

# When dairies do beef: The feed and management approach

**Stuart Hall**, BVetMed, MRCVS

Feedlot Health Management Services, PO Box 140, Okotoks, Alberta, T1S 2A2

Corresponding author: Stuart Hall; Phone: 403-938-5151, E-mail: [stuarth@feedlothealth.com](mailto:stuarth@feedlothealth.com)

## Abstract

Dairy farmers are realizing they can generate profit from more than just milk. One of the most underdeveloped potential profit centers is the production of specialized dairy-crossed steer calves and excess heifers that can be profitably fed and marketed. These proceedings will discuss the opportunity and the feed and management approach to help producers understand and raise profitable dairy-beef cattle.

**Key words:** dairy-beef, feed, management, margin

## Résumé

Les producteurs laitiers se rendent compte qu'ils peuvent générer des profits au-delà du lait. Parmi les centres de profit au potentiel le moins développé se retrouve la production de bouvillons spécialisés croisés et de taures excédentaires pouvant être engraisés et commercialisés de manière rentable. Dans cette présentation, on discutera de ces opportunités et de l'approche de gestion et d'alimentation pour aider les producteurs à comprendre et à élever profitablement des bovins de boucherie croisés avec une lignée laitière.

## Introduction

Statistics from the National Association of Animal Breeders (NAAB) show how popular it has become to breed the bottom-end dairy cows to beef bulls, with a 59% increase in domestic beef semen units sold in 2018.<sup>2</sup> Programs like Breeding to Feeding<sup>SM</sup> and HOLSim differentiate those that use structured planned breeding to produce profitable feeder cattle. Programs like these and others are taking the almost valueless Jersey bull calves and making them into a profit-making commodity.

More beef semen use will translate into more dairy-beef freshenings, presenting an opportunity for consulting veterinarians to generate a customized producer plan and assist in the feed and management approach for the cattle. There are significant market-based premiums for dairy-beef calves that can be captured. The Holstein steer continues to meet resistance in packing plants, creating a bearish outlook for pricing and opportunity. In contrast, the economic incentives attached to dairy-beef create margin and opportunity for dairy producers to capitalize on.

Dairy producers who engage in dairy-beef will need to be challenged to define goals and understand cost of production, feed efficiency concepts, and markets to be successful and sustainable. With the proper skill set, consulting veterinarians should be well positioned to help understand the similarities and differences between dairy and dairy-beef production to ensure goals are reached in a cost-effective and profitable manner.

## Similarities and Differences Between Dairy and Dairy-Beef Production

There are certain similarities that are intrinsic to cattle that cross the breed divide. Animal health presents a core similarity; bovine respiratory disease (BRD) is the primary cause of morbidity, mortality, and culling that can in turn drive profitability.<sup>1</sup> In addition, the basics of animal husbandry are at the core of the production system. Access to feed, water, and shelter are crucial. Appropriate facilities are required to feed, handle, and work the cattle but these facilities may need adjustment to meet the differing processes that are required by the dairy-beef animals. In contrast to dairy production, dairy-beef production demands a laser focus to feed efficiency (F:G) and cost of production (COP). There is no daily validation of income, so having a plan of measurements to achieve the desired endpoint will be needed. In dairy-beef, the customer is not so focused on cattle conformation or appearance, so instead the producer's focus has to be on F:G.

## Marketing Plan and Goal Setting

Setting goals for dairy-beef production is intrinsically related to the goals of the dairy herd. It's important to ensure that the dairy producer is engaged in this process and tools are put in place to project both dairy heifer and dairy-beef inventories.

Considerable research will need to be applied to understand local market options and incentives, as well as historical and projected prices for day-olds, feeders, and fats. Initiating conversations with feedlots to explore their charging mechanisms and scope will help determine what's feasible as you build a plan that fits. In addition, home-grown forages and commodity feed availability, pen space, facilities, and employee time and skill sets will have to be assessed to create a customizable plan. Your client will need repeat customers, so understanding buyers' specifications as part of the goal setting is critical.

## Production Lots, Measurements and Key Performance Indicator (KPI)

We need to define what our production lot is. Lots prove helpful to organize the cattle and track both costs and the animals. The production lot can be dynamic and customized to the production system. Examples of the production lot could be a pen, a week of freshenings, a barn or an ownership. It is important that the production lot is clearly defined so that financial inputs and outputs can be appropriated correctly.

There are 3 key performance indicators we should focus on, non-feed cost of gain (NFCOG), feed only cost of gain (FCOG), and total cost of gain (TCOG). We can build what we measure around these KPIs to benchmark internally or externally. NFCOG includes items such as vaccines, antimicrobials (morbidity cost), implants, chute charges, tags/EIDs, yardage (may or may not be included), and mortality cost. FCOG is the feed cost and in some instances the producer can mark up the feed to capture margin in the feed. The TCOG is the sum of NFCOG and FCOG. To compute these KPIs you need to measure the initial weight, final weight, and days-on-farm (DOF). These KPIs can be used retroactively to assess closed-out groups or lots of cattle and proactively if we have interim measurements to ensure we are focused and hitting the goals.

### Customized Health Approach

Total protein/IgG status of calves at 48 hours of age is a primary determinant of future health and performance.<sup>5</sup> Optimizing maternity management, colostrum quality, and colostrum quantity serve as essential critical control points. There may be incentives based off total protein status if selling day-olds, so investigating how to maximize total protein results will be beneficial. The colostrum approach should be similar to the heifer-raising approach: ensure at least 1 gallon of colostrum is fed within the first 12 hours of life. Data suggest more colostrum leads to better ADG and lower cull rates.<sup>3</sup>

Mortality and morbidity can substantially affect the total cost of production. A customized health protocol and system is needed to optimize mortality and morbidity outcomes. Start with an existing dairy heifer vaccine protocol and build from that. There may be elements of an existing dairy vaccine protocol that may or may not be relevant to dairy-beef. Vaccines targeted at leptospirosis might be an example of a disease process not as critical to dairy-beef. The primary challenge will still be BRD, so ensure the viral and bacterial components of BRD are addressed. Provide customized treatment protocols for common diseases such as enteritis, BRD, and pinkeye and have clear definitions of endpoints and options to cease treatment and cull calves.

### Customized Feeding Approach

FCOG, driven by F:G and diet cost, should be the primary focus of a dairy-beef operation. Unlike dairy heifers, where

data have suggested better ADG leads to more lifetime milk,<sup>4</sup> this correlation may not be beneficial in a dairy-beef scenario compared to improving F:G. We will explore how to optimize ADG and F:G in a cost-effective manner.

A typical feeding approach could be broken down into distinctive phases, customized to meet the nutritional needs of the calf. An intimate knowledge of available feeds will be necessary and engagement with a beef nutritionist can be done to develop a plan.

Example phases could look like this:

**Milk and Starter.** A calf is born with a non-functional rumen with no microbes and it cannot break down forages or dry feeds, so it must rely on liquid diets. Aim for at least a 22:18 (protein:fat) milk product fed at 1 gallon/day divided into 2 feedings and be fully weaned off milk by 50 DOF. Know your numbers as milk can be one of the most of expensive phases of the feeding period. The feed cost of a higher volume or component milk feeding program adapted from dairy heifers may be too high to achieve optimal FCOG.

The calf needs to have dry feed at an early age to stimulate rumen development. There is a wide range of crude protein (CP) levels that are recommended, but an industry standard lies between 18 and 20% CP. Some industry goals for a starter grain diet are to achieve intakes of 2 lb (0.91 kg)/animal/day by weaning and 4 lb (1.8 kg)/animal/day by approximately 60 days-of-age. A starter grain diet is typically expensive on a per-ton basis, but intakes will average ~1 lb (0.91 kg)/animal/day over the hutch period, with higher intakes post weaning. Starter feed costs will vary significantly by geographic location; whereas, milk cost is likely to be around \$1.00/animal/day for the first 42 days, then \$0.50/animal/day until 50 days.

Ideally, calves should be weighed at the time of exit from the hutch or the end of the starter phase to understand ADG, FCOG, and NFCOG for this phase.

**Grower.** The grower diet goals are to take a calf from the starter phase until around 325 lb (147 kg) and prepare the rumen and calf for future diets. To transition the calf off the starter, an example would be feeding a 50:50 diet of starter and grower for 1 week prior to transitioning them to a 100% grower diet. Once cattle are out of the hutch, we typically recommend feeding them the same hutch diet for a day or 2 to get them acclimated to their new pens. The dry matter (DM) cost of the grower ration is typically lower compared to the starter diet, but assuming calves will eat an average of 6 lb (2.7 kg)/animal/day (100% DM) in the grower phase, the daily feed cost will be higher than in the starter phase. Most grower diets are still high in CP (16 to 18%) and the starch content (~38%) isn't that different from the starter diets, but typically roughage is incorporated into grower diets at 7 to 15% of the diet DM.

Consulting with a nutritionist to devise the best plan to continue from the grower phase is crucial. There may be opportunities to use lactating refusals or local by-products in the diet. Alternatively, it may make more sense to send

the calf to a feedlot. Feedlots specialize in feeding cattle to specific end points (feeder cattle or slaughter cattle). In addition, feedlots may have options for maintaining ownership, financing feed and yardage, and other solutions that may present opportunities to the dairy.

### **Performance Enhancing Technologies**

Unless you are considering entering a growth promotant-free program, there is always an opportunity to use implants. Implants will help improve F:G, but it's crucial to match the implant to the growth stage and diets. The implant strategy must be customized to the operation. Cattle handling facilities, time, and labor might apply constraints to the adoption of an implant program so it's important to proactively investigate this. The opportunity may exist to leverage your implant supplier to gain product knowledge, personnel training, and timing expertise. In addition, you will need to engage a nutritionist to align the feeding protocol with the implant strategy and goals.

### **Conclusion**

An overarching approach is to leverage the similarities and recognize the differences. Consulting veterinarians can leverage the basic husbandry, health, and feeding protocols developed for raising dairy heifers and then customize them to incorporate the different endpoints and specifications of dairy-beef. Implement production lots and track NFCOG, FCOG, and TCOG to control costs of production and hit KPIs.

Engaging a nutritionist will ensure goals are met and feed and implant strategies are aligned. Utilizing available technologies allows optimization of COP and F:G.

Sustainable dairy-beef production requires repeat customers to purchase the product. As a result, it is necessary to understand the target market and meet the buyer's specifications.

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