

Review of “Voluntary intake and digestibility of reed canarygrass and timothy hay fed to horses”

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Why was this study done?

Although it has been identified in the region for at least 50 years, the cereal rust mite has become a significant problem only in the last 15 years for producers of timothy hay in the mid-Atlantic states. Yields of timothy hay grown in some areas of New York, New Jersey, Maryland, and Pennsylvania have dropped as much as 70%. The mite causes discoloration and curling of leaves as well as a decrease in nutritional quality. Shortages of this popular horse hay have led growers to look at other forage crops that produce high yields, offer equivalent nutrition, and are less susceptible to cereal rust mite damage.

This study examined the use of hay made from Chiefton, a low-alkaloid variety of reed canarygrass, as an alternative to timothy hay for the equine market. Chiefton grows well in the mid-Atlantic region, is tolerant of flooding and drought, and has good nutrient digestibility compared to some other perennial cool-season grasses. It is not susceptible to damage from cereal rust mites, and its lower concentration of alkaloids makes it more palatable than other strains.

The authors stated that the objective was to evaluate nutrient composition, voluntary dry matter intake, and apparent dry matter digestibility of timothy and a low-alkaloid reed canarygrass hay to evaluate it as an alternative to timothy hay for horse.

How was the study performed?

Eleven Thoroughbred geldings were used in the study. Horses were kept in stalls and were walked 30 minutes each day on an automated exerciser. Locally-grown hay was obtained for the study, and orchardgrass hay was fed twice daily during an initial acclimation period.

For the voluntary intake experiment, horses were paired by age and body weight and were randomly assigned to either timothy hay or reed canarygrass hay. Both hays were provided in excess of voluntary intake for two weeks, and the amount of hay consumed was recorded twice a day.

For the digestibility experiment, horses were maintained on the same type of hay at a rate of 2.2% of body weight daily. The hay ration was divided and fed twice a day. After five days, total

collection of feces was performed for four days. Dry matter intake was determined and apparent dry matter digestibility was calculated.

What results were found?

In the voluntary intake experiment, horses consumed more timothy hay than reed canarygrass hay during the two-week study period. The difference in intake was most pronounced during the first week of the period. All horses showed an increase in body weight during the period, with body weight increasing more in the timothy-fed horses.

In the digestibility experiment, apparent dry matter digestibility was greater for horses consuming timothy compared with horses fed reed canarygrass hay. Timothy-fed horses had greater apparent digestibility of ADF, sugar, and calcium, but lower apparent digestibility of fat and protein. There was no difference by diet in apparent dry matter digestibility of nonstructural carbohydrates, starch, phosphorus, magnesium, potassium, iron, zinc, copper, and manganese.

Both hays met the minimum maintenance requirements of a 550-kg horse for energy, protein, calcium, phosphorus, potassium, iron, and manganese. They did not meet minimum requirements for copper, zinc, and sodium. Timothy had a lower crude protein concentration, a greater iron concentration, and a more desirable calcium:phosphorus ratio (1.6:1 for timothy, 0.8:1 for reed canarygrass).

What does this study tell us about feeding horses in areas where timothy hay is in short supply?

Dry matter digestibility of forage reflects the nutritive value of the forage and has an effect on body condition and performance. In this study, reed canarygrass hay was not as digestible as timothy hay. The authors suggested that two factors may have influenced digestibility. Fiber in the timothy hay may have been more fermentable, and the longer, wider leaves of reed canarygrass may have caused a larger particle size, increasing the mean retention time in the hindgut and reducing digestibility.

A less than ideal calcium:phosphorus ratio such as that found in reed canarygrass hay can be detrimental to calcium absorption. Although a less than ideal ratio was found in the Chiefton strain of reed canarygrass hay used in this study, it is not known if this is typical of all such hay. If necessary, additional calcium can be supplied by other dietary components (grain, forages, and/or supplements).

According to this study, both hays met most of the nutrient requirements for horses at maintenance. Timothy hay was higher in voluntary dry matter intake and apparent digestibility. Chiefton reed canarygrass hay can be fed to horses in place of timothy hay, but managers should know that this hay may be consumed at a lower rate, at least when first introduced to horses; is not as digestible; and may require the addition of dietary calcium in some form.

The full text of this report can be found in the Journal of Animal Science 84:3104-3109.