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Landscape

by Dr. Elton Smith

Increasing labor costs in recent years have caused an increase in the use of both pre-emergence and post-emergence herbicides. Herbicides are a useful tool on golf courses, cemeteries, parks, arboreta, schools, as well as commercial and residential landscapes.



They are used to control weeds under trees, delineate turf areas, in and around sand traps, around grave markers, in patios, driveways, under fences and in flower, ground cover and woody plant beds.

The effectiveness of a weed control program is only as successful as the person responsible for selection, calculation, calibration, and application of herbicides. It's up to the applicator to create the proper conditions necessary to achieve the desired results. The label specifies those conditions.

Weeds typically found in the landscape are classified as either annuals or perennials. Annual weeds, such as crabgrass, foxtail or purslane, are relatively easy to keep under control by either mulching, cultivation, hand pulling, pre-emergence herbicide application, or a combination.

Perennial weeds, such as bindweed, thistle, quackgrass, or nutsedge, are much more difficult to control by the above methods principally due to their extensive root systems.



Chemical control of weeds at tree bases (top) reduces physical damage caused by mowers and trimmers. The key to weed-free plant beds is to control perennial grasses and broadleaved weeds prior to planting.

Weeds can be controlled prior to or after planting, however, many fail to recognize the importance of eliminating weeds, especially perennials, prior to planting.

Prior to planting

The most successful approach to a weed-free landscape is to control perennial grasses, and perennial broadleaved weeds, prior to preparing the area for planting. Spraying the weeds in the area with one of several post-emergence herbicides which will be translocated to the root system for total plant control is one of the most effective methods of control. Examples of such products would be 2,4-D and related products for broadleaf weed control, dalapon for grass control and amino triazole and glyphosate for general weed control. Each of these normally has to be applied more than once and most have a specific waiting period prior to planting. Glyphosate, a very effective product for perennial grass and broadleaf weed control, has no soil residue.

A number of pre-emergence herbicides are labelled for landscape plants and two are recommended for use prior to planting. Incorporate into the soil, following tillage, either Eptam or Treflan to control annual and some perennial weeds for a period of 4-6 weeks. Following incorporation to a depth specified on the label, planting of the ornamentals can begin. The incorporation of these two herbicides have been used extensively by commercial nurserymen and is now being used by landscape contractors to a large extent, especially where maintenance for a specified period of time is in the contract.

Tillage as a method of weed control prior to planting is a successful practice for the control of annual weeds but not as effective against perennial weeds. In some cases, tillage only cuts up the root system

continued on page 54

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Landscape

into smaller pieces and redistributes them.

Following planting

In recent years the landscape industry has made extensive use of mulches to prevent weeds in the landscape. Many types of mulches are available, however, the most popular in the Midwest include hardwood, Cypress and pinebark mulches along with wood chips, peat moss, and an assortment of hulls and numerous inorganic types. These should be applied at least 2-inches deep and renewed annually or as needed. Avoid the use of black plastic near woody plants as plastic contributes to excessive soil moisture.

Some weeds will come through

the mulches. These must be hand pulled or sprayed. Seeds will be carried into planting beds by wind and birds and will often germinate in the mulch. Again, hand pulling is the most satisfactory control measure in small areas, however, landscape personnel are using more & more herbicides, such as glyphosate.

As an alternative to, or in combination with mulches, are several pre-emergence herbicides that can be applied between or over the plants to control annual weeds for a period of 4 to 8 weeks. Reapplications are usually necessary to achieve season-long control depending on selection of herbicide, soil and climatic conditions. Typically, the first application

should be made prior to weed seed germination and subsequent treatments as needed based on re-growth of annual weeds.

The soil should be weed-free and moist prior to application or the treatment should be followed by rain or irrigation. It's important to know how much area is included in the beds to be treated. Once the area has been calculated, determine the amount of herbicide needed for that area, and apply with equipment that is properly calibrated and in working order. Many types of application equipment are available. Select a sprayer and/or granular applicator that is large enough to complete anticipated needs and is easy to calibrate and clean.

Calculating rates and quantities

continued on page 58

Granular Materials

Example—A landscaper needs to treat 4,000 sq. ft. of Juniper with 4% RONSTAR granules at 4 lbs. aia. How much RONSTAR is required?

Formula

$$\text{lbs. aia} \times \frac{\text{sq. ft. to be treated}}{44,000 \text{ sq. ft./acre}} \times \frac{100}{\% \text{ granular}} = \text{lbs. required to treat area}$$

Calculation

$$4 \text{ lbs. aia} \times \frac{4,000}{44,000} \times \frac{100}{4} = 9.1 \text{ lbs. 4\% granular RONSTAR}$$

Wettable Powders

Example—A landscape firm needs to treat 4,000 sq. ft. with 50% DEVRINOL wettable powder at the rate of 10 lbs. aia.

Formula

$$\text{lbs. aia} \times \frac{\text{sq. ft. to be treated}}{44,000 \text{ sq. ft./acre}} \times \frac{100}{\% \text{ powder}} = \text{lbs. required to treat area}$$

Calculation

$$10 \text{ lbs. aia} \times \frac{4,000}{44,000} \times \frac{100}{50} = 1.8 \text{ lbs. 50\% DEVRINOL W.P. to be mixed in enough water to cover 4,000 sq. ft.}$$

Liquid Concentrate

Example—The recommendation is to apply trifluralin at 2 lbs. aia. Since TREFLAN contains 4 lbs. active ingredient/gal., how many gallons should be applied on 1/2 acre of area to be planted to Purple Wintercreeper.

Formula

$$\text{lbs. aia} \times \frac{\text{sq. ft. to be treated}}{44,000} \times \frac{1}{\text{lbs. active ingredient/gallon}} = \text{gallons required to treat area}$$

Calculation

$$2 \text{ lbs. aia} \times \frac{22,000}{44,000} \times \frac{1}{4} = .25 \text{ or } \frac{1}{4} \text{ gal. TREFLAN to be mixed in enough water to cover } \frac{1}{2} \text{ acre}$$

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Apply BAYLETON according to label directions and you get lasting control of dollar spot, fusarium blight, and anthracnose. Control that lasts a full 30 days, sometimes longer.

BAYLETON is more than a contact fungicide, more than a systemic fungicide with only foliar activity. With BAYLETON, you get contact action plus systemic action with both foliar and root uptake. The result is unequalled staying power and the broadest spectrum of control available in one product.

BAYLETON not only gives

you 30-day control of dollar spot, fusarium blight, and anthracnose, but also combats brown patch, copper spot, powdery

mildew, red thread, rusts, smuts poa annua decline, pink snow mold, and grey snow mold.

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Landscape

Pre-emergence herbicides for landscape use

There are approximately 18 pre-emergence herbicides registered for the nursery industry but only the 12 listed below are utilized in landscape plantings.

Check the label for sensitive plant materials before using any herbicide. Consider using a drift preventer (cone) for liquid materials to reduce damage to desirable plants and to increase application speed. Bulbs can be affected by many preemergence herbicides. Soil type can reduce effectiveness. Foliage of desirable plants should be dry to prevent granular materials from sticking.

BETASAN, LESCOSAN (Bensulide)—used at the rate of 10-12 lbs. aia to control annual grasses, especially crabgrass, and annual bluegrass in established flower gardens. Use the 12.5% granular formulation (80-96 lbs.), the 3.6% G (278-333 lbs.), or the 4 E formulation at 3 1/8 gals./A in 80-100 gals. of water and irrigate after application. This is the only pre-emergence herbicide labelled for use with tulip and daffodil.

CASORON, DYCLOMEC (Dichlobenil)—effectively controls a wide spectrum of annual and perennial grasses and broadleaved weeds when used at 5 to 6 lbs. aia (125-150 lbs. of G-4). CASORON is one of the most effective pre-emergence herbicides against mugwort (wild chrysanthemum), thistle, nutsedge, quackgrass and bindweed, particularly if used for 2 successive years. CASORON is not especially effective in fine sandy soils. It should be incorporated 2-3 inches if the soil temperature is above 45°F, however, no incorporation is necessary if applied in late fall or winter. CASORON may injure fir, spruce, hemlock, certain Japanese hollies, viburnum and most herbaceous plants.

DACTHAL (DCPA)—is used at the rate of 10.5-12.0 lbs. aia in 75% wettable powder (14-16 lbs.) or 5% granular form (210-240 lbs.) to con-

trol annual grasses and many broadleaved weeds including dodder. DACTHAL is not effective against wild mustard, ragweed, smartweed, and velvet leaf. It can be safely used with nearly all woody ornamental and many herbaceous crops.

DEVRI-NOL (Napropamide)—controls annual grasses and broadleaf weeds including chickweed, groundsel, lambsquarters and red-root pigweed. DEVRI-NOL is ap-

plied at the rate of 4-6 lbs. aia in 10% granular form (40-60 lbs.) or 50% WP (8 to 12 lbs. in 50 gals. water). For small areas, apply the 10 G at 15 oz.—1 lb. 6 oz./1000 sq. ft. or the 50 WP at 3 oz. to 4.4 oz./2 1/2 gals. water/1000 sq. ft. DEVRI-NOL is registered on a wide selection of trees, shrubs, evergreens and ground covers.

continued on page 60

TABLE 1. **Woody plants tolerant to pre-emergence herbicides**

The following evergreen and deciduous plants are labeled for use with the pre-emergence herbicides across the top of the chart. An (X) in the column indicates the herbicide can be safely used for that plant listed. The list includes only those plants with company label registration.

	BETASAN	CASORON	DACTHAL	DEVRI-NOL	ENIDE	EPTAM	FURLOE	CHLORO IPC	ORNAMENTAL WEEDER	PRINCEP	RONSTAR	SURFLAN	TREFLAN
Narrowleaf Evergreens													
Arborvitae		X	X	X	X		X	X	X	X	X	X	X
Chamaecyparis				X	X	X							
Eastern Red Cedar		X		X	X					X			X
Fir			X	X		X	X						
Fir, Balsam							X			X			X
Fir, Douglas				X						X	X		X
Fir, Fraser										X			
Hemlock				X	X	X	X	X	X	X	X		X
Juniper	X	X	X	X	X	X	X	X	X	X	X	X	X
Pine			X	X		X	X	X					
Pine, Austrian										X	X		X
Pine, Japanese Black											X	X	X
Pine, Mugo										X		X	
Pine, Red										X			X
Pine, Scotch										X	X		X
Pine, White										X	X	X	X
Spruce			X	X		X	X						
Spruce, Blue										X	X	X	X
Spruce, Norway										X	X		X
Spruce, White										X	X		X
Yew		X	X	X	X	X	X	X	X	X	X	X	X
Broadleaf Evergreens													
Boxwood	X	X	X	X		X					X	X	X
Cherry Laurel					X							X	X
Euonymus				X	X		X	X			X	X	X
Firethorn	X	X		X	X						X	X	X
Holly	X	X	X	X	X	X		X			X	X	X
Holly, Japanese						X					X	X	X
Japanese Pieris			X			X		X				X	X
Leucothoe		X				X					X	X	
Magnolia grandifolia											X	X	
Mahonia					X		X		X	X	X		
Mountain Laurel	X	X		X	X		X			X	X	X	X
Rhododendron	X	X	X	X	X	X	X	X			X	X	X

continued

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Landscape

ENIDE (Diphenamide)—is used at the rate of 6-8 lbs. aia (12-16 lbs. 50% WP, 6.6-8.8 lbs. 90% WP) to control annual grasses and broad-leaved weeds. ENIDE, available as a 50% and 90% wettable powder, is particularly effective in sandy soils and quite safe on evergreens, deciduous plants, numerous ground covers and flowers.

EPTAM (EPTC)—is available as a 7 EC and 10% granular and can be used to rid an area of certain weeds the season prior to planting. It must be incorporated 2-3" for annual weed control and at least 6" in the soil, preferably by cross discing at 3-6 lbs. aia (30-60 lbs. G-10, 5¼-7 pts. of 7 EC in 10-50 gal. of water) for the suppression of nut-

sedge, quackgrass, and certain other weeds. Mugwort can be controlled at 17 pts. of 7 E in 10-50 gals. of water/A. Unless thoroughly incorporated into the soil, EPTAM will not give as long lasting control of broadleaf weeds as many other herbicides. EPTAM should be considered for nutsedge and mugwort control the season prior to planting only.

FURLOE CHLORO-IPC (Chloropropham)—is used at the rate of 6-10 lbs. aia as a 20% granular (30-50 lbs.) or 10% granular (60-100 lbs.) formulation to control chickweed and other annual winter weeds. FURLOE CHLORO-IPC should be applied when landscape plants are in a dormant stage. It kills established chickweed and is a most useful autumn herbicide.

ORNAMENTAL WEEDER (Chloramben 4 G)—controls annual broadleaf weeds and grasses at the rate of 4.0 lbs. aia (100 lbs. 4 G). Use in the spring on weed free soil, irrigate with ½" of water within 1 week of application but do not incorporate. Controls chickweed, crabgrass, foxtails, lambsquarters, mustard, pigweed, ragweed, seedling johnsongrass, smartweed and velvetleaf. Chloramben is more effective in clay loam soil than in sandy soils.

PRINCEP (Simazine)—is used from 1 to 3 lbs. aia in the 4% granular (25-75 lbs. G-4), 4 L (1-3 qts.) or 80% wettable powder (1.3-3.8 lbs. 80 W) formulations to control annual and perennial grasses and broadleaf weeds. PRINCEP CALIBER 90, a water dispersible granule, should be used at 2.2-3.4 lbs. of product in 25 gal. water. Princep is effective for 3 months or longer if applied in the spring. PRINCEP will injure birch, euonymus, deutzia, lilac, linden, privet, spirea, and herbaceous plants. Autumn or early winter applications at 2-3 lbs. aia are recommended with a lower rate (1 lbs. aia) suggested for summer use alone or preferably, in combination with

TABLE 1. **Woody plants tolerant to pre-emergence herbicides**
Continued

	BETASAN	CASORON	DACTHAL	DEVIRINOL	ENIDE	EPTAM	FURLOE CHLORO IPC	ORNAMENTAL WEEDER	PRINCEP	RONSTAR	SURFLAN	TREFLAN
Deciduous Trees												
Ash		X	X	X	X					X		X
Ash, White					X							X
Bald Cypress					X							X
Beech					X							
Birch		X	X		X		X			X		
Birch, European					X							X
Chinese Chestnut			X		X							X
Corktree, Amur		X										
Crabapple		X	X	X	X					X		X
Dogwood		X	X		X	X		X	X	X		X
Dogwood, Kousa												X
Elm		X	X									
Elm, American								X				
Elm, Siberian								X				
Ginkgo										X	X	
Goldenchaintree		X		X								
Goldenraintree		X									X	
Hackberry		X										
Hawthorn			X	X								
Honeylocust				X				X				X
Linden		X				X						
London Planetree												X
Magnolia		X	X			X	X			X		
Maple		X	X	X	X	X	X					
Maple, Amur										X		
Maple, Norway												X
Maple, Red							X					X
Maple, Silver												X
Maple, Sugar					X							X
Mountain Ash		X										
Oak		X	X		X	X				X		
Oak, Pin												X
Oak, Red								X	X	X		X
Oak, Scarlet												X
Poplar		X	X	X	X		X					
Redbud			X		X							X
Russian Olive		X	X		X			X	X			
Sassafras							X					
Sweetgum			X		X						X	X
Sycamore			X		X							X
Tuliptree			X		X							X
Tupelo												X
Walnut		X	X	X	X							X
Willow		X	X		X							X

continued on page 62