

Forage Legume Regeneration from the Soil Seed Bank in Western North Dakota

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Summary

Rotating wheat (*Triticum* spp.) with fallow cannot be sustained in the Great Plains. Replacing fallow with legume pasture enhanced wheat production in Australian ley farming. The legume species used in ley farming regenerated from seed produced during previous pasture periods. Our objective was to identify legumes that regenerated from the seed bank in western North Dakota. Ten legume species were established in one experiment, 30 species in a second experiment, and 29 species in a third experiment. Seedlings were counted in the spring following the year of establishment. Over 200 seedlings m⁻² germinated in balansa clover (*Trifolium michelianum* Savi), berseem clover (*T. alexandrinum* L.), birdsfoot trefoil (*Lotus corniculatus* L.), black medic (*Medicago lupulina* L.), burr medic (*M. polymorpha* L.), crimson clover (*T. incarnatum* L.), Persian clover (*T. resupinatum* L.), and red clover (*T. pratense* L.) plots in at least one experiment. Forage dry matter yield ranged from 2 to 5 Mg ha⁻¹ for birdsfoot trefoil and red clover depending on the experiment and was similar to forage yield by alfalfa (*M. sativa* L.) that persisted in the second year following establishment ($P > 0.05$). Crude protein, acid detergent fiber, and neutral detergent fiber concentrations suggested that forage quality was equal or superior for birdsfoot trefoil compared with alfalfa and red clover. Birdsfoot trefoil has potential as a self-seeding pasture species in the Great Plains.

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