

Be Careful with Early Germination of Annual Grasses

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Annual grasses such as large and smooth crabgrasses, goosegrass, and barnyardgrass are major problems in turfgrasses. As a result, turfgrass managers use preemergence herbicides to prevent the occurrence of these troublesome weeds. When control with preemergence herbicides fails, appropriate postemergence herbicides can be used.

There are several reasons why preemergence herbicides fail to provide season-long control. **One of the most common reasons is that some germination of annual grasses occurs prior to the application of a preemergence herbicide. Most annual grasses will start to germinate when a critical soil temperature is maintained over a few consecutive days.** Table 1 provides a list of critical soil temperatures for germination of various grasses.

The temperatures listed in Table 1 refer to 24-hour average soil temperatures over several days. As a result, it is impossible to place a soil temperature probe in the ground and get a good measure of a 24-hour average soil temperature. For instance, in late winter/early spring, a bright sunny day may produce soil temperatures far above the 55°F (13°C) needed for crabgrass germination. However, at night, soil temperatures fall well below this temperature and as a result, the 24-hour average temperature is somewhat below the critical temperature needed for germination. **Automated weather data recording systems with an attached**

soil probe are needed for accurate measures of average daily temperatures. Many portable weather stations can be fitted with a remote soil temperature sensor. **Measuring the soil temperature at your site is the most accurate method to predict weed germination.**

Turfgrass managers can also find excellent information on 24-hour average soil temperatures on the Internet. Many land-grant universities post daily weather data on the Internet. Because many universities have multiple outlying research stations, these data can often be found at a site near you.

It is also important to point out that **most grasses germinate in the upper one-half inch or so of soil. Because most grasses have a small seed, they will not germinate below this depth.** In addition, **many weeds, such as crabgrasses, have a high light requirement for seed germination.** Therefore, the deeper the seed in the soil/thatch layer, the more difficult it will be for this plant to germinate. This is also one of the reasons why dense, healthy turf has less weeds than thin turf. More light penetrates through the canopy of the thin turf, which leads to more weed germination.


In summary, accurate information on soil temperature will allow turfgrass managers to properly time their preemergence herbicide application. Proper timing of application leads to the best control at the minimum herbicide rate. 

Table 1.

Weed	Critical Soil Temperature*		Scientific Name
	°F	°C	
large and smooth crabgrasses	55	13	<i>Digitaria sanguinalis and ischaemum</i>
goosegrass	60–65	15–18	<i>Eleusine indica</i>
barnyardgrass	60–65	15–18	<i>Echinochloa crusgalli</i>
foxtails	65	18	<i>Setaria</i> spp.

* Watschke, T.L. 1995. Turfgrass weeds and their management. In *Managing Turfgrass Pests*.