

# Managing Holstein Steers for Beef Production

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In many areas of the country, the Holstein steer is gaining popularity because it offers profit opportunities for alert, innovative cattle feeders. In the upper Midwest, dairymen can make a profit producing beef from dairy steers if they have access to the right resources. These include a sustainable market for their steers, homegrown feeds, and reasonable rearing costs. In addition, the Holstein steers must not compete with the dairy herd for management time, space and feed.

Feeding Holstein steers may be considered a supplemental operation, but it should also be viewed as a way to increase income without having to milk more cows. A dairyman who wishes to quit milking and produce beef full-time or supplement other farm or off-farm enterprises, should consider raising dairy steers for beef. Cash croppers with feeding, management and marketing skills may also be able to increase their net income by marketing their feeds through Holstein steers.

This publication outlines feeding options for Holstein steers that will provide a basis for you to choose the most profitable program for your specific labor, feed resources and facilities. These recommendations are based upon research and practical experience with Holstein steers. They apply generally to steers of other dairy breeds as well, but keep in mind that differences exist between breeds.

## Differences between Holstein and traditional beef breed cattle

One area in which Holsteins differ greatly from traditional beef breed cattle is in the deposition of intramuscular and external fat. Large-framed Holstein cattle are typically leaner at finished weights than British breeds. Increased public awareness and demand for a more healthful product have created more interest in Holstein steers because they produce a high quality product with less external fat than traditional beef breed steers.

Taste panel analysis of loin steaks from Holstein Choice, Holstein Select and Charolais-crossbreed Choice carcasses did not reveal any differences in palatability. Sensory data showed that all major dairy breeds were similar in their carcass characteristics. However, since Holsteins are by far the most numerous of the dairy breeds and have a growth and performance advantage, most studies have focused on Holsteins.

Researchers have suggested an increase of the net-energy-for-maintenance requirement of 8-12% for Holsteins as compared to traditional beef breeds. Maintenance energy required is a function of metabolic body size, which varies with the proportion of organ tissue to empty body weight. Holsteins consume approximately 7% more feed than traditional beef steers.

Holstein steers use feed energy more efficiently to make protein and less efficiently for fat deposition than beef breeds. Energy, protein and fat content of gain vary less with rate of gain than with body type. An average fat content of 28.8%, which corresponds to a 1250-lb large frame Holstein steer, a 1050-lb medium frame and a 900-lb small frame beef steer, rates a USDA low Choice grade.

Holstein steers have less muscling than beef breeds, greater ability to marble with less external fat and a lower dressing percentage. Typically, beef breeds such as Angus have greater marbling scores, larger rib-eye areas and greater quality grade than Holsteins at the same live weight.

Holstein steers are less adaptable to environmental stress because they have a thinner hide, less hair and less external fat. Mud, wind, rain and snow appear to affect them more than beef breed steers. Beef breed steers perform well in open lots as long as windbreaks and mounds are provided, but Holstein steers performance may suffer during the winter in these types of facilities. For optimum feedlot performance, Holstein steers should have access to a three-sided barn with a naturally ventilated roof, and should be able to get out of the mud at all times.

## **Characteristics of Holstein beef**

There are many breeds of beef cattle in the U.S. and considerable variation exists in carcass traits between and within them. As a group, Holsteins possess more consistent carcass features than beef breed cattle, because they represent a single breed, and because of the dairy industry's widespread use of artificial insemination.

The following general points can be made about fed Holstein cattle compared to average, traditionally fed beef breed cattle.

## **Characteristics of Holstein carcasses**

In general, Holstein carcasses:

- Are less muscular, with a lower muscle-to-bone ratio and smaller ribeye areas; they also have different muscle shapes
- Have less external fat, usually less than 0.3 inch of back fat (most are yield grade 2)
- Often have more kidney, pelvic and heart fat
- Produce lower yields of boneless, sub-primal cuts

## **Product from Holsteins**

Generally, Holstein product :

- Is lean, and well-marbled when cattle are properly fed and managed (60–80% Choice)
- Has differences in muscle size and shape which result in some cuts having an altered appearance (narrower, longer strip steaks)
- Has eating quality very similar to beef breed product when fed and managed to the same grade

## **Factors that affect Holstein value**

An analysis of the slaughter and processing of Holsteins at a major packer that specializes in the breed highlighted a number of factors that affect value. Table 1 compares the carcass yields of boneless Holstein sub-primals calculated at this plant to yields of similar cuts for beef breed carcasses as reported by the USDA.

**Table 1. Comparison of Holstein vs. beef breed carcass yields of boneless sub-primal meat cuts.**

| Sub-Primal              | Yield, % of carcass            |                 |             | Sub-Primal price/lb | Value difference for Holstein per cwt. of carcass |
|-------------------------|--------------------------------|-----------------|-------------|---------------------|---|
|                         | Beef breed Choice <sup>1</sup> | Holstein Choice | Difference  |                     |   |
| Ribeye                  | 3.4                            | 2.9             | -.5         | \$3.25              | -\$1.63   |
| Brisket                 | 2.7                            | 2.6             | -.1         | 1.03                | -.10  |
| 3-Way Chuck             | 23.7                           | 21.8            | -1.9        | 1.02                | -1.94   |
| Knuckle                 | 2.9                            | 3.0             | +.1         | 1.40                | +.14  |
| Top Round               | 5.8                            | 5.5             | -.3         | 1.55                | -.47  |
| Gooseneck               | 7.3                            | 7.0             | -.3         | 1.30                | -.39  |
| Strip                   | 3.9                            | 3.0             | -.9         | 2.55                | -2.30   |
| Top Butt                | 3.4                            | 3.3             | -.1         | 1.50                | -.15  |
| Miscellaneous (5 items) | 4.2                            | 3.6             | -.6         | 2.13                | -1.28   |
| <b>Total</b>            | <b>57.3</b>                    | <b>52.7</b>     | <b>-4.6</b> |                     | <b>-8.12</b>                                      |

<sup>1</sup>USDA 199\_\_

Because Holsteins are not as muscular and carry less outside fat than beef breeds, it is not surprising that they have slightly lower yields of boneless sub-primal cuts. When current market prices are placed on these reduced yields, Holsteins appear to be worth about \$8 less per hundredweight (cwt) of carcass than beef breed carcasses. However, there are some positive credits associated with Holsteins which add value back to this formula. These include:

- 1. Greater hide value.** Because Holstein hides are thinner, larger and non-branded, they are slightly more valuable than typical beef breed hides.
- 2. Greater trim value.** Because Holstein carcasses are leaner than most beef breed carcasses, the trim generated during carcass fabrication tends to be leaner, thereby commanding a higher price.

In addition to the above, relative Holstein prices are also affected by total demand for this type of beef. Acceptance of Holstein beef seems to be growing slowly within the industry as these cattle are fed more uniformly to desired quality levels.

### **Management from weaning to slaughter**

When dairy calves reach 300 lbs or more, they can be handled similarly to beef calves that are weaned by the age of seven months. One difference between beef breed calves and their counterpart dairy calves is that, when they arrive at the feedlot, dairy calves have probably been bunk-broke and are accustomed to a higher-concentrate diet. Holstein feeder calves can be received on a diet consisting of 60-75% concentrate.

The forage component of the diet should be high quality and not fermented (unless the calves consumed a fermented product prior to their arrival). This is important because a fermented product may have an unfamiliar aroma that causes calves to adjust more slowly. High quality grass hay is the most desirable feed for receiving cattle because it provides the calves with long feed particles which help stimulate rumination and salivation.

As animals arrive at the feedlot, be very careful not to accept sick cattle. All acceptable calves may need electrolytes, a preventative dose of antibiotics and booster vaccinations for the major respiratory diseases. Electrolytes can be administered in water offered in stock tanks, and antibiotics ingested through the diet.

## Selecting the feeding program

The next major decision is to select the most profitable feeding program for your operation. Choosing the most economical feeding system depends on the cost of producing or purchasing energy and protein from grains or roughages, as well as overhead costs, turnover rates and the prevailing marketing conditions for grains or cattle.

Holsteins are a breed with a large mature size and a propensity for lean muscle growth rather than excessive subcutaneous fat deposition. Unfortunately, Holsteins also require higher energy maintenance than beef breed cattle. Because of this and because of interest that accumulates on borrowed capital, it is desirable to feed Holstein steers in the most cost-efficient way and to keep the number of days on feed as low as possible.

Healthy, uniform 300- to 400-lb Holstein feeder steers are very marketable and still maintain excellent potential for rapid growth and efficient gains on high energy diets. On a continuous 90:10 concentrate to roughage diet, Holstein steers will perform well in the feedlot with peak

growth rates between 500- and 700-lb body weight. Feed intake will continue to increase but daily gain and feed efficiencies will gradually decline. Demand also exists for 500- to 700-lb Holstein feeder steers that fit readily into existing commercial facilities designed to feed 500-lb or heavier cattle. Feeding strategies should remain economically efficient for both light and heavy Holstein feedlot steers.

The general feeling in the cattle feeding industry is that efficient use of energy for maintenance and gain decreases as the level of roughage in the diet increases. This has been shown to be true if the percentage of roughage is high throughout the entire feeding period. Forage has typically been used in growing rations to allow smaller-framed cattle to grow before they are finished on a high concentrate ration, and to help alleviate the potential for acidosis. Currently, the Holstein steer industry feeds cattle high concentrate diets throughout the entire feeding period to obtain maximum performance.

## Self-feeders

Self-feeders are very popular in predominantly dairy states where the dairy operation is the main farm enterprise and labor for a cattle feeding operation is limited. In these cases, self-feeders work well since the need to feed cattle once or twice daily is eliminated. Operations that use self-feeders must make a greater effort to observe cattle for problems as the opportunity to "read" cattle is eliminated. Producers who bunk-feed their cattle can observe cattle on a daily basis as the cattle come to the bunk to eat. This gives them an advantage in identifying and treating sick or lame cattle. Producers who use self-feeders are forced to watch cattle more closely to identify sick or lame animals.

Holstein steers are quite tolerant of high-corn or all-corn diets. Management of cattle fed these diets must focus on the feed intake behavior of all animals in a pen. Some feeding programs are based upon self-feeding dry corn and a

pelleted supplement. Holsteins will tolerate this program as long as they are never without feed. If the self-feeder or “steer-stuffer” is allowed to stand empty, or if weather or feedlot conditions prevent them from eating normally, numerous metabolic disorders can occur, such as founder, bloat or acidosis.

Self-feeders also cause a cyclic intake pattern in beef cattle because of their inability to control intake. Beef cattle will consume a high concentrate feed until the volatile fatty acids of that diet accumulate to the point that the animal seeks relief. If there is no fiber in the diet to prevent this from occurring, the animals will go “off-feed” until the acid level is reduced or a source of fiber is introduced. Fiber in the diet stimulates rumination and saliva production that buffers the acid level in the rumen and eases the discomfort of the metabolic disorder (acidosis).

## Two-phase feeding

Most farming operations that produce their own feed can usually maximize overall returns by harvesting at least part of the land as silage or hay and using forage in their feeding programs. The most successful feeding programs have been shown to incorporate a two-phase feeding system that produces a 2.5–3.0 lb average daily weight gain during the growing phase (350–700 lb), and a 2.8–3.2 lb average daily gain during the finishing phase (700–1250+ lb). The growing diet has a lower energy density than the finishing diet (52 vs 62 Mcal NEg/cwt DM) so that lighter cattle can increase their muscle mass and skeletal size (if needed) without depositing fat. The greatest level of forage in the ration is given during the growing phase.

The advantage of phase feeding is that it allows the producer to feed a roughage-based diet to Holstein steers during the growing phase (300–700 lb) which will allow producers to reduce ration cost without decreasing overall performance. Feeding a level of 30% to 50%

forage in the diet during the growing phase should allow for gains of more than 2.5 lb/day with a feed conversion of 5:1.

Feeding a forage-based diet during the growing phase can also help eliminate the “stalling” phenomena associated with metabolic disorders (such as acidosis) that occur when cattle are continually fed a high concentrate diet. Some studies have examined grazing Holstein steers during the growing phase (300 to 700 lbs). Grazing Holsteins is a very viable, inexpensive option to promote weight gain during the growing phase. Projected gains for Holstein steers on pasture are 1.5–2.0 lb/ADG (average daily gain). To increase this gain to 2–2.5 lb/ADG, you may need to feed a supplemental grain source of up to 1% of the cattle’s body weight.

When cattle reach the finishing phase (700 lbs +) they are normally fed a high concentrate diet consisting of 85% or more grain. The finishing diet (62-68 Mcal NEg/cwt DM) should support growth plus fat deposition so that the carcass contains 28–30% fat when finished. When cattle are put on high concentrate diets after being on forage-based diets during the growing phase (300–700 lbs) they normally show excellent compensatory gain during the finishing phase. Incorporating a two-phase feeding program will most often allow producers to market their cattle in a weight range of 1200–1400 lbs.

Regardless of the feeding strategy you use, all diets should contain ionophores (antibiotics that selectively affect certain microorganisms) and growth-promoting implants to enhance economic efficiency. The performance response to ionophores and implants are cumulative. These topics are discussed in detail in the publication entitled *Tools for Optimizing Feedlot Production* (A3661), available from Extension Publications at the address on the back page.

## Economics

A key participant in a cattle feeding enterprise is your banker or lender. As a cattle businessperson you should be aware of the lender's criteria for establishing a credit relationship. You must present a plan that itemizes all production costs and displays careful thought and good judgment. A cattle marketing plan based upon accurate use of current market information is very important. Give some thought to risk protection, perhaps in the form of forward contracting of grain supplies or finished cattle. The bottom line is that your lender expects to be convinced that you are likely to add value to the production inputs by producing beef.

## Conclusion

A Holstein steer feeding operation is a very viable entity. Holstein steers are predictable in both performance and carcass characteristics. You can design feeding strategies to fit the cattle's varying ages and weights to optimize your economic return. Whole corn:pellet programs work well if managed efficiently. You can also take advantage of compensating growth potential for feeding high energy diets after a period of higher roughage feeding. An analogous response is often observed in large frame "green" steers taken off pasture or range and

then fed high energy feedlot diets. A market weight goal for a specific niche must be attained to maintain the profitability of a production system.

Market options for Holstein steers include: light feeder steers weighing 350 to 400 lbs; feeder steers from 500 to 700 lbs; heavy feeders from 900 to 1000 lbs; and finished steers marketed at 1150 to 1300+ lbs, depending on the previous feeding regimen. Feeding strategies should optimize the excellent growth characteristics of the young Holstein steer to provide a potential base for economic return.

It is important to define clear marketing objectives and production goals for a Holstein steer operation prior to establishing a system that fits your specific feed, labor and facilities. Feeding Holstein steers can be subdivided into distinct segments that provide opportunities for the dairy farmer feeder or specialized feedlot operator to customize a marketing niche. The ultimate goal is to produce a finished steer between 12 and 14 months of age. Interim production phases include weaning through growing (between 300 and 700 lbs) and a finishing period in commercial feedlots or retained ownership on a dairy farm.

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