

Optimizing Forage Quality of Alfalfa-Grass Mixtures

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Variability in forage quality is the primary concern when feeding alfalfa-grass mixtures, which is strongly impacted by the ratio of grass to legume. Approximately 85% of all alfalfa sown in New York State is sown with a perennial grass, providing greater yield stability in variable environments. Forage quality can only be optimized by harvesting at an optimal time for the mixture in a particular field. Botanical composition of alfalfa-grass fresh and ensiled mixtures is a key parameter for assessing forage and diet quality, as well as for managing mixed stands. Conventionally-bred reduced-lignin alfalfa (Alforex HiGest 360) may be up to 7-10% lower in lignin than normal alfalfa types. Our objective was to evaluate reduced-lignin alfalfa in mixed grass stands. A high yielding alfalfa and Alforex Hi-Gest 360 were planted at 14 lbs/acre in binary mixture with two tall fescues, two meadow fescues, four orchardgrasses and one festulolium (all with the same PLS/acre). Two sites were planted in early May 2015; farmer fields in Oneida Co, and Wyoming Co., NY, with six replicates per farm. Harvesting occurred on June 24, July 28 and Sep.1 in seeding year at the Oneida site, which was the same schedule as the farmer on his 180 acre field. Harvesting occurred July 6, Aug. 6, and Sep. 11, at the later maturing Wyoming site. Samples were separated into grass and alfalfa and analyzed separately. Our seeding year goal is about 10-20% grass. Our 1st production year production goal is 20-30% grass. Festulolium at same PLS/acre as other grasses was excessive and smothered alfalfa, with grass% at 40-60% of mixtures in Sept. Kora tall fescue was too aggressive for alfalfa at one site (25% grass in Sep.). All other grasses were between 5 and 15% grass in stands in Sep. Hi-Gest was lower in lignin ($P < 0.05$) at all three cuttings than a high yielding alfalfa at Oneida (12, 10, and 6 % lower in lignin for cuttings 1, 2, and 3, respectively), and was higher ($P < 0.05$) in NDFD (9, 14, and 7% at cuttings 1, 2, 3, respectively) than the high yielding alfalfa. At the Wyoming site, Hi-Gest tended to be lower (3, 4, 2%, respectively) in lignin than the other alfalfa, and Hi-Gest was lower ($P < 0.05$) in lignin than the other alfalfa when all three cuts were combined and Hi-Gest was higher ($P < 0.05$) in NDFD % (4, 7, 4% respectively for cuttings 1, 2, 3) than the other alfalfa. Orchardgrass NDF > fescues > festulolium ($P < 0.05$). Orchardgrass was also low in NDFD. Meadow fescue averaged 5.5% units higher NDFD than tall fescue ($P < 0.5$). For the seeding year, we conclude that Hi-Gest is higher in NDFD than alfalfa not selected for high quality and that festulolium, though highest in NDFD than other grasses except meadow fescue, was too competitive at the same PLS seeding rate of other grass species.