UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

2012

SAMPLE COSTS FOR FINISHING BEEF CATTLE ON GRASS



SACRAMENTO VALLEY

(Northern Sacramento Valley)

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UC COOPERATIVE EXTENSION SAMPLE COSTS FOR FINISHING BEEF CATTLE ON GRASS 20 Head Sacramento Valley – 2012

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INTRODUCTION

There is increased interest and effort among some California ranchers to offer a value-added, ranch-raised grass fed product. The goal is to sell the beef product for a higher price and improve ranch profitability. The scale of operation can vary between a few head per year to a company marketing thousands of head per year. Ranch-raised meat products can increasingly be found in natural food stores, restaurants, and farmers markets.

Changing the business structure of the ranch from selling live animals to merchandising meat requires a new set of skills and knowledge. The producer must enjoy dealing with people and be comfortable marketing the family ranch experience and the wholesome product that is produced. It requires knowledge in food safety, marketing, and meat quality. Case studies have indicated the success of the new ranch enterprise is highly correlated to how the business in constructed to minimize transportation and labor costs.

Sample costs to raise beef cattle finished on grass are presented in this study. This study is intended as a guide only, and can be used to help make production decisions, determine potential returns, prepare budgets and evaluate production loans. Practices described are based on production methods considered typical for grass finishing beef cattle, but will not apply to every situation. Sample costs for materials, equipment and custom services are based on current figures.

The hypothetical cattle operation, production practices, overhead, and calculations are described under the assumptions. For additional information or an explanation of the calculations used in the study call the Department of Agricultural and Resource Economics, University of California, Davis, (530) 752-3589 or your local UC Cooperative Extension office.

Sample Cost of Production Studies for many commodities can be downloaded at <u>http://coststudies.ucdavis.edu</u>, requested through the Department of Agricultural and Resource Economics, UC Davis, (530) 752-6887 or obtained from the local county UC Cooperative Extension offices.

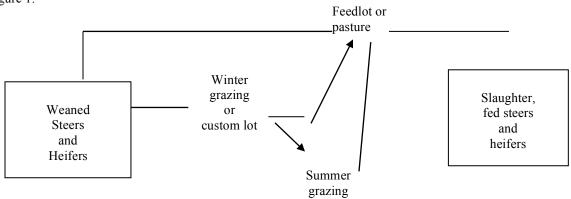
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ASSUMPTIONS

The assumptions refer to Tables 1 to 3 and pertain to sample costs to operate a forage based beef cattle finishing operation. Practices described represent production methods and materials considered typical of a well-managed ranch in the northern Sacramento Valley. The costs, materials, and practices shown in this study will not apply to all situations. Production practices vary by grower and the differences can be significant. The use of trade names and ranching practices in this report does not constitute an endorsement or recommendation by the University of California nor is any criticism implied by omission of other similar products or cultural practices.

Cattle Operation. In California, cattle will typically pass through three phases while reaching market weight. These include the cow-calf operation, yearling/stocker phase and finishing phase.





- This cow-calf phase is from birth to weaning (cattle are typically weaned at 7 to 9 months weighing around 500-600 pounds).
- The yearling/stocker phase will take these weaned cattle and grow them out on grass to about 800 to 900 pounds (14 to 20 months).
- > The feeding phase takes these yearlings on grass and finishes them on higher energy forage.

This study will focus on the finishing cattle on grass. For the purposes of this study, 800 pound yearling heifers will be fattened on grass to 1,100 pounds. Across California, cattle production techniques and management vary.

Feeder cattle can come from several sources. A cattle producer can keep their own yearling cattle or purchase them. Different time periods through out the calendar year can affect the availability of feeder cattle and may change the cost of purchase or income from sales.

This study focuses on feeder heifers purchased in the spring. It assumes the irrigated pasture is leased. The grazing lease is based on a \$156 per cow price for a six month grazing season (\$26/AUM). Because these feeder heifers are going onto pasture weighing 800 pounds and will be coming off at the end of the grazing season weighing 1,100 pounds, these animals will be considered 1 AU. It is imperative that for this finishing phase these cattle have abundant high quality forage available. The example herd size is 20. This could be typical of start up grass fed operations. The fixed costs will vary with the number of head involved or size of the operation.

In California, there are two grass sources available depending on the season. The coastal and inland valleys have green forage from February to June on non irrigated rangelands. The feed tends to be high in protein early and increase in energy later in the season (George, 2001). The forage quantity and quality is highly variable with the timing of rainfall and temperature. The second source of green feed is irrigated pastures which provide 2012 Beef Costs and Returns Study Sacramento Valley UC Cooperative Extension 3

forage from May to October. These pastures are generally cool season grasses and the bulk of the production is in the spring and fall. There are also native mountain meadows in the Sierra Nevada Mountains and in the northeastern California Intermountain area. This diversity of green forage provides many options for a grass fed protocols in California. It is a challenge to fatten the animals on forage of varying quality. For this Cost Study, the operation will be on leased irrigated pasture.

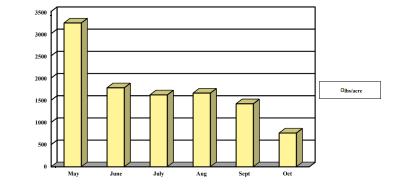
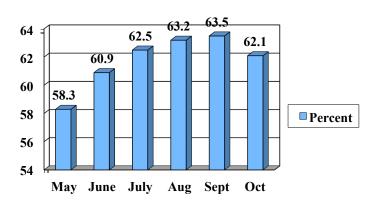


Figure 2. Outlines the average irrigated forage production on Shasta County.

In the Central and Sacramento Valleys cattle are typically grazed on irrigated pasture from late spring through mid autumn. The goal of grass finishing operations is to get cattle to harvest weight and standards as quickly as possible. Average daily gain varies by local environmental conditions (i.e., summer heat), forage quality, and genetic attributes of the cattle being pastured. Depending upon these attributes, producers might expect daily gains from 1.00 - 2.75 pounds per day across the grazing season. Forage quality and quantity are the primary drivers in seasonal cattle gain. Secondarily, rate of gain may also be affected by health, body condition, mineral nutrition and the quality of the cattle.

Fattening of the cattle can depend on grazing system, plant species present in the pasture, fertility, irrigation management. To properly finish cattle on irrigated pasture there must be ample good quality forage available throughout the feeding period. Forage quality is dependent upon species and vegetative state (rank forage is lower quality than forage in the vegetative state). Figure 3 illustrates the monthly energy level of irrigated pasture in Sacramento Valley portion Shasta County. These plots were harvested every 30 days.

Figure 3. Average Monthly Irrigated Pasture TDN-Select Shasta Co. Ranches



The production protocols vary for ranches claiming grass fed beef. The USDA Agricultural Marketing Service (AMS) has established a **voluntary** standard for a grass (forage) fed livestock marketing claim. It is summarized as follows: Grass and forage shall be the feed source consumed for the lifetime of the ruminant animal, with the exception of milk consumed prior to weaning. The diet shall be derived solely from forage consisting of grass (annual and perennial), forbs (e.g., legumes, *Brassica*), browse, or cereal grain crops in the vegetative (pre-grain) state. Animals cannot be fed grain or grain byproducts and must have continuous access to pasture during the growing season. Hay, haylage, baleage, silage, crop residue without grain, and other roughage sources may also be included as acceptable feed sources. Routine mineral and vitamin supplementation may also be included in the feeding regimen. If incidental supplementation occurs due to inadvertent exposure to non-forage feedstuffs or to ensure the animal's well being at all times during adverse environmental or physical conditions, the producer must fully document (e.g., receipts, ingredients, and tear tags) the supplementation that occurs including the amount, the frequency, and the supplements provided.

The federal register copy of the **voluntary** standards can be found at http://www.ams.usda.gov/AMSv1.0/getfile?dDocName=STELPRDC5063842

Production Options

If producers retain their own stocker cattle at the end of the yearling phase, they have forgone the opportunity to market them as feeder cattle and have effectively transferred them to a beef grass finishing enterprise. The fair market value of those feeder cattle must be assigned to this enterprise to evaluate the profitability of the grass fed enterprise.

Twenty heifers averaging 800 lbs will be turned onto leased irrigated pasture on April 15. The value of the heifers (January 13, 2012 Shasta Livestock Auction Yard, \$126-\$133) is estimated at \$1.30 per pound. Assumed value of the heifers into the fed cattle enterprise is \$1,040. The animals are assumed to be ready for harvest on Oct. 1 (168 days). The assumption is they will need to reach a 1,100 finish weight. To do this they will need to gain about 1.78 pounds per day. Keep in mind that some cattle will not perform as well as others and that there will be variation in the time required to reach a finished weight. Cattle will be processed and packaged at a USDA inspected processing plant located 100 miles from the ranch. The ranch will pay the harvest costs (\$70/head) and cut and wrap charges (\$0.90/lb).

For a niche beef business to be successful the operation must produce a high quality product consistently. Off quality product sold to consumers could result in dissatisfied customers and lower future meat sales. The structure of the business needs to be carefully considered so that opportunities to scale the business up can be implemented in response to market demand. The marginal return on a few head may not make this enterprise economically attractive where if that same per head return was realized across many head it might be more attractive. (REDUCE PER UNIT COST)

Operations. The Operations Calendar for finishing beef cattle on grass is shown in Table A. The operations are affected by several factors such as weather, quality and quantity of the irrigated pasture. Therefore, depending upon the season, the operations will vary each year.

Production Operating Costs

Table A. *Operations Calendar for Grass Fed Beef -- Farmers Market Based on range & Pasture (20 head, 0% mortality

Month	Operation
April 15 to October 15	Irrigated pasture
April to October	Vaccination/Deworming
September	Reserve Harvest Date
October	Start Farmer's Market Planning
October (varies according to Ranch)	Harvest animals & process into retail cuts
November	Start Farmer's Market Sales
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*Calendar will vary according to the Ranch and Farmers Market

Pasture, Hay and Supplements. This includes the market value of all feed (purchased or raised) that was used in the beef cattle finishing operation. The assumption used in this study is that irrigated pasture is rented for \$26/AUM (an AUM [animal unit month] is the equivalent to 1,000 pounds of forage on an air dry basis) over a six-month period. It is assumed the landowner pays for water, fertilization and provides the irrigator in this cost study. Some operations feed small amounts of hay when they receive or ship cattle.

Some areas of California are deficient in micro and macro-nutrients, which can greatly impact the weight gains on pasture. Consult your local veterinarian to learn about what might be deficient in your area. For Se, Cu, Zn and P a good reference by county is the UC Website <u>http://animalscience.ucdavis.edu/MineralProject/</u>

Health, Veterinary, Medicine. Good health and nutrition management can greatly impact profitability. Cattle should be treated to reduce risk from parasites (external and internal) and disease. Consult your local veterinarian on the best program for your cattle. Cattle should be appropriately identified. Cattle will be gathered and processed again mid-season. This study assumes a death loss of 1%. This cost is based upon 1% of the total purchase amount of the 20 yearlings.

Vehicle/Freight. Pickup business vehicle mileage is estimated at 1,000 miles per year and includes mileage while pulling the stock trailer. Estimated mileage for the stock trailer is 400 miles and the All Terrain Vehicle (ATV) 4-wheeler is 1,000 miles per year. All hauling will be by the livestock owner.

Repairs. Vehicle and equipment repairs are accounted for in the mileage rate allocated to each vehicle.

Labor-Cattle Management. Owner labor is used for hauling, gathering, feeding, salting, checking cattle, and moving pastures is also not included as a cost. Water charges, fertilizer, irrigation and fence repair is the responsibility of the land owner and is included in the pasture rental rate.

Management-Niche Beef Business. Although the development of a grass finished niche beef business requires a tremendous amount of time to produce the product, develop the market, manage sales and inventory it is not included in the cost of production example (Table 1).

Marketing/Returns. There are two different grass fed business plans in this cost study. Both involve the same number of head (20). They include selling 20 animals to consumers as sides of whole carcass beef or as packages of cuts at a Farmers market.

Sides of Carcass. The target market size is 40 people interested in purchasing a side of beef. The product is defined as grass fed beef delivered to a USDA inspected should this be slaughter and processing plant, which is required to sell processed beef. Adding this enterprise will require additional labor from the owner, but is not reflected in this cost study. In tables 1 and 2, labor is considered to be part of the Returns to Risk and Management. To obtain the costs of forage, we have the cattle on leased pasture. No additional equipment or facilities have been charged against the operation. The cattle will be marketed to friends and neighbors. Limited advertisement in local media will be done as well. Additional revenue could be potentially earned through the sale of offal (heart, liver, tongue), dog bones and other by-products but is not considered in this cost study.

Farmers Markets. Marketing at a Farmers market will require that the beef be frozen and stored at a facility that has temperature monitoring or control systems. Equipment to transport and store the meat at a guaranteed temperature will need to be purchased. Costs for permits, stall rental (at Farmer's Market) and travel to market need to be considered. Development flyers or promotional information for consumer education and sales

support will be needed. This example assumes meat sales will be in fifty pound packages of assorted cuts of meat to address the inventory issues by getting consumers to buy a wide array of cuts. The price is \$7 per pound or about \$350 per box. This example assumes there will be approximately six to seven of these 50 pound boxes per carcass. For purposes of this analysis two farmers markets are attended weekly for 40 weeks of the year. This model assumes that approximately two of the 50 pound boxes will be sold at each farmers market each week and that 100 miles per week of driving is necessary to service these markets. Additional revenue could be potentially earned through the sale of offal (heart, liver, tongue), dog bones and other by-products but is not considered in this cost study.

Interest on Operating Costs. Interest on operating costs is calculated on cash costs (yearling cattle purchased or retained and operating costs) and is calculated at 5.75 % annual interest over a 6-month period.

Risk. Production risks should not be minimized. While this study makes every effort to model a production system based on typical, real world practices, it cannot fully represent financial and market risks, which affect profitability and economic viability.

Cash Overhead

Cash overhead consists of various cash expenses paid out during the year that are assigned to the whole farm and not to a particular operation. These costs include property taxes, interest on operating capital, office expense, liability and property insurance, equipment repairs, and management.

Insurance. Insurance for farm investments varies depending on the assets included and the amount of coverage. Most producers have assumed that their farm or ranch liability policy will cover this extended ranch business. Most insurance agents have stated that their general farm liability packages do not cover processed foods or off farm retail activity. In these cases, the policy does not provide product liability coverage that producers need to have if they are selling meat products to the public. Some farmers markets will require product and business liability policies and may also ask that they are listed as "Additionally Insured." The American Grassfed Association (AGA) is providing a service to its members by working with a specific company to offer a Commercial General Liability insurance product specifically for direct meat marketers, including Products and Completed Operations coverage. Based on favorable claims experience and business longevity, the average cost of 2007 Policies was \$640 per year.

Office Expense. Office and business expenses are estimated at \$1,000 per year or \$50 per head. These expenses include office supplies, telephones, bookkeeping, accounting, legal fees, utilities, and miscellaneous administrative charges.

Non-Cash Overhead

Non-cash overhead is calculated as the capital recovery cost for equipment and other farm investments. Values in the table are for information only. The equipment capital recovery costs are included in the mileage costs shown in Tables 1 and 2.

Capital Recovery Costs. Capital recovery cost is the annual depreciation and interest costs for a capital investment. It is the amount of money required each year to recover the difference between the purchase price and salvage value (unrecovered capital). It is equivalent to the annual payment on a loan for the investment with the down payment equal to the discounted salvage value. This is a more complex method of calculating ownership costs than straight-line depreciation and opportunity costs, but more accurately represents the annual costs of ownership because it takes the time value of money into account (Boehlje and Eidman). The formula

for the calculation of the annual capital recovery costs is ((Purchase Price – Salvage Value) x Capital Recovery Factor) + (Salvage Value x Interest Rate).

Salvage Value. Salvage value is an estimate of the remaining value of an investment at the end of its useful life. For farm machinery (tractors and implements) the remaining value is a percentage of the new cost of the investment (Boehlje and Eidman). For other investments including irrigation systems, buildings, and miscellaneous equipment, the value at the end of its useful life is zero. The purchase price and salvage value for equipment and investments are shown in the tables.

Portable Cattle Working Facilities. Consists of portable loading chutes and portable corral panels. Depending upon the type and number of squeeze chutes and corral panels, the price will vary. An estimated price for livestock handling equipment required by a typical 300-stocker operation is used in this study. *UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION 2010 SAMPLE COSTS FOR BEEF CATTLE YEARLING/STOCKER PRODUCTION* (300 head) cost study notes a capital investment for corrals and chutes at \$15,000. The annual capital recovery is calculated to be \$1,281. The use of these facilities by this enterprise is estimated to be 6.67% (20 head of cattle/300 head) or \$85/year.

Equipment. Farm equipment is purchased new or used, but the study shows the current purchase price for new equipment. Annual ownership costs for equipment and other investments are shown in the Equipment, Investment, and Business Overhead Costs table. Refrigeration or storage equipment will be required for the Farmer Market operations. The amount of expenditure will depend on the requirements of the County Health Dept. and or Farmers market requirements to mechanize meat.

Table Values. Due to rounding, the totals may be slightly different from the sum of the components.

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- Fields, Thomas G., Robert W. Taylor. *Beef Production and Management Decisions*. 4th Edition. 2003. ISBN: 0130888796.
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University of California Cooperative Extension Table 1. 20 HEAD OF PURCHASED YEARLINGS FINISHED ON GRASS – Carcass Beef

Sacramento Valley - 2012

Gross Income			Dollar	Gross	
	Number	Weight	Value	Value	¹ Per Cal
Calves Purchased	20	800	130	20,800	1,040
Carcasses Sold ²	20	627	2.75	34,485	1,724
Gross Income				13,685	684
Operating_Costs					
Pasture (leased-based upon seasonal \$156/cow or 1AU) ³				3,120	150
Purchased Feed :	Tons	Cost/unit			
Salt	0.50	230.00		115	6
Hay	1.00	120.00		120	(
Veterinary/Medical				200	10
Death Loss (1% of purchased price) ²			208	208	10
Truck Mileage	1000.00	0.555	555	555	23
Stock trailer mileage	400.00	0.20	80	80	2
4 Wheeler mileage	1000.00	0.22	220	220	1
Brand inspection			20	20	
Checkoff (Marketing Order Promotion)			20	20	
Harvest Cost	70.00		1,330	1,330	6
Cut and Wrap		0.90		10,722	53
Marketing Costs (brochures, fliers, newspaper advertisement)			1,500	1,500	7
Horse costs - shoes, vet, & feed			200	200	10
Total Cash Operating Costs				18,410	92
Income Above Cash Operating Costs				-4,725	-23
Ownership Costs					
Interest on Operating Costs (calves + operating cash) @ 5.75%			982	982	4
Insurance (Vehicle, liability, etc.)			1,500	1,500	7:
Overhead (utilities, office costs, legal and accounting)			1,000	1,000	5
Investments (Capital Recovery)			100	100	:
Total Overhead (Cash & Non-Cash Overhead)				3,582	17
Total Costs				21,992	1,10
Net Returns Above Total Costs (Returns to Land and Management)				-8,307	-41

¹ Per Calf based on 20 head purchased

 2 Assumes a $\,1\%$ death loss calculated on the total purchase price of the 20 head

Note: The cost of labor and health insurance is not included

³ noted above but not defined here

University of California Cooperative Extension Table 2. 20 HEAD OF PURCHASED YEARLING FINISHED ON GRASS - Sold at Farmers Markets Sacramento Valley - 2012

Gross Income			Dollar	Gross	
	Number	Weight	Value	Value	¹ Per Calf
Calves Purchased	20	800	1.30	20,800	1040
Farmers market sales (50 pound boxes at \$7/pound)	20	385	7.00	53,900	2,695
Gross Income				33,100	1,655
Operating Costs					
Pasture (leased-based at \$26/month for 6 months)				3,120	156
Purchased Feed :	Tons	Cost/unit			
Salt	0.50	230.00		115	6
Hay	1.00	120.00		120	6
Veterinary/Medical				200	10
Death Loss- (1%-Cash Basis-Purchase Price) ²				208	10
Truck Mileage	1,000.00	0.555	555	555	28
Stock trailer mileage	400.00	0.20	80	80	4
4 Wheeler mileage	1,000.00	0.22	220	220	11
Horse costs - shoes, vet, & feed			200	200	10
Brand inspection			20	20	1
Checkoff (Marketing Order Promotion)			20	20	1
Harvest Cost	70.00		1,330	1,330	67
Cut and Wrap		0.90		10,910	546
Marketing Costs (brochures, fliers, newspaper advertisement)			2,534	2,534	127
Professional Services			2,103	2,103	105
Permits			75	75	4
Farmers Market Membership Fees (\$30/each)				60	3
Farmer's Market (two markets per week, 40 weeks/year)			2,400	2,400	120
Frozen Storage			400	400	20
Transportation costs to Farmer Markets	4000	.555	2200	2200	110
Total Cash Operating Costs				26,870	1343
Income Above Cash Operating Costs				6,230	312
				,	
Ownership Costs					
Interest on Operating Costs (calves + operating cash) @ 5.75%			1,170	1,170	59
Insurance (Vehicle, ranch general liability, and product liability)			2,000	2,000	100
Overhead (utilities, office costs, legal and accounting)			1,000	1,000	50
Investments (Capital Recovery)			100	100	5
Total Overhead (Cash & Non-Cash Overhead)				4,270	214
Total Costs				31,140	1,557
Net Returns Above Total Costs (Returns to Land and Management	6)			1,960	98

¹ Per Calf based on 20 head purchased

 2 Assumes a 1% death loss calculated on the total purchase price of the 20 head

Note: The cost of labor and health insurance is not included

UC COOPERATIVE EXTENSION Table 3. RANGING ANALYSIS SACRAMENTO VALLEY 2012

Carcass Sales

Weight per Animal (lb)	627	627	627	627	627	627	627
Weight per Animal (lb)							
Animals Sold	20	20	20	20	20	20	20
\$/lb	1.50	2.00	2.50	2.75	3.25	3.75	4.25
Gross Income	18,810	25,080	31,350	34,485	40,755	47,025	53,295
Animal Purchase Cost (20 calves)	20,800	20,800	20,800	20,800	20,800	20,800	20,800
Income less Purchase Cost	(1,990)	4,280	10,550	13,685	19,955	26,225	32,495
Total Cash Operating Costs	18,410	18,410	18,410	18,410	8,410	18,410	18,410
Income above Cash Operating Costs	(20,400)	(14,130)	(7,860)	(4,725)	1,545	7,815	4,085
Total Costs	21,992	21,992	21,992	21,992	21,992	21,992	21,992
Net Returns above Total Costs	(23,982)	(17,712)	(11,442)	(8,307)	(2,037)	4,233	10,503

Farmers Market Sales

Weight per Animal (lb)	385	385	385	385	385	385	385
Animals Sold	20	20	20	20	20	20	20
\$/lb	5.50	6.00	6.50	7.00	7.50	8.00	8.50
Gross Income	42,350	46,200	50,050	53,900	57,750	61,600	65,450
Animal Purchase Cost (20 calves)	20,800	20,800	20,800	20,800	20,800	20,800	20,800
Income less Purchase Cost	21,550	25,400	29,250	33,100	36,950	40,800	44,650
Total Cash Operating Costs	26,870	26,870	26,870	26,870	26,870	26,870	26,870
Income above Cash Operating Costs	(5,320)	(1,470)	2,380	6,230	10,080	13,930	17,780
Total Costs	31,140	31,140	31,140	31,140	31,140	31,140	31,140
Net Returns above Total Costs	(9,590)	(5,740)	(1,890)	1,960	5,810	9,660	13,510