

Level of whole corn or corn gluten on performance of F-1 (HxB) steers stocked on Tifton 85 bermudagrass and subsequent feedlot and carcass traits

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Application: Supplementation on Tifton 85 bermudagrass of F-1 (Hereford x Brahman) steers and subsequent feedlot-carcass traits offers management strategy options for continuous ownership through the stocker or feeder stage.

Introduction: The objectives of this 2-year study were to document the effects of the level of whole corn (Year 1) and corn gluten (Year 2) on performance of F-1 (HxB) steers on Tifton 85 bermudagrass, and subsequent performance in feedlot and carcass traits.

Materials and Methods: In each of 2 consecutive years, 2020 and 2021, F-1 (HxB) steers (1-steer = 600 lb BW) were stocked at 4.3 hd/ac on Tifton 85 bermudagrass from June 2 to Oct 7 (2020) and from July 21 to Oct 20 (2021). Pastures received 300 lb/ac 21-8-17 (63-24-51; N-P₂O₅-K₂O) for hay harvest followed by 3 applications of 68-0-0 for a total pasture-grazing allotment of 219-0-0 in 2020. In 2021, 2 applications of 68-0-0 were applied for a total pasture-grazing allotment of 136-0-0.

In Year 1, steers received daily levels of group-fed 0, 0.3%, and 0.6% BW whole corn. In Year 2, steers received daily levels of group-fed 0, 0.4%, and 0.8% BW corn gluten. Steers were weighed at initiation of stocking, at 28-day intervals, and at termination. Body condition scores (BCS) were taken at initiation and termination. At termination of stocking in Year 1 steers were transported to a Central Texas feedlot and to an abattoir in South Texas at finish. In Year 2, feedlot and abattoir changes were required, and steers were shipped to a West Texas feedyard and nearby abattoir. Carcass traits were taken by skilled, trained meat scientists.

Results: In Year 1, F-1 steers showed an increase in ADG and body weight with daily supplementation of 0.6% whole corn (Table 1). In Year 2, steers had greater ADG, BCS, and gain per acre from daily supplement of 0.8% corn gluten pellets (Table 2). With feedlots located about 400 miles apart in Year 1 and Year 2, days on feed were different to reach the desired backfat end point of at least 0.5" (Table 3). Although ADG was much greater at Feedlot 2, carcass traits did not differ between feedlots/years or supplement treatments, except for marbling and quality grade.

Conclusions and Implications: Supplementation of whole corn and corn gluten promoted ADG of F-1 steers stocked at more than 4 hd/ac on Tifton 85 bermudagrass pastures. Level of either energy- or protein-based supplementation on pasture had small to no effects on feedlot performance or carcass traits. The Quality Grades of 700 indicated USDA Choice. With 2025 cost of N at approximately \$.70 per lb, 150 lb N/ac fertilizer cost is about \$100 to \$120/ac. With about 1000 lb steer gain per acre, the N fertilizer cost per lb gain ranged from \$0.10 to \$0.15/lb gain.

Table 1. Level of whole corn on performance of F-1 (HxB) steers stocked on Tifton 85 bermudagrass (Year 1).

Pasture Performance	Whole Corn ¹ (% BW)		
	0	0.3	0.6
ADG (lb/d)	2.18 b ²	2.42 ab	2.57 a
Off Pasture Wt (lb)	874 a	893 a	906 a
Off Pasture BCS	5.5 a	5.6 a	5.8 a
Gain / Ac ³ (lb)	997 a	1049 a	1155 a

¹ Daily level of whole corn group-fed as % BW (body weight) of the group.

² Numbers in a row followed by a different letter differ at $P < 0.05$.

³ Body weight of 1 stocker = 600 lb.

Table 2. Level of whole corn on performance of F-1 (HxB) steers stocked on Tifton 85 bermudagrass (Year 2).

Pasture Performance	Corn Gluten ¹ (% BW)		
	0	0.4	0.8
ADG (lb/d)	1.93 b ²	2.24 b	3.21 a
Off Pasture Wt (lb)	842 b	869 ab	942 a
Off Pasture BCS	5.0 b	5.3 b	6.0 a
Gain / Ac ³ (lb)	925 b	1005 b	1348 a

¹ Daily level of corn gluten pellets group-fed as % BW (body weight) of the group.

² Numbers in a row followed by a different letter differ at $P < 0.001$.

³ Body weight of 1 stocker = 600 lb.

Table 3. Feedlot performance and carcass traits for F-1 (HxB) steers receiving supplement on pasture and finished at two different feedlots.

Carcass Trait	Feedlot-Year 1 ¹			Feedlot-Year 2 ²		
	Whole Corn (%BW)			Corn Gluten (%BW)		
	0	.3	.6	0	.4	.8
Days on Feed	241	241	241	181	181	181
Off-Feedlot Wt (lb)	1549 a	1612 a	1597 a	1503 a	1544 a	1583 a
Feedlot ADG (lb/d)	2.83 a	3.10 a	2.81 a	3.93 a	4.02 a	3.85 a
Hot Carcass Wt (lb)	928 a	966 a	957 a	899 a	924 a	947 a
Backfat (in)	0.67 a	0.75 a	0.65 a	0.60 a	0.67 a	0.68 a
Rib Eye Area, (in ²)	13.73 a	13.79 a	13.49 a	13.83 a	13.94 a	14.00 a
Predicted Yield Grade	3.91 a	4.12 a	3.67 a	3.40 a	3.63 a	3.69 a
Marbling Score	458 a ³	511 a	429 a	416 b	489 a	423 b
Quality Grade	717 a	737 a	710 a	707 b	731 a	709 b

¹ Feedlot and Abattoir located in South Texas

² Feedlot and Abattoir located in West Texas

³ Numbers in a row within a Feedlot-Year followed by a different letter differ at $P < 0.01$.