

The future of dairy-beef in cattle production

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Abstract

Beef-on-dairy (BOD) cattle constitute a meaningful and growing percentage of North American fed beef production. The transition to BOD programs by dairy producers has been facilitated in part by sexed semen technologies, which may ultimately result in over 3.5 million BOD cattle entering the US fed beef supply on an annual basis. This class of cattle presents unique opportunities for vertical alignment of the value chain, but packer concerns remain about carcass conformation and consistency as well as liver abscess rates and precocious lactation in BOD heifers. The future of BOD production will hinge on participants' ability to efficiently distribute data and the associated value up and down the BOD value chain.

Key words: alignment, conversion, cutability

Introduction

Cattle originating from dairy systems have historically represented approximately 20% of US beef production.¹ The nature of that supply has evolved in recent years because of the beef-on-dairy (BOD) phenomenon, a practice whereby dairies selectively mate females to beef bulls to produce terminal animals that enter the fed cattle supply chain. The paper that follows discusses some of the historical dynamics that led to the widespread adoption of this practice, the comparative advantages of BOD versus traditional Holstein and native fed cattle, various stakeholder perspectives, and future opportunities presented by this production system.

North American cattle supplies

Recent years have seen a decrease in the size of the beef cow herd in both the United States and Canada, while the size of the dairy herd has remained remarkably steady.^{2,3} The beef and dairy industries have both seen a decline in the total number of operations, while the average size of those operations that remain has increased proportionally.^{4,5} Dairies have historically contributed to the North American beef supply through two avenues, namely, via the slaughter of cull cows and through fed Holstein steer production. In recent years, a confluence of factors has precipitated a major shift in the nature of the dairy industry's contributions to the North American fed beef supply. Those factors include 1) the widespread adoption of sexed semen products; 2) improved reproductive performance of the milking herd; 3) the emergence of Jerseys as a meaningful percentage of overall cow numbers due to the value of milk components; and 4) a collapse in the value of day-old Holstein bull calves.

The widespread utilization of sexed semen has allowed dairies to become more selective about which females are utilized to produce the next generation of herd replacements. Simultaneously, overall reproductive performance has improved, as has the longevity of the average dairy cow. These factors have effectively created a surplus of uteruses that can be used to produce higher value BOD calves destined for the fed beef supply chain versus Holstein steers. Moreover, Jersey cows now represent a meaningful percentage (roughly 10%) of the U.S. dairy herd.⁶

The value of Jersey genetics for their contribution to milk components is inversely proportional to their value for fed beef production. In other words, high quality beef genetics are necessary to improve the feeding value of Jersey-influenced calves that are not retained in the herd (and thus destined for the feedlot). Finally, one of the "big 3" meat packers decided to discontinue the slaughter of calf fed Holsteins, which significantly decreased the slaughter price of these animals and led to a collapse in value of the purebred Holstein bull calf from a high of over \$500 per head in mid-2015 to as little as \$15 per head since that time.

Beef-on-dairy stakeholders, benefits, and value chain

There are 4 direct stakeholders in the BOD value chain, consisting of the dairy, the genetics provider(s), the calf ranch/grower, and the cattle owner/feeder. (Notably, circumstances exist where a single party/entity may simultaneously fill more than one of these roles at any given time.) Indirect stakeholders include packers, restauranters/grocers, and the beef-consuming public.

Beef resulting from BOD value chains has several major advantages compared to commodity beef from native cattle. Chief among them is the consistent youthfulness of BOD cattle at the time of slaughter, which is more strongly correlated with tenderness (and therefore eating experience) than quality grade, despite the massive attention devoted to the latter. Almost by definition, beef from BOD cattle also delivers a more consistent eating experience when compared to their native beef counterparts due to the narrower gene pool and limited variation in production practices inherent to beef-on-dairy systems. Last, but certainly not least, BOD production systems boast the lowest carbon footprint per output unit of any beef production system currently or previously in use.⁷ Aside from the *prima facie* environmental benefits, this also confers an additional marketing opportunity for cattle owners looking to capitalize on the demands of an increasingly environmentally conscious consumer base.

From the perspective of production economics, BOD cattle also have several advantages over the Holstein steers that have characterized the majority share of dairy fed beef production until recently. Compared with Holstein steers, BOD cattle enjoy improved average daily gain (ADG), improved feed conversion (F:G or DM:G), improved carcass traits (thereby making them eligible for premiums and branded programs like Certified Angus Beef), and improved carcass conformation/cutability.⁷ The importance of these traits cannot be overstated, as they help to counterbalance packer concerns that are particularly poignant when considering "generic" BOD cattle, meaning those that are not produced as part of an organized value chain. Common packer concerns include dairy-like conformation and low yielding carcasses (both of which can be mitigated by proper bull selection), lack of consistency, liver abscesses, precocious lactation in heifers, and a general lack of quality control. While liver abscesses and precocious lactation both represent complex, poorly understood, and multifactorial biological phenomena, the other concerns can be addressed when all stakeholders are

properly aligned in the value chain. The natural result is industry participants, particularly at the cattle owner/feeder level, who are actively working to improve the consistency of health and production outcomes, carcass characteristics and grid outcomes for BOD cattle in their production systems.

The future of beef-on-dairy

Competing proteins have managed to consolidate and achieve vertical integration. They generally benefit from a multitude of factors compared to the traditional native beef cattle industry, including but not limited to a shorter generational interval, lower capital costs per output unit, and more narrowly defined geographies for key production segments. Beef-on-dairy systems offer an opportunity for de facto vertical integration by linking stakeholders in a way that allows value to be transmitted up and down the value chain. Opportunities abound for improving BOD value chains moving forward. Greater operational efficiencies can be realized through economies of scale. Improved health and production outcomes can be achieved through targeted genetic selection for economically relevant traits like feed conversion. Finally, sustained and growing pull-through consumer demand can be achieved through positive and repeatable eating experiences that create opportunities for the development of branded BOD products.

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