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Dairy Beef

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Dairy beef is an opportunity to diversify operations and boost income, especially when production is pasture-based. This publication discusses production, finishing, niche markets and direct marketing, and analyzing profitability.

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Introduction

Dairy beef is an opportunity to diversify operations and boost income, especially when production is pasture-based. Since many consumers are interested in lean, naturally-raised beef, dairy beef also represents an enterprise option for direct marketing to a niche market. However, market research is critical before getting started in dairy beef production.

It has been estimated that 2.35 million Holstein steers are marketed annually in the U.S. (Schaefer, 2005), and dairy beef accounts for about 18% of all beef and veal marketed in the U.S. (Lowe and Gereffi, 2009). Until recently, most dairy bull calves were sold for veal. However, dairy calves are also valuable for beef production. Dairy beef production has the advantage of being relatively easy to enter and exit compared to other enterprises. For instance, Holstein beef calves gain weight very efficiently and can produce a high-quality carcass if fed and managed correctly (Eng, 2005).

Production

The Penn State publication, *Agricultural Alternatives: Dairy-beef Production* (Comerford et al., 2008), describes how young dairy calves are usually sold through local auctions at 2 to 5 days old, though they are sometimes sold as older animals. Since the health of newly arrived calves can vary greatly, guidelines are given for starting calves out in individual clean stalls with electrolytes and a health maintenance program. An "all-in, all-out" approach is often used in which each batch of calves is treated as a unit from the time of arrival on the farm until departure—new animals are not added to the group.

The feeding program for Holstein beef calves depends on the age at which the calves are

acquired. According to Rulofson et al. (1993), a calf needs 4 to 5 percent of its body weight in colostrum by the time it is 12 hours old and preferably within 1 to 2 hours. Calves also need milk for the first 3 to 4 weeks of life. They can be weaned between 4 and 8 weeks of age, so plan on getting calves on to a calf starter feed as soon as possible, at about 10 days of age. When they are 10 to 20 weeks old, the calves still require a high-energy feed. Nurse cows and even dairy goats have been used by some producers to suckle dairy calves instead of using milk replacer (Nation, 1993). After 20 weeks, more flexibility in feeding is possible. Forage-feeding, which includes grazing pastures and feeding conserved forage, can be used.

Forage feeding

Grazing dairy steers may be a profitable feeding option for farmers. According to Lehmkuhler, the expected performance of grazing Holstein steers will vary depending on the grazing system, forage type, and level and form of supplementation (2005). Forage-feeding Holstein calves up to 850 pounds does not necessarily change how the carcass will grade at slaughter. In addition, steers that are fed forage during the

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NCAT

Receiving program for young dairy calves

(Adapted from Boyles et al, no date (a))

Week 1 – Provide a clean, dry stall with adequate ventilation. Provide a high-quality milk replacer. Check the navel and dip in iodine (7%) if not dry. Inspect the calves for injuries and evidence of diarrhea. Develop a comprehensive health program including vaccinations with your veterinarian. Provide a high-quality starter ration around day 5.

Weeks 2 to 4 – During this time calves are acclimated to starter feeds and can be castrated and dehorned.

Week 5 – Booster vaccinations for respiratory diseases may be considered with additional vaccines for enterotoxemia and the other clostridial diseases included.

Week 6 – Discontinue milk replacer abruptly when calves are consuming adequate starter (2 to 3 pounds) and are healthy.

Week 7 – Move to pasture.

growing period (325 to 700 pounds) and are later switched back to grain, still reach a market weight of about 1200 pounds in the same time as steers on a constant grain diet (Grant et al., 1993).

Dairy calves typically gain less weight per day on pasture than do their beef breed counterparts, due to their higher maintenance requirements. However, a study in 1997 suggests that, given an improved cool-season pasture (no-till annual ryegrass) and appropriate supplementation (including implants), Holstein calves can compete with beef breeds, with average daily gains approaching 2.7 pounds per day (Murphey et al., 1997).

Raising cattle on pasture necessitates management decisions about grazing. Controlled grazing or management-intensive rotational grazing (MIG) can increase both plant and animal production. Controlled grazing involves grazing and then resting several pastures in sequence. The rest periods allow plants to recover before they are grazed again. Significant increases in forage utilization are often possible when changing from a continuous to a controlled grazing system. Although an intensive system has initial costs of electric fencing and watering investments, as well as increased management, many farmers report better profitability. See the ATTRA publications *Rotational Grazing*; *Ruminant Nutrition for Graziers*; *Pasture, Rangeland, and Grazing Management*; and *Paddock Design, Fencing and Water Systems for Controlled Grazing* for detailed information on grazing management.

Allan Nation describes how pasture-based Holstein beef production in Mississippi can be more profitable than stocker beef. In an article for the *Stockman Grassfarmer,* he writes "the growth rate of fall-born baby Holstein steers almost perfectly matches the seasonal growth rate of annual ryegrass pasture" (Nation, 1991). In Nation's scenario, pasture was fertilized with a high rate of nitrogen, and spring calf gains were more than 3 pounds per day. With the addition of legumes such as white clover in the pasture, nitrogen fertilization can be significantly reduced or even eliminated (Gerrish, 2007). Calves were placed on pasture at 2 months and sold as feeder cattle by late May—before the summer heat set in. A good health program to reduce mortality was critical to profitability.

Pasture finishing

Finishing is a term that describes feeding an animal to a predetermined end weight. In a feedlot, cattle are fed to achieve an end weight of around 1150 to 1300 pounds with a carcass grade of Select or Choice. In pasture finishing, cattle are grazed on high-quality forages to accomplish the same purpose. This requires strict attention to forage and grazing management because cattle typically take longer to finish on grass than they do on a concentrated feedlot diet.

A project conducted by the Northern New York Agricultural Development Program in 2005

Related ATTRA publications

Paddock Design, Fencing and Water Systems for Controlled Grazing

Pastures: Sustainable Management

Grass-Based and Seasonal Dairying

Rotational Grazing

Managed Grazing in Riparian Areas

Pasture, Rangeland, and Grazing Management

Solar-Powered Livestock Watering Systems

Ruminant Nutrition for Graziers

Cattle Production: Considerations for Pasture-Based Beef and Dairy Producers

Dairy Production on Pasture: An Introduction to Grass-Based and Seasonal Dairying

Raising Dairy Heifers on Pasture

Beef Marketing Alternatives

Direct Marketing

Selling to Restaurants

studied the viability of raising Holstein steers on grass from calfhood to slaughter. New York, like many dairy states, has a surplus of bull calves that are often not profitable to farmers. The study was conducted to see if these calves could be used to supply the grass-fed market, which is growing in many parts of the country.

The lessons learned from this trial are promising for farmers who are thinking about grazing Holstein steers. According to Brent Buchanan (2009), one of the investigators on the study, the cattle grew rapidly and responded well to the whole forage diet throughout the finishing period. They finished well and, according to a taste study, presented a good taste profile; the grass-fed Holstein beef was preferred over grain-fed beef. Maintaining a balanced ration was critical to success. One of the problems encountered was excessive crude protein in the cool-season forages and the need to get more energy into the cattle to support growth. Some options to consider might be high-energy forages such as brassicas to allow for more efficient protein usage. The cattle were also fed high-quality hay, low-quality hay, and wet balage during the feeding period, and Buchanan reports the best gains occurred when the cattle had wet balage as part of their diet.

Another problem that many farmers may be familiar with is getting young calves to start grazing as soon as possible. The calves in the study started off slow, as is expected, and it was noted that a better way to start young calves may be to place them on pasture with mature cows so they learn how to eat grass (Buchanan, 2009).

Combination pasture/grain finishing

Work from Chester-Jones and DiCostanzo (1996) suggests that grazing works well for Holsteins up to about 700 pounds. After 800 pounds, they generally need a higher-energy ration, such as corn, in order to be able to grade well at slaughter.

Dairy beef cattle can be finished one of two ways. Many feeders (including large feedlots and smaller farmer-feeders) feed a high concentrate ration from weaning all the way to slaughter. This system takes advantage of the efficiencies inherent in feeding high-energy diets to ruminant animals. A forage-based option is a two-phase feeding program, in which a high forage/roughage diet is fed to cattle up to 750 pounds, and then replaced with a high-energy finishing ration to slaughter. This allows for compensatory growth in the finishing stage. Chester-Jones and DiCostanzo (1996) suggest that pasture can be used during the grazing season with no effect on carcass cutability or the weight at which an animal reaches choice grade.

Northern New York ag development program grass-fed Holstein steer program

In 2005, Beef Extension Specialists in New York facilitated a demonstration project at the Extension Learning Farm in Canton, New York, funded by the Northern New York Agricultural Development Program. Northern New York produces high-quality forage as well as Holstein bull calves, and research exists indicating that Holstein steers make a high-quality beef carcass when raised under commercial feedlot conditions. However, there is a growing demand for beef finished on an all-forage diet and raised without growth promotants or feed-based antibiotics. One of the purposes of this project was to determine if grass-fed Holstein steers can produce meat products that are acceptable to consumers.

In this study, Holstein bull calves were purchased from local dairies. Beginning at 200 lbs. and 300 lbs., animals were intensively grazed from May through November 2004. At the end of the grazing season, calves were housed in the open-front barn with cement pad feeding area. Animals from each weight category were randomly assigned to one of three all forage diets: 1) high-quality baleage; 2) high-quality dry hay; and 3) medium-quality dry hay. The calves were fed all they could eat to maximize their potential rate of gain. Following the winter feeding period, the calves were again grazed intensively. Harvest of the animals began on September 7, 2005. At harvest, carcass weight, backfat, intramuscular fat, and rib eye area were measured.

Unlike most beef available in grocery stores today, carcasses were dry-aged for 10 to 14 days or longer, then processed into vacuum packages and frozen. Consumer data were collected to determine tenderness, flavor, juiciness and overall eating satisfaction of the product. No respondents indicated flavor was OK or Disappointing.

This project has held considerable interest for farmers and consumers alike. So far, the concept is encouraging as a potentially viable farming enterprise.

For more information, contact Cornell Cooperative Extension in St. Lawrence County at 315-379-9192.

Two-phase feeding program

(adapted from Chester-Jones and DiCostanzo, 1996)

- From 400 pounds to market weight
- Phase I – up to 700 pounds; 75% alfalfa hay, silage, or pasture, 25% corn grain and supplement
- Phase II – from 700 pounds to slaughter; 7 to 10% alfalfa hay, and 90 to 93% concentrate finishing ration

Carcass and meat qualities:

Holsteins, in particular, are valued by many feeders and meat packers because of the consistency of the breed. They have uniform rates of gain and feed conversion and show predictable carcass characteristics in terms of yield, grade and cutability (Johnson, 1993). However, Holsteins tend to be discounted in comparison to traditional beef breeds. This is likely due to pricing methods that value dairy cattle lower than beef cattle, because of their lower dressing percent, inferior conformation, and a lower percentage of valuable cuts from the rib and loin (Rust and Abney, 2005).

Holstein cattle typically have a smaller ribeye area and less backfat than do beef breeds (Rust and Abney, 2005). Holstein beef is leaner than most beef, yielding a carcass with 25 to 30 percent less trimmable fat than beef breeds, which is important to consumers interested in a low-fat diet. Holsteins do, however, tend to marble well since fat accumulates inside the muscle as opposed to outside the muscle. This accounts for a quality grade advantage over traditional beef breeds (Schaefer, 2005). Dairy cattle breeds have a higher ratio of feed to weight gain than beef breeds, thus dairy beef steers usually will not produce an acceptable quality carcass if slaughtered beyond 18 months of age (Comerford et al., 2008). Bartlett (1998) notes that dairy steers have a rate of gain similar to that of traditional beef breeds, but are 10 to 15 percent less feed-efficient than beef breeds due to higher maintenance requirements.

Cattle finished on pasture have distinct meat qualities that are receiving more and more attention. See ATTRA's *Beef Marketing Alternatives* for a discussion of pasture-finished beef production, meat qualities, and marketing.

Niche markets and direct marketing

Niche marketing involves producing and marketing products for a targeted group of individuals, typically those who are dissatisfied with conventional supply and willing to pay a premium for specialty products. Niche marketing generally requires more intensive management (i.e., accounting for time spent in marketing in addition to managing an animal herd), more labor, and is inherently more risky (Thilmany and Sullins, 2004).

There are niche markets for beef that is grass-fed to slaughter weight and raised without antibiotics or implanted growth hormones, and perhaps certified organic. Direct-marketing—selling lean dairy beef directly to individuals and restaurants—is a particularly effective way to access these niche markets.

The SAN publication, *How to direct market your beef* (Holder, 2005), available online at *www.sare.org/publications/beef.htm*, describes in detail the considerations in planning and implementing a direct beef marketing campaign to niche markets. In addition, ATTRA's *Beef Marketing Alternatives* has more information on marketing beef to niche markets. ATTRA's *Direct Marketing* publication provides further details on the tasks, challenges, and opportunities a producer faces when marketing farm products.

For more information, see the Marketing and Economics section of **Resources** at the end of this publication.

Analyzing profitability

You may want to evaluate a prospective dairy beef operation from an economic standpoint to figure out a break-even price and determine if raising dairy beef is a viable option for you. To do this you will need to write a budget. The ATTRA publication *Grazing Contracts for Livestock* contains a simple beef cattle stocker budget you can use for this purpose. Another good resource for developing a budget is *Stocker Enterprise Budgets for Grass-Based Systems* (Schuster, et al., 2001) from the University of Wisconsin. Your local Cooperative Extension Service is also a good source of information on the economics of livestock production.

Some of the variables you might consider in a budget include animal costs (purchase price, labor, veterinary costs, supplemental feed and/or mineral, interest, and marketing costs), and pasture costs (seed, fertility, equipment, baling costs for hay, labor, land costs, and property taxes). By figuring these costs on a per-animal basis, you can figure a break-even price for your animals. Any income over the break-even price is considered a profit, and income under the break-even price is a loss.

If you plan to direct market your beef, part of your business planning process and profitability analysis should include carcass yield information. It is important to have a clear understanding of how many pounds of beef each animal will yield and break it down into yield per retail cut. You can then calculate break-even prices for retail or wholesale beef products. Remember that as a beef carcass ages it shrinks. Calculate this shrink into your break-even point (Mucklow and LeValley, 2003).

The University of Kentucky offers online Direct and Local Meat Marketing Aids that include marketing budgets, yield guides, and pricing guides, as well as links to publications and other direct marketing resources. The Direct and Local Meat Marketing Aid tools can be downloaded at: *www.uky.edu/Ag/KyMeat/aids.html*.

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General dairy beef

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Dairy Beef Quality Assurance
www.dbqa.org

> *Voluntary program designed for dairy producers who also earn a part of their income from contribution to the beef supply. Promotes awareness of the producer's role in the beef industry as well as food safety and beef quality.*

University of Minnesota Dairy Beef Resources
www.extension.umn.edu/Dairy Modernization

Pasture and Grazing

Gerrish, Jim. 2004. Management-intensive Grazing: The Grassroots of Grass Farming. 314 p.

> *To order:*
> The Stockman Grass Farmer
> (800) 748-9808
> *www.stockmangrassfarmer.net/index.html*

Figuring a breakeven price for cattle

(Boyles, et.al., no date (b))

To calculate the final break-even price, use the following formula:

[(IW X IP) + (G X C)]/FW = FP

- IW is the initial weight purchased
- IP is the initial price of the animal going into the program
- G is the expected pounds of gain during the feeding program
- C is the cost per pound of gain
- FW is the final weight sold
- FP is the final price needed to break even on the investment

Example:

Assume you are purchasing 500-pound calves at $0.90 per pound. You expect an average daily gain of 1.5 pounds per day on grass, which will yield a 725-pound animal at the end of a 150-day grazing season. For example, assume a cost per pound of gain at $0.50 per pound. The final price you will need to break even is:

[(500 x .90) + (225 x .50)] / 725 = $0.78 per pound, or $565.50 per animal

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www.attra.ncat.org/attra-pub/PDF/dairybeef.pdf

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