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PRODUCTION OF FALL-BORN VS. SPRING-BORN CALVES

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Range livestock operators in eastern Oregon and much of the western range areas can be classified as either cow-calf or cow-calf-yearing operators. The major reason for each type of operation is the size of calf at weaning. Range forage of eastern Oregon and similar range country matures early with a steady decline in nutritive value thereafter (Cook, Stoddart, and Harris, 1956; Wallace, Rumburg, and Raleigh, 1961; Raleigh and Wallace, 1963; and Raleigh, 1970). Consequently, milk production of range cows and weight gains of their calves are greatly reduced in late summer and fall (Raleigh, 1970). Calf weaning weights are often below 150 kg (Wallace et al., 1962) which is not even a "break even" point for most operators; therefore, these calves are carried over the winter and return to the range the next summer to balance the cost of operation.

Calf weaning weights and percent calves weaned can be increased by improved management, selection, and breeding practices. However, little can be done to improve the quality of forage available to permit calves to gain at their potential. Spring-born calves go on range at about 50 kg and make little direct use of the early season high quality forage. When the calf is old enough to effectively utilize the forage the forage quality and milk production is reduced to a point where the calf derives only a small benefit from it.

Fall calving provides a larger calf to go on forage so the forage can be utilized at peak value. Objectives of these studies were to determine the advantages and disadvantages of fall-calving versus spring-calving.

Experimental Procedure

The fall-calving program was initiated in 1964 by holding 60 cows out of the regular spring-calving herd and breeding in the winter of 1965 to calve in October and November of that year. Additional mature cows and replacement heifers were added to the fall-calving herd each year so that half the herd was converted by 1968. The herds are comparable in age and productive ability.

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Breeding of the spring-calving herd takes place in June and July on a sagebrush-bunchgrass range at Squaw Butte. The breeding pasture is about 800 hectares in size with water hauled and watering at one location at a time. Breeding of the fall-calving herd takes place during January and February on the meadowlands of the Station where the cattle are fed during the winter. Both herds are multiple sired with the same bulls. First-calf heifers in both herds are bred to calve about two weeks before the mature cows. Replacements for the fall herd were picked from the spring herd and vice versa to help assure genetic uniformity between herds. Cows from both the spring-calving and fall-calving herds were pregnancy tested about 90 days after the breeding season and open cows were switched to the other herd for a second chance or culled, depending on the history of the animal.

Both herds received salt and bonemeal supplements at all times, with the spring-calving herd receiving 0.45 kg of cottonseed meal per head daily from February 15 to April 15 each spring. The fall-calving cows were supplemented from parturation to turnout on spring range. Supplements were fed at two levels of energy using various sources of N to give one level of N in the ration (Turner, Raleigh, and Phillips, 1970). From one month of age to weaning calves were creep fed a ration consisting of 40% alfalfa pellets, 40% rolled barley and 20% cottonseed meal, fortified with vitamin A and terramycin, with salt limiting intake during the summer and "hand-fed" during the winter.

Animals from both herds were grazed on native or crested wheatgrass range from turnout in April until September 15 and November 1 for the fall- and spring-calving herds, respectively. Fall-born calves were weaned in late July and spring-born calves in early September.

Results and Discussion

The performance data of spring- and fall-born calves are shown in table 1. The fall-born calves weaned at a significantly ($P < .01$) higher weight than the spring-born calves with weights of 228 and 150 kg, respectively. The weaning age of the fall-born calves was 273 days as compared to 166 for the spring-born calves. Little or no increase in weaning weight can be expected from extending the time of weaning beyond mid-September with cattle on these ranges (Wallace and Raleigh, 1961).

There were no significant differences ($P < .05$) in conception rates of cows in either herd, with averages of 90 and 91% for spring- and fall-calving cows, respectively. However, on the Squaw Butte Station, spring-calving cows are bred on relatively small range pastures. This, combined with good stockwater conditions, means animals are concentrated and higher conception rates are to be expected. Most range livestock operators breed their cattle in larger pastures with rougher terrain and poorer water distribution, and even with extending the breeding season to 90 or 120 days do not get this high rate of conception.

Table 1. PERFORMANCE DATA OF SPRING- AND FALL-BORN CALVES AVERAGED OVER 4 YEARS

Item	Spring calves	Fall calves
Number of calves	507	377
Date of birth	March 30	October 26
Weight when put on range, (kg)	42	137
Average daily gain from birth to time on range, (kg)	0.50	0.60
Average daily gain on range, (kg)	0.74	0.90
Average daily gain from birth to weaning, (kg)	0.65	0.72
Weaning age, (days)	166	273
Weaning weight, (kg)	150	228

The percent of calves weaned was 82 and 85%, respectively, for the spring- and fall-born calves. These figures represent the percent of calves weaned from the total cows that were exposed to breeding. Cows that were culled on pregnancy test, age, cancer eye, or other reasons before weaning were considered as not weaning a calf.

The fall calves took to the creep readily, with about 90% of them on feed after a week of exposure to the creep. The others followed shortly, and it is believed that all the calves in the study were eating from the creeps. Clinical cases of calfhood diseases, such as scours and pneumonia, were minimal in the fall-born calves requiring treatment of less than 1%, whereas, upwards of 10% required treatment in the spring-born calves. There was no evidence that any of the cows had weaned their calves prior to weaning time.

Economics favored the fall-calving herd. Feed costs for wintering the lactating fall-calving cows have ranged from $10 to $18 per animal higher than for the spring-calving cows. The fall calves were creep fed at a cost of $3.75 to $5.50 per calf making a total cost for the cow-calf pair of $13.75 to $23.50 more for the fall calf than for the spring calf. This range in cost is due to the nutritional treatments imposed on the fall-calving herd (Turner et al., 1970). The average increase in weaning weight of the fall calf over the spring calf for the four year's data was 79 kg. With gain valued at 66 cents per kg, a gross return of $52.14 more for the fall calf is obtained, or a net increase ranging from $27.64 to $38.39. Another way to look at the economics is to consider the feed, labor, possible death loss, etc. involved in bringing the 149 kg spring-born weaner calves up to the 228 kg weaning weight of the fall calves. Using an average cost figure of 51 cents per kg, the 79 kg required to bring the spring-born calf weight up to the weight of the fall-born calf will cost $40.29 giving a net increase in feed cost ranging from $16.79 to $26.54.

Summary

Weaning weights, conception data, weaning percentage, disease problems, and other criteria were evaluated from a fall-calving and spring-calving operation at the Squaw Butte Experiment Station.

The fall-calving herd was established by adjusting the breeding dates of the Station cow herd so that half the herd was calved in fall. This transition was made during a three-year period and herds are now as near alike with respect to age, productivity, and other criteria, as was feasible.

Weaning weights were significantly lower ($P < .01$) for the spring-born calves compared to fall-born calves. Spring dropped calves summered on the sagebrush-bunchgrass range, typical of much of the west with respect to quality of forage, and had average weaning weights of 150 kg. Calves born in the fall were able to make better use of the short period of high quality range forage (May-July) than spring-dropped calves and had average weaning weights of 228 kg.

Conception rate, during a 60-day breeding season, averaged 90% for both herds. Disease problems were lower in the fall calves which is reflected by the difference in percent calves weaned. Three percent more calves were weaned from the fall-calving herd than from the spring-calving herd.

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