

WEEDS and TURF

PEST CONTROL

A SECTION OF PEST CONTROL MAGAZINE

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A fixed nozzle on the bed of Naugatuck's demonstration spray unit covers a 20-foot swath with a spray of MH-30, new growth retardant.

"Mowing" Spans of Grass with Retardant MH-30

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Inside demonstration truck, Naugatuck's Paul Bohne shows how remote controls are used to regulate spray equipment. Note low-speed speedometer mounted outside the cab, just to right of driver's head.

SPRAY TRUCKS equipped with hydraulically operated booms rolled along scores of miles of Massachusetts highways this spring, spraying the roadside grass. Motorists who observed the operation probably thought the highway maintenance men were killing weeds. Actually, that observation was only half correct. The spray crews were knocking out weeds all right, but with another ingredient in their combination spray they were "chemically mowing" the roadside grass.

Retarding the growth of grass along its highways with a chemical is now a regular highway

maintenance practice in Massachusetts. The spray crews working this spring were finishing up a 440-mile grass growth-retarding spray program which the state got underway in the fall of 1961. The project's completion this spring meant that Massachusetts was now chemically retarding roadside grass growth on better than 1 out of 6 miles of its 2,400-mile highway system.

While this is the most extensive use of "chemical mowing" by a state, Massachusetts is far from alone in the application of this new roadside maintenance technique. Approximately 18 other

states, plus the District of Columbia, used the chemical approach to grass trimming last year on a total of approximately 25,000 acres of grass.

In Use Since 50's

The chemical used is MH-30, or maleic hydrazide, a development of the Naugatuck Chemical Division, United States Rubber Co., which it patented in 1947. Its use on grass began, on an experimental basis, the following year. Highway departments — Connecticut was the first — began tests with the chemical on small plots during the early 1950's.

Massachusetts, probably among the first states to try the chemical, began its evaluation work on the chemical in 1953. "This experimental work was stepped up in succeeding years," said Massachusetts Public Works Commissioner Jack P. Riccardi recently, "and during the spring of 1961 we sprayed 65 miles of roadsides.

"The results of this extensive trial were so satisfactory, that full-



Contrast of treated (right) and untreated (left) grass is pointed out by Dr. John Zukel, a Naugatuck scientist who worked on MH-30.

scale use of the chemical began last fall."

Commissioner Riccardi put his finger on the reason for the mounting interest of state highway departments in chemical retarding of grass growth when he cited these results from use of the chemical in Massachusetts:

"Mowings have been reduced from 11 to 3 per season on certain median strips and exchange areas, and from 5 to 2 along some stretches of roadsides in Massachusetts. In addition, mowing grass along median strips — which



Refilling water tanks of the demonstration spray truck was no problem at all for the Naugatuck scientists. Here a stream in North Carolina is pressed into service.

can be hazardous work areas for mowing crews — can now be accomplished by spray operators working from the cab of a well-marked tank truck."

\$50 Million for Roadside Mowing

Across the nation it is estimated that states now spend a staggering \$50 million yearly to mow roadside grass. Faced with the prospects of this cost rising, as wages and other expenses mount, highway officials are working overtime to develop techniques which will cut down this tremendous budget item.

Many new highway systems now have extensive tree plantings at interchanges and other large areas. Several states are also experimenting with wood chip mulch as a grass substitute on slopes, or ground-hugging shrubbery. But these devices have yet to make any appreciable dent in roadside maintenance costs. Every state has thousands and thousands of acres of grass along its highways, and this grass must be kept trimmed.

The cost of mowing this grass varies from state to state, and also from location to location within a state. Some states have their own mowing crews, others contract the job either wholly or in part. Per acre mowing costs can be well under \$20 in some instances, and can climb as high as \$500 per acre in other situations. The high water mark in mowing costs is reached on steep slopes, where mechanical equipment cannot be utilized and the job has to be done — several

times each season — with costly hand labor.

By contrast, it is estimated that MH-30 can retard the growth of an acre of grass — no matter what the degree of the slope — for approximately \$20. That figure includes cost of the chemical and the expense of application.

Only one application of the chemical is required for a growing season, and it can be applied either in the spring or fall. In areas where close trimming is required, the spray is generally supplemented with one or two mowings. On slopes at interchanges, and on

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Growth-retarding MH-30 rolls over roadside grass on a North Carolina highway. Naugatuck says about 25,000 acres in 18 states will be sprayed with MH-30 this year in a massive effort to cut the staggering \$50 million paid yearly by states to keep roadside grass trimmed.

steeply pitched banks at cut-throughs or elevated sections of the highway, a single application — without supplementary mowing — would suffice.

There are several ways to apply the chemical, which is a liquid and must be mixed with water before being sprayed. Over the past two years Naugatuck Chemical has used special demonstration spray trucks to show these various techniques to highway officials throughout the country. The trucks contain 5 different pieces of spray apparatus.

Applicator Trucks Described

On both sides of the flat beds of these trucks are fixed nozzles, angled to cover up to 30 feet, which are used to spray median strips and roadside areas. T-jet nozzles in the 80° series are used. These fittings are spaced 10 inches apart on the boom, and the width of the grass strip being sprayed determines the number of nozzles used. Two larger, fixed nozzles, mounted on the tailgate, cover broad areas such as interchanges.

A boom rig, which sprays a 22-foot swath, is used for road shoulders or medians. It has a series of spray heads, and at the boom's end is a small outrigger wheel to keep the spray heads a fixed distance above the grass.

Mounted on the body of the trucks is an air-carry sprayer, which has been converted for MH-30 use. Its big fan can move up to 50,000 cubic feet of air per minute, and this air volume is

funneled through a rubber diaphragm and tear-shaped hood. Spray nozzles in the hood's open end feed the spray mixture into the air stream. The blower can be swung through a 360° arc, and aimed up or down a total of 90° from controls on the truck's back, to spray long slopes. Also operated from the platform on the trucks is a high pressure hose used to clean up in hard-to-spray areas such as bridge abutments.

Controls in the cabs of the trucks can turn all of the spray equipment on and off and similar controls are mounted on the rear platforms. The hose, and air-carry, are controlled from the rear platform, and an intercom system is used to keep contact between the driver and the operator on the rear platform.

The trucks have a 500-gallon spray tank; a gasoline-operated filler pump to draw water from streams and ponds; a low-speed speedometer used to keep the truck at the 10-mile-per-hour, or slower, speed used when spraying; seat belts for the driver and his passenger-operator, and flashing identification lights used to warn traffic while spraying.

Some of this apparatus has been adopted by state highway departments. In some states, such as Massachusetts, the equipment used has been designed by highway engineers or on-hand spray equipment has been adopted for MH-30 use.

The necessary equipment req-

uisites, as outlined by Naugatuck Chemical, are: (1) special low-speed speedometers, since standard truck speedometers are generally inaccurate at the speeds used to apply the chemical. The speedometers used in Naugatuck's demonstration are made by the Franks Manufacturing Company of Mentone, Ind. Another manufacturer is the Stewart Warner Company. (2) A centrifugal pump with a 100-gallon per minute capacity, plus an off-center nozzle is recommended for spraying up to 30 feet swathes. Naugatuck used pumps made by the Myers or Pacific Pump Companies. No model number is listed because several models made by both companies could be used. The only requirement is that the machines be capable of pumping 100 gallons per minute. This same pump, incidentally, is used to operate all the spray equipment on Naugatuck's demonstration trucks, including the air-carry machine. (3) For treatment of areas beyond 30 feet, and up to 70 feet, the modified air-carry machine is recommended. Naugatuck is helping applicators to obtain information on new equipment and equipment conversion for this type of spraying.

Timetable

As previously mentioned, the chemical can be applied in either the fall or spring. In the northern states spring applications should be made between May 1 and June 1, and fall applications between September 15 and October 30. Timing will be somewhat different for other sections of the country, depending on grass-growing conditions.

Naugatuck does not recommend MH-30 for grass-growth inhibition in either the Deep South or the Southwest. All of the research work so far has been done in the Northern area, Middle Atlantic States, the Midwest, and the Northwest. The atmospheric conditions in these areas, particularly the average rate of humidity, is favorable to the use of MH-30. Here is what we recommend for these areas: In the Northeast, Middle Atlantic States, and the Midwest, the time for spring spraying is between April 15 and May 20. Fall application should be made between September 15

and November 15. In the Northwest, spring application should be made during the month of April; and the fall application can be made between October 15 and November 30.

The chemical should be sprayed on established turf. The grass should be green at the time since brown grass will not absorb the chemical. It should also be 2 to 4 inches in height.

Naugatuck Chemical recommends that 1½ gallons of MH-30, mixed with 50 gallons of water, be used per acre of grass under standard conditions. This dosage will markedly reduce the number of mowings required per season, especially if it is applied at the time suggested. For difficult-to-mow areas, where a further cut-back — or the complete elimination — of mowings is desired, it is suggested that 2 gallons of the chemical be applied per acre along with 50 gallons of water. It is possible to mix some weed killers, such as 2,4-D, with MH-30 in order to do the double job of weeding and growth retarding at the same time.

The growth-retarding effect of a spring application will be visible in about a week's time, at which point the chemical will be well distributed within the grass plants. Its retarding effect generally lasts until summer dormancy sets in.

When grass is sprayed with MH-30 in the fall, the chemical is retained in the plant over the winter dormancy period, and then takes effect in the spring as regrowth begins. Fall-sprayed grass generally greens up about one or two weeks later than unsprayed grass.

A rain within 12 hours after spraying will reduce the chemical's effectiveness since the water-soluble chemical is still being absorbed into the grass during this period. After 12 hours, when the chemical has been absorbed, rain has no effect on its performance.

How MH-30 Works

When sprayed on grass the chemical is absorbed through the grass plant's leaves, or blades. It then moves through its vein systems to the point where growth is taking place. Here, it blocks cell division — the growing process in which one plant cell splits in two,

and the two in turn split into two more. By blocking this multiplication-through-division process the chemical halts upward growth. Frequently, then, the plant's growth impetus shifts to secondary growth points and side growth is promoted. As a consequence, MH-30 sprayed grass is frequently thicker and greener than unsprayed grass.

More than a decade of testing has shown MH-30 to be a safe chemical. It has no effect on humans, animals or birds, and will not harm grass when applied according to recommendations. It is also a nonvolatile chemical, and consequently does not create drift problems.

A commercial chemical since 1957, MH-30 is also used to prevent the growth of sucker shoots on tobacco plants, prevent runner growth of strawberry plants, increase the frost resistance of citrus trees and prevent potatoes and onions from sprouting in storage. It has been approved for use on food products by the Food and Drug Administration.

It is not, however, presently suggested as the answer to the lawn mowing problems of homeowners. For even results, the chemical must be applied at a carefully controlled rate and at a near-constant speed. Naugatuck Chemical suggests, for example, that spray equipment to be used for MH-30 be carefully calibrated before an actual spraying job. Since such equipment is not available to the homeowner, the chemical is not recommended for full lawns.

However, for roadside grass and other large grass areas — such as cemeteries, plant areas, tank farms, airports, etc. — MH-30 now represents a proven method for reducing grass-cutting costs.

Miller Opens Peoria Branch

A new branch office of the Miller Chemical Company, Omaha, Nebraska firm which numbers lawn and garden chemicals among its products, has been opened in Peoria, Ill.

W. D. Brooks of Peoria is general manager of the new branch. He was formerly associated with American Cyanamid Company, and other chemical firms.

Chinch Bugs Moving to Midwest; Here's Way to Identify Them

Chinch bugs, though primarily a southern menace, are visiting Midwestern lawns in untold numbers. The insects suck the life from grass blades, leaving faded, strawy patches.

It is difficult to distinguish chinch bug damage from a fungus disease, such as dollar spot, unless the inspector gets down on his hands and knees for a close examination at the base of damaged blades. The bugs are generally found along the outer edges of discolored patches.

Complaints of chinch bugs often come in combination with leaf hopper and clover mite damage. One very accurate method of locating and identifying the source of trouble is to remove the top and bottom of an ordinary soup can and press the can partly into the turf at the margin of the patch. Fill with water until the bugs float to the surface. Make the test in several places if necessary.

Chinch bugs are little more than a speck, flat, and less than 1/6th of an inch long, even in the adult stage. Tiny nymphs are red, then turn brown with a white dot or band and, when mature, have distinct black and white markings.

The hairy chinch bug has short wings, while the ordinary variety has wings extending the full length of the abdomen.

Chinch bugs ignore plants outside the grass family. Their favorite foods are corn, grain crops, and turfgrass.

Brown patches caused by chinch bugs often have a reddish cast in the center, turning yellowish along the outer portions.

Nymphs and adults begin sucking during warm June days, primarily in sunny spots. Nymphs take about 30 days to mature. During the 20 to 30 day adult period, eggs are laid for a second brood that appears about August and lives and feeds until cold weather.

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