

NATIONAL CEMETERY ADMINISTRATION
SED
Agronomic Information Sheet # 5

Selective Broadleaf Weed Control in Established Stands of Turfgrass

Introduction: Conventional wisdom implies that the best way to avoid broadleaf weed encroachment in a stand of turfgrass is by producing a healthy, vigorous, dense stand of the desired turfgrass species. This of course is the case and the cultural practices recommended for use on NCA properties are designed with minimization of broadleaf weeds as one of their objectives. When however, this approach alone is not completely successful, other methods may become necessary.

Cultural Controls: Utilization of appropriate cultural practices will greatly reduce the necessity of frequent chemical control measures. The most common cultural control technique in turf is the routine mowing (defoliation) that is practiced. Only a limited number of broadleaf weed species are able to tolerate the frequent mowing. That is the good news. The bad news is that a number of the species that can tolerate the mowing are quite competitive once established and often difficult to control with any method.

Other cultural practices that have a significant impact on weed encroachment are fertilization, irrigation and aerification. Proper timing, quantity, and nutrient content of the fertilizer products used on a stand of turfgrass can favor the growth of the desired turfgrass species while not encouraging weed species to develop or thrive. Warm season turfgrass species will benefit most with spring and fall applications of fertilizer. Summer annual weeds on the other hand would be encouraged if mid summer applications were made. Fertilizer analyses low or absent phosphorus also favor the turfgrass species and not germinating weed seedlings. Established stands of perennial turfgrass should be irrigated infrequently, in sufficient quantity to penetrate to a minimum soil depth of 6 inches and then allowed to dry before another irrigation is required. Irrigation that is applied in frequent light quantities will only encourage the germination of weed seeds located near the soil surface and help them to become established. Core aerification should never be conducted during the spring, which is the primary germination period of most summer annual broadleaf weeds and would provide an ideal opportunity for seedling weeds to emerge in the aerification holes.

Mechanical Control: Hand removal of a few isolated weeds is the obvious method of choice when the number involved is small or the species is not a particularly common turf pest and unlikely to invade in great numbers. A sharp pocketknife or suitable substitute for cutting out the offending plant(s) will discourage many casual weed invaders.

Chemical Control: Occasionally it will be necessary to employ an effective broadleaf herbicide to control an infestation of unwanted weed species. The most difficult species of broadleaf weeds to deal with in turf are those that have a low spreading habit of growth and can tolerate the mowing heights commonly employed for turfgrasses. Species such as clover, black medic, wild violet, ground ivy, knotweed, prostrate spurge, veronica, and chickweed are some of the most troublesome. Scattered small patches of these or other broadleaf weed species can be selectively controlled and removed by spot treating only the affected areas. Small hand held or backpack style sprayers are available that can hold 2 to 4 gallons of spray solution and have a hand held spray wand attached. It is a relatively simple task to uniformly spray the target patches of weeds without any damage to the desired turfgrass species. The most common error made by an untrained user of one of these devices is to apply a significantly greater quantity of spray solution than is recommended or required for effective control. To avoid this occurrence, the spray solution should be delivered in a single pass over the target weeds so that the foliage of the weeds is uniformly wet. Do not pass the wand back and forth several times just for good measure. The proper technique should simulate the delivery from a large spray boom attached to a tractor that is driven over a large area at a constant rate of speed for treatment.

Of course, if a large expanse of turf becomes infested with broadleaf weeds, larger tractor or utility cart mounted spray equipment should be employed to apply the selective herbicide. The process and herbicide employed would be the same as in spot treating but the scale is significantly larger.

Herbicide Selection: Ever since the end of the Second World War, the standard for broadleaf weed control in turf has been 2,4-D or one of its close relatives in the phenoxy family of herbicides. Various two or three way combinations of this class of herbicides are still widely used. MCPP, MCPA, or 2,4-DP are the relatives most commonly included along with another newer material known as dicamba. The development of dicamba during 1960's and its inclusion in mixtures with 2,4-D and MCPP created a minor revolution in herbicide performance. These three way combination products provided very broad-spectrum control of many of the difficult to control weed species. One of the limiting characteristics of such combinations involved the propensity of dicamba to leach downward into the soil and occasionally cause injury to woody shrubs and trees through root uptake of this molecule. This limitation does not create an insurmountable problem as reduced rate treatments and avoidance of the most potentially sensitive areas greatly reduced the likelihood of any damage. Another limitation involves its use in an ester formulation that poses volatility concerns for damage to nearby sensitive plants such as tomatoes and various flowers. Low volatile esters or amine formulations should be used under these circumstances.

2,4-D and several of its woody species active relatives, 2,4,5-T and 2,4,5-TP came under increased environmental and health hazard scrutiny during and following their use in the Vietnam War. Pressures to reduce or eliminate their use resulted in the development and release during the late 1980's and early 90's within the industry of a new class of chemistry, the pyridines. These molecules are very effective on a range of difficult to control broadleaf weed species. Numerous new combination products based on this new chemistry are now available and widely used as replacements for 2,4-D and its relatives. Triclopyr and clopyralid sold as Turflon,

Confront, Millennium and other trade names are the pyridine molecules available for use on turfgrasses. As with all of the herbicide molecules discussed here, these possess excellent levels of tolerance for use on the commonly grown cool season turfgrasses.

Application Timing: Although these selective broadleaf herbicides can be used anytime that the target weeds are present and growing and the turfgrass is mature and actively growing, there are preferential time periods that will deliver the best results.

- **Summer annual broadleaf weeds:** This category of weed species completes its life cycle in less than one year. They germinate during the spring, grow rapidly into early summer, flower and produce seed during the summer and usually die as a result of the first killing frost in the fall. If herbicide treatment is deemed necessary for summer annual species, it should be completed well before the plants have a chance to produce seed and contaminate the soil with a future population of offspring. Common examples of this category include, pigweed, prostrate spurge, black medic and yellow woodsorrel.
- **Winter annual broadleaf weeds:** This category of weed species also completes its life cycle in less than one year. They, however, germinate during late summer and early fall, grow rapidly through the fall, over-winter in a semi-dormant state and resume active growth the following spring, flower and produce seed and die during the warmer temperatures of summer. Treatment to control these species can be made during the initial late summer/fall growing period or the following spring prior to flowering and seed production. Common examples of this category include chickweed, henbit, Virginia pepperweed and corn speedwell.
- **Perennial broadleaf weeds:** This category of weed species is often the most difficult to control as they live two or more seasons and don't need to come back from seed each year. Treatment to control perennials is best made in the early fall when plants are translocating carbohydrates downward into their root systems as storage reserves for winter survival. During this process, the applied herbicides are also translocated into the root system to facilitate a complete kill of the target weed plant. Common examples of perennials broadleaves include Canada thistle, wild carrot, ground ivy (creeping Charlie), white clover, wild violet and dandelion.