COVER CROP MANAGEMENT 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 from 2017 to 2019 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, and cotton lint yield were determined. The no-till systems include two 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 both termination timings. Biomass amounts varied across years, ranging from 3000-7000 lbs/A in 2017, to only 1000-2000 lbs/A in 2019. In all years seeding rate had no effect on biomass, with the 30 lbs/A rate producing as much biomass as the 60 lbs/A rate within species each year. Cotton plant populations were optimum in both 2017 and 2019, but were lower in 2018, but all were still in an acceptable range. Cotton lint yields varied across years, producing 1000-1400 lbs lint/A in 2017, 550-900 lbs lint/A in 2018, and 750-850 lbs lint/A in 2019. The 30 lbs/A seeding rate and optimum termination timing in either species produced yields equal to the conventional yield in all three years. When comparing the relationship between cover crop biomass and cotton lint yield, higher amounts of cover crop biomass had a negative effect on cotton lint yield. These results indicate that the best cover crop management strategies in the semiarid Texas High Plains include planting a lower seeding rate of 30 lbs/A of either wheat or rye and terminating at an optimum time of six to eight weeks prior to cotton planting. This practice can produce similar yields when compared to a conventional tillage system.