

Controlling crabgrass in cool-season turf

Crabgrass is the dominant weed in cool-season turf. If you can't eradicate it, at least learn how to master this persistent pest.

By ZAC REICHER, Ph.D.

Whether you manage lawns or sports turf, crabgrass is a major weed concern. It germinates in the spring; thrives during the heat of summer forming tillers and growing to a foot or more in diameter; sets seed in the late summer and dies with fall's cool temperatures. It's a prolific seed producer, with a single plant producing thousands of seeds in one season. Because of this, crabgrass can never be eradicated from a turf site and can only be managed to minimize populations.

Baby your turf

Crabgrass control begins with good cultural practices. Thicker and healthier turf is more competitive with crabgrass and results in less crabgrass infestation. The easiest method to control crabgrass is mowing often and mowing on the upper edge of the preferred range of mowing heights. For instance, mowing Kentucky bluegrass lawns at three inches will limit crabgrass pressure, regardless if herbicides are used. However, all of the herbicides in the world will not

prevent a crabgrass infestation on a Kentucky bluegrass lawn mowed at one inch.

Irrigating deep and infrequently also favors turf. As an annual, crabgrass forms shallow roots that compete



Post-emergence herbicides are most effective on young crabgrass that has not tillered.

for water in the soil profile. Turf is deeper rooted than crabgrass. If you keep the turf on the dry side and water only to prevent water stress, you will give the desirable grasses an advantage over crabgrass.

Proper fertilization encourages turf density and further minimizes crabgrass infestation. The majority of the annual fertilizer should be applied to cool-season turf in the fall. Make two applications in the fall, one in September and one after the turf has ceased growing. The first application will encourage recovery from summer stress through lateral growth and increased tillering. Include some slow-release fertilizer to feed the plant over the following four to six weeks.

Apply the late-fall application after growth has slowed but while the plant is green and actively photosynthesizing. This may be mid- to late-October in the northern states or mid- to late-November in the southern states with cool-season grasses. The fertilizer should be a source that is quickly available, such as urea. It's important for the nitrogen to be taken up by the plant before winter. This late-fall application maintains deeper green color well into fall, speeds spring green-up and improves spring density.

Other building blocks in a turfgrass program include traffic management and aeration to minimize compaction, increasing drainage and airflow to keep turf as dry as possible and minimizing damage from insects and diseases to prevent a thin turf prone to crabgrass infestation. However, even with our best intentions to maintain a thick turf stand, some areas are still prone to crabgrass infestation and we must use herbicides.

Pre-emergence herbicides

It is important to apply pre-emergence herbicides accurately and evenly across a turf site. Since pre-emergence herbicides are immobile in the soil, a uniform application ensures that the germinating crabgrass

plants will come into contact with the herbicide. Using a pre-emergence herbicide on a large fertilizer granule might make applications easier, but it may not provide a dense enough pattern to ensure consistent application.

Some labels state that the product should be applied two weeks prior to the expected germination period for crabgrass (who can guess the exact germination period for crabgrass each spring?). Some say to apply pre-emergence herbicide when minimum soil temperatures reach 50°F for five consecutive days. However, soil temperatures in West Lafayette, IN, often reach 50°F during early March, only to fall back into the 40s for many more weeks. Others will say to apply pre-emergence herbicides when forsythia is in bloom. Again, it is very common to see the forsythia blooming just before the last March snowstorm.

Timing of pre-emergence herbicides was more important years ago when the herbicides did not have the duration of control like today's products.

Today's pre-emergence herbicides, applied in March, will provide season-long crabgrass control. In fact, our research has shown that November and December applications of pre-emergence herbicides will provide season-long control on most turf areas when used at the high recommended rate.

On areas with extremely high crabgrass pressure, a December application should be followed by a sequential application in the early summer to ensure control, or possibly a spot treatment with a post-emergence herbicide, if needed.



Crabgrass is the most common weed on commercial properties, home lawns, sports turf and most other turf settings.

Late fall and early spring applications work to control crabgrass because microbial degradation is the main factor in breakdown of pre-emergence herbicides. Soil microbes become more active once soil temperatures reach 55°F. Since soil temperatures are at or near 32°F throughout the winter, minimal degradation of herbicide occurs until the soil temperatures warm up in April.

Sequential applications

If you manage areas with extremely high crabgrass pressure or with the possibility of goosegrass, you might consider a sequential application of pre-emergence herbicides. An application in late fall or early spring will provide acceptable control into early summer, but a second application will boost the activity of the herbicide in the soil to extend control throughout the growing season.

Most labels will recommend 2/3 to 3/4 of the high label rate in the first application, followed by a second application of 1/3 to 1/4 of the total label rate in late May

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or early June. Use the same active ingredient in the sequential application as you applied in the first application.

Research at Purdue suggests that using sequential applications of an active ingredient different than the initial application provides less effective control. It appears that concentrations of different herbicides are not additive in the soil. Instead of boosting the concentration of the initial herbicide in the soil with a second application, you merely add a second herbicide at a concentration that may not give season-long control.

This strategy is important when you are trying to reduce the rate of herbicide used in both the initial and sequential application. As you may suspect, it may not be as important if you are willing to use high

One Tough Crabgrass

- ▶ One crabgrass plant can produce 10,000 seeds per year
- ▶ 12% germination produces 1200 seedlings
- ▶ 10% survival of seedlings leaves 120 crabgrass plants
- ▶ Assuming commercially acceptable 90% crabgrass control, 12 plants survive until seed set when the cycle begins all over

label rates for different herbicides in both the initial and sequential applications, thus creating effective concentrations for each herbicide in the soil.

Post-emergence herbicides, such as MSMA (under a variety of trade names), Acclaim, Dimension and the newly released Drive, offer increased flexibility in a weed control system. Some professionals have opted not to use the traditional pre-emergence herbicide application, preferring a wait-and-see approach. If the summer weather is conducive to crabgrass, and/or regular scouting reveals newly emerging crabgrass, a post-emergence herbicide can be used in early- to mid-summer. This is useful on areas that traditionally have lower crabgrass pressure. During mild summers not conducive to crabgrass, this can reduce expenses and pesticide use.

Post-emergence herbicides are most effective on small crabgrass. The smaller the crabgrass plant, the lower the rate of herbicide necessary to be effective. Since post-

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emergence herbicides can be phytotoxic to turfgrass, the lower rates will also improve the safety margin. Accurate applications are essential to minimize possible phytotoxicity to the turfgrass.

If you apply post-emergence herbicides early in the summer, include a pre-emergence herbicide in the tank mix to control the later germinating crabgrass. Since Dimension has both pre- and post-emergence properties, it can be used alone to control young crabgrass that has not tillered and that has not yet germinated. Drive actually appears to control tillered crabgrass as well, if not better than younger crabgrass. Drive also is active on clover and a number of broadleaf weeds and appears to be one of the safer post-emergence herbicides on newly emerged seedlings.

Though post-emergence herbicides are



effective in controlling crabgrass, don't attempt to control crabgrass in late summer because the plants are too large and vigorous. Attempting to control crabgrass at this time will only result in disappointing con-

◀ Pre-emergence herbicide applications have been timed in the past to coincide with forsythia bloom.

trol and possibly turf damage. Wait for the most effective, safest and cheapest control of crabgrass — the first frost.

By maintaining a dense, healthy stand of turf, you can limit the amount of crabgrass. This starts with the cornerstones of turf management: proper mowing, irrigation and fertilization. Maximizing these three cultural practices can almost eliminate crabgrass from many turf stands.

—Zac Reicher is Assistant Professor of Agronomy and the Turfgrass Extension Specialist at Purdue University, West Lafayette, IN

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