Factors Influencing Performance of Growing Beef Cattle Consuming Bermudagrass Forages

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INTRODUCTION

The southeastern region of the United States has the resources available for the development of a viable stocker cattle enterprise. These resources include a relatively large supply of weaned calves and a warm climate with adequate rainfall conducive for production of warm-season perennial forages.

Bermudagrass is a perennial grass that grows during the warm-season. In the Coastal Plains region of the southeastern United States, improved bermudagrass varieties such as Coastal will produce more digestible protein and carbohydrate per acre than any other forage crop that can be grown. Coastal is well adapted to the relatively infertile, sandy, acid, upland soils typical of the region. Coastal is a deep rooted plant that remains productive, if it is properly fertilized and managed, during the short-term summer droughts that are typical of the region.

Many producers are reluctant to incorporate stocker grazing systems into their enterprise due to relatively low rates of gain achieved by growing cattle grazing warm-season perennial grasses. Therefore, factors that influence animal performance on bermudagrass forages will be discussed.

APPLIED MANAGEMENT PRACTICES FOR GRAZING BERMUDAGRASS

The stocker phase of beef production begins when a calf is weaned and ends when the calf is old and big enough to use feed efficiently and fatten in the feedyard. The only reason for owning stocker cattle is to let them age and grow. Time is necessary for aging. Feed in excess of the amounts required for body maintenance must be provided to produce growth or weight gain. Growth must be kept reasonably high if owning stocker cattle is to be profitable.

The amount of digestible protein and carbohydrate required to produce 1 lb of gain is the same regardless of whether cattle are fed stored feed or grazed forage. Once grain or forage is harvested and properly stored, the digestible protein and carbohydrate content changes very little and day to day nutrient intake management is rather simple. Conversely, the digestible protein and carbohydrate available from grazing actively growing forages is not constant. It varies in response to changes in moisture, temperature, season, available plant food, and plant maturity. Day to day nutrient intake management for actively growing forages is more difficult and often more critical.

If animal gain is to be kept reasonably high, every bite of forage that growing cattle eat must be as high in digestibility as possible. The forage remains in the rumen until physical and bacterial digestion breaks it down enough to pass on into the remainder of the digestive tract for chemical digestion. When grazed forage is high in digestibility, it will pass through the rumen more quickly and allow for increased forage intake. If the forage is low in digestibility, it must remain in the rumen longer and the animal will eat less forage. Rumen capacity is much smaller in stocker calves and yearlings than in cows, therefore a rapid rate of passage of forage is more critical with young cattle than with mature cattle.

The goal of managing bermudagrass should be to allow the cattle to continuously consume forage that will pass through the digestive tract rapidly. This goal requires that the manager understand that the bermudagrass plant matures and becomes low in digestibility at a rapid rate.

Three factors that relate to the physiology of bermudagrass forage digestibility are discussed. Knowledge of these factors will contribute to optimizing animal performance on bermudagrass forages.

Digestibility will never be higher than it is the first day a new bermudagrass tiller grows. On that day, it will usually exceed 70%. As the tiller grows older, forage digestibility decreases. Each 1% decrease in digestibility will result in an estimated 5% decrease in animal performance.

Young, growing leaves are more digestible than old leaves and stems. Stems that produce seedheads are less digestible whether ungrazed or partially grazed, and cattle that are forced to eat forage low in digestibility will not exhibit a high growth rate. The reproductive stems are very low in digestibility-perhaps as low as 45%. More important, the reproductive stems exert a dominance over dormant growth buds, which are prevented from growing and supplying more immature, highly digestible forage. This phenomenon is called apical dominance. Forage management while grazing bermudagrass must be based on allowing new, young, highly digestible forage to grow repeatedly by continuously removing the apical dominance effect on other dormant growth buds. Often, apical dominance forces the young cattle to consume forage that is low in digestibility before managers become aware of it.

Cattle often give managers an idea of the digestibility of the forage being utilized. They should pay particular attention to the manure. If the manure splatters and spreads thin on the ground when the animal defecates, the forage being grazed is high in digestibility, and the rate of passage through the rumen is rapid. On the other hand, if the manure piles up when it hits the ground, the forage being grazed is low in digestibility, rate of passage is reduced, and cattle will eat less forage.

Bermudagrass forage matures, produces reproductive stems, and becomes low in digestibility very rapidly. The improved bermudagrass plants go through a change from leafy, immature forage to stemy, mature forage over a period of 20 to 40 days depending on environmental conditions. The leaf to stem ratio of Coastal at 3 weeks of age is about 4:1, at 6 weeks of age about 2:1, and 1:1 at 8 weeks of age (Eichhorn et al., 1983).

An awareness of the impact of these physiological characteristics of the bermudagrass plant is necessary if the forage is going to be managed properly. With improved bermudagrasses, heavy grazing pressure is necessary to remove the apical dominance effect and keep the forage young. This management concept can best be stated as follows: **Use the forage as fast as it grows and manage to grow some more forage.**

GRAZING MANAGEMENT RECOMMENDATIONS

Begin grazing early. Graze as soon as the new spring growth is about 2 to 4 inches tall. Use the forage to eliminate the apical dominance effect on new growth in June. Never stockpile forage in April and May to use in June and July. Stockpiled, mature bermudagrass will not allow for desired growth of young cattle.

Use a heavy stocking rate. Heavy grazing pressure is necessary if all the forage is to be used before it becomes stemy and mature, and the apical dominance effect is removed. Perhaps the optimum stocking rate for bermudagrass could best be described as a grazing pressure that will produce a maximum weight gain per acre with no more than a small decrease in weight gain per head. Experience has shown that properly managed, improved bermudagrass can support weight gains of 600 to 700 lbs of gain per acre. To achieve this level of gain, a grazing pressure of 1,800 to 2,000 lbs of initial liveweight per acre is advised. This requires a stocking rate of 3 to 4 yearlings or 4 to 5 calves per acre.

Mow excess forage. Early initiation of grazing and heavy grazing pressure should result in efficient forage grazing. Often, however, this will not completely eliminate the apical dominance effect that inhibits new tillers from dormant growth buds. Thus, stemy forage must be removed by mowing or clipping. The mowing must be close enough to the ground to effectively bermudagrass, can be minimized by changing the age of available forage by close mowing as neede

Keep ample plant food available. Soils in the Coastal Plains region are relatively low in fertility. The improved bermudagrasses are capable of yielding 6 to 8 tons of forage per acre over the growing season when properly fertilized (Eichhorn et al., 1987). The bermudagrasses require more potassium or potash than nitrogen for a high forage yield, plant disease control, stand maintenance, and efficient fertilizer utilization (Eichhorn et al., 1987).

The following pasture fertilization program is suggested for successful stocker grazing on bermudagrass. Use a complete fertilizer blend. This blend contains N-P_2O_5-K_2O-S in a 4-1-5-1 ratio. This ratio is based on uptake of each nutrient as measured in the harvested forage (Eichhorn et al., 1987). Sulfur improves fertilizer utilization.

The first application should be made in mid- to late April at a blended rate that will provide approximately 50 lbs of nitrogen per acre. The growing forage will utilize about 85% of the nitrogen applied in the next 26 to 28 days. Make four subsequent applications of the blend providing 50 lbs of nitrogen per acre at 28 to 30 day intervals throughout the grazing season with the last being made in late August.

This program sounds like a lot of fertilizer, and amounts to 250 lbs of nitrogen per acre. In the 1994 growing season, fertilizer cost was $123 per acre. This fertilization program, together with proper grazing, will produce 600 to 700 lbs of young cattle growth per acre. At 700 lbs of gain per acre, the fertilizer cost per pound of gain will be 18 cents. This is relatively cheap when compared to other systems of producing young animal growth.

In summary, the use of improved bermudagrass forage is an efficient way to provide nutrients for producing young cattle growth if it is grazed and fertilized properly. Manage to keep the grass young, use the forage as fast as it grows to keep it young, and fertilize properly to grow additional young forage.

GROWING BEEF CATTLE GRAZING BERMUDAGRASS FORAGES WITH PROTEIN SUPPLEMENTATION

One limitation that has hindered development of a stocker industry in the Coastal Plains is the relatively low gains of cattle grazing bermudagrass and other warm-season perennial forages. Gains of stocker cattle grazing these forages are generally acceptable from mid-April to mid-July. A decrease in rate of gain is often experienced after this period, usually occurring from mid-July until the end of the grazing season.

Protein supplementation of stocker cattle grazing cool-season annual grasses has improved animal performance (Worrell et al., 1990) because an extensive amount of grass protein is degraded in the rumen (Beever, 1984; Hafley, 1986). For cattle grazing bermudagrass pastures, Cantrell et al. (1985), Grigsby et al. (1989), and White and Hembry (1989) have reported improved gains with protein supplementation. Providing supplemental natural protein and(or) non-protein nitrogen sources to cattle grazing low quality forages has resulted in increased forage intake (Ventura et al., 1975; Lusby et al., 1984) and forage digestibility (Guthrie et al., 1984; Hardin et al., 1988).

The purpose of this study was to evaluate effects of a self-limiting protein supplement on performance of yearling and weanling stocker cattle grazing bermudagrass pastures. The materials given below were excerpted from an article published on this study (DeRouen et al., 1993). Please refer to this paper for additional information.

A total of 180 yearling cattle (140 steers, 40 heifers) and 80 weanling steer calves were used in a 2-year study. The study was conducted in 1990 and 1991 at the Hill Farm Research Station of the Louisiana Agricultural Experiment Station, Homer. Grazing paddocks were on fine sandy loam soils, which were typical for the Coastal Plains region of the southeastern United States.

Pastures were composed predominately of Coastal and common bermudagrasses. Two treatments were evaluated: (i) cattle grazing bermudagrass pasture alone (**BGPAS**); and (ii) cattle grazing bermudagrass pasture, and supplemented with a 28% crude protein (**CP**) condensed molasses block (**PMB**) (Postive Feed, Inc., P.O. Box 626, Sealy, TX 77474).

A stocking rate of 3 yearlings or 5 weanlings per acre was maintained for the duration of the study. Weanlings were stocked at higher rates because of their lighter weights and the lower grazing intensity of younger calves (Oliver, 1972).

Yearling cattle were spring-born, weaned in mid-September, and wintered on a hay-grain ration prior to the beginning of the grazing trials. Winter daily gain for the yearlings was approximately .5 lbs/day prior to the onset of the grazing seasons for both years. The weanling steer calves were fall-born and weaned in early April just before the start of the grazing season.

Paddocks received identical fertilizer and clipping management. Fertilizer was applied at rates of 275 lbs of 17-4-21-4 (N-P_2O_5-K_2O-S) at 25 to 28 day intervals throughout the grazing season. One clipping was necessary each year, occurring during mid- to late-June, to keep the grass in a vegetative growth stage. Grazing was initiated May 2 and terminated August 22 for a 112-day grazing season in 1990. For 1991, a 152-day grazing season was achieved beginning on April 19 and ending September 18. At the conclusion of the grazing season for each year, the cattle were weighed and shipped to a local auction facility and sold individually to obtain an individual sales value for each animal.

Yearlings supplemented with PMB gained .31 lbs/day more ($P < 0.03$) than those grazing bermudagrass alone (table 1). Gill et al. (1984) reported that protein-supplemented yearlings grazing native bluestem range grass in Oklahoma had daily gains that were .60 to .95 lbs/day greater than unsupplemented steers. Anderson et al. (1988) found improved daily gains of yearling steers grazing smooth brome pastures when supplemented with an escape protein.

The PMB-supplemented yearlings responded with greater ($P < 0.03$) total gain and final weight than unsupplemented cattle (table 1). Sales price did not differ ($P = 0.18$) among treatments, but yearlings receiving PMB had a greater ($P < 0.07$) individual sales value than those grazing bermudagrass alone. Average daily consumption of PMB was .85 lbs/day for yearling cattle. This resulted in a ratio (lbs:lbs) of supplement consumption to additional gain of 2.74:1. Daily consumption of the supplement was higher than anticipated. Daily intake of the PMB was expected to be approximately .5 lbs/day as suggested by the supplement manufacturer.

Treatment differences for weanlings (table 2) tended to be of lesser magnitude when compared with differences among yearling cattle. Daily gain of weanling calves receiving PMB (0.91 lbs/day) was greater ($P < 0.09$) than that for calves grazing bermudagrass only (0.68 lbs/day). Cantrell et al. (1985) found that protein-supplemented weanling calves gained .30 lbs/day more than control calves grazing bermudagrass in Oklahoma. Grigsby et al. (1989) reported that fall-born weanling calves in Texas supplemented with a protein-molasses block increased daily gain by .25 lbs/day compared to those receiving only bermudagrass pasture. Likewise, White and Hembry (1989) found improved daily gains for protein-supplemented calves over control calves grazing Coastal bermudagrass in Louisiana.

Final weight of PMB-supplemented weanlings was 40 lbs heavier ($P < 0.09$) than weanlings grazing bermudagrass alone (table 2). There was a tendency for greater ($P < 0.11$) total gain and higher ($P < 0.12$) individual sales value for supplemented weanlings compared with those grazing bermudagrass only. There was no difference ($P = 0.32$) in sales price between supplemented and unsupplemented calves. As was found for the yearling cattle, average daily consumption of PMB by weanling calves was higher than expected at .77 lbs/day. The ratio of consumption to additional gain was 3.35:1. Grigsby et al. (1989) reported appreciably lower consumption of a 32% CP condensed molasses block supplement (.44 lbs/day) as well as a lower ratio of consumption to added gain (1.83) for calves grazing bermudagrass.

Because the supplement used was self-limiting, labor cost of supplementation was minimal and not considered for estimation of supplement cost. Approximate cost of the PMB was $27.00/cwt. Based upon supplement consumption over the entire grazing season, a cost of $30.29/animal for yearlings and $27.44/animal for weanlings was estimated (table 3). Differences in individual sales value between protein-supplemented and unsupplemented yearlings and weanlings were $26.16 and $29.84, respectively, in favor of the PMB-supplemented cattle. Based upon these cost estimates and sale value differences, only supplementation of weanling calves was cost-effective, even though

Table 1. Performance of yearling cattle grazing bermudagrass with and without a protein supplement block.

Measurements	Treatment[a] BGPAS	PMB	Probability level
Initial weight, lb	575 ± 10.1	577 ± 10.2	.82
Avg. daily gain, lb/day	1.47 ± 0.12	1.78 ± 0.12	.03
Total gain, lb	197 ± 14.4	236 ± 14.5	.03
Final weight, lb	772 ± 13.8	813 ± 13.8	.02
Avg. daily consumption (ADC), lb/day	0	0.85	
ADC: additional gain, lb:lb	0	2.74	
Sales price, $/cwt	76.68 ± 0.31	76.24 ± 0.31	.18
Sales value, $/hd	548.01 ± 12.01	574.17 ± 12.08	.07

[a]BGPAS - bermudagrass pasture only; PMB - bermudagrass pasture supplemented with a protein-molasses block.

Table 2. Performance of weanling calves grazing bermudagrass with and without a protein supplement block.

Measurements	Treatment[a] BGPAS	PMB	Probability level
Initial weight, lb	448 ± 5.3	459 ± 5.7	.18
Avg. daily gain, lb/day	0.68 ± 0.07	0.91 ± 0.08	.09
Total gain, lb	87 ± 11.7	117 ± 12.5	.11
Final weight, lb	535 ± 13.1	575 ± 14.0	.09
Avg. daily consumption (ADC), lb/day	0	0.77	
ADC: additional gain, lb:lb	0	3.35	
Sales price, $/cwt	85.99 ± 0.53	86.68 ± 0.56	.32
Sales value, $/hd	432.78 ± 12.53	462.62 ± 13.40	.12

[a]BGPAS - bermudagrass pasture only; PMB - bermudagrass pasture supplemented with a protein-molasses block.

this age group tended to be less responsive to the protein supplement.

Daily rates of gain and daily consumption of supplement by period of grazing season are presented in table 4 for yearling and weanling cattle. As expected, daily gain was higher during the first period (late April to mid-July) of the grazing season than for the second period (mid-July to mid-September). Treatment differences were similar during the first period for both age classes, with the PMB groups having daily gains that were .28 lbs/day higher ($P < 0.07$) for yearlings and tended to be higher for weanlings (.32 lbs/day; $P = 0.14$). Moreover, the ratios of supplement consumption to additional gain were similar for both age groups during this period. This indicates that both yearlings and weanlings responded beneficially to protein supplementation during the early portion of the summer grazing period. This concurs with McCollum and Lusby (1989), who stated that fall-born weaned calves responded positively to supplemental protein during the early part of the summer grazing season (late May to mid-July).

Table 3. Sales value and supplement costs for yearling and weanling cattle grazing bermudagrass with and without a protein supplement.

	Yearlings			Weanlings		
Treatment[a]	Sales value, $/hd	Supplement cost, $/hd	Added value, $/hd	Sales value, $/hd	Supplement cost, $/hd	Added value, $/hd
BGPAS	548.01	0	---	432.78	0	----
PMB	574.17	30.29	-4.13	462.62	27.44	2.40

[a]BGPAS - bermudagrass pasture only; PMB - bermudagrass pasture supplemented with a protein-molasses block.

Table 4. Performance of yearling and weanling cattle grazing bermudagrass with and without a protein supplement by period of grazing season.

		Measurements		
Period	Treatment[a]	Avg. daily gain, lb/day	Avg. daily consumption (ADC), lb/d	ADC: additional gain, lb:lb
Yearlings				
Late April to mid-July[b]	BGPAS	1.96 ± 0.13a[*]	0	0
	PMB	2.24 ± 0.13b	0.87	3.11
Mid-July to mid-September[c]	BGPAS	0.64 ± 0.26	0	0
	PMB	1.00 ± 0.26	0.84	2.33
Weanlings				
Late April to mid-July[b]	BGPAS	1.03 ± 0.14	0	0
	PMB	1.35 ± 0.15	0.82	2.56
Mid-July to mid-September[c]	BGPAS	0.10 ± 0.05	0	0
	PMB	0.17 ± 0.05	0.67	9.57

[a]BGPAS - bermudagrass pasture; PMB - bermudagrass pasture supplemented with a protein-molasses block.

[b]Period of grazing occurred from May 2 to July 11, 1990 and from April 19 to July 24, 1991.

[c]Period of grazing occurred from July 11 to August 22, 1990 and from July 24 to September 18, 1991.

[*]Means within grazing period and age group for average daily gain and followed by a different letter differ at $P < 0.07$.

Daily gains were appreciably lower after mid-July for both treatment and age groups (table 4). Although the gains were slightly greater for the supplemented cattle, the PMB fed to both yearlings and weanlings did not significantly offset the lower rates of gain that occurred during this period. Consumption levels remained relatively high during this period at .82 and .67 lbs/day for yearlings and weanlings, respectively.

In conclusion, this study demonstrated that improved animal performance can be achieved with protein supplementation for both yearling and weanling cattle. Yearling cattle tended to be more responsive to the protein supplement than weanling calves. The additional gains provided by the protein supplement were consistent throughout the grazing season for the yearling cattle, whereas the weanling calves benefitted from the supplement primarily during the first half of the season (late April to mid-July). Differences in individual sales value between supplemented and unsupplemented cattle were larger for weanling calves than for yearling cattle. Furthermore, supplement costs were lower for weanling calves due to lower supplement consumption. As a result, this study found that a self-limiting protein supplementation program was cost-effective only for weanling calves.

INFLUENCE OF HORN FLY CONTROL ON WEIGHT GAINS OF YEARLING BEEF CATTLE GRAZING BERMUDAGRASS

The horn fly is one of the major blood-sucking pests of cattle. This ectoparasite can be found year round in southern regions of the United States, but population peaks occur in the spring, summer, and early fall, which coincide with stocker-grazing production systems on warm-season perennial grasses.

Until recently, estimates of economic benefits of horn fly control for cattle were based on studies using extremely effective control measures for treated animals, often achieving 100% control (Haufe, 1982; Kunz et al., 1984). This level of horn fly control is no longer attainable in many parts of the United States due to development of resistance to both organophosphate and pyrethroid insecticides. Hogsette et al. (1991) were the first to address this problem and concluded that economic benefits of horn fly control for cow-calf pairs and replacement heifers could not be attained. Other studies, however, conducted in temperate environments have shown beneficial effects of horn fly control on weight gains of calves (Campbell, 1976; Quisenberry and Strohbehn, 1984; Haufe, 1986). Thus, location, age of cattle, and realistic levels of horn fly control must be considered to determine the economic benefits of horn fly control strategies.

There have been various studies during the last 15 years that have reported benefits of horn fly control for increasing weight gains of yearling cattle (Harvey and Brethour, 1979; Haufe, 1982; Kunz et al., 1984). Angus and Hereford breeds of cattle were used in these studies, which were conducted in areas outside the southern region of the United States. Furthermore, effective levels of horn fly control of treated animals were achieved in the studies (84 to 100% control).

The objective of this study was to determine the impact of moderate levels of horn fly control on subsequent animal performance for Brahman-influenced yearling cattle under a grazing production system in the southern region of the United States. This material has been excerpted from an article soon to be published on this study (DeRouen et al., 1995). Please refer to this paper for additional information.

A total of 246 yearling steers and heifers were used in a 3-year study (1990, 1991, and 1993). The three grazing trials were conducted at the Hill Farm Research Station of the Louisiana Agricultural Experiment Station, Homer. Pastures used in the study were composed predominately of Coastal and common bermudagrasses.

Angus, Gelbvieh, and F_1 Gelbray (50% Brahman breeding) sires mated to crossbred dams of approximately 50% Brahman breeding (Brahman x *Bos taurus*) were used to produce yearlings for the study. Angus- and Gelbvieh-sired yearlings were of approximately 25% Brahman breeding, whereas Gelbray-sired yearlings were of approximately 50% Brahman breeding. Tugwell et al. (1969) reported that decreased horn fly counts were observed as level of Brahman breeding increased.

In 1990, 30 yearlings were each treated with two organophosphate-impregnated ear tags per animal (Optimizer®, 20% diazinon, supplied by Y-Tex Corp., 1825 Big Horn Ave., Cody, WY 8241-4), while 48 yearlings served as untreated controls. In 1991 and 1993, 42 and 39 yearlings, respectively, were each treated with two pyrethroid-impregnated ear tags (Saber Extra®, 10% Lamb-dacyhalothrin plus 13% Piperonyl Butoxide, supplied by Coopers Animal Health, 1201 Douglas Ave., Kansas City, KS 66103). A total of 48 and 39 animals in 1991 and 1993, respectively, received no horn fly control and served as untreated groups.

The ear tags were applied at the initiation of each year's trial, and treated and untreated cattle were grouped separately into grazing pastures. Horn fly populations were determined each week during the early morning hours. At least 10 animals were randomly selected from each treatment, and the number of horn flies per side was counted with the aid of binoculars.

Grazing was initiated when adequate forage was available (usually in May) and was terminated in late August to early September depending on forage availability. The lengths of 1990, 1991, and 1993 trials were 13, 16, and 16 weeks, respectively. Pastures received identical fertilizer and clipping management. Fertilizer was applied at rates of 275 lbs per acre of 17-4-21-4 ($N-P_2O_5-K_2O-S$) at 25 to 28 day intervals throughout the grazing season.

Horn fly populations on treated yearling cattle were reduced ($P < 0.05$) in all 3 years of the study. In 1990, the organophosphate-treated group had an average 58% reduction in horn fly population, whereas the pyrethroid-treated groups in 1991 and 1993 had an average reduction of 66 and 83%, respectively, in horn fly numbers. Harvey and Brethour (1979), Haufe (1982), and Kunz et al. (1984) reported appreciably higher levels of horn fly control for yearling cattle at 84 to 87, 100, and 100%, respectively.

The average number of flies per animal on untreated yearlings exceeded the economic threshold of > 200 as suggested by Haufe (1979) and Schreiber et al. (1987). For treated cattle, the overall fly count average was 87, with a range of 37 to 209 flies per animal.

Weight gains of yearlings were affected ($P < 0.08$) by horn fly control; treated cattle had greater average daily gains and total gains than untreated animals (table 5). Yearlings treated for horn fly control gained .27 lbs/day more ($P < 0.07$) than those untreated, resulting in a total gain advantage of 27 lbs ($P < 0.08$). These results agree with data of Harvey and Brethour (1979) who reported in a 6-year study an 18 lb (220 vs. 202 lbs) advantage in total gain for treated over untreated yearlings. Likewise, Kunz et al. (1984) found that treated yearling steers over 2 years had .18 to .22 lb higher daily gains than controls. Large treatment differences were observed by Haufe (1982), who reported that treated yearlings outgained untreated animals by 48 lb during a 115-day grazing period. Furthermore, results in our study indicated that Brahman-influenced yearlings responded beneficially to horn fly control, as was found in previous studies that investigated yearlings of *Bos taurus* breeding (Harvey and Brethour, 1979; Haufe, 1982; Kunz et al., 1984).

Under conditions of this study, beneficial weight gain responses were achieved for yearling cattle when moderate levels of horn fly control were achieved. Cattle with 25 or 50% Brahman breeding responded similarly with improved animal performance to horn fly control. An average of 87 flies per animal was observed on treated yearlings versus 275 flies per untreated animal. This reduction increased weight gains 17%, and these data do not contradict the currently accepted economic threshold of approximately 200 flies per animal.

Table 5. Effect of horn fly control on performance of yearling cattle grazing bermudagrass.

	Treatments		Increase due to	Probability
Item	Treated[a]	Untreated	treatment, %	level
No. of cattle	111	135	---	---
Initial weight, lb	633 ± 6.8	645 ± 6.0	---	0.18
Avg. daily gain, lb/day	1.70 ± 0.09	1.43 ± 0.09	18	0.07
Total gain[b], lb	179 ± 10.4	152 ± 9.0	17	0.08

[a]Treated cattle received two organophosphate- (1990) or pyrethroid- (1991 and 1993) impregnated ear tags.

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