



Although herbicides can be helpful tools in turf management, their use should be integrated with good cultural practices.



Integrated Weed Management — Natural Turf Management, Part 4

By Pam Elam

Obviously, a dense, vigorously growing, competitive stand of turfgrass will resist invasion by weeds. Even so, all athletic fields are susceptible to weeds. While it is difficult to eliminate all weeds from turf, except if the turf is resodded constantly, turf managers can prevent large patches of weeds. Optimum turf management practices and an integrated weed management program are the key factors in preventing weed infestations.

The objective of an integrated weed management program is to reduce the natural pressure of succession within a particular turf site. In other words, the idea is to keep weed populations below levels that are incompatible with the purpose of the turf.

The first step in an integrated weed management program is preparing the site properly and choosing an appropriate turfgrass species for the location, followed by cultural practices that contribute to turf vigor, such as proper irrigation, mowing, fertilization, thatch removal and aeration. Increased vigor allows turf better to withstand insect, disease and nematode damage and permits quicker recovery from any stress as well. Healthy turf can out-compete weeds and reduce the chances of weed establishment. Herbicides may be used as tools in turf management where high quality turf is required; however, herbicide use should be integrated with good cultural practices.

The concept of succession in turf is relatively simple. When a new field is sodded, it looks perfect. Over time, however, the turf is subjected to stress

pressures, and weed species begin to invade. The stress comes from management practices as well as the environment. All management practices bring stress to plants. These stresses include drought or irrigation, fertilization, pesticides (specifically herbicides), mowing height and frequency, verticutting and other practices.

The turf adjusts to most of these management stresses. Each management strategy may favor a certain species over another. Several specific studies have illustrated how certain cultural practices may favor the invasion of weeds. Turfgrass specialist J.H. Madison studied the invasion of cool-season grasses by bermudagrass and found more rapid invasion with close cutting. The late V.B. Youngner, a turfgrass researcher and breeder at the University of California, Riverside (UCR), looked at the effect of verticutting during the germination period and found increased *Poa annua* invasion. Dr. Vic Gibeault, Cooperative Extension specialist in environmental horticulture at UCR, investigated watering and mowing height on crabgrass and prostrate spurge invasion and found more rapid succession of these weeds with close mowing and shallow, frequent watering.

Drought has always been a primary stress in turf. This particular stress accelerates succession in cool-season turfs. Certain weed species become more apparent under drought conditions, including dandelion, bur clover, white clover, bermudagrass and knotweed. Excessive shallow irrigation, on the other hand, encourages invasion by annual bluegrass, bentgrass and crabgrass.

Herbicides are used as a means of slowing the succession process. However,

some studies have shown that the use of certain herbicides may increase the opportunity for succession of other weeds. For example, when 2,4-D was used on turf for broad-leaf weed control, the weed species that increased included oxalis and clovers. If a mixture of 2,4-D and dicamba or mecoprop was used, the clovers were reduced, but the oxalis remained and became a serious problem. Sometimes maintenance equipment, such as mowers, can actually spread weed seeds around.

Goosegrass has become more apparent in turf which suffers from heavy traffic or divoting and where compacted soil is a problem. Since many preemergence herbicides are removed with divots or are otherwise not present in the soil when the late-germinating goosegrass emerges, it is not controlled.

Turf managers can monitor the process of succession in their turfgrass by simply noting what weed species are present, their approximate population levels and what management practices may be contributing if their populations are increasing. A weed survey form, noting frequency of each species (low, medium or high), can be made easily and can be an excellent reference tool. A written record of the weed history will help you make better management decisions in the future and can help to determine which tools (such as herbicides) or management practices can change the direction of succession to favor your desired turfgrass species. □

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