EFFECT OF TILLAGE REGIME AND TIMING OF GLYPHOSATE APPLICATIONS ON TRUMPETCREEPER (*CAMPSIS RADICANS*) IN GLYPHOSATE-RESISTANT SOYBEAN.

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The adoption of conservation or no-tillage production has resulted in dramatic and beneficial changes in soil physical properties. In Kentucky, the soils and topography are well suited to these limited tillage production systems because they allow an effective means to reducing soil erosion and plant nutrient losses by water while growing a crop on sloping land. However, one the major drawbacks to no-tillage production is the increase of populations of difficult to control perennial dicots, such as trumpetcreeper. This species remains difficult to manage with normal in-season use rates of glyphosate. Delaying herbicide treatment of trumpetcreeper to the late-season/fall period (either preharvest or after crop removal) would potentially result in more herbicide translocated into the underground root tissue. The objectives of this study were to establish a uniform population of trumpetcreeper, to evaluate the following season after transplanting the impact of tillage regime on established trumpetcreeper population, and to evaluate control and population changes on established trumpetcreeper the following season after various rates and timings of glyphosate treatments. Field experiments were conducted in Central Kentucky at Lexington and in Western Kentucky near Princeton. Experimental design was a split-plot with the main plot being tillage regime and the subplot herbicide treatment. Tillage regime was replicated three times at each location. In the establishment year (2001), trumpetcreeper seeds were collected from fencerows adjacent to roadsides in Nelson County in Central Kentucky. Starting in March 2001, and every year afterward, tillage blocks were tilled using a tandem disk set to a depth of 7.6 cm. No-tillage blocks were undisturbed. To initiate growth and derive a uniform population, seeds were planted in peat tablets in the greenhouse six weeks before transplanting to the field. Seedling trumpetcreeper, at the 2- to3-leaf stage, were transplanted to the field locations (late May to early June). The planting arrangement consisted of 6 plants spaced equidistantly along the center of 3 by 12 m subplot in Lexington and 3 by 10 m subplot in Princeton. One year after transplanting (2002), glyphosate-resistant Asgrow AG4403 soybean (*Glycine max*) was planted on May 28, 2002 in Lexington and May 19, 2002 in Princeton. Trumpetcreeper populations were measured before applying herbicide treatments. In-season herbicide treatments consisted of glyphosate early post (EP) at 0.84 kg ha^{-1}, glyphosate late post (LP) at 0.84 kg ha^{-1}, glyphosate EP at1.68 kg ha^{-1}, glyphosate LP at 1.68 kg ha^{-1} and a preharvest treatment of glyphosate at 1.68 kg ha^{-1}. In-season and preharvest treatments were applied with CO_2 backpack sprayer at carrier volume of 13 L ha^{-1} and a pressure of 138 KPa. Visual control ratings and plant heights were recorded on in-season treatments at 3, 6, and 9 weeks after treatment. Plots were harvested for yield 14 days after the preharvest treatment. All plots were evaluated the following season (2003) for long-term effect on trumpetcreeper populations and control. Data were subjected to ANOVA and means separated at the P = 0.05 level. At both Lexington and Princeton, spring tillage had a significant effect on trumpetcreeper population the season following establishment. In addition, in-season trumpetcreeper control was better with the higher rate of glyphosate. More importantly, trumpetcreeper control was better the season following herbicide treatment with the late season (preharvest) versus in-season treatments. No differences were observed in trumpetcreeper control and plant height between the two in-season glyphosate timings. In Princeton, soybean yield were similar across all in-season treatments, but EP did yield higher than LP treatments. In conclusion, spring tillage provided an excellent tool in the management of trumpetcreeper. In-season trumpetcreeper control was better with the highest rate of glyphosate at both locations. The preharvest treatment provides the best trumpetcreeper control the following season (12 months after treatment). Therefore, a long-term strategy for reducing trumpetcreeper infestation may include the use of late-season/fall herbicides and/or conservation tillage.

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