

## **BREEDING YEARLING HEIFERS**

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Many studies have shown returns are increased by breeding yearling heifers to calve for the first time at 2 years of age. Generally this is a sound recommendation, but it requires that replacement heifers are "grown-out" after weaning. They will need to reach puberty and start cycling by 12-14 months of age, which is attainable if heifers are fed adequately over their first winter.

It is common for calves to lose weight after weaning and not start gaining until new forage appears the following spring or summer. This results in breeding replacement heifers to calve first when they are approximately 3 years of age. Under these conditions, the rancher has two alternatives if he wants to breed heifers as yearlings:

- 1) provide supplemental feed on range after weaning replacement heifers,  
  
or
- 2) place them in a drylot environment and provide adequate feed to ensure puberty by 12-14 months of age.

This report summarizes the results of a study designed to evaluate the effects of supplemental feed for replacement heifers under range conditions, and discusses potential benefits of a drylot system.

## **PROCEDURES**

For more than a quarter of a century, The University of Arizona has had a cooperative research project with the San Carlos Apache Tribe's registered Hereford herd at Arsenic Tubs. The heifers used in this study were from this project. The general range area is at an altitude of 5,000 feet with forage consisting primarily of desert grassland vegetation. Annual rainfall averages about 14 or 15 inches with most of it occurring during the summer months of July and August. Temperature extremes may range from -10 F in January to 95 F in July.

At weaning time (October 6) the replacement heifers were divided into three groups of approximately 60 head each on the basis of weight. One group was maintained as a control with no supplemental feed and the other two groups were fed a high energy supplement to gain either 0.5 lb. (low) or 1.0 lb. (moderate) per day until the beginning of the breeding season (May 1). The supplement consisted of 65 percent milo, 25 percent cottonseed meal, 6 percent molasses, 1.5 percent dicalcium phosphate, 1.5 percent urea, 1 percent salt and vitamin A. It was prepared in 3/4-inch pellets and fed on the ground three times per week.

The .5 and 1.0 lb. gain-per-day levels were selected to determine the minimum weight (gain) required to breed yearling heifers successfully. The moderate-gain group would result in heifers weighing an average of 600 lbs. at the beginning of the breeding season. Weights were taken several times during the experiment and feed level adjusted in an attempt to obtain the desired rates of gain. All heifers were exposed to bulls for a 90-day breeding season beginning on May 1.

## RESULTS

Heifers receiving supplemental feed were weighed four times during the wintering period; the controls were weighed twice. One of the major difficulties encountered in this study was maintaining the desired rate of gain (Table 1). Although feed levels

group. The greatest difference between actual and desired rate of gain occurred in the moderate group, even though feed levels were increased to almost 8 lbs. per heifer daily in this group from January 26 until the end of supplementation (April 23). Other studies have shown that providing supplemental feed to range cattle results in a decrease in grazing activity and intake of range forage.

**Table 1. Gain, Feed Levels and Reproductive Performance.**

Items	Control	Projected Gain Group	
		0.5 lb.	1.0 lb.
Number Heifers	61	60	61
Weaning Weight (10-6)	396	396	400
Feed Level and Gain (by period):			
11-17 Avg. Da. Gain, lb.		.41	.79
Avg. Da. Feed, lb.		2.70	2.70
12-21 Avg. Da. Gain, lb.	0.28	.21	.64
Avg. Da. Feed lb.		3.50	4.60
1-26 Avg. Da. Gain, lb.		.40	.33
Avg. Da. Feed, lb.		5.00	6.60
3-23 Avg. Da. Gain, lb.	-.11	0.60	0.83
Avg. Da. Feed, lb.		5.10	7.90
Total Avg. Da. Gain, lb.	-.21	0.43	0.66
Avg. Da. Feed, lb.		4.20	5.60
Total Feed/Heifer		701	946
Cwt. Feed/Cwt. Gain		974	843
Weight, 3-23	361	468	513
Number Exposed to Bull	27	55	59
Number of Live Calves	0	17	32
Percent Calving	0	30.9	54.2
Weaning Rate, Percent			
of Total	-	20.0	35.6
of Those Calving	-	64.7	65.6
Weaning Weight	-	352	336
Total Supplement (lb.)/ 100 lb. Calf Weaned	-	942	747

This would certainly seem to be the case in this study. The amount of pellets required per cwt. gain would indicate that practically all of the nutrient intake was being derived from the supplement.

No additional weights were taken after March 23, although supplemental feeding continued for another month (to April 23). Heifers weighing 400 lb. or more in March were exposed to bulls from May 1 to July 1. The actual numbers exposed were: controls, 27; low gain, 55; moderate gain, 59. None of the control heifers conceived during the breeding season, whereas 30.9 percent and 54.2 percent of the low and moderate groups conceived. Approximately one-third of the pregnant heifers lost their calves at birth or shortly thereafter, primarily due to calving difficulty. This resulted in a very low percent calf crop weaned for the supplemental group (20.0 percent for the low and 35.6 percent for the moderate). Based on the amount of supplement fed, it required approximately 800 lb.

were increased after each weigh period, the actual gains obtained by March 23 were 0.43 lb/day in the low group and 0.66 lb/day in the moderate

of feed to produce 100 lb. of calf at weaning time. Using 1984 prices, this would be roughly \$80-\$90 per 100 lb. calf at weaning time.

The system for growing-out heifers on the range used in this study was not effective. The biggest problem was maintaining the desired rate of gain with a reasonable amount of supplemental feed. Perhaps other methods of providing supplement would have been more effective, but any system used must address the problem of reduced grazing activity.

It may be more efficient to grow-out heifers after weaning under drylot conditions if they are to be bred at 12-14 months of age. This system has several potential advantages for Arizona ranchers grazing public lands. Heifers could be grown-out and bred while in drylot, and only those replacements that conceived would be returned to the cow herd. A short, 45-day breeding season starting approximately

one month in advance of the normal breeding season will assure that replacements would produce early calves and have additional time to re-breed for their second calf.

This system would also permit the use of estrus synchronization and artificial insemination to bulls with proven records for calving ease, as well as enable ranchers to gradually phase into a crossbreeding system if they desired to do so. Finally, there would be a reduction in Animal Units charged against the allotment, thereby reducing grazing pressure on the range during the critical winter and early spring months. Obviously, these potential advantages would have to offset the costs of feeding and breeding replacements under drylot conditions.

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