

Agronomic analysis of sainfoin (*Onobrychis viciifolia* Scop.) and grass mixtures for forage production in western Canada

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Sainfoin is a perennial forage legume that is gaining interest in the western Canadian cattle industry since it does not cause frothy bloat. It is well adapted to western Canadian growing conditions, yields similar to other legumes, is highly palatable, matures earlier than alfalfa, and remains succulent into the fall. There is a lack of updated agronomic information available for sainfoin production in western Canada. This study evaluates two sainfoin cultivars, 'Melrose' and 'AAC Mountainview', in mixtures with 'AC Goliath' crested wheatgrass (*Agropyron cristatum*), 'Armada' meadow brome (*Bromus riparius* Rehm.), and 'AC Knowles' hybrid brome (*Bromus riparius* x *Bromus inermis*) at three locations at Saskatoon, SK (Dark Brown soil zone), Swift Current, SK (Brown soil zone), and Brandon, MB (Black soil zone). The experimental design was a split plot, randomized complete block design with three replications. The main plot factor is harvest frequency (one or two cuts), the subplot factor is the mixtures of sainfoin and grass as seeding ratios of 100:0, 5:0, 25:0, 70:30, 50:50, and 30:70. The two-cut system yielded higher than the one-cut system and the mixtures with grasses yielded higher than the monocultures of sainfoin at all sites. The mixtures in Saskatoon and Brandon had similar yields, and nutritive values (fiber and crude protein) that were higher than in Swift Current. The 30:70 ratio of the 'Melrose': 'AC Knowles' mixture is recommended for the Dark Brown and Black soil zones. The 30:70 ratio of the 'AAC Mountainview': 'AC Knowles' and the 30:70 ratio of the 'AAC Mountainview': 'AC Goliath' mixtures are recommended for the Brown soil zone.