

# AGRONOMIC AND PEST INTERACTIONS IN NO-TILL CORN AND SOYBEAN WITH FALL VERSUS SPRING HERBICIDE APPLICATIONS

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## ABSTRACT

Fall herbicide applications have increased in popularity in recent years. Little is known of how fall herbicide applications impact soil conditions, insect populations, and winter and summer annual weed populations. Few studies have directly compared fall herbicide applications to early spring applications. Therefore, field experiments were conducted in both no-till corn and soybean fields from 2004 through 2006 in central, northwest, and northeast Missouri. Herbicide applications were made in the fall and at three spring timings. Two residual and one non-residual herbicide treatment were applied at each of the four timings. Removal of winter annual weeds with the three herbicide treatments led to an increase in soil moisture just after planting, and a decrease in insect populations and feeding well after planting. Measurements of soil temperature indicated that removing winter annual weeds could increase temperatures in the spring. Fall residual herbicide treatments provided the highest level of winter annual weed control, yet provided poor control of summer annual weed species after planting. Residual herbicide applications made at the last spring timing provided the highest level of summer annual weed control, yet provided poor winter annual weed control at planting. Residual herbicide applications made one to two months prior to planting offered the best balance between winter and summer annual weed control. Based on the results of these experiments, no-till corn and soybean producers can obtain maximum weed control and planting conditions by applying a residual herbicide in the early spring rather than the fall.