

Portrait of an Industrial Weed Killer

By PAUL E. PEDERSEN

IN the past several years, weed specialists have been responsible for marked changes in long-established techniques of controlling weeds and undesirable grasses in industrial areas. Bermudagrass, bindweed, and crabgrass no longer need be common

headaches for grounds maintenance crews and contract applicators. Even that hardy perennial, johnsongrass, which weed experts say is about the toughest of all, can be controlled with chemical weed killers.

Chemicals are becoming the widely recognized and accepted method of solving weed problems around industrial plants,

buildings, petroleum tank farms, railway yards, outdoor storage areas, fence lines, along sidings, rights-of-way, above-ground pipe lines, in and around transformers, gasmetering substations, and in fire lanes and ditches. Here, unwanted vegetation can create an industrial safety hazard and contribute to fire or rust and corrosion of machinery, in addition to providing cover for insects and rodents. Quick-seeding weeds may infest not only the industrial property itself, but also neighboring properties.

Pramitol (commonly known as prometone) is Geigy Chemical Corporation's answer to the demand for industrial herbicides equal to these tasks. This non-selective herbicide (2-methoxy-4,6-bis (isopropylamino) - s-triazine) is available in two formulations: Pramitol 25E liquid for spray application, and Pramitol 5P pellets for dry application.

Studies conducted with several industrial weed killers at Texas A&M University's College of Agriculture, under the direction of Professor Homer E. Rae, show that Pramitol is effective for pre-emergence control of weed seedlings and for postemergence control of annual and perennial weeds. These findings are summarized in Table 1.

Works on Contact and in Soil

Both formulations of Pramitol kill most annual and perennial broadleaf weeds and grasses by disrupting vital plant processes. The herbicide destroys weeds through foliar contact, even where considerable top growth has already occurred. And, once moisture has moved it into the soil, it is picked up by roots of germinating weeds, where it continues to act, usually controlling vegetation for the full growing season or longer.

Pramitol spray can be applied before weeds emerge, or until they are about two to three



Uncontrolled weed growth in lumber yard (left) is unsightly, creates a potential fire hazard. Above, application of an industrial herbicide at this site killed weeds, still seen beyond chain link fence.

months old. At rates of 5 gals. to 7½ gals. per acre, the spray controls such annuals as downy brome grass, oatgrass, and goosegrass, and such perennials as quackgrass, puncturevine, goldenrod, burdock, and plantain. To control hard-to-kill perennials like johnsongrass, bermudagrass, field bindweed, and wild carrot, rates of 20 gals. to 30 gals. per acre are recommended.

It is noncorrosive to metal surfaces, and can be removed from conventional spray equipment by flushing with water immediately after use. Caution should be exercised when applying near crop or ornamental areas, since the herbicide is nonselective.

Apply Pellets Any Time

Because sodium chlorate and sodium metaborate are added to pelleted Pramitol, it can be applied either before, or any time after, weeds emerge. Adequate rainfall is required to move the chemical into the root zone. It can be spread with mechanical applicators, such as push-type or cyclone spreaders, or it can be applied by hand. No mixing or water is necessary, nor is application timing critical.

Application of ½ lb. to 1 lb. of Pramitol 5P per 100 sq. ft. of soil surface is suggested to control annual broadleaf weeds and grasses. For the tougher perennial weeds, use 1 lb. to 2 lb. for

the same area. In regions of high rainfall or longer than usual growing season, or when extended residual control is desired, the higher application rate is recommended.

Herbicide Combinations

Development of an effective weed control program depends on such factors as vegetation and soil type and amount of rainfall. For some of the more difficult weed problems, herbicide combinations are often preferable for faster top kill and longer residual control.

A Pramitol-TCA combination provides these advantages, and can be useful when bermudagrass and johnsongrass are particularly difficult problems. On sandy or light-textured soils, infested areas can be sprayed with a mixture of 10 gals. of Pramitol 25E with 100 lbs. of TCA and 400 gals. or more water per acre. Increasing the amount of Pramitol to 20 gals., with the same rate of TCA and water, is suggested where soils are heavy or high in organic content.

Pramitol and oil combinations can increase the speed and efficiency of top kill. The herbicide goes into solution in most oils, so no agitation is required during application. Recommended rate is 10 gals. to 20 gals. of herbicide and 100 gals. to 200 gals. of oil per acre.

Lower rates can be used when weeds and grasses are small. To control bermudagrass, for example, the lowest rate is usually adequate. As the height and density of vegetation increases, the combination rate can be increased correspondingly. To thoroughly cover dense stands of tough weeds such as johnsongrass, the highest rate is required.

For more spray per acre, water and a suitable emulsifier can be added to the solution to reach the desired volume of spray mixture. Penetration and effectiveness are increased accordingly. Pramitol-oil-water emulsions at 400 gals. or more per acre are not unusual where extremely dense weed growth is to be harnessed.

Pramitol and Chlorates

This combination provides good top kill, followed by long-term residual control. It is usually applied as 5 gals. to 10 gals. of liquid herbicide with 125 lbs. to 150 lbs. of chlorate plus sodium metaborate and 200 gals. to 400 gals. of water per acre. Because the chlorates are high in solubility, they move rapidly into the root zone to work on deep-rooted established weeds. For the most part, herbicide remains near the soil surface to kill young weeds shortly after germination. Lower rates will generally control most annual weeds; higher rates are

Table 1. Tests Conducted at Texas A&M University on the Effectiveness of Pramitol 25E

Active Ingredient per Acre	Spray Volume per Acre	Time and Application	Weeds Controlled	Remarks
10 to 16 lbs. in water.	200 to 300 gals. with power gun.	Sept. 15 to April 15, to short weeds and soil.	Delayed control of most emerged annuals and some shallow-rooted perennials. Preemergence control of most seedlings after one or more 2-in rains.	Residual control of 18 to 30 months, except for emerged oxalis and dallisgrass and their seedlings, and most deep-rooted perennials.
10 to 16 lbs. in toxic oil.	150 to 200 gals. with power gun.	Anytime, but preferably when temp. is above 80°. Apply overall and to soils.	Foliage kill of all species. Top kill of most herbaceous species. Preemergence control of seedlings of most species after rainfall of 2 in.	Residual control of 18 to 30 months, except for invasion by oxalis and some emergence of dallisgrass.
30 to 40 lbs. in toxic oil.	150 to 200 gals. with power gun.	Anytime, to all vegetation and soils.	Foliage kill of all species. Top kill of most herbaceous species. Delayed eradication of johnsongrass and bermudagrass after several 2-in. rains.	Residual control of 18 to 30 months, with exceptions of emerged oxalis and dallisgrass, and seedlings of these species.

recommended where tough perennials predominate.

Combinations of Pramitol and hormone-type weed killers are practical where hard-to-kill broadleaf weeds are present with woody vegetation. These combinations work best when applied early in the growing season.

To control woody plants 2,4,5-T or silvex are recommended additives to Pramitol. Application rates will vary from one location to another, ranging from 5 gals. to 10 gals. of Pramitol combined with 2 lbs. to 4 lbs. acid equivalent of 2,4-D, 2,4,5-T, or silvex. Whichever combination is selected, it should be mixed with sufficient water to assure good coverage of foliage.

Addition of 2 lbs. to 4 lbs. of a hormone-type weed killer to a Pramitol-chlorate or Pramitol-oil combination will broaden the spectrum of weeds that can be controlled and hasten top kill.

Southern Weed Meet Sets Industrial Control Talks

A Report on Practical Organization of an Industrial Weed Control Division, by Irvin A. Berger, vice president, J. C. Ehrlich Chemical Co., Inc., Reading, Pa., will lead off industrial weed sessions at the Jan. 24-26 Southern Weed Conference. Scheduled for the Jung Hotel, New Orleans, La., the '67 meet also offers weed control sessions in such areas as agronomic crops including turf and pastures, horticultural crops, and brush and tree control.

Industrial talks will include "Diversification of Services—A Key to an Applicator's Success," by Tom Graham, president, Graham, Inc., Oklahoma City, Okla.; and "Satisfying Our Industrial Customers' Weed Control Needs," by Glen I. Bounds, industrial herbicide sales, Van Waters & Rogers, Inc., Dallas, Tex.

Vegetation control in asphalt pavements, drainage ditches, river banks, and rights-of-way for power lines, railroads, and highways will also be covered. A new brush killer, tree growth inhibitors, drift control agents, and helicopter application of pel-

lets are to be evaluated for conerees by experts in the field. Eleventh-hour conference queries can be directed to Southern Weed Conference secretary-treasurer, Dr. H. Hanly Funderburk, Botany Department, Auburn University, Auburn, Ala.

Illini Host Jan. CA's School

University of Illinois will host an anticipated capacity crowd for its 19th Illinois Custom Spray Operators' Training School, Jan. 25-26, at the Illini Union. Activities really begin on the afternoon of Jan. 24, with an informal get-together and early registration for attending applicators.

Program includes a number of discussions on weed control in agronomic crops. Of special interest to noncrop controllers will be planned talks on Fungicides for Lawns and Ornamentals, Weed Control in Turf, and Industrial Weed Control. WTT readers can obtain more information on the course from H. B. Petty, Chairman, Custom Operators' Training School, College of Agriculture, University of Illinois, Urbana, Ill. 61801.

Calif. Weedmen To Gather In San Diego, Jan. 24-26

Final program arrangements are complete for this month's 19th Annual California Weed Conference at San Diego's Hilton Inn.

Following a welcoming address by conference president Cecil Pratt, Deputy Agricultural Commissioner, San Bernardino County, Calif., balance of the opening session will be devoted to cropland weed control. Second day's program is entirely focused on noncrop and aquatic weeds, with talks to include "Weed Control in Turf"; "Alligator and Skeleton Weed Control"; and "Application Methods for Aquatic Weed Control and Dissipation of Herbicides in Water."

Jan. 25 luncheon speaker, Stuart Turner, consulting agrologist, from San Francisco, will discuss "What's New in Pesticide Litigation." Research reports are due to be presented at the final morning session. For last-minute details, contact Floyd L. Holmes, Secretary, California Weed Conference, E. I. duPont de Nemours & Co., 118 Blueberry Hill, Los Gatos, Calif.



New officers and directors of the Missouri Valley Turfgrass Association chosen in conjunction with the recent Lawn and Turfgrass Conference at the University of Missouri, pictured here at their first meeting following the election, are (from left front): secretary-treasurer Earl M. Page, Earl M. Page, Inc., St. Louis; president William M. Latta, manager, Princeton Turf Farms, Kansas City; first vice president and retiring president, Robert V. Mitchell, Sunset Country Club, St. Louis; and second vice president, Walter W. Fuchs, Upjohn Co., Glen Ellyn, Ill. Standing are director Donald Clemans, Norwood Hills Country Club, St. Louis; group advisor and consultant, Dr. Delbert Hemphill, professor of horticulture, University of Missouri, Columbia; and director Stan Frederiksen, Mallinckrodt Chemical Works, St. Louis. Not pictured is director Robert Bechtold, Bechtold Lawn Service, Columbia.