

# Plan Ahead To Combat Herbicide Resistant Weeds

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Last summer, University of Illinois weed scientists confirmed the existence of a glyphosate resistant waterhemp population in southern Illinois. This new addition means that there are now at least 18 known weed biotypes in the state that are resistant to one or more of the herbicide families commonly used in row crop production. Waterhemp joins horseweed (marestail) on the list of glyphosate resistant weeds in Illinois.

Several characteristics of waterhemp make this new biotype a serious issue. Waterhemp is a genetically diverse weed species that has now demonstrated the ability to develop resistance to Photosystem II (triazines), ALS (imidazilones and sulfonyleureas), PPO (diphenyl ethers) and ESPS (glyphosate) herbicide sites of action. In fact, some biotypes of this weed have shown resistance to at least three of these herbicide families within the same plant. In the case of the glyphosate resistant waterhemp biotype, it is also resistant to the ALS herbicides. In addition to being genetically diverse, waterhemp plants are dioecous, meaning that there are separate male and female plants. Cross pollination between plants must occur, and increases the possibility of spreading resistance genes more widely. Finally, waterhemp is a prolific seed producer that is broadly distributed throughout the state, in both corn and soybean

fields.

While this new resistant biotype has only been confirmed at one location in Illinois, there is no reason to assume that this will remain an isolated incident. Resistance development occurs when the same herbicides are used repeatedly in the same field every year. USDA surveys indicate that in 2007, 88 percent of soybeans planted in the state were glyphosate tolerant. The data for corn is a little harder to come by, but 2007 estimates indicate that at least 15 percent of the corn planted contained a herbicide resistance trait alone, and that 40 percent of the corn planted in 2007 contained stacked traits that may have included a herbicide resistance trait. When soybeans and corn are added together, there is a high probability that glyphosate is being applied to many fields in Illinois on an annual basis.

If a glyphosate resistant waterhemp biotype also develops resistance to the PPO herbicides, there will be severe ramifications because there are no other effective post emergence herbicides available to provide control in soybean. As a proactive measure to slow possible glyphosate resistance development, U of I weed scientists are recommending that a soil-applied residual herbicide that has efficacy against waterhemp be used on all soybean fields, and that careful crop scouting be implemented to monitor and document resistance should it occur. Δ

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