

IT PAYS TO HAND THIS KIND OF WORK TO ROUNDUP®

Hand-weeding areas like this doesn't make sense today. Not when Roundup® herbicide can do the job faster and better and give you more time to handle more customers.

Here's how: one-shot Roundup controls over 100 weeds right down to the roots, including poison ivy, poison oak and kudzu. One gallon of 2% spray solution can treat up to 30 tree rings for about a nickel each, or 1,000 feet of fenceline for less than \$2.00*.

It also pays to use Roundup when you're working around expensive ornamentals—because Roundup won't wash, leach or carryover in the soil. And

Roundup is virtually odorless and environmentally sound.

Use Roundup wherever you've been hand-weeding—around patios, flower beds, curbs, walkways, driveways, mulched areas, fences and steps. The choice is simple. You can spend valuable time hand-weeding. Or you can use Roundup to help you make more money. Now, that's using your head.

*Based on the cost of Roundup only to treat low growing vegetation.

FOR A FREE TRIMMING AND EDGING GUIDE
FOR ROUNDUP CALL TOLL FREE 800-621-5800.
IN ILLINOIS, CALL 800-972-5858.

ALWAYS READ AND FOLLOW LABEL DIRECTIONS FOR ROUNDUP.

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Monsanto

Circle No. 150 on Reader Inquiry Card



TURF



ing growth habit. It is a summer annual and prolific seed producer with a lengthy period of germination throughout the spring and summer. Spurge is best controlled with preemergence herbicides.

Sow thistle is an annual with flowers similar to dandelion but its leaves have spines on the edges and deeper indentations. Selective control is effective.

Herbicides

Herbicides are chemicals used to kill or inhibit the growth of plants. There are many kinds of herbicides for general and specific weed control available in a number of packaged forms. All are subject to the influences of environmental conditions and man's ability to use them to his best advantage.

Herbicides can be mixed, depending upon formulation and chemical compatibility with other herbicides or adjuvants to increase efficiency. Many her-

bicides are premixed to make your job easier and to provide control of a number of weeds. Use premixed herbicides unless you understand all the complexities and safety considerations.

Mode of action, length of residual, and selectivity are good ways to differentiate herbicides. All herbicides can be categorized by the following outline.

1 FOLIAGE APPLIED

A Contact

- Selective
- Nonselective

B Translocated (Systemic)

- Selective
- Nonselective

2 SOIL APPLIED

A Short Residual

- Selective
- Nonselective

B Long Residual

- Selective
- Nonselective

Foliage applied—contact—selective herbicides are of little importance in turf or landscape.

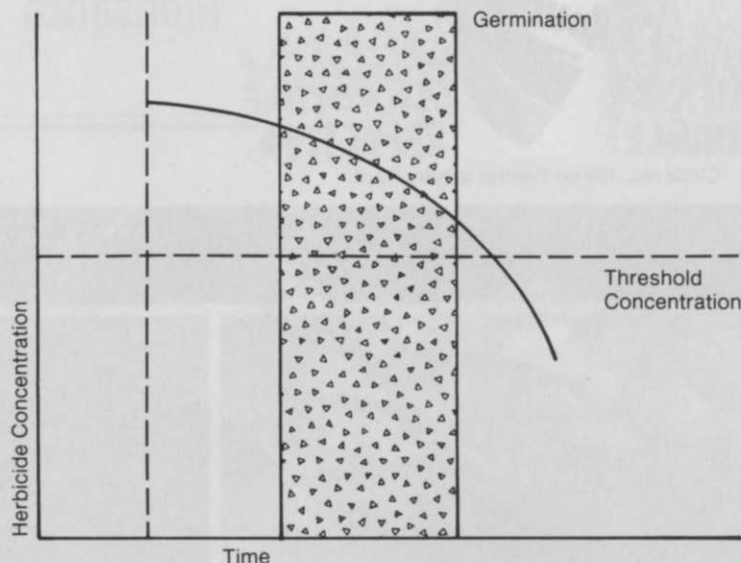
Foliage applied—contact—nonselective herbicides for turf and landscape uses include paraquat and cacodylic acid (Phytar 560). These herbicides will kill all green and growing foliage contacted by the spray solution.

Dormant bermudagrass, zoysiagrass, and other warm-season perennial turfgrasses are not usually affected by application of this type of herbicide. To escape injury, foliage must be completely dormant.

Contact type herbicides enter the plant where applied and do not move significantly beyond that point (limited upward or downward translocation). Spray volume and coverage of the leaf surface of the target plants is very critical for maximum control. Extremely low volume applications will often result in inadequate coverage and will kill only

continued on page 46

The effect of delaying the application of preemergence herbicides





A new day in grass control for ornamentals.

FUSILADE™

HERBICIDE

Postemergence grass control

This is the beginning of the FUSILADE herbicide era for ornamentals. FUSILADE is now registered for postemergence control of both annual and perennial grasses in ornamentals.

Safe grass control

FUSILADE controls grasses without damage to ornamentals. You can apply FUSILADE either over-the-top or as a directed spray. Follow label directions carefully for the correct method of application for specific ornamentals. Used as directed, FUSILADE controls nearly all grasses without danger of phytotoxicity to ornamentals, eliminating expensive hand labor to remove grassy weeds.

Complete grass control

FUSILADE means complete grass control because it controls weeds systemically, even penetrating into roots, rhizomes and stolons. And FUSILADE can be used with more ornamental species than any other postemergence grass herbicide. It's a new day in complete grass control for ornamentals. For more information



on FUSILADE, call the ICI Americas Information Service toll-free, 1-800-441-7757, extension 3192. ICI Americas Inc., Wilmington, DE 19897.

The Grass Master



ICI Americas Inc.



How many turf in this

Here's a clue. D-z-n[®] Diazinon[®] controls every insect you see here, from the root-eating white grub to the juice-sucking chinch bug. In fact, D-z-n Diazinon has the biggest label of any turf

insecticide. And that makes it the perfect choice for broad spectrum control in both commercial and residential turf.

Need another clue? D-z-n controls damaging worms including



insects are hiding picture?

cutworms, sod webworms and armyworms. Plus it takes care of nuisance pests like ants, fleas and chiggers.

We've mentioned 8 species on the label but that's not even half.

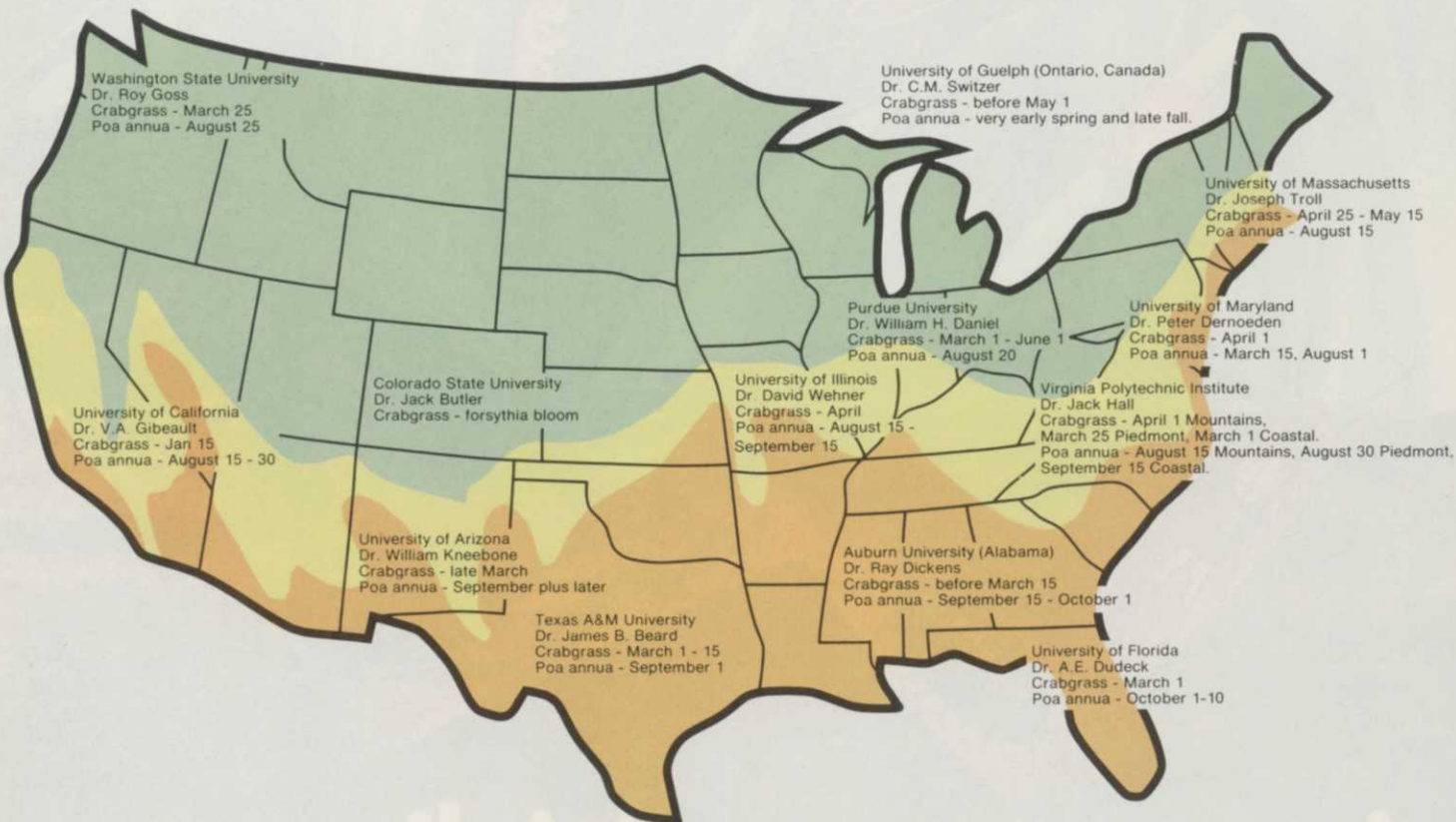
Keep counting. And when you place your next insecticide order, ask your supplier for the biggest label in the business—D·z·n Diazinon.

PS: You'll find the answer below.

CIBA—GEIGY

Answer: D·z·n Diazinon controls all twenty-three insects seen here.

Suggested Timing for Preemergence Herbicides to Control Crabgrass and Annual Bluegrass



the upper layer of the foliage canopy. Regrowth occurs in a comparatively short period of time.

Increases in control and speed of activity of contact herbicides depends upon the volume of water mixed with them. Increases in activity can be demonstrated up to 50 to 60 gallons per acre of water used. Control is generally poor with less than 20 gallons per acre. A good compromise is 30 to 40 gallons per acre.

Foliage applied—translocated—selective herbicides are absorbed into the plant at point of contact and spread throughout the plant tissues. These herbicides are most effective when applied to actively growing weeds that are storing

food reserves in underground structures, such as roots, rhizomes, and tubers. For example, dandelions are most effectively killed by 2,4-D applied in the fall when the plant is storing reserves in its taproot.

The most common foliage applied-translocated-selective herbicides are the phenoxy (2,4-D, mecoprop), dicamba (Banvel), bromoxynil, and the arsenicals (MSMA and DSMA). They are the only group of selective herbicides effective on perennial weeds since they kill the foliage and the reproductive structures.

Spray volume and coverage is not as critical with translocated herbicides as with contacts. However, adequate coverage is

essential for maximum weed control (spray volumes from 30 to 40 gallons per acre).

Foliage applied—translocated—nonselective herbicides are used in peripheral areas, such as along fences or structures, and for renovation of turf areas. Examples of foliage applied-translocated-nonselective herbicides are dalapon (Dowpon), amitrole, and glyphosate (Roundup). These materials generally control all weed species sprayed.

Like foliage applied-contact-nonselective herbicides, translocated-nonselective herbicides can be used to control cool-season perennial grasses infesting warm-season turf when applied while



Keep roadside grasses from overwhelming your maintenance budget. Spray Embark® PGR.

Don't let the long stretches of grass growing along your roads capsize your maintenance budget.

Just a little Embark® PGR (Plant Growth Regulator) sprayed early in the season stops unsightly seedheads, dramatically slows the growth of most roadside grasses and keeps you out from under.

By slowing grass growth, Embark PGR eliminates mowing during the lush spring growing season. What's more, it typically now costs less to spray Embark PGR than to mow one time. And it can be sprayed over an



area in about one-sixth of the time it takes to mow an area of identical size.

Embark PGR also eliminates labor-intensive hand-trimming around guardrails and trees, and maintains improved sight distance at intersections. It reduces costly mowing

frequency on bridge abutments, dangerously steep inclines, and along rights-of-way where mowers have difficulty.

Embark PGR is now available at dramatically reduced prices: \$79/gallon and \$27/quart*

*Suggested retail price.

For more information, contact Agricultural Products/3M, 223-1N, 3M Center, St. Paul, MN 55144. Or see your local 3M Embark PGR distributor.



3M Hears You...

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TURF

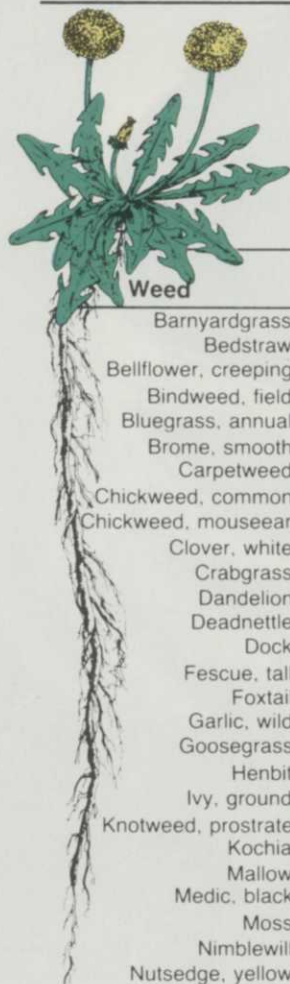


CHART 1
Growth and treatment periods

Weed	SPRING			SUMMER			FALL			WINTER		
	Early	Mid	Late	Early	Mid	Late	Early	Mid	Late	Early	Mid	Late
Barnyardgrass												
Bedstraw												
Bellflower, creeping												
Bindweed, field												
Bluegrass, annual												
Brome, smooth												
Carpetweed												
Chickweed, common												
Chickweed, mouseear												
Clover, white												
Crabgrass												
Dandelion												
Deadnettle												
Dock												
Fescue, tall												
Foxtail												
Garlic, wild												
Goosegrass												
Henbit												
Ivy, ground												
Knotweed, prostrate												
Kochia												
Mallow												
Medic, black												
Moss												
Nimblewill												
Nutsedge, yellow												
Pigweed, prostrate												
Plantain												
Puncturevine												
Purslane, common												
Quackgrass												
Sanbur												
Shepherdspurse												
Sorrel, red												
Speedwell												
Spurge, prostrate*												
Thistle, Canada												
Thistle, musk												
Vervain, prostrate												
Violets												
Waterleaf (nyctelea)												
Woodsorrel, yellow												
Yarrow												

— Active period of plant growth. Varies from year to year and from north to south.
 — Apply preemergence chemicals.
 — Apply postemergence treatments. Approximate periods may vary two weeks from season to season.

* Preemergence herbicide applications should be made a second time in late June or early July.

the warm-season grass is dormant.

Soil applied—short residual—selective herbicides include pre-emergence herbicides such as DCPA(Dacthal), benefin(Balan),

bensulide(Betasan), atrazine, simazine, and pronamide. Simazine and pronamide applied to the soil will also control established annual bluegrass as pre-emergence herbicides.

Maximum residual activity of

these herbicides is a matter of weeks to a few months, compared to several months for long residual herbicides. Spray volume is not as critical as with postemergence herbicides, but even distribution is necessary for uniform effective control.

Preemergence herbicides are the best approach to control weeds germinating from seed. They eliminate competition from newly germinated weeds prior to application of postemergence herbicides.

Soil applied—short residual—nonselective herbicides are used as temporary soil sterilants. They are usually referred to as fumigants and include methyl bromide and metham(Vapam). They are active in the vapor forms.

Methyl bromide is a gas at atmospheric pressure while metham is a liquid that converts to a toxic gas in the soil. Because of their volatile nature, both compounds require some kind of sealing to prevent vapor loss to the atmosphere. A plastic or gas-tight cover must be used for methyl bromide fumigation. Water can serve as the seal for metham, although a plastic cover makes control more consistent.

Both herbicides are excellent for killing vegetative structures of perennial plants such as bermudagrass, nutsedge, and torpedograss and are effective on a large number of weed seed, fungi, and insects.

This group of chemicals is the only one that will kill weed seed before germination. All other herbicides work only if applied to germinating or germinated seed.

The effectiveness of fumigants is highly dependent upon soil moisture, temperature, compaction, and texture. They are most effective when applied to friable or well-aerated soils at temperatures above 70 degrees F. Diffusion of vapors can be



Keep ornamental growth from eating up your manpower. Spray Embark® PGR.

Keep ornamental growth from consuming too many of your valuable manhours — pruning, trimming and cleaning up clippings.

Just a little Embark® PGR (Plant Growth Regulator) will slow the growth of ornamental shrubs, hedges, trees and ground cover. And keep them from devouring your profits.

One spraying with Embark PGR keeps ornamentals within inches of their clipped height for two months or longer. Plants retain



a healthy appearance. And you can spend more manhours working other jobs. The overall result is uniform, dense, attractive and long-lasting ornamentals, with a signif-

icant savings in labor, thanks to reduced trimming, clean-up and disposal time.

What's more, **Embark PGR is now available at dramatically reduced prices: \$79/gallon and \$27/quart***

For more information, contact Agricultural Products/3M, 223-1N, 3M Center, St. Paul, MN 55144. Or see your local 3M Embark PGR distributor.



*Suggested retail price.

3M Hears You...

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TO STAY ON THE RIGHT COURSE, COLOR YOUR WAY FROM TEE TO GREEN.

When you mix Blazon™ Spray Pattern Indicator with herbicides, fungicides, insecticides, and liquid fertilizers, you can see exactly where you've sprayed, helping to prevent costly overlap and/or missed areas. ☐ The color pattern is temporary and dissipates with rain, heavy dew, normal sprinkling, or even with sunlight alone. ☐ You'll be able to apply a uniform spray everywhere your tank sprayer or tractor goes, including areas around bunkers and across contours and hills. ☐ And while Blazon itself is environmentally safe and does not permanently stain hands, clothing, or equipment, it lets you know exactly where potentially harmful chemicals are. ☐ Best of all, you're turning an educated guess into an applied science, making for a better golf course and a better-looking bottom line. For further information, contact Milliken Chemical, P.O. Box 817, Inman, South Carolina 29349, 800-845-8502.



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