Extension
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Soybean Residuals

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Warm temperatures were welcomed in Northwest Missouri this past week, leading to field work progressing rapidly. Summer annual weed emergence picked up as well, so now is a good time to consider the importance of a residual herbicide in a soybean weed control program.

Weeds have uneven emergence, a trait we wouldn't want in our crops, but that serves the weed well. Unlike our crops, where all seeds will ideally emerge in a narrow window, weeds can emerge throughout the growing season. This improves the chances that at least some of the weeds will progress to maturity, ensuring the species survives to future years. This also allows weeds to escape eradication measures such as tillage and postemergence herbicides, as only emerged weeds are susceptible to these actions. Residual herbicides are a powerful tool to control emerging weeds over a much wider emergence window.

When preemergence residual herbicides are applied, rainfall is required for herbicide activation. This basically means that rainfall is needed to dissolve the herbicide in the soil water solution where it can be absorbed by germinating weeds. In dry conditions, the herbicide stays on the soil surface or is bound to soil particles, therefore is never taken up by the emerging weeds. How much rain is needed to activate an herbicide will depend on the herbicide applied and growing conditions, but generally ranges from 0.25 to 0.75 inches, with approximately 2 inches of rainfall leading to the best herbicide performance.

If spraying is delayed, some residual herbicides can damage emerging soybeans. Active ingredients such as sulfentrazone (Authority products), flumioxazin (Valor, others), pendimethalin (Prowl H_2O), saflufenacil (Sharpen, others) and several others can cause severe injury if they come into contact with the growing plant. Damage can also result from these products if they are applied to fields where the seed trench was not properly closed at planting.

Every year there are calls about splashing injury on emerged soybeans from residual herbicide applications. This happens when a residual herbicide is applied, but there is no rainfall to incorporate it into the soil. As the soybean emerges, the herbicide remains on the soil surface. When rain does come, water droplets bounce off the soil surface, carrying herbicide molecules with them, onto the emerged soybeans. This can result in necrotic or "burned" lesions on the hypocotyl or cotyledons of the soybean. Generally, the plants will grow out of this injury with very little or no yield loss, so no action is necessary, but each field should be evaluated individually. While injury from herbicides is unfortunate, the weed control benefits of residual herbicides will easily outweigh the negative results of crop injury.