Weed Control on Cool Season Turfgrasses

John A. Jagschitz
Department of Plant and Soil Science
University of Rhode Island, Kingston, RI

Having a weed-free turf requires good management coupled with the use of efficient and safe herbicides. Maintaining dense, vigorously growing turf will help prevent weed invasion. When grasses become weak and turf thins, weeds can easily take over. To make grass grow at its best, use adapted and improved turfgrasses, properly fertilize, mow and water, control insects and diseases, reduce traffic, etc. If the cause of poor turf is not corrected, new weeds will take over again. Remember, weeds are the result of poor turf rather than the cause.

Herbicide Use

There are many herbicides and only a few are suitable for use in turfgrass. Select the herbicide that will kill the weed and not harm the grass. Follow the label directions and precautions and apply the herbicide properly. The pesticides listed in this article may be classified "for restricted use only" in accordance with regulations. It is unlawful to use any pesticide for other than the registered use. Read and follow the label. The trade names used in this article are for identification purposes and no product endorsement is implied, nor is discrimination intended against similar materials.

Using more herbicide than needed can injure the grass, however, sufficient material must be used or the weed will not be killed. Follow instructions to get the best results. Proper calibration of equipment is essential and the operator should be on the alert for potential disaster due to uneven distribution of the chemical. Apply herbicides so chemical drift will not damage other plants. Use herbicides when the wind is calm and reduce spray drift with low pressure and large size spray droplets. Careless use is not the fault of the herbicide; it is yours.

Charcoal to Reduce Injury

Activated charcoal (GRO-SAFE) has been used on turfgrass to reduce injury from herbicide misuse, over-dosage or spillage. The charcoal (300 lb/A) can be applied in water (500 gal/A) as a spray. The sooner the activated charcoal can be applied the better chances for success. The charcoal particles must make physical contact with the chemical in order to be effective. Good results have been obtained where 2,4-D, 2,4,5-T, bromoxynil, dicamba, endothall, linuron, silvex and simazine were used at excessive rates. Where toxic herbicide residues exist in soil and prevent safe seedings or inhibit sod establishment, charcoal can be added and raked into the soil. Improved grass stands have been obtained with charcoal in seedbeds which contain 2,4-D, amitrole, bandane, benefin, bensulide, DCPA, dicamba, endothall, mecoprop, nitralin, picloram, pronamide, prosulfalin, silvex, simazine and terbutol.

Total Plant Kill

Before lawn is seeded weed control can begin. There are fumigants that kill weeds and weed seeds in the soil. Some of the fumigants in use are: methyl-bromidem (DOWFUME), metham (VAPAM, VPM) and ethyl-isothiocyanate (VORLEX). They require warm soil to be effective. Depending on the material used and other

factors, some seedings can safely be made within a few days while others may have to be delayed for 2 or 3 weeks. There are other materials that will kill vegetation and are useful for renovation purposes. These are helpful because they persist for only a short time in the soil and seeding within a few days is safe. Materials such as glyphosate (ROUNDUP) and paraquat (PARAQUAT CL) are useful for this purpose. These chemicals are also useful for spot treatment of weeds and for short term vegetative control under fences, around buildings, etc. If longer lasting residual kill is desired and there are no shrub or tree roots in the area, consider using materials which contain amitrol (AMIZINE), bromacil (HYVAR X), chlorates, diuron (KARMEX), hexazinone (VELPAR), prometon (PRAMITOL), and tebuthiuron (SPIKE). If possible, water them gently or work them into the surface soil layer so rains will not wash them into lawn, shrub or garden areas.

Weed Control in Seedling Turf

In general, broadleaf herbicides are usually not safe to use in new seedings until the grass is several weeks old and has been mowed three or four times. Regular mowing will eliminate most annual broadleaf weeds. However, for heavy infestations, use bromoxynil (BROMINAL, BUCTRIL). It does not harm seedling grass and is most effective against broadleaf weeds in the seedling stage. In combination with dicamba (BANVEL), it will control a wider range of weeds. If nutsedge is also a problem, consider using bentazon (BASAGRAN) since it is very effective for nutsedge control and does provide some control of seedling broadleaf weeds. Bentazon is safe on most cool seson seedling grasses with the possible exception of perennial ryegrass. In Rhode Island we have made some renovation seeding in athletic fields using a Jacobsen slicer-seeder and obtained safe seedings where we applied broadleaf herbicides 2 weeks before or just after seeding time. The herbicides included mixtures of 2,4-D with dicamba, mecoprop (MCPP) or silvex (2,4,5-TP). Normally it is best to wait about four weeks after herbicide use to make successful seedings. In one of the athletic field trials, the stand of knotweed was so competitive that grass establishment was negligible without herbicide use; however, treating seedling turf with these herbicides did result in the loss of some grass seedlings.

To control annual grasses such as crabgrass, a necessary step in spring or early summer seedings, use a herbicide called siduron (TUPERSAN). It is applied as a preemergent treatment to the surface of the seedbed after seeding and before the weedy grasses germinate or emerge. This is the easiest and most effective treatment for crabgrass control in new seedings. If siduron is not used in the seedbed and crabgrass becomes competitive during grass establishment, postemergent treatments with methanearsonates (AMA, DSMA, MAMA, MSMA, etc.) alone or in combination with siduron or other preemergent herbicides should be used. Although some grass injury may be develop or the establishment of the turf will be slower, the resultant grass stand should be considerably better than that obtained with competitive crabgrass. This topic will be discussed further under annual grass control in established turfgrass.

Broadleaf Weed Control in Established Turf

Broadleaf weeds are best controlled in early fall or in the spring with the postemergent herbicides. In early fall the grasses can fill the voids left by weeds before the crabgrass season in the following summer. To get the best control without turfgrass injury, the weeds and grass should be growing well at the time of treatment. Avoid the use of herbicides during drought or hot weather. Do not water or mow for at least 24 hours after treatment to allow the herbicide to enter the weed and kill it. To control most weeds use a mixture of 2,4-D with

either one or two of the following: dicamba (BANVEL), dichlorprop (2,4-DP), or mecoprop (MCPP). Combinations with high dicamba rates are very effective but require cautious use under trees or shrubs where root uptake may cause injury. This is more apt to develop if heavy rains occur soon after application and wash the dicamba to the root system. Mixtures containing dichlorprop may cause some injury to bentgrass. Knotweed and red sorrel may be controlled best with mixtures containing dicamba while oxalis may be controlled best with mixtures containing dichlorprop. DCPA (DACTHAL) has been effective for postemergent creeping speedwell control and preemergent control of prostrate spurge. Bromoxynil (BUCTRIL, BROMINAL) appears effective for postemergent control of prostrate spurge at a rate of 1 to 2 pounds per acre. With difficult to control broadleaf weeds, apply a second application of the herbicide mixture about three weeks later to achieve better results.

Annual Grass Control in Established Turf

The easiest and best way to control annual grasses such as crabgrass is with preemergent herbicides. These are applied before crabgrass seed germinates and the plant emerges. They do not kill established crabgrass plants. Application is usually made in April or at the end of forsythia bloom. Good control has been provided by benefin (BALAN), bensulide (BETASAN, PRESAN, etc.), DCPA (DACTHAL), oxadiazon (RONSTAR) and siduron (TUPERSAN). Check the label as to the tolerance of various cool season turfgrasses to these herbicides. For example, oxadiazon is presently suggested for use only in Kentucky bluegrass turf. One feature of oxadiazon is that it is very effective for goosegrass control. We have found bensulide and DCPA to perform well under conditions where crabgrass pressure and competition is extremely high and/or the germination period extends over several months. In some situations a second application at a one-half rate may provide better long term control.

Except for siduron, the preemergent crabgrass herbicides should not be used in seedbeds, on seedling turf, or where reseeding or sod installation is necessary within 2 or 3 months. As discussed earlier, use activated charcoal to help nullify harmful herbicide residues when some unforeseen situation makes it necessary to seed. We have obtained good crabgrass control with siduron even where some crabgrass plants (2 to 3 leaf stage) recently emerged from seed. If, however, there are many crabgrass plants and they are taller than one-half inch, with more than three leaf blades, then it would be best to apply both a pre- and post- emergent herbicide. In young seedling turf siduron would be the recommended preemergent herbicide. We have had good results using one-half rate of any of the other four preemergent materials. The advantage of this could be cost savings as well as being able to choose a herbicide, such as bensulide or DCPA, which may have longer residual effectiveness. If the turf is mature, then choose any of the preemergent materials, keeping in mind the advantages and disadvantages of each.

There are several methanearsonates herbicides such as AMA, DSMA, MAMA, MSMA, etc. that can be used for postemergent control of crabgrass. They work most effectively on younger plants and when used early in the season. One application along with the preemergent material should provide good seasonal control. If the crabgrass plants do not appear to be seriously injured after ten days, then a second postemergent treatment should be made without delay. On mature crabgrass, and when used late in the season, two or three applications spaced 10 days apart are needed to achieve control. If the time interval exceeds 14 days, it is possible for the crabgrass plants to survive the treatments. Some discoloration of cool season turfgrass is likely from the methanearsonate materials. These materials are also effective for nutsedge control, as is bentazon (BASAGRAN). Bentazon, however, has little effect on crabgrass. Two applications of either

material at low rates and at 10-day intervals are usually more effective for nutsedge control than a single application at higher rates. Nutsedge control is easier to achieve with early summer rather than spring treatments.

Comments

Continued use, year after year, of preemergent herbicides for the prevention of crabgrass in turf areas may not be necessary. Research is presently being conducted in various states, such as New Jersey, Pennsylvania and Rhode Island, to learn more about this subject. Results may indicate that where excellent control of crabgrass is achieved for two or three years there is no need for further preventive herbicide programs. This could result in reduced herbicide use, savings in labor and energy, and make for more effecient use of our resources.

Remember, if a dense, vigorously growing stand of grass is maintained and herbicides are used judiciously, weeds should not be a major problem. Weeds do not cause poor turf; they are the result of it. A successful weed program will depend on good management and the proper use of herbicides. The information in this article was presented at the New Jersey Turfgrass Expo '80 and in the American Lawn Applicator, April, 1981, pages 10-14.