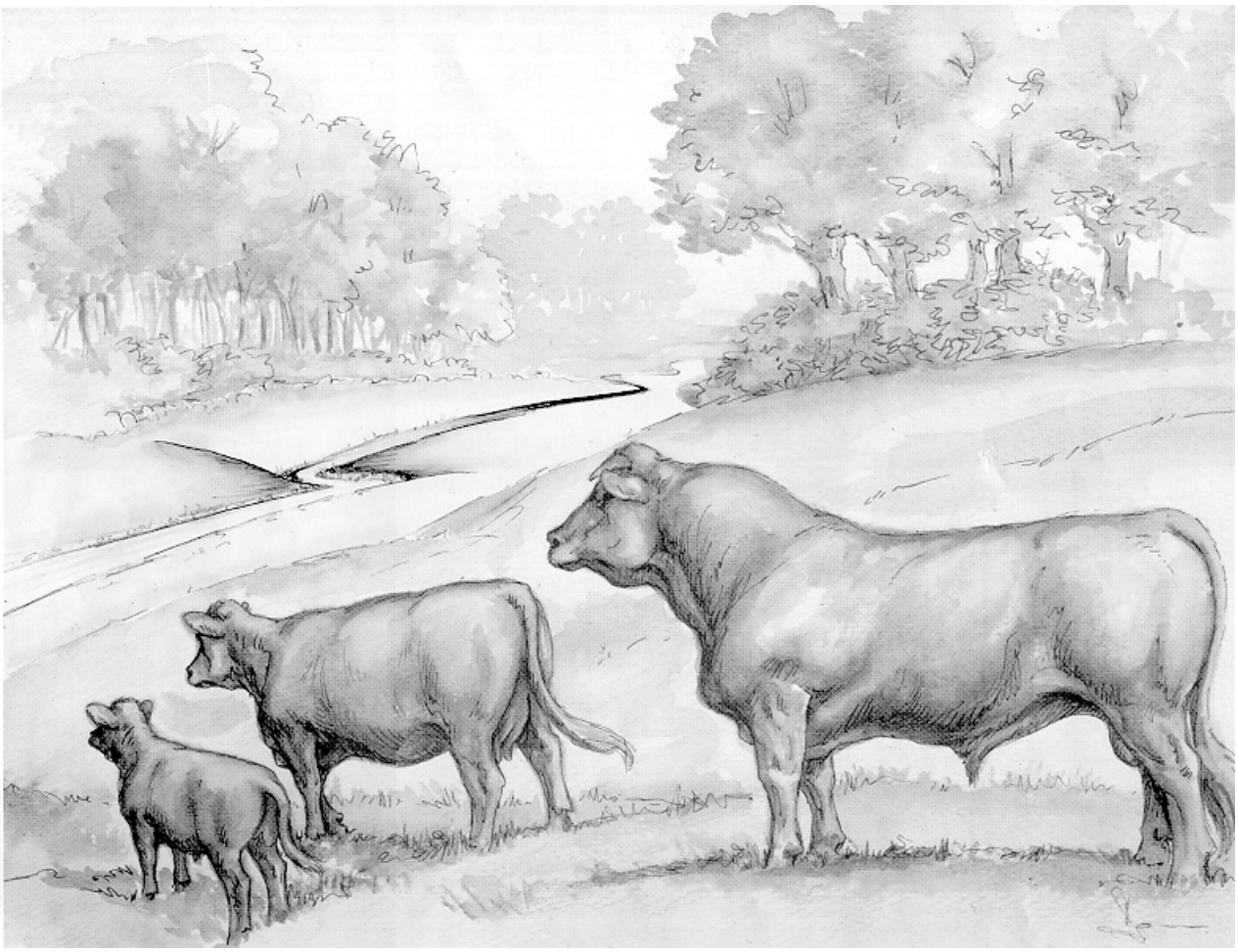
Alberta Cow-Calf Audit, 1997/1998 Production indicators and management practices over the last 10 years



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Introduction

The Alberta Cow-Calf Audit was designed to provide both participants and the beef industry with information on the province cow-calf population for education and research. The first audit of this type was conducted by Dr. J.A. Basarab in 1988, 1989, 1990 and 1991 with a total of 6249 cow-calf herds participating. The a second Alberta Cow-Calf Audit was conducted on the 1997/98 cow-calf production cycle and was sponsored by Alberta Agriculture, Food and Rural Development and Farm Business Management Initiative Program, with support in principle from the Alberta Cattle Commission.

The 1997/98 Alberta Cow-Calf Audit was a 5 page questionnaire, containing 70 questions and 437 data entry fields. Questions were asked on production indicators and management, feeding, animal health, marketing and quality assurance practices of Alberta's cow-calf managers. The questionnaire was pretested with 20 cow-calf managers in September, 1998 and mailed to 9,424 cow-calf managers in November, 1998. A covering letter explaining the purpose of the questionnaire and how the data would be used was mailed with each questionnaire. Two to three weeks later a reminder letter was sent to all managers who did not reply (n = 8,318).

The mailing list was developed from the original Alberta Beef Survey mailing list and was cross-referenced to the Alberta Brand Inspection name list. Those names which matched were checked for current address and became part of the new Alberta Cow-Calf Audit mailing list. Names from the Brand Inspection name list which did not match were excluded. This procedure met the requirements of the Freedom of Information Program (FOIP). Data verification of each returned questionnaire was conducted in February, 1999 by 14 beef specialists. One-on-one phone interviews were also conducted with 10% of the respondents to further validate the information. Data entry was conducted in March, 1999 with data analysis and report generation to follow in April through December, 1999.

Response Rate

The response to the Alberta Cow-calf Audit ranged from a low of 18.1% in the north-east to a high of 24.0% in the south (Table 1). Overall, the response rate was 20.9% over four months. This response rate is four-fold higher than the 5.1% response rate obtained by a Manitoba Agriculture Beef Survey (Small and McCaughey, 1998). However, this value is lower than the 42% response rate

Table 1. Response rate for the Alberta Cow-Calf Audit.

Region	Surveys Sent	Respondents	Response Rate, %
South	1843	442	24
Central	2738	621	22.7
North west	1389	258	18.6
North east	2282	414	18.1
Peace	1172	239	20.4
Total	9424	1974	20.9

obtained in the 1988-91 Alberta Beef Survey (Basarab and ZoBell, 1989; Rock, 1990). Factors which contributed to the lower response rate in the last cow-calf audit were:

1) increased difficulty in obtaining a complete and accurate mailing list,
2) shortened time period to conduct the audit, and 3) decreased staff resources in the districts.

Despite these limitations, a 20.9% response rate is significant and provides adequate data to establish industry benchmarks for production indicators and management practices, establish industry trends and identify weaknesses in production and management practices.

Characterization of the Sample Population
Herd size, farm type and beef operation type

J.A. Basarab

The average herd size was 128 bred females (cows and bred heifers) for the 1997/98 Cow-Calf Audit and 84 bred females for the 1987/89 Cow-Calf Audit. This was higher than the average beef cow herd size for Canada of 45 (Statistics Canada 1996). The Alberta Cow-Calf Audit targeted producers having more than 25 bred females, thus resulting in a much higher average herd size. The majority (62.8%) of herd managers reported between 51 and 200 bred females. There were regional differences in distribution of herd size, with proportionately more of the larger herds in the south.

In Alberta, 69% of farm are mixed beef and grain, with another 29.3% being categorized as beef only and 1.7% as others. Farm type was consistent across regions. Most beef operations (82.3%) were best characterized as having commercial cattle only (Figure 1). Slightly more than1

in 10 herds (13%) had both commercial and purebred cattle and only a small percentage (4.1%) of herds had purebred cattle only. This distribution of beef operation type was similar for all five regions of Alberta. Similar result have been previously published by the USDA through their National Animal Health Monitoring System (1998). In their audit, 72.8% of the herds were categorized as commercial, 21.4% both commercial and registered and 5.8% registered. These data would indicate that beef herd type distribution between the US and Alberta are fairly similar.

Figure 1. Distribution of beef operation type in Alberta

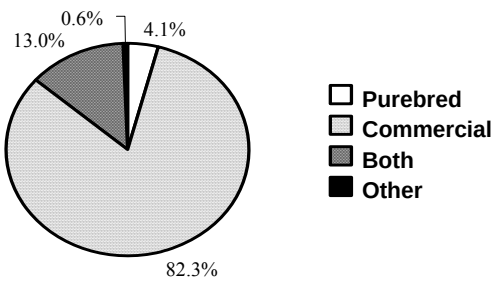


Table 1. Distribution of herd size by regions of Alberta for the 1997/98 production cycle

Herd size	Region of Alberta					
	South	Central	North-east	North-west	Peace	Alberta
<25	4.6	3.8	7.4	4.2	13.0	5.9
25-50	13.9	16.5	20.7	13.1	23.4	17.2
51-100	27.3	29.3	31.8	35.5	28.7	30.1
101-200	32.0	35.3	31.0	35.1	27.6	32.7
201-400	15.2	12.6	7.7	9.8	6.8	11.2
>401	7.0	2.5	1.4	2.3	0.5	3.1

Characterization of the Sample Population
Breed makeup and crossbreeding

J.A. Basarab

In the 1960's, Alberta's cow-calf industry was predominated by the Hereford, Aberdeen Angus and Shorthorn breeds and by pure breeding systems. Over the next 25 years many researchers demonstrated a 16% to 35% increase in the productivity of crossbreeding systems over pure breeding systems. Today, crossbreeding technology has almost been completely adopted by Alberta's cow-calf industry. Information taken from over 3,400 cow-calf herds from 1986 to 1991 indicates that almost 90% are practicing some form of crossbreeding. Approximately 65% of all cow-calf managers surveyed were producing at least three-way cross calves. Rough estimates suggest that this technology is worth from $96 to $108 million annually to the cow-calf sector alone. In the early 90s, the Hereford, Charolais, Simmental and Aberdeen Angus breeds predominated Alberta's commercial beef cow herd, while Charolais, Hereford, Simmental and Limousin were the most popular sire breeds used (Table 2). Crossbred bulls were being used more often and ranked eighth among the sire breeds.

In the late 90's, 83.7% of cow-calf managers (n=1684) were practicing some form of crossbreeding. Of these 43.6% were producing two-way cross calves and 40.1% were producing three- and more-way cross calves. Again, Hereford, Charolais, Simmental and Aberdeen Angus breeds predominated the commercial beef cow herd, while Charolais, Simmental, Hereford and Red Angus were the most popular sire breeds used (Table 2). Over the 10 year period from 1988 to 1998, Red Angus and Gelbvieh breeds saw wider use primarily because of their carcass characteristics and more moderate size. Again, crossbred bulls were being used and ranked eighth among the sire breeds.

Table 2. Top ten breeds used in Alberta's commercial cow-calf industry for 1997/98 and 1988/91.

Dam Breeds	Dam breed ranking		Sire Breed	Sire breed ranking	
	1997/98	1988/91		1997/98	1988/91
Hereford	1	1	Charolais	1	1
Charolais	2	2	Simmental	2	3
Simmental	3	3	Hereford	3	2
Aberdeen Angus	4	4	Red Angus	4	6
Red Angus	5	7	Aberdeen Angus	5	5
Limousin	6	5	Limousin	6	4
Salers	7	8	Gelbvieh	7	10
Gelbvieh	8	10	Salers	8	7
Shorthorn	9	6	Maine Anjou	9	8
Maine Anjou	10	9	Shorthorn	10	9

Characterization of the Sample Population
Dam breed cross by region

J.A. Basarab

Astute cow-calf managers know that the unit cost of production is among the most important factor affecting profitability. More specifically, feed and pasture costs account for 50% to 65% of total production costs. A major determinant of feed costs is cow size and milk production or what is referred to as biological type. Comprehensive crossbreeding studies conducted in Western Canada and Nebraska have concluded that matching the brood cow's biological type to specific environmental and management conditions is critical to production efficiency. Thus, biological types with low to moderate body size and milk production are better matched to production conditions which have constraints on feed intake. Larger biological types are best matched to conditions which have an abundant and relatively inexpensive feed supply.

The 1997/98 Cow-Calf Audit documented over 90 different types of crossbred cows. This genetic diversity is primarily due to the vastly different agro-climatic areas within Alberta, ranging from the restrictive forage availability of the short grass prairie in the south-east to the abundant forages in central and northern Alberta. Thus, moderate to mid-large biological types predominate southern Alberta (71% of herds reporting) whereas mid-large to large biological types predominate other regions of Alberta (Table 3 and 4).

Table 3. Distribution of biological types among various regions of Alberta

Biological type		Region of Alberta					Total
Body Size	Milk production	Central	North east	North west	Peace	South	
small to moderate	low to medium	24.2	22.9	18.8	22.9	40.3	26.7
Mid-large	medium	26.3	30.4	27.1	32.5	30.4	28.9
Mid-large to large	medium to high	24.9	31.2	38.2	28.8	16.5	26.5
Unknown breed crosses		24.5	15.5	15.9	15.9	12.8	17.9

Table 4. Most popular crossbred of dams used in Alberta cow herds by biological type.

Small-moderate body size Low-medium milk prod.		Mid-large body size Medium milk production		Mid-large to large body size Medium to high milk prod.	
Breed cross of dam	% of total herds	Breed cross of dam	% of total herds	Breed cross of dam	% of total herds
1. HE x HE	8.6	1. HE x CH	7.1	1. SM x SM	6
2. AN x HE	4.8	2. HE x SM	6	2. CH x CH	5.3
3. AN x AN	4.1	3. AR x SM	3.8	3. CH x SM	4.9
4. AR x HE	3.4	4. AR x CH	2.1	4. LM x LM	1.9
5. AR x AR	3	5. AN x CH	2.1	5. CH x LM	1.8

Breed letters are: HE, Hereford; AN, Aberdeen Angus; AR, Red Angus; CH, Charolais; SM, Simmental; LM, Limousin.

B. Production Efficiency
Growth of calves.

J.A. Basarab

Calf weaning weight (Growth) is the first of the four GOLD indicators used to assess the production efficiency of a cow-calf operation. Over the last 10 years, actual calf weaning weight has increased by 22 lb, 200-day adjusted weaning weight has increased by 39 lb and cow mature weight has increased by 18 lb (Figure 2). The more appropriate way of comparing weaning weight is to express them in pounds of calf weaned (adj.) per 100 pounds of cow weaning a calf. Thus in 1988/91, cow-calf herds in Alberta weaned 40.0 lb of calf/100 lb of cow, while in 1997/98 this increased by 6.5% to 42.6 lb of calf/100 lb of cow. The benchmark for Alberta's cow-calf industry is set at 45.0 lb of calf/100 lb of cow.

Weaning date, actual weaning weight, mature cow weight and age at weaning were affected by region (Table 5).

However, when weaning weight was adjusted for age of calf and mature cow weight, no differences were observed in 200-day weaning weight or in lb calf weaned per 100 lb of cow among regions of Alberta. Farm types (mixed, beef only and other) and beef operation types (commercial, purebred, both and other) were also similar in lb calf weaned per 100 lb of cow

Figure 2. Change in calf weaning weight and cow mature weight during a ten year period from 1988 to 1998 in Alberta.

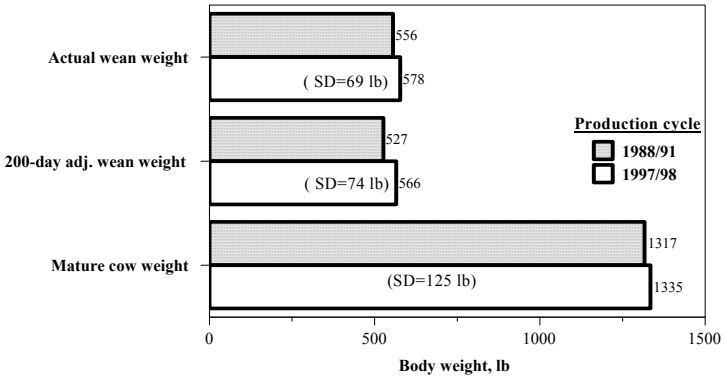


Table 5. Provincial and regional statistics for calf weaning weight and cow mature weight for the 1997/98 production cycle.

Region of Alberta	No. of herds	Weaning date[z], days	Actual wean wt, lb	Mature cow wt, lb	Weaning Age, days	200-d adj. wean wt, lb	lb calf weaned/100 lb of cow (adj)
Overall mean	1562	293	578	1335	208	566	42.6
Overall SD		22	69	125	26	74	6
Central	493	290a	587a	1360ab	211a	574	42
North-east	326	284b	581a	1356ab	207a	582	42.7
North-west	204	286ab	597a	1380a	212a	583	41.9
Peace	180	278c	554b	1336bc	197b	574	42.7
South	369	288ab	584a	1318c	213a	565	43
Sign. level[y]		.0001	.0001	.0001	.0001	.1026	.2365

[z] Weaning date is given as days from the beginning of the year.

[y] Significance level where $P<0.05$ is statistically significant and $P\exists 0.05$ is not different.

[abc] Means in the same column with different letters, differ 19 times out of 20.

B. Production Efficiency
Open rate, culling rate, breeding dates, cow: bull ratio and reasons for culling.

J.A. Basarab

Cow open rate (Open rate) is the second of the four GOLD indicators used to assess the production efficiency of a cow-calf operation. In the 1988/91 production cycles, open rate averaged 6.5%, whereas in 1997 the open rate decreased by 32.3% to 4.4% (SD=5.2%; Table 6). Most open cows (75.2%) were culled in the fall, with the remaining 24.8% being culled in the spring for the 1997/98 production cycle. This result indicates that there is still a need for improvements in the early identification and culling of open cows. Alberta statistics indicate that only 49.4% of cow-calf managers are pregnancy testing their cow herd.

Table 6. Alberta statistics for cow culling rates, open rate and cow to bull ration for the 1988/91 and 1997/98 production cycles.

	1988/91	1997/98
Herds reporting	6249	1712
No. of cows	519979	205277
Open rate, %	6.5	4.4
Cull rate-fall, %	7	6.6
Cull rate-spring, %	3.9	3.2
Total cull rate, %	10.9	9.8
Breed date[z], cows	NA	136
Breed date[z], heifers	NA	132
Cow:bull ratio	25:1	25:1

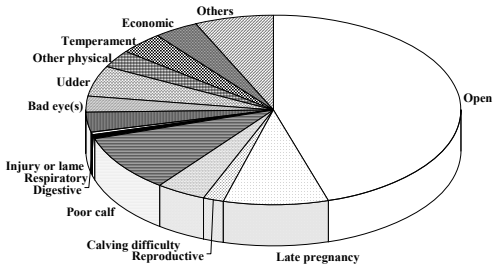
[z] Breeding dates are given as days from the beginning of 1997.

Approximately 10 to 11% (SD=10%) of the cow herd is culled each year, with two-thirds of the culling occurs in the fall of each year for spring calving herds. The average breeding date for cow-calf herds in 1997 was May 16 (SD=43 days) with replacement heifers being bred one to two weeks before the main cow herd. The average breeding season for purebred herds started about one month earlier on April 17. The cow to bull ratio remained relatively constant over the last ten years at 25 to 1 (SD=8.1). Regions of Alberta were similar in open and culling rates, breeding dates and cow to bull ratio.

Reasons for culling during the 1997/98 production cycle are presented in Figure 3.

The top five reasons for culling were open at pregnancy check or at calving time (45.3%), producing poor calves (9.7%), late pregnancy (9.0%), udder problems (5.2%) and calving difficulty (4.3%). Culling 4.3% of bred cows and replacement heifers due to calving difficulty is low, particularly when one-third of calf death losses are caused by calving difficulty. Other significant reasons for culling were temperament (3.8%), injury or lameness (3.4%), bad eyes (2.8%), other physical problems (3.0%), other reproductive problems (1.8%), digestive problems (0.7%), respiratory problems (0.4%) and other reasons (6.8%). Herd reductions due to drought or economic situations accounted for 3.8% of the cows lost from the breeding herd in 1997.

Figure 3. Reasons for culling during the 1997/98 production cycle in Alberta cow-calf herds.



These data were taken from 1,712 herds and 205,277 cows and bred heifers.

B. Production Efficiency
Length of the calving span and calving pattern

J.A. Basarab

Length of the calving span is the third of the four GOLD indicators used to assess the production efficiency of a cow-calf operation. The industry benchmark for length of the calving span is 60 to 80 days, while those for the calving pattern are 70%, 21% and 9% of calves born during 1-21, 22-42 and 43-63 days of the calving season, respectively. During the last ten years the length of the calving span across Alberta has decreased by 12.1% to 94 days (Table 7). However, the length of the calving span could be reduced by an additional two weeks before the provincial calving span would be considered optimum. A calving span between 60 and 80 days is advantageous as it results in more labor efficiency, heavier and more uniform calves at weaning, faster post weaning gains, improved production efficiency and more fertile heifers available as replacements. Common disadvantages are increased labour over a short calving period and increased management requirements.

Table 7. Alberta statistics for length of the calving span, first calving date and calving pattern for the 1988/91 and 1997/98 production cycles.

	1988/91	1997/98
Herds reporting	6249	1712
Length of calving span, day	107	94 (44)
Date first calf born[z]	56	58(26)
Calves born- 1-21 days, %	42.5	47.6(21)
-22-42 days, %	33.4	31.3(13)
-43-63 days, %	16.2	13.3(10)
-+ 64 days, %	7.9	7.8(12)

[z] Date first calf born is given as days from the beginning of the year.
Numbers in parentheses are standard deviations.

The date of first calving has not changed over the last ten years and was February 25th and February 27th for the 1988/91 and 1997/98 production cycles (Table 7). The strategy of calving during the winter months (Jan, Feb, Mar) needs to be re-assessed as it is known to increase winter feeding costs and does not match the increasing requirements of the lactating cow with the grazing resource.

The calving pattern of the brood cow herd is another management indicator that all cow-calf managers should record and assess. While not optimum, the calving pattern of the Alberta herd has improved over the last ten years. For example, the calves born in the first 21 days of the calving period has increased from 42.5% to 47.6%, an improvement of 12%. However, there are still 7-8% of calves born late.

Table 8. Regional statistics for length of the calving span, first calving date and calving pattern for the 1997/98 production cycle.

Region of Alberta	n	Date first calf born[z]	Length calving span, day	Calves born 1-21d, %
Central	454	49ab	96bc	45.1a
North-east	298	46bc	104ab	43.4a
North-west	186	42c	109a	39.0b
Peace	165	51a	99b	45.6a
South	326	44c	90c	47.3a
SEM		1.6	2.8	1.3
Sign. level		.0013	.0001	.0004

Cow-calf herds in the Peace tended to start calving 7 days later than herds in the South (Table 8). In addition, purebred herds begin calving one month before commercial herds (Jan. 29th vs Mar. 3rd) and had longer calving spans than commercial herds (106 vs 97 days, $P<0.05$).

The length of the calving span in north-eastern and north-western Alberta are considerable longer than average (94 vs 104 and 109 days) and should be addressed. This resulted in fewer calves being born early and more being born late, at least for north-western Alberta.

B. Production Efficiency
Death loss of calves, when and why

J.A. Basarab

Death loss of calves is the fourth GOLD indicator used to assess the production efficiency of a cow-calf operation. The industry benchmark for calf death loss to weaning is set at 4%. Death loss valves of less than 4% can be obtained within any herd for any given year, but are very difficult to maintain over many years and for all herds without major inputs of management and labour.

Total calf death loss decreased by 21.4% in 1998 as compared to the 1988/91 production cycles (Table 9). When calves died and why were similar across production cycles, with 77.8% to 79.3% of calf death losses occurring within two weeks of birth. Again, calving difficulty was the main reason why baby calves died, accounting for one-third of all calf death losses. The reasons for calving difficulty are well documented in the Beef Herd Management Reference Binder and in a CD on "Minimizing Calving Difficulty". Both publications are available through Alberta Agriculture, Food and Rural Development or at http://www.agric.gov.ab.ca/

Calf death loss, calf death loss within 14 days of birth and calf death loss due to calving difficulty were similar for all region of Alberta. More detailed region statistics on when and why death losses occurred are given in Appendix 1.

Table 9. Alberta statistics for calf death loss, when death losses occurred and why for the 1988/91 and 1997/98 production cycles.

	1988/91	1997/98
Herds reporting	6249	1712
Number of calves born	459,563	181,936
Total calf death losses, %	5.6	4.4
When- premature, %	15.7	12.9
- at birth, %	31.9	40.5
- 1-14 days of birth, %	31.7	24.4
- 14 days-6 mon., %	14.8	17.0
- + 6 mon. of birth, %	5.9	5.2
Why-Calving difficulty, %	28.5	30.7
- Scours, %	14.9	9.8
- Pneumonia, %	8.6	9.9
- Starvation, %	2.4	6.2
- Accidental, %	8.7	10.1
- Unknown, %	36.9	33.3

Table 10. Regional statistics for calf death loss, when and why for the 1997/98 production cycle.

Region of Alberta	n	Calf death loss, %	Within 14 days of birth, %	Calving difficulty, %
Central	536	4.3	80.0	33.5
North-east	363	4.2	79.7	27.9
North-west	221	4.7	79.0	28.5
Peace	198	5.2	80.2	27.7
South	394	4.2	78.1	32.0
Sign. level		.9904	.9991	.9890

B. Production Efficiency
Calf crop and production efficiency

J.A. Basarab

Percent calf crop or calves weaned of cows exposed to breeding is a composite trait including both fertility and calf death loss. Optimum valves for percent calf crop are between 88% to 92% since there will always be 0-4% open cows, 0-4% death losses and some culling due to other traits.

Percent calf crop increased in 1998 by two more calves per 100 cows exposed to breeding as compared to the 1988/91 production cycles (Table 11). This increased calf crop appears to be sustainable since most of the Good Management Practices which improve herd fertility and reduce calf death losses have also increased over the last ten years. For example, fall pregnancy checking was practiced in 49.4% of the herds as compared to 34% ten years ago. Bull evaluations were conducted in 50.7% of the herds as compared to 27.9% ten years ago, and the testing of winter forages for nutrient composition has increased from 17.7% to 30.0% of the herds over this same period. As a result, production efficiency has also increased by 5.6 to 11.0%, depending on how one expresses production efficiency.

Table 11. Alberta statistics for percent calf crop and production efficiency for the 1988/91 and 1997/98 production cycles.

	1988/91	1997/98
Herds reporting	6249	1712
Number of calves born	459,563	181,936
Calf Crop, %	83.5	85.6
Production Efficiency (calf weaned/cow exposed)		
lb calf weaned/cow exposed	472	506
lb calf weaned/100 lb cow	36.0	38.0
lb calf weaned, adj/cow	447	496
lb calf wean, adj/100 lb cow	34.1	37.2

Adj. refers to adjusting weaning weight to 200 days of age.

In 1998, the Alberta cow herd produced 49 lb more calf at weaning time than ten years ago when expressed in lb calf weaned (200-day adjusted) per cow exposed to breeding (Table 11). In early November of 1998, 500-600 lb steer calves were averaging $1.21/lb, while heifer calves were averaging $1.12/lb in Central Alberta. Thus, the increased production efficiency in 1998 was worth approximately $136 million for Alberta's 2.4 million beef cows and replacement heifers compared to 10 years ago. More can be accomplished to increase production efficiency, since the benchmark is somewhere around 43-45 lb of calf weaned (adj.) per 100 lb of cow exposed to breeding.

Table 12. Regional statistics for percent calf crop and production efficiency for the 1997/98 production cycle.

Region of Alberta	n	Calf crop, %	lb calf weaned (adj.)/cow exposed	lb calf weaned (adj.)/100 lb cow exposed
Central	425	84.5	497ab	36.4
North-east	292	87.5	512a	37.6
North-west	169	87.2	508ab	36.6
Peace	158	85.0	499ab	37.2
South	321	85.2	488b	37.2
Sign. level		.0687	.0323	.2749

Calf crop weaned of cows exposed to breeding were similar among regions of Alberta (Table 12). The north-east produced slightly more lb of calf weaned (adj.) per cow exposed to breeding than the southern region. However, this was primarily due to smaller cows in the south. Thus, when adjusted for cow weight, regions were similar in the lb of calf weaned per 100 lb of cow exposed to breeding. In addition, neither farm type (mixed beef/grain; beef only; others) nor beef operation type (commercial; purebred; both; others) had an effect on lb of calf weaned per 100 lb of cow exposed to breeding.

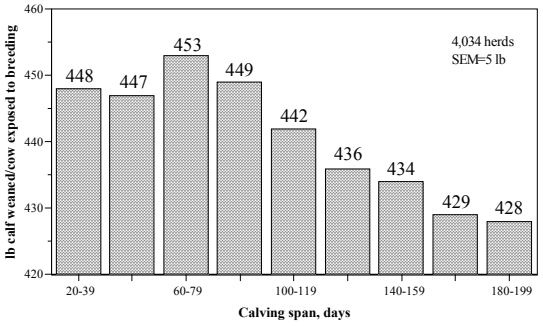
B. Production Efficiency
Effect of calving span on production efficiency

J.A. Basarab

There are numerous advantages to a short calving span. They include more efficient use of labour, heavier and more uniform calves at weaning, faster post-weaning gains in calves, improved herd production efficiency, more fertile heifers available as replacements and higher lifetime productivity of the cow herd. However, can a calving span be too short?

The 1988/91 Cow-Calf Audit revealed that a calving spans shorter than 60 days and longer than 80 days had reduced production efficiencies (Figure 4). The reason was that herds with calving spans shorter than 60 days had one to two percent more open cows than did herds with calving spans greater than 60 days. Herds with calving spans longer than 80 days had reduced production efficiencies due to calves being younger and lighter in weight at weaning. Thus the optimum calving span was 60 to 80 days with 60-70%, 20-25% and 5-10% of the calves be born in the first, second and third 21-day periods of the calving season.

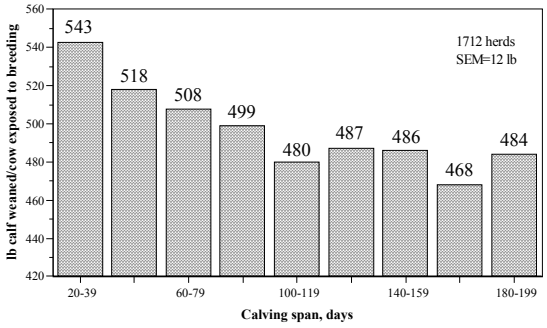
Figure 4. Effect of calving span on production efficiency for the 1988/91 production cycles.



The 1997/98 Cow-Calf Audit was somewhat different than the audit conducted 10 years earlier. Production efficiency did decrease as the calving span became longer, but no optimization between 60 and 80 days was observed. Stated differently, the shorter the calving span the higher the production efficiency of the cow-calf herd. However, it must be emphasized that calving spans less than 60 days are very difficult to maintain and require additional feed, labour and management inputs.

Figure 5. Effect of calving span on production efficiency for the 1997/98 production cycle.

In both audits the data were held constant for farm type (mixed beef/grain, beef only, other), beef operation type (commercial, purebred, both, other) and herd size.



ALBERTA COW-CALF AUDIT - 1999
PREGNANCY CHECKING

Sandi Jones and Lloyd Giebelhaus

In the winter of 1998/99 cow/calf managers across Alberta took part in a Cow/Calf Audit administered by Alberta Agriculture Food & Rural Development.

Data was collected on production indicators and management, feed, animal health, marketing and quality assurance practices of Alberta=s cow/calf managers. This one-page summary sheet reports on the following question: ***AWhat percentage of producers pregnancy check their cow herd in the fall?@***

Table 1. Pregnancy checking rates.

Region	Herds responding	% Pregnancy checking
Central	536	50.8
North East	362	38.1
North West	221	43.4
Peace	198	36.4
South	394	67.8
Provincial	1711	49.4

Provincial statistics indicate that of the 1711 herds completing the question, 49.4% are pregnancy checking their cow herds. When comparing 1987-89 data with these currents statistics the results are on the upward trend. In 1987-89 results, 6324 producers completed the questionnaire and 34% of those were fall pregnancy checking their cow herds.

Advantages to Pregnancy Checking

In today=s highly competitive cow/calf industry it is fast becoming critical that managers identify efficient cattle within their herds. Two advantages to pregnancy checking include: the elimination of overwintering open cows and the identification of herd fertility problems. It costs approximately $1.00 to $4.00 per cow to have a veterinarian check your cows and heifers. Compare this with the Alberta Agriculture 1998 preliminary Cow-Calf enterprise costs and returns analysis. The average provincial feed bill was $243 plus ten dollars for bedding, showing it makes good economic sense to pregnancy check. This allows nonpregnant females to be immediately culled to offset production costs as well as explore opportunities such as feeding for the white fat market.

Use pregnancy checking in early gestation (35 to 50 days) to detect repeat breeding or infectious venereal diseases and minimize the financial risk of a loss.

How to Pregnancy Check

There are several methods of checking pregnancy. They include the following with the first two most often used:

√ examination of the reproductive tract rectally
√ observing cows for return to heat
√ ultrasound
√ analyzing blood or milk for high levels of progesterone
√ using probes to measure electrical resistance of vaginal mucus

Industry Guideline

Producers should expect no more than five percent of their cows to be open after a 63 day breeding period. An increase to this percentage may indicate potential management problems in bull fertility, nutrition, housing and health.

ALBERTA COW-CALF AUDIT - 1999
FEED ANALYSIS AND RATION BALANCING
Brad Fournier and Freeman Iwasiuk

Data were collected on production indicators and management practices of cow-calf managers in Alberta. This one-page summary reports on two questions from the audit: ***"Do you feed test forages and grains of your winter feeding program?" and "Do you balance the winter rations?"***

Table 1. Feed testing and ration balancing in cow-calf herds.	Alberta
Total herds responding	1711
Forage Analysis, % of total	30.0
Grain Analysis, % of total	17.5
Herds that balance rations, % of total	25.7

Forage testing ranged across the province from a high of 38% in the Southern region to a low of 16 % in the Peace Region. Ration balancing also had a range from 31% in the Southern region to 13% in the Peace. Provincially there has been an increase in the number of managers that are testing their feed based on the results of a similar questionnaire sent in 1987-89. In 1987-89, 18% of producers were testing feedstuffs compared to the 30% of forages tested now. However, the numbers are still relatively low, especially for producers that are balancing winter feeding programs.

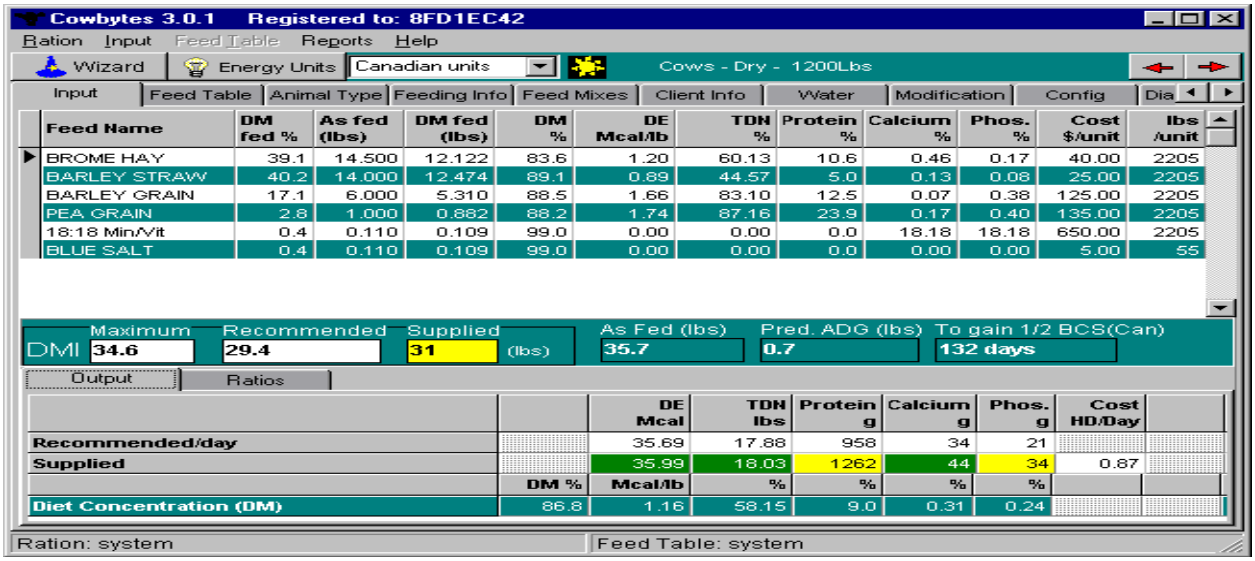
Feed testing is necessary due to the variation in feed quality between fields or pastures within the same area or the same year. Forage maturity will influence fibre, energy and protein concentrations in the forage. Research has indicated that even the time of day forages are cut will influence their relative feeding value. Effective utilization of low quality forages are dependent upon adequate protein. A feed analysis is more cost effective than over supplementing expensive protein.

Feed testing determines the **Energy** (NE, DE or TDN via ADF levels), **Protein** and **Mineral** content of feeds. Other analyses such as NDF can help determine animal intake of questionable forages and in the case of heated forages, ADIN will determine the fraction of protein no longer available to the animal. Anti-nutritive factors, such as nitrates or molybdenum levels can also be determined in feedstuffs.

Feed Analysis, in conjunction with **Ration Balancing** and **Body Condition Scoring** can ensure an adequate supplementation program, that reduces over or under-feeding while determining a minimum cost formulation. Ration balancing programs such as **Cowbytes** will have adjustment factors for body condition, temperature and other environmental or physiological aspects.

Below is a minimum-cost, balanced ration for a 1200 pound cow expected to gain 0.7 pounds/day; the cow is in -15^{o} C winter conditions. She is eight months pregnant and in moderate body condition. Balancing winter cow rations will increase production efficiency and profitability of the cow herd.

Editors: J.A. Basarab, R.Hand and E. Okine.



ALBERTA COW-CALF AUDIT - 1999
PREWEANING VACCINATIONS

Ken Ziegler, Pat Ramsey, and Joyce Van Donkersgoed

Data were collected on production indicators and feeding, animal health, marketing and quality assurance practices from 1711 cow-calf herds in Alberta. This one-page summary reports on the question: **"Did you vaccinate animals in your herd? If yes, what did you vaccinate your beef calves for?**

Table 1. Frequency of calf vaccination in 1,711 Alberta cow-calf herds.

Type of Vaccination	Herds vaccinat-ing in 1998, %	Timing of vaccinations, as a % of total herds vaccinating		
		1-2 mon. of age	Pre-wean-ing	after wean-ing
Clostridial	81.6	53.6	19.0	27.4
IBR[1]	46.2	23.7	28.4	47.9
PI3[2]	41.3	23.2	29.5	47.3
BVD[3]	40.3	23.2	29.4	47.4
BRSV[4]	32.7	22.9	30.8	46.3
Pasteurella hemolytica[5]	24.2	34.7	26.6	38.7
Hemophilus somnus[6]	36.2	28.5	28.8	42.7

1. IBR = infectious bovine rhinotracheitis or bovine herpesvirus 1. Red Nose.
2. PI3 = parainfluenza 3 virus.
3. BVD = bovine viral diarrhea.
4. BRSV = bovine respiratory syncytial virus.
5. Bacteria associated with bovine respiratory disease
6. Bacteria associated with hemophilosis.

Provincial statistics indicate that 82% of cow-calf managers vaccinated their calves for clostridial diseases, with the majority of the vaccinations occurring when the calf was 1-2 months of age. This value is lower than that report in the 1987/89 Beef Survey when 90% of Alberta cow-calf producers vaccinated their calves for clostridial diseases. Calf vaccinations for IBR, PI3, BVD, and BRSV occurred in 46%, 41%, 40%, and 32.7% of the 1711 herds responding to the question, respectively. This is an increase over the 1987/89 Beef Survey when 46.3%, 25.4% and 25.5% of the 6,324 cow-calf managers responding vaccinated for IBR, PI3 and BVD, respectively.

Calf vaccinations for *Pasteurella hemolytica* and

Hemophilus somnus occurred in 24.2% and 36.2% of the herds responding to the question. No provincial statistics from the 1987/89 Beef Survey were kept for these types of vaccination.

What vaccinations should your calves receive at which times of their life on the farm? A general answer is not appropriate because disease prevalence and management practices vary from farm to farm. Vaccination works as an aid to good sanitation, management, and nutritional practices. The costs of vaccination are quite low compared to the economic loss of an animal because of sickness or death.

A recent review of the characteristics of the diseases listed above, including their occurrence, treatment, prevention, and control, can be found in the Alberta Feedlot Management Guide, available through your local Feeder's Association or Alberta Agriculture office. Also, Alberta Agriculture offers their Beef Herd Management Binder which contains an excellent discussion on vaccination programs for beef cattle. Specific recommendations regarding which vaccines to use and when to administer them to maximize their immunological benefit should be received from your herd veterinarian. Vaccine products are continually changing, and as new products and research results become available, adjustments can be made to your existing vaccination program. The best source of information on vaccines that are useful to your cattle is from your local veterinarian, who is familiar with your herd and the diseases in your area. Please contact your veterinarian for further information on disease prevention.

ALBERTA COW-CALF AUDIT - 1999
BODY CONDITION SCORING

Ken Ziegler, Erasmus Okine and Rob Hand

The Alberta Cow-Calf Audit was conducted on the 1997/98 cow-calf production cycle and collected data on production indicators and management practices of Alberta's cow-calf managers. This summary sheet reports on the question: **"Did you Body Condition Score your bred Cows and Heifers?"**

Table 1. Frequency of Body Condition Scoring.

Region	Herds Responding	Body Condition Scoring, %
Central	536	23.0
North East	362	22.7
North West	221	21.3
Peace	198	23.2
South	394	26.7
Provincial	1711	23.4

Provincial statistics indicate that of the 1711 cow-calf managers completing the question, 23.4% are body condition scoring (BCS) their cow herd. This is an upward trend from the 1987-89 Beef Survey when 9.8% of 6324 cow-calf managers conducted body condition scoring.

Body Condition Scoring is a "hands on" method of determining the amount of fat "energy reserve" an animal is carrying. This is a better predictor of body energy content than visually "eye balling" an animal. The body condition of the animal is important for good management decisions as there is a relationship between body condition and fertility. There are specific priorities for the utilization of nutrients: body maintenance comes first, followed by lactation and growth and lastly reproduction. During periods of low nutrition, reproduction is the first to suffer and the last to recover. Since reproduction is the most important trait influencing profitability of the cow-calf enterprise, it becomes essential to know the nutritional status of the cow. In addition, cost effective feeding strategies can be determined by the animal's condition score. The advantage of Body Condition Scoring is that it is fast, simple and can be done at times where animals are in the chute for other processing reasons. Also, Body Condition Scoring allows for a standardized method of describing an animal that is understood by an increasing number of people.

Effect of Body Condition Score on Fertility

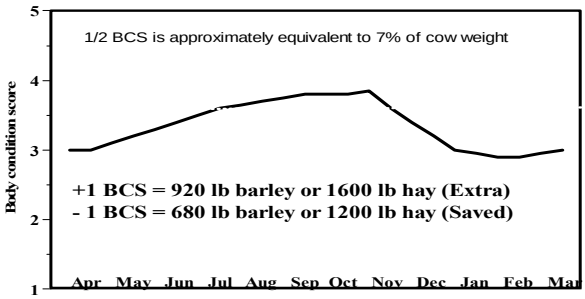
Body condition is scored from 1 (very thin) to 5 (grossly fat) in the Canadian system and 1 - 9 in the American system. Only about 30% of your cows have a chance of becoming pregnant in the first 21 days of breeding if they are in a body condition score of 2 or less compared to over 70% if they are in body condition of 2.5 or greater. In addition, cows with condition scores of 2.5 and greater cycle back sooner (30 to 50 days) versus over 85 days for cows with scores of 2 or less. Having a cow conceive within 85 days after calving is critical for maintaining a yearly calving interval. A cow in a body condition score of 2.5 to 3 at re-breeding time appears to be optimum for good fertility and net return.

Visit with your local beef specialist to learn how to body condition score.

Using Body Condition Score as a management tool

Ideally Body Condition Scores should fluctuate throughout the year from a high of about 3.5 to 4.0 during late fall to a low of 2.5 to 3 in late winter for spring calving cows (Fig. 1). The actual timing of the weight fluctuations will depend on the calf production cycle, feed availability and feed cost. Have your cows gain condition when feed is abundant and cheap and use body reserves when feed is limiting and expensive. If a cow comes into the winter in thin condition and has to increase a body condition score from a 2.0 to 3.0 by breeding time, an additional 920 lb of barley or about 1600 lb of hay will be required during a 150 day feeding period. This is a very expensive time to add a body condition to the herd. An alternative is to let the cow store up excess fat during the summer and fall months so that she can harvest it during the winter months. Having the cow drop a body condition score during the winter allows you to feed less feed resulting in lower feed costs yet maintaining good fertility levels.

Figure 1. Seasonal changes of a cow's body condition.



ALBERTA COW-CALF AUDIT - 1999
TRACE MINERAL SUPPLEMENTATION

Patrick Ramsey, Erasmus Okine and Ken Ziegler

In November of 1998 Alberta Agriculture surveyed Alberta Cow Calf producers to determine current production indicators, feeding, animal health, marketing, and quality assurance practices. The article summarizes the results of two questions asked of 1,711 Alberta cow-calf producers:

"Did you feed trace mineralized salt to your wintering cow herd, if yes what form? (block-free choice, loose-free choice, mixed in feed and other), and **"Did you feed trace mineralized salt to your cow herd on pasture, if yes what form? (block-free choice, loose-free choice and other).**

Table 1. Percent of producers supplementing trace mineralized (TM) salt in winter or summer.

Item	Wintering cow herd	Summer Pasture
Producers responding	1711	1711
Supplementing TM, %	92.7	84.2
Form, as a % of total		
- block, free choice	34.4	53.0
- loose, free choice	48.9	47.0
- mixed in feed	16.7	NA

NA - not applicable.

The results indicate that 93% of producers are feeding trace mineralized salt to their cow herd in the winter. A slightly lower proportion (84%) are feeding trace mineralized salt on pasture. These results are consistent across the five agricultural regions of Alberta (Peace, north east, north west, central and south).

Generally 80 to 90% of our feed and pasture is short of trace minerals such copper, manganese, zinc and selenium. These trace minerals are necessary to promote health and maximize growth rate of cattle. They help boost the immune system against disease which leads to greater productivity and fertility. In several situations there have been 20 to 36 pounds of added gain in yearlings on pasture and 14 to 26 pounds gain in weaning weights when cow/calf pairs have been supplemented with trace mineralized salt.

Block salt has convenient attributes for use on pasture however, the use of loose salt may be better especially in the fall and winter because it is easier to mix with other mineral and vitamin products.

Phosphorus is an important macro mineral influencing fertility levels in nursing beef cows. By using loose salt mixed with the phosphorus mineral, the cows have a better chance of receiving the necessary amount of phosphorus. This applies to all other minerals as well. In addition, cattle consume more salt in the loose than block form.

To design a trace mineral supplementation program, one needs to know:

- the cattle requirements for minerals,
- the feed or pasture mineral level and
- the nutrient content of supplements.

The trace mineral content of feed and pasture can be determined by sending samples to a feed analysis laboratory. Most labs list package prices at a reasonable cost. Computer programs such as "Cowbytes", which is available through any district office of Alberta Agriculture, make it easy to check trace mineral levels in your cattle's diet and determine the type of and amount of supplement to use.

For more information on trace mineral supplementation, contact your local Alberta Agriculture Beef Specialist, feed company or nutritionist.

Strategic use of trace minerals will add to your profit line.

ALBERTA COW-CALF AUDIT - 1999
LOCATION OF INJECTION SITES

John Basarab, Rob Hand and Joyce Van Donkersgoed

The Alberta Cow-Calf Audit was conducted on the 1997/98 cow-calf production cycle and collected data on production indicators and management practices of Alberta's cow-calf managers. This one-page summary reports on the following question: "***Where on the animal do you normally inject the vaccine?"***

Table 1. Route of vaccine administration for Alberta cow-calf herds.

Total herds responding	1711
(IM) Intramuscular only, % of total	32.3
(SQ) Subcutaneous only, % of total	17.2
Both - IM and SQ, % of total	40.2
No vaccinations	10.3

Just under 90% of managers were vaccinating their herd for some type of disease. The primary route of vaccine administration was by intramuscular injection (72.5%), with subcutaneous injections being less frequent (57.5%). A small proportion (10.3%) of the managers did not vaccinate their herd for any disease. Results show that 66% of producers gave IM injections (Fig. 1) and 77% gave SQ injections (Fig. 2) in the neck. This is a Good Management Practice which follows the Quality Starts Here √ Program (QSH) recommendation that **states; "vaccines and anti-microbials should be given in the neck and subcutaneously, if label direction permit"**. However, we still have 29.3% of producers administering vaccines in the top hip and back thigh muscles (Fig. 1), which are the prime cuts of meat for sirloin and round steaks. These results indicate the need for some improvement in injection practices by cow-calf managers.

Figure 1. Intramuscular (in the muscle) injections

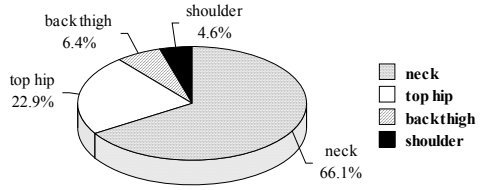
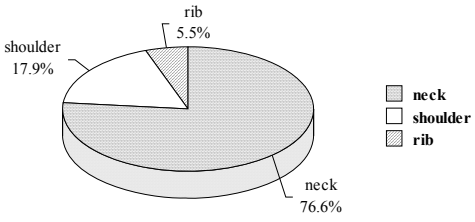


Figure 2. Subcutaneous (under the skin) injections



Industry Benefits

The Canadian Injection Site Audits reveal that trim from injection site lesions results in a $7-10/head loss or $15-22 million in Canada annually. Van Donkersgoed and co-workers in a study conducted at the Lacombe Research Centre revealed that ***"vaccines and anti-microbials injected into calves at 2 to 3 or 5 to 7 months caused scars that persisted until slaughter".*** For example, clostridial bacterins given IM to calves at spring processing or at weaning were associated with a high incidence of injection site lesions at slaughter (Fig. 3). Thus, producers and veterinarians should follow the QSH recommended injection practices for vaccines and antimicrobials to reduce injection site trim, chemical residues, broken needles and increase consumer confidence. For a copy of these recommendations contact the Canadian Cattlemen's Association office at 403-275-8558 or fax 403-274-5686.

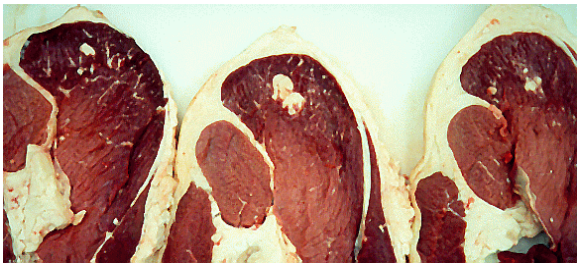


Figure 3. A visible injection site lesion in the inside round following administration of an 8-way clostridial bacterin (blackleg vaccine). Adapted from Van Donkersgoed et al. 1999, Can. Vet. J. 40: 245-251.

ALBERTA COW-CALF AUDIT - 1999
QUALITY ASSURANCE AND VACCINATION PRACTICES

Tennis Marx

The Alberta Cow-Calf Audit was conducted on the 1997/98 cow-calf production cycle and collected data on production indicators and management practices of Alberta's cow-calf managers. This article summarizes the response of two questions received from 1712 Alberta cow/calf producers; ***"Have you implemented one or more of the quality assurance practices mentioned in their Quality Starts Here manual? and Where on the animal do you normally inject the vaccine?"***

Table 1. Percent of producers who vaccinate intramuscular or subcutaneously by location and have implemented Quality Assurance Practices.

	%Yes QA Aware	% Not QA Aware
QA practice implemented %	35.9	64.1
Intramuscular (IM)		
- Neck	78.4	58.2
- Shoulder	3.7	5.1
- Top Hip	13.7	28.8
- Other	4.2	7.9
Subcutaneous (SC)		
- Neck	76.1	77.1
- Shoulder	18.5	17.4
- Rib	5.4	5.5

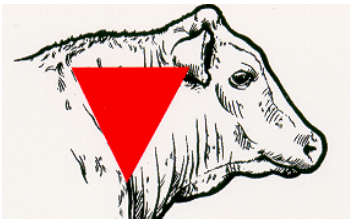
There were 46% of Alberta producers surveyed that were aware of the CCA's Quality Starts Here √ (QSH) Program. There were 36% of Alberta producers aware of the QSH program that implemented one or more QA practices.
Results show that QSH herds are most likely to give intramuscular (IM) and subcutaneous (SC) injections in the neck. However, 13.7% of QSH herds are still giving IM injections in the top hip (area of expensive high quality cuts) compared to 28.8% for those herds not implementing QSH practices. Seventy-seven percent of herds that do not have a QA program administer SC injections in the neck.

Industry Benefits

Intramuscular injections can cause scars or lesions that persist for life. The Canadian Cattlemen's Quality Audit reveals that trim from injection site lesions result in a $7-10/head loss or $15-22 million loss in the Canadian beef industry annually. Injection site lesions are associated with tough beef and consumer dissatisfaction from unsightly lesions. A loss in consumer confidence of beef's safety and quality, translates into decreased consumption.

What Can We Do- QSH Recommendations.

- √ Give all drugs subcutaneously in the neck if the label permits.
- √ Inject intramuscular drugs in the neck muscle behind the base of the ear and ahead of the shoulder point.
- √ Use long-acting products to reduce the number of injections.
- √ Avoid extra-label use of drugs that may cause adverse tissue reactions and drug residues.
- √ Observe withdrawal times.
- √ Change needles frequently, every 10-15 uses.
- √ Discard dull, bent or burred needles.
- √ Use clean needles and make sure the injection site is clean and free from manure and/or mud.
- √ Do not use outdated or contaminated products.
- √ Use transfer needles, to reduce contamination of bottles.
- √ Use no more than 10 cc (ml) per injection site.
- √ Space multiple injection sites several inches apart.
- √ If a needle breaks mark the animal, and try to retrieve the broken needle.
- √ If a broken needle cannot be retrieved permanently ID the animal as suspect. Inform the packer of the potential problem or consider euthanasia**.**
- √ Develop an on farm HACCP plan.



Injection Site location
(Picture courtesy of the Canadian Cattlemen's Association)

For more information, read, understand and incorporate the QSH Good Production Practices Manuals on your farm or contact your veterinarian, Canadian Cattlemen's Association office or AAFRD Beef Specialist.

ALBERTA COW/CALF AUDIT - 1999
QUALITY ASSURANCE PRACTICES - CASTRATION
Ken Ziegler

In November 1998, Alberta Agriculture surveyed Alberta cow-calf producers to determine current production indicators, feeding, animal health, marketing and quality assurance practices. This article summarizes the results of three questions asked of 1,712 Alberta cow-calf producers regarding their awareness of the Canadian Cattlemen's Quality Starts Here (QSH) program and their castration times and practices.

Table 1. % of Producers who knowingly implemented QSH Practices

% yes	% no
36%	64%

From these survey results, it is obvious that the majority of the respondents did not know enough about the Quality Starts Here program to recognize whether they were implementing practices recommended by the program.

Table. 2 Castration Practices

	Total	% Yes QSH Aware	% Not QSH Aware
Castrated their calves	95.2%	95.8%	94.8%
Time of Castration:			
Shortly after birth	52.9	50.5%	54.2%
At spring processing	38.9	42.4%	37.0%
At weaning	6.2	7.6%	5.4%
At another time	2.9	2.8%	2.6%
Castration Method:			
Bloodless (rubber rings/tubing)	56.7%	54.4%	58.0%
Surgical	34.4%	39.2%	31.7%
Burdizzo	9.9%	9.0%	10.5%
Other	.8%	.5%	1.0%

Awareness of the QSH Program to Castration Time and Method

From this summary of responses, the majority of respondents castrated the majority of their bull calves before the calves moved further along the food chain. The 5 % of the calves that were not castrated may have been castrated beyond the ownership influences of these cow calf respondents. The difference between the numbers of the two groups was minimal on the practice of castration. This shows that the majority of producers are castrating their calves regardless of the QSH program. This stands to reason as the practice of castration has been practiced much longer than the initiation of the QSH program.

Regarding castration times, of those that castrate their calves during spring processing, more people were aware of the QSH program than those that were not. People that castrated at birth, in the fall or later, had equal awareness of the QSH program.

When segregating groups to the way they castrate their calves, the group that had awareness to the QSH program, were those that surgically castrate their calves. There was no difference in awareness of the QSH program for those that castrate their calves with the bloodless method or with the burdizzo.

Trends to Castration Time and Method

As the statistics indicate, there is a strong trend for cow calf owners to castrate their calves at a younger age. This follows in line with the recommendations of the Beef Cattle Code of Practice. Virtually all of the calves are castrated before 6 months of age which is considered a Good Production Practice under the QSH program. Virtually all methods of castration employed are accepted methods of castration under the QSH program.

Conclusion

From the responses on the issue of castration, this survey indicates that Alberta cow-calf operators are following QSH protocol. Although relatively few people were aware of the QSH program at the time of the survey, the majority of cattle castrated were being done at acceptable times and using acceptable procedures.

ALBERTA COW-CALF AUDIT - 1999
QUALITY ASSURANCE PRACTICES - BRANDING

Karen Schwartzkopf-Genswein

In the winter of 1998/99 Alberta Agriculture Food and Rural Development surveyed Cow Calf producers across Alberta in attempt to determine current production practice such as animal health, feeding, marketing and quality assurance practices.

This one page report summarizes the results of the following questions *"What percentage of cattle are branded ?" What branding method is preferred and what is the most common location(s)?*

Table 1. Percentage of cattle branded, method and location of branding

Animal Type	% Branding	%Yes QSH Aware	% Not QSH Aware
Brand Calves	57.1	61.0	54.8
Brand cows	72.5	74.3	71.6
Brand Replacement heifers	72.9	76.2	71.0
Brand bulls	48.9	51.6	47.6
Method:			
Hot-iron	82.8	84.7	81.8
Freeze	1.1	1.3	.9
Others	1.6	0.8	2.0
Location:			
Hip	39.9	42.4	38.5
Side/rib	39.6	39.7	39.5
Shoulder	10.1	9.6	10.4
Other	0.8	0.8	0.7

The survey indicates that of the 1712 herds completing the questionnaire, 57.1% of calves and 72% of the breeding herd are branded. In addition, more producers that implement QA programs brand calves, replacement heifers and breeding bulls than those that do not. Hot-iron branding is the preferred method of branding. There is an equal distribution between those that brand on the hip and side/rib location.

Advantages and disadvantages of branding

To date branding (hot and freeze) is the only accepted permanent method of identification. Both methods leave a highly visible mark that cannot be easily altered. Brands are relatively inexpensive, produce no setback in animal performance, are easy to produce and can be done quickly.

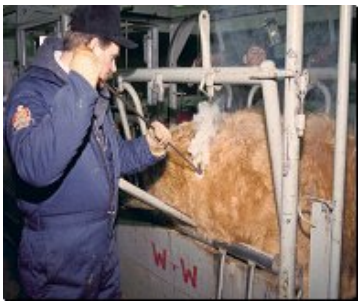
The disadvantage of hot-iron branding is the negative image of the procedure in terms of animal welfare. In addition hot-iron branding (and in some cases freeze) results in scarring on the hide and therefore effects the hide quality depending on the placement of the brand. This is particularly true when brands are placed on the hip and rib areas and therefore is not recommended in those locations.

In terms of recommending which branding method is better it appears that freeze branding may be less painful than hot-iron branding at the time the irons are being applied. However, other aspects of animal management must be considered. The extra time and cost required to produce a freeze brand, the availability of a suitable coolant and the inconsistency of the freeze mark produced, make it a less desirable method from a producers perspective. These factors in combination with the fact that the two branding methods have similar effects on animal performance may promote the use of hot-iron.

How to brand

Proper technique is important in producing a clean easy to read brand. The following is a brief overview of the techniques recommended for both methods.

A hot brand should be done on a clean dry hair coat. The irons should be grey in color and placed on the animal for 3-5 seconds (until hide is a light tan color). Freeze irons need to be in the coolant until the liquid stops bubbling. Clip a patch of hair large enough to contain the brand. The hide should be drenched with alcohol and the iron applied for at least 60 seconds for yearlings and 45 seconds for calves. More than 70 seconds may produce a freeze burn and less than suggested may not be sufficient to produce a brand.



ALBERTA COW-CALF AUDIT
QUALITY ASSURANCE - DEHORNING
Sandi Jones

Data was collected on production indicators and management practices of cow-calf managers in Alberta. This one-page summary reports on the questions related to dehorning practices from the audit: "Do you dehorn your calves and, if yes, what time and method do you use?" and "Are you aware of Quality Assurance practices?"

Table 1 Dehorning and Quality Assurance

	%	% Yes QSH Aware	% Not QSH Aware
# of total herds	1712	614	1098
Herd is 100% Polled	7.8	6.03	8.74
Dehorn Calves	79.4	85.83	75.87

Figure1. Most common times for dehorning.

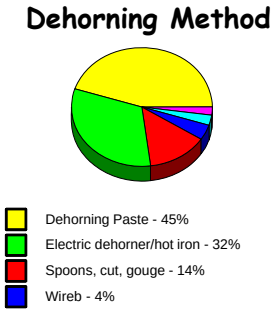


Figure 2.Most common dehorning methods

The results indicate that of the 1712 producer herds which responded 7.8% have a calf crop which is entirely polled. Of those herds 46.8% had calves born horned and 79.4% of them dehorned prior to sale. More producers implementing QA practices dehorn calves than those that do not (85.8 versus 75.9 %)

The majority of producers are dehorning their calves shortly after birth, the next most common time is at spring processing and then at weaning. Those producers aware that had indicated that they had implemented a QA practice tended to dehorn calves at a younger age. This is in compliance with the Beef Cattle Code of Practice which recommends dehorning at an early age.

Best Time for Dehorning

Almost all animal industries carry out some routine management practices which may cause discomfort. The practice of dehorning subjects our animals to short-term discomfort for long-term benefits. Many researchers have conducted trials to identify the procedures which cause the least amount of discomfort and set back to the animal. The guideline from the Good Production Practices for Cow-Calf Producers for QSH standards for dehorning is as follows:

All Calves are dehorned in an effective, humane manner prior to three months of age.

We still do not know whether the level of discomfort an animal experiences is age dependent. However, we do know that the younger the animal at the time of the procedure the more expedient the healing process.

Recommended Technique for Dehorning

The alternatives many producers use include; caustic paste, electric dehorners, cutters, wire, gougers or scoops. No one procedure has been deemed to cause the least amount of discomfort and set back to the animal. Dehorning our cattlethrough genetic selection for polled animals is a welfare friendly practices which many producers are moving towards. Researchers have found no link between polledness and poor performance or production traits. Horns are inherited as a recessive gene, while polledness is dominant. In one breeding season, a producer can take a herd of horned cows and breed them to a polled bull and have an entire polled calf crop.

Advantages of Dehorning and at an Early Age

√ Potential marketing tool to increase profits, as horned cattle - off type and may be discounted.
√ Dehorned cattle use less feedbunk space.
√ Horned cattle prevent other cattle from feeding properly.
√ Horned cattle cause bruising which lowers carcass value.

ALBERTA COW-CALF AUDIT - 1999
QUALITY ASSURANCE PRACTICES - IDENTIFICATION
Sandi Jones

The Alberta Cow-Calf Audit was conducted on the 1997/98 cow-calf production cycle and collected data on production indicators and management practices of Alberta's cow-calf managers. This article summarizes the response of two questions received from 1712 Alberta cow/calf producers regarding cattle identification; **"Are you aware of the Canadian Cattlemen's Association's Quality Starts Here Program and if they did or did not individually identify their cattle?", if yes what method of identification was used?**

Table 1.	%	%Yes Aware of QSH	%Not Aware of QSH
# total Herds	1712	614	1098
Cattle Herds individually identified	86.3	93	82.6
Method of ID Breeding age Females			
Plastic Tags	81	86.6	77.8
Metal Tags	10.2	14.2	8.0
Tattoos	13.7	18.2	11.1
Electronic Transponder	0.1	0.2	0.1
Other	5.8	7.5	4.9
Method of ID calves			
Plastic Tags	78.6	85.8	74.6
Metal Tags	6.1	7.2	5.6
Tattoos	9.8	12.2	8.4
Electronic Transponder	0.1	1	0
Other	.8	0.8	0.8

The results indicated that 86.3% of these herds individually identify their cattle. The most popular method of identification is a plastic ear tag followed by tattoos and metal tags regardless of whether implementing Quality Assurance practices or not.

The importance of Cattle Identification

Food Safety - A permanent ID can help alleviate food safety concerns by providing a paper trail of practices and drugs administered.

Disease control and eradication - A permanent ID allows our cattle to be accessible to the world markets since disease can be better traced.

Genetic Improvement - To estimate the genetic potential, data of economic importance as measured by performance and physical evaluation records must be compiled and evaluated. Therefore, each individual animal must be identified. The retrieval of carcass information can be used to improve meat quality/consistency.

Requirements of a Good Identification Program

No one identification system is best for all herds. The system selected however, should exhibit the following characteristics:

* inexpensive.
* permanent.
* easy to apply.
* causes little pain or harm to the animal.
* contains a concise meaningful numbering system.
* uses numbers rather than letters for electronic data processing.
* will not duplicate numbers with a 10-year period.

Canadian Cattlemen Identification Agency CCIA)

This program is an industry-led system for individually identifying cattle in Canada. After the target date of December 31, 2000 cattle in Canada are to be ear tagged with an official CCIA ear tag prior to leaving their herd of origin. This program will help maintain market access for Canadian beef cattle, help protect the health of the Canadian cattle herd, and reassure consumers the industry is proud of and stands behind the health and safety of its product. For further information about the CCIA program call 1-800-909-2333. For quality assurance information obtain the QSH Good Production Practices Manuals or contact your veterinarian or AAFRD Beef Specialists.

Alberta Cow-Calf Audit 1999
QUALITY ASSURANCE PRACTICES - PARASITE CONTROL

Harry Brook

The Alberta Cow-Calf Audit was conducted on the 1997/98 cow-calf production cycle and collected data on production indicators and management practices of Alberta's cow-calf managers. This article summarizes the response of two questions received from 1712 Alberta cow/calf producers regarding parasite control; ***"Do you treat your cattle for parasites? and if they did when were cows and calves treated for warbles, ticks, lice, other insect pests (horn/face flies) intestinal worms and lung worms.***

Of the 1712 herds, 95% treated for parasites such as either lice, intestinal worms, warbles, ticks or flies. Treatment for all parasites was completed in the fall months.

Table 1. Parasite Control and Quality Assurance - QA

Cows Treated For:	% Treated	%Yes Aware of QA	%Not Aware of QA	% which treat in fall
Lice	99.3	106	95.4	73*
Warbles	97.5	99.7	96.3	84.5
Ticks	63	67	60.7	51.3
Intestinal Worms	64.5	75.4	58.3	55.3
Lung worm	59	69	53.4	50.8
Horn/face flies	53.3	62.2	48.3	28

*treat more than once a year.

The preferred method of treatment as indicated by the survey, was by the use of pour-ons with a majority of 92.3% of producers in the study using this. The question that should be answered is " What is the economic threshold of these pests?" At what point should you treat your herd. Work is being carried out now to determine at what levels of infestation is it profitable to treat for some of these parasites.

Parasite Facts

Lice

* Two types of lice - sucking & biting
* Product used must have residual effect to control adults and the next nit hatch in 7 to 14 days.
* Ensure proper nutrition to aid in immune response
  - Minimize stress*
  - Contact your local veterinarian, or Veterinary Practitioner for identification and diagnosis of lice

Warbles

* Have been effectively controlled over the last 20 years.
* Life cycle begins with the fly laying eggs on the legs of the animals. When hatched the larvae then burrow and migrate to the back.
* Larvae are most susceptible to treatment in the fall when located on the back of the animal.

Ticks

* Responsible for the transmission of diseases.
* Commonly seen in the dry interior of BC, AB and the western portion of SK.
* Ticks may be picked up from contact with wildlife

Intestinal Worms

* Usually roundworms found in the gut and intestines.
* Three serious types are: threadworm, baberpole worm, and the brown stomach worm.
* Spread in cattle by eating food or drinking water contaminated with manure contaminated with larvae.
* May cause anemia, poor growth, and even death.
* Young cattle are more susceptible than mature.
* Lungworm may be a problem in moister areas of the province.

Horn Flies

* Important pests of cattle on pasture.
* Relatively light infestations can cause a 16% reduction of weight gain.
* Hornflies are active from May to September.
* Control measures include: fly ear tags, cattle oilers and dust bags all using insecticides to give control.

Advantages of controlling Parasites

Parasites deprive the animal of nutrients required for maintenance and production, and cost livestock producers millions of dollars annually. Economic losses can be broken down into the following sources:

1. Reduced daily gain, feed conversion, and milk production.
2. Wasted labor and animal holding space.
3. Reduces reproductive performance.
4. Increase susceptibility to other diseases.

Parasites can rob your herd of profitability. Contact your local veterinarian or beef specialists regarding parasite control. It makes good economic and management sense to control parasites when striving to produce a quality product.

UPDATE ON BEEF QUALITY ASSURANCE PROGRAMS

Sandi Jones, Alberta Agriculture Food & Rural Development
Rob McNabb, Canadian Cattlemen's Association

Canadian Cattlemen 'Quality Starts Here'√

The Canadian cattle industry has developed and is leading an initiative to assure continued market access and consumer confidence. The Canadian Beef Industry Quality Assurance and Product Safety Program was instituted in January, 1995 and comprises of three main objectives:
√ To establish procedures at the production and processing stages to ensure a safe and healthy product.
√ To maximize the quality of the product.
√ To improve returns to all sectors of the industry.
The design of research projects and educational materials has incorporated the Hazard Analysis Critical Control Point (HACCP) principles and definitions as outlined by the Food Safety Enhancement Program (FSEP) under the guidelines established by the Canadian Food Inspection Agency (CFIA). In January of 1996 the Canadian Beef Industry Quality Assurance and Product Safety Program was renamed

Canadian Cattlemen: Quality Starts Here√ to further articulate the responsibilities and initiatives of producers and industry partners to ensure the safety and quality of Canadian beef. The guiding principles of the program determined by the multi-sector Management Committee in the development of a national strategy are:

√ We produce food, not cattle
√ Product safety and quality are a shared responsibility from pasture to plate
√ Improvements to management practices that influence quality will generally lead to improvement in product safety
√ If the production industry lead the initiatives, we will realize our objectives

Simply put, the Canadian Cattlemen: Quality Starts Here√ program is the beef industry's commitment to food safety and quality. This program starts with the farm and feedlot and will ensure that a comprehensive approach is taken throughout the beef production continuum. The ultimate goal is that all Canadian Producers embrace the program and make it part of their everyday management. By doing so, markets will expand and returns will improve.

Producer Awareness

In the winter of 1998/99 Alberta Agriculture Food and Rural Development surveyed Cow Calf producers across Alberta in attempt to determine current production practices such as animal health, feeding, marketing and quality assurance practices. In regards to quality assurance the following questions were asked, *"Are you as a cattle producers aware of the Canadian Cattlemen's 'Quality Starts Here' Program ?" and "Have you implemented one or more practices mentioned in the QSH Manual?" Other quality assurance practices where included such as castration, dehorning, branding, control of parasites, vaccinations, and identification.*

Awareness of CCA's Quality Starts Here Program

The survey indicates that of the 1712 herds completing the questionnaire, 46.1% of Alberta producers surveyed that they were aware of the CCA's Quality Starts Here' program. Those producers that were aware of the QSH program tended to have more breeding females 144 vs. 105 head than those not aware.

Implementation of One or More QA Practices mentioned in the QSH Manual

There were 36% of producers aware of the QSH program and that implemented a QA practice change.

Table 1. Producer Awareness of Quality Assurance

Type of Operation	% Practice Change
Commercial Cow/Calf	35.54
Purebred Cow/Calf	49.28
Mixed Beef and Grain	41.10
Other Beef Operations (feedlots, backgrounders)	50

Alberta Agriculture is currently undertaking an active role in the distribution of fact sheets and information regarding the Quality Starts Here√ program.
In January of 2000, newly revised versions of the Quality Starts Here√ manuals where printed and are now available for cattle producers and industry representatives. These booklets include:

- Good Production Practices for Feedlot Producers
- Good Production Practices for Cow/Calf Producers
- Recommended Procedures for Feedlot Animal Health
- Good Production Practices Records for Feedlots
- Treatment Record Notebook

Producers and industry representatives are encouraged to acquire their new copies of the updated versions at Alberta Agriculture offices across the province free of charge. For more information regarding Quality Assurance Programs please contact your local beef specialist or phone the CCA office in Calgary at (403) 275-8558.

Table 1. Alberta cow-calf production statistics for the 1997/98 production cycles (Basarab et al. 1999).

	South	Central	North East	North West	Peace	Alberta
Number of herds	394	536	363	221	198	1712
Cows & replacement heifers	60,616	66,105	36,267	25,272	17,021	205,281
Total land base (acre)	3,223	1,816	1,493	1,091	1,270	1,971
Cows (2 yr & older)/herd	132	108	86	100	73	104
Replacement heifers (1 yr)/herd	35	23	20	23	18	24
Breeding bulls/herd	7	5	4	5	4	5
Cow to bull ratio	24	25	25	25	24	25
Culling rate - fall 97, %	7.5	6.7	5.9	6.3	5.4	6.6
Culling rate - spring 98, %	2.7	3.3	2.8	3.3	4.5	3.2
Open cows, %	5.3	4.3	3.4	4.6	3.9	4.4
CALVING SEASON						
Date first calf born[1]	56	60	57	52	62	58
Calves born - 1 - 21 days, %	49.9	48.2	46.5	42.2	49.6	47.6
- 22 - 42 days, %	31.5	32.1	31.6	30.4	28.7	31.2
- 43 - 63 days, %	12.9	12.8	13.3	16.1	12.6	13.4
- + 64 days, %	5.7	6.9	8.5	11.3	9.0	7.8
Length of the calving span, days	84	91	100	105	95	93
CALF DEATH LOSSES						
Number of calves born	53,024	57,703	32,878	23,315	15,016	181,936
Total calf death losses, %	4.2	4.3	4.2	4.7	5.2	4.4
CALF DEATH LOSSES-TIMING						
- premature, %	12.8	16.8	12.1	18.4	22.2	15.7
- at birth, %	33.1	33.6	32.8	28.9	26.7	31.9
- 1-14 days of birth, %	32.2	29.6	34.8	31.7	31.3	31.7
- 14 days - 6 months of birth, %	16.0	14.8	15.4	13.0	12.9	14.8
- + 6 months of birth, %	5.9	5.2	4.9	8.0	6.9	5.9

[1] Values are given as days from the beginning of the year. Day 58 refers to February 27.

Table 1. Continued.

	South	Central	North East	North West	Peace	Alberta
CALF DEATH LOSSES - REASONS						
- calving difficulty, %	32.0	33.5	27.9	28.5	27.7	30.7
- scours, %	8.0	9.5	10.2	13.2	9.6	9.8
- pneumonia, %	9.1	10.6	10.8	10.0	7.5	9.9
- exposure, %	8.4	5.0	5.5	3.4	9.5	6.2
- accidental, %	7.7	9.4	10.8	11.0	15.6	10.1
- unknown, %	34.8	32.1	34.8	33.9	30.1	33.3
WEANING						
calves weaned/herd	134	109	90	103	77	106
weaning date, days[1]	294	296	291	293	284	293
weaning weight, lb	578	580	577	593	552	577
200-day adj. Wean weight, lb	559	565	575	576	565	567
cow mature weight, lb	1303	1342	1341	1367	1327	1334
CALF CROP, %						
calves born of cows exposed, %	87.5	87.3	90.7	92.3	88.2	88.6
calves weaned of calves born alive, %	99.0	98.8	98.4	97.6	97.5	98.1
calves weaned of cows exposed, %	85.2	84.5	87.5	87.2	85.0	85.6
PRODUCTION EFFICIENCY						
lb calf weaned/cows exposed	503	505	513	522	485	506
lb calf weaned/100 lb cow exposed	38.7	37.7	38.2	38.2	36.8	38.0
lb calf weaned/cow exposed (adj)	484	492	509	505	496	496
lb calf weaned/100 lb cow exposed (adj)	37.4	36.7	38.0	36.8	37.4	37.2

[1] Values are given as days from the beginning of the year. Day 293 refers to September 20th.

Table 2. Percentage of herds conducting various management and feeding practices in Alberta for the 1986/89 and 1997/98 production cycles.

	Alberta 1986/89	Alberta 1997/98	Percent Improvement
Number of herds	6,324	1711	
MANAGEMENT PRACTICES			
- fall pregnancy check, %	34.0	49.4	45.3
- condition score[1], %	9.8	23.6	140.8
- bull evaluation[1], %	27.9	50.7	81.7
- test winter feeds - forages, %	17.7	30.0	69.5
- test winter feeds - grains, %		17.5	
- Balance winter diet, %		25.7	
- increase energy level, %		76.0	
- feed thin cows separately, %		39.6	
- feed replacements separately, %	55.2	55.0	
VACCINATION PRACTICES			
- blackleg, %	89.9		
- scours, %	22.4		
- IBR, %	46.3		
- PI3, %	25.4		
- BVD, %	25.5		
- others, %	15.8		
PASTURE MANAGEMENT			
- fertilization, %	33.3		
- weed control, %	32.2		
- brush control, %	19.7		
- rotational grazing, %	59.3		
- rented pasture, %	37.0		
FORAGES FED IN WINTER			
- alfalfa, %	37.9		
- mixed hay, %	68.7		
- grass hay, %	32.8		
-green feed, %	49.0		
- silage, %	15.5		

[1] Condition score is by a standardized method. Bull evaluation refers to those done by a veterinarian or qualified specialist.

Table 2. Continued.

	Alberta 1986/89	Alberta 1997/98	Percent Improvement
Number of herds	6,324		
GRAIN & STRAW FED (winter)			
- grain, %	76.6		
- barley, %	56.0		
- oats[1], %	51.9		
- straw, %	46.4		
MINERALS & VITAMINS			
- mineral - (Ca:P -1:1 or 2:1), %	58.5		
- limestone, %	12.6		
- vitamins - injectable, %	34.5		
- dry powder, %	46.9		
TRACE MINERAL & PROTEIN SUPPLEMENT			
- cobalt iodized and/or TM, %	93.6		
- cobalt iodized, %	73.1		
- trace mineral (TM), %	57.8		
- protein supplement, %	34.9		
MARKETING METHOS- CALVES			
- sold as weaned calves, %	53.4		
- sold as preconditioned calves, %	9.3		
- fed as backgrounders, %	33.0		
- fed for slaughter, %	17.0		
- place feeders in custom feedlot, %	3.2		
MARKETING METHODS- FEEDERS			
- sell as short keep off pasture	23.8		
- feed to slaughter -sell live/rail	19.8		
SELLING METHODS			
- local auction market, %	70.0		
- through dealer, %	9.3		
- direct to packer, %	9.6		
- direct to feedlot, %	4.4		
- farmer to farmer, %	12.3		

APPENDIX 2. Results from the 1988-91 Alberta Beef Survey (Basarab, J.A. 1991. Alberta Agriculture, Food and Rural Development, Lacombe Research Centre, 6000 C & E Trail, Lacombe, Alberta T4L 1W1).

Table 1. Cow-calf production statistics for various regions in Alberta for the 1986/87 to 1988/89 productions cycles.

	South	South Central	North Central	North East	North West	Alberta
Number of herds	654	1,087	2,901	1,152	455	6,249
Cows & replacement heifers	73,262	116,826	201,460	90,645	37,786	519,979
Total land base (acre)	2,358	2,248	891	1,301	849	1,387
Cows (2 yr & older)/herd	96	92	60	67	70	72
Replacement heifers (1 yr)/herd	16	15	9	11	13	12
Breeding bulls/herd	5	4	3	3	3	3
Cow to bull ratio	27	27	27	26	28	27
Culling rate-fall, %	7.3	6.9	7.2	6.6	6.4	7.0
Open cows, %	7.1	6.9	6.0	7.2	8.8	6.5
CALVING SEASON						
Date first calf born[1]	54	58	58	56	51	56
Calves born - 1 - 21 days, %	44.4	43.3	41.6	42.5	41.0	42.5
- 22 - 42 days, %	35.6	34.1	32.4	33.2	33.4	33.4
- 43 - 63 days, %	14.3	15.9	17.1	16.4	15.4	16.2
- + 64 days, %	5.7	6.7	8.9	7.9	10.2	7.9
Length of the calving span, days	94	100	108	115	122	107
CALF DEATH LOSSES						
Number of calves born	64,379	102,816	178,843	79,606	32,619	459,563
Total calf death losses, %	5.4	5.4	5.8	5.4	6.0	5.6
CALF DEATH LOSSES-TIMING						
- premature, %	11.9	12.1	14.0	11.6	14.4	12.9
- at birth, %	41.9	43.1	38.0	42.5	38.9	40.5
- 1-14 days of birth, %	24.5	25.1	24.5	23.0	24.5	24.4
- 14 days - 6 months of birth, %	17.5	16.1	17.5	16.6	17.0	17.0
- + 6 months of birth, %	4.2	3.6	6.0	6.3	5.2	5.2

[1] Values are given as days from the beginning of the year.

Table 1. Continued.

	South	South Central	North Central	North East	North West	Alberta
CALF DEATH LOSSES- REASON						
- Calving difficulty, %	26.4	29.2	28.6	30.5	24.8	28.5
- Scours, %	16.7	11.7	16.8	13.5	13.9	14.9
- Pneumonia, %	8.4	8.3	9.2	8.8	6.3	8.6
- Starvation, %	3.4	3.1	1.8	2.0	2.7	2.4
- Accidental, %	7.8	8.7	8.5	9.5	9.1	8.7
- Unknown, %	37.3	39.0	35.0	37.7	43.2	36.9
WEANING						
Calves weaned/herd	94	90	58	65	68	70
Weaning date, days[1]	299	304	292	300	293	296
Weaning weight, lb	547	564	556	556	563	556
200-day adj. Wean weight, lb	514	531	521	528	536	527
Cow mature weight, lb	1250	1306	1334	1317	1328	1317
CALF CROP, %						
- calves born of cows exposed to breeding, %	87.2	88.4	88.8	88.1	86.3	88.7
- calves weaned of calves born alive, %	98.7	97.4	97.3	97.3	97.3	97.3
- calves weaned of cows exposed to breeding, %	83.4	83.5	83.6	83.0	81.2	83.5
PRODUCTION EFFICIENCY						
lb calf weaned/cow exposed	466	479	470	472	476	472
lb calf weaned/100 lb cow exposed	37.5	36.8	35.4	36.1	36.0	36.0
lb calf weaned/cow exposed (adj.)	437	451	439	449	454	447
lb calf weaned/100 lb cow exposed (adj.)	35.0	34.5	32.7	34.2	34.4	34.1

[1] Values are given as days from the beginning of the year.

Table 2. Percentage of herds conducting various management and feeding practices in various regions of Alberta for the 1986/87 to 1988/89 production cycles.

	South	South Central	North Central	North East	North West	Alberta
Number of herds	668	1,097	2,945	1,160	454	6,324
MANAGEMENT PRACTICES						
- fall pregnancy check, %	57.4	45.3	28.5	25.8	29.1	34.0
- condition score[1], %	10.0	8.9	9.4	10.9	11.3	9.8
- bull evaluation[1], %	39.7	41.0	22.3	26.1	19.4	27.9
- test winter feeds, %	18.3	25.6	16.1	14.8	15.9	17.7
- feed replacements separately, %	54.4	54.0	55.6	55.5	55.6	55.2
VACCINATION PRACTICES						
- blackleg, %	90.3	91.8	88.5	92.7	87.2	89.9
- scours, %	27.4	23.0	19.9	24.1	25.1	22.4
- IBR, %	57.5	51.3	41.1	47.4	48.2	46.3
- PI3, %	34.6	30.0	21.6	24.6	27.5	25.4
- BVD, %	31.6	30.7	20.3	26.9	33.7	25.5
- others, %	22.3	15.7	15.2	13.5	16.0	15.8
PASTURE MANAGEMENT						
- fertilization, %	27.4	24.3	35.8	35.7	43.8	33.3
- weed control, %	32.6	29.0	34.5	26.7	40.1	32.2
- brush control, %	7.5	12.7	23.1	24.0	25.7	19.7
- rotational grazing, %	58.5	59.1	59.7	56.7	65.6	59.3
- rented pasture, %	37.5	41.3	36.1	37.5	30.3	37.0
FORAGES FED IN WINTER						
- alfalfa, %	69.3	42.7	29.0	34.9	45.4	37.9
- mixed hay, %	52.7	60.3	76.2	58.8	89.4	68.7
- grass hay, %	31.3	34.8	31.5	34.0	35.9	32.8
-green feed, %	45.1	64.7	42.3	59.8	31.9	49.0
- silage, %	8.2	19.4	17.1	12.9	12.8	15.5

[1] Condition score is by a standardized method. Bull evaluation refers to those done by a veterinarian or qualified specialist.

Table 2. Continued.

	South	South Central	North Central	North East	North West	Alberta
Number of herds	668	1,097	2,945	1,160	454	6,324
GRAIN & STRAW FED (winter)						
- grain, %	59.3	73.8	76.9	89.3	73.8	76.6
- barley, %	48.8	58.2	55.3	63.0	48.9	56.0
- oats[1], %	30.1	44.0	52.9	66.2	59.9	51.9
- straw, %	49.4	45.4	46.1	53.3	28.9	46.4
MINERALS & VITAMINS						
- mineral - (Ca:P -1:1 or 2:1), %	59.1	60.1	57.8	56.4	63.0	58.5
- limestone, %	3.0	11.0	11.0	26.3	5.3	12.6
- vitamins - injectable, %	43.1	41.3	30.0	34.4	34.8	34.5
- dry powder, %	28.1	43.6	48.8	54.2	51.8	46.9
TRACE MINERAL & PROTEIN SUPPLEMENT						
- cobalt iodized and/or TM, %	96.4	95.0	91.4	95.4	95.6	93.6
- cobalt iodized, %	86.4	82.3	70.6	69.3	57.5	73.1
- trace mineral (TM), %	46.1	48.4	57.5	67.9	74.9	57.8
- protein supplement, %	37.9	47.0	30.1	35.5	26.7	34.9
MARKETING METHOS- CALVES						
- sold as weaned calves, %	60.2	58.4	52.8	49.7	44.4	53.4
- sold as preconditioned calves, %	6.8	8.5	9.3	11.3	9.5	9.3
- fed as backgrounders, %	32.5	27.5	32.0	34.4	49.7	33.0
- fed for slaughter, %	16.1	20.1	17.3	16.3	10.4	17.0
- place feeders in custom feedlot, %	8.3	4.0	2.3	1.8	1.8	3.2
MARKETING METHODS- FEEDERS						
- sell as short keep off pasture	27.1	21.9	18.7	28.7	44.1	23.8
- feed to slaughter -sell live/rail	18.4	22.6	20.7	17.8	14.2	19.8

SELLING METHODS						
- local auction market, %	67.8	67.2	75.1	62.3	67.0	70.0
- through dealer, %	12.2	6.7	7.5	13.2	12.7	9.3
- direct to packer, %	9.6	11.0	10.3	8.9	3.6	9.6
- direct to feedlot, %	7.4	4.9	3.5	2.9	8.9	4.4
- farmer to farmer, %	11.1	13.3	12.6	11.1	12.2	12.3

APPENDIX 1. A sample of the 1987/91 Alberta Beef Survey customized by district.