WesternBeef DEVELOPMENT CENTRE

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Time of Calving and Feeding Strategy Effects on Performance of Feeder Steers

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Introduction

Over the years, cow/calf producers in western Canada have evolved their production systems to accommodate calving in late winter or early spring (March) in order to extend the growth period for calves prior to fall weaning. In western Canada, this shift has resulted in the cow's highest nutritional demands occurring at a time when high-quality forage (i.e. pasture) is not available. Due to this relationship, late-winter calving corresponds with increased feed costs (Stockton et al., 2007; Adams, 2001) and increased labour requirements. As Canadian beef producers search for ways to reduce costs and improve efficiency, many have looked to later calving dates as a way to achieve this goal. Calving dates in late spring or summer (June) result in forage resources more closely matching cow requirements (Adams et al. 1996, Adams et al. 1994), as well as more favourable environmental conditions for newborn calves. However, the impact of a later calving season on feeder calf productivity and suitability for different finishing strategies is less clear.

Objective:

A trial was conducted between 2007-2009 to evaluate the effect of late- (June) and early-born (March) calves on their performance during the backgrounding and finishing phases. The objective of this study was to evaluate the performance and carcass characteristics of steer calves from these two calving seasons under two different finishing systems—rapid finish (RF) vs. slow finish (SF).

Trial Management

Steer calves born in 2007 and 2008 from a three-site Canadian study (Swift Current, SK, Lanigan, SK, and Brandon, MB) which evaluated the effects of calving season on cow/calf production were sourced for the current study (Girardin, 2011). Calves were born in one of two calving systems, early (March) or late (June), and were weaned at approximately 205 days of age (October for early calves and January for late calves). Weaned steers (124 in 2007, 157 in 2008) from the three sites were transported to Brandon, MB and placed on a diet of good quality grass/alfalfa hay for approximately one month prior to being allocated onto a finishing system.

RF steers were fed a backgrounding diet in the feedlot for approximately 14 weeks (target rate of gain 2.2 lbs per day), after which they were transitioned to a high-barley grain diet for finishing (Table 1) to the targeted endpoint. SF steers were fed a backgrounding diet in the feedlot (target rate of gain 1.5 lbs per day) until going onto pasture in June, where they grazed a grass/alfalfa pasture for two months and then swath grazed barley underseeded to winter triticale for two months. The grass/alfalfa pasture was supplemented with a small amount of dry hay early in the grazing season to slow the passage rate of lush early season

growth. Following grazing, SF steers were transitioned on to a high-barley grain finishing diet (Table 1). All steers (RF and SF) received a trenbolone acetate-based growth implant (Synovex Plus™) once on the finishing diet. Ultrasound backfat scans were recorded routinely throughout the finishing phase to monitor fat deposition, and once steers met the desired end point of 0.3 inches (8 mm) backfat or 1,650 lbs bodyweight (BW), they were sent for slaughter.

Table 1 – Diet Composition (% of DMI)

	2007 Calves				2008 Calves			
	Rapid Finish		Slow Finish		Rapid Finish		Slow Finish	
	March	June	March	June	March	June	March	June
Backgrounding Phase								
Barley grain	20.6	16.8	1.9	0	35.5	18.9	0	0
Barley Silage	40.5	44.4	1.1	0	34.9	42.9	17.3	0
Hay	38.9	38.8	96.9	100	29.6	38.3	82.7	100
Finishing Phase								
Barley grain	71.0	83.3	70.9	71.9	78.0	82.2	77.2	77.5
Barley silage	21.2	1.1	23.7	23.2	20.1	2.1	18.3	18.5
Hay	6.5	14.0	4.0	3.7	0.4	14.0	3.1	2.4
Supplement	1.4	1.6	1.3	1.4	1.5	1.7	1.4	1.5

Results and Discussion

Calving season had an effect on initial BW (i.e. weaned weight), with March-born steers heavier than June-born steers (Table 2). This finding is consistent with several other studies where calves born later in the season resulted in lower BW at weaning (Grings et al. 2005; Julien and Tess, 2002; Renquist et al. 2006; Stonehouse et al. 2003). March-born steers were consistently heavier through the backgrounding period than June-born steers in both feeding systems. The difference in BW between the early and late steers lessened during the pasture/swath-grazing portion of the feeding cycle for slow finished calves as June-born steers gained weight faster than the March-born steers, however, the March-born steers were still heavier at the end of this stage. Body weight at slaughter was heavier for SF calves (not significantly different) due to the increased time on feed when compared to RF calves. June-born, RF steers finished at a heavier weight than March-born RF calves due to the longer period in the finishing phase.

Table 2 – Steer weights and ADG during trial

	March Born Calves		*June Born Calves*	
	Rapid Finish	Slow Finish	Rapid Finish	Slow Finish
Body Weight (lbs)				
Start of test	623	620	568	576
End of backgrounding	798	963	761	779
End of pasture	-	1,016	-	853
End of swath-grazing	-	1,079	-	939
Start of finishing	798	1,079	761	939
End of test	1,206	1,582	1,385	1,428

Feeding strategy also had an impact on steer weights throughout the growing and finishing periods. Although BW was not different at the start of test for the two feeding strategies, RF calves were consistently

lighter than SF calves for the remaining portion of the trial. This result was expected, as the RF strategy involved less time on feed (i.e. less time for weight gain) than the SF strategy. Differences in steer BW between the two feeding strategies were more pronounced in March-born than June-born steers.

As expected, time on feed was affected by feeding strategy; RF resulted in less time on feed (total) than SF with the difference being greater for March- than June-born steers (Table 3). For example, while there was a difference of 237 d between feeding strategies for the March-born steers, there was only 105 d difference for June-born steers. It was also interesting that total time in the drylot was almost equivalent for the June-born steers in the two feeding systems (271 d RF vs 269 d SF – Table 3). Differences between both calving system and feeding strategy were noted during the finishing portion of the trial where March-born steers spent less time in the finishing phase than June-born steers, and SF steers spent less time in the finishing phase than RF. The longest time on the high-grain finishing diet was for the June-born RF steers, and may reflect the problems with fattening cattle during hot summer weather, which is often associated with periods of reduced feed intake. The shortest time on the finishing diet was for the March-born steers (RF and SF). This occurrence is likely due to the fact that March steers were older at placement on the high-grain finishing diets than June-born steers and, therefore, had little lean growth remaining allowing for a greater portion of energy consumption to be laid down as fat.

Table 3 – Time on feed, and total feed intake of steers during trial (2007 and 2008 average)

	March Born Calves		*June Born Calves*	
	Rapid Finish	**Slow Finish**	**Rapid Finish**	**Slow Finish**
Time on Feed (days)				
Backgrounding	84	226.5	83.5	135.0
Pasture	-	53.5	-	53.5
Swath-grazing	-	52.0	-	52.0
Finishing	123.8	111.0	187.2	134.1
Total trial	207.8	444.0	270.7	375.6
Total time in drylot	207.8	337.5	270.7	269.1
Total Feed Intake (lbs)				
Backgrounding	1,492	4,594	1,347	2,696
Pasture	-	1,221	-	1,213
Swath-grazing	-	2,685	-	2,229
Finishing	3,003	3,563	4,857	4,209
Total trial	4,495	12,055	6,202	10,339

There were differences noted in backgrounding, finishing, and total trial DMI between the two feeding strategies with RF steers consuming less than SF steers. During the backgrounding phase, this difference is largely a reflection of the time on feed. During the finishing phase, June-born steers actually consumed more feed than March-born steers for both finishing strategies, likely due to the fact that June-born steers spent longer in the finishing phase than the March-born steers.

Total feed intake was largely affected by feeding strategy, with SF steers consuming more feed than RF steers, and the difference between feeding strategies greater for March- than June-born calves. This result was expected, due to the different lengths of time on feed employed by these two strategies. Total DMI during the backgrounding phase was affected by both calving times and feeding strategy, where SF calves consumed a greater amount of feed than RF calves, and March-born steers consumed more feed than June-born steers. There was also an effect of calving system during the finishing phase where June calves consumed more feed than March calves. March-born SF steers consumed the most feed over the trial followed by June-born SF; June-born RF; March-born RF.

Conclusion/Implications

The results of the current study demonstrate the varied effects of calving season on steer post-weaning performance and the interaction with finishing system. In general, the different finishing systems had a greater impact on performance of March-born steers. This increased sensitivity is largely accounted for by the duration of the backgrounding period, with longer backgrounding periods reducing overall gains and efficiencies, but increasing final weights. March-born calves appeared to be more suited to the RF system in this trial and June-born calves showed greater flexibility in adapting to the two finishing systems. Again, this is largely due to the decreased time required to background June- vs March-born calves. The impact of these observations is that cow-calf producers will need to give consideration to the interaction of post-weaning management systems when selecting calving seasons, and choosing target markets following weaning of their calves.

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