Interseeding Falcata Alfalfa (Medicago sativa ssp. falcata) into Native Rangelands: I. Soil Carbon and Nitrogen Dynamics. (S03-schuman144443-Oral)

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Abstract:

Rising atmospheric CO2 levels have led to research to assess management strategies that increase C sequestration in soils. Fertilization of nitrogen deficient rangelands can increase production and C sequestration. Rangelands in northwestern South Dakota that have been interseeded with yellowflowered alfalfa (Medicago sativa ssp. falcata) over the past 40 years were selected to evaluate the effect of this practice on soil N and C storage. Experimental sites were selected that had been interseeded in 1965, 1987, and 1998. Adjacent control sites for each interseeding date were also established. Soil samples collected in 2001 showed increases in soil N of 2.9, 0.6, and 1.4 Mg N/ha in the surface 1-meter soil depth compared to the non-interseeded areas for the 1965, 1987, and 1998 dates, respectively. This additional fixed N also resulted in more C being sequestered in the soil. An additional 11.8, 9.1, and 4.7 Mg C/ha in the 1965, 1987, and 1998 interseeded sites, respectively, compared to the untreated control areas. The practice of interseeding alfalfa has been shown to increase soil N through symbiotic fixation. The N provided through fixation and the subsequent increase in aboveground biomass can help mitigate rising atmospheric CO2 levels through increased C sequestration.

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