WISCONSIN - Meadow Fescue and White Clover Had the Greatest Additive Effect on Nutritive Value of Grass/Legume Pasture Mixtures

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Grazing-based producers typically seed complex mixtures of cool-season grasses and legumes to improve pasture productivity and forage quality. Although productivity is often influenced by the growth of one or two dominant species in the mixture, the impact on forage quality by individual species is less known. In Wisconsin and Pennsylvania, we seeded combinations of two grasses and two legumes that resulted in forage mixtures having a wide composition range (0-100%) of each of four species. One group included orchardgrass, quackgrass, alfalfa, and white clover; the other included meadow fescue, reed canarygrass, red clover, and kura clover. Vegetative-stage mixtures (typical of grazing) were harvested five times each year for two years.

Botanical composition was determined in spring, summer, and fall and used to calculate each component's additive effect, or the expected change in nutritive value associated with a change in botanical composition of a species from 0-100%. Nutritive value differences among mixtures attributed to botanical composition were evident the first year, but except for monocultures, had largely disappeared in the second year. White clover and meadow fescue generally had a positive additive effect on digestibility, but alfalfa and reed canarygrass had no significant additive effect. These results suggest that in complex mixtures consisting of multiple grass and legume species, a particular component may not have the predicted effect of reducing (usually a grass) or improving (usually a legume) the nutritive value of a mixture.