

A NEW CHEMICAL weapon has been added to the commercial applicator's arsenal of materials to control vegetation on industrial sites. Called Hyvar weed killer, it is a soil sterilant developed by Du Pont. It represents a new class of highly active organic herbicides for vegetation control, and is particularly useful for long-term general weed control on industrial areas where grasses are the main problem. Field studies have shown it to be in the range of 2 to 5 times more active against hard-to-kill grasses such as Johnson, Bermuda, nut, and quack grasses, than soil sterilants presently in use. Furthermore, it performs consistently on a broad range of soil types, because it is less subject to adsorption on soil colloids than many herbicides. Although it is not in full production, supplies are available for commercial trials this year.

Like Du Pont's Telvar monuron weed killer and Karmex diuron weed killer, Hyvar is formulated as a wettable powder. It can be mixed with water or herbicidal oil and applied with any equipment suitable for soil application of a wettable powder spray mixture. Generally a fixed-boom power sprayer is recommended, because with proper calibration it will give a constant rate of application. However, it can be applied with

Hyvar: New Weed Killer Designed For Industrial Sites

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hand-operated guns on hose lines, or (for small areas) with a knapsack sprayer or sprinkling can.

The vegetation problems for which Hyvar weed killer is recommended, and the rates, are:

Annual Weeds and Grasses

4 to 8 pounds per acre — For such species as foxtail, crabgrass, cheatgrass, wild oats, brome grass, ryegrass, pigweed, ragweed, purslane, wild mustard, cocklebur, and lambsquarters.

Perennial Grasses

5 to 15 pounds per acre — For such species as quackgrass, bluegrass, smooth brome, and brome-sedge.

15 to 25 pounds per acre — For hard-to-kill species such as Johnson grass, Bermuda grass, and nutgrass.

Perennial Broadleaf Weeds

10 to 15 pounds per acre — For such species as dock, wild carrot, sheep sorrel, plantain, and dandelion.

15 to 25 pounds per acre — For hard-to-kill species such as bounce-

ing bet, spurge, dogbane, goldenrod, daisies, and asters.

(The higher levels of ranges given above should be used on very adsorptive soils — usually those high in organic matter or carbon.)

The new family of chemicals from which Hyvar was developed is designated as substituted uracils. Hyvar is based on 5-bromo-3-isopropyl-6-methyl uracil. This family of compounds promises to provide interesting candidates for a variety of herbicidal applications. Several other substituted uracil compounds are in various stages of testing by Du Pont.

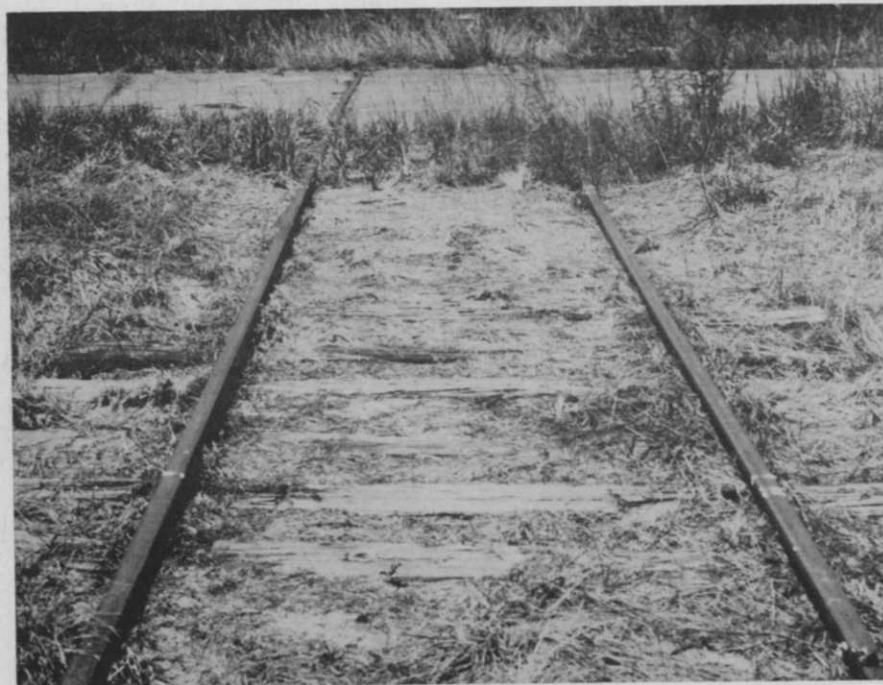
Hyvar is nonvolatile, nonflammable, and low in toxicity to people and animals under recommended conditions for use.

Wettable powder herbicides, such as Hyvar, can be used in most hydraulic sprayers provided all screens and strainers are at least 50-mesh, but continuous agitation is required to keep them from settling out. Mechanical agitation is preferred, but a "jet agitator" in the bottom of the tank can provide very satisfactory hydraulic agitation. The bypass line should always come close to the bottom of the tank to reduce foaming.

A jet agitator is easy to install. A pipe is attached to the output side of the pump and extended into the tank and along the bottom. Jet agitator nozzles are spaced along the pipe to maintain turbulent agitation. Even a small pipe with holes drilled in it can be used to create a constant turbulence. To maintain adequate agitation, the spray mixture should be recirculated through the pipe at about 10% of the total tank capacity per minute.

If a knapsack sprayer or sprinkling can is used, the mixture should be shaken or stirred at frequent intervals to maintain the chemical suspension.

Applicators using wettable powder herbicides for the first time



Hyvar weed killer was applied to this spur track, foreground, in the high rainfall area of Florida, using 18 pounds per acre. The photograph, taken 5 months after application, shows the effectiveness of Hyvar on the undesirable growth.

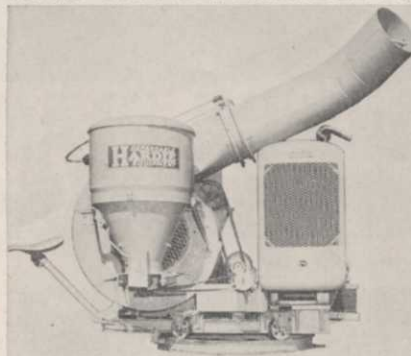
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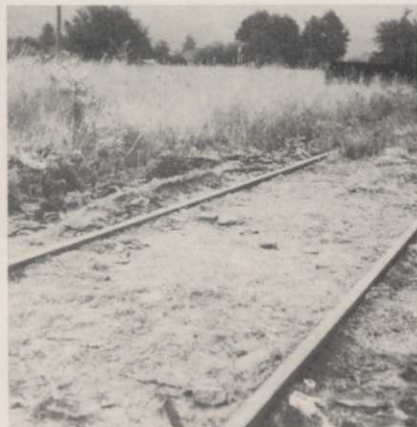
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should use a water volume of 200 to 300 gallons per acre to carry the recommended amount of chemical, especially where hand-operated weed spray guns on hose lines are used. With experience, it will be found that certain jobs require less spray per acre, often as little as 100 gallons per acre and sometimes even less. Smaller volume means smaller nozzles, lower pressures, but of course more accurate calibration and greater care in spraying.

When the equipment is adequate, the proper rate per acre should be determined, and the sprayer should be calibrated to deliver this rate in the spray-



On this track in the state of Washington, Hyvar weed killer was applied at 15 pounds per acre. The photograph was taken 4 months later.

water ratio which is being used. Hyvar weed killer is applied at rates of 4 to 25 pounds per acre, and at least 2 gallons of water are required for each pound of Hyvar. The proper amount of Hyvar for each tank filling should be weighed out carefully.

Apply Early in Growth Season

Field trials indicate that Hyvar can be applied effectively at any time during the period of active growth for the weeds to be eliminated, but kill will be most prompt if application is made during the early part of the growing season. Late season applications are not recommended, when plant growth has hardened off or is dormant.

Tall and dense vegetation should be removed before spraying in order to obtain uniform ground coverage.

Before using Hyvar weed killer, or any other herbicidal chemical, the area and type of vegetation should be examined to determine

whether one chemical should be used alone, or whether conditions indicate a combination of chemicals.

For example, where hard-to-kill grasses grow in combination with woody vines and brambles, other herbicides of known effectiveness for control of woody plants will need to be included in the spray. With many commonly found mixtures of grasses and broadleaved weeds, 50-50 combinations of Hyvar and Karmex diuron weed killer have proved effective.

Furthermore, topography, soil texture, and rainfall enter into the weed control picture. If water moves laterally in the treated area, plants immediately outside the treated area may be affected. Also, trees with only a small part of their root system in soil containing a soil sterilant may be injured or killed.

None of these soil sterilant materials should be used on lawns, walks, driveways, tennis courts, or similar areas. Equipment used for them should not be used for applying any chemicals to desirable vegetation; and care should be used in draining or flushing equipment, to be sure that no tank residues reach the roots of desirable plants, and that no chemicals get into any water supplies.

The areas where Hyvar weed killer and other soil sterilants are suitable include:

Oil industry — refineries, pipelines, tank farms, producing wells. *Railroads* — track, yards, sidings, crossings, bridges, switches, towers. *Industrial plant sites* — parking areas, storage areas, fence lines, sidings. *Roadways* — shoulders, guard rails, bridge abutments, curbs, signposts. *Drainage ditches* — dry ditch bottoms.

Custom applicators have long served some of these markets with pest control programs, disinfectants, or equipment cleaning and maintenance. Vegetation control is a growing segment of the business. Each new chemical herbicide development, such as Hyvar, adds to the specialized service which the custom applicator can provide.

Next month:

**How Chlorea
Herbicides Work**