Chemical Weed Control

Herbicides are chemicals that kill or alter the normal growth of weeds. They can be divided into two main groups: selective and nonselective. Selective herbicides are those that control the target weed(s) without damaging desirable turfgrass species. Nonselective herbicides kill all vegetation (including turfgrasses) and are used in lawn renovation or on weeds not controlled by selective herbicides.

Herbicides can be further divided into pre-emergence and post-emergence categories. Pre-emergence herbicides are applied prior to germination and emergence of weeds. These are typically used for controlling annual weeds. Post-emergence herbicides are used for controlling weeds that have already emerged from the soil. They are either contact or systemic in nature. Post-emergence-contact herbicides affect only those plant parts that they contact and are not translocated to other portions of the plant. Post-emergence-systemic herbicides are translocated throughout the plant; hence they are effective in controlling perennial weeds that can generate new foliage from underground vegetative structures.

Herbicides can be applied to foliage or soil. Post-emergence herbicides are usually foliar applied, whereas pre-emergence herbicides are soil applied. A foliar-applied herbicide must contact and be absorbed by foliage, and is less effective if washed off the leaf surface by rainfall or irrigation. Soil-applied herbicides can be applied as either liquids or granulars; they should be watered into the soil during or following application.

Chemical control of grass

- **Summer annual grasses**

Summer annual grass weeds are usually controlled with pre-emergence herbicides. These herbicides act by forming a chemical barrier in the soil prior to seed germination or emergence. The barrier prevents grass seedlings from emerging and developing normally.

Most pre-emergence herbicides have long residual activity in the soil and may affect newly seeded turfgrasses.

The timing of pre-emergence herbicide applications is the most critical component of an effective chemical control program. As a general rule, the best time to apply pre-emergence materials is approximately 10 to 14 days prior to the expected germination period in spring. Crabgrass begins to germinate when soils are moist and the temperature in the upper inch of soil reaches 55° to 58° F at daybreak for four to five days.

Depending on the product, time of application, and location, reapplication within 60 days may be required for season-long control. Consult product labels to determine if two applications are allowed or needed. Poor weed control may occur with late applications. In these cases, post-emergence herbicides may be required.

- **Winter annual grasses**

Before attempting to manage this species, realize that complete eradication is nearly impossible and that acceptable control may take several years to achieve. Chemical control of annual bluegrass can be attempted with pre-emergence herbicides, herbicides that have both pre-emergence and post-emergence activity, and chemical growth regulators.

Several commercial pre-emergence herbicides can be used for annual bluegrass control. Application should take place in September just prior to the peak period of annual bluegrass germination. Since seeds of this species germinate at different times of the year, complete control with a single application of a pre-emergence herbicide is unlikely. Although repeat applications will improve control, newly developing roots and rhizomes of desirable turfgrass species may be inhibited.

Perennial grass weeds

Most perennial grass weeds cannot be controlled with selective herbicides in turf. Spot treatment with a nonselective herbicide such as glyphosate (Roundup™) is the most reliable means of removing these weeds from turf. Glyphosate is an especially effective herbicide for perennial grass weeds since it is translocated through stolons and rhizomes and leaves no harmful soil residual. This herbicide is most effective when applied to actively growing plants.

Chemical control of broadleaf weeds

Broadleaf weeds are usually controlled with selective post-emergence herbicides. The most common broadleaf herbicides used in turf include 2,4-D, 2,4-DP (dichlorprop), MCPP (mecoprop) and dicamba.

It is extremely important to identify the weed(s) to be controlled before selecting one of these herbicides. All have the potential to damage trees, shrubs, flowers, and vegetables if they contact the foliage. Trees and shrubs are particularly sensitive to dicamba since this herbicide is mobile in the soil and can be taken up by tree roots.

The most effective control of broadleaf weeds is obtained when post-emergence herbicides are applied as sprays to foliage (and not washed off). Granular formulations of these products are sometimes used to control broadleaf weeds; however, granulars should be applied to moist (dew-covered) foliage for optimum control.