



# BEEF ON DAIRY

## Meat Quality Impacts of Crossbreeding

MIDAN MARKETING  
Customer Insights Team  
MARCH 2022



## Executive Summary

Beef on dairy crossbreeding is becoming a common and growing trend in the industry. This report examines the meat quality and performance of beef on dairy crosses in comparison to conventional and straight dairy beef. Studies have shown this crossbreeding strategy results in tenderness and overall meat quality levels that meet or exceed consumer and industry expectation.

## Issue

When we think of dairy cattle we think of milk, more than meat, but on average, dairy influenced beef contribute 18-24% of the U.S. beef volume annually. Over the past 20 years, beef from dairy steers specifically has contributed 10.8% to 14.7% of total beef volume produced annually, a significant part of the U.S. beef supply.<sup>1</sup>

Beef on dairy crossed cattle are becoming increasingly available to the beef supply chain. There were approximately two million beef on dairy crosses born in 2021, increasing to an expected three million born in 2022, all destined for the fed-beef supply.<sup>2</sup> Rabo Agrifinance estimates beef on dairy crosses could account for up to 13% of the fed-beef supply as this trend continues.<sup>3</sup> With the increase of beef on dairy cross carcasses entering the supply chain, we reviewed the quality and composition differences in these animals and their potential impact on the industry.

## Background

*What is a Beef on Dairy Cross?*

Beef on dairy is the concept of breeding dairy cows to beef bulls with the intent to produce a more desirable animal to enter the beef supply chain. While beef on dairy crossbreeding has been common for years, the trend has taken flight in the past five years. With modern breeding technologies, dairy producers can select their highest quality dairy cows to produce herd replacement females with the remainder of their herd going to produce steers for fed-beef. Using beef bulls, predominately Angus or Limousin, on these cows has been shown to produce a more valuable, higher performing terminal animal than a straight dairy calf.





For dairymen, these beef on dairy cross calves can be worth 2-3 times more than their straight dairy counterparts because they can deliver better feed efficiency and more desirable carcass traits in comparison to straight dairy calves.<sup>4</sup> Additionally, research conducted by Texas Tech University found that breeding dairy cows to beef bulls had no significant impact on milk production.<sup>5</sup>

#### *Straight Dairy Beef:*

Historically, straight dairy cattle have carried a stigma of producing a less desirable carcass composition in comparison to conventional beef animals. The cattle feeding industry hasn't traditionally sought out dairy cattle because their feed conversion is less efficient than conventional beef animals, thus costing more to get the animal to harvest.

Packers have struggled to manage dairy cattle's larger, heavier framed carcasses, which can strain plants originally designed to harvest smaller-framed conventional beef cattle. Additionally, straight dairy cattle have significantly lower carcass dressing percentages in comparison to conventional beef animals, meaning they produce less sellable meat as a percentage of their overall weight.

For retailers specifically, the most common challenge with dairy-derived beef is steak color and shape. The resulting rib and loin shapes are more triangular or concave than desired; resulting beef muscle can be darker in color and can discolor at a much faster rate than conventional beef in the meat case.<sup>5</sup>

However, these carcasses generally have very consistent USDA quality grades and usually have more marbling and less external ribeye fat than conventional beef. In foodservice, dairy carcass derived steaks have done well, as they can provide a consistently high eating experience given their favorable marbling and tenderness levels. A Texas Tech University sensory panel, made up of trained panelists with a more acute palate than the everyday consumer, rated steaks derived from dairy carcasses as more tender and juicier than steaks derived from conventional beef carcasses.<sup>5</sup>



## Insights

Beef on dairy crossbreeding strategies allow the industry to capitalize on the established tenderness and consistency of dairy-derived beef while improving less desirable carcass characteristics by incorporating conventional beef genetics.

A study conducted by Texas Tech found that beef on dairy crosses are the true intermediate between conventional and straight dairy beef. The crossbred carcasses evaluated in this study produced the expected marbling, tenderness and leanness of a straight dairy carcass, while being heavier muscled, producing a more desirable ribeye size and shape, and maintaining a rich red color for an extended time in the meat case, which would be expected from a conventional beef carcass.

### Attributes of Beef Derived from Beef on Dairy Cross Cattle

1

#### Eating Satisfaction:

This beef can be just as or more tender and flavorful than conventional beef. Fed dairy beef can have a more tender and flavorful sensory profile due to high marbling scores, as it is common for fed-dairy carcasses to grade USDA Choice and Prime. In a Texas Tech consumer sensory panel, beef derived from beef on dairy crosses performed better than conventional beef in both tenderness and juiciness categories. Additionally, there were no differences in the sensory panel's acceptance between conventional, beef on dairy cross, or straight dairy beef.<sup>5</sup>

2

#### Improved Meat Color:

Steaks from beef on dairy cross cattle were shown to have a more conventional beef-like color and to maintain a desired color for longer in the retail case in comparison to straight fed-dairy beef making it easier and more versatile to market to consumers.<sup>5</sup>

3

#### Carcass Characteristics:

The influence of dairy genetics positively affects the U.S. quality grade distribution for beef on dairy crosses with this crossbreeding strategy resulting in a higher percentage of Prime carcasses in comparison to conventional beef carcasses. Beef on dairy cross cattle are more moderately framed and heavier muscled than straight Holsteins resulting in dressing percentages more in line with conventional beef carcasses, and a ribeye shape and size that more closely mimics a conventional beef ribeye.<sup>5</sup>

4

#### Feed Efficiency:

Beef on dairy cross cattle are performing almost identical to conventional beef cattle in feedyards today. This is a huge improvement from straight dairy cattle which require significantly more days on feed to reach harvest weights. Additional days on feed increase the cost of production and can result in the emission of more greenhouse gases making the beef on dairy cross animal a greener and more economical animal to feed in comparison to a straight dairy animal.<sup>5</sup>



Steaks from the 13th rib region of strip loins from different cattle types: conventional beef (A), crossbred beef x dairy (B) and dairy (C).

Image source: Texas Tech University, Invited review: A carcass and meat perspective of crossbred x beef cattle, February 22, 2022



# 5

## Traceability:

Traceability has been a growing interest and concern for consumers. Dairies, calf ranches and feedyards have robust record-keeping systems in place. Calves born on dairies are typically given identification tags that can trace them from birth to harvest. As the beef industry strives to become more traceable and transparent, beef on dairy cross cattle will be a strong source of traceable beef.

# 6

## Branded Programs:

Beef on dairy cross cattle are generally black hided (a phenotype indicator of Angus breed type), grade USDA Prime and Choice, and are age and source verified. These attributes make them ideal for branded beef programs targeting a premium from domestic and international buyers.

# 7

## Liver Abscesses:

For packers, beef on dairy cross carcasses still present a much higher rate of liver abscesses in comparison to conventional beef carcasses requiring additional trimming, which increases labor requirements, slows down production, and decreases valuable meat yields. Beef on dairy cross carcasses present with approximately 20% fewer liver abscesses in comparison to straight fed-dairy carcasses at harvest.<sup>5</sup> However, abscesses have not yet been reduced to the level seen in conventional beef carcasses. Researchers believe liver abscesses are more prevalent in fed-dairy cattle because of the need to feed a more concentrated diet for an extended period in comparison to conventional fed-beef cattle.



## Impact

Overall, beef resulting from beef on dairy cross cattle is meeting the expectations of conventional beef and achieving high tenderness levels. In comparison to straight dairy cattle, the beef on dairy cross is a superior animal to feed across all feeding and carcass measurements. While there are many positive impacts from beef on dairy crosses, their carcasses are still presenting with a higher level of liver abscesses than preferred and will require further work from the industry to improve.

While dairy influenced cattle were already entering the feeding industry and the overall beef supply as straight dairy cattle in years prior, as beef on dairy crosses increase in volume and availability, it is likely that the volume of straight dairy cattle will decrease in the fed-beef supply. As more and more beef on dairy cross animals enter the beef supply chain, we can be confident based on recent research findings that these animals will not have a negative impact on overall beef quality.

Semen sales reports have indicated a 128% increase in beef semen sold to dairies over the past five years and that practice is expected to further grow, indicating the beef on dairy trend will continue to increase over time.<sup>6</sup> As more research is conducted and more emphasis is placed on choosing optimal beef sires for beef on dairy crossbreeding programs, we can expect to continually see an ongoing improvement in quality and efficiency of these crossbred cattle.

## Sources

<sup>1</sup> University of Wisconsin-River Falls, Dairy cattle a big part of U.S. beef supply, May 13, 2019


<sup>2</sup> Southwest Farm Press, Dairy-beef crossbreds are expected to reach 3 million head in the U.S. in 2022, August 2021

<sup>3</sup> Progressive Farmer, Beef Brings Dairy a Profit Boost, April 24, 2020

<sup>4</sup> University of Wisconsin-Madison, Optimizing Value on Dairy Beef Cross Cattle from Birth to Harvest Webinar, March 8, 2022

<sup>5</sup> Texas Tech University, Invited review: A carcass and meat perspective of crossbred x beef cattle, February 22, 2022

<sup>6</sup> Dairy Herd Management, Mating Decisions for Beef x Dairy Crosses Just as Important as Conventional, February 3, 2022



# Thank you for your interest in the Midan Beef on Dairy Crossbreed Insights Report.

For more information contact

**Bridget Wasser**

Associate Director, Customer Insights

[b.wasser@midan.com](mailto:b.wasser@midan.com)

Any citation of this report should be credited as follows:  
Midan Marketing, Meat Quality Impacts of Beef on Dairy  
Crossbreeding, March 2022

© 2022 Midan Marketing Inc.

