Meeting Dates

Chemical Marketing Research Association, Annual Meeting, Plaza Hotel, New York, N.Y., May 15-17.

Florida Nurserymen and Growers Association, Annual Convention, Robert Meyer Motor Inn, Orlando, May 25-27.

National Plant Food Institute, Annual Convention, The Greenbrier, White Sulphur Springs, W. Va., June 11-14.

The Hyacinth Control Society, Annual Meeting, Holiday Inn, Fort Myers, Fla., June 18-21.

American Society of Landscape Architects, Annual Conference, Hotel Regency, Atlanta, Ga., June 25-28.

American Association of Nurserymen, Annual Convention, Americana Hotel, Bal Harbour, Fla., July 8-13.

Third National Grassland Field Day and Conference, University of Nebraska, Mead, July 12-14.

Southwestern Fertilizer Conference and Grade Hearing, Annual Meeting, Skirvin Hotel, Oklahoma City, Okla., July 19-21.

Miss Lark Trade Show and Convention, Convention Auditorium, Hot Springs, Ark., Aug. 10-12.

Penn State 1967 Field Day, Pennsylvania State University, University Park, Aug. 16-17.

Nursery and Garden Supply Show, Texas Association of Nurserymen Annual Convention, City Auditorium, Austin, Aug. 20-23.

International Shade Tree Conference, 43rd Annual Convention, Marriott Motor Hotel, Philadelphia, Pa., Aug. 27-31.

American Society for Horticultural Science, Annual Meeting, Texas A. & M. University, College Station, Aug. 27-Sept. 1.

Pacific Northwest Spraymen's Association, Annual Conference, Seattle, Wash., Sept. 15-16.

National Agricultural Chemicals Association, Annual Meeting, Holiday Inn, Palm Springs, Calif., Nov. 5-8.

American Society of Agronomy, Annual Meeting, Sheraton-Park and Shoreham Hotels, Washington, D. C., Nov. 5-10.

Texas Fertilizer Association's 1967 Agricultural Exposition, KoKo Inn, Lubbock, Nov. 9-10.

Systemic Fungicides For Stripe Smut

By J. R. HARDISON

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Recent publicity on stripe smut (*Ustilago striiformis*) in bluegrasses focused attention on an important turf disease. The purpose of this article is to describe encouraging results with systemic chemicals, because effective chemical control will permit continued use of smut-susceptible but otherwise high-quality bluegrass varieties, such as Merion.

The tardy development of suitable chemicals prompted the recent suggestion that the most promising method of controlling stripe smut will be by selection and breeding resistant varieties. Yet, the failure to produce a comparable new variety during the 20 years that Merion bluegrass has been in general use illustrates that bluegrass improvement is a slow process. Although a number of smut-resistant bluegrass selections have been found, great difficulty is encountered in locating smut-resistant plants with all the other desirable turf qualities of existing varieties.

A few promising new varieties have failed to produce sufficient seed for commercial use. Diseases other than stripe smut have ruined certain bluegrass selections and will probably eliminate some additional selections when they are multiplied. Finally, it should be mentioned that resistance to plant diseases is often temporary, particularly with rusts, smuts and mildews, because new races of pathogens arise to attack previously resistant plants. New bluegrass varieties resistant to smut probably will be developed eventually; meanwhile, stripe smut control by new fungicides will enable continued general use of time-proven varieties.

Chemical control of stripe smut is particularly difficult because of the infection of adult plants. Seed treatment has only limited value. Prevention of infection might be possible by a number of protectant-type fungicides. This approach has been unattractive because of the probable need for frequent applications of excessive quantities of chemicals which increase both cost and nuisance.

The best hope for feasible chemical control of stripe smut lies in development of systemic fungicides. Such sophisticated chemicals are absorbed by the plants and eradicate or suppress existing infections. Hopefully, some of these chemicals may also prevent new infections. Testing of systemic chemicals for stripe smut control is now in progress at several state agricultural experiment stations. Additional chemicals can be expected from the chemical industry since the turfgrass market has much to offer. The nonfeed, nonfood classification of turfgrass greatly eases the chemical residue restrictions. In addition, relatively more plant injury can be tolerated in turf. Therefore, a new chemical can be brought to the market for turf much faster than for food or feed crops.

Testing of systemic chemicals for stripe smut control is now a major effort in the regional USDA grass disease project in cooperation with Oregon State University at Corvallis. We are prepared to work with all chemical companies in evaluation of candidate systemic chemicals in the development of new fungicides for stripe smut.

A significant breakthrough in chemotherapy was made during 1966 in the studies at Corvallis. Flag smut (*Urocystis agropyri*), one of two diseases involved in

the turf smut problem, was eradicated within infested plants of Kentucky bluegrass by root absorption of a new systemic chemical, Plantvax, (2,3-dihydro-5-carboxanilido-6-methyl-1, 4-oxathiin-4,4-dioxide), supplied by the United States Rubber Company, Naugatuck, Connecticut. Bluegrass plants growing in soil treated with Plantvax in November 1965 have remained smut-free through February 1967. This chemical has also given long-term control of stripe rust (*Puccinia striiformis*) in bluegrass plants. Plantvax provided fair inhibition of stripe smut in bluegrass plants as was also found in tests at Connecticut. Recently another new systemic fungicide, Demosan, (1,4-dichloro-2,5-dimethoxybenzene), manufactured by the E. I. duPont de Nemours & Company, Wilmington, Delaware, has been found to inhibit stripe smut in infected bluegrass plants by Dr. Ray Lukens in studies at the Connecticut Agricultural Experiment Station.

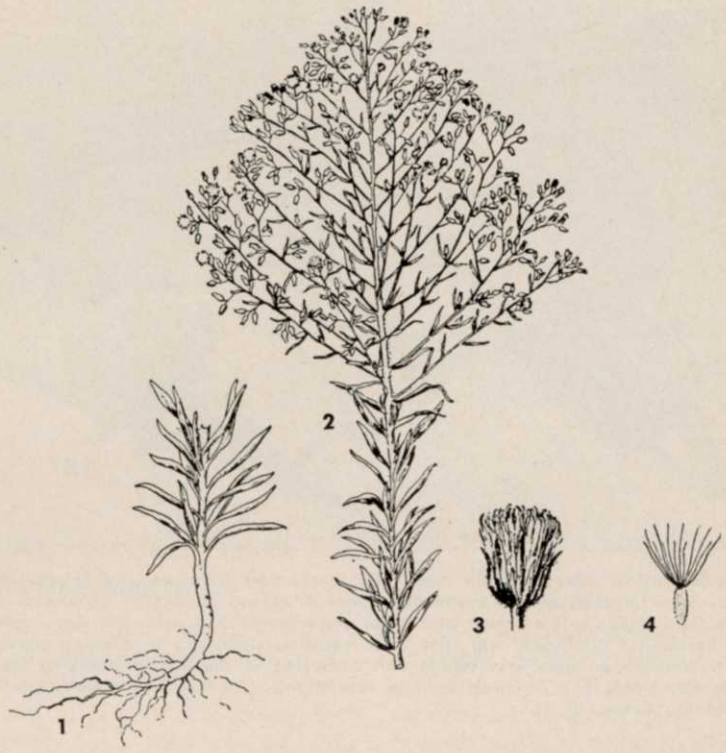
The above results and the current level of chemical testing activity justify optimism that systemic fungicides will become available which will furnish control of stripe smut by inhibition of the fungus. In such fungistatic action the chemical suppresses the fungus within the plant, so that no symptoms of the disease are evident. Although the pathogen may not be killed, the fungus activity is greatly reduced. As a result the plants resume normal growth and thereby escape damage while appearing to be "smut-free." The first systemic chemical products for stripe smut may be of this type, and they will probably furnish effective control for one to several months by a single application. Thus, only a few applications per year should suffice for satisfactory control. At the present rate of progress, however, true eradicant systemic chemicals that will kill the fungus within the plant should also become available.

That promising results on chemical control are being obtained is highly encouraging for continued use of Merion, because most turf experts agree that Merion bluegrass will probably continue to be a favorite turf-

Know Your Species

HORSEWEED

(Erigeron canadensis)



Horseweed is called marestail and is also sometimes known as Canadian fleabane, common fleabane, or bitterweed.

A native plant, horseweed is common throughout North America and grows in waste areas, along roadsides and in pastures. Readily takes over abandoned areas. Thrives mostly on rather dry soils from July through October.

An annual which reproduces by seed, horseweed grows from 1 to 6 feet in height. Leaves are narrow, alternate without petioles, and 1 to 4 inches long, lower leaves sometimes having toothed edges (1). Stems are stout, hairy, erect, and unbranched at the base but with many branches at the top (2). Leaves arranged close together along stem resemble a horse's tail and give plant its common names.

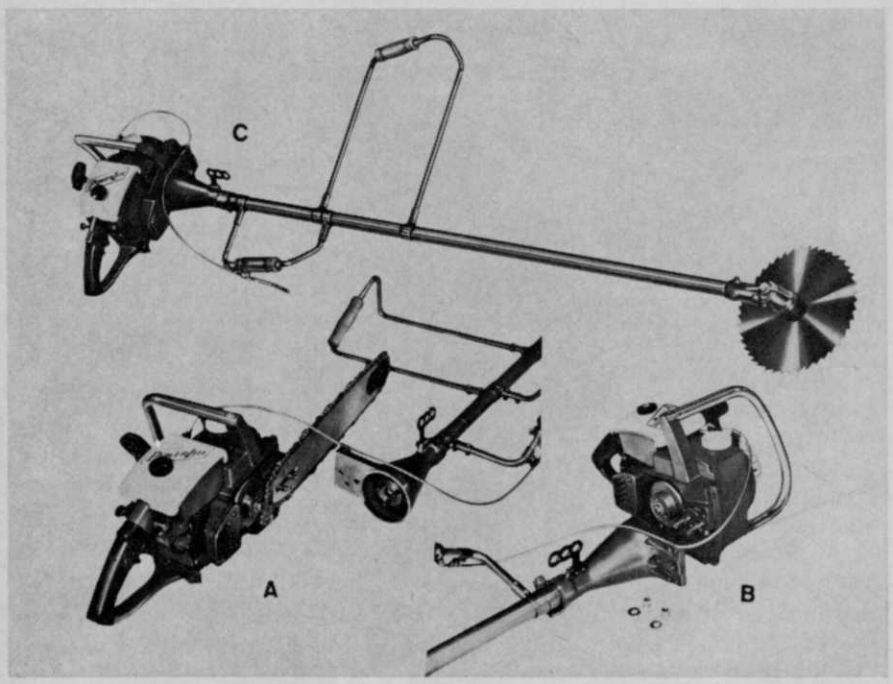
A number of tiny white ray flowers, usually more than 100 per head, are produced by the plant. Yellow disk flowers form a loose head at the top (3). Seeds are slightly curved, and have a number of slender white bristles on one end (4) which permit the wind to carry them. The seed proper is about $\frac{1}{16}$ inch long.

Horseweed is somewhat resistant to 2,4-D but one pound per acre is fairly effective when plants are small and growing rapidly. Higher rates or repeated applications are usually needed for effective kill. Both 2,4,5-T and Silvex at 1 pound per acre rates are more effective than 2,4-D. At a rate of 2 pounds per acre and with repeated applications, 2,4-DB is fairly effective.

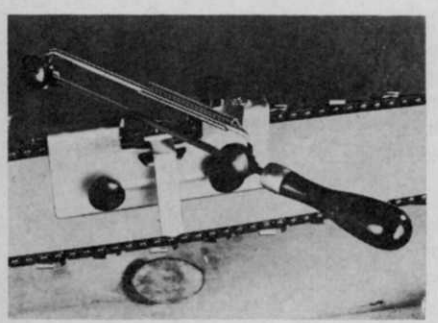
Prepared in cooperation with Crops Research Division, Agricultural Research Service, United States Department of Agriculture, Beltsville, Maryland.

(DRAWING FROM NORTH CENTRAL REGIONAL PUBLICATION NO. 36, USDA EXTENSION SERVICE)

New Products.....

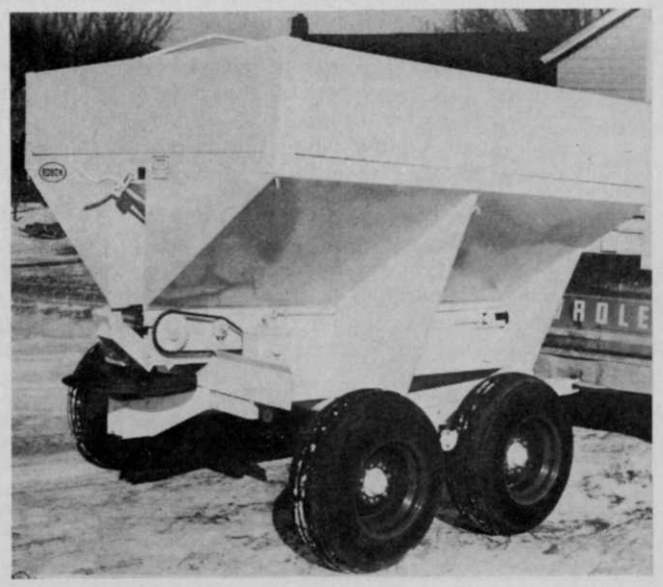


New attachment to convert chain saws into brushcutters introduced by Rowco. (A) Chain saw engine with sprocket cover removed and Rowco Brushking brushcutter attachment in place to engage clutch. (B) Chain saw bar and chain are removed and, with pin drive clutch drum in place, brushcutter attachment will slide onto mounting studs. (C) In minutes, conversion is made to a complete portable brushcutting unit comprised of the Rowco Brushking Model 321 brushcutter attachment and lightweight chain saw engine. Contact Rowco Manufacturing Co., 48 Emerald St., Keene, N. H.



For chain saw users, a simple-to-use sharpener for field or shop without removing the saw chain. Regulates its own height, holds tooth being filed positive, includes positive go-and-no-go guide gauge and adjusts automatically to various chain sizes. Of 100% heavy-gauge steel construction, it provides a v-guide for file holder and includes 7/32 Oberg File. Write Pakard, Inc., 3839 Merle Hay Rd., Des Moines, Ia.

Hawk Bilt/Edson Spreader from Hawk Bilt Manufacturing Corp., Vinton, Ia., features controlled high-volume spreading with simple design and minimum of moving parts. Pull type with 12-gauge stainless steel hopper bottom, the spreader is rated as a 4- to 5-ton unit with 152-cu.-ft. capacity. Full-floating oscillating tandem axle with 2-inch heavy-duty spindles keeps each wheel carrying full share of load, regardless of terrain. Ground-driven 10-inch stainless steel conveyor moves flow of fertilizer.



grass as soon as stripe smut is controlled. Merion produces the dark green, dense turf that is so much desired, is widely adapted, and has good resistance to Helminthoporium leaf and culm rot. Merion has to be considered an outstanding variety, because it has furnished nearly trouble-free turf in many areas for more than 20 years. No other bluegrass variety has this long record of satisfactory performance in extensive use under a wide range of soils, climates, diseases and pests throughout the northern half of the United States.

In summary, recent progress in systemic fungicides as shown by eradication of flag smut by Plantvax, fair inhibition of stripe smut by Plantvax and Demosan, and the intensive search for other systemic chemicals, indicate that a satisfactory chemical control of stripe smut will become available. New plantings of Merion started in 1967 will surely be provided with an effective chemical control during the several years before stripe smut becomes a problem. Such chemicals would also restore older plantings to a smut-free condition.

Sarolex Found Effective Against Florida Nematodes

During four years of testing at the Everglades Agricultural Experiment Station of the University of Florida, a nematocide produced by Geigy Chemical Corp., called Sarolex, was the only one tested which consistently caused no injury to turfgrass and was safe for use on golf greens and home lawns. It is a specially formulated Diazinon compound for soil application for nematode and soil insect control.

Reporting results of the tests, Dr. J. S. Winchester, assistant nematologist with the station, says at a rate of ¾ pint per 1,000 sq. ft. of turf, Sarolex gave good control of sting nematodes and sod webworms on Everglades No. 1 bermuda.

Nematodes responsible for most of the turfgrass injury in the state are sting, root knot, stubby root, and spiral nematodes the scientist says.

At least 65% of the unthrifty