

# PREEMERGENCE HERBICIDES FOR WARM-SEASON TURFGRASS LAWNS

Becky Bowling, PhD\*

## What are preemergence herbicides?

A **preemergence herbicide** is an herbicide that is designed to control weeds by interfering with seedling **emergence** following germination. They are commonly referred to in the lawn care industry as “**weed preventers,**” and essentially form a **protective barrier** on your lawn during critical seasons when weeds are most actively germinating. Conversely, **postemergence herbicides** will control established weeds that have already germinated and emerged. Some herbicides have both pre- and postemergence activity.

## How do they work?

Herbicides are classified by their **site of action**, which refers to the biochemical site within the plant where the herbicide interferes with and impairs normal plant development. Different preemergence herbicides may have different sites of action or manners in which they work. However, many of the preemergence herbicides found in lawn care products for homeowners are classified as **mitosis inhibitors** (or seedling root growth inhibitors). In simpler terms, these products **inhibit cell division**, resulting in seedlings that are **stunted, deformed, and unable to emerge as healthy plants.**

## What are the potential benefits of using a preemergence herbicide?

- ▶ These herbicides provide protection during critical seasons when turfgrass may be less able to compete with weeds (spring and fall).
- ▶ Preemergence herbicides are generally the most effective chemical option for controlling **challenging annual weeds** like crabgrass (*Digitaria* spp.) and annual bluegrass (*Poa annua* L.) as shown in photos on the right.
- ▶ In some cases, preemergence herbicides can reduce the number of postemergence herbicide applications required to maintain a healthy lawn.

\*Assistant Professor & Extension Urban Water Specialist

- ▶ When used as directed by the label, many preemergence products can be safer to use around established plants in the landscape compared with select postemergence products.

## What other factors should I consider before purchasing and using a preemergence herbicide?

- ▶ Preemergence herbicides are intended **for healthy, well-established turfgrass systems.** These products should not be used on turfgrass exhibiting symptoms of moderate to severe stress. Consider manual weed control and spot-treatment with a postemergence herbicide until turfgrass has recovered.
- ▶ Preemergence herbicides can injure newly established or overseeded turfgrass lawns. Follow label recommendations and consult your **AgriLife County Extension Agent** when in doubt.
- ▶ It is possible to over-apply preemergence herbicides. Weed and feed products used for other purposes in



Large Crabgrass (*Digitaria sanguinalis*) seedhead  
 Photo courtesy of Casey Reynolds



Annual Bluegrass (*Poa annua* L.) Photo courtesy of Casey Reynolds

the landscape may already contain preemergence herbicides. Application of separate preemergence herbicides in addition to these products may lead to over-application that can be harmful to your lawn. Follow the label on any herbicide product that you use to avoid over-application.

- ▶ The performance of preemergence herbicides can be significantly affected by timing, precipitation, environmental conditions, and the specific weeds you are targeting. For the most effective program, work with your AgriLife County Extension office regarding their recommendations for your area.
- ▶ Preemergence herbicides may not be appropriate for all environments. Pay close attention to label recommendations related to soil texture, slope, and proximity to both surface and groundwater resources.
- ▶ Avoid using weed and feed products during months when turfgrass is not actively growing, as this can lead to the application of nitrogen fertilizers at inappropriate times.

## When do I apply my preemergence herbicide?

For best results, we recommend that you make **two** preemergence herbicide applications each year: one in the **spring** to target summer annual weeds and one in the **fall** to target winter annual weeds. Preemergence herbicides will often be the most effective when applied based on **soil temperature** because soil temperatures play a critical role in weed seed germination. Per the recommendations above, apply your spring preemergence herbicide when soil temperatures reach approximately **55°F** for several days. Fall applications can be made when soil temperatures decrease to approximately **70°F** for several days (Fig. 1). Application

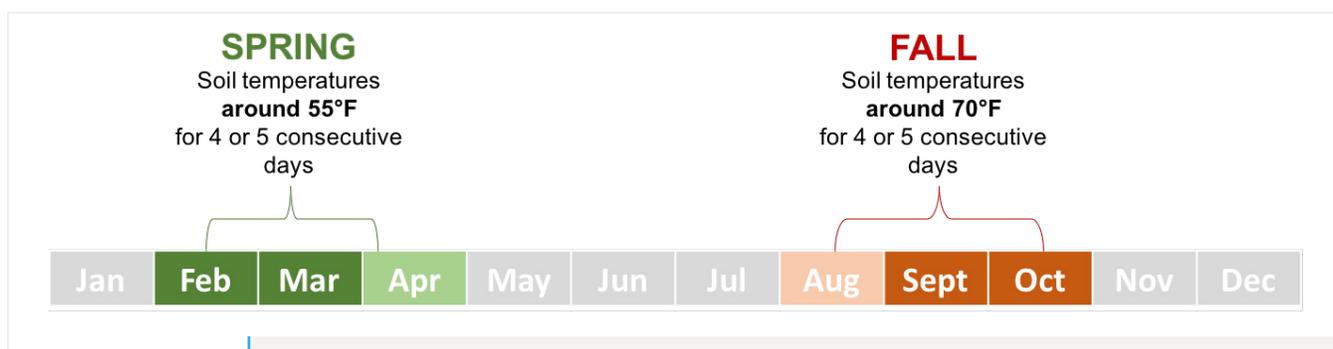
timing in Texas can vary by several weeks based on **geographic region** and **annual weather conditions**. When in doubt, contact your local AgriLife County Extension office.

## Monitoring soil temperature

You can monitor soil temperature yourself using a **soil thermometer** or even a household **meat thermometer** (check that the thermometer can measure lower readings). Measure the soil temperature for the **uppermost 1 inch of soil**, where most weed seeds will be concentrated. Be mindful that some seeds may be on the soil surface, which will warm more quickly, leading to earlier germination. Soil temperatures are also generally monitored at different depths for many areas throughout the state of Texas. Contact your local AgriLife County Extension office for recommendations on the **most reliable sources** for soil temperature data in your county.

## Other tips:

- ▶ Check out [aggieturf.tamu.edu/turfgrass-weeds/](http://aggieturf.tamu.edu/turfgrass-weeds/) for assistance with **weed identification**.
- ▶ **ALWAYS FOLLOW THE LABEL.** Consider all parts of the label including recommended personal protective equipment (PPE), as well as appropriate application rates and timing.
- ▶ Download **A Homeowner's Guide to Herbicide Selection for Warm-Season Turfgrass Lawns** from [aggieturf.tamu.edu/publications](http://aggieturf.tamu.edu/publications). Additional resources on weed control and turfgrass management can be found on AgriLife Learn, [agrilifelearn.tamu.edu](http://agrilifelearn.tamu.edu).
- ▶ When searching for additional lawn care products, don't forget your local producer's co-op and/or feed store.



COMMON PREEMERGENCE HERBICIDES FOUND IN LAWN CARE PRODUCTS

ACTIVE INGREDIENT	TARGET WEEDS	FOUND IN PRODUCTS LIKE	NOTES
<b>Benefin</b>	Grasses, some small-seeded broadleaf weeds	Balan Herbicide; Amaze Grass & Weed Preventer; Fertilome A-Vert Plus Lawn Food	This product can be volatile and prone to loss if not watered-in properly. Pay attention to label recommendations.
<b>Corn Gluten Meal</b>	Grasses	Green It Liquid Corn Gluten Weed Preventer; Preen Natural Weed Preventer; Others	An option for organic lawn care programs. Performance of this product is variable and may not offer the same level of control as some other products listed.
<b>Dithiopyr</b>	Grasses, some broadleaf weeds	Sta-Green Crab-Ex Crabgrass & Weed Preventer; Bonide DuraTurf Crabgrass & Weed Preventer; Others	Offers early postemergence control of crabgrass, which creates some flexibility in application timing.
<b>Indaziflam</b>	Grasses and broadleaf weeds	BioAdvanced 3-in-1 Weed and Feed for Southern Lawns	This active ingredient is currently only available in a limited number of homeowner products that may be designed to do multiple things. Follow label recommendations carefully before use to ensure all parts of the product are appropriate for your circumstances.
<b>Isoxaben</b>	Broadleaf weeds	Ferti-Lome Broadleaf Weed Control with Gallery; Snapshot Granular Preemergent; Others	Can be combined with grassy weed preemergence herbicides to broaden the spectrum of weed control.
<b>Oryzalin</b>	Grasses, some broadleaf weeds	Monterey Weed Impede; Green Light Amaze Grass & Weed Preventer; Surflan Herbicide	This herbicide thins overseeded grasses.
<b>Pendimethalin</b>	Grasses, some broadleaf weeds	Scotts Halts Crabgrass & Grass Weed Preventer; Others	Can stain concrete areas. Use caution when applying to these areas.
<b>Prodiamine</b>	Grasses, some broadleaf weeds	Nitro-Phos Barricade Preemergence; Sta-Green Crab-Ex plus with Lawn Fertilizer	Can stain concrete areas. Use caution when applying to these areas.