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DEVELOPMENT OF YEARLING HORSES ON SOD-SEEDED BERMUDAGRASS PASTURES

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Do we still classify equines as grazing animals, or have we placed them into a "unique" category in which supplemental energy and protein have become a "necessary but routine" part of the development-maintenance management program? Have we become too regimented with "special recipes" for performance and lost sight of some of the traditional nutritional concepts? Horses, as well as all other animals, have basic nutritional requirements to meet maintenance and performance demands. And, the most convenient method of supplying these nutrients for some has been in the form of feed grains and supplemental protein sources. For those horses which are expected to perform specific tasks and functions of work, then the use of high energy rations may be the only alternative to meet these nutritional demands. However, there is a large percentage of horses in various stages of activity (growth, lactation, etc.) which may receive costly supplemental nutrients which could otherwise be provided in a well-managed forage system. Certainly, cost effective and efficient methods for developing and maintaining horses is a primary concern of many.

A two-year pasture experiment was conducted at the Texas A&M University Agricultural Research and Extension Center at Overton to determine the biological and economic feasibilities of developing yearling horses exclusively on pasture or on pasture plus a daily supplemental feed (3, 6). Bermudagrass was the basic perennial forage used in the trial. In late-September to early-October in each year, cool-season annual grasses (rye and ryegrass) were seeded directly into the sod and provided grazing from December to late May. Bermudagrass initiates growth in mid-April at this Texas location and pastures generally make a good transition from winter forage to summer forage. Both colts and fillies which were summer-fall weaned were used to measure the influence of pasture and supplement on growth and development. Horses weighed approximately 650 lbs at initiation of the study period in both trials. In the first trial (6), two

treatments were examined: (1) pasture only, and (2) pasture plus 8 lbs per day (average of approximately 1% of body weight per horse per day of a 14% crude protein supplemental feed. In the second trial (3), pasture only; pasture plus a daily grain supplement supplying 25% of NRC (5) requirement for energy and 30% NRC requirement for protein (2.5 lbs/day); and pasture plus a daily grain supplement supplying 50% of NRC requirements for energy and 60% NRC requirements for protein (5 lbs/day) were evaluated as nutrient sources for yearling horses. The 8-lb daily supplement in Trial 1 and the 5-lb daily supplement in Trial 2 were similar with respect to caloric or energy status.

Performance of yearlings in each of the two trials is shown in Table 1. During the first year, the 1% body weight ration of supplemental feed provided an additional .34 lbs/day of weight gain and horses were visually scored to have more condition or fat when compared to yearlings on the pasture only treatment. There was no difference between horses on pasture or pasture plus supplement with respect to height gain. In the second trial, yearlings which received 5 lbs/day gained an extra .29 lbs/head/day, had more rump fat, and were visually scored to be in better condition. There was no influence of supplemental feed on gain in either height or heart girth circumference. Although absolute performance appeared to be different between years as anticipated, the impact of supplementing yearling horses with approximately 50% of their nutrient requirements was an addition in weight gain of approximately .3 lb/day. The conversion of the supplemental feed to extra gain was 24:1 in Trial 1 and 17:1 in Trial 2. With proper adjustments for caloric value, these values may be similar. Perhaps, the most significant part of these trials was that the supplement feed used was probably substituting for forage rather than having an additive effect on forage consumption.

Tables 2 and 3 were prepared to show the cost relationships between an exclusive feeding regimen for yearlings as compared to pasture only or supplemental feeding on pasture. In general, anticipated feed costs would average from $1.25 to $1.50 per head per day under conditions where pasture was either not available or not used as a source of nutrients (Table 2). By using the animal performance data from the 2-year trial, estimated costs may be

projected which allows for a comparison of pasture only and pasture plus a supplemental feed. During a 270-day grazing period, total cost per yearling on the pasture only treatment was $41.67; whereas, total yearling costs on pasture plus supplemental grain was $279.27. These costs indicate a daily pasture-feed cost of $1.03 per yearling on the supplemental regimen and $0.15 per yearling on pasture only. Although it is not customary to examine costs per pound of gain for horses, the yearlings which received supplement on pasture gained at a cost of nearly 70 cents per pound of gain; whereas, the yearlings which received pasture only gained at a cost of 15 cents per pound of gain.

SUMMARY

Results from these experimental grazing trials indicated that bermudagrass pastures overseeded with winter annuals such as rye and ryegrass can provide an economic alternative of developing yearling horses. It is recognized that although a high percentage of yearling horses may take advantage of this type of pasture development program, there are certain management objectives which cannot be met through an exclusive pasturing program. For example, horses which are being prepared for athletic events, halter performances, sales, etc. will most likely not attain the preferred or desired level of condition and visual appearance from an exclusive pasture diet. It is noteworthy, however, that yearling horses can gain at the rate of more than one pound per day from an exclusive pasture diet and without any detrimental effect on height (skeletal growth).

Well-managed forages can play a significant role in the diet of not only yearling horses, but also for brood mares and other horses in which a constant high work-performance demand is not required. However, because of the unusually high selective grazing behavior of horses (1, 3), pasture-grazing management requires certain agronomic and animal husbandry skills. The sod-forming grasses such as bermudagrass are very resistant to frequent defoliation under grazing conditions. Therefore, management practices to alter or change the distribution of grazing should be used based on forage specie, desired level of performance, and maintenance of forage stand. Some of the possible management techniques which may be used to reduce the impact

of selective grazing are to rotate pastures with different classes of livestock, and/or mow pastures to a uniform height. In the southeastern U.S., bermudagrass pastures represent one of the most reliable, permanent pasture species for horses as well as other classes of livestock. The most cost effective management of forages and horses will occur when the nutritive potentials of the forage are matched with the nutritive requirements of the horse. Energy is energy whether it is be packaged in 50 lb bags or in multi-acre units of pasture. Those who are interested in cost containment should not overlook the vast potential of pastures and forages to supply dry matter and nutrients in their total horse management program.

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TABLE 1. PERFORMANCE OF YEARLING HORSES ON PASTURE OR PASTURE PLUS SUPPLEMENTAL FEED DURING A TWO-YEAR TRIAL

ITEM	TRIAL 1[1]		TRIAL 2[2]		
Supplement (lbs)	0	8	0	2.5	5.0
Initial wt (lbs)	665	637	642	655	650
Average daily gain[3] (lbs)	1.12 a[6]	1.46 b	1.23 c[6]	1.21 c	1.52 d
Initial height (in)	54.1	52.8	52.8	52.8	52.4
Gain in height (in)	1.9 a	1.7 a	3.5 b	2.8 b	3.4 b
Initial heart girth circumference (in)	-	-	59.3	59.2	59.3
Gain in heart girth (in)	-	-	6.3	6.0	7.4
Final rump fat thickness[4] (in)	0.76 a	0.90 a	.21 b	.24 b	.35 c
Final condition score[5]	4.2 a	5.9 b	5.3 c	5.2 c	6.3 d

[1]Rouquette et al. (6)
[2]Hansen et al. (3)
[3]Length of Trial 1 was 201 days (March-Oct) and Trial 2 was 188 days (March-Sept).
[4]Determined by ultrasound device.
[5]Determined as described by Henneke et al. (4).
[6]Within a Trial, numbers in rows followed by different letters differ ($P<.05$).

TABLE 2. ESTIMATED FEED COSTS FOR A YEARLING HORSE DURING A 12-MONTH DEVELOPMENT PERIOD

ITEM	GRAIN		HAY
Quantity (lbs/day)	8		10
Unit cost ($/ton)	$220		$100
Period (days)	365		365
Total quantity (lbs)	2920		3650
TOTAL COSTS	$321.20		$182.50
TOTAL FEED COSTS		$503.70	
DAILY COST ($/DAY)		$ 1.38	

TABLE 3. ESTIMATED PASTURE AND SUPPLEMENTAL FEED COSTS FOR YEARLING HORSES DURING A 270-DAY DEVELOPMENT PERIOD

ITEM	PASTURE + SUPPLEMENT	PASTURE ONLY
Grain		
Daily ration[1] (lbs)	8	0
Total for period (lbs)	2160	0
Cost for period[2] ($)	$237.60	0
Pasture Costs[3]		
Per acre	$125.00	$125.00
Stocking rate[4]	3/ac	3/ac
Per horse	$ 41.67	$ 41.67
Average daily gain[5] (lbs)	1.49	1.18
Total cost/horse	$279.27	$ 41.67
Cost/day	$ 1.03	$ 0.15
Cost/lb gain	$ .69	$ 0.13

[1]270-day period represents active grazing period from Jan-Feb to Sept-Oct.
[2]Cost based on $11/cwt.
[3]Pasture costs based on fertilizer, seed, etc. of rye-ryegrass-bermudagrass.
[4]Stocking rate of 1½ yearlings/acre for 70 days (winter) and 3½ yearlings/acre for 200 days (summer) for an average of 3 horses/acre for the 270-day period.
[5]Based on data from 2-year trial.