Legume Green Fallow Effect on Soil Water Content at Wheat Planting and Wheat Yield. (S06-nielsen151832-Poster)

Authors:

- D.C.Nielsen* USDA-ARS
- M.F.Vigil USDA-ARS

Abstract:

Growing a legume cover crop in place of fallow in a winter wheat-fallow system can provide protection against erosion while adding nitrogen to the soil. However, the water used by the legume may reduce the following wheat yield. This study was conducted to quantify the effect of varying legume termination dates on available soil water content at wheat planting and subsequent wheat yield in the central Great Plains. Five legumes (Austrian winter pea, spring field pea, black lentil, forage pea, hairy vetch) were grown at Akron, CO as spring crops in 1995-1999. The legumes were terminated at 2-week intervals (four termination dates). Wheat was planted in September in the terminated legume plots, and yields were compared to wheat yields from a conventional tillage wheat-fallow system. Soil water at wheat planting was significantly reduced with delayed legume termination date and legume growth, resulting in a significant decrease in subsequent wheat yield. Wheat yield was linearly correlated with available soil water at wheat planting (kg/ha=144.8*cm- 816.6). There were generally no significant differences in available soil water at wheat planting due to legume type. The cost in water use by the legume and subsequent decrease in wheat yield may be too great to justify the use of legumes as fallow cover crops in wheat-fallow systems in this environment.

Corresponding Author Information:

David Nielsen USDA-ARS 40335 County Road GG Akron, CO 80720 phone: 970-345-0507 fax: 970-345-2088 e-mail: dnielsen@lamar.colostate.edu

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