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Grazing Behavior of Yearling Horses. I. Time Spent Grazing Different Forages

D. K. HANSEN, F. M. ROUQUETTE, JR., M. J. FLORENCE, J. WALKER, AND R. HEITSCHMIDT

Summary

The time budgeting of yearling horses grazing improved pastures at two different times of the year in East Texas was studied. Three yearling horses weighing 650 lbs each were grazed from March through September and from December through January. Time spent grazing and time involved in other behavior was measured using a Kienzle TFW time recorder device in September and December 1986. Time spent grazing averaged 16.3 hours or 67.8 percent of the time (24 hours) in September when bermudagrass was grazed, and 13.8 hours or 57.2 percent of the day in December during which time rye-ryegrass was grazed. A circadian pattern of grazing was seen in both times of the year, with a depression just before sunrise and after sunset. However, there was fairly sustained grazing activity during the dark hours. These results indicated that the Kienzle time recorder device can be used successfully with horses.

Introduction

There have been few reports in the literature of grazing behavior or time budgets (Arnold, 1984) for behavior in horses. Most reports have described behavior of feral horses (Feist, 1971) or horses grazing large areas (Tyler, 1972; Arnold, 1984), but there have been very few describing the behavior of horses grazing small pastures. Therefore, the grazing behavior or time budgeting of yearling horses grazing improved pastures at two different seasons in East Texas was studied.

Procedure

Three yearling horses averaging 650 lbs were grazed on bermudagrass pastures which were sod-seeded with rye-ryegrass from March through September 1986. Animals were removed from pastures in October and placed back on similar pastures in December for grazing of cool-season annual forage. Animals were stocked at slightly less than 3 AU/A throughout the experiment.

Time spent grazing and time spent in other behavior was measured using a Kienzle TFW time recorder device.[1] The device transfers the motion of the horse's head onto a recording chart by means of a pendulum motion and a stylus. The clock-like device is enclosed in a weather-proof bag attached around the animal's neck at the throat latch area and secured to a halter. When the horse lowered the head to graze, the movement of the head produced markings on the recording chart. The time recorders were placed on the horses for 3 to 4 days prior to the actual measurement to allow the horses to become accustomed to the device. Records were made for 7 consecutive days during September when horses were grazing bermudagrass and December when rye-ryegrass was grazed. The chart records were validated by observation of horses several times daily.

KEYWORDS: Horses/grazing behavior/forage/bermudagrass/ryegrass.

[1]Kienzle Apparate Villingen/Schwarzwald.

Results and Discussion

Time spent grazing was easily measured since distinctive marks were made when the horse's head was lowered. However, the distinction between other types of behavior (resting, walking, running, etc.) was not measurable with this device. All other behavior was grouped under time spent not grazing.

Examining Table 1, it can be seen that during September, yearlings grazed 68 percent of the day, or 16.3 hours per day. This is similar to the value of 16.9 hours found in mature thoroughbred horses grazing paddocks in August (Francis-Smith, 1977). In a study conducted in Australia, the time spent grazing ranged from 4 to 16 hours per day over a period of 2 years in mature horses (Arnold, 1984). Time spent not grazing, which included all other activities, constituted 32.2 percent of the day. During September, forage availability was approximately 4,900 lbs DM/A. The time spent grazing by yearlings during December was 57.2 percent or 13.8 hours per day. Time spent in other activities was 42.8 percent. Forage availability during this time was approximately 2,200 lbs DM/A. Grazing time was 2.5 hours less in December than during September, which could be due to the season or forage type since bermudagrass was grazed in September and rye-ryegrass was utilized in December. The most obvious difference between these types of forages was the greater moisture content of the rye-ryegrass, which may have caused more fill and sense of satiety to the horses with less forage; thereby, reducing grazing time.

A graphic representation of percent time spent grazing per hour in September and December is shown in Figures 1 and 2, respectively. Even though total time spent grazing was different between times of the year, a similar circadian trend was evident from both forage types. Percent time grazing was depressed just before

TABLE 1. TIME SPENT GRAZING AND NOT GRAZING BY YEARLING HORSES

Animal	Date	Pasture	Hours Grazing	Time Spent Grazing (%)	Time Not Grazing (%)
8	9-16	bermudagrass	17.9	74.4	25.6
3	9-16	bermudagrass	14.9	61.9	38.1
16	9-16	bermudagrass	16.1	67.0	33.0
Mean			16.3	67.8	32.2
7	12-3	rye-ryegrass	13.1	54.4	45.6
8	12-3	rye-ryegrass	14.2	59.2	40.8
17	12-3	rye-ryegrass	13.9	58.1	41.9
Mean			13.8	57.2	42.8

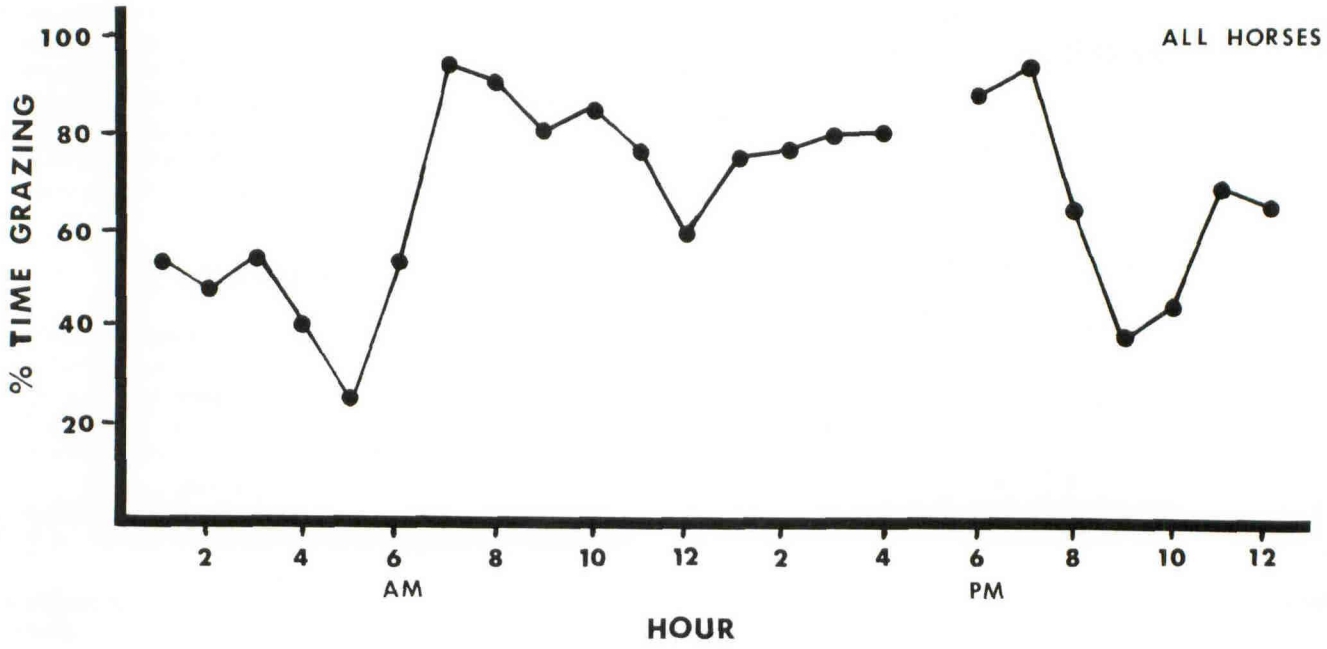

Figure 1. Percent time spent grazing per hour of yearling horses in September on bermudagrass.

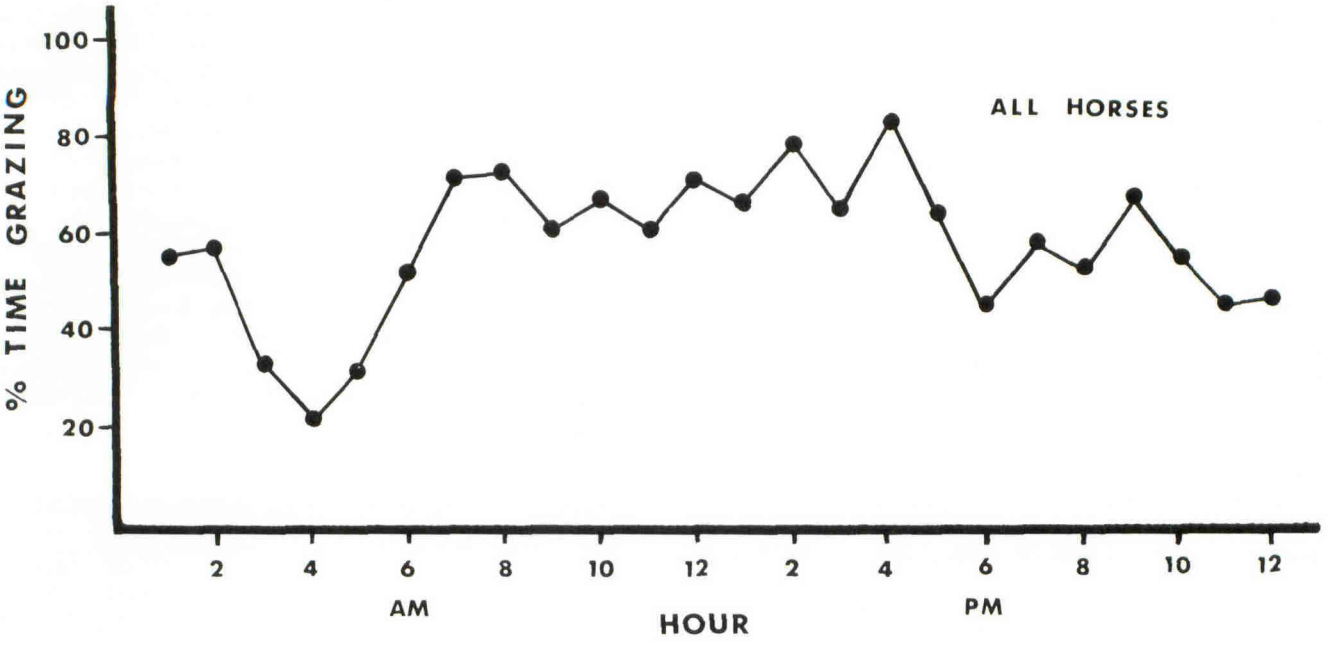

Figure 2. Percent time spent grazing per hour of yearling horses in December on rye-grass pastures.

sunrise on both forages (approximately 4 to 6 a.m.). Grazing was maintained at a fairly high level during the daylight hours, then was depressed again at approximately sunset (6 to 8 p.m.), and resumed thereafter. This was similar to a circadian pattern seen in horses grazing in Australia where grazing was most depressed between 2 and 6 a.m. (Arnold, 1984).

Results of these experiments indicated that the Kienzle time recorder device can be used successfully with horses. The adjustment period to the device should be at least 3 to 4 days before representative charts can be produced. The times spent grazing per day found in these experiments were similar to the few reports in the literature using mature horses in large paddocks. The time spent grazing per day of yearling horses on small, improved pastures ranged from 13.8 to 16.3 hours, and horses tended to graze throughout the night as well as during the daylight hours. With the increasing economic advantage of improved pastures for horses, more research needs to be conducted in the area of equine grazing behavior in these situations.

Literature Cited

1. Arnold, G. W. 1984. Comparison of the time budgets and circadian patterns of maintenance activities in sheep, cattle, and horses grouped together. Appl. Anim. Behav. Sci. 13:19.
2. Feist, J. D. 1971. Behavior of feral horses in the Pryor Mountain Wild Horse Range. M.S. Thesis. Univ. of Michigan, Ann Arbor.
3. Francis-Smith, K. 1977. Behaviour patterns of horses grazing in paddocks. Appl. Anim. Ethol. 3:292.
4. Tyler, S. L. 1972. The behavior and social organization of the New Forest ponies. Anim. Behavior Monogr. 5:85.