

Producing dairy x beef cross calves has the potential to increase market value of these calves compared to straight bred dairy bull calves. However, as supply of these calves increases, it's reasonable to assume buyers will become more discerning. Dairy producers can stack the odds in their favor with thoughtful beef sire selection.

Contrary to some old assumptions, modern, well managed Holstein steers are a high quality and very consistent carcass product. It is far from the truth to say they are only good for hamburger. (Abby: add reference to Dan & Bill's article?)

Today's Holstein Steer

Strengths:

- Comparable quality grades with less external fat than common beef breeds
- Similar taste & tenderness compared to common beef breeds
- Similar taste panel evaluations (Holstein vs. Angus)
- Consistency in performance as a breed

Weaknesses:

- Lower dressing percentage than common beef breeds
- Smaller ribeye size, and elongated ribeye shape compared to common beef breeds
- Risk of exceeding packer height or weight restrictions if not properly managed
- Limited number of harvest facilities procuring Holsteins, resulting in fewer competing bidders

By choosing beef sires that improve upon the weaknesses of dairy steers, listed above, using beef on dairy can improve feed efficiency, rate of gain and reduce days on feed. Wisely incorporating beef genetics can also improve carcass characteristics over straight bred dairy by increasing ribeye size and changing the ribeye shape, increasing muscling, and moderating frame size while maintaining the marbling ability of dairy animals.

To gain a better understanding of the use of beef on dairy genetics, a multi-state Extension field survey was conducted in the fall/winter of 2018. The field survey asked producers their beef sire selection criteria; with semen costs, conception rate, and calving ease the top ranked answers. The most popular beef breeds used were Black Angus, Limousin, and Lim-flex (Limousin x Angus). According to the majority of survey respondents these dairy x beef cross calves were being marketed at a week old or less.

Since the majority of these dairy x beef cross calves are entering the market at a young age, there is a disconnect between the dairy and feedlot buyer on the genetics and health history of these calves. Research is needed to establish beef sire selection criteria for use on dairy breeds. Observations have found some dairy x beef crosses lack sufficient improvement in frame size and muscling to meet the feedlots needs and are ultimately priced as Holsteins at harvest. Breed selection, and within breed sire selection, is important to address the weaknesses in dairy breed feedlot performance and carcasses.

(Abby question: should bullet points be in separate box, or does this flow OK as is?)

Beef on Dairy sire selection

Considerations important to the dairy:

- Semen cost
- Sire conception rate
- Calving ease
- Hair coat color

Considerations important to the feedlot:

- Carcass value, carcass weight, and feed efficiency traits, selected for by using a terminal index (e.g. TI, \$B, MTI, etc.) depending on the breed
- Select for greater Ribeye area (REA) amongst high Terminal Index sires
- Improved muscling, by using REA as the indicator trait
- Moderate frame score (Holstein matings)
- Increase carcass weight (Jersey matings)
- Use homozygous polled bulls

Emphasis on calving ease may vary depending on the use for heifers vs. cows and the dairy breed. Dairy farmers marketing week old calves may feel pressure to select for heavier birth weights, but do so without risking cow or calf health. Hair coat color is a factor in many markets, with discounts for non-black haircoat or black with white markings. However, hair coat color alone is not indicative of beef sire breed or genetic potential for economically important carcass traits.

The future challenge to beef sire selection on dairy is selecting sires that simultaneously protect factors important to the dairy (e.g. calving ease, semen cost) and improve traits economically important to the feedlot (e.g. yield, feed efficiency) and traits that enable carcasses to be acceptable as beef carcasses (e.g. ribeye area, frame score). Muscle shape of the ribeye and round is extremely important for many grid based marketing programs, and a trait that dairy genetics typically lack. Beef x dairy crosses lacking sufficient improvement in frame and muscling can be discounted in price for being dairy type when sent to harvest. Since there is no EPD for muscle shape, Ribeye EPD is used instead as an indicator trait. When dairy steers are fed and managed properly, they often grade well (80%+ Choice) with comparable quality grades to their beef breed counter parts and less external fat at the 12 to 13th rib. Thus, beef sire selection for ribeye size, carcass weight, and frame size may need to be prioritized higher than marbling.

All major beef breeds have sires with traits that can moderate the frame size and improve the muscle-to-bone ratio of dairy steers, without adversely affecting their marbling traits. Conversely, there are sires that provide little improvement or even have a negative effect on frame score and muscle shape. A 2015 research study from the USDA Meat Animal Research Center¹ found less than a 34 pound difference in hanging carcass weights between Angus, Limousin, and Simmentals in their study. The study showed Angus had the greatest average carcass weight, followed by Simmental, and Limousin. Angus, Limousin, and Simmental all have homozygous black and polled bulls that can provide the needed muscle shape and moderate frame size to add value to crossbred calves. Bottom line, within breed selection is highly important regardless of the breed you choose.

Lack of group uniformity has been identified as a drawback to dairy x beef crosses. Random use of multiple sires, no sire selection criteria for carcass traits, and poor calfhood management are all potential sources of variability. Forward thinking dairy producers can add value to their crossbred calves by providing sire identity and health management protocols to their marketing partners and potential buyers. The current premiums paid for solid black coat colored beef x dairy cross calves may not incentivize dairies to change their beef sire selection practices. However, if too many beef cross calves fail to achieve the muscling and moderate frame score needed to be accepted as beef carcasses, buyers may lose their motivation to pay a premium over Holstein calves.

Some feedlot operations are offering contracts or purchase programs for dairy x beef cross calves, if you use the genetics they select or provide, and follow specific health protocols. They typically require use of a limited number of bulls or closely related bulls. These bulls are genotypically selected with traits to improve feedlot performance and carcass traits of their offspring while maintaining the traits

important to the dairy (i.e. calving ease). This is their way of minimizing variability, improving beef traits, and ensuring predictable calf group health.

The emerging dairy x beef cross calf market has potential to add value to dairy farm calf sales. However, beef sire selection should include criteria that also improves feedlot profitability. This means thinking beyond semen cost, conception rates, and hair coat color for sire selection.

Reference: 1Kuehn & Thallman, 2017 Across-Breed EPD Table & Improvements.

[https://articles.extension.org/sites/default/files/2018-2 Across Breed EPD Table and Improvements.pdf](https://articles.extension.org/sites/default/files/2018-2_Across_Breed_EPD_Table_and_Improvements.pdf)