

Weed Control In Cool-Season Athletic Fields

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Sports turf maintenance is certainly one of the most difficult challenges in the entire field of turfgrass management. Conditions limit the obtainment of satisfactory turf for sports activities, such as budget limitations often encountered in both construction and maintenance, general overuse and concessions made to ideal agronomic practices due to user demands. Thin and open turf subsequently develops and weeds encroach with little resistance.

Weed control is not just a question of aesthetics. Weeds provide much poorer footing than turfgrasses, are more slippery than turfgrasses and provide almost no resiliency or cushion for athletes. Annual weeds crowd out desired turf and, upon dying, lead to soil erosion and an uneven playing surface. Furthermore, weed-infested fields require more frequent mowing. Due to the importance of minimizing weeds in sports turf, careful attention needs to be given to developing a sound program for their control.

A successful weed control program must be two-pronged. First, the potential for weed infestations must be minimized through the implementation of sound agronomic principles and practices in construction, establishment and maintenance. Second, when weed problems eventually develop, herbicides must be properly selected and carefully fit into the overall athletic field management program.

Construction and Establishment

Good turf density is critical in avoiding potential weed problems. Any factor that can influence the development of turf density must be considered, especially during construction and establishment.

The soil or soil mix has major long-term impact on potential weed problems. A poor soil will invariably compact much easier when used for sports activities. Poor soil also drains insufficiently, setting the field up for a number of common turf weeds, such as knotweed, goosegrass, crabgrass, and annual bluegrass.

Soils for sports fields should be carefully selected for percolation characteristics. If soil is amended with organic matter or sand, the amended soil should be tested by a soils laboratory. Some amendments can actually worsen drainage when mixed with certain soils.

Many weed problems can be avoided by specifying that imported topsoil be free of difficult-to-control weeds such as nutsedge,



Fumigation of soil prior to establishment can greatly reduce future weed problems.

quackgrass and annual bluegrass. These weeds are very often found as contaminants of topsoil.

Improper construction invariably leads to weed encroachment, particularly in regard to drainage. Drainage systems that are properly designed and spaced for the particular soil are critical. Where reliance is placed on surface drainage, the proper grade must be established to quickly move water off the field. It is extremely important that this grade be even and consistent. Any pockets or depressions where water can collect will lead to a loss of turf and a site for initial weed encroachment.

Seedbed fertility is taken for granted more often than any other factor in the establishment of a field. Soil should be tested by a reputable university, state or commercial laboratory. Laboratory recommendations should be followed carefully.

While seedbed nitrogen applications are very important, soil pH and phosphorus are equally important. Far too many times weeds predominate in fields where seemingly everything has been done properly. Upon testing the soil, it is found to have a pH in the range of 4.0 to 5.0 and the soil phosphorus is very low.

Several research studies have shown long-term effects of phosphorus applied to seedbeds and subsequent reduction of

weeds such as dandelion and crabgrass. For example, phosphorus applications in one study decreased crabgrass encroachment by as much as 26 percent and dandelion encroachment by 55 percent.

Liming and fertilization are relatively inexpensive and represent false economy when omitted or applied at less than recommended rates.

A well-constructed field does not assure a satisfactory playing surface if the proper grass species and varieties are not selected. Many times I have inspected athletic fields only one to two years old that are more than half weeds because an unadapted turfgrass species or variety was planted. It is important that only turfgrass species and varieties proven to perform well in your area be planted.

Factors such as anticipated use levels, irrigation capabilities and maintenance level capabilities must be considered during grass selection. Also, always try to buy quality, certified seed which has no or minimal weed seed. Certified seed will have this information on the label of each bag.

Once a turfgrass mixture has been selected, many annual weed problems can be greatly reduced by planting at recommended times for your location. For example, seedings in mid-spring through early summer in Maryland are doomed to annual weed

problems and will require applications of herbicides from the beginning. Late summer and early fall seedings have considerably fewer problems with weeds.

Proper applications of mulch can help reduce weeds in a new seeding and can hasten turf establishment. However, a mulch can often contain weed problems such as timothy, orchardgrass and thistle. Always specify weed-free mulch.

Maintenance

More weed problems on athletic fields develop due to improper maintenance than any other reason. Most important are mowing practices, fertilization, irrigation, aerification and scheduling field use.

Mowing too low or infrequently leads to weed encroachment. Sports turf managers often mow fields too low in order to satisfy a coach's or player's demands. In Maryland, reducing mowing heights from two to one inch on both Kentucky bluegrass and tall fescue can result in a change from virtually no weeds to 50 percent or more weeds. Infrequent mowing also stresses turf which eventually enhances the opportunity for weed encroachment. On many athletic fields, extremely dull mowers are used causing additional stress to the turf.

Turf density is largely dependent upon proper applications of nitrogen. Unfortunately, low budgets often don't allow for sufficient amounts of nitrogen and weed problems multiply as both turf density drops and the turf recovers from injury more slowly.

Timing of nitrogen applications is nearly as important as the rate. Poorly-timed applications often enhance the weeds more than the desired turf. Optimum timing varies with location, so it is important to contact local turf specialists for timing recommendations.

Potash is also critical for athletic turf. Potassium improves wear tolerance and turf performance during periods of environmental stress. Maintaining levels of potassium according to soil test recommendations can reduce weed populations. The same is true for applications of lime and phosphorus. Early spring greenup and growth are made possible with adequate levels of phosphorus. It's important to give turf a head start in the spring over the weeds.

While many athletic fields cannot be irrigated, proper irrigation can greatly improve turfgrass vigor and density. Improper irrigation, however, can have the opposite effect. Light, frequent irrigation may actually improve weed seed germination and growth. Excessive irrigation, particularly just before a field is to be used, can cause increased compaction as well as greater damage to the turf.

Although the athletic field manager usually has little control over field use, educating those who do can be of great benefit. Restricting use of fields when they are excessively wet or under stress from heat, cold or drought can greatly reduce field damage and resulting weed problems. Communication in this regard is vital to field condition.

Herbicide Selection and Use

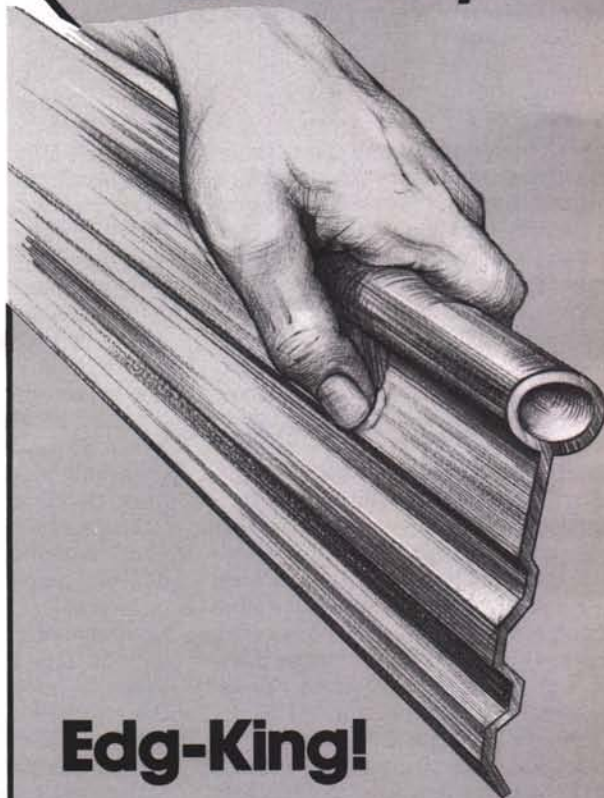
Despite the best management, the heavy use of athletic fields often leads to conditions that favor weed encroachment. Herbicides then become necessary to regain control over weeds. Five factors influence selection of herbicides. They include weed species, turf species, weather or irrigation capability, seeding or sodding plans, and aerification.

Herbicides have been designed to have specific effects on specific plants. The common herbicides for control of broadleaf weeds are 2,4-D, dicamba, MCPP, triclopyr and 2,4-DP. Often a mixture of two or three of these are used for broad spectrum control.

By knowing the specific weed problem, money can be saved. For example, if dandelions are the only problem, 2,4-D alone will provide excellent control. Knotweed can also be controlled with 2,4-D alone if it is treated when in the two- to three-leaf stage. Many broadleaf weeds, however, are not controlled by 2,4-D.

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Broadleaf weed herbicides may be applied up to the time of seeding when seed is drilled in by a slicer/seeder.

Weed Control

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For postemergence control of crabgrass, a new material called fenoxaprop (Acclaim) offers a new approach to annual grass control. If applied according to label directions, fenoxaprop usually gives excellent post-emergence annual grass control with one application and with little or no phytotoxicity to the desired turf. This represents a major advantage over the previous alternative, the methanearsonates. This new chemical should prove to be very valuable in sports turf management, allowing for greater customization of crabgrass control.

Nutsedge, often misidentified as a broadleaf or annual grass weed, can only be successfully controlled with bentazon (Basagran). Even with this material, control will be poor and phytotoxicity can occur if label directions are not followed exactly.

Each turf species has different sensitivities to the various turf herbicides. For example, perennial ryegrass and tall fescue have a greater tolerance to fenoxaprop than Kentucky bluegrass. Rate and particularly timing of application are more critical on Kentucky bluegrass and label directions must be followed carefully. Also, fenoxaprop can be used on seedling perennial ryegrass and tall fescue, but Kentucky bluegrass should be at least one year old. To prevent possible problems, tailor your herbicide selection to the species being used on each field. A weed control program for tall fescue fields may not be the right choice for a Kentucky bluegrass stadium field.

Irrigation capabilities are a big factor in

selection of specific preemergence crabgrass herbicides. If you cannot irrigate, sprayable formulations of materials such as bensulide or DCPA should be avoided since they must be watered-in within 48 hours to be effective.

In general, granular formulations of the preemergence herbicides should be used on fields without irrigation systems. Also, try to time your application as close as possible to an expected rain. These materials need to be applied about two weeks before the anticipated germination of crabgrass. It becomes increasingly important to apply these materials well in advance of annual grass germination if a field lacks irrigation.

The success of broadleaf herbicides is very weather dependent. Weeds must be actively growing for good control. Soil moisture must be adequate and temperatures should be below 85 degrees F to prevent damage to the turf. Also, rain falling within 24 hours of application can reduce the effectiveness of the materials.

If you cannot irrigate, wait until sufficient soil moisture has been achieved through rainfall before applying broadleaf herbicides. Usually spray formulations will give better and more cost-effective control than granular broadleaf formulations.

Early fall and mid-spring are generally the best time for broadleaf weed control. However, these are also the times when athletic fields are most heavily used. Due to the current negative attention on pesticides, it might be wise to make broadleaf herbicide applications at a time when fields will not be used for a couple of days.

One of the most important considerations an athletic field manager must make in herbicide selection and use is planning for seeding and sodding. Due to the heavy use and wear of athletic fields, some seeding or sodding may be needed several times each year. Unfortunately, many herbicides have negative side effects on new seedings and on newly laid sod. Know the potential effects of each herbicide so that seedling development or rooting is not retarded or damaged.

The only preemergence herbicide that can be applied to a new seeding or an overseeded area is siduron. However, each preemergence herbicide differs in its residual activity in the soil. For example, pendimethalin has an activity of about 16 weeks. If your plans call for overseeding within four months of your preemergence application, this material should not be used. As mentioned previously, postemergence control of annual grasses can be achieved in seedling tall fescue and perennial ryegrass with fenoxaprop, which should make this chemical an important tool in the athletic field manager's overall program for these grasses.

Broadleaf weed control can also present a problem in new seedings or overseedings. When seed is broadcast, the only broadleaf herbicide that can generally be used is bromoxynil. It is recommended that 2,4-D, dicamba, and MCPP not be applied sooner than three weeks before seeding or after seedlings have been mowed twice. However, an important study in Rhode Island showed that if seed is sown with a slicer/seeder, these broadleaf materials can be applied up to the time of seeding and possibly a few days after. This information should be of great value to athletic field managers who often work under severe time restraints.

Research at Rhode Island has also shown broadleaf herbicides should generally not be applied approximately four weeks before sod is harvested or four weeks after it is laid. These same studies indicated pre-emergence herbicides contained in sod can reduce rooting for a period of five to 13 weeks.

Many benefits can be achieved in the overall health of sports fields with proper aeration. However, improper timing of aeration can actually increase weed problems. Aeration performed during periods of peak annual grass germination will greatly enhance their encroachment. It will also break the herbicide barrier of pre-emergence herbicides. Aeration should not be performed when the turf is not actively growing because the open holes are an ideal site for weed establishment.

Weed control in sports turf management is far greater than just applying herbicides. It encompasses sound construction, establishment and maintenance, in addition to proper herbicide selection and use. Weed control is a major part of athletic field safety and contributes greatly to the effectiveness of an overall field management program.

TABLE 1

Weeks Before Overseeding Is Possible When Preemergence Annual Grass Herbicides Are Applied.

Herbicide	Weeks Before Reseeding Is Possible	Herbicide	Weeks Before Reseeding Is Possible
Benfen	6-8	Oxadiazon	16-20
Benfen + trifluralin (Team)	6-8	Pendimethalin	16
DCPA (Dacthal)	8-10	Siduron (Tupersan)	0
Bensulide	16		