COMMON POKEWEED CONTROL IN CORN AND SOYBEAN WITH A CONSERVATION TILLAGE CULTIVATOR

J. D. Green[1] and William W. Witt[2]

AUTHORS: [1]Extension Professor and [2]Professor, Department of Agronomy, University of Kentucky. Corresponding author: J. D. Green, N106 Agricultural Science Building-North, University of Kentucky, Lexington, KY 40546, jgreen@ca.uky.edu.
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Common pokeweed (*Phytolacca americana* L.) is of increasing concern to corn and soybean producers in Kentucky and surrounding states where no-tillage production systems are used. Appearance of this weed species and other perennial dicots in field crops in recent years has occurred as tillage has decreased. In the past, pokeweed was considered to be more of problem weed in pasture areas, fencerows, and other non-cropland sites.

Specific management practices to prevent and control common pokeweed in row crops are not discussed in the literature. Because of its growth habit and large, deep-rooted taproot, effective control opitions are very limited in no-till cropping systems. Therefore, this research was initiated to evaluate the effectiveness of a conservation-till cultivator for pokeweed management, yet minimize soil disturbance. Treatments included cultivation with or without a postemergence herbicide treatment.

Experiments were conducted in Kentucky corn and soybean fields where common pokeweed had become well established after several years of continuous no-till crop production. In-crop cultivation and postmergence herbicide applications were evaluated at each location resulting in treatments arranged in a split-plot design. The main plots consisted of postmergence herbicide treatments applied four to five weeks after crop planting and an untreated check. Each main plot was divided into two sub-plots that consisted of cultivation or no cultivation. Cultivation was conducted approximately one week following herbicide application and was performed with John Deere 886 Conservation Tillage cultivator set to a soil depth of 2 inches. The horizontal sweeps are designed to move through the soil below the surface with minimal disturbance of the surface residue. The width of the sweeps between the row varied depending on the crop row spacing.

Corn Studies:

Four replicated studies were conducted on three different farms in Kentucky during 1996 and 1997. Cultivation treatments without a herbicide 12 WAT(weeks after treatment) gave over 60% control at two locations and approximately 40 to 50% control at the other two locations. In general, acceptable control was observed between the corn rows where cultivation occurred, but overall visual ratings per plot were lower since no control was obtained in or near the crop row. Average common pokeweed height in the untreated check plots ranged from 66 to 76 inches measured at 12 WAT. Whereas, the average height of common pokeweed plants was reduced by at least 75% with cultivation at three locations and reduced 50% at one location.

Exceed herbicide alone or Exceed followed by cultivation were highly effective in suppressing common pokeweed growth. Pokeweed control 12 WAT was 75 to 85% with Exceed without cultivation in three studies, while control was 43% at the other location. Cultivation one week following the Exceed application did improve effectiveness at three locations compared to Exceed alone. Common pokeweed heights were reduced gently reduced either with a postemergence application of Exceed or with Exceed followed by cultivation. At two locations Exceed followed by cultivation further decreased average plant height compared to Exceed alone.

Banvel without cultivation provided 60 to 86% control 12 WAT. Banvel followed by cultivation did enhance common pokeweed control 4 WAT, but was not improved 12 WAT compared to Banvel alone at two of three sites. Except for one study, average plant heights between Banvel alone and Banvel followed by cultivation did not differ and were equal to those observed with Exceed treatments.

Corn grain yield tended to be greater in postemergence herbicide treated plots with and without cultivation compared to the untreated check plots. This indicated that if left uncontrolled common pokeweed has the potential to reduce corn yield. Cultivation treatments had no negative effect on corn grain yield at any of the sites compared to the uncultivated plots.

Soybean Studies:

Two replicated studies were conducted in 1996 by dividing the field site into two main plot areas. Therefore, the potential impact of the "burndown" herbicide application to control the existing vegetation present before crop planting, including common pokeweed, could be evaluated along with in-season treatment affects of

Synchrony “STS” with and without cultivation. At time of soybean planting one study was treated with Roundup Ultra (3 pt/A) and the adjacent study area with Gramoxone Extra (3 pt/A). Another experiment was conducted in 1998 to evaluate in-season applications of Roundup Ultra and Synchrony “STS” with and without cultivation.

The “burndown” treatment used at time of planting had little impact on the common pokeweed control observed in the 1996 crop season. Common pokeweed control was approximately 45% 5 WAT when cultivation was used without a postemergence herbicide treatment. As noted with corn studies, acceptable control was observed between the rows where cultivation occurred, but was obtained in or near the soybean row. Common pokeweed height 5 WAT was reduced nearly 80% with cultivation compared to the untreated plots. Treatments with Synchrony “STS” with and without a cultivation provided better pokeweed control than the cultivation only treatment.

Common pokeweed in the 1998 study was about 30% when cultivation was used without a postemergence herbicide. Average pokeweed height 4 WAT was reduced over 50% with cultivation (28 inches) compared to the untreated plots (63 inches). Treatments with Synchrony “STS” with and without a cultivation provided 72 and 52% control, respectively, which was greater than control obtained with the cultivation provided over 95% control throughtout the season. Soybean grain yield was also greater with Roundup Ultra treatments compared to untreated plots and Synchrony “STS” without cultivation.