

Farm Business Management Report

2008 Estimated Costs and Returns for a 150-head
Cow-calf to Grass-finished Beef Production
System in the Channelled Scablands Range
Area of East-central Washington

WASHINGTON STATE UNIVERSITY EXTENSION

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Authors

**J. Shannon Neibergs
WSU Extension SE District
School of Economic Sciences**

and

**Donald D. Nelson
Department of Animal Sciences**

**Washington State University
Pullman, WA 99164**

The cover photo is of the ranch used as the budget model for this publication.

ABSTRACT

Grass-finished beef is gaining popularity with both consumers and beef producers. Consumers have demonstrated a willingness to pay a premium price for grass-finished beef based on positively perceived meat product attributes and the associated natural production process. Producers are interested in grass-finished beef for production profitability. Given the recent dramatic increase in the cost of finishing grain-fed cattle due to the increased cost of corn and feed grains, information on forage-based beef feeding systems is in high demand. This publication provides a budget analysis for producing grass-finished beef using the Channelled Scablands range area of eastern Washington as a resource base. An enterprise budget is included for each stage of production: cow-calf, stocker, and grass-finishing. Average Washington cattle prices are used to evaluate enterprise profitability for the cow-calf and stocker phases, and an active price bid for grass-finished beef is used to evaluate the finishing enterprise's profitability and overall profitability of the grass-finished beef production system. The lower cost of gain for grass-finished beef and the price premium it generates compared to traditionally processed beef results in producer profitability.

NOTE

Enterprise costs and returns vary from one ranch to the next and over time for any particular ranch due to differences in:

- Capital, labor, land, and management resources
- Type and size of machinery complements
- Production practices
- Size of ranch and enterprise
- Production yields and sale prices
- Input prices

Costs can also be calculated differently depending on the intended use of the cost estimate. The information in this publication serves as a general guide for a grass-fed beef production system in the Channelled Scablands area of east-central Washington. To avoid drawing unwarranted conclusions from this study, closely examine the assumptions and data used and make appropriate adjustments to your situation.

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INTRODUCTION

This publication presents an example production system with associated enterprise budgets to raise grass-finished beef cattle in east-central Washington using a combination of ranch-owned and leased forage sources that require shipping cattle in the back-grounding/stocker and finishing phases of the production chain. Cows used for breeding remain on the ranch year-around with a winter feeding program. The production management system described represents production practices and inputs available in the production area and typical of a well-managed operation. Some costs, practices, and materials may not be applicable to your production system and other costs may need to be added to the budgets to model individual ranch unique characteristics. This publication is offered as a guide for determining grass or forage-based beef production costs.

These budgets were developed as part of the Ruckelshaus Center Agricultural Pilots Project. The Beefing Up the Palouse pilot project applied a total systems approach to research production methods for profitably producing value-added grass-fed beef. The goal was to develop a replicable production model to help producers take full advantage of the eastern Washington dryland wheat production area resource base.

Beef cattle are essentially converters of forage to high-quality protein for human consumption. The typical beef production chain uses forage-based feeding systems for the cow-calf breeding phase and back-grounding/stocker phase until the steer or heifer is transported to a feedlot and fed a grain-based finishing diet. The profitability of grain-finished beef production systems is currently challenged with dramatically increased feed grain prices in 2007 and 2008 without a commensurate increase in finished cattle prices. This profitability squeeze is forcing cattle producers to examine the entire production system for cost-effective alternatives.

Utilizing cattle's natural forage consumption ability is receiving increased attention in traditional production systems by either maintaining cattle on forage for longer periods to minimize time in grain-based diet finishing programs or completely finishing cattle on grass forage and

marketing the product under a grass-fed label. The budgets in this report examine the cow-calf, stocker, and grass-finishing production phases. Readers can use the budgets as a complete system or apply any of the budgets independently to evaluate the economic feasibility of a portion of the system on an enterprise basis.

Grass-fed production system description

The production system described here models the 2007 grass-fed production standards issued by the USDA Agricultural Marketing Service¹. The voluntary standard published in the Federal Register states that "grass and/or forage shall be the feed source consumed for the lifetime of the ruminant animal, with the exception of milk consumed prior to weaning or harvested feeds in cases of emergency. The diet shall be derived solely from forage and animals cannot be fed grain or grain byproducts and must have continuous access to pasture during the growing season." The modeled production system does not use growth implants and limits antibiotic applications to treat individual animal infections, which maintains animals within the grass-fed² market channel.

RANCH AREA DESCRIPTION

The budget model area is located in central eastern Washington where the primary land uses are dryland wheat in a summer fallow or small grains rotation, Conservation Reserve Program grass stands, dryland pasture and hay ground, irrigated hay and pasture ground, and large range holdings in the Channelled Scablands. The area typically receives less than 13 inches of rain annually, with some portions receiving 7–10 inches of annual rainfall. The growing season is a northern climate zone with limited to no winter forage growth. Winter range or pasture is only available if it was stockpiled through the growing season. Hay is normally

¹See the USDA AMS at www.ams.usda.gov/AMSV1.0 for further information on grass-fed label production specifications.

²The term "grass-fed" refers to the complete production chain from a calf's birth to consumption. "Grass-finished" refers specifically to the production phase in which an 800–900-lb steer or heifer is finished to slaughter weight.

fed as winter forage. Stockers not transported out of the state are commonly shipped to central Washington's irrigated agricultural area to winter on crop aftermath. Pastures are typically small fields of low quality land interspersed between large farmed fields. A description of the area's ecology and grass varieties—including photographs—is available at <http://www.tarleton.edu/~range/Grasslands/Palouse%20Prairie/palouseprairie.htm>.

CATTLE HERD DYNAMICS, MATERIAL INPUT COSTS, AND BUDGET ASSUMPTIONS

The information for this budget came from meetings for the Ruckelshaus Center Agricultural Pilots Project: Beefing Up the Palouse. Producer collaborators provided details on production management and input costs.

Cattle herd dynamics

The cow-calf production segment has a March to April calving period.³ A herd size of 150 cows is used because it results in the most cost-efficient load numbers for transporting cattle to the stocker phase, finishing phase, and final sale, and it represents a manageable herd size rela-

tive to the study area's pasture and range acreage. Calves are pre-conditioned and weaned at the end of October. The weaned calves are then transferred to the backgrounding/stocker phase and shipped to crop aftermath from weaning until the start of March, at which time the stockers have to be removed to allow for spring farming operations. The stockers are shipped back to the Channelled Scabland area to graze the spring forage flush. At the end of the spring forage growth in July, heifer replacements are selected from the stocker herd and transferred to the cow herd. A replacement rate of 15% is used in the budget. The remaining stockers are transferred to the finishing operation and shipped to irrigated pasture. The targeted finish weight for grass-finished steers and heifers is 1,300 lbs and 1,200 lbs, respectively. The animals finish in December after a 153-day finishing period. The herd production dynamics are illustrated in Figure 1.

³This is a common calving interval in the area. An analysis of shifting the calving interval to later in the season to look at differences in forage availability and economic costs is part of the Beefing Up the Palouse project feasibility study, the results of which will be available through WSU publication outlets and at www.livestockeconomics.wsu.edu.

March/April '08 CRP Improved Pasture Calving Season 95% Calving 95 calves	May '08 Turn Out Bulls 150 cows 23 heifers	July '08 Cow Calves Out on Summer Range Pull Out Bulls	October 31 '08 Wean 94% Weaning 575 lbs avg wt 71 steers 71 heifers	October '08 Cull Opens 22 head	December 15 '08 to April 1 '09 Cow Winter Range Feed Hay Dec 15 to April 1
November '08 to March '09 Weaned Calves Shipped to Background/Stocker Crop Aftermath 71 steers 71 heifers in at 575 lbs		March '09 to July '09 Stocker Shipped Back to CRP Improved Pasture 70 feeder steers 48 feeder heifers 23 replacement heifers out at 879 lbs 1.23 lbs ADG stocker phase 1 dead		July '09 to December '09 Grass Finishing Shipped to Irrigated Pasture 69 steers 48 heifers In at 879 out at 1,252 lbs 2.39 lbs ADG 1 dead	

Figure 1. Grass-finished beef production cycle for a 150-head cow herd.

Feed and forage costs

Feed is the largest cattle production cost and highest ranked management priority in a survey of cattlemen and industry specialists (Field 2006). The feed costs for each production segment in the budget model are provided in *Appendix Table I*. The table provides detail on the feedstuff, amount fed per day, feeding period, number of days fed, dry matter fed per head per day, and unit feed cost. Grass forages and crop aftermath feedstuffs are on an AUM basis and represent typical lease costs. The cow winter feeding program is based on feeding hay, and this budget uses a cost of \$150 per ton for hay⁴. Forage costs are priced on an AUM basis⁵ using typical market prices for improved pasture, range, crop aftermath, and irrigated pasture. Only the replacement heifers receive supplemental grain for 60 days prior to breeding, while all cattle receive a mineral salt supplement.

Herd health

The herd health plan is detailed in *Appendix Table II*. Vaccinations, worming, and fly control are provided for each production phase. The cow-calf herd is worked 3 times annually: 1) prior to calving to vaccinate cows and replacement heifers, 2) at spring branding, and 3) in the fall when the calves are preconditioned prior to being weaned and transferred into the stocker phase.

Fencing, water, and capital equipment

Fencing, water delivery, construction, and maintenance costs are of increasing importance in the budget model area to take advantage of available forage resources. The model ranch has some permanent fencing and substantial temporary fencing. Amortized permanent fence capital and maintenance costs are included in the AUM cost of range grazing. As is common in the model area, temporary fence is used extensively

for pasture, CRP, and crop aftermath grazing. Without temporary fences, much of these forage sources would be unavailable, because permanent fencing was long ago removed to facilitate farming operations.

Temporary fencing is electric and moved as needed. This allows use of multiple forage fields over the year, thus lowering capital costs. The total temporary fence capital cost covers the solar fence energizer, reels, pigtail fence stakes, and wire. Moving the fence to create new grazing cells takes 2 hours per move. For the stocker and finishing phases, cattle are moved into new paddocks regularly depending on the forage production and paddock size in order to maintain healthy forage stands. Moving the fence to create a temporary paddock is estimated to take 3 hours per move. By using rotational grazing, a higher number of cattle can be maintained on fewer acres compared to traditional grazing methods.

Water availability is a primary constraint for the discontinuous forage pastures commonly found in the study area. The model uses a combination of below-ground piping, above-ground 2-inch hose, and above-ground tank storage supplied through water truck delivery to achieve the greatest efficiency. The placement of water tanks in the grazing area is an important management consideration for proper forage grazing management with respect to physical water delivery constraints, cattle grazing patterns, and movement through the field.

Although the cash costs of permanent fencing and improved water systems are large, amortizing over 30 years and the 200 acres affected results in a low annual per acre cost. The per acre costs are used to set the AUM grazing cost on the owned forage resources. Both the capital and amortized costs are detailed in *Appendix Table III*. The current value assigned to the machinery items such as the squeeze chute, ATV, tractor, and pickup are based on used purchase prices rather than new capital purchases to better represent actual ranch machinery and capital holdings. The used equipment values were obtained through agricultural equipment sale publications. A straight line depreciation cost is calculated to determine annual capital costs.

⁴Hay costs have increased annually in Washington since 2003; see Neiberger et al. 2008 for a review of the Washington hay market.

⁵Average animal weight and growth over the grazing period of that forage source

The total annual machinery and equipment cost is the sum of the annual capital and maintenance costs.

Transportation costs

Cattle transportation is becoming a more significant aspect of cattle production because as producers increase herd sizes to gain economies of size and scale, the forage and shipping resources required also increase. However, it is much easier to buy cattle than land in terms of both cost and availability. As a result, most producers do not own an adequate supply of forage resources and must factor cattle transportation costs to leased seasonal and supplemental forage into their budgets. Table 1 presents a trucking cost worksheet used to determine trucking cost per head for each production phase. Using the truck head load capacity for each production phase, a cost of \$4.50 per loaded mile, and an assumed 150-mile travel distance, the trucking cost ranges from \$9.57 to \$17.31 per head.

REVENUE RECOGNITION AND BUDGET MODEL SALE REVENUES

The producer retains ownership through the grass-finishing phase. Cash sales are for culls and grass-finished steers and heifers. The budgets recognize the non-cash revenue transfer values of weaned calves to the stocker phase, heifer replacements to the cow herd, and stockers/feeders to the finishing phase to evaluate the profitability of each production phase and calculate the opportunity costs of retained ownership. The Base Value Method (Farm Financial Standards Council 2008) was used to determine the raised livestock revenue.

Weaned calf and feeder values

Table 2 provides historical Washington price information on calf and feeder commercial values and the price spread between 500–600-weight calves and 800–900-weight feeder cattle. Publically reported finished fat cattle prices are not

Table 1. Trucking costs for a 150-head cow herd.

	Weight lbs	Truck Load Capacity Head	Truck Load Weight lbs	Herd Inventory	Truck Load Numbers	Rounded Truck Loads	Trucking Cost 150 miles \$4.50/mi	Trucking Cost \$/Head
Weaned Calves	500	80	40,000	141	1.76	2.00	1,350	9.57
Stockers	700	70	49,000	140	2.00	2.00	1,350	9.64
Feeders	900	55	49,500	118	2.15	2.00	1,350	11.44
Finished Cattle	1,250	40	50,000	117	2.93	3.00	2,025	17.31

Table 2. Washington cattle auction price spreads for cattle production phases.

Year	October—November 400–500 Weight		October—November 500–600 Weight		Year	September—November 800–900 Weight		Price Spread 500–600 Weaning to Feeder	
	Steer \$/cwt	Heifer \$/cwt	Steer \$/cwt	Heifer \$/cwt		Steer \$/cwt	Heifer \$/cwt	Steer \$/cwt	Heifer \$/cwt
2001	92.16	82.85	87.40	81.93	2002	75.50	68.97	-11.90	-12.96
2002	79.14	76.83	76.96	73.72	2003	91.36	87.22	14.40	13.50
2003	107.92	97.14	101.90	94.26	2004	98.33	98.55	-3.57	4.29
2004	122.00	112.85	111.80	104.16	2005	100.90	95.47	-10.90	-8.69
2005	131.45	118.72	117.29	109.06	2006	94.41	91.47	-22.88	-17.59
2006	103.84	103.86	98.30	98.66	2007	96.94	89.87	-1.36	-7.79
2007	113.51	100.58	105.22	96.86	2008	na	na	na	na
Average	107.15	98.98	99.84	93.95		92.91	88.59	-6.93	-5.36

Source: <http://www.lmic.info/tac/spreadsheets/cattle/auctions%20washington.xls>

available for Washington. The average commercial values reported in Table 2 are used in the budgets for weaned calf sales and stocker sales for their months of transfer. The replacement heifers are valued at their cost of production from the stocker production phase and are transferred to the cow-calf herd at their production cost.

Cull sales

Monthly Washington cull cow prices are reported in Table 3 from 2004 to 2007. The data combines 75% to 80% lean cull dairy and beef slaughter cows that range from 850 to 1,200 pounds. Both monthly and yearly averages are provided. Monthly averages range from a seasonal fall low of \$45.31 in November to a high of \$54.94 in June. Yearly price averages range from \$48.56 in 2006 to \$52.04 in 2005. The budget model uses cull prices of \$55/cwt and \$48/cwt for cows and bulls, respectively.

Grass-finished value

Markets for grass-fed beef are still developing. Sale values for live grass-finished beef animals are not publically reported because the market is primarily privately owned and activity is conducted via direct market channels or through

a grass-fed beef marketing cooperative. The marketing process to harvest beef animals in accordance with USDA processing guidelines for retail meat sales and then develop and maintain direct marketing channels is beyond the scope of this publication.

The budget provided here uses \$100 per cwt as a sale price for finished grass-fed beef. A 3% shrink is applied to the live weight. This value and shrink was an active bid throughout 2008 for grass-finished beef from a leading grass-fed beef marketer in the study area who maintained the \$100 per cwt as a fixed standing private offer for several years. Washington does not have enough conventional finished cattle to report live finished cattle sale prices, so Figure 2 compares the \$100/cwt grass-fed price offer to the 5-market average live finished steer price. For all months reported except November 2003, the grass-fed price of \$100 per cwt was a premium.

DISCUSSION OF BUDGET INFORMATION

The enterprise budgets are presented in *Appendix Tables IV–VI* for the cow-calf, stocker, and finishing phases, respectively. As previously mentioned, the value of production from one phase is transferred to the next phase as a non-

Table 3. Washington cull cow prices.

Month	2004 \$/cwt	2005 \$/cwt	2006 \$/cwt	2007 \$/cwt	Average \$/cwt
January	45.25	47.84	49.98	43.81	46.72
February	42.85	50.28	52.99	46.38	48.12
March	46.69	53.68	48.44	48.90	49.43
April	50.50	57.20	48.52	51.28	51.87
May	53.08	60.00	49.27	55.91	54.56
June	54.17	60.44	50.50	54.64	54.94
July	56.38	56.80	49.05	54.77	54.25
August	56.96	49.56	50.58	51.42	52.13
September	49.50	49.22	48.13	47.23	48.52
October	49.85	45.65	45.60	41.85	45.74
November	46.56	45.81	nr	43.54	45.31
December	47.85	47.99	41.10	44.44	45.34
Average	49.97	52.04	48.56	48.68	49.74

Source: <http://www.lmic.info/tac/spreadsheets/cattle/auctions%20washington.xls>
Prices reported are for 850 to 1,200 pound breakers 75% to 80% lean.

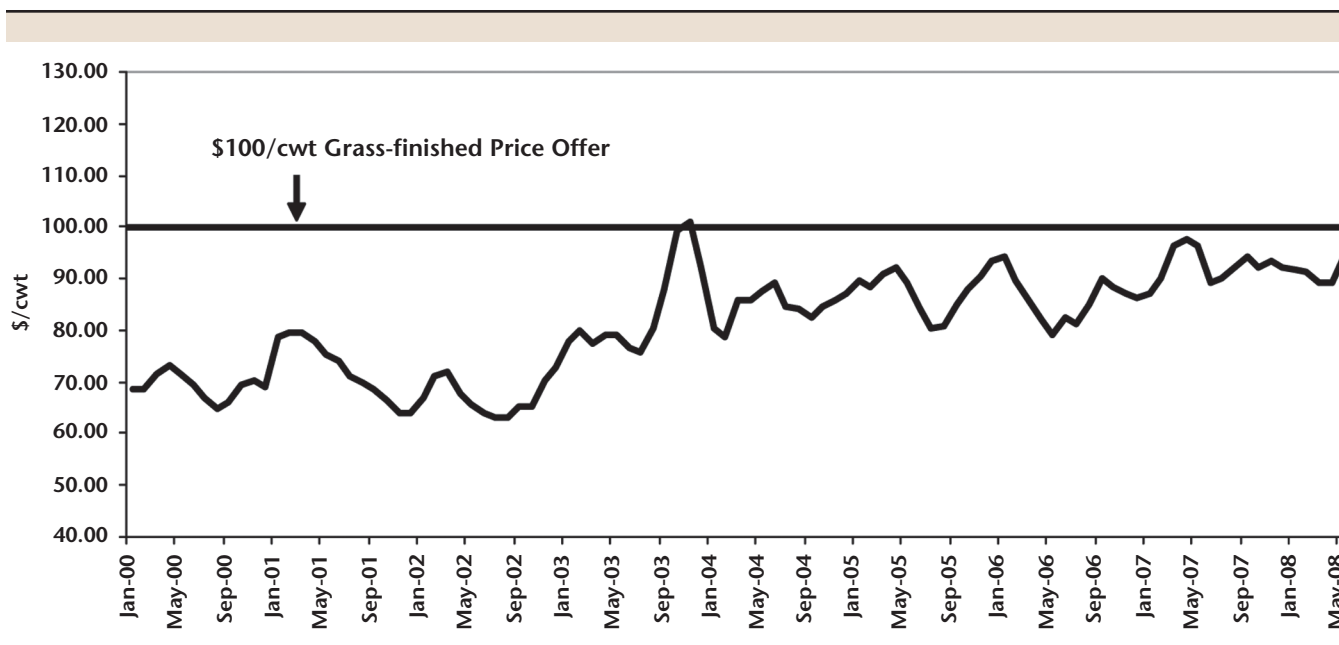


Figure 2. Monthly 5-region (Texas–Oklahoma, Kansas, Nebraska, Colorado, Minnesota) average grass-finished live steer prices (www.lmic.info/tac/spreadsheets/spreadsheets.html).

cash input cost. The cow-calf phase has a net return loss of $-\$10,621.26$ or $-\$70.81$ per cow. This loss is primarily attributable to high winter feed costs, the non-cash transfer cost of raised heifer replacements, the opportunity cost of the breeding herd, and valuing the calf crop production at historical commercial values. In order to break even, the average commercial calf values would have to increase 17% to $\$109.92$ for heifers and $\$116.01$ for steers as was the case in 2005 (Table 2).

The stocker enterprise, *Appendix Table V*, nearly breaks even with a herd level net return loss of $-\$642.30$ or $-\$2.89$ per head. This return covers the non-cash cost of transferred-in weaned calves from the cow-calf production phase. Again, the largest direct cost of production is feed, but for the stockers the feed is crop aftermath and pasture grazing. Non-cash enterprise revenue is based on average commercial feeder values and recognizing a non-cash sale of the replacement heifers to the cow-calf phase.

The grass finishing enterprise shown in *Appendix Table VI* generates a positive net return of $\$12,291.77$ or $\$522.87$ per head. This also covers the non-cash cost of cattle transferred in from the stocker phase. The profitability stems from a

relatively low cost of gain on irrigated pastures and a premium sale value as grass-fed beef.

Actual cash sales are generated from selling grass-finished cattle, cull cows, and bulls. Table 4 presents a summary profitability analysis over all phases of production using cash sales, direct operating expenses, and enterprise overhead costs. The overhead costs of each production phase include the opportunity cost of capital charged for retained ownership of cattle through all production phases. The non-cash transfer costs between enterprises are not included. The production cost for the replacement heifers are accounted for in the stocker phase, resulting in an overall cattle operation profitability of $\$33,236.43$.

Hay cost breakeven analysis

Dramatically increasing hay costs is an issue facing many cattle producers. Hay prices in 2008 were at record high levels. Cattlemen in the budget model area have limited winter-fed options and hay is the basis of most cow-calf winter feed programs. Table 5 examines the breakeven price levels for each production phase as a result of variable hay costs. Increasing hay costs increase breakeven levels in all pro-

Table 4. Profitability of grass-fed beef combined with cattle production phases.

	Number	Weight	\$/cwt	Total Herd Value \$
Production Revenue (cash sales)				
Heifers (sold to grass market packer)	48	1,151	100.00	55,248.10
Steers (sold to grass market packer)	69	1,259	100.00	86,861.75
Cull Cow and Bull Revenue	23	1,122	54.57	14,078.00
<i>TOTAL RETURNS</i>	<i>140</i>			<i>156,187.85</i>
Direct Operating Costs				
Cow-Calf Phase (see notes)				78,953.13
Stocker Phase				27,477.15
Finishing Phase				32,208.23
<i>Sub-Total Direct Operating Costs</i>				<i>106,430.28</i>
RETURNS OVER DIRECT OPERATING COSTS				49,757.57
Overhead Costs				
Cow-Calf Phase				7,671.78
Stocker Phase				5,917.53
Finishing Phase				2,931.84
<i>Sub-Total Overhead Costs</i>				<i>16,521.14</i>
TOTAL COSTS				122,951.42
NET RETURN				32,236.43

Notes:

The production cost of the replacement heifers is included in the stocker phase budget, and is deducted from the cow-calf costs to avoid double counting.

Net Return is after charging 6% opportunity cost on retained cattle ownership.

Table 5. Variable hay cost breakeven analysis.

Hay Cost \$/ton	Weaned Calf \$/cwt	Feeder Cattle \$/cwt	Grass-fed Finishing \$/cwt	Total Operations \$/cwt
120	103.40	95.86	94.83	72.17
130	106.74	98.17	96.56	73.90
140	110.07	100.47	98.28	75.62
150	113.41	102.78	100.01	77.35
160	116.75	105.09	101.74	79.07
170	120.08	107.39	103.46	80.80
180	123.42	109.70	105.19	82.53
190	126.76	112.01	106.92	84.25
200	130.09	114.31	108.64	85.98
210	133.43	116.62	110.37	87.70
220	136.76	118.92	112.10	89.43
230	140.10	121.23	113.82	91.16
240	143.44	123.53	115.55	92.88
250	146.77	125.83	117.28	94.61

duction phases because the budget model recognizes the revenue—or in this case the necessary breakeven value—of the livestock at the end of one production phase as the non-cash inventory purchase cost to the following enterprise production phase. Transferring weaned calves to the stocker phase is an example of this. The breakeven prices are a combined weighted average heifer and steer price and represent the \$/cwt needed to break even. With a base hay price of \$150 per ton, the average weaned calf price needed to break even is \$113.41. Hay prices of \$170 per ton and higher require breakeven prices above any cattle prices ever reported in Washington (Table 2).

The total operation breakeven takes projected grass-fed beef cash sales and calculates the breakeven price over the entire production chain, but eliminates the non-cash enterprise transfer costs. This eliminates transfer costs and operating interest expenses and results in a lower breakeven price so that the total operation breakeven price ranges from \$72.17 to \$94.61 for \$120–\$250 per ton hay, respectively. The total operation breakeven price is after the 3% shrink used in the base model budget assumptions.

CONCLUSIONS

The cow-calf and stocker beef cattle enterprises were unprofitable using average Washington commercial cattle prices. However, the grass-finishing operation, which has a relatively lower cost of gain, sold cattle for a premium above commercial prices and was therefore profitable. Even when considering the increasing cost of hay, the current price offer of \$100 per cwt for grass-finished beef allows the cattle producer to remain profitable. This budget incorporates the increasing industry trend of using trucking to ship cattle between forage feed sources and is a component of a larger project to examine producing grass-fed and finished cattle in the project area.

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Appendix Table I. Feeding schedule per head.

	Amount Fed per hd per day	Units	Feeding Period	Days	Units Fed	Units	Dry Matter lbs/hd/day	Cost	Cost/hd/yr
Cows									
Hay	25	lbs	December 15–April 1	108	1.35	tons	22.5	150.00	202.50
Mineral	1	oz	Year round	365	22.8	lbs	0.06	0.25	5.70
Salt	1	oz	Year round	365	22.8	lbs	0.06	0.10	2.28
Improved Pasture	1	AUM	April 2–July 15	105	3.5	AUM	22.5	20.01	70.04
Range	1.25	AUM	July 16–Sept 30	77	2.5	AUM	21.9	17.00	53.13
Wheat Stubble	1.25	AUM	October 1–December 14	75	2.5	AUM	22.5	17.00	53.13
Cow Forage/Feed Days				365					
Annual Per Cow Feed Cost									386.77
Stickers									
(November 1 to June 30)									
Crop Aftermath	0.7	AUM	November 1–March 1	121	2.8	AUM	15.6	17.00	47.60
Improved Pasture	0.9	AUM	March 2–June 30	122	3.6	AUM	19.9	20.01	72.04
Mineral	1	oz	November 1–June 30	243	15.2	lbs	0.06	0.25	3.80
Salt	1	oz	November 1–June 30	243	15.2	lbs	0.06	0.10	1.52
Stocker Forage Days				243					
Stocker Per Head Feed Cost									124.95
Replacement Heifers									
(March 1 to April 30)									
Supplement Grain	4	lbs	March 2–April 30	60	240	lbs	3.6	0.20	48.00
Grass Finishing									
(July 1 to December 31)									
Irrigated Pasture	1.1	AUM	July 1–November 30	153	5	AUM	22.1	35.00	175.00
Mineral	1	oz	July 1–November 30	153	9.6	lbs	0.06	0.25	2.39
Salt	1	oz	July 1–November 30	153	9.6	lbs	0.06	0.10	0.96
Finishing Forage Days				153					
Finishing Per Head Feed Cost									178.35

Appendix Table II. Herd health program.

	Number	Units	Cost Per Unit	Cost Per Animal
Cows				
Fly Tags	2	tag	1.35	2.70
Pour On (Ivomec Eprinex Valley Vet)	1	dose	3.20	3.20
Lepto Vibrio	1	dose	0.51	0.51
Preg Check	1	service	2.00	2.00
7 Way	1	dose	0.43	0.43
IBR PI3 BVD	1	dose	1.28	1.28
Miscellaneous Veterinarian Treatments	5	calls/dose	100.00	0.67
Total Cow Health				\$10.79
Calves				
<i>Branding</i>				
Fly Tags	1	tag	1.35	1.35
7 Way	1	dose	0.43	0.43
IBR PI3 BVD	1	dose	1.28	1.28
<i>Pre-Weaning (pre-conditioning)</i>				
Selenium	1	dose	0.38	0.38
7 Way	1	dose	0.43	0.43
IBR PI3 BVD	1	dose	1.28	1.28
Pour On (Ivomec Eprinex Valley Vet)	1	dose	1.17	1.17
Bangs (all heifers \$3 *.5 for steers to per head)	1	dose	3.00	1.50
Total Calf Health				\$7.82
Total Cow-Calf Health				\$18.60
Stocker Phase Herd Health				
<i>Note Stockers Preconditioned Cost In Calf</i>				
Pour On (Ivomec Eprinex Valley Vet)	1	dose	1.17	1.17
Miscellaneous Treatments	1	dose	2.00	2.00
Total Stocker				\$3.17
Grass Finishing Phase Herd Health				
7 Way	1	dose	0.43	0.43
IBR PI3 BVD	1	dose	1.28	1.28
Pour On (Ivomec Eprinex Valley Vet)	1	dose	1.17	1.17
Miscellaneous Treatments	1	dose	2.00	2.00
Total Finishing				\$4.88

Appendix Table III. Machinery and equipment schedule and costs.

Cattle Operation Equipment										
Description	Current \$ Value	Salvage \$ Value	Useful Life	Depreciation Straight Line	Cattle Share	Annual Fixed Capital Cost	Annual Maintenance Cost	Annual Repair Cost	Cattle Maintenance Share	
Portable Corrals (20 12' panels @ \$100)	2,000	0	15	133	100%	133	0	0	0	
Portable Loading Chute	1,000	0	15	167	100%	67	0	0	0	
Squeeze Chute	2,000	0	15	133	100%	133	0	0	0	
Permanent Corrals	4,000	0	30	133	100%	133	50	50	50	
Rotational Fencing Not in Pasture and Range	1,860	0	7	266	100%	266	0	0	0	
Pickup	12,000	2,000	5	2,000	60%	1,200	300	300	180	
70 HP Tractor	25,000	5,000	10	2,000	50%	1,000	250	250	125	
Stock Trailer	3,500	1,000	10	250	100%	250	50	50	50	
ATV	4,000	1,000	7	429	60%	257	50	50	30	
Miscellaneous Equipment	1,000	0	15	67	100%	67	0	0	0	
Total Annual Cattle Equipment Cost						3,506	700	700	435	
Pasture Operation Equipment										
Description	Current \$ Value	Salvage \$ Value	Useful Life	Depreciation Straight Line	Pasture Share	Annual Fixed Capital Cost	Annual Maintenance Cost	Annual Repair Cost	Pasture Maintenance Share	
70 HP Tractor	25,000	5,000	10	2,000	20%	400	250	250	50	
ATV	4,000	1,000	7	429	20%	86	50	50	10	
ATV Sprayer	300	0	3	100	100%	100	0	0	0	
Mower	800	0	7	114	100%	114	20	20	20	
Pickup	12,000	2,000	5	2,000	20%	400	300	300	60	
Total Annual Pasture Machinery Cost						1,100	620	620	140	
Per Acre Cost Machinery				200	acres	5.50			0.70	
Per Acre Cost Fencing and Water \$30 Per Acre	30		30	1	100%	1.00	1	1	1	
Total Per Acre Pasture Capital Cost						6.50			1.70	
Total Per Acre Pasture Repair and Maintenance Cost										

Appendix Table IV. Spring calving 150-head cow-calf budget.

Production Assumptions:

Cow Herd	150
Calf Crop	96.00%
Replacement Rate	15.00%
Cow Death Loss	1
Weaning Rate	95.00%

	Number	Weight lbs	\$/cwt	Total Herd Value	Per Cow	Your Value
Production Revenue						
Heifer Calves (non-cash transfer to stockers)	71	550	93.95	36,687.48	244.58	
Steer Calves (non-cash transfer to stockers)	71	600	99.84	42,531.84	283.55	
Cull Cows	22	1,100	55.00	13,310.00	88.73	
Cull Bulls	1	1,600	48.00	768.00	5.12	
<i>TOTAL RETURNS</i>				93,297.32	621.98	
Direct Operating Costs (Appendix Table I)						
Pasture				10,505.41	70.04	
Range and Stubble				15,937.50	106.25	
Hay				30,375.00	202.50	
Minerals and Supplements				1,197.66	7.98	
<i>Sub-total Feed Cost</i>				58,015.57	386.77	
Herd Health Cow and Calf (Appendix Table II)				2,790.34	18.60	
Bull Breeding and Maintenance				5,090.23	33.93	
Replacement Heifers (Transferred from Stockers + Supplement)				18,397.67	122.65	
Marketing (Check-off Brand Inspection)				0.00	0.00	
Hired Labor				1,500.00	10.00	
Fuel and Oil				2,000.00	13.33	
Machinery Repair				1,000.00	6.67	
Utilities				200.00	1.33	
Miscellaneous Costs (5% of costs)				4,449.69	29.66	
Interest on Operating Costs at 6%				2,803.30	18.69	
<i>TOTAL DIRECT OPERATING COSTS</i>				96,246.80	641.65	
Overhead Costs (Cow-Calf 40% of Overhead Costs)						
Insurance				800.00	5.33	
Machinery and Equipment Depreciation				1,402.48	9.35	
Opportunity Cost on Breeding Herd at 6%				5,469.30	36.46	
<i>TOTAL OVERHEAD COSTS</i>				7,671.78	51.15	
<i>TOTAL COSTS</i>				103,918.58	692.79	
NET RETURN				-10,621.26	-70.81	

Appendix Table V. Stocker operation budget.

Production Assumptions:

Starting Stocker Head	142
Heifers	71
Steers	71
Death Loss	1

	Number	Weight lbs	\$/cwt	Total Herd Value	Per Head	Your Value
Production Revenue						
Heifer (non-cash transfer to finishing)	48	850	88.59	36,144.72	753.02	
Steers (non-cash transfer to finishing)	70	900	92.91	58,533.30	836.19	
Replacement Heifers (non-cash transfer to cow-calf herd at cost)	23	875	85.93	17,293.67	751.90	
<i>TOTAL RETURNS</i>	<i>141</i>			<i>111,971.69</i>	<i>794.13</i>	
Cattle Transfer in Costs						
Transfer in Heifers	71	550	93.95	36,687.48	516.73	
Transfer in Steers	71	600	99.84	42,531.84	599.04	
Gross Margin						
Heifers				16,750.92	235.93	
Steers				16,001.46	228.59	
<i>Net Gross Margin</i>				<i>32,752.38</i>	<i>232.29</i>	
Direct Operating Costs (Appendix Table I)						
Crop Aftermath				6,759.20	47.60	
Pasture				10,229.27	72.04	
Minerals and Supplements				754.82	5.32	
<i>Sub-total Feed Cost</i>				<i>17,743.29</i>	<i>124.95</i>	
Stocker Health (Appendix Table II)				449.59	3.17	
Trucking to Crop Aftermath				1,350.00	9.51	
Trucking to CRP Pasture				1,350.00	9.57	
Marketing (Check-Off Brand Inspection)				0.00	0.00	
Hired Labor				2,000.00	14.08	
Fuel and Oil				1,500.00	10.56	
Machinery Repair				1,000.00	7.04	
Utilities				200.00	1.41	
Miscellaneous Costs (5% of operating costs)				1,279.64	9.01	
Interest on Operating Capital at 6%				604.63	4.26	
<i>TOTAL DIRECT OPERATING COSTS</i>				<i>27,477.15</i>	<i>193.57</i>	
Overhead Costs (Stocker 50% of Overhead Costs)						
Insurance (Vehicles, liability, etc.)				1,000.00	7.04	
Machinery and Equipment Depreciation				1,753.10	12.35	
Opportunity Cost on Retained Ownership				3,164.43	22.28	
<i>TOTAL OVERHEAD COSTS</i>				<i>5,917.53</i>	<i>41.67</i>	
<i>TOTAL COSTS</i>				<i>33,394.68</i>	<i>235.17</i>	
NET RETURN				-642.30	-2.89	

Appendix Table VI. Grass-finished operation budget.

Production Assumptions:

Starting Finishing Head	118
Heifers	48
Steers	70
Death Loss	1
Shrink	3.00%

	Number	Shrunk Weight	\$/cwt	Total Herd Value	Per Head	Your Value
Production Revenue						
Heifer (to grass marketing less shrink)	48	1,151	100.00	55,248.10	1,151.00	
Steers (to grass marketing less shrink)	69	1,259	100.00	86,861.75	1,258.87	
<i>TOTAL RETURNS</i>	<i>117</i>			<i>142,109.85</i>	<i>2,409.87</i>	
Cattle Transfer in Costs						
Transfer in feeder heifers	48	850	88.59	36,144.72	753.02	
Transfer in feeder steers	70	900	92.91	58,533.30	836.19	
Gross Margin						
Heifers				19,103.38	397.99	
Steers				28,328.45	422.68	
<i>Net Gross Margin</i>				<i>47,431.83</i>	<i>820.66</i>	
Direct Operating Costs (Appendix Table I)						
Irrigated Finish Pasture				20,650.00	175.00	
Minerals and Supplements				394.93	3.35	
<i>Sub-total feed cost</i>				<i>21,044.93</i>	<i>178.35</i>	
Finishing Health (Appendix Table II)				575.38	4.88	
Trucking to Irrigated Pasture				1,350.00	11.44	
Trucking to Packer Processor				2,025.00	17.31	
Marketing (Check-Off Brand Inspection)				304.20	2.60	
Hired Labor				1,500.00	12.71	
Fuel and Oil				2,000.00	16.95	
Machinery Repair				1,000.00	8.47	
Utilities				200.00	1.69	
Miscellaneous Costs (5% of operating costs)				1,499.98	12.71	
Interest on Operating Capital at 6%				708.74	6.01	
TOTAL DIRECT OPERATING COSTS				32,208.23	272.95	
Overhead Costs (Finishing 10% of Overhead Costs)						
Insurance (Vehicles, liability, etc.)				200.00	1.69	
Machinery and Equipment Depreciation				350.62	2.97	
Opportunity Cost on Retained Ownership				2,381.22	20.18	
TOTAL OVERHEAD COSTS				2,931.84	24.80	
TOTAL COSTS				35,140.06	297.80	
NET RETURN				12,291.77	522.87	

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