

EVALUATION OF WHEAT FORAGE IN WINTERING PROGRAMS FOR COW-CALF OPERATIONS--YEAR 2

K.L. Apple¹, K.S. Lusby², A.L. Hutson³, Lloyd Ely⁴ and George Provence⁵

Story in Brief

From November 18 to March 8, 106 beef cows and their calves were used to compare (1) alternate day grazing of cows on wheat pasture with calves having continuous access to wheat pasture, (2) dry wintering of cows on dormant bermuda-native pasture with calves having continuous access to wheat pasture or (3) cows and their calves wintered on dormant bermuda-native pasture with no creep provided to calves. All cows and calves grazed native range pastures from April 25 to weaning on July 9. From November to weaning, calves from Treatment 1 gained 32 lb more than Treatment 2 and 120 lb more than Treatment 3. The total advantage in weaning weight for creep grazing (Treatment 2 minus Treatment 3) was 88 pounds. Treatment 1 had a \$37.30 advantage per cow over Treatment 2 and a \$109.95 per cow advantage over Treatment 3 when wintering costs and the value of additional gain were combined until March 8. The grazeout period after March 8 was not an economical use of wheat pasture. In conclusion, alternate day grazing of cows and permitting free access of their calves to wheat can be an economical method of wintering a cow herd.

(Key Words: Wheat pasture, Creep, Beef Cows.)

Introduction

Wheat pasture has long been recognized as an extremely high quality forage that is suitable for rapidly gaining stocker calves. It has been assumed that beef cows, having large daily forage intakes and lower nutrient requirements on a percentage basis would waste much of the nutrient content of wheat forage if permitted to graze wheat pasture full time. As a result, various programs such as grazing cows on wheat forage one day in two or three or only allowing calves access to wheat forage through creep gates have been suggested to more efficiently utilize wheat forage with cows. Unfortunately, many of

¹Area Livestock Specialist ²Professor ³Area Agricultural Economics
Specialists ⁴Ranch Owner ⁵County Extension Director

these recommendations are not supported by controlled research. The objective of this study was to compare traditional wintering of fall-calving cows and their calves on dormant native range with protein supplementation with alternate day grazing of wheat pasture or traditional wintering of cows with calves permitted access to wheat forage through creep gates.

Materials and Methods

One hundred and six Hereford and Hereford x Angus cows and their calves were used to evaluate the value of wheat pasture for complementing native range for fall-calving cows. The study was conducted on a ranch near Duncan in south central Oklahoma. Cows calved from early September to late October. Treatments were (1) cows alternately grazed one day on wheat pasture and one day on dry bermudagrass-native pasture with free-choice wheat straw in round bales. Calves of these cows had continuous access to wheat via creep gates; (2) cows were wintered on dormant bermudagrass-native pasture and fed 4 lb/day of a 39% crude protein supplement. Calves had continuous access to wheat pasture via creep gates; and (3) cows and their calves wintered on dormant bermudagrass-native pasture with no creep provided to calves. Data were analyzed for three periods: November 18 to March 8, at which time cattle could be removed to permit harvest of wheat, and a graze-out period from March 8 to April 25. All cows and calves grazed in a common native range pasture from April 25 to weaning on July 9.

Cows were randomly allotted to treatments in September before calving. Cows were then grazed on three similar native grass pastures during the calving season. Cows and calves were gathered off pasture and calves were individually identified with an ear tag, and weighed unshrunk on November 19, 1990. Cows were not weighed. Steer calves were implanted with Synovex C (Syntex) on November 19. Calves were again weighed unshrunk and reimplanted on March 8.

Data were analyzed using the GLM procedure of SAS (1985). The final model included treatment, calf breed, calf sex, initial calf weight and two-way interactions.

Results and Discussion

This was the second in a series of studies at this ranch. Results of the first study were reported by Apple et al. (1991). Therefore, the study reported here will be referred to as Year 2 and the study conducted the previous year will be referred to as Year 1. Calf weights at the start of Year 2 on November 13 were about 170 lb (Table 1) and similar to weights at the start of Year 1. By chance, calves allotted to Treatment 1 happened to weigh about 25 lb less than calves

Table 1. Performance of calves from November 18 to March 8 and to April 25 when wintered on wheat, creep graze-out on wheat or wintered on dry grass.

| | Treatments | | |
|----------------------|------------------------------|--------------------------|--------------|
| | 1 | 2 | 3 |
| Cows | Wheat pasture alternate days | Native range | Native range |
| Calves | Wheat pasture continuous | Wheat pasture continuous | Native range |
| No. of Pairs | 55 | 27 | 24 |
| Calf Wt., lb | | | |
| 11-18-90 | 162 | 186 | 188 |
| 03-08-91 | 342 | 346 | 273 |
| 04-25-91 | 453 | 453 | 378 |
| 07-09-91 | 598 | 590 | 504 |
| Calf daily gain, lb | | | |
| 11-18-90 to 03-08-91 | 1.65 | 1.47 | .81 |
| 03-08-92 to 04-25-91 | 2.31 | 2.23 | 2.18 |
| 04-25-91 to 07-09-91 | 1.93 | 1.83 | 1.68 |

a,b Numbers on a line with different superscript letters differ ($P < .05$).

from Treatments 2 and 3. Although not individually weighed or scored for condition, cows were estimated by trained observers to be in an average condition score of 5. Compared to Year 1, growing conditions for wheat forage were less favorable resulting in poorer weight gains of cattle grazing wheat during the winter.

From November to March, calves from Treatment 1 in which both cows and calves had access to wheat forage gained .18 lb/day more ($P < .05$) than calves from Treatment 2 in which calves creep grazed wheat pasture but cows were dry wintered. It is likely that the increased gain by Treatment 1 calves represented increased milk production by the cows grazing wheat. The increased calf gain for Treatment 1 compared to Treatment 2 during this period was similar to the difference observed in Year 1 (.23 lb/day).

The value of creep grazing wheat can be estimated by comparing gains of calves from Treatments 2 and 3. Treatment 2 calves that creep grazed wheat gained .66 lb/day faster ($P < .05$) than calves dry wintered with their dams. Because Treatments 1 and 2 were represented in both Years 1 and 2, the value

of creep grazing wheat can indirectly be compared to more traditional milled creep feed. In Year 1, calves from Treatment 3 were fed a 20% protein creep feed that was limit-fed at a rate of 2 lb/day with salt. In Year 1, calf gains from November to March were similar for calves creep grazed on wheat and calves fed limited 20% protein creep. It can be inferred then, that the value of creep grazing wheat is approximately equal to feeding 2 lb/day of 20% protein creep feed. Both programs appear to add about 75 lb weight to calves during the winter.

During the period of March 8 to April 25, Treatment 1 calves tended to gain faster than calves from Treatment 2. However, calves from Treatment 3 gained only slightly less than calves from Treatment 2, suggesting that dry wintered calves were able to graze sufficient winter annuals to match intake of calves with access to wheat forage. Very warm but dry weather during the graze-out period resulted in little growth of wheat forage and termination of the graze-out period 2 to 3 weeks earlier than normal. As a result, the quantity of green annual forages available to calves in the native range pastures probably equaled the availability of wheat forage to creep-grazed calves. The value of creep grazing during the graze-out period is being further evaluated in Year 3 of the study.

Calves of cows from Treatment 1 continued to gain about .1 lb/day faster ($P < .05$) than calves from Treatment 2 during the period from April 25 to weaning on July 9 during which all cattle were grazing native range. This suggests that the additional milk production from Treatment 1 cows that grazed wheat during the winter carried over after cows were no longer grazing wheat forage. While one might expect some compensatory gain when calves from Treatment 3 began grazing early summer native forages, these calves gained the slowest during this period.

When calf gains from November through weaning are considered, calves from Treatment 1 had an 32 lb advantage over calves from Treatment 2 and a 120 lb advantage over calves from Treatment 3. The total advantage in weaning weight for creep grazing (Treatment 2 minus Treatment 3) was 88 pounds. These data show that additional nutrients provided to fall-born calves maintained with their dams on dormant native grass result in large increases in weaning weight. The major portion of the added benefit appears to be achieved before March at which time cattle could be removed from wheat to permit grain harvest. There appears to be no compensatory gain during the spring and early summer for poor gains during the winter. With two years of data, it appears that returns can be increased for the cow-calf producer who has wheat pasture available as a winter feed source for cows and calves.

When utilizing wheat pasture with cows and calves, the producer needs to be aware of costs and returns for two periods of time; the period until the normal time for removal of cattle from wheat for harvest and the grazeout period. As was the case in Year 1 of this study, the use of wheat pasture from November until March 8 decreased costs and increased weaning weights.

Table 2. Costs and returns analysis.

| | Treatments | | |
|--------------------------------------|---------------------------------|-----------------------------|----------------------|
| | 1 | 2 | 3 |
| Cows | Wheat pasture alternate days | Native range | Native range |
| Calves | Wheat pasture continuous | Wheat pasture continuous | Native range |
| Winter Costs 11-18-90 to 03-08-91 | | | |
| Native Pasture | \$10.59 ^a | \$23.98 ^b | \$23.98 ^b |
| Wheat Pasture | 60.00 ^c | 10.00 ^d | ----- |
| 39% Supplement | ----- | 47.96 ^e | 47.96 ^e |
| Total Winter Cost | \$70.59 | \$81.94 | \$71.94 |
| Graze-Out Costs 03-08-91 to 04-25-91 | | | |
| Native Pasture | \$4.22 ^a | \$10.56 ^b | \$10.56 ^b |
| Wheat Pasture | 53.57 ^f | 12.50 ^g | ----- |
| 39% Supplement | ----- | 17.60 ^e | 17.60 ^e |
| Total Graze-Out Costs | \$57.79 | \$40.66 | \$28.16 |
| Additional wt. gain, lb ^h | | | |
| 11-18-90 to 03-08-91 | +95 | +75 | ----- |
| 03-08-91 to 04-25-91 | +6 | +2 | ----- |
| 04-25-91 to 07-09-91 | +19 | +11 | ----- |
| Total Added Gain | +120 | +88 | ----- |
| Value of Added Gain ^{i,j} | | | |
| 11-18-90 to 03-08-91 | \$108.60 | \$82.65 | ----- |
| 03-08-91 to 04-25-91 | \$6.73 | \$1.92 | ----- |

^a Native pasture charged at 4 acres/cow @ \$80/yr. \$.088/day.

^b Native pasture charged at 10 acres/cow @ \$80/yr. \$.22/day.

^c Wheat pasture valued at \$60 per acre until March.

^d Wheat pasture valued at \$60 per acre until March, stocked at 6 calves/acre.

^e 39% protein supplement @ \$220/ton, 4 lbs/day.

^f Wheat pasture valued at \$75 per acre from March through graze-out.

^g Wheat pasture valued at \$75 per acre from March through graze-out, stocking rate 6 calves/acre.

^h Computed from lowest treatment to highest treatment.

ⁱ Avg. of 5-6 & 6-7 steers & 5-6 heifers for July 1991 (\$100.08 steers \$92.14 heifers = \$96.11).

^j Additional gain after 4-25-91 prorated between first 2 periods.

Treatment 1 had a \$37.30 advantage per cow over Treatment 2 and a \$109.95 per cow advantage over Treatment 3 when wintering costs and the value of additional gain were combined until March 8 (Table 2). The cost of wheat pasture was more than offset by the value of added gain and to a small extent, reduced wintering costs.

The grazeout period after March 8 did not prove to be an economical use of wheat pasture. Although gains were improved, costs also increased (Table 2). When costs from March to April 25 and calf weight gain were combined for this period, Treatment 1 had a \$12.32 per cow loss over Treatment 2 and a \$22.90 loss compared to Treatment 3. No attempt was made to determine if the grazeout acres could have been harvested or if the acres could only have been used for haying or grazing. A different value could be assigned to the grazeout acres based on the producer's options for use.

There are other issues that need to be addressed when using wheat pasture for wintering the cow herd. Although rebreeding performance was not evaluated in this study, less than 6 percent of cows used failed to calve the following fall, suggesting that rebreeding efficiency was high on all treatments. Data from the first two years of this study suggest that alternate day grazing of cows and permitting free access of their calves to wheat by creep grazing can be an economical method of wintering a cow herd.

Literature Cited

- Apple, K.L. et al. 1991. Evaluation of wheat forage in wintering programs for cow calf operations. Oklahoma Ag. Exp. Sta. Res. Rep. MP-134:167.