Species composition affects yield and nutritive value of binary legume-grass mixtures

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Abstract

Legume-grass mixtures generally provide more consistent forage yield than monocultures. We studied 18 binary mixtures of one legume and one grass species for dry matter (DM) yield, neutral detergent fibre (NDF) concentration and *in vitro* digestibility (NDFD), and estimated milk production per hectare. Orchardgrass (*Dactylis glomerata* L.), Kentucky bluegrass (*Poa pratensis* L.), meadow bromegrass (*Bromus biebersteinii* Roemer & J.A. Schultes), meadow fescue (*Festuca elatior* L.), tall fescue [*Schedonorus phoenix* (Scop.) Holub], and timothy (*Phleum pratense* L.) were seeded with birdsfoot trefoil (*Lotus corniculatus* L.), alfalfa (*Medicago sativa* L.) or white clover (*Trifolium repens* L.). Frequent clipping at two sites, simulating grazing, and cattle grazing at one site were imposed on the 18 binary mixtures in this 3-yr study conducted in eastern Canada. Legume and grass species significantly affected seasonal herbage DM yield, NDF concentration, and NDFD of the mixtures averaged over three production years. Birdsfoot trefoil mixed with meadow bromegrass or timothy resulted in the largest estimated milk production per hectare under frequent clipping, while white clover with meadow bromegrass or tall fescue provided the best results under cattle grazing. Frequent clipping and cattle grazing affected differently the performance of the mixtures, primarily for the legume component. Meadow bromegrass performed very well with the three legume species and under both frequent clipping and cattle grazing.

Keywords: frequent clipping, grazing, digestibility, simple forage mixtures