Stops weed breakthrough.

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Not just for one year. Pramitol controls weeds for about three years.

It works through a slow, naturally continuing process.

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And carrying it down to be absorbed by the germinating weeds.

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If you’d like to know more about how Pramitol stops weeds from breaking through your pavement, drop us a line.

Agricultural Division, CIBA-GEIGY Corporation, P.O. Box 11422, Greensboro, NC 27409
Officers of the Hi-Lo Desert Golf Course Superintendents Association are: Robert Reyes, Tri-Palm Estates, Thousand Palms, Calif., president; Roy Stoddard, Soboba Springs Country Club, San Jacinto, Calif., vice president; and Cal Caster, Palm Desert Greens, Palm Desert, Calif., secretary-treasurer.

Crown Chemicals, Inc., St. Louis, announces the appointment of Benjamin L. Lentz III to the newly created position of business representative for turf, sod, nursery and greenhouses. He holds a degree in biochemistry from the University of Missouri.

Larry G. Schmidt has been appointed field agronomist for the Chevron Chemical Co., ORTHO Division, as announced by Dr. R. M. Thorup, national manager of fertilizer. Schmidt will provide agronomic support for district representatives in field testing and evaluation of fertilizers and fertilizer recommendations.

William J. Johnson, who has taught landscape architecture at the University of Michigan since 1958, has been appointed dean of the University of Michigan School of Natural Resources.

New officers of the Wisconsin Landscape Federation are: John Roeske, Grass Unlimited, Inc., New Berlin, president; Earl Wiggins, Wiggins Landscape Co., Milwaukee, vice president; and Ralph Christian, Mead Nursery, Inc., Oconomowoc, secretary-treasurer.

James F. Lang has been named to the position of district sales manager for the Outdoor Power Equipment Division of J I Case Co., Winneconne, Wis. He will cover eastern Ohio, northwest Pennsylvania and West Virginia. Chris P. Melgar has been named to the position of district sales manager for New England.

Asplundh Chipper Co., Willow Grove, Pa., has announced a number of job changes: Larry Grocott is maintenance manager for the company's fleet of helicopters; Ed Cummings is vice president; Harold Duncan is Connecticut manager; Bill Eggers Jr. is manager for northern and central Pennsylvania; Paul Erickson is manager for Minnesota, North and South Dakota.

Russell M. Candee has been appointed manager of distribution sales of the Pipe Products Marketing Division and continues as a vice president of the Johns-Manville Sales Corp., Denver, Colo. He was most recently vice president and national sales manager of the division.

C. R. McMicken, president, of B. Hayman Co., Inc., Waipahu, Hawaii, announced the appointment of Jack W. Pegg as representative in home offices. He was previously executive manager of golf for C. Brewer and Co., Hawaii.

D. W. "Dub" Gammon has transferred to the Dallas distribution center of Thompson-Hayward Chemical Co. as branch manager. The company is based in Kansas City, Kan. Gammon will be responsible for the sale and administration of the company's line of products.

Dennis R. Albaugh has joined Thompson-Hayward Chemical Co., Kansas City, Kan. as an agricultural sales representative. He will be responsible for the sale of the company's line of agricultural products. His territory will be central Iowa.

James W. Adams, Irrigation Group vice president of Toro Company, Riverside, Calif., has announced a number of changes: Craig M. Tanner is director of agricultural marketing; Tanner's assistant will be Scotty G. Griffin, marketing representative — agriculture; William F. Thoele is group director of planning and controls.
The Bel Air Country Club superintendent irrigates the whole course sitting down.

The J-M Binar\textsuperscript{®} system gives him unique flexibility to match every condition on the course.

Beautiful Bel Air Country Club in Los Angeles had its problems. This world-renowned golf course had very little control of how much water went where. And when.

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But that's all changed since Bel Air installed a total J-M irrigation system, with flexible Binar controls, Buckner\textsuperscript{®} sprinklers, and J-M PVC and Transite\textsuperscript{®} pipe: the most advanced, computerized system available today.

Now the groundskeeper has the option of reprogramming every area, on a sprinkler-by-sprinkler basis, at any time of the day. And it all happens from a control panel in his office. Unless he wants to make changes out on the course, in which case he uses a portable control to override the central system.

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**Meeting Dates**

**Tri-State Golf Course** Superintendent’s Association Meeting, Lakewood Country Club, Rockport, Ind., July 6.

**Connecticut Nurserymen’s Association** Annual Summer Meeting, Holdridge Farm Nursery, Inc., Ledyard Center, Conn., July 6.


**American Association of Nurserymen** Annual Convention, Sheraton-Boston Hotel, July 10-14.

**76th Annual Meeting** of the American Society of Landscape Architects, Hotel de Coronado, San Diego, Calif., July 11-14.

**Aquatic Plant Management Society** Annual Meeting, Pier 66, Fort Lauderdale, Fla., July 11-14.


**Indiana Golf Course Superintendents Association** Association Meeting, Tippecanoe Lake Country Club, July 13.

**American Institute of Landscape Architects Regional Meeting**, Santa Fe, N.M., July 15-17.

**Rocky Mountain Golf Course Superintendents Association Meeting**, Los Verdes Golf Course, July 15.

**Midwest Association of Golf Course Superintendents Meeting**, Exmoor Country Club, July 19.


**Penn Allied Nursery Trade Show**, Hershey Motor Lodge Convention Center, Hershey, Pa., July 27-29.

**University of Massachusetts** Third Annual Turf Field Day, South Deerfield Turf Station, South Deerfield, July 28.

**Southern Nurserymen’s Association Horticultural Trade Show**, Marriott Motor Hotel, Atlanta, Ga., August 1-3.

**Tennessee Golf Course Superintendents Association Meeting**, Crockett Springs National Golf Course, Brentwood, August 2.

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The System is built around the rugged, versatile 18 hp Turf-Truckster, 3-or 4-wheel model. With this one power source and options, you can haul, spray, spike, spread and top dress. And save as much as 35% on equipment in the process.

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Meeting Dates continued

International Society of Arboriculture Annual Meeting, Stouffer's Riverfront Towers, St. Louis, Mo., August 8-12.


Georgia Golf Course Superintendents Association Educational Program and Business Meeting, Northwood Golf and Country Club, Lawrenceville, August 9-10.

Erosion Control Symposium for Erosion Control Contractors, Denver, August 9-10.

Symposium on Reclamation of Drastically Disturbed Lands, Ohio Agricultural Research and Development Center, Wooster, Ohio, August 9-12.

Indiana Golf Course Superintendents Association Meeting, Prestwick Golf Club, August 10.

Plant Growth Regulator Working Group, Baton Rouge, La., August 11-14.

Rocky Mountain Golf Course Superintendents Split Meeting, Colorado City, Cheyenne, Glenwood Springs, August 19.

Rhode Island Turfgrass Field Day, Turfgrass Research Farm, University of Rhode Island, Kingston, R.I., August 25.

International Symposium on Biological Control of Weeds, University of Florida, Gainsville, August 30-Sept. 2.

Pacific Horticultural Trade Show, Anaheim Convention Center, California, Sept. 11-13.


Indiana Golf Course Superintendents Association Meeting, Westbrook Elks, Sept. 21.


Midwest Association of Golf Course Superintendents Meeting, Butler National Golf Club, Oct. 4.


Florida Turfgrass Association Management Conference and Show, Sheraton Hotel and Convention Center, Orlando, Oct. 10-14.

Indiana Golf Course Superintendents Association Meeting, Eagle Creek, Oct. 12.


26th Central Plains Turfgrass Conference, Kansas State Union, Manhattan, Oct. 21-22.

Southwest Turfgrass Conference, New Mexico State University, Las Cruces, Oct. 21-22.


Sixth National Institute on Park and Grounds Management Conference, Marriott Hotel, Atlanta, Nov. 8-10.

Indiana Golf Course Superintendents Association Meeting, Delaware Country Club, Nov. 9.

10th Annual Clemson Turfgrass Conference, Clemson House Hotel, Clemson, S.C., Nov. 9-10.

Missouri Turfgrass Conference, Ramada Inn, Columbia, Mo., Nov. 11-12.

Washington Aviation Association Convention, Spokane, Wash., Nov. 18-20.

Seventh Annual Georgia University of Georgia Turfgrass Short Course, Center for Continuing Education, University of Georgia, Athens, Nov. 22-23.

31st Oklahoma Turfgrass Conference, Oklahoma State University, Stillwater, Dec. 1-3.
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Each sod webworm larva chews up 20 square inches of turf during its average life-span of 20 to 40 days. The cutworm larva can devour up to 36 square inches. Multiply this by the average 300 to 500 larvae generated from each adult in a 1½ to 3 week period and you begin to realize the damage these turf pests can cause.

But you can stop these insect predators before they start with Proxol 80SP, an organophosphate insecticide which provides fast, effective control of major turf and ornamental insects. Proxol 80SP acts as both a contact and stomach insecticide for combined quick-kill and residual activity.

With rising costs of maintenance and limited budget allocations, you need a sound pest prevention program of regular applications of Proxol 80SP to coincide with periods of peak insect activity.

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Visual Symptoms Of Copper Toxicity On Woody Ornamentals

To aid nurserymen and landscape contractors in identifying copper toxicity on ornamentals, a series of tests were run by T. Davis Sydnor and Larry Kuhns of Ohio State University.

Copper toxicity symptoms have been recorded for a number of fruit and agronomic crops, but not for ornamentals. Ornamentals may also be subjected to high copper levels in several ways. Some factories emit copper-containing smoke. In these areas copper may be deposited on foliage or it may accumulate in the soil.

Repeated applications of fungicides, such as Bordeaux mixture may result in toxic copper levels in the soil. Finally, many woody ornamentals are sold balled and burlapped with copper treated burlap. Several growers have suggested that this treated burlap may be toxic to enclosed plants, though they have not kept accurate records, they have claimed plants wrapped with copper treated burlap have a higher replacement rate than plants in untreated burlap. A study by the authors suggests this may be true for copper sulfate treated burlap, but not for copper naphthenate treated burlap. In all of these situations copper is especially troublesome because of its immobility in the soil. It is one of the most tightly held cations, so that only in very sandy or very acid soils can it be readily leached.

To aid nurserymen and landscape contractors in identifying copper toxicity on ornamentals, a series of tests were run to obtain visual symptoms of copper toxicity on several woody ornamentals. Spreading cotoneaster common boxwood and azalea were selected as the test plants.

Plants were selected from cuttings rooted in sand, transferred to a medium of acid-washed silica sand, and watered with a standard nutrient solution. Iron was supplied in the chelated form to prevent its precipitation from solution. The copper concentration in the nutrient solution was then adjusted with copper sulfate to vary from 0.032 ppm (control) to 8000 ppm. These copper levels caused two types of injury to the plants. At concentrations of 50 ppm copper and below, chronic injury was induced, resulting in the gradual decline of the plants. At 100 ppm copper and above, acute injury was induced, resulting in the sudden death of all plants.

Chronic injury. Chronic injury is the type injury which would most commonly be found on ornamentals. It was induced in azalea and cotoneaster by copper concentrations between one and 50 ppm, and in boxwood by five to 50 ppm. Generally, chronic symptoms were interveinal chlorosis and stunted growth, except for boxwood which did not become chlorotic but was simply stunted.

The location of the chlorosis in azalea and cotoneaster was dependent on the concentration. Between one and five ppm chlorosis began on the new growth, while at 50 ppm bottom leaves became chlorotic first. The higher copper concentrations resulted in faster symptom expression. Chlorosis may have developed at lower copper levels if chelated iron had not been used, as it has been shown to alleviate the
effects of high copper concentrations. Surviving cotoneasters were pruned during the experiment, and this seemed to accentuate the problem. New growth was very severely stunted and chlorotic with five ppm causing all but terminal leaves to drop.

Chronic injury of the roots resulted in thicker main roots and fewer lateral roots. Dark stubs were prevalent that apparently were lateral roots which were killed before elongating. Necrotic lesions were common on affected roots which were also darker than healthy roots. At copper concentrations associated with chronic injury, high soluble salts levels were not a problem.

Acute injury. Copper concentrations of 100 ppm and above caused acute injury, but far exceed the amount of copper normally available to a plant. General symptoms of acute injury were wilting, dessication and death of all affected plants. The youngest leaves were affected last, but newly expanded leaves remained small and poorly developed. Other symptoms were species related.

Azaleas showed a gray discoloration of new leaves; and as the wilting occurred, the hairs on the new growth became very prominent and appeared silver. On cotoneaster and boxwood there occurred either a brown discoloration or chlorosis beginning at the base of the leaf and spreading outward until the leaves abscised. With copper toxicity, as opposed to water relations problems, the leaf margin is affected last. Lower leaves curled upward toward the stem, especially on boxwood, and some rosetting of terminal growth was evident. With boxwood only, leaf veins turned charcoal gray, beginning with the midvein and proceeding toward the margins. At copper concentrations of 1,000 ppm and above this occurred while the leaves were still dark green; at concentrations between 100 and 1,000 ppm the leaves and stems became chlorotic first.

Acute injury was hard to define on the roots because the plants declined so quickly. However, darkened root tips, necrotic lesions, and some dessication were apparent when the plant roots were washed. Some of the described injury may have been due to root cell plasmolysis resulting from the high soluble salts level in the nutrient solutions containing high concentrations of copper sulfate. Root cell plasmolysis would lead to wilting, dessication, and death of plants, but it would not account for the translocation of copper to leaves, the gray discoloration of stems and leaves, or the basal leaf discoloration. It is believed copper toxicity and high soluble salts were both involved in the acute injury to roots.

Summary. Copper toxicity symptoms are very hard to distinguish from other nutrient, and some physiological disorders. Soil tests are generally unsatisfactory in determining a copper toxicity problem, as interpretation of the results depends on the analysis method and soil characteristics. Copper is toxic at much lower levels in a light sandy soil than in a soil high in organic matter or clay. High copper levels resulting from copper treated burlap are confined to the area around the burlap and would probably be missed by a soil test. Tissue analysis seems to be the only sure way to identify a copper toxicity problem, and it is complicated by the fact that a foliar sample is not accurate when looking for copper toxicity. Roots are the only tissue which accumu-

Comparison of chronic and acute levels of copper on boxwood roots.

Chronic copper toxicity injury on boxwood roots. Necrotic lesions and undeveloped laterals are characteristic.
IRS Sets Off Trade Show Tremors

Late last year the federal Internal Revenue Service, after studying the question for seven years, ruled that non-profit organizations have to pay income tax on trade shows they run if selling takes place at the exhibitions.

Companies and attendees at the Golf Course Superintendents Show in Minneapolis earlier this year in Minneapolis were well aware of this ruling, due to a printed sheet handed out to exhibitors as they set up their booths. "We've never wanted a carnival atmosphere at the show," GCSAA director Lou Haines told WEEDS TREES & TURF at the time. No problems, the show went smoothly.

But there could be some repercussions at future shows in the green industry, according to a recent report in Business Week, which polled other associations. Many associations plan to have its staff pose as attendees and listen to the pitches of exhibitors to make sure no rules are being broken. Many exhibitors in some industries are dropping out because of the ruling.

Trade show sponsors in all industries are writing no-selling clauses into their contracts with exhibitors, insisting on posting of no-selling signs at the exhibitions, and urging that booths be manned by technical personnel rather than sales types. Long-used promotion literature about shows is being screened more carefully by association lawyers.

Some associations are even banning distribution of price lists and not allowing companies to pass out any kind of sample. But many argue that a trade show without selling may seem a contradiction in terms. The issue seems to be what actually constitutes selling. Many shows, for instance, have long banned booths that actually accepted cash on the spot and turned over merchandise. But the new IRS rules apply to any orders written at the show — even if they are subject to later credit checks and similar contingencies.

Some say this is discriminatory against smaller companies in the industry because they look at the shows as the only way to offset the advantage companies with large sales forces have.

Order writing can still go on, of course, as long as it is not at the show, so hospitality suites are expected to get a greater-than-usual workout. It is still not clear, however, whether suites provided to exhibitors by the show's sponsor can be used for such purposes.

The IRS rules leave companies the option, of course, of going ahead with a selling exhibition and simply paying taxes on the surplus from the part of the show where orders are written. Informal figuring by one association indicates that a surcharge of about $5 per booth would cover any tax liability.

ALCA Seeks CLCA Merge For Problem Solving

The American Landscape Contractors Association (ALCA) seeks to interest the California Landscape Contractors Association (CLCA) into forming a united organization.

The largest and oldest landscape contractors organization in the U.S., CLCA draws leadership from 700 landscape contractor members representing small concerns to interstate groups of massive businesses. Its 60 member board of directors is larger than membership figures for some states, according to the Landscape Industry Council of Colorado.

The purpose of the merger is to better deal with the groups' problems and to provide better answers. Both groups have remained separate since their founding in the 1940's.

Wally SaBell, a director at large for ALCA, and Duane Nelsen, president of ALCA, are coordinators for the proposed merger.

Fall Set as Release Date For EPA Pesticide Review

Review and classification of "those products which are most agriculturally used and important and classified for restricted use" will be completed by the EPA by September.

Only private and commercial applicators will be allowed to make "restricted use" applications. Chemicals classified as "general use" can receive application by the general public. Almost one half of the states now have EPA-approved plans to certifying applicators for marking "restricted use" applications.

Green Section Conference Moves to Atlanta in 1977

The annual United States Golf Association Green Section Conference will be January 28 at the Hyatt Regency, Hotel, Atlanta.

The subject of the conference is "Great Golf Courses of America — What Makes Them That Way". The scheduling of the annual meeting away from New York City is a departure from tradition; only in 1958, when it was in Chicago, was it held outside of New York.

Tree Organizations Sponsor Bicentennial Tree Programs

The International Society of Arboriculture (formerly International Shade Tree Conference) and the National Arborist Association are jointly sponsoring a tree recognition program for the Bicentennial Celebration.

In keeping with the Bicentennial, the groups are honoring significant trees of 200 or more years which are standing today as they did during the American Revolution. To qualify, the person must sponsor a tree by sending documentation of its age. The Society will issue bronze plaques to the sponsors. Members or non-members of the two groups are eligible.

The program is officially recognized by the American Revolution Bicentennial Administration in Washington, D.C.

For further information, contact the International Society of Arboriculture, P.O. Box 71, Urbana, Illinois 61801.