

PRELIMINARY INVESTIGATIONS OF GRAZING HORSES ON ALFALFA

D.W. Freeman¹, D.R. Toppliff², F.T. McCollum³,
J.E. Pumphrey⁴, W. Altom⁵ and C.A. Griffith⁶

Story in Brief

Sixteen yearling horses were grazed on alfalfa under two different grazing treatments. Eight horses were continually grazed on 5.2 acres and eight were grazed on a rotational system consisting of six paddocks of .9 acres each. The horses were allowed 24 hour access to alfalfa throughout the trial, and they received no additional protein or energy supplementation. The continually grazed treatment lasted 25 days before the grazing pressure removed available forage. Those horses on the rotation treatment grazed a total of 37 days. Forage yields revealed that the horses on rotation had access to more forage per acre due to yield variations in the field and to the system's design of restricting grazing to smaller sections of the grazing area. Visual observation revealed a higher incidence of spot grazing in the continually grazed treatment. Animal gains at 25 days of grazing averaged .5 pounds per day for the continually grazed horses and 1.3 pounds per day for the rotationally grazed horses. The horses remained in a moderately thin body condition throughout the trial, and no decreases in condition were noted in any of the horses. No digestive disorders were detected in any of the horses. Results suggest that if managed correctly, moderate growth rate may be reached in yearling horses grazing alfalfa without additional supplementation. From visual observation, it is suggested that a controlled grazing system may be the most efficient method for forage utilization under the conditions of this trial.

(Key Words: Horse, Alfalfa, Grazing)

Introduction

Recommendations for efficient forage utilization by horses are mainly based on research from other species and on subjective measurements obtained from practical use. Feed cost is a major expense incurred in horse farms, and utilization of pastures is often an extremely cost effective method to meet nutritional needs. Grazing studies using different forages and grazing systems need to be conducted so horse owners can make more accurate decisions when designing production schemes for their various classes of horses. Recently, a trial conducted on bermudagrass pasture has shown yearlings can be successfully managed to gain at rates of 1.0 pound per day without additional energy or protein supplementation (Aiken et al., 1985). Results from another trial have indicated similar performance in nonsupplemented yearlings grazing sodseeded winter pasture in bermudagrass (Roquette et al., 1985).

¹Assistant Professor ²Assistant Professor ³Assistant Professor
⁴Livestock Spec., Noble Foundation ⁵Soils Spec., Noble Foundation
⁶Agronomist, Noble Foundation

Alfalfa hay is thought of as the hay of choice by many horse owners. On the other hand, there are conflicting opinions on whether grazing alfalfa causes digestive disorders in horses. Also, little is known about animal and plant performance when horses graze alfalfa. The purpose of this preliminary investigation was to gain information about grazing horses on alfalfa so further research can be directed in this area. The objectives of this trial were to determine if grazing alfalfa causes digestive disorders in yearling horses, observe growth performance of yearling horses on alfalfa and observe forage yield and grazing patterns under a continuous system and a rotational system of grazing.

Materials and Methods

Sixteen yearling horses, ranging in age from 13 to 15 months, were randomly assigned to one of two grazing treatments. A 10.6 acre alfalfa field was divided into two treatments; a continuous grazing treatment of 5.2 acres and a rotational grazing treatment consisting of six paddocks of .9 acres each. The horses were preconditioned to an all forage ration by being fed free choice prairie grass hay for 7 days prior to the beginning of the trial. The horses were given free grazing access to alfalfa on day 1, and had continual access to grazing throughout the trial. Horses remained on each treatment until it was visually determined that grazing pressure had removed available forage. Horses were moved to a new paddock on the rotational treatment as grazing pressure removed available forage in the grazed paddock. Trace mineralized salt was provided free choice. Yields of the alfalfa were determined by randomized clippings of 11.5 inch by 22 inch areas. Clippings of the continuous treatment were taken at the beginning of the trial. Clippings of the individual paddocks of the rotational treatment were taken at the beginning of the period the paddock was grazed. Ungrazed forage yield was determined in the continuous treatment by clipping a 3 foot square of nongrazed enclosed area located in the field. Crude protein content was determined on the clippings. Grazing patterns of the horses on each treatment were visually determined at 3-day intervals. Measurements taken to characterize growth performance of the horses were taken at the beginning of the trial and when the horses were removed from one of the treatments. Body weight, wither height and body condition score (Henneke et al., 1983) were taken on each horse.

Results and Discussions

There were no observed digestive disorders in any of the horses while grazing alfalfa. The growth performance data is presented in Table 1. Average daily gain for the 25 day period was .5 lb/d for the horses on the continuous treatment and 1.3 lb/d for those on rotation. Gains were variable among horses within each treatment which resulted in no statistical differences between the treatments. The gains in weight in this trial compare to the National Research Council's (NRC, 1978) recommendation of 1.3 lb/d for horses of this weight, age and expected mature size. Little difference in body condition was detected in either group following the 25 days of grazing. Horses were maintained in a moderately thin body condition (Henneke et al., 1983), and no decreases in body condition were noted in any of the horses. Results on growth performance suggest yearlings may be safely managed on alfalfa with no protein or energy supplementation and grow at rates similar to those recommended by the NRC (1978) for moderate growth. More research is necessary to

Table 1. Growth of yearling horses grazing alfalfa^a.

Measurement	Grazing treatment	
	Continuous	Rotation
Animal units	8	8
Initial weight, lb	781.4 + 93.3 ^b	747.6 + 97.2
Average daily gain, lb/d	.5 + .6	1.3 + .9
Initial wither height, in	56.3 + 1.6	55.5 + 2.0
Final wither height, in	56.7 + 1.6	55.9 + 2.0
Initial condition score	4.0 + .6	3.7 + .4
Final condition score	4.3 + .6	4.2 + .6

^aRepresents 25 grazing days on each treatment.

^bAverage + standard deviation.

obtain information on animal performance grazing for longer periods of time, so practical recommendations can be made.

The amount of forage available to the grazing horses in both treatments is shown in Table 2. The continuous group began grazing on the field which had 816 lb of oven dry forage per acre, or an estimated 4243 lb of oven dry forage in the 5.2 acre field. The horses were removed after grazing 25 days on the field because of the apparent lack of forage available for grazing. Ungrazed forage growth in the enclosure was determined to be 890 lbs of oven dry forage/acre over the 25 day period. Visual observation detected a selective grazing pattern early in the grazing period, which resulted in a comparatively high degree of spot grazing as compared with the rotation group.

The beginning yield of the rotational grazing paddocks were higher than the continuous group. This was partially due to variation in various locations of the entire 10.6 acre field. Also, the ungrazed cells continued to grow after the beginning of the trial, so yields were greater on day 1 of grazing. It was apparent that the horses had access to more forage per acre on the rotational system which aided in the

TABLE 2. Alfalfa yields in the continuous and rotational grazing treatments.

Treatment	Oven Dry Yield ^a (lb/acre)	Crude Protein (%)	Area (Acres)	Grazing Period (days)
Continuous	816	18.5	5.2	25
Rotation				
Paddock 1	1381	20.0	.9	7
Paddock 2	2101	19.8	.9	2
Paddock 3	2101	18.0	.9	4
Paddock 4	-	-	.9	4
Paddock 5	2241	15.6	.9	6
Paddock 6	1849	14.7	.9	7
Paddock 1	996	14.4	.9	2
Paddock 2	1212	11.0	.9	3
Paddock 3	1405	12.9	.9	2

^aPaddocks grazed in numerical order.

trend for larger gains. Also, the rotational group of horses continued on treatment 12 additional days longer than the continuous group. Part of this increase in time before forage was visually determined to be unavailable for grazing can be attributed to the availability of growth without grazing pressure in the ungrazed paddocks. It was also visually determined that spot grazing was virtually nonexistent in the rotation treatment. It appeared that the horses were more uniform in their grazing pattern, thus making better use of available forage.

In summary, it appears that growing horses can successfully graze alfalfa without incurring digestive disorders. Also, if managed correctly, recommended gains in yearling horses may be reached without additional energy or protein supplementation. From visual observations, it is suggested that a controlled grazing system may be the most efficient method to utilize forage under conditions similar to this trial. Results from this trial will aid in the design of future research in this area, and more research will be necessary before accurate recommendations can be made.

Literature Cited

- Aiken, G.E., et al. 1985. Growth performance of yearling horses grazed at different stock rates on bermudagrass pastures. In: Proc. of the ninth Equine Nutr. and Physiol. Symp., p. 20. Michigan State University, E. Lansing, Mich.
- Henneke, D.R., et al. 1983. Relationship between condition scores, physical measurements and body fat percentage in mares. Equine Vet. J. 15:371.
- N.R.C. 1978. Nutrient Requirements of Domestic Animals No. 6. Nutrient requirements of horses. National Research Council, Washington, D.C.
- Roquette, F.M., et al. 1985. Influence of pasture and feed on growth and development of yearling quarter horses. In: Proc. of the Ninth Equine Nutr. and Physiol. Symp., p. 14. Michigan State University, E. Lansing, Mich.