

PROJECT TITLE: NITROGEN REQUIREMENTS FOR WHEAT FOLLOWING SUNN HEMP

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SUMMARY

A sunn hemp cover crop was drilled across the experimental area on September 9, 2007 at the Wiregrass Research and Extension Center (WGS). Sunn hemp was no-till seeded at 45 lb ac⁻¹ with an 8 inch drill spacing. Each plot was 12 ft. wide and 40 ft. long. AGS2000® winter wheat was planted across the experimental area at a rate of 90 lb ac⁻¹ on November 23, 2007. This experiment was expanded to the Tennessee Valley Research and Extension Center (TVS) in Bella Mina, AL on September 2, 2008 and continued on a new field at WGS on September 10, 2008 to observe the differences in soil type and climate on sunn hemp.

Sunn hemp biomass levels at WGS decreased from 3082 lb ac⁻¹ in 2007 to 775 lb ac⁻¹ in 2008, a 75% reduction. In 2008, sunn hemp production at TVS was 48% higher than that of WGS, with averages of 1502 lb ac⁻¹ and 775 lb ac⁻¹ respectively. Based on this information, taller plants found in Belle Mina, AL resulted in better sunn hemp yields. The potential N available from sunn hemp based on N content and sunn hemp biomass during the 2007-2008 growing season at WGS ranged from 61 to 98 lb ac⁻¹, with an average of 75 lb N ac⁻¹. Nitrogen content data has not been summarized for TVS and WGS for the 2008-2009 growing season.

The average wheat grain yields in 2008 across all N fertilizer application rates was 15 bu ac⁻¹ for fallow treatment and 20 bu ac⁻¹ for sunn hemp treatment. When no fertilizer was applied, there was 54% more grain produced in the plots planted after sunn hemp. Despite, the low wheat grain yields, high N fertilizer rates were not required following sunn hemp.

The experimental area at WGS was not deep-tilled, prior to wheat planting, which contributed to the low overall wheat production. In addition, plants appeared stunted throughout the growing season indicating a possible herbicide carryover problem, but nothing specific was ever diagnosed. These two factors combined to severely limit wheat grain yields. After the wheat grain yields from the 2008-2009 growing season have been analyzed, better conclusions may be made on the effectiveness of sunn hemp as an N source to reduce commercial fertilizer costs in wheat production.