

Forage Nutritive Value of Cool Season Grasses in Binary Mixtures with Alfalfa, Birdsfoot Trefoil and Cicer Milkvetch

Michael Peel, ARS

Earl Creech, Utah State University

Blair Waldron, ARS

Forage legumes have the potential to ameliorate high N costs and enhance nutritive value of productive irrigated pastures of the Intermountain Western US. Our objective was to determine the species combinations of binary grass-legume mixtures that optimize forage nutritive value. Tall fescue (TF), orchardgrass (OG), and meadow brome (MB), were grown in monocultures and with alfalfa (ALF), birdsfoot trefoil (BFTF), and cicer milkvetch (CM) in grass-legume mixes at planting ratios of 25:75, 50:50, 75:25 percent. Plots were harvested four times annually 2011-2013. Crude protein (CP) and neutral detergent fiber (NDF) was determined for the first and third harvests. CP of unfertilized TF, OG, and MB monocultures were 116, 108, and 104 g/kg, respectively. TF, OG, and MB grass-legume mixes averaged 43, 51, and 59% higher CP than their respective grass monocultures. Differences in CP among the ratios were only observed in grass-ALF mixtures averaging 15 % higher than the CP of the lowest ratio. NDF of the unfertilized TF, OG, and MB monocultures averaged 533, 557, and 472 g/kg, respectively. NDF of the TF, OG, and MB grass-legume mixes were slightly better averaging 7, 6, and 6 % lower than their respective monoculture. For the most part, NDF did not differ with respect to grass-legume ratio. Overall, for both harvests the mixtures showed similarly higher nutritive value. Mixtures with ALF and BFTF had the highest CP and lowest NDF and generally at the 75:25 planting ratio. While all forage legumes improved the nutritive value of irrigated pastures, the greatest improvement was observed with alfalfa followed by birdsfoot trefoil.