

The New Trim King.

Greens King precision steps off the green.

From Jacobsen, the company that brought you the Greens King, the first triplex precision greens mowers, comes the Trim King. Possibly the finest, most economical, formal cut triplex mower you'll ever own. Like the Greens King IV, the Trim King is compact and very light on the turf. With a cutting width of up to 70 inches. Like the Greens King IV, the Trim King is fully hydraulic for total control and ease of maintenance. Unlike any triplex mower you've ever ridden, the Trim King will give all your fine areas a clean carpet finish while providing the kind of dependability and engineering quality you've come to expect only from a Jacobsen.



Trim King Features

- Out Front Mowing**—Cuts ahead of the wheels to eliminate tracking.
- Hydraulically Driven Reels**—Cuts wet or dry grass easily. Reels can be reversed from the operator's seat. Instant backlapping.
- Hydraulic Variable Traction**—Eliminates marking and turf damage. Provides variable traction speed to match terrain conditions.
- Grass Catchers**—Seven bushel capacity. Easy on and off. No clipping spillage.

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TEXTRON

Jacobsen Division of Textron Inc.

Jacobsen. Engineered from the ground up.

Turf

begin feeding as soon as the grass begins to grow. Usually damage is insignificant, but areas which do not green-up may be infested. Infested areas frequently have probe marks from starlings who feed on the larvae.

When necessary, a wide range of insecticides including diazinon, Dursban®, Proxol® (trichlorfon), Aspon, Sevin® (carbaryl) and others applied at labeled rates may be used to obtain control.

F. Black Cutworms — Moths of the black cutworm begin laying eggs on golf course greens and other turf areas in the spring. These eggs hatch producing larvae that feed on grass blades during the night. While visible damage is uncommon on home lawns, damage can be significant on golf course greens in late May.

Generally, the insecticides effective against the sod webworm (mentioned above) are also effective against cutworms. The principle of controlling these pests is to apply the insecticide (late in the afternoon) to the grass and allow the cutworm to feed on and come in contact with the treated foliage.

Irrigation following liquid application is therefore not advisable.

G. Greenbug - Greenbug eggs begin hatching as early as April but significant infestations do not develop until later in the year. Aphid numbers are too low to detect.

H. Winter Grain Mite — Damage from this mite is often first noted in April when home lawns are receiving spring pesticide and fertilizer applications. By late May, the mites will have laid their eggs and died. Mites do not appear again until the eggs hatch in October.

If treatment is necessary, diazinon or Dursban® will provide control.

SUMMER (JUNE-AUGUST)

A. Chinchbug — Chinchbug eggs begin hatching in May and continue into June when bright red nymphs appear. The number of chinchbugs increases rapidly reaching a peak during July when northern lawns can sustain severe damage. During August the nymphs molt into adults that mate, lay eggs and produce a second generation. Some northern areas have

only one generation each year.

A wide range of insecticides such as Dursban®, diazinon, Aspon®, and Sevin® may be used at labeled rates to control existing infestations. Treatments should be applied *before* injury is severe, otherwise, damaged areas may not recover.

B. Billbug — Billbug larvae feed in grass stems during June but move to the plant crowns and roots during July. This feeding causes brown spots that frequently resemble the symptoms of some fungus diseases. During August the larvae burrow deeper into the soil to pupate and transform into adults.

Infestations discovered during this time may be treated with applications of insecticides such as diazinon, Turcam®, Proxol® at rates used to treat existing grub infestations. Irrigation or rain following application is needed for optimal results. If larvae are feeding in the root zone, control may be difficult to achieve. Oftanol® applied during June controls feeding larvae and also provides control of late summer grub infestations.

C. Grubs — By June grubs have stopped feeding and are in the pupal stage 3-4 inches deep in the soil. Beginning in mid-June and continuing through July, the adults of various species emerge and burrow into the soil to lay eggs. Hatching and appearance of young larvae occur during July and August.

Oftanol® applied in June provides control of developing grubs during August as well as chinchbugs and/or billbug larvae present in the turf at the time of application. Existing infestations of grubs found in August may be treated with Proxol®, Turcam®, Oftanol®, diazinon or Nematicide/Insecticide (for golf courses) at standard label rates. At least 0.5 inch of irrigation following treatment maximizes insecticide effectiveness.

D. Mole Crickets — Mole cricket egg laying continues through mid-



Greenbug damage to bluegrass, but not fescue, under tree canopy.

Continued on page 36

Surflan® and Roundup®. A powerful combination with beautiful results.

When you combine the dependable residual control of Surflan® with the knock-down power of Roundup®, the result is season-long control of troublesome weeds and grasses. And that can be beautiful. You simply won't find a more effective tank-mix for use in noncropland areas, Christmas tree and ornamental plantings, landscaped areas, and highways.

With Roundup, you can have weed and grass kill right away. Then Surflan follows up with six to eight months of dependable residual control, the real key to a solid, long lasting weed control program. A preemer-

gence herbicide, Surflan meets crabgrass, barnyard-grass, fall panicum, pig-weed, johnsongrass, foxtail, and many others head-on, before they ever really get a chance to grow.

By being a weed's worst enemy, an effective tank-mix is the best friend flowers, trees, plants, or shrubs can have. And that's the real beauty of Surflan and Roundup. For Surflan, see your Elanco distributor.

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Surflan®
TM



Surflan® - (oryzalin, Elanco Products Company) Roundup® - (glyphosate, Monsanto)

How Dyclomec™ helps turn problem areas

With this unique herbicide you can do much more than temporarily kill vegetation along fence rows, in woody ornamental beds, around tree trunks, etc. You can actually turn these areas into cosmetic highlights.

Dyclomec is surely the most exciting herbicide ever offered to the professional groundskeeper who is dedicated to manicured landscaping but has to live within a hard-nosed budget.

Obviously, there is no way you can live with a lot of unsightly plant residue growing along fences, in ornamental beds, etc. So you've probably been using a quick-acting contact herbicide, since mowing or hand trimming is out of the question.

But this has to be frustrating for you, because it leaves a lot of ugly, dead vegetation; furthermore, new seeds germinate and the vegetation grows right back. And, to add insult to injury, the cost of a contact herbicide is nothing short of exotic. Dyclomec

can make these aggravations ancient history.

Dyclomec enables you to turn these eyesores into sharply defined highlights that are absolutely beautiful because they will be absolutely blank ... just pure mother earth in all her natural, naked splendor.

... And you'll do it economically and efficiently because one application of Dyclomec gives season-long control.

But wait! To truly maximize the effectiveness and efficiency of Dyclomec as a tool to achieve the manicured look, you need to thoroughly understand what it is; how it works; and how to apply it. Dyclomec is a professional product and requires professional treatment.



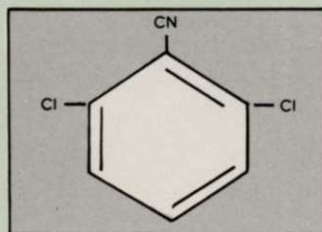
What is Dyclomec?

Dyclomec is 2,6-dichlorobenzonitrile. The formula is $C_7H_3Cl_2N$. The one word that best describes this unique herbicide is *sublimation*. The material goes to a vapor stage without going through a liquid stage. It is activated by heat in combination with soil moisture, and is virtually insoluble.

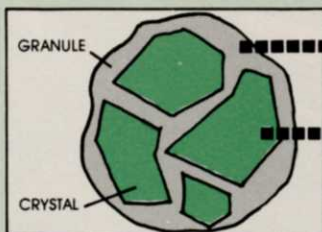
This remarkable compound is milled into razor-thin crystals which are uniquely processed by PBI/Gordon to make a precise granule.

How Dyclomec Works:

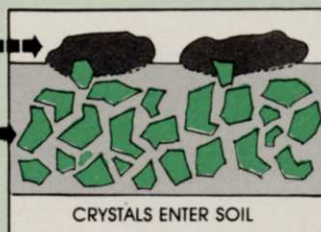
Dyclomec granules are spread on the surface. Moisture carries the Dyclomec crystals from the granule into



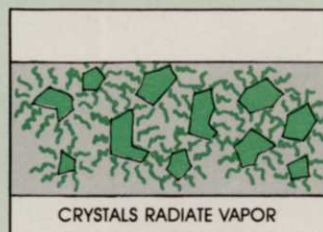
1. Dyclomec is 2,6-dichlorobenzonitrile. The formula is $C_7H_3Cl_2N$. This unique herbicide goes directly to a vapor stage without going through a liquid stage. It is activated by heat and soil moisture.



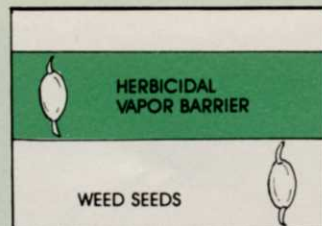
2. This remarkable herbicidal compound of razor-thin crystals is uniquely processed by PBI/Gordon to make a precise granule.



3. Granules are spread on soil surface. Moisture carries the Dyclomec crystals into the soil approximately two inches. Because of adsorption by soil particles, lateral movement is usually no more than one inch.



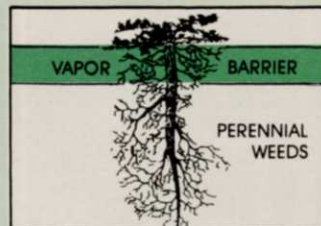
4. Temperature and soil moisture activate the Dyclomec crystals and they begin to radiate a herbicidal barrier. This continues for an entire growing season, and the spent crystals disappear, leaving no residue.



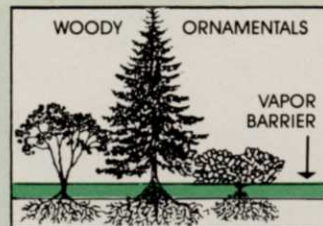
5. In this vapor barrier no plant cell division can occur. Seeds trying to germinate in the barrier will die. Sprouts below this zone will be killed as they try to penetrate the barrier.



6. Existing vegetation such as shallow-rooted grasses and annual weeds having root structures in this barrier will likewise be affected and die after two to three weeks.



7. Certain perennial weeds coming out of dormancy and attempting new growth within the Dyclomec barrier will run into the same dead end: they will be killed by the vapor.



8. Dyclomec, when used as directed, does not affect woody ornamentals, shrubs and trees that have deep roots extending well below the herbicidal vapor zone.

the turf professional into beauty spots...

the soil to a depth of approximately two inches. Because of their insolubility and adsorption by soil particles, they tend to remain in this upper soil level under most conditions. Lateral movement is limited to approximately one inch.

Temperature and moisture activate the Dyclomec crystals, and they radiate a vapor that creates a herbicidal barrier. This radiation continues throughout the growing season, and then the crystals become totally spent.

... In this Dyclomec herbicidal vapor barrier no plant cell division can occur. Any vegetation such as grasses or shallow-rooted annual weeds which have their root structures within this barrier will die.

Furthermore, as weed seeds in this zone attempt to germinate, they are killed. In addition, sprouts developing below this zone will be killed as they try to penetrate the barrier. A number of perennial weeds coming out of dormancy run into this same dead end.

On the other hand, plants such as woody ornamentals, shrubs and trees are not affected by Dyclomec since their root structure is below this herbicidal vapor zone.

Call our Technical Service Department

If you have any questions about where and how to use Dyclomec,* we invite you to call our Technical Service Department.

TOLL-FREE 1-800-821-7925
In Missouri 1-800-892-7281

*Dyclomec is not available west of the continental divide.

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KANSAS CITY, MISSOURI 64101
816/421-4070

A handy way to apply Dyclomec

Uniform distribution is the most important factor in Dyclomec's effectiveness, so PBI/Gordon offers a patented, gravity-flow applicator called *Acme Spred-Rite® G* that is ideal for applying Dyclomec in tightly circumscribed, manicured areas.

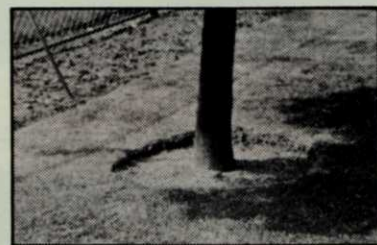
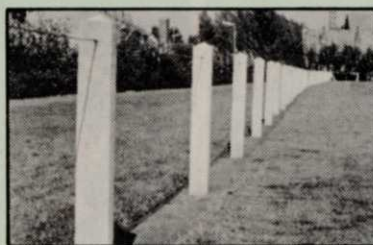
Tilt the applicator down and granules tumble into a series of stubby, deflector spikes in the head. Some granules slip through the spikes, others bounce off; the result is a predictable pattern of granules.

Hold the Spred-Rite three feet above ground to get the widest swath, 30 to 36 inches. Hold the head closer to the ground to get a narrower swath. Turn the head sideways for a sharply delineated edge. Remove the Spred-Rite head to get the finest line of vegetation control.

Two interchangeable orifice disks, included, regulate the flow of granules through the tube and further sharpen the precision with which the Spred-Rite performs.

Spred-Rite® is a registered trademark of PBI/Gordon.

Where are you going to use Dyclomec?



- Has no moving parts.
- No metal parts to corrode or rust.
- Lightweight: 6 oz. empty; 6 pounds full.
- Can be used to spread granular herbicides, fungicides, insecticides, fertilizers.

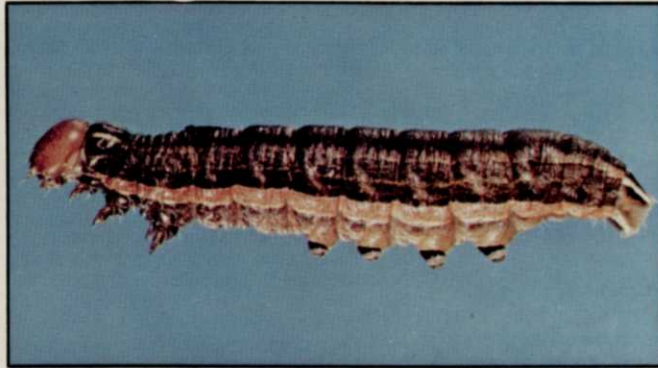
Turfgrass Insect Identification Quiz

By Dr. Harry D. Niemczyk, Professor of Turfgrass Entomology, Ohio Agricultural Research & Development Center, Wooster, Ohio

Quiz yourself. Answers are on the next page.



A. _____



B. _____ C. _____ D. _____



Photo courtesy Dr. H. Tashiro

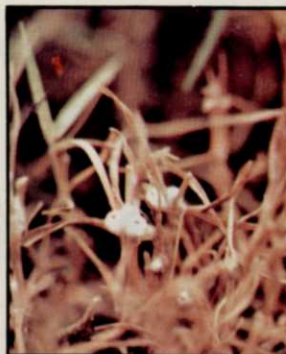


Photo courtesy Dr. J.A. Reinert



E. _____ F. _____ G. _____



Photo courtesy Dr. H. Tashiro

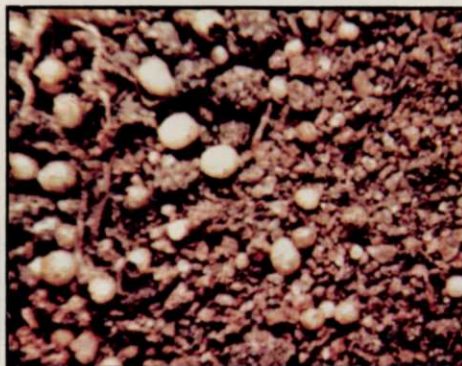


Photo courtesy Dr. J.A. Reinert



H. _____ I. _____ J. _____



When your job depends on stopping gypsy moths and other pests, depend on ORTHENE.

ORTHENE® Tree & Ornamental Spray is the professional way to kill gypsy moth larvae... plus a wide range of other insects. It kills on contact, then keeps killing with an effective residual action.

Other insects on ORTHENE's list? It also works on aphids, bagworms, birch leaf-miner, tent caterpillar, Douglas fir tussock moth larvae, webworms, scales, California oakworm, spring and fall cankerworms, Nantucket pine tip moth larvae and adult root weevil.

See your ORTHO Distributor or send in the coupon for more information — make your job easier, with ORTHENE.

AVOID ACCIDENTS: For safety, read the entire label including precautionary statements. Use all chemicals only as directed.



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ORTHENE®

YOU CAN DEPEND ON IT.

Turf

June. Depending upon location, eggs hatch from early June through August with peak hatch during June.

In areas where damage occurred previously, sprays of Baygon® (propoxur) or Sarolex® (diazinon) or granular Mocap® (ethoprop) at labeled rates have shown effectiveness when applied in early June. Irrigation (½ inch or more) should be applied after treatment. Bait formulations with Baygon®, Dursban®, Malathion or Sevin® have also been effective when applied during late June. Irrigation should not be applied for 3-4 days after application of baits.

E. Black Turfgrass Ataenius — Eggs laid by beetles during May hatch in June and the larvae begin feeding on the turf roots immediately. From late June to mid-July, symptoms of injury include wilting of the turf, in spite of irrigation. In July, larvae move deep into the soil, pupate and emerge as adults. In states such as Ohio, these adults lay eggs during August producing a second generation of larvae capable of damaging turf.

If a preventive program was not applied, existing infestations may be spot or generally treated with Proxol®, Turcam®, diazinon or Nematicide/Insecticide at label rates.

F. Black Cutworm — By June larvae of the black cutworm are large enough to cause visible damage to golf course greens. These larvae pupate in the soil or thatch and emerge as moths that lay eggs on the turf in July. The larvae of this second generation are present on greens in August.

Cutworm larvae can be controlled with a wide range of insecticides such as Dursban®, Proxol®, Aspon®, Sevin®, and others, at labeled rates. Irrigation following liquid applications is generally not advisable.

G. Greenbug — Damaging populations of greenbug can occur from June through August. Populations and incidents of damage frequent-

ly varies from area to area, even within a city. Symptoms of injury include turf under the dripline of trees and in open areas having a burnt orange color. When such symptoms are seen, numerous aphids (40 or more) may be seen on a single grass blade. Close examination of damaged turf is necessary because the aphids are small. If left untreated, a heavy infestation can kill the turf.

Greenbug infestations may be controlled with liquid treatments of Dursban®, 1 lb AI/Acre or diazinon at 2.5 lb AI/Acre. If reinfestation occurs following treatment with these insecticides, Orthene (acephate) EC at labeled rates has been effective.

FALL (SEPTEMBER-OCTOBER)

A. Chinchbug — In northern areas such as Ohio, the second generation of chinchbug is at peak numbers in September. Nymphs complete their development to adults by late October. Most chinchbugs overwinter in the turf but some move to protected areas before winter.

Generally, infestation levels at this time are not high enough to warrant the use of insecticides. Early fall rains and infection by a parasitic fungus usually provides sufficient suppression.

B. Billbug — During September billbug adults that developed from summer larvae are often seen wandering about on sidewalks, driveways or other paved surfaces. Before winter, these adults seek shelter in thatch, along sidewalk edges, or near the foundation of houses and overwinter there. However, if many, if not most, overwinter in the turf.

C. Grubs — Most species of grubs are in the third of their 3 stages of development and are feeding actively. When soil temperatures decrease in late October the larvae burrow deep into the soil to overwinter. However, during the mild winter of 1982-83, the larvae

remained in the top 3 to 6 inches of soil.

Treatments of existing grub infestations can be accomplished as late as early-to mid-September using standard grub insecticides and sufficient (½ inch or more) irrigation. Treatment after this time may or may not kill the grubs before they move deeper into the soil to overwinter. Whenever treatment is applied, the grubs should be in the top one to two inches of soil.

D. Black Turfgrass Ataenius — By September adults of the current generation begin to fly into protected areas, such as golf course roughs, to overwinter. Larvae that have not completed development to adults before frost are killed.

E. Mole Crickets — Mole cricket nymphs develop through the summer and most become adults by fall. However, recent studies in Florida show some egg laying continues throughout the year.

F. Greenbug — Severe infestations of greenbug have been known to occur as late as the first week of December. Areas having a history of infestations should be re-examined when mild temperatures extend late into fall. Heavily infested, turf probably will not survive through winter.

Late fall infestations may be controlled with the same insecticide used to control the pest during the summer.

ANSWERS TO TURF INSECTS

- A. masked chafer (adult)
- B. hairy chinchbug (nymph)
- C. bronzed cutworm (larva)
- D. winter grain mite
- E. hyperodes weevil (adult)
- F. Rhodesgrass scale
- G. Japanese beetle (adult)
- H. hyperodes beetle (larvae)
- I. ground pearls
- J. hairy chinchbug (adult)

Continued on page 40

**No matter how tough
the infestation, or how late
you apply it...**

TURCAM[®]

INSECTICIDE

is Tough on Grubs



TURCAM[®] gets to the root of your grub problem.

Because grubs are active under the thatch covering of turf, you need a product that will get through this layer to control grubs in their active stage of destructive root degeneration.

If no grub preventative was applied, in early summer you may find isolated grub infestations. TURCAM's new advanced carbamate

formulation goes to work fast to handle grubs where they live, providing effective control over white grubs and 40 other turf and ornamental pests.

TURCAM BENEFITS

- will not damage turf or ornamentals
- will not tie up in thatch layer
- is odorless
- is suitable for use in liquid systems



TURCAM is sold to and used only by professional applicators. It is easy to mix, and can be applied with conventional hand- or power-operated sprayers.

For further information on TURCAM, including full labeling and recommendations for use, please contact your local distributor, or write to:



BFC Chemicals, Inc.,
4311 Lancaster Pike
P.O. Box 2867
Wilmington, Delaware 19805

Circle No. 103 on Reader Inquiry Card

Landscape

by Dr. R.E. Partyka

Insect damage to woody ornamental can vary from the subtle insignificant to widespread destruction that eventually results in death of plants. There are many plants included in the ornamental area with a varied assortment of insects on each species. This results in a relatively large number of insect pests that can be destructive to ornamentals. Fortunately, all of these insect pests do not appear at one time or in one year, as many of them are cyclic.

Insect control is dependent on early recognition of the specific insect, its significance in the area, its life cycle or biology, a practical approach to control if needed and materials to use on the pest and their effect on the environment.

Early recognition is important in preventing serious damage to the plant. The majority of the space devoted to this article will dwell on recognition. Once we have established the insect is on a plant, we need to evaluate its potential for severity and what measures will be employed to minimize plant damage.

A second step is to consider its significance. Is it important at this

time and what will happen in the future if nothing is done? How does the client view the pest problem? Are holes or webbing so obnoxious that a high degree of control is needed? Also what time of the year does the pest develop?

A late season defoliator may be annoying, but does little harm to a plant that is essentially shutting down for the season. But if this annoys a person who owns the plant, then appropriate suppressive measures must be applied at the proper time.

An early season defoliator may result in foliar devastation but new leaves will form and mid- to late-season appearance will approach that of normal plants.

Continued defoliation each year may be harmful to the plant and results in a second onslaught of problems at some late date. The person diagnosing the problem must understand the consequences of minimal control and the client's feelings toward the problems must be put in perspective.

Life cycles

Life cycles and general biology of the insects are important in

determining sensible control strategies. Often times, early control materials can be used in reducing the pest and are safer to the applicator and environment. Treatment at the appropriate stage of development can result in good suppression with a safer material of relatively low toxicity. In some cases, reasonable control can only be obtained at a certain stage in the life cycle of the insect and this becomes critical if one is to obtain satisfactory results.

A practical approach to control needs to be resolved with certain pest problems. The nature of a life cycle and certain predisposing factors that may influence the pest outbreaks need to be considered and evaluated. In some situations, there are no practical means to control because of the advanced nature of the problem at the time. Therefore, removal and starting over again may be the best approach. Again a full understanding between diagnostician and client is important.

Materials to use on a specific pest need to be determined based on research results, climatic conditions, size and age of the pest, plant reactions, equipment capabilities, area where the material is to be used and effects on other forms of life. It should be understood that 100 percent control of a pest is not practical or possible. Shifting a delicate balance where and when it is needed is the prime aim of pest control. Therefore, many other factors need to be considered in maintaining strong healthy plants that are capable of withstanding a degree of insect injury but can recover in a short period of time with minimum visual symptoms and little impact on total plant vigor.

What to look for, where, and suppressive measures to use should be checked in your area by contacting the local county extension agent, farm advisor, or the State University. Climate variations and num-

Continued on page 44



Fall webworm larvae produce silk to form a web where they feed. One to four generations can take place in the U.S. per year.