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WEED CONTROL IN LANDSCAPE PLANTINGS¹

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Weeds may be controlled in landscape plantings by hand or mechanical weeding, mulching, or by treatment with herbicides. Of these methods, the use of herbicides is the most economical and least labor-intensive. In one recent study (3), for example, we found that two seasons of hand-weeding groundcover plantings required about 1400 man-hours per acre. By using herbicides, we were able to reduce weeding time and estimated costs by 85 percent or more.

Herbicides, chemicals used to control weeds, are helping to conserve energy, time, and money in landscaping operations.

Choosing the herbicide. Before any chemical preparation can be legally used as an herbicide, the information for the safe and effective use of the preparation must appear on the label of its container. Furthermore, since no one herbicide is safe around all ornamental plants or will control all weeds, these weed-killing preparations work best when the right material is chosen and label directions are followed (2).

Different sites may call for special treatments. For example, dosage may vary with soil type, treatments may wash down slopes, or herbicides may damage desirable trees and shrubs if the treatments encounter hidden roots in the treated areas. For equal effectiveness, higher dosages of herbicides may be required for finer textured soils and those with higher organic matter. This information is usually on the label. On sloping areas, safe treatments have been those materials with short residuals or those that are labelled for use around the plants downslope. Problems with hidden roots have been avoided by using short-residual herbicides or else materials that are not

harmful to the trees and shrubs established near the treatment site.

Types of herbicides. Herbicides are classified as preemergence or postemergence. Preemergence herbicides, applied to the soil, kill weeds as germinating seedlings. Postemergence herbicides kill established weeds, by entry through leaves, by root absorption, or both.

Preemergence herbicides. Because they work primarily on seedling weeds, preemergence herbicides are most selective in established ornamental plants. These include herbicides such as Casoron (dichlobenil), Princep (simazine), Dacthal (DCPA), Enide (diphenamid), Eptam (EPTC), and Treflan (trifluralin). Three newer preemergence herbicides that may have utility in landscape plantings are Surflan (oryzalin), Ronstar (oxadiazon), and Devrinol (napropamide). Preemergence herbicides such as Dacthal and Ronstar, that have turf registrations, are useful for treating shrubs or ground covers on slopes above turfed areas. Because no single preemergence herbicide controls every weed, mixtures of preemergence herbicides often at reduced dosages, have been found to control a broader spectrum of weed species. Princep, an effective broadleaf herbicide, is often combined with grass herbicides such as Treflan, Enide, Dacthal, Devrinol, or Surflan.

No herbicide is safe on all landscape plants. For example, Princep works well on many woody plants, but can injure certain deciduous shrubs and most herbaceous plants. Dacthal, Treflan, Eptam, and Enide have been used safely to control weeds in plantings of certain herbaceous ornamentals.

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Preemergence herbicides work best when applied on weed-free soil and irrigated if the application is not followed by rainfall. Herbicides such as Casoron, Treflan, and Eptam are volatile and work best during the cool seasons, or when incorporated into the soil by tillage or mulches. Uniform distribution over the soil surface has given the most effective weed control. Preemergence herbicides, unless the label warns otherwise, may be sprayed over the tops of listed ornamental plants. Such herbicides may be used this way because they have no foliar activity. Granules may be applied over dry plant foliage to reduce the chances of toxicity to landscape plants.

Postemergence herbicides. Postemergence herbicides, unlike preemergence herbicides, kill established plants by entering through leaves or roots. To avoid injury to landscape plants, therefore, these herbicides are applied before planting or directed around established plants to avoid contact with ornamental plant foliage. They include herbicides such as amitrole (Weedazol, Cytol, etc.), Paraquat (paraquat), and Roundup (glyphosate), preparations that have a short life in the soil. Postemergence herbicides with long residual activity in the soil are not suitable for landscape use because they may injure the landscape plants when applied in their root zones. Such materials include total vegetation killers such as Pramitol, Hyvar, Spike, Atratol, Krovar, and Tandex.

Although Paraquat, Amitrole, and Roundup do not injure the mature bark of most trees, Paraquat can be injurious to immature bark, especially when sprays are applied repeatedly (5). Paraquat, a short residual "chemical hoe" has sufficient mammalian toxicity so that it is not registered for use around homes. Amitrole controls poison ivy, certain brush species, and many perennial weeds, and is often combined with simazine to provide initial weed kill and long residual control in driveways and non-crop areas. Roundup, a systemic herbicide, is effective against most annual and perennial weeds and many woody plants if the material is applied at the correct stage of plant growth. Like Paraquat, it is rapidly inactivated in soil. Both are useful for preplant site preparation in landscape plantings, but Roundup

more effectively controls deep-rooted perennials. Plots have been cleared of perennial weeds such as quackgrass, mugwort (chrysanthemum weed), bindweed, and johnsongrass by sprays of Roundup. Following sufficient time for translocation (3 to 7 days), sites treated with Roundup have been tilled and planted safely with ornamentals. Since Roundup has no lasting properties in the soil, however, a preemergence herbicide or mulching materials or both, have been used to prevent growth of weeds from seeds after the planting is established.

Both Paraquat and Roundup have been successfully combined with preemergence herbicides for initial weed kill and long lasting control around trees, shrubs, and structures. The following formulas have worked well for us where the weed foliage is merely wet with the spray and the foliage of trees and shrubs is avoided.

**Mixes for knapsack sprayer applications
to kill established weeds**

(Amount in cups per 3 gallons of water)

Around trees and shrubs tolerant of Princep where runoff onto turf is not a consideration:

Paraquat ¼ cup or
Roundup 3/8 cup
plus
Princep 80W ½ cup
plus
Surflan 75W ½ cup

Around trees and shrubs intolerant of Princep or where runoff onto turf is a consideration:

Paraquat ¼ cup or
Roundup 3/8 cup
plus
Surflan 75W 1 cup

Either Paraquat or Roundup alone have been used at the indicated dosages for periodic weed kill without residual control. However, where Paraquat is used alone a non-ionic surfactant (wetting agent) is required for best results. Walking through areas wet with sprays of postemergence herbicides onto turf areas often results in "tracking," leaving footprints of dead grass.

Methods of applying herbicides. Preemergence of herbicides are available in either granular or sprayable formulations. Granules have been successfully applied in landscape plantings with hand-crank rotary spreaders. The proper

dosage and good distribution were obtained by weighing out the required granules for the area to be treated and then making the application in two or more passes. Calibrations for single-pass applications worked best on large, relatively uniform areas.

Knapsack sprayers have also been used effectively for spraying preemergence herbicides in landscaped plantings, turf areas, and tank farms. A knapsack sprayer fitted with a pressure gauge and the proper nozzle can apply precise swaths up to 14 feet wide at low volumes approaching those of aircraft applications (Fig. 1 & 2). Many growers and landscapers have adopted this inexpensive system which can be used in almost any landscape situation (1, 4). Complete details and description of the method are available from the author on request.

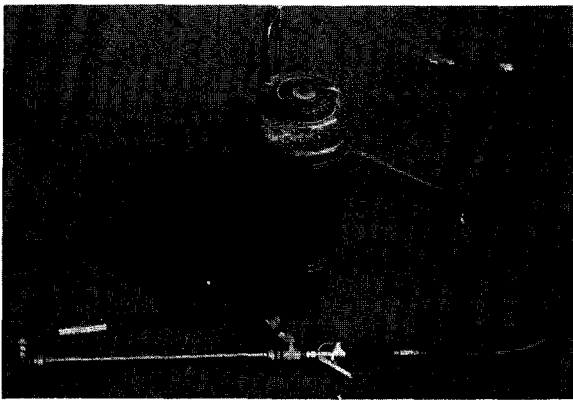


Fig. 1. Knapsack sprayer equipped with a pressure gauge and nozzle for broadcast spraying of herbicides.

Postemergence herbicides that are directed around landscape plantings to avoid their foliage have also been applied effectively with knapsack sprayers fitted with a simple funnel shield (Fig. 3). The neck is cut off an 8 inch plastic funnel and the funnel is fitted on the nozzle end of the sprayer, using one or more rubber washers. The funnel serves as a shield allowing the spraying of weeds right up to the base of woody plants without injury. A cone-type nozzle and very low pressure (5 to 15 psi) is used. With the right postemergence herbicides, such as Roundup or Paraquat, or combinations previously mentioned, such a system has been used to control weeds around upright



Fig. 2. The width of spray swath is determined by the height that the nozzle is held above the ground.

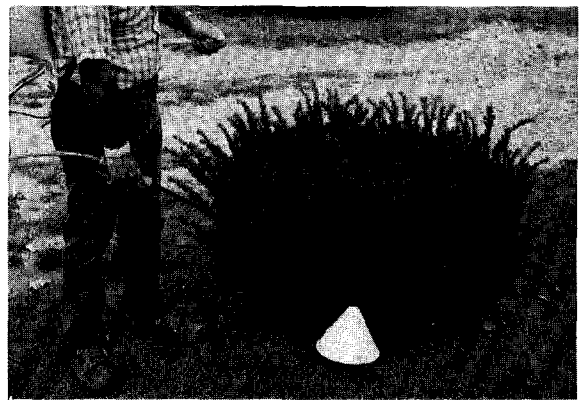


Fig. 3. A simple polyethylene funnel serves as a shield for spraying around shrubs.

woody plants or structures with essentially no hand-weeding.

A relatively new development in herbicide application equipment is the rope wick applicator. The technique involves wiping a concentrated herbicide solution on the leaves of weeds. Wipe-on devices are especially made for Roundup which is systemic, and can kill a weed even if only part of the wood foliage is treated. A ratio of 1 part Roundup to 2 to 4 parts water is effective. We have tested one inexpensive hand-held device called the *Lightning Hoe*¹ with good results (Fig. 4). A plastic handle holds the solution which wicks out on a nylon rope. By fitting the rope end with a

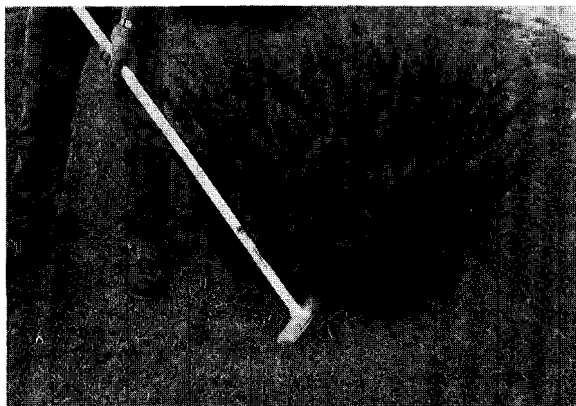


Fig. 4. The *Lightning Hoe* rope wick applicator.

simple shield to prevent contact with foliage of desirable plants, this device has been used to kill weeds in landscape plants and even flower beds selectively without spraying. We have found that other systemic herbicides such as 2,4-D and dicamba can also be used in this device to spot-treat weeds in lawn turf.

Currently available herbicides, properly applied at the right time, have been used economically and effectively to control weeds in landscape plantings.

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ABSTRACT

Reilly, Ann. 1980. **Fall planting encourages earlier root development**. Grounds Maintenance 15(9): 15, 18, 70, 72, 73.

The experienced professional can successfully plant in almost any season if the ground is not frozen. However, he will experience a greater degree of success and will do less follow-up maintenance if he plants in the fall. When trees and shrubs are set into place in the fall, they have a long establishment period in which stress is minimized. Cool soil temperatures encourage more vigorous root growth, which can be expected until the soil temperature drops to 40°F (although some negligible root growth does occur as long as the soil is not frozen). Even where winter temperatures drop as low as 0°F, the ground will probably not be frozen until mid-December. When spring comes, root growth will start at a time earlier than most planting occurs. When planting is postponed until mid- to late-spring, flowers and foliage start to grow, discouraging root development. When summer warms the soil, root growth almost stops.

¹*Lightning Hoe* is manufactured by Hardy-Roberson, P.O. Box 506, Batesville, MS 38606 and distributed by Industry Products Co., P.O. Box 38624, Germantown, TN 38138