DOES HERBICIDE USE IN THE PRECEDING CROP INFLUENCE COVER CROP ESTABLISHMENT?

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Abstract

Adequate establishment of cover crops is essential for the efficacy of weed suppression. With the sowing of most cover crops immediately following a subsequent summer crop, there is risk that residual herbicides applied to the previous crop may persist and damage the subsequent cover crop. With some federal payments being linked to use of cover crops as a means to encourage reduced tillage and increase weed suppression, there is widespread interest among growers to plant a wide-ranging assortment of cover crops, many of which have not been thoroughly researched in Midsouth cropping systems. Hence, a field study was conducted in the fall of 2014 at the Arkansas Agricultural Research and Extension Center in Fayetteville to evaluate the sensitivity of cover crops to herbicides that are commonly used in Midsouth summer crops. This experiment was a split plot with 16 cover crops serving as main plots and 17 residual herbicides applied at a 1/16X rate (simulated four half-lives) as subplots with four replications. After application, all the treatments received 1.3 cm of overhead irrigation to activate the herbicides. Stand accounts were taken after two weeks and injury was evaluated at two and four weeks after cover crop planting. For each herbicide tested, there was at least one or more cover crops that exhibited tolerance. The broadleaf cover crops Austrian winterpea, tillage radish, crimson clover, buckwheat, and repeseed were most sensitive to the photosystem II-inhibiting herbicides, especially Cotoran (fluometuron). Brake (fluridone) also negatively affected broadleaf cover crops, especially the two smallest-seeded legume cover crops in the study, berseem clover and crimson clover. Valor (flumioxazin), a photoporphyrinogen oxidase inhibitor, injured all the winter broadleaf cover crops. The grass cover crops wheat, rye, browntop millet, oats, and triticale had were injured most when treated with the chloroacetamide herbicides, Dual Magnum (S-metolachlor) or Harness (acetochlor). Envoke (trifloxysulfuron), an acetolactate synthase inhibitor, did cause injury to either the broadleaf or grass cover crops.