

# New Crabgrass, Brush Control Concepts Bow at 20th North Central Weed Control Conference, Dec. 14-16

Delegates to the 20th North Central Weed Control Conference at Michigan State University were introduced to the first really new crabgrass control compound to be developed since the advent of organic preemergence materials. Michigan State hosted the annual event at its Kellogg Center for Continuing Education on the East Lansing campus Dec. 14-16.

The race is on, too, for a no-drift weed and brush control chemical which can be applied safely from the air, delegates learned. Several companies previewed or reviewed their wares which range from heavy materials applied with special equipment to liquids which solidify on contact with plants.

Techniques for industrial and rights-of-way weed and brush control were freely aired. Conferencees were pelted time and again with the idea that control efforts must be programmed and planned well in advance for best results. There is no cure-all chemical which will control all weeds in all climates, during all seasons, under any conceivable conditions.

Year by year weed conference agendas have included more and more nonagricultural weed control techniques. The volume of commercial pursuits was evident at this 20th NCWCC meeting since the programmers rearranged the schedule so that con-

current meetings could be easily chosen for those not involved in agriculture, and the 329 delegates budgeted their time and managed to make all sessions in their particular disciplines.

## Product Previews

Perhaps the most exciting session of the first day's program was the "New Products from Industry" presentation, if one can count on the reaction of delegates as an indicator.

A product which especially stirred conferees was DuPont's new selective preemergence herbicide, Tupersan. Mark B. Weed of DuPont's Experiment Station described the soon-to-be-marketed product.

"An outstanding feature of Tupersan's active ingredient, 1-(2-methylcyclohexyl)-3-phenylurea, is its selective ability to eliminate certain annual seedling grasses from stands of other grasses," Weed began.

He showed slides which illustrated that Tupersan had selectively removed smooth and hairy crabgrass from Kentucky bluegrass plots. Uniquely, Tupersan is applied at the time of seeding, when a new bluegrass lawn is planted.

"Bluegrass, red fescue, and bentgrass seeds have germinated and grown in soil containing eight times the recommended dose for annual grass control," Weed explained. In addition to



Highly respected for his knowledge and opinions, Dr. F. L. Timmons (right), Aquatic Weed Investigations Leader with USDA, Laramie, Wyo., willingly shares his experiences with cottail with Philip Marvin, agricultural consultant from Manhattan, Kansas.

the crabgrasses, Tupersan is claimed to remove foxtails, downy brome, barnyard grass, witchgrass, and nimblewill from a number of cereal grains and from turf, when applied before weed or grass germination at planting time.

A 50% wettable powder formulation, called Tupersan Weed Killer, will be sold early in '65.

Among other products of interest to *WTT* readers are Maintain and Hibor, just released by U. S. Borax and Chemical Corp., Los Angeles, Calif. J. T. Hallett of U. S. Borax Research introduced the products.

"Maintain is an emulsifiable compound containing Tritac, bromacil, and a low-volatile 2,4-D ester," Hallett began. "It is designed to control grasses, annual broadleaves, deep-rooted perennials, and vine species around industrial sites for extended periods." Maintain is claimed to offer quick knockdown of broadleaf weeds and season-plus control of hard-to-kill species.

Hallett also described Hibor, Borax's new ready-to-spray herbicide designed primarily for railroad use. Hibor consists of a combination of sodium chlorate, sodium metaborate, and bromacil. Again, Hallett indicated the combination would give rapid knockdown and a significant residual. "Hibor is sold in tank-car quantities and is a useful herbi-

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Longtime Conference supporters, C. E. Stower (right) and W. C. Reed (center), both with Slayton Agricultural Chemical in Wisconsin discuss the years' changes with conference secretary, G. Clare Buskirk.

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cide for the commercial applicator in industrial weed control," Hallett said.

Dacogen, a fourth product, but still in the premarket experimental stage, is a phenoxy herbicide formulation with a physical spray drift inhibitor. It bowed to the NCWCC with the help of technical man, R. L. Schauer, Diamond Alkali Co., Cleveland, Ohio.

"This material is added in powder form to water in a spray tank. The powder will contain concentrations of 2,4-D, or 2,4,5-T, or both. Dacogen acts as a liquid while being agitated and sprayed. But after contact with a plant surface for a few moments, it reverts to a gel state," Schauer explained. This phenomenon may be likened to the solidification of a gelatin dessert.

"Once applied, Dacogen is sticky," the Diamond rep went on; "it adheres to plants, keeping the herbicide in contact with plant tissue longer. This happens because the gel hardens and encapsulates the herbicidal material beneath the shell. Upon complete drying, the Dacogen formulation produces a film, still attached to the plant where it was sprayed. The material also inhibits volatility," Schauer said.

### Aquatic Talks Well Attended

As the section symposiums got underway on the second day, WTT reporters found topics of interest being aired in the well-attended Aquatic Weed Control session.

"Aquathol and Hydrothol are two aquatic herbicides from Pennsalt Chemical Co., which have found value in weed control programs where fish safety is a factor," Harold Lindaberry, Northern Technical Supervisor for Pennsalt's agricultural division in Aurora, Ill., said.

Both compounds have endo-thall as an active ingredient, but formulations produce differences in herbicidal activity. Lindaberry explained that Aquathol is an effective herbicide for many submersed weed species at 1 part per million, a rate far below that where fish will be harmed. He related that Pennsalt experienced no mortalities when Aquathol was fed to laboratory dogs at 800 ppm daily.

"Hydrothol is formulated with the amine salt derived from coconut oil," Lindaberry went on. This changes the activity so that the compound is effective at concentrations of 1/10 to 4/10 ppm. Hydrothol is correspondingly more toxic to fish, however.

### No Aquatic Cure-alls

An underlying theme of the conference emerged during the open discussion of the aquatic session. It is that there are no cure-all chemicals. Chemicals are tools designed to do specific jobs and should be planned or programmed for this purpose.

Session moderator, John Gallagher, Amchem Products Co.,



Industry and education find common ground at breaks between scheduled sessions. Pennsalt's Harold Lindaberry (left) hears Ohio State horticulture professor Dr. E. K. Alban's views on ornamental crop weed control.

Ambler, Pa., drove a point home when delegates debated the advantage of weed-free water. Completely weedless water may not be the desired end. When conservation interests are involved, as they are with increasing frequency, it may be desirable to induce new plants to establish in the vacancies. This is particularly true on wildfowl refuges. Instead of letting nature take her course, a farsighted operator will disperse millet or smartweed seed to produce an improved habitat with waterfowl food plants designed for best possible use of the water body. The aquatic weed controller must be an ecologist, able to make best possible use of available water, not simply one who chemically removes weeds from water.

### Crabgrass Trials Failed

1964 was a strange year for crabgrass. It did not germinate on schedule, and in many places not at all, to any significant degree. This put researchers test-

ing preemergence herbicides in the awkward position of not having any test plants.

Dr. Robert W. Miller, professor of agronomy, Ohio State University, Columbus, revealed that crabgrass failed to establish because of dry weather. A second germination period did occur, but if turf was not irrigated, this weed crop failed, too.

"These conditions force us to take another look at preemergence herbicides," Dr. Miller asserted. "During years when unseasonably dry weather occurs, it will be necessary to apply preemergence materials which last throughout the season."

As an alternative, Dr. Miller offered split applications of herbicides that are not active season-long.

"We do have a good selection of preemergence crabgrass controllers, but there is room for improvements," Dr. Miller feels.

Improvements he would like to see include: good long-season control; herbicides specific for annual grasses; materials which will permit perennial lawngrass seeding the same spring as preemergence treatments; material which does not damage turfgrass; more latitude on date of application; and preemergence material for crabgrass and annual bluegrass in bentgrass turf.

### How Santa Fe Kills Weeds

"There are numerous reasons why weeds along railroad lines must be controlled," Dave Yazell, Vegetation Control Engineer for the Santa Fe System, Albuquerque, N. M., began in his talk at the session on industrial weed control, during which he explained the Santa Fe's maintenance methods.

Older methods of burning and on-track and off-track mowing are being replaced by chemical treatments. Yazell listed four kinds of treatments his railroad uses. Bare-ground control requires sterilant chemicals and is initially high in cost. Annual maintenance costs are of course reduced. Santa Fe uses what it calls abatement control; this offers a high degree of general weed control, but no bare-ground results. Chemical mowing with materials such as pentachlorophenol or sodium chlorate retards plant growth.

Under selective chemical control, Santa Fe eliminates noxious

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weed species along its track where state laws demand. Brush control is selective and Santa Fe uses several methods in its program, Yazell revealed. Summer foliage treatments with combinations of 2,4-D and 2,4,5-T are effective in areas where there is no drift hazard. When track adjoins farmland, Santa Fe uses ammonium sulfamate. Recently dormant cane broadcast has gained favor with Santa Fe controllers. Yazell stated that the dormant cane method is comparable in cost to ammonium sulfamate summer treatments.

For cleanup treatments of hard-to-kill plants, either a 3% 2,4-D basal spray, or hand treatment with pelleted materials like fenuron, are used.

Yazell advised controllers with similar programs to be aware that continued use of a single chemical for control along rights-of-way will permit a buildup of species not susceptible to the chemical in use.

### Highways Have More Acreage

"Expressways have four times more roadside than conventional roadways," Jack Burton, District Forester, Michigan State Highway Department, Alpena, revealed. "Regular roads have seven adjacent acres to a mile, but new expressways have 28 acres per mile." Burton told the NCWCC how his department maintains these extra acres in his talk, "Methods and Problems of Weed Control Along Highways."

Burton said the Michigan Highway Department relies on five types of weed control: selective sprays, growth retardation, brush control, ditch weed control, and soil sterilization along guardrails, signs, etc.

"Last year 3,000 miles of Michigan highway were spring sprayed with 2,4-D selective sprays. In April, May, and June, we use 1 to 2 lbs. of 2,4-D esters per acre. For the fall spray program, we combine 2 lbs. of 2,4-D with 2 lbs. of 2,4,5-T," Burton detailed.

This kind of roadside spraying, which Burton said has been used since 1948, is performed both by state spray rigs and by contract with private sprayers.



**Asplundh:** "Helicopter use will be increasingly economical as labor costs continue to rise."

"This practice does not eliminate mowing, but we have reduced it, and it pays off," the highway forester remarked. He said that the Department is ahead if only one round of mowing is eliminated, since mowing is three times as costly as spraying.

"For brush control, we use the cutting method, then spray the stubble," Burton revealed. "We respray the foliage which resprouts."

Delegates heard that anything which slows water movement in drainage ditches is bad for the highway. Michigan uses dalapon with success on cattails along roadsides. The highway official reminded controllers to spray vegetation which appears in cracks in roadside concrete gutters, and in sealed shoulders, so cracks will not be opened further by the force of growth.

"This year maleic hydrazide

grass growth regulator worked for us," Burton announced. Areas which had been mowed seven to eight times per summer in previous seasons, needed to be mowed only twice this past year.

### Contractors Offer Views

Contract applicators were represented on the NCWCC program also. Herbert Hackman, Western Soil Management, Philadelphia, Pa., told the industrial session where he felt his company fits into the picture.

"We're a service organization, and we guarantee the work we say we will do," he began. "We like to think of ourselves as doctors; we will look at your problem, diagnose the trouble, and prescribe a control program."

"Since we guarantee our work, we feel it necessary that we are permitted to choose the chemical to use to get the best and safest results, and the time of application so control will be optimum," Hackman explained.

Hackman also revealed that a service of his company provides a weed specialist under contract to any agency or company which does not have one. As a consultant, a specialist will advise the proper treatment and oversee work performed if a company wants to do the work itself.

### Helicopter Future Bright

"Helicopter applications for brush control will increase as more nearly perfect aerial systems come along, and will become more economical as labor costs increase," Edward Asplundh, head of the Aviation Division of Asplundh Tree Expert Co., Jenkintown, Pa., predicted in the session devoted to woody plant control.

Asplundh reviewed the history of early applications and told of recent chemical developments to

### Weeds for lunch?

No, but the WTT camera caught Dr. Robert Hiltibran (left) of the Illinois Natural History Survey, Urbana, and James Whitley, Missouri Conservation Commission, Columbia, talking about aquatic nuisances after the dishes were cleared.



aid aerial application. "Helicopters have been considered for brush control since the 1940's, but drift of unthickened material to nontarget areas was the biggest hurdle."

Chemistry jumped the hurdle, according to Asplundh, with the development of invert emulsions, a heavy emulsion of water in oil instead of oil emulsified in water. He explained that early inverts would break or separate too soon, but today's products when properly mixed will stand for days without separation.

"In the early days, mixing techniques were such that we could only apply 4 to 6 lbs. of 2,4-D acid per acre from the air," Asplundh continued. "But today 8, 10, and 12 lbs. per acre are not uncommon. We have even applied as much as 20 lbs. per acre of 2,4-D acid on tall resistant brush."

Some chemical systems which are or soon will be available were listed by the Asplundh official. "The Amchem system uses a premixed invert emulsion which is applied through a whirling disc. The speed the disc turns at determines the swath width; this can be controlled by the helicopter pilot.

"The Hercules system, called Rhap-Trol, keeps the water and chemical apart until it reaches a special bi-fluid nozzle where it is mixed, thickened, and released.

"Dow Chemical's system involves a boom adapted to thickened material," Asplundh disclosed experiments with Dow's Tordon applied by air. He said Dow is developing a thickener, called Norbac, which when added to a water spray mix produces a tapioca-like consistency. It can then be dispensed through a boom arrangement.

"Our first helicopter purchase was a Sikorski, because it had the power we needed to carry the chemical payload. Later when Bell Helicopter increased the power on its design, we purchased some of these, because they can be trailered to the treatment site. Our present fleet includes both."

#### Helicopter Crew Details

"Number one man on the spray crew is the supervisor," Asplundh said; "he is experienced with chemical use, knows flight plans, and gets along well with the public and government officials.

"Our helicopter pilots are truly specialists," Asplundh went on. "We train them ourselves for a job which is much more difficult than just flying, at which they must be expert also." Asplundh pilots attend a special school before going on the job, then they must attend refresher courses periodically.

Since helicopters must be in perfect working condition at all times, and on-the-job repair time must be minimal, a trained mechanic is the important number three man.

"We supplement our ground crew force with vacationing college men. They drive the mixing trucks and recharge empty spray tanks at predetermined heliports," Asplundh explained.

A typical spray schedule is tedious because bulk of work is done in morning and evening before wind comes up. Wind speeds over 6 mph hamper operations. Weather is probably the biggest cause of lost job time, the brush control expert disclosed.

"In the brush control business, when you have made expensive

investments, you either must do the same job as someone else would for less money, or a better job for the same money. I can see where much utility line spraying for brush control will demand the use of helicopters in order to be economical," Asplundh concluded.

New officers for the North Central Weed Control Conference were elected at this annual meeting. Replacing Dr. D. D. Hemphill, Horticulture Department, University of Missouri, Columbia, as president for the 1965 term is John D. Furrer, Agronomy Department, University of Nebraska, Lincoln.

R. L. Warden, Plant Science Research and Development, Dow Chemical Co., Midland, Mich., is the newly elected vice president.

G. Clare Buskirk was reelected as secretary of the organization. Buskirk is from Lincoln, Neb., also.

Proceedings of this 20th meeting will be compiled, secretary Buskirk told WTT. Availability of a complete transcription of the conference will be announced in WTT at a later date.



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