December 2001

Considerations When Selecting A Calving Season

Connie R. Quinn
Quinn Cow Company, Elanco Animal Health

Proceedings, The Range Beef Cow Symposium XVI
December 11, 12, and 13, 2001 Casper, Wyoming

CONSIDERATIONS WHEN SELECTING A CALVING SEASON

By Connee R. Quinn
Quinn Cow Company
Elanco Animal Health

Every ranch is backed by a unique set of resources. The resources are used to cost effectively produce a consumer acceptable product. Ranch resources can be simply categorized into forage base, genetics base and the commitment to good management practices. Range cattle management must be based on relating forage quality and quantity to the nutrient requirements of the animal for a given level of production. In order to be cost effective it is important that the forage base optimally express the genetic potential of the cowherd, with little or no supplemental feed.

Today's rancher, according to Jim Gosey of the University of Nebraska, must define optimum levels of performance within the limit of his own resources. The levels of performance must be defined within the restriction of not only the available resources, but input costs as well. Harlan Ritchie, Michigan State University, feels that lowering production costs will become more important than improving biological efficiency. Most certainly, the producer is challenged daily to balance the two.

It is important to match the production cycle with the quality and availability of forage. It is a well-known fact that the nutrient requirements of the beef cow are highest two to three months prior to calving and about the same length after calving. For cost effective management it is important that high quality and quantity forage nutrient supply coincide as closely as possible with calving date. There are several considerations when selecting a calving season. Primary considerations include the total pounds of calf or yearling produced on the ranch and the cost return ratio of feed, labor and protection. Another consideration would be the effect on replacement heifers and their lifetime productivity. Of course the decision must also be made within the constraints of the goals, management and marketing strategies of the ranch.

It is interesting to note in South Dakota, as well as in other Northern High Plains states, that over the past twenty years there have been significant swings in date of calving. A survey of 489-ranch observations reported average calving date in South Dakota in 1978 and 1979 was about May 1st (Dooley et al., 1982). Dooley's work also showed that the weaning weights for that period averaged 469 pounds. Barry Dunn, South Dakota State University, reported in his analysis of SPA data for 185 ranch observations for the years 1991-1999 that the average calving date was about March 1st with an average weaning weight of 519 pounds (Dunn, 2000). In a twenty-year period this indicated a difference of nearly 60 days in birth date and only 40-pound difference in weaning weight. It might be surmised that the extra 40 pounds was gained at a less than optimum cost/input ratio because the cost to calve early in the year generally requires additional feed resources. It is not

possible to separate out all the factors that may have influence those trends, especially genetics, and perhaps weather and management.

From 1978 to1998 the average calving date reported by Kris Ringwall, North Dakota State University, was about April 1st. The range in calving date was from late March to the early part of April (Table 1). The April 1 calving date amounted to a 14-day difference from 1978 to 1998, which is in contrast to the 60 days reported in South Dakota for approximately the same twenty year time period. The North Dakota data showed a range in weaning weight of 479 to 612 pounds (Table 1). This data set showed larger differences in the weaning weights and less difference in the average date calved, which is what one would expect. This suggests that the increase in weaning weights was due to genetic improvement. Again, the data did not include the input costs; but the significantly heavier calves could have offset additional input costs.

In research that did include economic analysis, Ringwall reported in *Dataline* on a three-year comparison from 1996-1998 of cow cost and market adjusted net return for cows calved March/April, May/June or October. The data showed very similar market adjusted net returns as influenced by calving season but lowest cow cost for those cows calved in the May/June time frame followed fairly close by March/April calving. There were fewer cows represented in the October group, but these cows were associated with highest costs.

In an excellent paper from University of Nebraska, Clark et al. (1999) reported on March versus June calving systems. The discussion considered both production and economic measures. Looking at the average cost/cwt of a weaned steer, they found March born calves had a cost of $31.76 compared to $24.11 for calves born in June. These costs are low because they only include costs that were different in the March and June born calves such as harvested feeds, supplements, etc.

The largest line item difference was in harvested feed costs. The March calving cows required $125.65 and the June cows required only $4.40. The costs for purchased feed (supplement), salt, and mineral were $15.78 for March born calves and $21.23 for June fed calves. Grazing costs were $31.07 for March born calves and $57.60 for June fed calves. The total feed and labor costs from weaning to slaughter, which included cow costs/calf weaned, was $38.84 for the March born steers and $31.85 for the June born calf fed steers. Economic analysis of these data by Carriker et al. (2001) showed net economic return for March born and June born calves to weaning of $86.00 and $151.00, respectively in the Nebraska study. For ranchers that have a high harvested feed cost this data would merit further study in a consideration of calving season.

Another excellent paper from Montana State University (Reisenauer et al., 2001) reported on two bio-economic computer models to evaluate calving either March 15, May 15, or August 15. The results are somewhat different than that reported by the Nebraska authors. Weaning dates were October 31, December 15 and February 1st. The parameter of the models are too numerous to discuss in this paper, but the bottom line was that the ranch gross margin (gross ranch returns minus variable costs) was highest for weaned calves when they were born in the March 15 time frame (Table 2). The researchers concluded from their

model "for cow-calf producers in the Northern Great Plains, spring calving is expected to be more profitable than calving in early summer or early fall".

In the consideration of selecting the most profitable dates for calving, it is important that we understand the impact that this change can have on all aspects our operations. Of course the number one consideration must be the effect that calving season has on the net profitability of the ranch. As can be seen from the research results, not all research or models agree to what may be the optimum calving season. It is important to understand the ecological and management systems under which the research was conducted and closely examine the information for not only similarities but also differences that might exist.

Comparison of both production and economic measures must be made. This will require an accurate set of both production records and financial records to determine the cost to produce pounds of calf as well as costs relating to reproductive efficiency of the herd. Pounds produced is still the primary source of income for many cow/calf producer. If delaying calving season results is a decrease in pounds produced, it must be more than offset by decrease in input cost or an increase in market price.

Quinn Cow Company is assessing our current calving season and we have closely monitored the research results and talked with our extension beef specialists. Our ranch is currently on a March 15th calving season with the first calf heifers calving some two weeks earlier. We have found that not all research studies or models are in complete agreement, but it is generally agreed that one of the first considerations would be a critical comparative analysis of feed costs for the cowherd. The Nebraska studies have shown a comparison of $137.09 to $89.33 as the total cow feed and labor costs for March born and June born calves, respectively. Fifty-seven percent of the $137.09 March born calf cost was for harvested forage. This is significantly more hay than is normally fed on our ranch.

Quinn ranch cows are calved fairly close to headquarters in large pastures, with an abundance of natural protection. The calf losses under this management system vary with winter conditions but are typically under 3%. Probably 25% of the cows receive no harvest forage. The remainder of the cows may receive harvested feed for 30 to 45 days. Supplemental protein is generally fed every fourth day from mid-December to mid April to supply approximately 0.4-0.5 pounds of crude protein daily.

Quinn Cow Company, as with any ranch, is backed by a unique set of resources. The most unique is the land base. The cowherd is ranged on short to mid-grass prairie, on both sides of the Nebraska-South Dakota line in the northwest and southwest corners of each state, respectively. Most of the land, including the headquarters, is leased. The leases involve both private land and land owned by the Oglala Sioux Tribe, Pine Ridge Indian Reservation. The majority of the land is Tribal Land. The Tribal Land is administered through the Department of Interior, Bureau of Indian Affairs. The leases are signed for a five-year term but can be terminated at the Tribe's request at any time during this period. This type of rental situation requires creative management of facilities, including headquarters improvement, water development, and any additional fencing. It also limits long range planning and goals, which involve land utilization. The stocking rate, which is set by the Tribe, is about 30 acres per

cow calf pair, which is more than normal for this area. The lease is paid on an annual per cow basis, one year in advance. The entire leasing arrangement is completely different, in administration and cost, from other federal types of land.

The range is predominantly a clay range site with a mixture of warm- and cool-season grasses. The grass retains a very high level of nutrients after dormancy and serves as excellent winter pasture. There is an abundance of winter protection in the form of trees and canyons. The geographic lay of the land, together with the prairie wind, generally insures adequate grazing even in winters with heavy snowfall.

The major utilization of the forage resource is to graze the mature cow year round, with the exception 30-45 days at calving for some cows. The nature of the tribal lease, and the economics of improving leased land, fairly well restricts the grazing pattern to a twelve-month period at a traditional stocking rate. It is important under these guidelines to utilize the grass to its fullest potential. The pastures are divided into winter and summer range, with some winter pastures used for a short period during breeding season. The replacement heifers are also grazed out most of the winter and bunk fed about 4-5 pounds of a 20% supplement. About 45 days prior to breeding they are brought closer to the headquarters and are fed some hay as well as supplement in order to reach their target breeding weight. The cows are condition scored at weaning (September-steers weaned, and October-heifers weaned) and sorted based on conditions score and age. A high sulfate water content necessitates a cow sort on age. After weaning the cows are put back on native range and those is less than condition score 4 are kept at the headquarters on a better ration.

It has thus far been our decision to continue calving in March. The research indicates that one of the major savings realized from later calving is the need to feed less harvested forage. Our forage base and the excellent protection provided by canyons, cedar trees and brush allows us to calve out with a minimum amount of harvested forage. We have been able to achieve around 90% weaned calf crop per cow exposed. While only a model the Montana State information did show that under all marketing strategies (Table 2) spring calving was most profitable. This model (4,300 AUM native range, 520 t grass hay, 182 t alfalfa hay) closely resembles our management system. Due to our grazing system, which is dictated by lease agreements, we feel it is necessary to have the pair utilizing the standing forage. We market and retain ownership on both calves and yearlings and feel it is cost effective to raise a little heavier calf. We will continue to closely track the research as well as our records.

It is imperative to critically analyze our production and financial records in order to determine production costs and net returns. Only with this information can we effectively evaluate the calving season alternatives. We must realistically evaluate the costs of producing “big calves”. We should consider building a systems approach to our operations that would reduce costs and maximize returns and remember that calving season is only part of the system.

It is sometimes the temptation of producers to manage by tradition. We must be willing to change. In an industry that must be driven by cost effective management it is

imperative that ranchers look at all options and make sound business decisions based on sound information. However, not all information is in agreement. It is up to each individual producer to determine what best fits their unique situation and what "agrees" with their management. The objective of this paper was not to define the "best calving dates" but rather to encourage individual producers to analyze the most cost effective time and not be merely lead by tradition or change for the sake of change only. The decision must be based on scientific, philosophical and practical input.

Simply stated, profitability depends on pounds, price and production cost. These three aspects must be considered in choosing the most profitable time for calving and marketing. As previously stated each ranch has a unique set of resources some backed by very distinct ecological systems. The good ranch manager will understand and capitalize on these differences. There is no one "right answer". To quote a favorite philosopher, Yogi Berra, "If the road forks take it." There is no doubt that the road is forking which fork you take is up to you.

References

Carriker, G., R.T. Clark, D.C. Adams, and R.E. Sandberg. 2001. June vs. March Calving for Nebraska Sandhills: Economic Comparison. University of Nebraska Beef Report. pp. 10-12.

Clark, R.T., D.C. Adams, G. Carriker, R.E. Sandberg, T. Milton, J. Musgrave, T.J. Klopfenstein, and G.P. Lardy. 1999. March vs. June Calving Systems: Production and economic considerations. In:Proc. Univ. of Nebr. Gudmundsen Sandhills Laboratory Field Day, Whitman, NE. pp 1-10.

Dooley, V., C.A. Dinkel, C.A. McPeake and E.L. and E.L. Lasley. 1982. A survey evaluation of South Dakota beef cattle production. J. Anim. Sci. 55:224.

Dunn, B.H. 2000. Characterization and analysis of the beef cow-calf enterprise of the Northern Great Plains. Dissertation.

Reisenauer, V.L., M.W. Tess, D.A. Griffith, And J. A. Paterson. 2001. Evaluation of calving seasons and marketing strategies in northern great plains cow-calf enterprises. Proceedings, Western Section, American Society of Animal Science.

Ringwall, Kris. 2000. Dickenson Research Extension Center, North Dakota State University, Personal Communication.

Ringwall, K.A., K.J. Helmuth and J.L. Nelson. 1999. Financial and production evaluation of cow calf, backgrounding and feedlot enterprises utilizing the chaps finpack and dataline^{TM} programs. Research/Extension Report, Dickenson Research Extension Center, North Dakota State University.

Table 1. Average birth date and adjusted 205 day weaning weight for calves in North Dakota from 1978 to 1998.

Year	Birth date	205 day	Year	Birth date	205 day
1978	Apr 5	492	1989	Mar 30	612
1979	Apr 2	479	1990	Mar 30	611
1980	Apr 1	505	1991	Mar 28	593
1981	Mar 30	498	1992	Mar 27	606
1982	Mar 28	489	1993	Mar 28	623
1983	Mar 27	516	1994	Mar 28	595
1984	Mar 28	517	1995	Mar 29	601
1985	Mar 29	541	1996	Apr 2	575
1986	Apr 2	542	1997	Apr 4	587
1987	Apr 4	581	1998	Apr 5	600
1988	Apr 5	591	Avg	Apr 1	579

Adapted from Ringwall, 2000.

Table 2. Results of alternative calving options and profit/loss incurred weaning – sell.

	Spring Calving		Summer Calving		Fall Calving	
Number of Cows	515		518		610	
Option 1 – Weaning – Sell						
	Steers	Heifers	Steers	Heifers	Steers	Heifers
Number of Calves Sold	209	127	215	143	254	160
Weaning Wt – lb	541	497	510	466	380	352
Weaning Wt/Cow Exposed	436		425		317	
Calves Weaned/Cow Exposed	82%		86%		85%	
Feed Cost	$8,992		$15.095		$41,136	
Ranch Gross Margin	$175,568		$161,929		$131,292	
Option 2 – Weaning – Backgrounding						
	Steers		Steers		Steers	
ADG – lbs	2.49		2.49		2.49	
Days on Feed	103		115		168	
Target Weight	799		799		799	
Cumulative Gross Margin	$183,221		$176,213		$162,048	
Option 3 – Weaning – Backgrounding – Feedlot						
	Steers		Steers		Steers	
ADG – lbs	3.50		3.50		3.50	
Days on Feed	113		112		115	
Target Weight – lbs	1197		1197		1197	
Cumulative Gross Margin	$203,588		$181,597		$182,829	

Adapted from Reisenauer, et al, 2001