**$ 617.08**	**$ 18,512.41**

Fixed and Total Expenses at Weaning

		Total Variable Expenses		**$ 617.08**	**$18,512.41**
Fixed Expenses					
Livestock Facilities & Equipment	head	1	$ 118.49	$ 118.49	$ 3,554.66
Pasture and Hay Machinery/Equipment	head	1	$ 371.94	$ 371.94	$11,158.13
Purchased Breeding Stock	head	1	$ 18.38	$ 18.38	$ 551.25
Miscellaneous Overhead[4]	head	1	$ 392.15	$ 39.22	$ 1,176.45
		Total Fixed Expenses		**$ 548.02**	**$16,440.48**
		Total Expenses		**$1,165.10**	**$34,952.89**

How can we reduce these costs?

Forage Management Practices to Consider

- Producing versus purchasing hay
- Stockpiling forages

Grazing and Feed Costs

- Make up 40-50% of total costs of production in cow/calf operation.
- Harvested forage can account for 18-24% of total cost per weaned calf.

What Does Hay Cost?

Bermuda Hay Cost

Item		Unit	Quantity	Price	Amount ($/ac)
Fertilizer	N	lb.	240	$0.57	$136.80
	P_2O_5	lb.	60	$0.50	$30.0
	K_20	lb.	180	$0.35	$63.00
	Custom Appl.	ac.	4	$6.86	$27.44
Lime	Custom Appl.	ton	0.67	$30.00	$20.10
Weed Control	Dormant	ac.			$13.32
	Post-Emerge	ac.			$9.38
Machinery	Variable	ac.			$108.08
	Fixed	ac.			$80.12
Establishment		ac.			$33.00
Labor		hour	5.42	$10.00	$54.20
Total Budgeted Expenses					**$575.44**

Fescue Hay Cost

Item		Unit	Quantity	Price	Amount ($/ac)
Fertilizer	N	lb.	100	$0.57	$57.00
	P_2O_5	lb.	30	$0.50	$15.00
	K_20	lb.	30	$0.35	$10.50
	Custom Appl.	ac.	2	$6.86	$13.72
Lime	Custom Appl.	ton	0.33	$30.00	$9.90
Weed Control	Post-Emerge	ac.			$10.67
Machinery	Variable	ac.			$72.82
	Fixed	ac.			$38.44
Establishment		ac.			$31.99
Labor		hour	5.83	$10.00	$58.30
Total Budgeted Expenses					**$318.34**

Hay Production Cost

Bermudagrass

- 8 ton yield
  - **$71.93/ton**
- 7 ton yield
  - $82.21/ton
- 6 ton yield
  - $95.91/ton

Tall Fescue

- 4 ton yield
  - **$79.59/ton**
- 3 ton yield
  - $106.11/ton
- 2 ton yield
  - $159.17/ton

** **$92.70 per ton**

(2010-2015 TN Avg. Price Received)

54 Ton Comparison

Bermudagrass

- Yield
  - 8 tons/acre
- Cost
  - $71.93/ton
- 54 tons
  - **$3,884**

Tall Fescue

- Yield
  - 4 tons/acre
- Cost
  - $79.59/ton
- 54 tons
  - **$4,298**

Total Purchased Hay Cost: **$5,006**
1,200 lb. bale: **about $56/bale**

Producing vs. Purchasing Hay

- Options when hay is purchased
  - **Increase herd** to utilize acres no longer in hay production
  - **Lengthen grazing period** by utilizing acres to produce summer annuals or perennials, winter annuals, or stockpile fescue and/or bermudagrass
    - Means less hay is needed
  - Sell hay equipment

Lengthened Grazing Season

Bermudagrass

- Yield
  - 8 tons/acre
- Cost
  - $71.93/ton
- 54 tons
  - **$3,884**

Tall Fescue

- Yield
  - 4 tons/acre
- Cost
  - $79.59/ton
- 54 tons
  - **$4,298**

Purchase 27 tons of Hay if 60 days of stockpiled forage available

Total Purchased Hay Cost: **$2,503**

Offsetting Hay Usage

- Stockpiling fescue
- Stockpiling bermudagrass
- Planting winter annuals

Stockpiled Fescue

- Grazed or clipped in late August
- 50 lb. N applied in late August
- Average Fall forage availability: 2,920 lb./ac.
  - Grazing initiated: Late Oct./Early Nov.
  - Harvest efficiency: 65% (1,898 lb.)
- Protein Content
  - 11.8-13%

University of Kentucky, Stockpiling for fall and winter pasture

Stockpiling Fescue

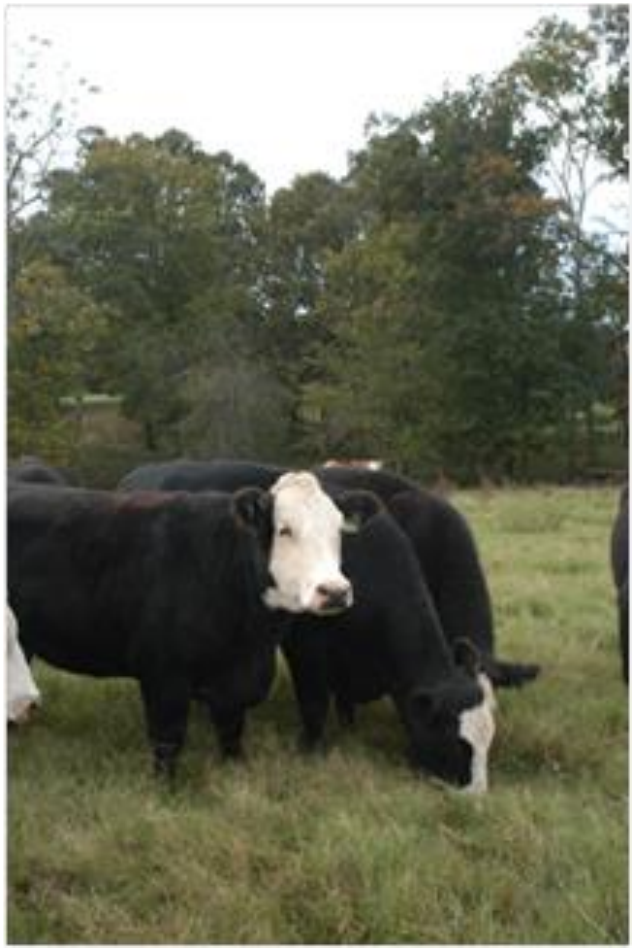
- Set aside 1 acre per cow to stockpile
- Stockpiled fescue can increase grazing by 2 months (63 days)

50 lb. N application on 30 acres	*Produced* Hay for 60 days
$35.36*30 = **$1,061**	27 tons @ $79.59/ton = **$2,149**

Total Savings from Stockpiling Fescue = $1,088
Total Savings per head = $36.27

Stockpiled Bermudagrass

- Grazed or clipped in late August
- 50 lb. N applied in late August
- Average Fall forage availability: 2,756 lb./ac.
  - Grazing initiated: Late Oct./Early Nov.
  - Harvest efficiency: 62.1% (1,712 lb.)
- Protein Content
  - Nov: 13.1-15.2%
  - Dec: 12.5-14.7%
  - Jan: 10.9-11.6%



2001 Animal Research Report: Oklahoma State University, Economics of stockpiled bermudagrass grazing system

Stockpiling Bermudagrass

- Set aside 1 acre per cow to stockpile
- Stockpiled fescue can increase grazing by 2 months (57 days)

50 lb. N application on 30 acres	*Producing* Hay for 60 days
$35.36*30 = **$1,061**	27 tons @ $77.63/ton = **$1,942**

Total Savings from Stockpiling Bermuda = $881
Total Savings per cow = $29.38

Winter Annual

- Rye/Ryegrass establishment cost: $230/ac.

- Average spring forage availability: 9,000 lb./ac.
  - Grazing initiated: March.
  - Harvest efficiency: 70% (6,300 lb.)

Hay vs. Annuals vs. Stockpiled

	Total Yield (lbs./ac.)	Utilization (lbs./ac.)	Cost ($/ac.)	Cost ($/lb. DM)
Stockpiled Fescue	2,920	1,898	$35.36	**$0.019**
Stockpiled Bermudagrass	2,756	1,712	$35.36	**$0.021**
Winter Annual	9,000	6,300	$230	**$0.037**
Fescue Hay	8,000	7,200	$318	**$0.044**
Bermudagrass Hay	16,000	14,400	$575	**$0.040**

Hay vs. Annuals vs. Stockpiled

	Cost ($/lb. DM)	Purchased Hay Breakeven ($/ton)	Breakeven 1200 lb. bale ($/bale)
Stockpiled Fescue	$0.019	**$37**	**$22**
Stockpiled Bermudagrass	$0.021	**$41**	**$25**
Winter Annual	$0.037	**$73**	**$44**
Fescue Hay	$0.044	**$88**	**$53**
Bermudagrass Hay	$0.040	**$80**	**$48**

You can pay up to $88/ton of hay and be just as well off as producing fescue hay.

Finishing Calves on Grass Assumptions

- Calves weaned Nov 1 (13 steers, 9 heifers)
- 550 lb steer carried to 1150 lb (ADG: 1.5 lb)
- 520 lb heifer carried to 1040 lb (ADG: 1.3 lb)
- Hay fed 120 days (Dec, Jan, Feb, Mar)
- Fed 2.5% of bodyweight

Cost of Finishing a Steer

Item	Descriptic	Unit	Quantity	Price	Amount ($/hd)	Total
Steers	13 head	lb	550	$1.80	$990.00	$12,870.00
Hay		ton	1.12	$79.59	$89.30	$1,160.93
Pasture		acre	1.3	$130.54	$169.70	$2,206.13
Interest			8%	$1,249.00	$99.92	$1,298.96
Labor			3	$10.00	$30.00	$270.00
Cost of Finishing a Steer					**$1,378.92**	**$17,806.02**
Breakeven Price Live Basis			1150	$1,378.92	**$1.20**	

Cost of Finishing a Heifer

Item	Descriptic	Unit	Quantity	Price	Amount ($/hd)	Total
Heifers	9 head	lb	520	$1.58	$821.60	$7,394.40
Hay		ton	1.04	$79.59	$82.87	$745.84
Pasture		acre	1.2	$130.54	$156.65	$1,409.83
Interest			8%	$1,061.12	$84.89	$764.01
Labor			3	$10.00	$30.00	$270.00
Cost of Finishing a Heifer					**$1,176.01**	**$10,584.07**
Breakeven Price Live Basis			1040	$1,176.01	**$1.13**	

Thoughts for the 30 Cow Herd

- Need 37 more acres of pasture and hay ground to continue carrying 30 cows and finishing 22 animals on grass (5 replacement heifers)
  - These costs were not included in the analysis
  - Likely to increase breakeven price $0.03 to $0.05

Thoughts for the 30 Cow Herd

- Marketing costs not included
  - This is a significant costs and can easily increase the breakeven price by $0.10 to $0.20 depending on marketing strategy. (May include significant labor.)

Conclusions

- 4 legged animals tend to be the most cost effective forage harvest machine
- Purchasing hay can be advantageous in many cases
- Ownership of equipment is expensive and capital intensive
- Annuals have their place
- Some of us will continue to harvest our own hay, because we find it enjoyable
  - I enjoy it myself.

Conclusions

- Grass fed is a niche market
- Is it more profitable than conventional production?
  - For some and not for others
- It takes more effort on the marketing side of the discussion
  - Are you willing to work?

May your boots still shine!

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