

FUTURE WORK

The above mentioned measurements will be continued for at least another year. New studies will include an evaluation of *Kochia* tolerance to 2,4-D and burning at different dates. Work will be done on seed characteristics and seeding methods. A 2 acre area has been seeded for testing cattle preference and utilization. The effects of height of clipping will be evaluated in terms of sustained production.

THE EFFECTS OF NUTRITION LEVEL ON THE
PERFORMANCE OF WINTERING COWS

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Wintering cows is one of the most costly phases of beef cattle production. The cost of hay continues to increase as does the cost of energy and labor to harvest and feed this hay. One way to reduce wintering costs would be to feed less hay, but not to the point of reducing the reproductive performance of the cow. Spring-calving cows entering the winter period in good condition can lose some weight without affecting reproductive performance and calf viability.

This study is designed to evaluate the effect of nutrition level on pre-calving and post-calving weight change, days to first post-partum estrus, conception rate, calf birth weight and weaning weight.

EXPERIMENTAL PROCEDURE

This study has been conducted for two winters (1975-76 and 1976-77). The first year's data is complete and the second year's data will be completed in the fall of 1977.

1975-76 TRIAL: Sixty head of pregnant Hereford cows, ranging in age from four to ten years, were allotted by age and weight into three groups of twenty cows each. The treatments were high, medium and low levels of hay which were to approximate 120%, 100% and 80% of the NRC nutrient requirements, respectively, for maintenance of a 1100 pound cow. Cows were group-fed first-cutting alfalfa-grass hay (13% CP) from October 22, 1975 to January 28, 1976. The trial terminated several weeks prior to the calving season. Cows had access to a salt-dicalciumphosphate mixture and fresh water at all times. Initial, 28-day period, and final weights were taken after an overnight shrink off feed and water.

Cows were fed 19 pounds of first-cutting alfalfa-grass hay from the end of the feeding trial until they calved. After calving, cows and calves were moved into another field and were fed 24 pounds of hay until they went on range (May 10, 1976). Marker bulls were used to determine days to first estrus after calving. The bulls were turned with the cows two weeks after calving and estrus was checked daily until the breeding season started. The cows grazed the Hall Ranch during the summer. The calves were weaned and the cows pregnancy tested on September 17, 1976.

1976-77 TRIAL: The feeding trial was conducted the same as the previous year except the cows went on test October 22, 1976 and came off test January 12, 1977.

RESULTS AND DISCUSSION

1975-76 TRIAL: Cow performance data is given in Table 1. During the test period hay intake for the high, medium and low groups was 22.4, 18.7 and 14.9 pounds of hay, respectively. The cows on the high level gained 107 pounds as compared to 38 pounds for the medium and a 31 pound loss for the low level groups. Daily feed costs were 22 cents less on the low level of feed as compared to the high level.

Table 1. Hay intake, winter and summer weights for cows fed at three levels prior to calving during 1975-76

	Treatment		
	High	Medium	Low
Test period (98 days)			
Feed intake, lb	22.4	18.7	14.9
Initial weight (10-22-75), lb	1129	1118	1139
Final weight (1-28-76), lb	1236	1156	1108
Weight change, lb	+107	+38	-31
Cost of feed/hd/day, \$.67	.56	.45
Calving and breeding period (103 days)			
Spring weight (5-10-76), lb	1058	1034	1030
Weight change, lb	-178	-122	-78
Range period (129 days)			
Weight at weaning (9-17-76), lb	1227	1201	1200
Weight change, lb	+169	+167	+170

The cows fed at the high level lost 100 pounds more than the cows fed at the low level (-178 vs -78 pounds) and the cows fed the medium level lost 122 pounds from the end of the test period until the cattle went on range. Summer weight gains for the three groups were similar.

The performance of the calves from cows fed at the three levels are given in Table 2. Birth weight and suckling gains of calves were similar for all three groups. The average age of the calves was within 10 days of each other between treatments.

Table 2. Calf weight and average daily gain as influenced by dam's treatment in the 1975-76 trial

	Dam's treatment		
	High	Medium	Low
	lb	lb	lb
Birth weight	94	91	89
On-range weight (5-10-76)	182	176	186
Days from birth to 5-10-76	58	56	66
Average daily gain	1.52	1.52	1.47
Weaning weight (9-17-76)	496	482	490
Average daily gain	2.43	2.38	2.41

The number of days from calving to first estrus was similar among the three groups, with conception rate being 85% on all treatments. From the limited data presented it would appear that cows can be fed at about 80% of NRC several weeks prior to calving with no adverse effects on reproductive performance, providing cows are in adequate condition coming into the winter and are fed to meet their nutritional requirements prior to and after calving.

1976-77 TRIAL: The hay intake and performance of cows during the test period are shown in Table 3. The intake for the cows on the three treatments was 20.2, 16.8 and 13.4 pounds of hay for the high, medium and low groups respectively. Weight change for the high, medium and low groups was 72, 14 and -54 pounds respectively. These weight changes are closer to the expected performance than last year.

The cost of feed per cow daily on the low level was 21 cents less than for the high level (Table 3). Over a 100-day period this would amount to \$21 per cow or \$2100 for 100 cows. Feeding 100 cows for 100 days at the low level rather than the high level would save 34 tons of hay or 50 more cows could be fed on the same amount of hay.

Table 3. Intake and cow performance for the 1976-77 trial

	Treatment		
	High	Medium	Low
	lb	lb	lb
Initial weight (10-20-76), lb	1127	1123	1123
Final weight (1-12-77), lb	1199	1137	1069
Weight change, lb	72	14	-54
Hay intake, lb	20.2	16.8	13.4
Cost of feed/hd/day ¹ , \$.61	.50	.40

¹ Alfalfa-grass hay @ \$60 a ton.

PARAQUAT PLUS MEADOW EQUALS WINTER GRAZING

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Chemical curing of grasses is a potential alternative method of haying some of our flood meadows. Currently, this method, using Paraquat has not been approved by the Environmental Protection Agency. Clearance for this use, however, is being sought, but the outcome is uncertain.

Paraquat (1,1' dimethyl - 4,4' bipyridinium bis (methylsulfate), is a nonvolatile, moderately toxic chemical used as a contact herbicide and crop dessicant in many areas of modern agriculture throughout the world. As a chemical for curing grasses, it is the rapid dessicating action that is important. Drying the plant rapidly prevents the nutrients in the herbage from being translocated. As long as the crop treated is not subjected to numerous heavy rains, which will leach some nutrients, the forage quality can be retained in the standing crop for 6 to 8 months with only minor losses. Thus, chemical curing is ideally suited to those haylands within the semiarid region where summers and falls are dry. These haylands occur throughout the area bounded by the Rockies on the east and the Cascade-Sierra Nevadas on the west and extend from northern Arizona to central Washington.

Research on chemical curing at the Squaw Butte Experiment Station began in 1960. Initially, and in the following 10 years, the studies concentrated on the curing of desert grasses for late season grazing. Results of those studies were published. With the cost of labor, machinery, and fossil fuel driving the cost of haying to exceptional high levels in the earlier 1970's, we diverted the research effort to the meadows. This report summarizes the results of studies conducted in 1974 through 1976.