



New Du Pont Landscape Fabric. It lets water through to give you healthier beds with less work.

New DuPont Landscape Fabric lets water pass through, reduces wash-away of mulch while it impedes weed growth. So you get healthier, more attractive plant beds with less maintenance work and cost.

Everything you apply for bed care gets to plant roots in the amount you want, where you want it. Water, fertilizers, herbicides and pesticides seep down through this chemically inert fabric to nourish and protect every plant in your bed.

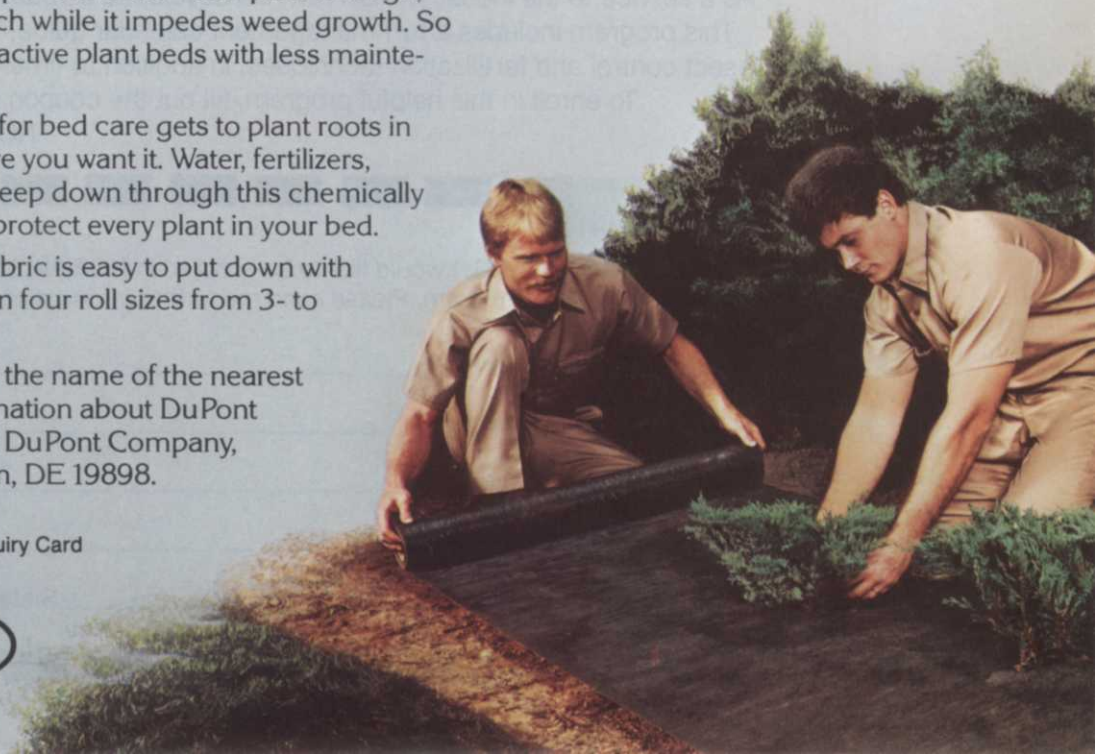
DuPont Landscape fabric is easy to put down with scissors or knife. It comes in four roll sizes from 3- to 12-feet wide.

Call 800-441-7515 for the name of the nearest distributor and more information about DuPont Landscape Fabric. Or write DuPont Company, Room G40955, Wilmington, DE 19898.

Circle No. 118 on Reader Inquiry Card



REG. U.S. PAT. & TM. OFF.



NOR-AM's[®] TURF PRODUCTS DON'T SIMPLY NOURISH YOUR TURF... THEY PROTECT IT

Now achieve fine turf with fewer problems...thanks to NOR-AM's Total Turf Management Program. This unique program brings you a broad selection of high-performance products that assure healthier turf with better root development, fewer insect problems and less disease destruction.

As a service to the industry, NOR-AM has developed a Total Turf Management Program. This program includes a turf management calendar guide, brochures on turf diseases, insect control and fertilization techniques, in addition to timely turf management reports.

To enroll in this helpful program, fill out the coupon below or contact your local NOR-AM sales representative.

MAIL COUPON TO:

**NOR-AM Chemical
Company
3509 Silverside Road
P.O. Box 7495
Wilmington, DE 19803**

Attn: Communications Dept.

WWT

YES, I would like to be enrolled in NOR-AM's Total Turf Management Program. Please send me further information.

Company _____

Name _____

Title _____

Address _____

City _____ State _____ Zip _____

preemergent herbicides
and annual bluegrass



Nitroform®

Slow predictable release by soil bacteria provides constant 38% nitrogen when most needed for even, sustained growth. Nitroform reduces the risk of nitrate contamination, decreases thatch build-up, is nonburning and nonstreaking, resists leaching even in sandy soil, and assures better root development.

Turcam®

An advanced broad-spectrum carbamate insecticide that controls white grubs, chinch bugs, sod webworms, mole crickets and many other turf and ornamental pests. Turcam is odorless, works well in spray equipment, won't tie up in thatch, won't damage turf or ornamentals, and should be your product of choice when long residual control is required.

Proxol®

Economical Proxol 80SP Insecticide works fast on surface-feeding sod webworms, armyworms and cutworms, and readily penetrates thatch to control grubs. Proxol is easy to apply as a spray, has no unpleasant odor, and no long-term residual build-up in the soil.

Prograss®

A selective herbicide that effectively controls annual bluegrass, crabgrass and other troublesome weed species.

Acti-dione®

Broad-spectrum family of turf fungicides that provide four-season disease control. Acti-dione has proven to be effective without creating resistance problems.

Acti-dione TGF® can be tank-mixed with Bayleton® or Daconil® to complement or improve disease control with significant cost-per-acre savings.

Banol®

Specialized fungicide that controls pythium and phytophthora in turf and ornamental plants. Preventative control with Banol stops the spread of pythium by mowers, foot traffic and surface water; it also means fewer applications, lower rates and savings in labor, fuel and equipment.



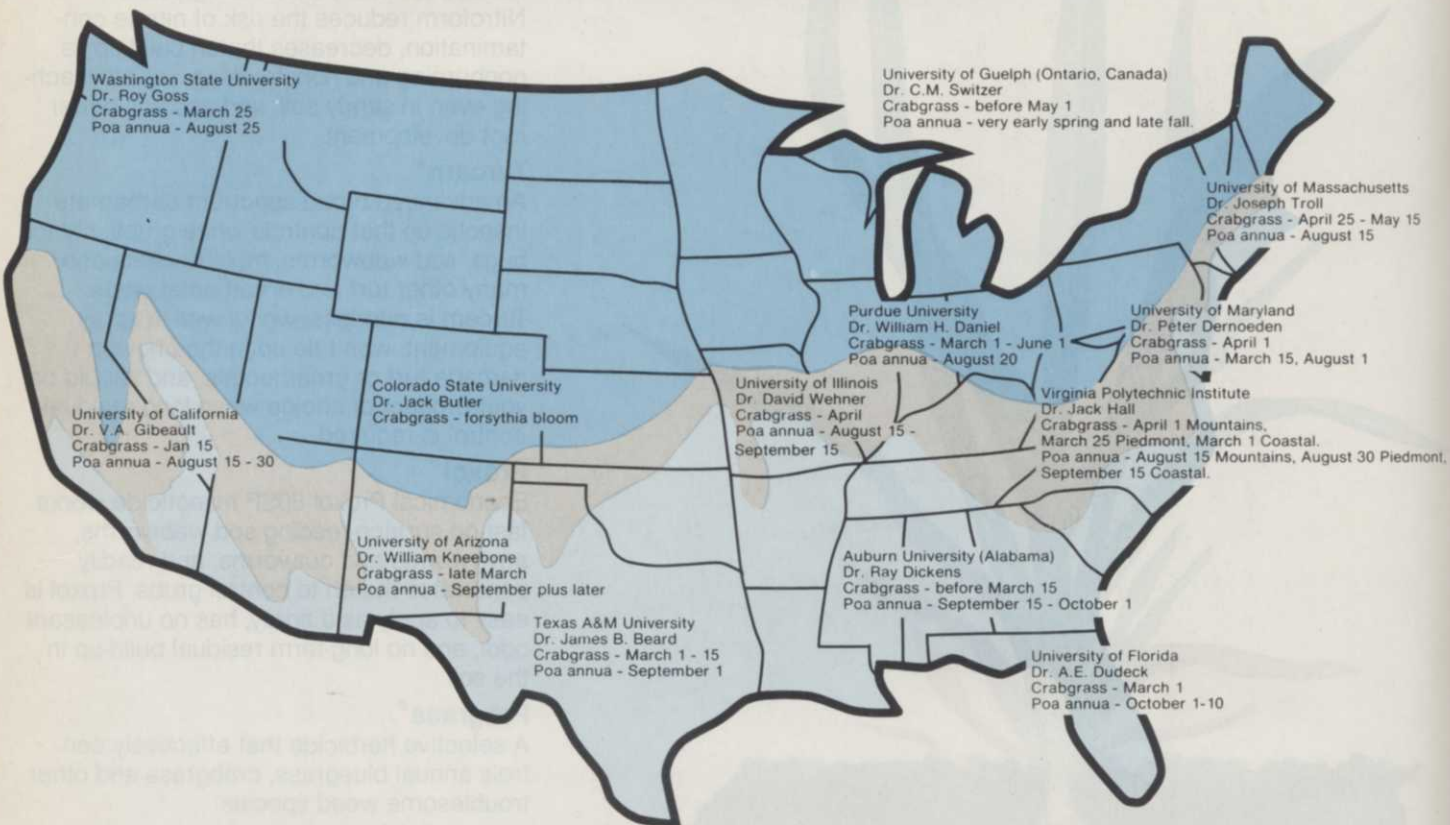
NOR-AM CHEMICAL COMPANY
3509 Silverside Road, P.O. Box 7495
Wilmington, DE 19803

**Total Turf Care from the
Turf Managers**

Circle No. 153 on Reader Inquiry Card

IMPORTANT: Please remember always to read and follow carefully all label directions when applying any chemical.

Suggested timing for preemergence herbicides to control crabgrass and annual bluegrass



Bermudagrass is the dominant turf species in warmer climates. In general, herbicides that can be used on bermudagrass can be used safely on zoysiagrass.

However, special attention should be paid to herbicide labels regarding applications to centipedegrass and St. Augustine, which are similar to each other in their tolerance to herbicides.

Summer grass weeds: Large crabgrass and dallisgrass invade more turf acreage in the southern U.S. than any other grasses. Germinating seeds of both can be satisfactorily controlled with benefin, bensulide, DCPA, oryzalin, pendimethalin, atrazine, and simazine.

Certain formulations of atrazine are labelled for use on St. Augustine, zoysia, and centipede for sod production while other commercial products containing atrazine are labeled for homeowner use. A combination of acetamide (Dual) and either atrazine or simazine is currently being tested for effectiveness.

Only asulam is used for post-emergence control of crabgrass and dallisgrass in St. Augustine. MSMA and DSMA are effective post-emergence herbicides for these weeds in

bermudagrass. The arsonates MSMA and DSMA are used almost exclusively in bermuda and zoysia turfs.

Goosegrass is the most difficult summer grass to control in the South.

Timing of application of pre-emergence herbicides is of paramount importance if control is to be achieved.

We generally think goosegrass starts germinating in significant quantities four to six weeks after crabgrass. However, this may vary. In the lower South, the two species may well germinate simultaneously.

If application of a pre-emergent herbicide is delayed, large crabgrass may escape because it germinates earlier than goosegrass. In bermudagrass and zoysia, large crabgrass can be controlled quite effectively with post-emergence applications of the arsonates.

Pre-emergence herbicides would appear to be a better approach to goosegrass control than post-emergence control with arsonates.

Oxadiazon (Ronstar) and oryzalin (Surflan) give excellent, season-long control of goosegrass. Research has shown post-emergence applications of MSMA plus metribuzin (Sencor) gives good control of goosegrass.

Sandbur and bahiagrass in bermuda and zoysia can be controlled with arsonates.

Research results over the past few years have shown that bahiagrass can be selectively controlled in established centipedegrass with sulfometuron or metsulfuron, but neither material is currently labelled for this use.

At present, there is no selective control of torpedograss in southern turf.

Both annual and perennial sedges are problems in the South. Purple nutsedge and, to a lesser degree, yellow nutsedge are the most severe problems.

Multiple applications of arsonates or an arsonate/phenoxo combination are generally recommended for purple nutsedge, only on bermuda or zoysia. Basagran can be used for control of yellow nutsedge and several annual species.

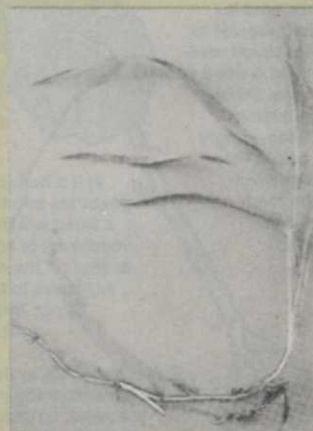
Summer broadleaf weeds are a problem throughout Southern turf but not to the extent of the grassy weeds, such as dallisgrass, large crabgrass, and goosegrass.

Prostrate spurge and Virginia buttonweed, along with yellow woodsor-

GRASSY WEEDS



Wild garlic



Quackgrass



Common yellow woodsorrel



Goosegrass



Crabgrass



Yellow nutsedge



Dallisgrass



Annual bluegrass

rel, are important and difficult-to-control broadleaf weeds.

Multiple applications of 2,4-D plus dicamba, Trimec, or Trex-San are almost always necessary. Researchers suggest the use of a non-ionic surfactant with the herbicide.

Winter grass weeds: Annual bluegrass is by far the most severe grassy weed infesting southern turf during the late fall, through the dormancy period, and into the early spring.

Annual bluegrass decreases the aesthetic value of turf and interferes with warm-season turfs in late spring.

Coverage is usually slow following fade out of annual bluegrass, leaving large sections of bare ground exposed.

Other weeds, such as goosegrass, tend to move into bare areas.

Annual bluegrass control with pre-emergence herbicides is usually accomplished with either benefin, bensulide, DCPA, oryzalin, pendimethalin, pronamide, simazine, or oxadiazon.

Two applications may be necessary during the dormant season for acceptable control, except with pronamide, oryzalin, or simazine, all of which provide pre-emergence and post-emergence control of annual bluegrass in bermudagrass.

There are three choices for annual bluegrass control on bermudagrass greens overseeded with perennial

ryegrass.

Bensulide may be applied prior to overseeding as a pre-emergence approach. Ethofumesate may be applied 15 to 30 days after overseeding. Check label for timing to avoid delaying spring transition back to bermudagrass.

Fenarimol, a fungicide, applied two weeks prior to overseeding, controls several turf diseases in addition to controlling annual bluegrass.

Another approach employed particularly on golf courses, is to use a post-emergence, non-selective herbicide such as paraquat, glyphosate, or cacocyclic acid prior to the warm-season turf breaking dormancy. This

How New Generation Trimec[®] Can Help Solve the Problems Facing Turf Managers Today.

HERBICIDE

... Achieving immaculate, weed-free turf ★ the elimination of retreatments ★ earlier-season control ★ lower cost per acre ★ less chemical in the environment. Let me explain how Super Trimec[®] Broadleaf Herbicide can help you with these problems and become progressively more economical in the second and third years.

Everett Mealman, president
PBI/Gordon Corporation



Super Trimec is a remarkable breakthrough in herbicide chemistry. We discovered in working with radio isotope tracer studies that formulations *do* make a difference in performance, and Super Trimec is the best product we have produced. The complex is created by combining certain esters with dicamba... something no one else has ever been able to do.

It is a synergistic and eutectic ester that behaves like an amine.

Super Trimec has unparalleled penetrating power in getting through the cuticle and into the circulatory systems of even the toughest weeds. For a better understanding, you may enjoy examining the schematic diagram on this page.

Less Chemical Reduces the Cost

One gallon of Super Trimec covers four acres; yet the spectrum is so broad,

and the activity so powerful, that it even controls such tough species as ground ivy, oxalis, and spurge.

Further Cost Reductions in 2nd and 3rd Years

But wait! We are getting reports from turf managers who have been using Super Trimec for two years, and now are saying their turf is so clean that they intend to spray only once this year, in the early spring, and then spot treat as needed. Imagine what a pleasant surprise it is to see your herbicide cost go down each year.

... and here's another pleasant surprise. Super Trimec is compatible with Ferromec[™] Liquid Iron, our patented sprayable complex that produces turf green-up in 24 hours. Ferromec was sprayed on the turf of the Rose Bowl to create the beautiful green you saw on TV New Year's day.

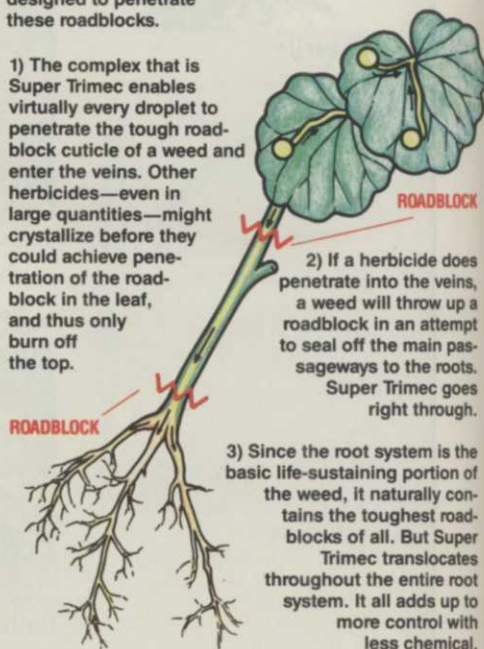
Schematic drawing shows why Super Trimec outperforms other herbicides

Since the purpose of life is to live and grow, plants throw up roadblocks to prevent herbicides from entering their systems, much like white corpuscles will rush to a wound and build up a roadblock to prevent a pathogen from entering the bloodstream. The unique combination of esters in Super Trimec is designed to penetrate these roadblocks.

1) The complex that is Super Trimec enables virtually every droplet to penetrate the tough roadblock cuticle of a weed and enter the veins. Other herbicides—even in large quantities—might crystallize before they could achieve penetration of the roadblock in the leaf, and thus only burn off the top.

2) If a herbicide does penetrate into the veins, a weed will throw up a roadblock in an attempt to seal off the main passageways to the roots. Super Trimec goes right through.

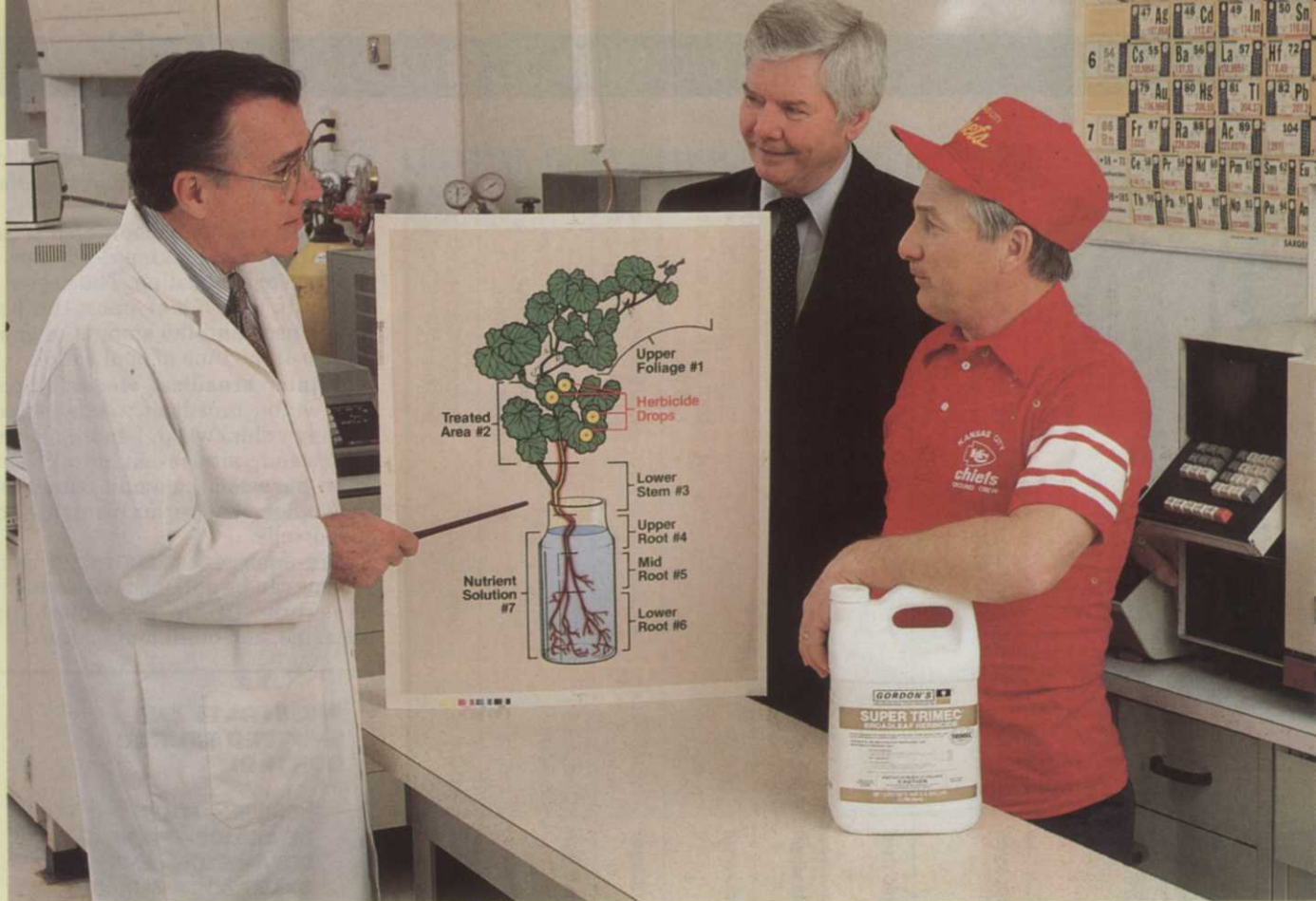
3) Since the root system is the basic life-sustaining portion of the weed, it naturally contains the toughest roadblocks of all. But Super Trimec translocates throughout the entire root system. It all adds up to more control with less chemical.



Since late 1983 we have sent out some 11,000 samples of Super Trimec, and the response has been so overwhelmingly positive that we now make this flat statement: Dollar for dollar and acre for acre of immaculate, weed-free turf, Super Trimec is the most efficient post-emergent broadleaf herbicide in the world... period.



SUPER



Dr. Jan Van Diepen, director of research for PBI/Gordon, shows a printout of a radio isotope tracer study to Everett Mealman and George Toma, the nationally recognized turf authority who has been in charge of preparing the playing fields for every Super Bowl and Pro Bowl to date.

The purpose of such studies at PBI/Gordon is to determine the smallest

possible amount of the strongest possible chemical formulation that can translocate to the root system of a weed and result in total control. Toma has been using Super Trimec at the Truman Sports Complex and the Chiefs' practice fields for two years, and he says, "We constantly test herbicides, and nothing is as efficient as Super Trimec."



Ask for Samples of these New PBI/Gordon Products

Among the new products that have been developed and thoroughly tested

by PBI/Gordon, and are now ready to help the lawn care operator improve his efficiency, are Ferromec™ Liquid Iron, a sprayable iron complex that produces turf green-up within 24 hours; and Bov-A-Mura® Natural Organic Activator that helps turn thatch into humus.

You'll be reading about these new products in the trade papers. But in the meantime, if you would like to have

samples of them, simply write to us or call.

Toll-free 1-800-821-7925

In Missouri 1-800-892-7281

Ask for Customer Service Department

Inform us of bids to be let.

We will furnish detailed specs and names of distributors serving your area.

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Ferromec™ is a trademark of PBI/Gordon Corporation.

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G pbi/gordon
CORPORATION

1217 WEST 12th STREET
P. O. BOX 4090
KANSAS CITY, MISSOURI 64101

TRIMEC®

BROADLEAF HERBICIDE

Herbicide Directory

Herbicide	Brand Name(s)	Company	Uses
bromacil	Hyvar	DuPont	Nonselective control of weeds and grasses in non-crop areas. Usually mixed with diuron for roadsides and rights-of-way.
bromoxynil	Brominal Buctril	Union Carbide Rhône Poulenc	Postemergence control of broadleaf weeds in seedling turf, established turf and non-crop areas.
cacodylic acid	Phytar Rad-E-Cate	Vertac Vineland	Nonselective control for turf renovation, edging and in plant beds.
chloramben	Amiben	Union Carbide	Preemergence control in ornamentals.
chlorthalenoil	Maintain	Uniroyal	Growth regulator. Also controls broadleaf weeds and vines.
copper	Cutrine-Plus	Applied Biochemists	Control algae, chara and hydrilla in potable water.
dalapon	Dalapon 85 Dowpon M	SDS Biotech Dow	Selective control of perennial and annual grasses in non-crop areas and ditchbanks.
dazomet	Mylone	Hopkins Ag.	Preplant sterilant for turf and ornamental beds.

usually does an excellent job on annual bluegrass and annual broadleaf weeds.

Injury is often encountered if bermudagrass is breaking dormancy at the time of application. The degree of injury is dependent upon the herbicide used and the amount of green foliage at the time of application.

Winter broadleaf weeds: Important winter broadleaf weeds include common chickweed, henbit, clovers, spurweed, mouse-ear chickweed, lawn burweed, common dandelion, wild onion, wild garlic, plantains, and speedwells.

Pre-emergence control of some species can be obtained with benefin, bensulide, DCPA, pendimethalin, simazine, and other herbicides.

PROSTRATE AND SPOTTED SPURGE CONTROL

BENEFIN—*POOR*
BENSULIDE—*POOR*
DCPA—*EXCELLENT*
OXADIAZON—*VARIABLE*
PENDIMETHALIN—*EXCELLENT*
SIDURON—*VARIABLE*

Herbicide	Brand Name(s)	Company	Uses
amitrole	Amitrole-T	Union Carbide	Non-selective grass and broadleaf control in non-crop areas including ditches, roadsides, industrial areas & marshes.
ammonium sulphamate	Ammate	DuPont	Non-selective rights of way herbicide
asulam	Asulox	Rhône Poulenc	Postemergence grassy weed control for turf and ornamentals
atrazine	Aatrex	Ciba Geigy	Non-selective control in non-crop areas.
benefin	Balan	Elanco	Preemergence control of annual grasses and broadleaf weeds in established turf.
bensulide	Betasan Pre-San Lescosan Betamec-4	Stauffer Mallinckrodt Lesco PBI Gordon	Preemergence control of annual grasses and broadleaf weeds in established turf and established flower gardens. Safe near tulip and daffodil bulbs.
bentazon	Basagran	BASF	Selective postemergence control of nutsedge in warm-season turf.

Henbit, chickweed, and clovers usually require something other than 2,4-D for post-emergence control. In dormant bermudagrass and zoysiagrass, dicamba or combinations with dicamba are used often for post-emergence control.

The phenoxy acids are safe on completely dormant turfs. However, actively growing turfs vary considerably in tolerance to phenoxy materials.

St. Augustine will usually tolerate 0.5 lbs./acre of 2,4-D with only minimal injury. At rates above that, St. Augustine is usually injured.

This may be unimportant when using phenoxy acids on dormant warm-season turfs, but invariably application is made during spring transition. All turfgrasses are more susceptible to phenoxy injury during this transition period.

The combination of mecoprop plus chlorthalenoil is often used, especially by the homeowner on St. Augustine.

Several experimental herbicides show promise for control of wild garlic and numerous winter broadleaf weeds. Single applications of imazaquin, sulfometuron, and metsulfuron have provided control of wild garlic equal to that obtained from multiple applications of phenoxy herbicides. **WT&T**

Herbicide Directory

Herbicide	Brand Name(s)	Company	Uses
amitrole	Amitrole-T	Union Carbide	Non-selective grass and broadleaf control in non-crop areas including ditches, roadsides, industrial areas & marshes.
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asulam	Asulox	Rhone Poulenc	Postemergence grassy weed control for turf and ornamentals
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Herbicide	Brand Name(s)	Company	Uses
bromacil	Hyvar	DuPont	Nonselective control of weeds and grasses in non-crop areas, usually mixed with diuron for roadsides and rights-of-way.
bromoxynil	Brominal Buctril	Union Carbide Rhone Poulenc	Postemergence control of broadleaf weeds in seedling turf, established turf and non-crop areas.
cacodylic acid	Phytar Rad-E-Cate	Vertac Vineland	Nonselective control for turf renovation, edging and in plant beds.
chloramben	Amiben	Union Carbide	Preemergence control in ornamentals.
chlorflurenol	Maintain	Uniroyal	Growth regulator. Also controls broadleaf weeds and vines.
copper	Citrine-Plus	Applied Biochemists	Control algae, chara and hydrilla in potable water.
dalapon	Dalapon 85 Dowpon M	SDS Biotech Dow	Selective control of perennial and annual grasses in non-crop areas and ditchbanks.
dazomet	Mylone	Hopkins Ag.	Preplant sterilant for turf and ornamental beds.

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PROSTRATE AND SPOTTED SPURGE CONTROL

BENEFIN—POOR
BENSULIDE—POOR
DCPA—EXCELLENT
OXADIAZON—VARIABLE
PENDIMETHALIN—EXCELLENT
SIDURON—VARIABLE

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Insecticide-Nematicide

NEW CHIPCO MOCAP® RUBS OUT GRUBS FASTER.

New CHIPCO® MOCAP® insecticide gives you the kind of grub control you need...control that's fast and effective.

CHIPCO MOCAP starts killing grubs as soon as you water it in. Other products take hours or days to work.

And all that time, grubs continue to feed, destroying your turf.

For best results, apply CHIPCO MOCAP before grubs start to feed—usually in August or early September. But if grubs get the jump on you, you can still take control quickly and effectively with fast-acting CHIPCO MOCAP.

And fast action is just part of the story. CHIPCO MOCAP gives effective control of a broad spectrum of grubs.

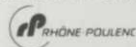
CHIPCO MOCAP KILLS OTHER TURF INSECTS, TOO.

CHIPCO MOCAP knocks out a broad range of surface insects, including chinchbug and sod webworm. And if nematodes or mole crickets are destroying your turf, you can destroy them, too, with CHIPCO MOCAP.

For the fastest, most effective control of grubs and other turf pests, include CHIPCO MOCAP in your turfgrass management program. CHIPCO

MOCAP from Rhône-Poulenc Inc., makers of CHIPCO® 26019 and CHIPCO® Ronstar®, is a new addition to the CHIPCO line of fine products for turfgrass protection.

For more information write to Rhône-Poulenc, CHIPCO Department, P.O. Box 125, Monmouth Junction, NJ 08852



CHIPCO® MOCAP®

Rubs out grubs.

CHIPCO, RONSTAR and MOCAP are registered trademarks of Rhône-Poulenc.

Herbicide Directory

Herbicide	Brand Name(s)	Company	Uses
DCPA	Dacthal	SDS Biotech	Preemergence control of annual grasses and broadleaf weeds in turf and ornamental beds.
dicamba	Banvel	Velsicol	Selective postemergence control of broadleaf weeds in turf and for noncrop control of brush.
dichlobenil	Dyclomec	PBI Gordon	Selective weed control in ornamental beds and for total weed control on roadsides, fencerows, etc.
dichlorprop	2,4-DP	SDS Biotech	Brush control and aquatic weed control.
diphenamid	Enide	Nor-Am, Upjohn	Selective control of annual grasses and broadleaf weeds in bermudagrass, dichondra and around ornamentals.
DSMA	Methar 30 Ansar DSMA Liquid DSMA 81% Weed-E-Rad	W.A. Cleary SDS Biotech Drexel Vertac Vineland	Selective postemergence control of sedges and grasses in turf and ditchbanks and storage yard.
diuron	Karmex Dynex Diuron 80WP Urox	DuPont Vertac Drexel Hopkins	Generally used at high rates for nonselective total weed control in industrial sites.
diquat	Diquat	Ortho, Chevron	Aquatic weed control.
endothall	Aquathol K Endothall	Pennwalt Pennwalt	Aquatic weed control and turf herbicide and dessicant.
EPTC	Eptam	Stauffer	Selective control of annual grassy weeds, nutgrass, and perennial weeds.
ethofumesate	Prograss	Nor-Am	For control of <i>Poa annua</i> and white clover in fairways.
fenac	Fenac	Union Carbide	Preemergence long-term control of weeds, usually mixed with other herbicides.

Herbicide	Brand Name(s)	Company	Uses
fosamine	Krenite	DuPont	Brush control.
flurprimidol	Cutless	Elanco	Growth regulator that suppresses annual bluegrass.
fluazifop-butyl	Fusilade	ICI Americas	Selective postemergence control of grassy weeds in ornamentals.
fluridone	Sonar	Elanco	Broad spectrum herbicide for submersed and emerged aquatic weeds.
glyphosate	Rodeo	Monsanto	For control of emerged aquatic weeds and broad leaf weeds in or near aquatic sites, such as ditchbanks.
glyphosate	Roundup	Monsanto	Nonselective, short-term herbicide for turf renovation and total weed control along fences and plant beds.
imazaquin		American Cyanamid	Experimental herbicide for turf
imazapyr	Arsenal	American Cyanamid	Broad spectrum systemic industrial herbicide
linuron	Lorox	DuPont	Short-term control of annual weeds in roadsides and fence rows.
mefluidide			Growth regulator that suppresses <i>Poa annua</i> .
methyl bromide	Dowfume	Dow	Fumigant for pre-plant control. Also kills weed seed.
metham	Vepam	Stauffer	Preplant soil fumigant killing weeds, weed seed, insects and fungi.
metribuzin	Sencor	Mobay	Postemergence control of goosegrass in warm-season turf.

continued