MANAGING SMALL GRAIN COVER CROPS IN TEXAS HIGH PLAINS COTTON

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Abstract

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 and November 2017 at the AG-CARES location near Lamesa, Texas to evaluate management factors that could affect cover crop biomass production and 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 herbage mass production, cotton stand establishment, soil gravimetric water content, and cotton lint yield were 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 was collected 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 in 2017 (May 24) and weighed, oven dried (105° C), and reweighed to determine gravimetric water content. Soil water content was similar at each depth for all the cover crop treatments. Rye herbage mass was greater than wheat at the spring collection date. At the first termination timing in 2017, rye tended to produce more herbage than wheat but seeding rate had no effect within species. At the late termination timing, herbage production was not affected by cover crop species or seeding rate. Soil water content was greatest with conventional tillage at the 12-24" soil depth. Differences were not determined between cover crop treatments at all depths and the conventional tillage at the upper two depths. Cotton populations were at an acceptable range with all treatments for optimum production. Cotton yields were not greater with cover crops compared to conventional tillage in either year. Early termination tended to have less of a negative impact on cotton yield than late termination. These results indicate that planting 30 lbs/A of wheat or rye with an early termination prior to heading minimizes soil moisture loss and maintains yields compared to conventional practices.