## EQUINE

## Impacts of Horses Grazing Alfalfa & Clovers in Pastures

Devan Catalano, Krishona Martinson, Craig Sheaffer, University of Minnesota

orses are grazing animals, and the majority of their diet should come from forage in the form of pasture or hay. Most Midwestern horses meet their nutritional needs from cool-season grass pasture or hay. However, this depends on factors such as time spent grazing and the horse's activity level. Horses having limited grazing time or increased nutritional needs (i.e., broodmares, performance horses) are often fed grain to help make up any energy or other nutritional deficiencies. Some owners prefer to limit grain intake. Legumes (e.g., alfalfa, clover) offer an alternative to grain because they contain more digestible energy (DE) and crude protein (CP) compared to grass species. Legumes are common in horse hay; however, they are rarely grazed as the sole forage species.

We looked at the possibility of grazing horses on legume pastures and found they are a good option for those looking to increase the forage nutritive value of their pastures. Alfalfa

can be grazed as a single-species or mixed with grass. We recommend using red or white clover in a mixture with grass due to lack of persistence when grazed by horses. Legumes can be safely grazed by healthy horses, and alfalfa and red clover appear to be appropriate pasture species for horses diagnosed with metabolic disorders. However, horse owners should work closely with their veterinarians and equine nutritionists before grazing horses diagnosed with metabolic disorders.

We rotationally grazed six adult, stock-type horses on legume and legume-grass pastures and tested eight alfalfa varieties, one red clover variety, and one white clover variety. We looked at yield, nutritional quality, and horse preference of the different forages and completed the study over multiple years and seasons in St. Paul, MN. Horses displayed the strongest preference for red and white clover species; however, they highly preferred and readily consumed all legumes.

Alfalfa and alfalfa-grass pastures had the greatest yields with more forage available for the horses to eat compared to clover or clover-grass pastures (Table 1). There was no difference in yield between alfalfa and alfalfa-grass pastures. Adding grass to a clover pasture increased yield.

Horses rotationally grazed the pastures used in this experiment. However, by the start of the third year, the pastures had damage likely from a combination of hoof traffic, grazing pressure, and winter weather events such as ice sheeting. Both clovers had greater damage (e.g., bare ground) compared to the alfalfas. When grass was added to the clover, these pastures had better persistence, or ground cover, compared to clover planted without grass.

All legume and legume-grass pastures provided a high level of nutrition (Table 2) and exceeded the needs of an adult, idle horse. Equine DE was high across all legume and legume-grass pastures. For adult idle horses, or those with unlimited access to grazing, this may result in excess weight gain. However, for horses needing to gain weight (those in work and other horses with higher caloric needs), legumes provide an advantage over grass-only pastures and may help alleviate a need for feeding grain. With the exception of white clover, all legumes and legume-grass pastures were <12% non-structural carbohydrates (NSC). This is important as a total diet <12% NSC is a guideline for horses diagnosed with obesity, laminitis, equine metabolic syndrome, and Cushings. This means these horses can potentially graze alfalfa or red clover pastures. Owners should routinely test the pasture and establish a grazing plan with help from veterinarians or equine nutritionists.

## Forage Focus, May 2019

 Table 1. Season yield for legume and legume-grass pastures in MN.

	2014	2015	2016		
Forage Species	Tons/ac				
Alfalfa	6.1	5.8	7.2		
Alfalfa-Grass	5.7	5.7	7.1		
Red Clover	3.7	3.2	2.1		
Red Clover-Grass	3.8	4.4	4.9		
White Clover	2.5	1.9	1.4		
White Clover-Grass	2.9	3.4	5.7		

**Table 2.** Forage nutritive values of cool-season grasses and legumes.

	Equine DE	CP	NSC	NDF*	Ca*	P*	
Forage Species	Mcal*/lb	%DM					
Alfalfa	1.18	27	10	35	1.3	0.4	
Alfalfa-Grass	1.17	26	10	38	1.2	0.4	
Red Clover	1.14	28	10	38	1.4	0.4	
Red Clover-Grass	1.11	26	11	42	1.2	0.4	
White Clover	1.24	29	13	29	1.2	0.4	
White Clover-Grass	1.10	25	12	43	1.0	0.4	

\*NDF, neutral detergent fiber; Ca, calcium; P, phosphorous; Mcal, megacalories.