EVALUATION OF A MECHANICAL ROLLER-CRIMPER AND REDUCED GLYPHOSATE RATES ON COVER CROP DESICCATION IN COTTON.

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ABSTRACT

An integral component of conservation-tillage systems in cotton is the use of a high-residue winter cover crop; however, managing such cover crops is a challenge. Black oat (*Avena strigosa* Schreb.), rye (*Secale cereale* L.), and wheat (*Triticum aestivum* L.) winter cover crops were established in early November at the E.V. Smith Research and Extension Center located near Shorter, AL in the fall of 2003 and 2004. Additionally, wheat was established in early November 2004 at the Tennessee Valley Research and Extension Center near Bella Mina, AL and at a grower's field near Robertsdale, AL. In mid-April in both years each cover was flattened with a straight-blade mechanical roller-crimper alone or followed by three rates of glyphosate (0.75, 0.38, 0.19 lb ae/ac). Additionally, glyphosate alone at each rate and a non-treated check were included to complete the factorial treatment arrangement. Cotton was then established after within-row sub-soiling at E.V. Smith and no-till at Tennessee Valley in four row (40 in. spacing) plots while in the grower's field, eight row plots established no-till were utilized. At 3 weeks after treatment in 2004, averaged across covers, rolling plus glyphosate at 0.75 or 0.38 lb/ac terminated the reproductively mature covers ≥ 96%. Rolling plus glyphosate at 0.19 lb/ac resulted in 89% rye and black oat termination, a 44% increase compared to glyphosate alone. Rolling alone killed wheat 96%. Cotton yield was unaffected by treatment in 2004, likely due to adequate early-season soil moisture and the use of a within-row subsoiler prior to cotton planting.