Insecticide treatments in combination with herbicides cause crop injury and yield loss

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As growers across the southern United States have planted increased corn acreage in recent years, corn-attacking insects have become a widespread problem, including populations of the western corn rootworm that have developed resistance to insecticidal proteins produced by genetically modified Bt corn varieties. Foliar sprays are ineffective because this rootworm, and other insects such as the sugarcane beetle, attack corn seedlings below ground. To combat such pests, at planting growers apply in-furrow granular or liquid insecticides such as the organophosphate chlorpyrifos. However, some Tennessee corn growers report reduced grain yields from crop injury when fields are treated with both an organophosphate insecticide and an herbicide premix.

A new study published in the journal *Weed Technology* investigated effects on crop health of combining insecticide and herbicide treatments. For two years, field experiments were conducted in western Tennessee to examine plant injury and yield loss in corn resulting from different combinations of in-furrow and foliar applications of chlorpyrifos with either a mesotrione- or tembotrione-based herbicide premix.

Combining chlorpyrifos with a mesotrione-based herbicide premix produced low levels of plant injury and no yield loss. However, foliar application of chlorpyrifos combined with application of the tembotrione premix resulted in 29% injury to corn plants and 41% yield loss compared with corn that received only the herbicide treatment. Plant injury doubled to 56% and yield loss increased to 49% when

chlorpyrifos was applied both in-furrow at planting and as a foliar spray.

This study shows that some of the newer herbicide premixes combined with organophosphate insecticides can cause severe crop injury, and that growers need to pay careful attention to which herbicides are applied when using organophosphate insecticides for insect management.

More information: "Corn Response to POST-Applied HPPD-Inhibitor Based Premix Herbicides with In-Furrow and Foliar-Applied Insecticides." *Weed Technology*: January-March, Vol. 29, No. 1, pp. 18-23. doi: dx.doi.org/10.1614/WT-D-14-00030.1

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