COVER CROP MANAGEMENT IN TEXAS HIGH PLAINS COTTON

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<u>Abstract</u>

Cover crops can reduce wind and sand damage to emerging cotton plants and improve soil health and quality. On the Texas High Plains, questions remain regarding cover crop water use and its subsequent effect on cotton lint yield. Studies were initiated in December 2016 at the AG-CARES location near Lamesa, Texas and the Texas AgriLife Research Farm near Halfway, Texas to evaluate management factors that could affect cover crop biomass production and effects on cotton yield compared to conventional tillage with no cover crop. In these studies, the effects of winter cover crop species at two seeding rates and two termination dates on biomass production, cotton stand establishment, soil water content, and cotton lint yield was determined. The no-till systems had two different cover crop species, rye (Secale cereale) and wheat (Triticum aestivum), and were compared with a conventional tillage system. The cover crops were planted at two seeding rates, 30 lbs/acre and 60 lbs/acre, and each plot was split into two termination timings, an early, six to eight weeks prior to planting of cotton, and late, which was two weeks after the early termination. Biomass collections were taken at an early-season stage and at both termination timings. Soil samples were collected at 0-6", 6-12" and 12-24" depths the day after planting (May 24) at the Lamesa location and weighed, oven dried, and reweighed to determine gravimetric water content. Soil water content was similar at each depth for all of the cover crop treatments. At the 12-24" depth, soil water content was greater in the conventional tillage than in any cover crop treatment. At the early termination timing, rye tended to produce greater biomass compared to wheat at both locations. At the late termination timing, biomass production was not affected by cover crop species or seeding rate at either location. Cotton populations at both locations were in an acceptable range with all treatments for optimum cotton production. At Lamesa, species or seeding rate did not affect yield; however, lower yields resulted with the later termination date. At Halfway, seeding rate or termination date did not affect yield, but yields with rye were greater than with wheat as a cover crop. At both locations, cotton yields were not greater with cover crops compared to conventional tillage.