

# Feeding Dairy Steers on Pasture - Grain or No-Grain?

Brad Heins, Elizabeth Bjorklund, University of Minnesota Extension

With the extreme drought conditions in the Upper Midwest during 2012, many dairy producers continue to worry about high grain and hay prices. Therefore, producers are reducing the amount of grain fed to cattle to reduce feed costs and maintain profitability. At the West Central Research and Outreach Center's organic dairy, a study was completed evaluating the effects of growth, meat quality, and profitability of conventionally raised dairy steers compared to organically raised dairy steers. This project was funded by a North Central SARE graduate student grant.

There is an increase in global demand for organic products, especially grass-fed and finished. Bull calves may represent a potential additional source of revenue for organic dairy producers. Currently, with the high price of organic grains in the U.S., the male offspring of organic Holstein and crossbred dairy cattle represent a potential resource for pasture-raised beef in the Midwest.

The research study used bull calves born from March-May 2011 from the WCROC dairy. The subjects were subsequently evaluated for growth, meat quality, consumer acceptability, and profitability over the next 14-20 months. The bull calves were assigned to one of three groups at birth: conventional, organic (pasture plus concentrate), and organic-grass only (100% pasture). The conventional steers were fed a diet of 80% concentrate and 20% roughage and received Component E-S implants. The organic steers were fed a diet of organic corn, organic corn silage, and at least 30% of their diet consisted of organic pasture during the grazing season. The grass-only steers grazed pasture during the grazing season and were fed high quality hay or hay silage during the non-grazing season. The conventional steers were sent to slaughter July 24, 2012 to the Tyson Fresh Meats plant in Dakota City, NE, and the organic and grass-only steers were sent to Lorentz Meats, Cannon Falls, MN, on September 19, 2012, and November 13, 2012, respectively. Strip loins were collected for a consumer taste panel which allowed 100 beef consumers to rate the beef for overall liking and flavor. Profit was defined to include revenues and expenses for beef value, feed cost, pasture cost, health cost, and yardage.

The table shows results for conventional dairy steers compared to organic and grass-only dairy steers. The grass-only dairy steers had greater days to slaughter, lower slaughter weights, and had lower average daily gains than conventional steers. Average daily gains from birth (lb/day) were 2.52 (conventional), 1.79 (organic), and 1.35 (grass-only). As expected, steers fed higher amounts of grain and concentrate had carcasses with greater fat thickness, larger ribeye area, and higher yield grades than steers fed higher amounts of pasture.

The fat from the grass-only steers was higher in Omega-3 fatty acid and lower in monounsaturated and saturated fat, which may indicate potential health benefits of grass-fed beef. Consumers who rated the beef found no significant difference for overall liking for the conventional and organic beef. The organic beef had significantly higher flavor liking than the conventional beef. However, consumers rated the grass-only beef the lowest in overall liking and flavor.

For profitability, grain costs were substantially higher for the organic steers and, therefore, resulted in a net loss per steer (-\$644/steer). The higher cost of production for the organic steers is due to the extremely high value of organic corn (\$15.90/bushel, January 2013). The grass-only steers had the highest profit per steer (\$593 vs. \$442) compared to conventional steers because of lower feed costs, mainly pasture. Therefore, a low grain ration may reduce feed costs without sacrificing profit in an organic dairy system, assuming the grass-fed steers can be marketed at a premium price based on the production system.

The conventional steers had some advantage over the grass-only steers and grew much faster and required less time to slaughter. However, grass-only steers required fewer resources than conventional steers. Organic dairy producers trying to seek relief from high grain prices with a little "extra" pasture may be able to make a profit from feeding organic dairy steers versus selling them to conventional markets. The most important point for reducing inputs and increasing profits in organic dairy systems is to produce high quality forages and maximize dry matter intake on pasture.

Table 1. Results for conventional dairy steers compared to organic (pasture plus concentrate) and organic grass-only (100% pastures) dairy steers.

	Steer Group		
	Conventional	Organic	Grass-Only
Number of Steers	16	16	17
Slaughter Age (d)	466 <sup>a</sup>	528 <sup>b</sup>	584 <sup>c</sup>
Slaughter Weight (lb)	1,263 <sup>a</sup>	1,037 <sup>b</sup>	884 <sup>c</sup>
Avg. Daily Gain from Birth (lb/d)	2.52 <sup>a</sup>	1.79 <sup>b</sup>	1.35 <sup>c</sup>
Fat Thickness (in)	0.38 <sup>a</sup>	0.11 <sup>b</sup>	0.10 <sup>b</sup>
Rib-eye Area (in <sup>2</sup> )	11.7 <sup>a</sup>	10.2 <sup>b</sup>	7.7 <sup>c</sup>
Yield Grade	3.0 <sup>a</sup>	1.2 <sup>b</sup>	1.0 <sup>c</sup>
Omega-3 Fatty Acid (%)	0.21 <sup>a</sup>	0.23 <sup>a</sup>	0.53 <sup>c</sup>
Monounsaturated Fat (%)	39.4 <sup>a</sup>	42.9 <sup>a</sup>	22.9 <sup>b</sup>
Saturated Fat (%)	37.2 <sup>a</sup>	28.0 <sup>b</sup>	27.8 <sup>b</sup>
Overall Liking <sup>1</sup>	69.2 <sup>a</sup>	71.3 <sup>a</sup>	56.3 <sup>b</sup>
Flavor Liking <sup>1</sup>	69.2 <sup>a</sup>	73.3 <sup>b</sup>	56.8 <sup>c</sup>
Profit per Steer (\$)	442	-644	593

Rows with common superscripts are not significantly different ( $P < 0.05$ )

<sup>1</sup> = Rated on a 120-point scale