Iowa Beef on Dairy Research Update: Evaluating Impact of Early Life Nutrition on Finishing Phase Performance & Carcass Traits

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The objective of our study was to examine how the early life nutrition, specifically looking at the level of starch or fiber in the diet, impacted performance later in life. One-hundredtwenty day-old beefxdairy steers were fed either a highstarch (HS) or low-starch (LS) starter ration for about 60 days



at the ISU Dairy farm. Steers were then weaned and moved to a receiving trial for another 60 days where they were fed either a pelleted (PEL) ration or a forage-based TMR ration. At the end of the 60-day receiving trial, they were fed a common growing TMR ration for 140 days. Then, steers were moved to a finishing yard and fed a common finishing diet for another 200 days. Calves were on an individual feed monitoring system throughout the project so individual daily feed consumption was measured.

In the calf nursery stage, the HS calves ate significantly more grain (0.99 vs 0.95 lb/day) and had a numerical advantage in weaning weight (179.8 vs 177.7 lb) compared to the LS calves.

In the receiving trial, there was a significant difference in feed intake, daily gain and ending weight based on the diet, with the pellet-fed calves consuming almost double what the TMR calves ate and ending with a heavier weight at the end of the 60-day trial. A month after the receiving trial ended, the weight difference had narrowed and there were no performance differences between groups by the end of the grower phase (about 260 days of age). There also were also no differences in intake or daily gain in the finishing phase. However, there was a slightly different growth curve for the calves that were on the low-starch starter and TMR receiving trial. These calves were still increasing in daily feed intake and growth as the other calves were starting to slow down.

All calves were marketed at about 465 days of age. Steers graded 15% Prime, 66% CAB, 15% low Choice and 4% Select with no difference in the quality or yield grade between groups. The low-starch TMR group had numerically heavier carcass weight and 20 percent fewer liver abscesses and rumen condemnations. Beefxdairy steers in this project only averaged 19 percent liver abscesses, which is well below other reports of beefxdairy steers.





The biggest impact from a carcass merit and gain perspective was from multiple treatments for respiratory issues. Calves that were treated two or more times had a significantly lower daily gain in the finishing phase, resulting in a 49-lb lighter ending weight and a 29-lb lighter carcass weight, and returned \$91 less compared to non-treated animals.

When combining the slight differences in feed intake, feed efficiency and increased weights, the LS-TMR group had numerically higher carcass value. The HS-TMR group had numerically greater economic returns.

	HS-PEL	LS-PEL	LS-TMR	HS-TMR
Weaning Wt. (~60 days of age)	229	224	226	221
End of receiving trial (120 days of age)	365a	366a	333b	309b
150 days of age	463	470	441	424
Move to finisher 260 days of age	813	829	805	776
Finished Wt (465 days of age)	1427	1455	1468	1401
	HS-PEL	LS-PEL	LS-TMR	HS-TMR
60-day Receiving ADG	2.32a	2.39a	1.75b	1.50b
Total Grower ADG	2.89	2.98	2.84	2.74
Finisher ADG	3.21	3.27	3.33	3.26
60-day Receiving DMI	12.6a	12.1a	6.4b	7.14b
Total Grower DMI	14.25	13.28	12.38	13.11
Finisher DMI	26.43	26.29	27.08	25.17
Total Grower F:G	4.96	4.5	4.47	4.91
Finisher F:G	8.4	8.23	8.1	7.83
%	hs-pel	ls-pel	ls-tmr	hs-tmr
Liver Abscess	21.4	23.1	4.2	31
Lungs Condemned	10.7	7.7	8.3	3.4
Rumens Condemned	17.9	11.5	4.2	6.9
Respiratory Treats	63.3	43.3	43.3	60
Death Loss%	10	10	16.7	6.7

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Economics	HS-PEL	LS-PEL	LS-TMR	HS-TMR
Cost per Calf from nursery phase	\$750	\$808	\$840	\$724
Total Per Calf in grower phase	\$576	\$593	\$472	\$490
Total per Calf in finishing stage	\$824	\$818	\$837	\$797
Total Cost \$ per Calf Overall	\$2,150	\$2,219	\$2,149	\$2,011
Gross Carcass Value Paid	\$2554	\$2560	\$2616	\$2500
Net Carcass Return	\$404	\$342	\$467	\$489