

control of common annual grass and several broadleaf weeds for various preemergence herbicides.

An important consideration in using preemergence herbicides is application timing. Most preemergence herbicides act as mitotic inhibitors, meaning they prevent cell division. Since the germinating shoot and root tips are the two major sites of cell division, preemergence herbicides must contact these in the soil. Application should therefore be timed just prior to weed seed germination since most preemergence herbicides are ineffective on emerged (visible) weeds. If applied too soon, natural herbicide degradation processes may reduce the herbicide concentration in the soil to a level resulting in ineffective or reduced control. If applied too late (e.g., weed seedlings are visible) the weeds have grown above the thin layer of preemergence herbicide located at the soil surface resulting in the effectiveness of the materials being drastically reduced (Figure 1).

Crabgrass germinates from February through May when soil temperatures at a 4-inch depth reach 53 to 58°F. Alternating dry and wet conditions at the soil surface, as well as light, encourage crabgrass germination. Goosegrass germinates at soil temperatures of 60 to 65°F. Goosegrass also requires light for seed germination and is very competitive in compacted soils. Normally, because of higher temperature requirements for germination, goosegrass germinates two to four weeks later in the spring than crabgrass. If herbicides are applied at the time for crabgrass control, the material will begin to breakdown in the soil and goosegrass control will be reduced. Therefore, when developing a goosegrass weed control program, delay preemergence spring herbicide application three to four weeks after the application date targeted for crabgrass control.

**Sequential or Repeat Applications**

Repeat applications of preemergence herbicides are generally necessary for full season control. Most herbicides begin to degrade soon after application when exposed to the environment. Usually, the level of degradation that occurs from 6 to 16 weeks after application reduces the herbicide concentration to the point that poor control of later germinating weed seeds occurs. Repeat applications are necessary at this time for prolonged preemergence weed control. Note: On those areas to be established with turf, most preemergence herbicides should not be used two

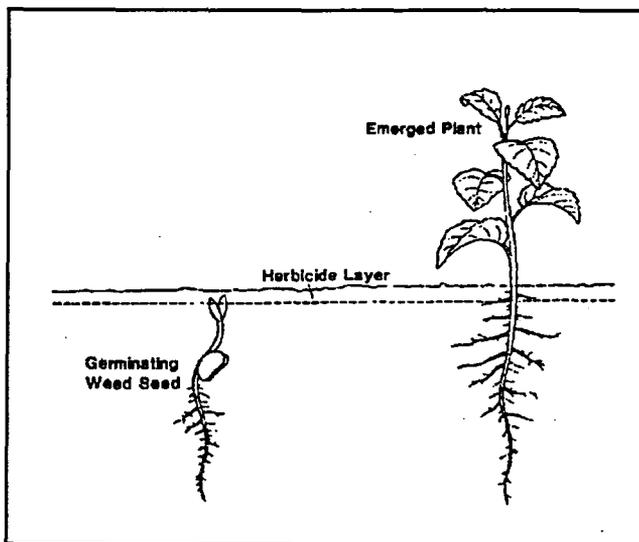


Figure 1. Preemergence herbicides form a barrier at or just below the soil surface and are relatively ineffective on emerged weeds.

to four months before planting. Otherwise rootdamage and germination reduction of turfseed may result. Table 2 lists expected control of selected weeds with preemergence herbicides.

**Core Aeration and Preemergence Herbicides**

Core aeration has not traditionally been recommended or practiced following a preemergence herbicide application. Core aeration was believed to disrupt the herbicide barrier in the soil, thus allowing weed germination. Research, however, indicates that core aeration immediately prior to or one, two, three, or four months after preemergence herbicide applications does not stimulate large crabgrass emergence. In the same study, aeration at one or two months after application increased large crabgrass cover five percent for oxadiazon at the low label rate but not at the high rate. In a related study, core aeration at one, two, or three months after an application of oxadiazon did not decrease goosegrass control on a 'Tifgreen' bermudagrass putting green. Core aeration or vertical mowing immediately or one month after an application of benefin, bensulide, or DCPA also did not affect large crabgrass control in either 'Tifgreen' or common bermudagrass. However, in creeping bentgrass, significantly greater amounts of crabgrass occurred in plots that were aerified with the cores returned than in plots not aerified, or aerified with the cores removed.

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