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Postemergence application of herbicides in corn

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Postemergence application of herbicides in corn

Abstract

The Iowa 2006 corn crop is mostly in the ground and much of it will be emerged by the end of the week. Planting progressed rapidly in late April prior to the current wet conditions, and this prolonged wet period will impact weed management plans for those fields planted prior to the rain but not treated with preemergence herbicides or nitrogen (N) fertilizer. This article is revised from a 2003 discussion and will describe two important issues.

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Crop Production

Postemergence application of herbicides in corn

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The Iowa 2006 corn crop is mostly in the ground and much of it will be emerged by the end of the week. Planting progressed rapidly in late April prior to the current wet conditions, and this prolonged wet period will impact weed management plans for those fields planted prior to the rain but not treated with preemergence herbicides or nitrogen (N) fertilizer. This article is revised from a 2003 discussion and will describe two important issues.

Inability to apply planned preemergence herbicides with N solution carrier. There are an estimated 15 to 20 percent of the Iowa corn fields that were planted without any preemergence herbicides. Most of the amide products intended for controlling grasses (i.e., Dual[®]) allow application after corn emergence. While labeled for delayed pre/early post applications, this application timing frequently results in reduced grass control since these products have little effect on emerged grasses. The rate of atrazine found in the premixes (i.e., Harness Xtra[®]) may not be sufficient to provide consistent annual grass control. Rotary hoeing may be beneficial in those fields where weeds are just beginning to emerge, but effectiveness of this tactic drops off quickly after weed emergence. Some preemergence products (i.e., Balance Pro[®]) that have excellent post activity on weeds are prohibited for application after corn emergence due to the potential for crop injury. The potential for crop injury increases when corn is under stress attributable to cool, wet, and cloudy conditions like most of Iowa has experienced recently.

There are also situations where the preemergence herbicide treatment was planned to include liquid nitrogen (28 or 32 percent urea-ammonium nitrate [UAN]), but application prior to corn emergence was not possible. While it is desirable to combine the application of UAN and herbicides to minimize trips across the field and enhance the herbicide activity on emerged weeds, this is neither a wise nor legal plan. Almost all herbicides prohibit application in nitrogen solutions after the corn has emerged. This practice will result in severe crop injury and is prohibited on the herbicide label. An exception is the Degree Xtra[®] label; while the application of this herbicide in UAN is not specifically prohibited, the label cautions: "Postemergence application of this product in liquid fertilizer carriers can result in crop injury and is not recommended." Rates of nitrogen less than 90 lb/acre applied alone (no herbicide) usually will not affect yields if applied by the V3–V4 stage (see related article, <http://www.weeds.iastate.edu/mgmt/2001/nitrogenfert.htm>). The concern, of course, is that this is



Corn likely stressed due to cool, wet conditions.

an extra trip across the field, and given the current price of petroleum products, not a good economic situation. However, the fact that the combination of UAN and preemergence herbicides is not legal and will likely result in significant crop injury does not suggest this is an acceptable risk. Importantly, there are alternative options that can be considered.

If the original preemergence treatment is desired, the application should be made sooner rather than later as weed control potential will decline rapidly. Other options exist for fertilizer. Alternatively, if emerged grasses are present when fields dry out, it may be worth considering a complete strategy change rather than forcing the issue with the previously planned preemergence program. Numerous postemergence options are available for controlling annual grasses (see related article, <http://www.weeds.iastate.edu/mgmt/2002/postgrasscorn02.htm>). However, keep in mind the difficulty in obtaining both maximum yield and full-season weed control with a single postemergence

application. In fields with heavy weed pressure, a combination of mechanical and chemical tactics is often the most economical and effective program in these situations (see related article, <http://www.weeds.iastate.edu/mgmt/2002/rrcorn.shtml>).

Weather induced stress. Corn that germinates and emerges in waterlogged soils will be under significant stress and is more susceptible to herbicide injury than corn emerging under better conditions. The same defense systems that metabolize herbicides are involved in the detoxification of harmful compounds produced as a result of saturated and cool soils. This increases the likelihood of herbicide injury since corn seedlings have a limited capacity to protect themselves from toxic compounds, and the combination of stress-induced toxins and herbicides may overwhelm the protective systems. When possible, avoid applying herbicides, particularly postemergence, to corn under stress to minimize the risk of injury. If applications cannot be delayed, select products with the greatest margin of crop safety.

Take-home messages:

- 1.** Do not apply herbicides in combination with UAN solutions if the corn has emerged. (If you can row the corn, it has emerged.)
- 2.** Consider changing from a preemergence herbicide treatment to an early postemergence herbicide treatment if weeds, particularly annual grasses, have more than 2 leaves.
- 3.** If an early postemergence application is selected, note the emphasis on “early.”
- 4.** Consider that in most Iowa corn fields, a single herbicide application, regardless of application tactic or herbicide(s) included, will not likely provide sufficient “season long” weed control. Know what options are available to supplement the first application.

Check out these links to related articles from past issues of the *ICM Newsletter*:

<http://www.ipm.iastate.edu/ipm/icm/2001/5-14-2001/postplant.html>

<http://www.ipm.iastate.edu/ipm/icm/2001/5-14-2001/watchuan.html>

<http://www.ipm.iastate.edu/ipm/icm/1999/5-24-1999/uansol.html>

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