EFFECT OF BARLEY AND WINTER PEA COVER CROPS ON NITROGEN AVAILABILITY IN NO-TILL CORN

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ABSTRACT

Cover crops are known to have positive effects on soil health and reduce erosion. However, popular cereal grains used as cover crops, such as rye (*Secale cereales*), wheat (*Triticum aestivum*), and barley (*Hordeum vulgare*) can negatively affect nitrogen availability for the subsequent corn crop. Legumes, such as winter peas (*Pisum sativum*) could reduce competition for nitrogen between the cereal cover crop and the summer corn crop. This study's objective is to determine if barley as a cover crop will be less competitive for nitrogen when mixed with a legume and how cover crop termination timing affects nitrogen availability for the subsequent corn crop. This study is located at the University of Kentucky's Spindletop Farm in Lexington, KY and at a private farm near Glendale, KY. The study design is a split-plot randomized complete block. Treatments for the cover crop include no cover crop control, barley alone, and an Austrian winter pea (plus barley mix. Cover crops were terminated at either five weeks or two weeks before planting. Five nitrogen rates of 40, 170, 215, 260, and 349 lb/A were applied, with 40 lb/A applied at planting, and the remaining nitrogen applied as side dress to V3 corn. Cover crop biomass and nutrient content were assessed. Soil cores were taken prior to V10 to determine nitrate levels. SPAD chlorophyll readings were taken at V10 and R1. Ear leaves were pulled at R1 for nutrient analysis. Grain yield is also being analyzed. Preliminary findings show that early termination of the cover crops can lead to an increase in corn nitrogen content during the growing season.