

# A Waterhemp Population Resistant To Synthetic Auxin Herbicides Identified

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**W**aterhemp has become a bane to weed management practitioners in many areas of the Midwest. The species has many characteristics that make it well suited to contemporary agronomic production practices, including the proclivity

to evolve resistance to herbicides from various site-of-action families. Resistance to herbicides from five families has been documented in various Illinois waterhemp populations. Resistance to any particular herbicide site of action is troubling, but multiple resistance, or resistance within a population to more than one site of action, is of particular concern. Data generated from recent surveys indicate that this type of resistance is becoming increasingly common in Illinois waterhemp.

Weed scientists at the University of Nebraska recently noted a new type of herbicide resistance in waterhemp. Their article describes the identification of resistance to the synthetic auxin herbicide 2,4-D in a Nebraska waterhemp population. In greenhouse research, the 2,4-D-resistant waterhemp was 10-fold resistant to the herbicide relative to a sensitive control population. In field experiments, waterhemp plants were treated with 2,4-D at rates ranging from 0.25 to 64 quarts per acre. At 28 days after treatment, plants treated with 64 quarts per acre of 2,4-D were stunted and had injury symptoms characteristic of exposure to 2,4-D, but they also were beginning to recover from the initial injury; by 84 days after treatment plants had recovered sufficiently to produce seed later in the season. The field in which the resistant population was discovered was treated annu-

ally, beginning in 1996, with atrazine, metolachlor, and 2,4-D applied as a burndown treatment followed by a postemergence application of 2,4-D.

The researchers also discuss the potential for other waterhemp populations to evolve this type of resistance. We encourage all weed management practitioners in Illinois to heed the reminders and warnings given by the Nebraska researchers: "New technologies that confer resistance to 2,4-D and dicamba (both synthetic auxins) are being developed to provide additional herbicide options for postemergence weed control in soybean and cotton. The development of 2,4-D resistant waterhemp in this field is a reminder and a caution that these new technologies, if used as the primary tool to manage weeds already resistant to other herbicides such as glyphosate, atrazine or ALS-inhibitors, will eventually result in new herbicide resistant populations evolving. This will limit the value of those technologies to farmers."

Exposing a weed population to multiple management tactics, whether multiple herbicides or herbicides combined with nonchemical control practices, reduces the selection for resistance to any particular tactic. Keep in mind, however, that most Illinois waterhemp populations already demonstrate resistance to one or more sites of herbicide action. Simply adding a synthetic auxin herbicide to other postemergence herbicides for which resistance already exists induces selection for resistance to synthetic auxin herbicides. Please don't consider resistance to synthetic auxin herbicides to be a concern only in Nebraska; selection and evolution of herbicide resistance is not limited by state boundaries.  $\Delta$

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