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Sample Costs for a 50-Head Organic Cow-Calf Operation in the North Coast Region of California (Mendocino and Lake Counties)

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INTRODUCTION

Although this study presents sample costs to raise beef cattle organically in Mendocino and Lake Counties on the North Coast of California, the costs will be useful for people in other areas who are interested in organic beef production. The ranch used in this study is a 50-head cow-calf herd operation that produces, slaughters, packages, and markets the final beef product during an 18-month cycle. This study is intended as a guide only and can be used to make production decisions, determine potential returns, prepare budgets, and evaluate production loans. Sample costs for labor, materials, equipment, and custom services are based on local figures current as of June 2005. The practices described are based on production procedures considered to be necessary for beef cattle in this area, but they may not apply in every situation. Some costs and practices presented in this study may not be applicable to your situation. A blank column is provided in table 3 to enter your costs.

In 2003, the U.S. Department of Agriculture's Economic Reporting Service (ERS) published comprehensive data and analysis on organic crop and livestock production (Greene and Kremen 2003) for the first time. Their findings revealed that organically raised beef and dairy cattle, sheep, hogs and pigs, laying hens, and broilers all exhibited strong growth between 1997 and 2001. ERS shows that this trend is continuing in California as well, and for this reason a sample costs study for a 50 cow-calf herd was conducted.

For an explanation of calculations used for the study, refer to the section "Assumptions." For metric conversions, see the table at the end of the publication. For more information, call Pete Livingston at the UC Davis Department of Agricultural and Resource Economics, 530-752-2414, or call John M. Harper, UC Cooperative Extension Mendocino and Lake County Livestock and Natural Resources Advisor, 707-463-4495.

ASSUMPTIONS

The following assumptions pertain to sample costs to raise organic beef cattle in Mendocino and Lake Counties, California. The practices described are not necessarily recommendations by the University of California but represent husbandry and production practices and materials considered typical of a well-managed organically raised herd. Some costs, practices, and materials may not be applicable to your situation or be used during every year. Additional practices not indicated may be needed. Husbandry practices vary by ranchers and region, and variations can be significant. These costs are presented in several formats.



Table 1. Months of major operations

Operation	Month
Winter feeding	September to February
Pasture feeding	March to August
Calving	December to February
Breeding	November to February
Weaning	June to July
Meat sale*	Varies

Note: *For meat sale, see table 3.

Land

The hypothetical ranch consists of 800 acres of land. Half of the land, 400 acres, is owned by the rancher and includes the irrigated pasture. The remainder of land is leased private rangeland. Currently, land adequate for grazing varies from \$500 to \$3,000 per acre. An average price of \$1,050 is used for this study. Private range leased in this region varies from \$6 to \$18 per animal unit month (AUM) depending on the quality of the land. An AUM in this region for dryland range requires 10 to 12 acres per cow annually. In this study, the land has a lease price of \$12 per AUM per month, and a total of 58.75 cows, calves, and bulls are assumed to graze on the leased range.

Labor

Labor rates of \$22.05 per hour for the owner or rancher and \$14.70 for general labor includes payroll overhead of 47%. The basic hourly wages are \$15.00 for owner labor and \$10.00 for general labor. The overhead includes the employers' share of federal and California state payroll taxes, workers' compensation insurance for a stock operation (Barker 2005), and a percentage for other possible benefits. Workers' compensation insurance costs vary among ranchers, but for this study the cost is based on the average industry final rate as of January 1, 2005 (Barker 2005).

COW-CALF HUSBANDRY PRACTICES AND MATERIAL INPUTS

Cattle Herd

The herd consists of 50 cows and 40 calves. During part of the year heifer and steer calves are sold except for 7 replacement heifers that take the place of 7 cows in the breeding herd. From the herd 10 heifers are bred and 7 are kept as replacements; 33 heifers and steers and 7 culled cows are sold as organically raised. The ranch also has one bull to service the herd; it is replaced every 6 years.

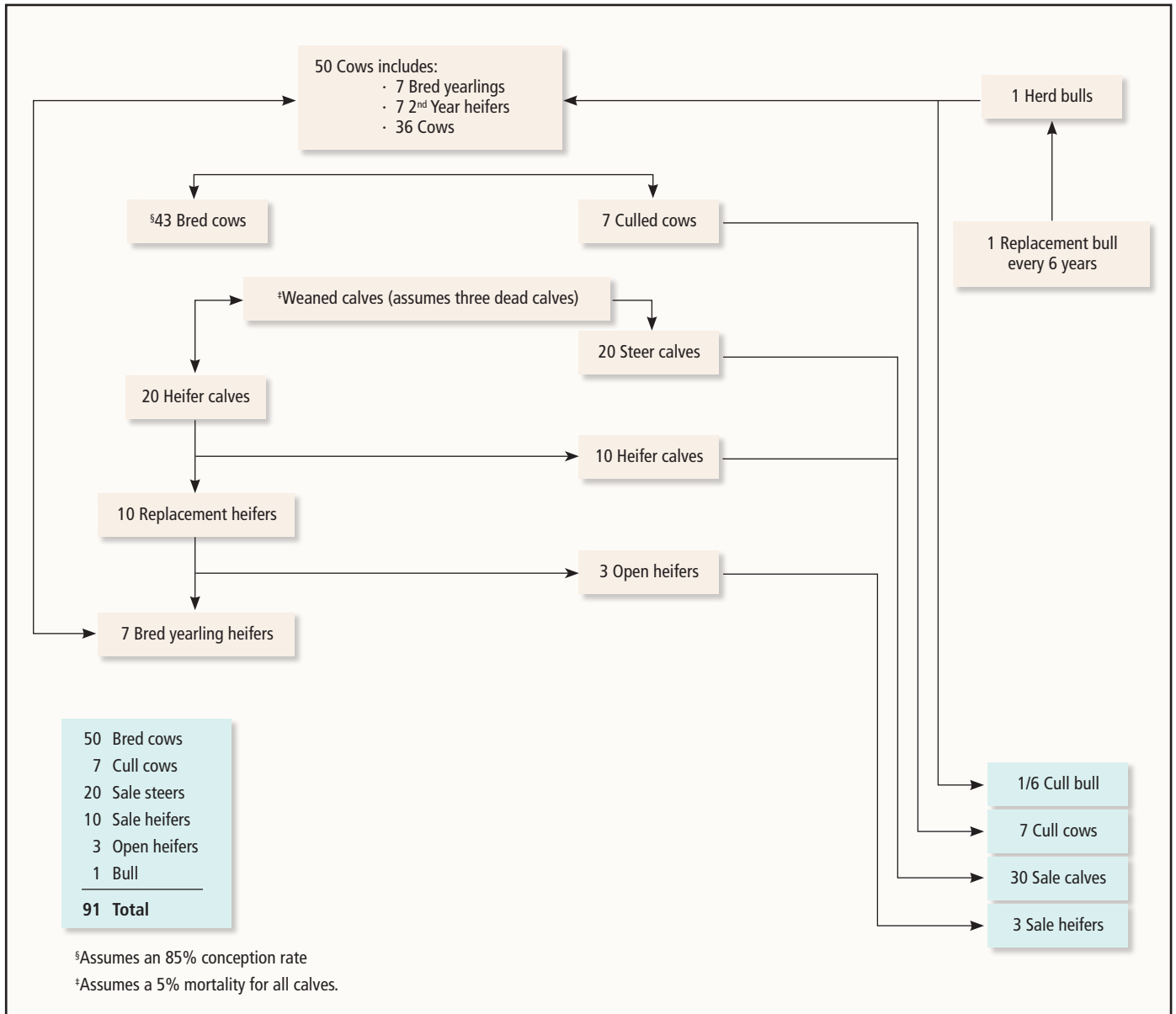
This is a winter–early spring calving operation. Approximate dates for ranching operations are shown in [table 1](#); the yearly cycle of the 50 organic cow-calf herd is shown in [figure 1](#). Cows and replacement heifers are bred in late winter through spring (November through February). An 85 percent conception rate and 95 percent birth rate are used (December through February). There is 5% death loss of heifers and bulls calves. Ten percent of the cows will be culled from the herd for various health reasons.

The cow-calf herd operates on a yearly basis. Steers and culled heifers are normally sold through commercial markets until the time when the entire beef operation becomes organic. The 20 heifer calves are kept until 14 months of age, at which time 10 heifers are moved out of the replacement herd and the other 10 are bred. Of the 10, 3 are assumed to fail to breed and are moved to the sale herd to be sold, leaving 7 selected heifers to go into the replacement herd.

At calving time in the organic beef operation all of the calves are raised to market weights. During this time the 20 heifers are scrutinized for suitability to move into the main cow herd for breeding. Out of those, 10 are selected to be bred. At that point, 7 cows and 3 more bred heifers are culled and sold.

For commercial operators transitioning to an organic livestock production system the assumptions presented here are for a base 50 cow-calf herd with 33 heifers and steers and 7 cows sold as organically raised. To become an organic beef operation a rancher must meet the requirements of the National Organic Program (NOP) and the (California) State Organic Program (SOP), register with California Department of

Figure 1. Annual breeding cycle for a 50-head organic cow-calf herd. Organic beef standards and labeling are governed at the federal level by the applicable standards of the USDA's National Organics Program (NOP) and by the CDFA's State Organics Program (SOP). *Source:* Adapted with permission from data by Larry Forero, UCCE Livestock and Natural Resources Advisor, Shasta and Trinity Counties.



Food and Agriculture (CDFA), and be accredited by a third-party organic certification organization. In addition, a rancher selling meat in a retail store or market must use slaughterhouse and wrapping facilities that are certified organic by the USDA and meet any other applicable state or local laws or ordinances.

Feed

Rented rangeland suitable for grazing varies from \$2 to \$18 per AUM in Mendocino and Lake Counties. The herd in this study is mainly range- and pasture-fed for most of the year.

The largest amount of labor expended is for feeding cows from October through February. Feeding is required because of the lack of pasture forage or the potential damage that cattle may do to pasture in wet conditions. It is assumed that during these wet months approximately 30 minutes per day (15 hours of labor per month) is required for feeding hay. During these months the whole cow herd is grazed in the range or pasture when feeding occurs. Animals will be fed an additional forage-based feed at a rate of $\frac{1}{2}$ to $\frac{3}{4}$ ton per head annually.

Animals are also fed a mineral supplement-salt mixture to ensure they receive proper nutrition. It is assumed that cows need 2 ounces of mineral supplement per head per day.

The cattle meant for sale are finished on organic grain in the ranch's feedlot for the final 4 months. They are usually placed in the feedlot at 590 to 700 pounds. Finished weights can range from 1,000 to 1,200 pounds per animal, depending on the starting weight and its average daily gain. A total of 3.6 tons of grain is used to finish all of the sale animals.

Fencing

The ranch has permanent and temporary fencing. The permanent fences are assumed to be in place on the rented rangeland. Maintenance of permanent fences on the leased land is included in the lease fee. Fences on the owned land are an improvement to the property, and landowners can depreciate this item.

Temporary fences are electric fences that can be moved as needed. This helps lower costs and the need for permanent fencing. The temporary fence is an investment, and a capital recovery cost is shown in various tables to account for its value.

The cost for labor to move cows depends on the pasture design, terrain, and the distance traveled to herd the cattle. Most cattle herds are left alone in the confines of their range to find sufficient forage and water for their needs.

In this cost study the ranch has a combination of irrigated pasture and dryland range. From the early spring until the forage is gone cattle feed on the vegetation that is available on the dryland fields of the ranch. Irrigated pasture is cut for hay to meet some of the winter feed requirements. When the irrigated pastures are consumed as forage, an electric fence is used to manage cattle grazing. The herd is kept in the same paddock for 5 days and then rotated to the next paddock. This allows the pasture time to regenerate feed for later use by the herd.

Vaccination and Veterinarian Care

All calves are given background shots as allowed under the organic protocols. This occurs during branding, weaning, and whenever animals are gathered. Animals are given routine vaccinations at a cost of \$4.50 per animal annually. Assisting with vaccinations and any other veterinarian care requires 3 hours of ranch labor. Because there are no effective organically approved medicines for treating internal parasites in cattle, the herd is not treated. If an organically certified cow or calf gets internal parasites, it

is usually treated with a non-organically approved medication, removed or tagged to separate it from the organic herd, and sold as conventionally raised beef.

Heifers that are not going to be replacement cows for the herd are spayed to prevent any breeding, and male cattle are castrated. Vaccination for brucellosis is administered or given to all of the female calves.

TRANSPORTATION, SALES AND RETURNS, MARKETING, AND ORGANIC CERTIFICATION

Transportation Cost

Live animals are shipped by the rancher's own truck and trailer to the Sacramento Valley for slaughtering, cutting, and wrapping in a USDA-inspected and certified plant that is also certified as an organic processor (Harris and Tan 2004). Transportation costs include fuel and labor and are paid by the rancher; these costs are included in the price paid by the buyer. The amount of the hauling cost in the final meat price depends on the shipping expense and how the meat is sold. It is assumed to take roughly 8 hours of labor round-trip to transport animals for slaughter, cutting, and wrapping.

Sales and Returns

Because the animals are processed into various cuts of meats that are sold either directly to the consumer or to a retailer, prices can vary in the marketplace. The prices and weights listed in [table 2](#) are used in this cost study to illustrate some typical organic prices and weights of cuts and are based on the best data available. The weights and prices for the cuts in [table 2](#) are used to calculate an average price. The average price per pound is calculated by dividing the total revenue per cow by the number of pounds of meat per cow. The total revenue per cow is calculated by multiplying the price per pound by the number of pounds for each cut of meat to get the income from each cut, and then adding these together as seen in [table 2](#). This takes into account the proportional importance of each cut of meat to income. [Table 2](#) shows that the weights of the packages are similar to published data on expected carcass weights. Prices and weights depend on many factors and can change over time.

Commercial organically raised heifer and steer calves are sold at about 18 to 24 months of age at 1,000 to 1,200 pounds, depending on feed and growth for the year. Heifers, steers, and culls are shipped for slaughtering and butchering once they reach proper weight. This study assumes that the heifers and steers are brought to a weight of 1,100 pounds at the time of slaughter, culled cows and open heifers are processed at 1,400 pounds of live weight, and every 6 years the bull is butchered at 1,800 pounds. It is also assumed that carcass weight of the 1,100-pound calves is 62% (682 pounds) of the live weight, and retail cuts are 75% (512 pounds) of the carcass weight. Fat and bones make up the rest of the carcass weight (170 pounds). Ten pounds of beef or soup bones are included in the weight of the carcass, giving a total 522 pounds of retail cuts. While transportation of the animals is required, shrink does not cause a significant weight loss.

Prices are quite variable, depending on factors such as the type of cut of meat sold, timing, markets, and demand. [Table 2](#) shows the prices for the organically raised beef cuts used in this study. Prices used in this study are a weighted average price based on the average weight of a cut of meat divided by the total carcass weight times the price of the cut. The total prices are added together, and a weighted average price of \$8.50 is used. This price is used to estimate and give an idea of potential positive or negative returns for retailed organic meat as shown in [tables 3 and 6](#).

Marketing

The ranches that were studied for the foundations of their costs of a hypothetical ranch used two types of marketing: direct consumer sales and sales to a retail store. Neither of these marketing channels are explored in depth in this cost study because markets for organic beef are still developing and do not have a standard or normal sales conduit. However, in an organic beef operation, alternative marketing methods should be taken into consideration as part of doing business. Ranchers need to explore markets and sales to find the best practice for their operation. This may mean using several sales strategies to achieve profitability and economic sustainability.

One source for additional information on marketing cattle from a rancher's perspective (Nader et al. 1997) can be found on the Internet at <http://sarep.ucdavis.edu/grants/Reports/nader/>. Four case studies of the ranchers' sales strategies are presented, as well as a prospective business and marketing plan. The report also cites other sources for marketing, labeling, standards, and taste and sensory testing. The report may be helpful to anyone wanting to start specialty niche beef marketing.

Packaging and Labeling

All meat cuts are hermetically sealed at butchering, labeled, and frozen to improve shelf life as well as shipping. Packaging and labeling are paid for by the rancher. Ranchers provide the labels, at their own expense, to the butcher. Ranchers selling their cuts either directly or through retail must have freezer storage on their ranch in order to hold meat as long as needed. Costs of cold storage and their operation are paid for by the rancher. A list of harvesting sites is available at the UCCE Placer-Nevada Counties Web site, <http://ucce.ucdavis.edu/datastore/datareport.cfm?reportnumber=175>.

Having a well-presented USDA Certified Organic label can help a rancher differentiate their product as markets become increasingly competitive, but the regulation and time necessary for approval of a label requires an early start in the process. The Food Safety Inspection Service (FSIS) is the entity in the USDA that approves any label on meat packages sold (FSIS 2005). The process for having a USDA-certified label is detailed; forms are given at the FSIS Web site, <http://www.fsis.usda.gov/home/index.asp>. Contact the FSIS for more information on label standards.

Organic Certification

Both the USDA and CDFA have jurisdiction over organic certification. The National Organic Standards Board (NOSB) is the agency in the USDA that officially approves the acceptable organic materials that can be used for certified organic production practices. The USDA accredits all international, state, and private certifying organizations. At the state level the CDFA also must approve the third-party organizations that certify that a commodity raised by a grower or rancher meets organic standards. A comprehensive description including rules for organic crop and livestock production, certifying organizations, approved materials, marketing, and contact information can be found in *Organic Farming Compliance Handbook: A Resource Guide for Western Region Agricultural Professionals* (Baker et al. 2005). The complete organic compliance handbook can be found on the Internet at the UC Davis SAREP Web site, www.sarep.ucdavis.edu/organic/complianceguide/organizations.htm.

The ranch in this study is assumed to have already transitioned to meet organic standards. Ranchers and growers registered as organic producers must pay annual fees to various agencies. There are different annual fees for certification, membership, sales, and assessments, depending on the organizations that a rancher uses. This study uses an estimate of \$1,000 for the annual certification, registration, and inspection process.

Risk

Significant risks are associated with operating a certified organic 50-head cow-calf operation and producing and marketing certified organic USDA-labeled beef. While this study makes every effort to model a production system based on typical real-world practices, it cannot fully represent financial, agronomic, animal husbandry, and market risks that affect the profitability and economic viability of a cow-calf or certified organic beef operation. Additionally, ranchers must consider the transition period from regular to organic production, approved labeling, and the availability of certified USDA and organic processing facilities. A market channel must be determined to exist before starting either a cow-calf operation or an organically certified beef program.

CASH OVERHEAD COSTS

Cash Overhead

Cash overhead consists of 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 expenses, liability and property insurance, management services, and equipment repairs.

Property taxes

Counties charge a base property tax rate of 1% on the assessed value of the property. In some counties special assessment districts charge additional taxes on property, including equipment, buildings, and improvements. For this study, county taxes are calculated as 1% of the average value of the property. Average value equals new cost plus salvage value divided by 2 on a per acre basis.

Interest on operating capital

Interest on operating capital is based on cash operating costs and is calculated monthly until harvest at a nominal rate of 6.89% per year. A nominal interest rate is the typical rate for borrowed funds.

Management

Wages for management are not included in this study. Any return above total costs is considered a return to management.

Insurance

Insurance costs for farm investments depend on the assets included and the amount of coverage. Property insurance provides coverage for property loss and is charged at 0.69% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs \$516 annually for the farm.

Office expense

Office and business expenses are estimated at \$5,000 annually. These expenses include office supplies, telephones, bookkeeping, accounting, legal fees, and so on.

Equipment Costs

Equipment costs are composed of non-cash overhead, cash overhead, and operating costs. The overhead costs have been discussed in previous sections. The operating costs consist of fuel, lubrication, and repairs.

Repairs, fuel, and lube

Repair costs are based on purchase price, annual hours of use, total hours of life, and repair coefficients formulated by the American Society of Agricultural Engineers (ASAE). Fuel and lubrication costs are also determined by ASAE equations based on maximum PTO horsepower and type of fuel used. Prices for on-farm delivery of diesel and gasoline are \$1.51 and \$2.05 per gallon, respectively.

NON-CASH OVERHEAD COSTS

The cost calculations are based on economic principles that include all cash costs. This analysis has used a rental value of the acres as a cost of operation. For this reason land taxes, fence and building depreciation, and land value are not considered in the costs.

Capital Recovery Costs

Although farm equipment on a stock farm in the region might be purchased new or used, this study shows the current purchase price for new equipment. The new purchase price is adjusted to 60% to indicate a mix of new and used equipment. Annual ownership costs for equipment and other investments are shown in the various tables. They represent the capital recovery cost for investments on an annual per acre basis.

The capital recovery cost is the amount of money required each year to recover the difference between the purchase price and salvage value (unrecovered capital). Put another way, 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 it accurately represents the annual costs of ownership because it takes the time value of money into account (Boehlje and Eidman 1984). Annual capital recovery costs are calculated as follows:

$$\text{capital recovery cost} = [(\text{purchase price} - \text{salvage value}) \times (\text{capital recovery factor})] + [\text{salvage value} \times \text{interest rate}]$$

Salvage value

Salvage value is an estimate of the remaining value of an investment at the end of its useful life. For farm machinery (e.g., tractors and implements) the remaining value is a percentage of the new cost of the investment (Boehlje and Eidman 1984). The percent remaining value is calculated from equations developed by the ASAE based on equipment type and years of life. The life in years is estimated by dividing the wear-out life as given by ASAE by the annual hours of use in this operation. For other investments, including irrigation systems, buildings, and miscellaneous equipment, the value at the end of its useful life is zero.

Capital recovery factor

The capital recovery factor is the amortization factor or annual payment whose present value at compound interest is 1. The amortization factor is a table value that corresponds to the interest rate and the life of the equipment.

Interest rate

The interest rate of 6.01% used to calculate capital recovery cost is the ERS's 10-year average of California's agricultural sector long-run rate of return to production assets from current income (ERS 2005). It is used to reflect the long-term realized rate of return to these specialized resources that can be used effectively only in the agricultural sector. In other words, it reflects the next best alternative use for these resources is in another agricultural enterprise.

TABLE VALUES

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

Table 2. Weights and prices of organic meat cuts from a 1,100-pound animal*

Meat cut	Average package weight (lb)	Average pounds of cut per animal	Price per pound (\$)
ground beef	1.00	122	5.50
top sirloin	2.09	67	10.50
bone chuck roast	2.31	60	8.75
rib eye steak, boneless	1.00	48	13.00
beef ribs	2.41	30	8.25
stew meat	1.78	26	6.50
tri tip	1.06	25	12.00
cross rib roast	2.93	25	8.75
short ribs	1.28	21	6.50
stir fry	1.00	15	6.75
sirloin tip roast	3.91	15	9.50
london broil	1.62	12	8.25
eye of the round roast	1.68	12	8.50
pot roast	1.30	12	7.50
fillet (beef tenderloin)	0.84	10	20.00
swiss steak	1.08	10	8.50
beef or soup bones	2.50	10	1.00
heart	2.34	2	5.00
TOTAL		522	\$8.50[§]

Notes:

* Weights and prices are given for illustration purposes only.

§ Weighted average price per pound.

Table 3. Cost per head to maintain a 50-head cow-calf organic operation in Mendocino and Lake Counties, California, during an 18-month period in 2005

	Weight each	Unit	Total number of head or units	Price or cost/unit	Total value	Value or cost/head	Your value
GROSS RECEIPTS							
Heifer calves	522	lb	10	8.50	44,370	887.40	
Steer calves	522	lb	20	8.50	88,740	1,774.80	
Cull cows	664	lb	7	8.50	39,508	790.16	
Cull bull	837	lb	0.17	8.50	1,209	4.10	
Cull sale replacement heifers	664	lb	3	8.50	16,932	338.64	
TOTAL RECEIPTS		lb	40.17	8.50	190,759	3,795.10	
OPERATING COSTS							
Mineral supplement/salt		lb	4,343	0.30	1,303	26.06	
Alfalfa hay		lb	145,200	0.05	7,260	145.20	
Grain		lb	37,850	0.21	7,949	158.97	
Leased land		AUM	1,116	12.00	13,392	267.84	
Miscellaneous		head	150	5.00	750	15.00	
Checkoff/brand inspection		head	141	3.50	494	9.87	
Slaughter		head	43	66.00	2,838	56.76	
Butcher (cut, wrap, & label)		lb	23,890	0.62	14,812	296.24	
Transportation		trip	8	631.80	5,054	101.09	
Organic certification		ranch	1	1,000.00	1,000	20.00	
State organic fee		ranch	1	300.00	300	6.00	
USDA organic approved labels		each	12,180	0.40	4,872	97.44	
Marketing		\$	1	5,000	5,000	100.00	
Hired labor		hour	140	15.00	2,100	42.00	
Owner labor		hour	3,471	22.05	76,536	1,530.71	
Veterinary medicine		\$	1,329	1.00	1,329	26.58	
Machinery (fuel, oil, lube, repair)		\$	3,396	1.00	3,396	67.91	
Vehicles (fuel, lube, repair)		\$	8,454	1.00	8,454	169.08	
Equipment (repair)		\$	463	1.00	463	9.27	
Housing and improvements (repair)		\$	721	1.00	721	14.42	
Interest on operating capital		\$	49,774	0.08	3,808	76.15	
TOTAL OPERATING COSTS					161,829	3,236.58	
INCOME ABOVE OPERATING COSTS					28,930	558.52	
CASH OVERHEAD COSTS							
Taxes and insurance					17,139	342.77	
Overhead					7,917	158.34	
TOTAL CASH OVERHEAD COSTS					25,056	501.11	
NON-CASH OVERHEAD COSTS							
Capital recovery					49,967	999.35	
Interest on retained livestock					2,993	59.86	
TOTAL NON-CASH OVERHEAD COSTS					52,961	1,059.21	
TOTAL COSTS					239,845	4,796.90	
RETURNS TO RISK & MANAGEMENT					-49,086	-1,001.80	

Table 4. Monthly summary of cash returns and expenses to maintain a 50-head cow-calf organic operation in Mendocino and Lake Counties, California, during an 18-month period in 2005

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Total	
PRODUCTION																				
Heifer calves	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13,311	17,748	13,311	44,370
Steer calves	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26,622	31,059	31,059	88,740
Cull cows	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22,576	5,644	11,288	39,508
Cull bull	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,209	1,209
Cull sale replacement heifers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5,644	11,288	0	16,932
TOTAL RECEIPTS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	68,153	65,739	56,867	190,759
OPERATING INPUTS																				
Mineral supplement/salt	57	57	57	57	57	57	57	57	57	57	57	57	102	102	102	102	102	102	102	1,303
Alfalfa hay	0	0	0	608	1,215	608	0	0	0	0	0	0	0	0	0	0	1,208	2,415	1,208	7,260
Grain	0	0	0	0	0	0	0	0	0	0	0	0	1,651	1,651	1,651	1,331	1,079	586	7,949	
Land lease	705	705	705	705	705	705	705	705	705	705	705	705	823	823	823	823	823	823	823	13,392
Miscellaneous	40	45	45	45	45	40	40	40	40	40	40	40	40	40	40	40	40	45	45	750
Checkoff/brand inspection	0	0	0	0	0	0	0	0	0	0	319	0	0	0	0	0	175	0	0	494
Slaughter	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	990	990	858	2,838
Butcher (cut, wrap, & label)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5,147	5,147	4,519	14,812
Transportation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,317	2,317	420	5,054
Organic certification	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,000	0	0	1,000
State organic fee	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	300	0	0	300
USDA organic approved labels	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,693	1,693	1,486	4,872
Marketing	0	0	0	0	0	0	0	0	0	0	0	0	833	833	833	833	833	833	833	5,000
Veterinary medicine	0	455	0	300	0	0	0	0	0	0	0	0	0	275	0	300	0	0	0	1,329
Machinery (fuel, oil, lube, repair)	517	142	142	142	142	142	19	19	9	9	19	393	901	152	152	152	171	171	3,396	
Vehicles (fuel and repair)	818	817	259	259	259	259	259	259	259	259	259	259	705	705	705	705	705	705	705	8,454
Equipment (fepair)	0	0	0	0	116	116	0	0	0	0	0	0	0	0	0	0	0	116	116	463
Housing, improvements (repair)	48	48	48	0	0	48	48	48	48	48	48	48	48	48	48	48	0	48	48	721
Hired labor	0	0	0	0	0	0	300	300	300	300	300	300	0	0	0	0	0	0	300	2,100
Owner labor	4,134	4,134	4,134	4,134	4,134	4,134	4,134	4,134	4,134	4,134	4,134	4,134	4,487	4,487	4,487	4,487	4,487	4,487	4,487	76,536
Interest on operating expenses	9	19	23	42	53	61	66	71	75	89	123	130	447	487	532	652	754	824	4,459	
TOTAL OPERATING COSTS	6,329	6,423	5,414	6,292	6,727	6,171	5,629	5,634	5,629	5,643	6,005	6,068	10,037	9,602	9,373	22,253	21,724	17,531	162,482	
RETURNS OVER OPERATING COSTS	-6,329	-6,423	-5,414	-6,292	-6,727	-6,171	-5,629	-5,634	-5,629	-5,643	-6,005	-6,068	-10,037	-9,602	-9,373	45,900	44,015	39,336	28,278	
CASH OVERHEAD COSTS																				
Taxes and insurance	870	870	870	870	870	870	870	870	870	870	870	870	1,116	1,116	1,116	1,116	1,116	1,116	1,116	17,139
Overhead	417	417	417	417	417	417	417	417	417	417	417	417	486	486	486	486	486	486	486	7,917
TOTAL CASH OVERHEAD COSTS	1,287	1,287	1,287	1,287	1,287	1,287	1,287	1,287	1,287	1,287	1,287	1,287	1,602	1,602	1,602	1,602	1,602	1,602	1,602	25,056
RETURNS OVER CASH COSTS	-7,616	-7,710	-6,701	-7,579	-8,015	-7,458	-6,916	-6,921	-6,916	-6,930	-7,292	-7,355	-11,639	-11,204	-10,974	44,298	42,413	37,734	3,222	

Table 5. Investment summary of maintaining a 50-head cow-calf organic operation in Mendocino and Lake Counties, California, on an annual basis in 2005

	Purchase price*	Salvage/cull value [§]	Livestock share (%)	Useful life (yr)	Annual taxes and insurance	Interest	Annual capital recovery
BUILDINGS, IMPROVEMENTS, AND EQUIPMENT							
Fencing	10,000	1,000	60	30	56		429
Corral	16,050	2,675	60	30	132		680
Barn	7,500	1,250	60	30	62		318
Water system	3,540	590	60	20	29		176
Owned land	420,000	420,000	98	40	6,956		24,737
Vet equipment	405	65	60	15	1		23
Gooseneck trailer	7,050	1,155	60	20	17		350
Squeeze	2,020	180	60	10	5		157
TOTAL BUILDINGS, IMPROVEMENTS, AND EQUIPMENT	466,565				7,258		26,870
PURCHASED LIVESTOCK							
Bulls	1,500	630	100	6			191
TOTAL PURCHASED LIVESTOCK	1,500						191
RETAINED LIVESTOCK (Beginning value) (Interest on investment)							
Cows	40,000	25,000	100			1,300	
Replacement heifers	4,200	3,500	100			154	
Bulls	1,500	630	100			43	
TOTAL RETAINED LIVESTOCK	45,700					1,497	
MACHINERY AND VEHICLES							
Tractor loader	31,200	5,250	60	26	75		1,386
ATV	3,900	390	60	5	283		514
Pickup 4 × 4, three-quarter ton	22,650	2,265	60	5	2,829		2,986
TOTAL MACHINERY AND VEHICLES	57,750				3,187		4,886

Notes:

*The purchase price for buildings, improvements, equipment, machinery, and vehicles is 60% of new cost.

§Salvage value is 10% of new cost.

Table 6. Ranging analysis for a 50-head cow-calf organic operation in Mendocino and Lake Counties, California, during an 18-month period in 2005

	Total weight* (lb)	Market prices (\$ per pound) [§]						
		7.75	8.00	8.25	8.50	8.75	9.00	9.25
Total sale animals [†]	22,442	7.75	8.00	8.25	8.50	8.75	9.00	9.25
Gross Income		173,928	179,538	185,149	190,759	196,370	201,981	207,591
Total operating costs		161,829	161,829	161,829	161,829	161,829	161,829	161,829
Net Income above operating costs		12,099	17,709	23,320	28,930	34,541	40,152	45,762
Total cash costs		186,885	186,885	186,885	186,885	186,885	186,885	186,885
Net Income above cash costs		-12,957	-7,346	-1,736	3,875	9,485	15,096	20,706
Total costs		239,845	239,845	239,845	239,845	239,845	239,845	239,845
Net Income above total costs		-65,917	-60,307	-54,696	-49,086	-43,475	-37,865	-32,254
Net Income per Cow	50	-1,318.35	-1,206.14	-1,093.93	-981.72	-869.50	-757.29	-645.08

Notes:

*Refers to total weight of meat that is packaged by the processor.

[§]The prices used are weighted averages.[†]The cull bull is sold only 1 out of 6 years. The weight listed is only one-sixth of the actual weight to represent annual income.**6A.** Returns above total operating costs for organic beef

Meat sales, retail (lb)	Market prices (\$ per pound) [§]						
	7.75	8.00	8.25	8.50	8.75	9.00	9.25
16,000	-37,829	-33,829	-29,829	-25,829	-21,829	-17,829	-13,829
18,000	-22,329	-17,829	-13,329	-8,829	-4,329	171	4,671
20,000	-6,829	-1,829	3,171	8,171	13,171	18,171	23,171
22,442	12,099	17,709	23,320	28,930	34,541	40,152	45,762
24,000	24,171	30,171	36,171	42,171	48,171	54,171	60,171
26,000	39,671	46,171	52,671	59,171	65,671	72,171	78,671
28,000	55,171	62,171	69,171	76,171	83,171	90,171	97,171

[§] The prices used are weighted averages.**6B.** Returns above total cash costs for organic beef

Meat sales, retail (lb)	Market prices (\$ per pound) [§]						
	7.75	8.00	8.25	8.50	8.75	9.00	9.25
16,000	-62,885	-58,885	-54,885	-50,885	-46,885	-42,885	-38,885
18,000	-47,385	-42,885	-38,385	-33,885	-29,385	-24,885	-20,385
20,000	-31,885	-26,885	-21,885	-16,885	-11,885	-6,885	-1,885
22,442	-12,957	-7,346	-1,736	3,875	9,485	15,096	20,706
24,000	-885	5,115	11,115	17,115	23,115	29,115	35,115
26,000	14,615	21,115	27,615	34,115	40,615	47,115	53,615
28,000	30,115	37,115	44,115	51,115	58,115	65,115	72,115

[§] The prices used are weighted averages.**6C.** Returns above total costs for organic beef

Meat sales, retail (lb)	Market prices (\$ per pound) [§]						
	7.75	8.00	8.25	8.50	8.75	9.00	9.25
16,000	-115,845	-111,845	-107,845	-103,845	-99,845	-95,845	-91,845
18,000	-100,345	-95,845	-91,345	-86,845	-82,345	-77,845	-73,345
20,000	-84,845	-79,845	-74,845	-69,845	-64,845	-59,845	-54,845
22,442	-65,917	-60,307	-54,696	-49,086	-43,475	-37,865	-32,254
24,000	-53,845	-47,845	-41,845	-35,845	-29,845	-23,845	-17,845
26,000	-38,345	-31,845	-25,345	-18,845	-12,345	-5,845	655
28,000	-22,845	-15,845	-8,845	-1,845	5,155	12,155	19,155

[§] The prices used are weighted averages.

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METRIC CONVERSIONS

English	Conversion factor for English to Metric	Conversion factor for Metric to English	Metric
Length			
foot (ft)	0.3048	3.28	meter (m)
mile (mi)	1.61	0.62	kilometer (km)
acre (ac)	0.4047	2.47	hectare (ha)
bushel (bu)	0.035	28.37	cubic meter (m ³)
gallon (gal)	3.785	0.26	liter (l)
ounce (oz)	28.35	0.035	gram (g)
pound (lb)	0.454	2.205	kilogram (kg)
ton (T)	0.907	1.1	metric ton (t)
Fahrenheit (°F)	$^{\circ}\text{C} = (^{\circ}\text{F} - 32) \div 1.8$	$^{\circ}\text{F} = (^{\circ}\text{C} \times 1.8) + 32$	Celsius (°C)

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Sample cost of production studies for many commodities can be downloaded at <http://coststudies.ucdavis.edu>, requested through the Department of Agricultural and Resource Economics, UC Davis, 530-752-4424, or obtained from the local county UC Cooperative Extension offices. Some archived studies are also available on the website.

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