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Weed management in continuous corn

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Weed management in continuous corn

Abstract
Despite the importance of glyphosate-based crop systems, there is a need for continued understanding about the management requirement for weed control in continuous corn production. The concern for timely weed management in order to protect corn yields becomes premier in postemergence (POST) herbicide corn systems, whether based on glyphosate or any other herbicide. Iowa State University recommends the use of herbicides that provide residual weed control in continuous corn regardless of the specific GM trait. The early preplant (EPP) or preemergence (PRE) application of residual herbicides is an excellent option to reduce weed management risks, improve environmental stewardship, and better utilize time at a critical period of the spring.

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Despite the importance of glyphosate-based crop systems, there is a need for continued understanding about the management requirement for weed control in continuous corn production. The concern for timely weed management in order to protect corn yields becomes premier in postemergence (POST) herbicide corn systems, whether based on glyphosate or any other herbicide. Iowa State University recommends the use of herbicides that provide residual weed control in continuous corn regardless of the specific GM trait. The early preplant (EPP) or preemergence (PRE) application of residual herbicides is an excellent option to reduce weed management risks, improve environmental stewardship, and better utilize time at a critical period of the spring.

Consider that it is critical to reduce POST application timing risk; while many growers now have sprayers or have corn treated by the custom herbicide application industry, there is still a major risk of making a timely POST application. The risk of making a timely POST herbicide application has less to do with controlling weeds and more to do with protecting potential crop yield. Recognize that herbicide applications are at the mercy of the environmental conditions, while weeds continue to grow irrespective of the weather. Furthermore, the ability to make a timely herbicide application is dictated on the ability to assess that which is impossible to predict—when weeds begin to compete with the corn yield potential. For the “average” corn field in Iowa, unless you can be assured that the POST herbicide will be applied by the V3 stage of corn development, you will likely lose enough yield to pay for the EPP or PRE herbicide treatment. Thus, there is still an important role for soil-applied herbicides in continuous corn weed management. Furthermore, the use of these alternative tactics tends to lessen the selection pressure resulting from recurrent use of glyphosate, which causes the evolution of herbicide-resistant weed biotypes and weed population shifts.

The purpose of the soil-applied herbicide treatment is to reduce the weed pressure somewhat, thus allowing the corn to achieve a superior competitive growth posture. This allows for more time to make the POST application and thus protect the potential corn yield. The purpose of the soil-applied herbicide is not to provide 100 percent “season-long” weed control. The soil-applied herbicide treatment should target the weeds that germinate first and in highest population in corn. Generally, these weeds include giant foxtail, woolly cupgrass, small-seeded annual broadleaf weeds, giant ragweed, and others. The goal is to achieve relatively good control such that the interference from the remaining weeds on the corn is delayed. If the corn is grown in no-till culture, and if winter annuals are a problem, the choice of the soil-applied herbicide should include a product that has good foliar activity.

Volunteer corn management can be an issue in continuous corn production but generally will not be any different than in the past, and may be easier, depending on the specific herbicide trait that is included in the hybrid. If a “traditional” hybrid was planted the previous year and a herbicide-resistant hybrid is planted this year, volunteer corn control will be easy unless the “traditional” hybrid was pollinated by a neighboring herbicide-resistant hybrid resulting in an unexpected infestation of herbicide-resistant volunteer corn. If a glyphosate-resistant hybrid volunteers, a Liberty Link® hybrid can be planted and effective volunteer corn control can be achieved with the application of Liberty®. Similarly, if a Liberty Link® hybrid volunteers, a glyphosate can be used if a glyphosate-resistant hybrid is planted. However, if a Herculex®/Roundup Ready® hybrid is planted, recognize that the Herculex® trait also includes resistance to Liberty® herbicide. Where no herbicide options exist to control volunteer corn in corn, cultivation is the best option.

Mike Owen is a professor of agronomy with research and extension responsibilities in weed management and herbicide use.