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# AGRICULTURAL ALTERNATIVES

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## Beef Cow-calf Production

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The beef cow-calf business is well adapted to small-scale and part-time farmers who have land suitable for pasture and hay production. Cow-calf operations in the northeastern United States tend to be small. Because of the relatively small size of these operations, it is often difficult for individuals to develop innovative marketing programs, but there are opportunities to link directly with feeders to produce beef for specialty markets.

Cow-calf production is the first stage of the beef production process. An average of about 2.2 years elapses between the breeding of a beef cow or heifer to the time their offspring are ready for slaughter. Heifer calves may be retained for herd expansion or replacements, sold to other producers as replacements, or sold along with the steers to feedlot operators to grow out for slaughter.

The United States is the leading beef producer in the world. Between 25 and 27 billion pounds of beef are consumed annually in the United States. Although per capita beef consumption has decreased gradually since the 1970s, it is projected to be around 58 pounds per year during the next decade. Foreign demand has been very strong with the United States exporting record amounts of beef in recent years.

Beef cows are raised in all regions where there is pasture and hay. Currently, over 31 million head of beef cows are widely dispersed throughout the United States on almost 730,000 farms and ranches, and there are 380,000 beef cows on about 15,000 farms in the northeastern United States.



### Marketing and Preconditioning

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About two-thirds of feeder cattle marketed from cow-calf operations are sold as calves in the third or fourth quarter of the year at or soon after weaning. Calves are sold directly to feeding operations or marketed through specialized feeder calf sales, livestock auctions, and electronic and video sales. A limited market also exists for selling top-quality steer calves to 4-H and FFA members as show prospects.

Because of the wide distribution of cow-calf operations throughout the United States, there are a lot of local markets for feeder calves. The sale prices of calves vary greatly depending on breed, weight, health, uniformity, group size, and the way in which the cattle have been managed. Regardless of whether the calves are sold through a local auction, directly to a cattle feeder, or through a broker, preparation for sale greatly influences sales price and profitability. Using a preconditioning program is an important practice that not only improves sale price but also enhances calf well-being

on the farm and in the feedlot. Preconditioning includes weaning the calves about six weeks before sale time, starting them on feed, castrating, dehorning, vaccinating, deworming, and perhaps implanting them with a growth promotant. These practices help ensure that the calves will stay healthy and have a good start in the feedlots.

Most cattle feeders prefer to purchase groups of 40 or more preconditioned calves separated by sex, breed, and weight. Market outlets such as graded sales are popular because calves from different farms can be combined and sorted into uniform groups for sale either by brokers or through traditional auctions, tele-auction (buyers bid by participating in a conference telephone call), video auction (buyers bid after viewing cattle via a satellite downlink), or online auction (buyers bid after viewing cattle on the Internet). If producers market through a tele-auction, video auction, or online auction, their calves do not have to leave the farm to be offered for sale. Uniform sale groups require tight breeding and calving seasons (all within 60 days), proper nutrition of the cow herd and the calf, and strict selection of replacement heifers and herd sires with desirable genetic traits. Another possible marketing niche is the selling of high-quality calves to 4-H and FFA members at prices slightly higher than for commercial feeder calves. However, this market is very small and unpredictable.

Retained ownership is another production/marketing option. Retaining ownership of the calves from the cow-calf herd and either feeding the calves on the farm or having the calves “custom fed” at a growing or finishing operation may be advantageous, but it also has its risks. Retaining ownership provides an opportunity for the herd owner to profit from both the cow-calf operation and the finishing enterprise. These potential benefits will also expose the owner to the possibility of falling prices and death losses.

## Starting a Beef Cow-calf Herd

Different ways of starting a commercial beef cow-calf herd include:

- Buying heifers of either weaning or breeding age
- Purchasing an entire cow herd
- Purchasing individual cows from established herds

When deciding on the source of cows or heifers, the genetic potential and health program of the herd should be considered.

If you have a good, relatively inexpensive source of feed, December or January is a good time to purchase bred cows and replacement heifers for spring breeding. Cattle for purchase may be priced lower at this time of the year since some producers are reluctant to overwinter too many cattle. Animals that are purchased during this time of the year should be healthy and tested not only for pregnancy but also the stage of pregnancy and projected calving date.

## Housing and Facilities

A herd calving in late winter or early spring requires little or no housing. However, maternity pens or sheltered lots should be provided. Except when calving in very cold, wet, and windy conditions, cow herds perform best (and most economically) with shelter only from hills or windbreaks. As long as there is adequate shelter, cold temperatures are not as detrimental to cow or calf health as muddy conditions are with extreme variation between night and day temperatures.

One of the most important facilities in a cow-calf enterprise is a corral and chute. These are essential for normal management and health maintenance practices (e.g., vaccination and deworming), as well as for pregnancy testing or assisting a cow at calving. A cattle-handling system can be designed as a one-person operation using wing fences and crowding gates to assist in moving cattle to automatic head gates. For possible designs for cattle-handling facilities, consult the suggested references at the end of this publication.

## Health Program

The most important component of a herd health program is the use of vaccinations. Any health program should include vaccinations for infectious bovine rhinotracheitis (IBR), parainfluenza 3 (PI3), bovine syncytial virus (BRSV), bovine viral diarrhea (BVD), *Haemophilus somnus*, leptospirosis, and clostridial diseases. Fecal samples should be taken from a random selection of all cattle of different ages to determine internal parasite infections. An appropriate deworming schedule can be developed from the results of the fecal tests. Treatment for lice and flies is also essential for maintaining animal well-being and performance.

Another way to reduce cattle health problems is to isolate the herd. Purchasing herd replacements from breeders who have long-established vaccination programs and a history of well-managed cattle can reduce herd health problems. Calving early in the spring also reduces the seriousness of various calf diseases. Producers should be sure to consult a veterinarian when developing a health program.

## Use of Growth Promotants

Cow-calf enterprises can benefit from the use of growth-promoting implants. These implants can increase both feed efficiency and growth rate. Some growth promotants can be used twice during the preweaning period (weaning at seven months of age). Preconditioning programs also include implanting at or shortly after weaning. Make sure you follow the implanting instructions and recommended length of time between implants. Implanting can increase calf weaning weights by 4 to 8 percent and is one of the most profitable individual practices that can be applied to beef cattle management. However, the final market for your beef and consumer acceptance will dictate whether you should use performance enhancers.

## Nutrition and Feeding

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One of the advantages of a beef cow herd is that relatively low-quality forages can be fed to the bred cows after the calves have been weaned. For a cow herd calving in March (calves weaned in October), relatively low-quality forages can be used for the three-month period from November to January. However, relatively high-quality forages should be available for the cows starting approximately two months before calving. Feeding high-quality forages during this period allows the cows to gain weight, rebreed quickly, and produce sufficient milk to yield heavy calves at weaning.

It is important to provide trace-mineralized salt and a source of calcium, phosphorus, and magnesium throughout the year, preferably through free-choice loose salt and mineral sources. In many areas, mineral supplements should also contain selenium.

Spring calving is usually preferred in the northeastern United States for a variety of reasons, including:

- Feeding least-cost high-quality forages soon after calving
- Making the best use of low-quality forages early in the winter during the immediate postweaning period
- Grouping calving in the spring for sale in the fall
- Rearing calves in a healthier environment on pasture as opposed to rearing fall calves in a dry lot over the winter

## Pastures

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Approximately two-thirds of the forage requirements for a cow-calf herd should come from pasture and the other third from stored feed (hay or silage). Feed costs for the cow herd can be reduced by grazing corn fields after harvest and providing stockpiled cool-season forages such as tall fescue. Pasture with tall fescue and similar early growing grasses can also be used as calving areas. Some small grains, such as rye or wheat, also offer the potential for early winter and spring grazing. Midsummer grazing can be improved with the use of brassicas, annual grasses such as sudangrass, and mixed alfalfa/grass pastures.

Many intensive grazing systems have been developed for beef cattle. Intensive rotational grazing systems can increase beef production per acre by 25 percent or more without reducing cattle performance. Other practices, such as creep grazing (in which the calves graze the pastures in a rotational scheme ahead of the cows), can also increase calf weaning weights and reduce or replace grain in the diet.

## Environmental Impacts

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In the normal course of operations, farmers handle pesticides and other chemicals, may have manure to collect and spread, and use equipment to prepare fields and harvest crops. Any of these routine on-farm activities can be a potential source of surface water or groundwater pollution. Because of this possibility, you must understand the regulations concerning the proper handling and application of

chemicals and the disposal and transport of waste. Depending on the watershed where your farm is located, there may be additional environmental regulations regarding erosion control, pesticide leaching, and nutrient runoff. Contact your soil and water conservation district, extension office, zoning board, state departments of agriculture and environmental protection, and local governing authorities to determine what regulations may pertain to your operation.

## Risk Management

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You should carefully consider how to manage risk on your farm. First, you should insure your facilities and equipment. This may be accomplished by consulting your insurance agent or broker. It is especially important to have adequate levels of property, vehicle, and liability insurance. You will also need workers' compensation insurance if you have any employees. You may also want to consider your needs for life and health insurance and if you need coverage for business interruption or employee dishonesty. For more on agricultural business insurance, see "Agricultural Alternatives: Agricultural Business Insurance." For more information on farm liability issues, see "Agricultural Alternatives: Understanding Agricultural Liability."

Second, check to see if there are multi-peril crop insurance programs available for your crop or livestock enterprises. There are crop insurance programs designed to help farmers manage both yield risk and revenue shortfalls. However, individual crop insurance coverage is not available for all crops. If individual coverage is not available for what you grow, you may be able to use the Whole-Farm Revenue Protection (WFRP) program to insure the revenue of your entire farm operation. To use WFRP you must have five years of Internal Revenue Service (IRS) Schedule F forms. The USDA Farm Service Agency has a program called the Noninsured Assistance Program (NAP), which is designed to provide a minimal level of yield risk protection for producers of commercial agricultural products that don't have multi-peril crop insurance coverage. NAP is designed to reduce financial losses when natural disasters cause catastrophic reduction in production. NAP coverage is available through your local USDA Farm Service Agency office. The application fee for this program may be waived for eligible limited-resource farmers.

Another way to manage risk in the livestock industry is by forward contracting through the futures market. You can use the futures market to "lock in" both your cost for purchased feed and the price you receive for your livestock. The idea behind forward contracting is to reduce income variability and set a price well in advance of when the animals are sold. Waiting until the sales date to determine the price for your cattle involves much risk. Although you may receive higher prices in some years, lower prices are also a distinct possibility. Obtaining a higher price than expected is certainly good news, but obtaining a lower price may have a major negative impact your ability to weather the volatility inherent in the cattle market. Using the futures market allows you to elimi-

nate this concern and lock in a price that meets your business goals and cash flow requirements. However, using the futures market does not ensure that you can generate a profit. During periods of high feed costs and low livestock prices there are often very few livestock producers who can generate a profit.

## Sample Budget

Included in this publication is a sample beef cow-calf budget summarizing the costs and returns of a cow-calf enterprise using a feeding program of hay and pasture. The cow-calf enterprise assumes the sale of steer calves at 550 pounds and heifers at 525 pounds and includes the cost of growing replacements. This budget should help ensure that you include all costs and receipts in your calculations. Costs and returns are often difficult to estimate in budget preparation because they are numerous and variable. Think of this budget as an approximation and make appropriate adjustments using the “your estimate” column to reflect your specific production conditions. More information on using livestock budgets can be found in “Agricultural Alternatives: Budgeting for Agricultural Decision Making.”

### Initial Resource Requirements Investment in Cattle and Equipment

■ 20 females at \$750–1,200 per cow	\$15,000–24,000
■ Two bulls at \$1,000–2,000	\$2,000–4,000
<b>Total</b>	<b>\$17,000–28,000</b>

*(If artificial insemination was used during the early part of the breeding season, one bull would be adequate.)*

■ All-purpose building for calving, hay, and grain storage	\$5,000–12,500
■ Corral or handling facility with headgate	\$500–5,000
■ Fencing	\$5,000–8,000
■ Feeding bunks and racks	\$250–1,000

## For More Information

### Publications

Becker, J. C., L. F. Kime, J. K. Harper, and R. Pifer. “Agricultural Alternatives: Understanding Agricultural Liability.” University Park: Penn State Extension, 2011.

Comerford, J. W., L. F. Kime, and J. K. Harper. “Agricultural Alternatives: Beef Backgrounding Production.” University Park: Penn State Extension, 2013.

Felix, T. L., L. F. Kime, J. K. Harper, and J. W. Comerford. “Agricultural Alternatives: Dairy-Beef Production.” University Park: Penn State Extension, 2017.

Harper, J. K., S. Cornelisse, L. F. Kime, and J. Hyde. “Agricultural Alternatives: Budgeting for Agricultural Decision Making.” University Park: Penn State Extension, 2019.

Kime, L. F., J. W. Adamik, J. K. Harper, and C. M. Callihan. “Agricultural Alternatives: Agricultural Business Insurance.” University Park: Penn State Extension, 2019.

Thomas, H. S. *The Cattle Health Handbook*. North Adams, Mass.: Storey Publishing, 2009.

Thomas, H. S., and E. Tanguy. *Essential Guide to Calving: Giving Your Beef or Dairy Herd a Healthy Start*. North Adams, Mass.: Storey Publishing, 2008.

Thomas, H. S. *Storey’s Guide to Raising Beef Cattle*. 4th ed. North Adams, Mass.: Storey Publishing, 2018.

### Websites

**Iowa Beef Center**  
[www.iowabeefcenter.org](http://www.iowabeefcenter.org)

**Ohio State University**  
Cattle Handling and Working Facilities  
[agmr.osu.edu/sites/agmr/files/imce/pdfs/Beef/CattleFacilities.pdf](http://agmr.osu.edu/sites/agmr/files/imce/pdfs/Beef/CattleFacilities.pdf)

Scoring Cows Can Improve Profits  
[ohioline.osu.edu/factsheet/anr-54](http://ohioline.osu.edu/factsheet/anr-54)

**Oklahoma State University**  
[afs.okstate.edu/breeds/cattle](http://afs.okstate.edu/breeds/cattle)  
Includes updated list of U.S. beef breed associations

**Penn State**  
[extension.psu.edu/animals-and-livestock/beef-cattle](http://extension.psu.edu/animals-and-livestock/beef-cattle)

**University of Arizona**  
Beef Cattle Handling Facilities  
[www.uaex.edu/farm-ranch/animals-forages/beef-cattle/beef-cattle-handling-facilities.aspx](http://www.uaex.edu/farm-ranch/animals-forages/beef-cattle/beef-cattle-handling-facilities.aspx)

**University of Missouri**  
Beef Production Glossary: BIF Fact Sheet  
[extension2.missouri.edu/g2030](http://extension2.missouri.edu/g2030)

**Virginia Tech**  
[www.pubs.ext.vt.edu/tags.resource.html/pubs\\_ext\\_vt\\_edu:beef-cattle](http://www.pubs.ext.vt.edu/tags.resource.html/pubs_ext_vt_edu:beef-cattle)

### Association

**Pennsylvania Cattlemen’s Association**  
[www.pacattlemen.org](http://www.pacattlemen.org)  
[pca@pacattlemen.org](mailto:pca@pacattlemen.org)



**Sample Cow-calf Budget for Cows Weighing 1,200 pounds, Hay-pasture Program**

Selling steers at 550 pounds and heifers at 525 pounds

Item	Quantity	Unit	Price	Amount	Your Estimate
<b>Receipts</b>					
Steer calf	248	lb	\$1.57	\$389.36	_____
Steer calf <sup>1</sup>	236	lb	\$1.57	\$370.91	_____
Heifer calf <sup>2</sup>	68	lb	\$1.41	\$95.18	_____
Heifers (cull replacements) <sup>3</sup>	83	lb	\$1.30	\$107.25	_____
Cull cows <sup>4</sup>	240	lb	\$1.26	\$302.40	_____
Cull bulls <sup>4</sup>	500	lb	\$1.60	\$600.00	_____
<i>Total receipts</i>				<i>\$1,865.10</i>	_____
<b>Variable Costs</b>					
Feed					
Pasture	0.7	acre	\$30.00	\$21.00	_____
Hay (mixed grass and legumes)	2.15	ton	\$190.00	\$408.50	_____
Soybean meal	0.91	cwt	\$23.90	\$21.75	_____
Crop residue	0.2	ton	\$10.00	\$2.00	_____
Salt and mineral	90	lb	\$0.12	\$10.80	_____
<i>Total feed costs</i>				<i>\$464.05</i>	_____
Health program	1.00	cow	\$14.00	\$14.00	_____
Hired labor	0	hours	\$10.00	\$0.00	_____
Transportation	1.00	cow	\$5.00	\$5.00	_____
Artificial insemination	1.00	cow	\$0.00	\$0.00	_____
Marketing	1.00	cow	\$10.00	\$10.00	_____
Supplies and misc.	1.00	cow	\$15.00	\$15.00	_____
Interest on operating capital <sup>5</sup>				\$29.88	_____
<i>Total variable costs</i>				<i>\$537.93</i>	_____
<b>Fixed Costs</b>					
Labor charge	0	hours	\$10.00	\$0.00	_____
Bull replacement costs <sup>6</sup>				\$600.00	_____
Interest on investment <sup>7</sup>	1	cow	\$76.80	\$76.80	_____
Fence	1	cow	\$156.82	\$156.82	_____
Buildings	1	cow	\$25.00	\$25.00	_____
Insurance				\$9.72	_____
Repairs				\$19.44	_____
Depreciation				\$167.50	_____
<i>Total fixed costs</i>				<i>\$1,036.22</i>	_____
<b>Total Costs</b>				<b>\$1,574.15</b>	_____
<b>Returns</b>					
Returns over variable costs				\$1,327.17	_____
Net returns				\$290.95	_____

1. Avg. weaning weight = 550, 90% calf crop, ½ bulls.

2. Avg. weaning weight = 525, 90% calf crop, ½ heifers, 0.205 keep for replacement.

3. 11 percent are sold to other cow-calf operators or to the slaughter market.

4. Cull cows weight = 1,300, 0.5% death loss, and a 20% culling rate for cows;

bull's weight = 1,800, 0% death loss, and a 25% culling rate for bulls.

5. Interest on working capital.

6. Bull replacement is 25% annual replacement rate, bull costs \$3,400 with a salvage value of \$1,000 and 25 cows per bull.

7. Interest on investment per cow.

**Monitor local markets and contact suppliers to determine current prices for all items contained in this sample budget.**

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Prepared by Cheryl A. Fairbairn, extension educator; Lynn F. Kime, senior extension associate; Jayson K. Harper, professor of agricultural economics; and John W. Comerford, associate professor of animal science.

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