Natural Reseeding By Forage Legumes Following Wheat In Western North Dakota

Patrick M. Carr, Woodrow W. Poland and Lee J. Tisor
North Dakota State University
Dickinson Research Extension Center

Summary

Legume pasture is rotated with wheat (*Triticum* spp.) to enhance grain production sustainability. The legume species maintain or enhance wheat yield and regenerate from the soil seed bank. Our objectives were to determine: (1) grain yield when wheat followed legume forages, and (2) if legume species regenerated naturally following wheat in western North Dakota. Ten to 30 legume species were established in field experiments in 1999, 2000, and 2001. Legumes that regenerated or persisted in the second year were terminated chemically prior to seeding wheat in the third year. Plots were fallowed in the second year where legumes failed to regenerate or persist. Grain yield ranged from 1290 to 4100 kg ha^{-1} across the 3 yr when wheat followed yellow-flowered sweetclover (*Melilotus officinalis* Lam.) and was equal or enhanced compared with fallowed plots where legumes did not reseed in 2 yr ($P < 0.05$). Grain yield never was enhanced and sometimes was reduced when wheat followed other legume forages compared with fallowed plots. Legume seedlings regenerated following wheat in birdsfoot trefoil (*Lotus corniculatus* L.) plots in all 3 yr and forage production exceeded 3 Mg ha^{-1} in 2 yr. Other legume species failed to regenerate or produced less forage than birdsfoot trefoil in at least 1 yr. Birdsfoot trefoil has potential as a regenerating pasture species, but strategies are needed to enhance grain yield in legume-wheat rotations.

The full paper was accepted for publication in an upcoming issue of Agronomy Journal.