

## News Column

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### **Importance of pre-emergence herbicides for corn**

Pre-emergence herbicides kill weed seeds/seedlings as they germinate or emerge. Applications of pre-emergence herbicides at or before corn planting are important to minimize yield losses to early-emerging weeds. These herbicides often control weeds for several weeks, which can greatly improve the effectiveness of a post-emergence herbicide application and give more flexibility for post application timing. Pre-emergence herbicides are also an important component of sequential herbicide applications later in the growing season. In general, preventing the emergence of weeds, especially herbicide resistant weeds, is preferable to controlling them after they emerge.

Much of the resistance to glyphosate has developed from over-reliance on post-emergence herbicide applications, thus it is essential to include one or more of the pre-emergence residual herbicides available for corn. However, it is also important to remember to change pre-plant and pre-emergence herbicide programs from time to time to prevent selection of tolerant or resistant weeds.

The specific herbicide you use is important, but it is usually less important than making the decision to use a pre-emergence herbicide. But, it is important to know the strengths and weaknesses of each product in terms of the spectrum of weeds controlled. A table summarizing weed species response to various corn herbicides can be found on pages 24-26 of *2020 Chemical Weed Control for Field Crops, Pastures, Rangeland, and Noncropland* (SRP 1155) at: <https://www.bookstore.ksre.ksu.edu/pubs/SRP1155.pdf> If you would rather have a paper copy of this book, they can be picked up at your local county or district Extension Office.

### **Categories of soil-applied residual herbicides for corn**

**Triazines (Group 5).** Atrazine is the most widely used triazine in corn. It is a common component of many preplant and pre-emergence herbicide premixes for corn. It controls a wide variety of broadleaf weeds, including pigweeds, ragweeds, morningglories, and mustards, as well as some grass species. However, atrazine resistance has been reported for many weed species. Atrazine use rates are influenced by soil type, soil pH, and organic matter, and use is prohibited in instances where water contamination is likely. Unless your situation prohibits atrazine use, it is recommended to include atrazine when you apply HPPD-inhibitor and acetamide herbicides.

**Acetamides and pyrazole (Group 15).** The main acetamide (15) products used in corn include acetochlor, S-metolachlor, metolachlor, dimethamid-P, and many premix products containing one of these active ingredients. Pyroxasulfone is a pyrazole herbicide, but has the same site of

action as the acetamides. In general, these products are very effective in controlling most annual grasses (except shattercane) and small-seeded broadleaf weeds such as pigweeds. They are much less effective in controlling small-seeded kochia or large-seeded broadleaf weeds.

The acetamide and pyrazole products are most effective when applied with atrazine. Several such premixes are available and should be used instead of acetamides or pyrazole alone, unless atrazine is not allowed.

**HPPD-inhibitors (Group 27).** Examples of HPPD-inhibitors are isoxaflutole (e.g. Balance Flexx) and mesotrione (e.g. Callisto and many generics). These products should be applied with atrazine, which is often included in premixes with Group 27 herbicides (e.g. Acuron, Callisto Xtra, Lexar EZ, Lumax EZ). HPPD-inhibitors provide excellent control of kochia, pigweeds, velvetleaf, and many other broadleaf weeds, as well as grasses.

**PPO-inhibitors (Group 14).** Examples of PPO-inhibitors include flumioxazin (e.g. Valor) and saflufenacil (Sharpen (14)). Herbicides containing flumioxazin must be applied 7 to 30 days before corn planting. These herbicides provide excellent control of pigweeds; however, they are marginal on kochia.

**ALS-inhibitors (Group 2).** One example of a pre-emergence ALS-inhibitor used in corn is flumetsulam (Python), which only has broadleaf activity and provides good control of large-seeded broadleaf weeds such as cocklebur, sunflower, and velvetleaf, or the small-seeded common lambsquarters.

Rimsulfuron is another ALS-inhibiting herbicide that is a component of Basis Blend, Instigate, Prequel, Realm Q and Steadfast Q. Products with rimsulfuron will provide short residual control of grass and broadleaf weeds and should be used as a setup herbicide with a good postemergence weed control program. If ALS-resistant broadleaf weeds are present, these ALS-containing herbicides often will be less effective.

If you have any questions on weed control in any of your crops, feel free to give me a call.

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