Preliminary report: DISTILLERS GRAINS AS A SUPPLEMENT FOR WHEAT PASTURE STOCKERS AND A REPLACEMENT FOR CORN IN FINISHING DIETS: I. GRAZING PERFORMANCE, YR 1

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Summary

A two yr study is in progress to evaluate the use of dried distillers grains (DDG) during the growing and finishing phases on cattle performance, carcass traits, and meat composition. The growing phase of yr 1 of the study has been completed and preliminary data analyzed. Sixty Hereford steers were randomly assigned to one of 15 wheat pastures. Pastures were blocked and supplement treatments were assigned. Treatments were 1) Control (CON)- monensin-containing mineral supplement only, 2) Dry rolled corn (DRC)- dry rolled corn offered at 0.5% of body weight daily in addition to mineral, and 3) Dried distillers grains (DDG)- dried distillers grains offered at 0.5% of body weight daily in addition to mineral. By design, initial weight was similar among treatments ($P = 0.37$). Final weight was greater ($P \leq 0.12$) for DDG-fed steers compared to CON and DRC-fed steers. Likewise, ADG was greater ($P \leq 0.14$) for DDG-fed steers than CON steers and DRC-fed steers.

Introduction

The recent increase in the ethanol industry has resulted in an increase in the availability of distillers grains, a nutrient rich co-product of ethanol production. Previous and current research has primarily focused on the use of distillers grains in finishing diets. Furthermore, little is known about the use of DDG as a supplement for high-quality forages and effects of long-term (growing and finishing) use of DDG on animal performance, carcass traits, and meat composition. In order to further characterize production responses and applications in the cattle industry, objectives of this research are to 1) determine performance responses to DDG when used as a supplement to winter wheat pasture, 2) determine performance responses and carcass characteristics when DDG replaces steam-flaked corn in finishing diets, and 3) determine overall performance and carcass responses as affected by use of DDG from beginning of the growing phase through finishing. The following is a preliminary report on the first year of wheat grazing.

Experimental Procedures

This study is being conducted at the Texas AgriLife Research – Texas A&M System facilities at Bushland, Texas. Hereford steer calves (n = 60; BW = 414 lb) of known parentage were purchased from a single ranch to determine effects of using DDG in the growing and finishing phases on animal performance, carcass characteristics, and meat composition. Fifteen 5.5 ac wheat pastures were assigned to five blocks of three pastures and stocked with four steers per pasture. Within each block pastures were assigned to each of three treatments: 1) Control (CON)- monensin-containing mineral supplement only, 2) Dry rolled corn (DRC)- dry rolled corn offered at 0.5% of body weight daily in addition to mineral, and 3) Dried distillers grains (DDG)- dried distillers grains offered at 0.5% of body weight daily in addition to mineral. Composition of the DRC and DDG are shown in Table 1.

The steers had been weaned in late October/early November, preconditioned, and grazed on dormant native rangeland until arrival on January 17. Upon arrival at our facility, the steers were revaccinated for viral and Clostridial diseases and implanted with Ralgro. Individual weights were recorded and ultrasound estimates of external fat and intramuscular fat were collected. Wheat pasture grazing began on January 22. Full BW was measured every 28 d. Supplements were hand-delivered 6 d/wk for the duration of grazing. Amount of supplement offered was re-calculated every 28 d to account for increases in BW. Grazing was terminated when forage availability in a pasture in a block was deemed inadequate by visual assessment. At that time, all cattle within a block of pastures were removed. Data from the first year of wheat grazing were analyzed as a randomized complete block using the mixed model procedures (PROC MIXED) of SAS (SAS Inst. Inc., Cary, NC) with treatment as the main effect, block as the random effect, and pasture serving as the experimental unit.

Results and Discussion

Across blocks, steers grazed the wheat pastures for 105 days. Gain for the unsupplemented steers was exceptional exceeding 3.0 lb/d. Because of limited fall precipitation, forage accumulation was delayed and grazing was not initiated until late January. From January until the termination of grazing, the weather was relatively mild and dry. This in combination with the background of the steers contributed to the exceptional gains. Actual supplement intake was lower than targeted. All supplement groups were slow to consume supplements early in the trial;

however an interesting observance was that the DDG groups consumed supplement more readily and consistently throughout the trial compared to the DRC groups. Daily gain was increased by supplement treatment ($P \leq 0.14$; Table 2). Gains were greater for DDG-fed steers than CON and DRC-fed steers. However, gain was not different for CON and DRC groups. Supplement efficiency (lb gain added by supplementation per lb supplement) was 0.05 and 0.14 for DRC and DDG respectively (Table 2).

Responses to supplements were similar to results from other grazing trials (Horn et al., 1995; MacDonald et al., 2006; Morris et al., 2006; Corrigan et al., 2007) with similar supplementation rates. The different responses to DRC and DDG possibly reflect differences in the starch, digestible fiber, and undegradable protein composition of DRC and DDG and accompanying influences on forage digestion, intake, and intestinal protein supply. However, Horn at al. (1995) and Cravey et al. (1992) reported that gain response and forage consumption on wheat pasture were not different for high starch and high digestible fiber supplements. In addition, supplementing undegradable protein to stockers on wheat pasture has not proven beneficial (Horn et al., 2005).

Implications

Exceptional performance by the steers may have limited the potential to improve performance with supplements. Under the conditions of this initial yr of study, the feed-only breakeven price (maximum feasible feed price) for corn DDG would have been less than $220/ton using the observed supplement efficiency and assuming a value of $0.80 per lb of weight added by the DDG supplement.

Literature Cited

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Table 1. Chemical composition of supplements.

Nutrient[a]	**Dry Rolled Corn**	**Dried Disillers Grains**
Crude protein, %	9.7	32.6
NDF, %	10.0	31.4
Crude fat, %	4.3	11.3

[a]Values reported on DM basis

Table 2. Effects of stocker supplementation on performance.

Item	**CON**[1]	**DRC**	**DDG**	**SEM**	***P***
Initial BW, lb	421	415	414	3.78	0.37
Final BW, lb	748 [a]	755 [a]	779 [b]	14.85	0.12
ADG, lb	3.06[a]	3.17[a]	3.40[b]	0.10	0.10
Supplement intake, lb/hd/d	-	2.5	2.6	-	-
Supplement efficiency[2]	-	0.05	0.14	-	-

[1]Experimental treatment; CON = control; DRC = dry rolled corn; DDG = dried distillers grains

[2] lb of gain added by supplementation per lb of supplement consumed

[a,b] Unlike superscripts differ