"COPPER SULFATE AND CONTINUAL SAMPLING KEEP ALGAE AT A MINIMUM"

states Alan H. Ketcham,
Superintendent of Supply,
Stamford Water Company,
Stamford, Connecticut

Alan H. Ketcham, Superintendent of Supply and William Bartscht, Watershed Supervisor plan an all-out attack on algae.

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William Bartscht, Watershed Supervisor, continually samples water from the reservoirs and from outlying ponds.

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"Our inspectors who are regularly in every quarter of the property, are constantly on the lookout for algae growth, particularly in remote shallow sections. When necessary, treatment with copper sulfate is directed at these points of algae concentration. We always try to catch algae at the start of growth and treat at once before it has a chance to spread."

"We have sometimes traced algae problems to untreated residential ponds. We find that the average homeowner does not fully comprehend pond management and maintenance so we try to advise him. This is really worthwhile because whenever algae is allowed to grow unchecked there is danger of it getting into the main reservoir, and it is always simpler to treat algae confined to a small pond."

"The men on our inspection team are uniformed, travel in radio-equipped cars and work with Health Department men from two states. Water is constantly sampled and examined microscopically. Copper sulfate purchased in 100 lb. bags is stored at the reservoir itself, ready for use at any time."

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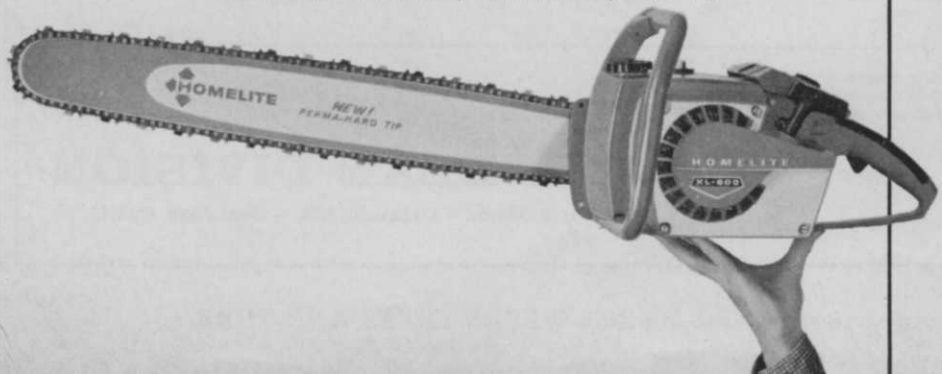

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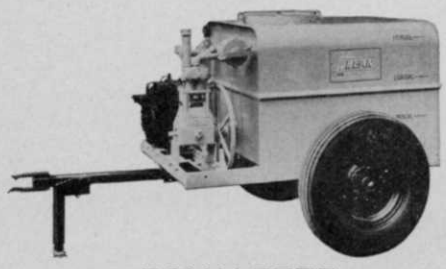

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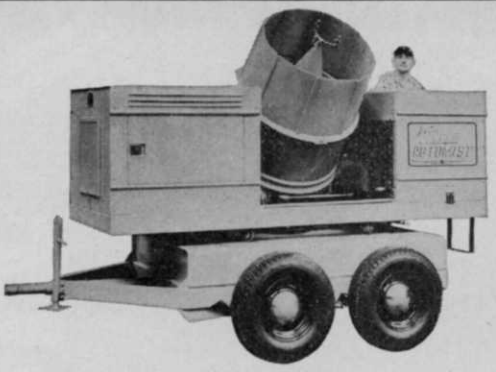

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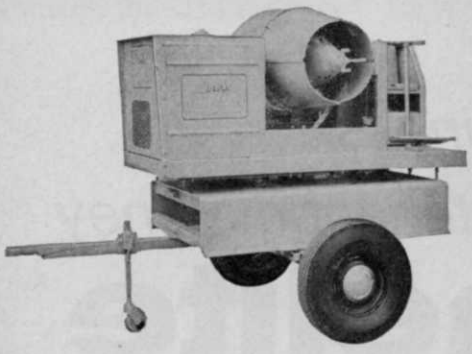

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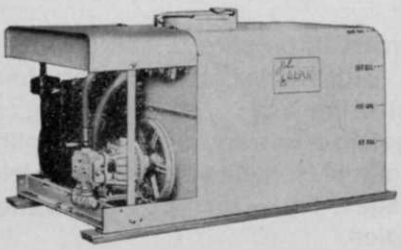

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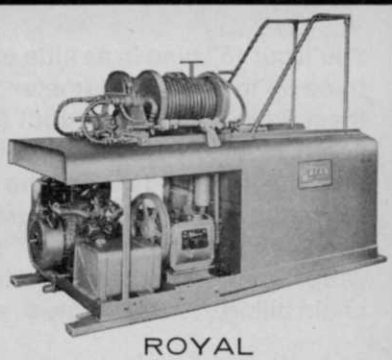

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WEEDS TREES and TURF

FORMERLY WEEDS AND TURF

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Competition and the Labor Supply

Wherever we have traveled in the past year, *WTT* has time and again run into a familiar complaint from small businessmen, whether arborists, or spraymen, or sod growers. We have talked to some operators who, far from expanding, are contracting the size and scope of their own businesses, and others who seem on the verge of giving up.

Their reasons are usually the same regardless of their field: stiff competition and a shortage of trained labor. Isn't competition the American way of business? Of course, the small operator answers, but lately it's become such a cutthroat proposition that many are losing money on a great deal of the work they perform.

And what of help? A small arborist or sprayman may have worked hard to build up a "fleet" of three trucks. But now he can't find the personnel to keep them operating. Often he just hires a man and begins to train him when his employe moves on. What is he to do about this? Hire another? Or, is there another available for the job?

The squeeze is on, and most informed prognosticators say it will get worse before it gets better. Is the small businessman going to be forced out? Perhaps not, if he will only convince himself that it's not enough to be just a good operator. He must also keep careful track of his business expenses. Turn to page 41 and you'll find a Floridian's suggestion that the operator's income may well depend more on what he can save than on how much he can make. This comment was aimed at spraymen, but applies to many others as well.

The small operator has to be competitive, but to do so he must know where to save, and one way is to have adequate equipment. Obsolete equipment that costs too much to operate, or is inadequate for the job and requires more man-hours than a precarious labor situation warrants, is a liability in competition. The cost of mechanizing may be high, but the cost of substituting man-hours for efficient equipment is even higher.

We think this coming year will see more small businessmen turning increasingly to mechanization to stay in the competitive race. We hope that those planning to purchase equipment will match items carefully to their job needs, choosing those that are neither too large nor too small, but suited to increase the efficiency of their operations.

WEEDS TREES AND TURF is the national monthly magazine of urban/industrial vegetation maintenance, including turf management, weed and brush control, and tree care. Readers include "contract applicators," arborists, nurserymen, and supervisory personnel with highway departments, railways, utilities, golf courses, and similar areas where vegetation must be enhanced or controlled. While the editors welcome contributions by qualified freelance writers, unsolicited manuscripts, unaccompanied by stamped, self-addressed envelopes, cannot be returned.

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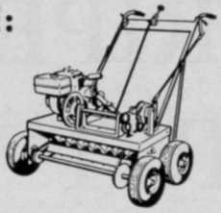

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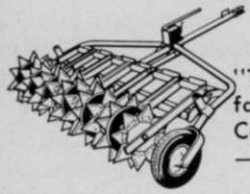

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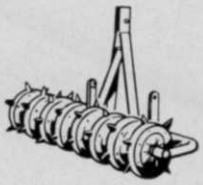

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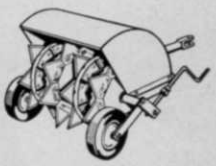

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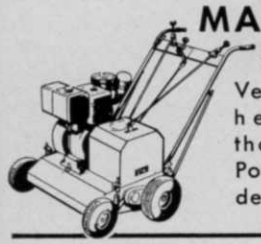

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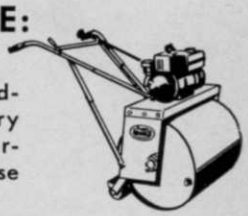

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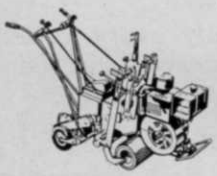

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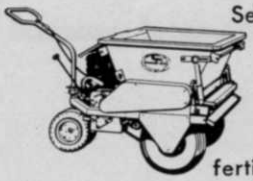

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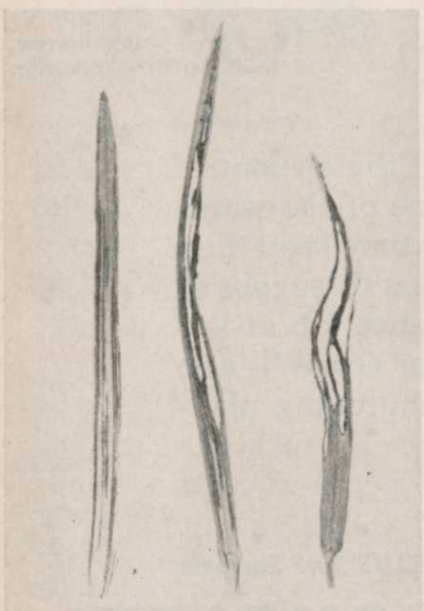
STRIPE SMUT Attacks Merion Bluegrass



Merion bluegrass leaves shown above have been shredded into ribbons by stripe smut.

By
P. M. HALISKY
C. R. FUNK, and
S. BACHELDER
College of Agriculture and
Environmental Science
Rutgers University
New Brunswick, New Jersey

STRIPE SMUT is caused by a fungus *(Ustilago striiformis)* which has become a serious problem in bluegrass in the Northeast. The widespread use of the highly susceptible variety "Merion" has focused attention on the prevalence and destructiveness of this disease in home lawns, golf courses, and industrial turf areas.

In New Jersey, stripe smut is found on bluegrass (*Poa*), bentgrass *(Agrostis)*, orchardgrass *(Dactylis)*, quackgrass *(Agropyron)*, and timothy (*Phleum*). In creeping bentgrass (*Agrostis palustris*) the disease was observed in plots of Seaside and Penncross. Among the bluegrasses, virtually every variety or selection observed was found infected with stripe smut.

Stripes Signal Disease

Stripe smut first appears as long, narrow, grayish stripes on the leaves of grasses. These linear sori normally extend the entire length of the leaf blade. Eventually the leaf tissues rupture along these stripes releasing dark, sooty spore masses and causing the leaves to shred into ribbons. The diseased leaves then curl from the tip downward and the infected plants become ragged, withered, and unthrifty.

In plots of Merion Kentucky bluegrass, infected plants appear in early May as yellowish tufts of stunted, sick-looking grass. During the summer such weakened plants succumb readily to the adverse effects of drought, insects, nematodes, weed competition, or other bluegrass diseases.

Stripe smut is disseminated by

spores which act as "seeds" of the fungus. The spores may be carried on bluegrass seed, in seed hay, or on lawn mowers, and become associated with the soil, in which they remain viable up to one year. The spores germinate and produce hyphae which penetrate the young tillers originating at the nodes of rhizomes.

Following pentration, the fungus mycelium spreads systemically throughout the grass plant including the leaves. As long as an infected plant lives the fungus generates successive crops of smut spores which find their way back into the soil and serve as inoculum for further infection of bluegrass tillers.

Merion Is Most Susceptible

Results of bluegrass evaluation trials conducted at the Rutgers Agricultural Experiment Station indicate considerable variation in the reactions of bluegrasses to stripe smut infection (Table 1). In these trials 3 varieties were found resistant, 3 were susceptible, and one (Merion) was highly susceptible. In some plots Merion produced an average of 2540 tillers per square foot of turf of which 521 (or 20.5%) were infected with smut.

In Merion lawns stripe smut usually appears two to three years after planting and thereafter the incidence of disease progressively increases each year until ultimately the turf is severly damaged. Among bluegrasses, those varieties which produce a dense sod such as Merion, Windsor, and Prato, are generally most susceptible to stripe smut infection. In contrast, varieties with a spreading growth habit such as Dwarf, Pa.K5(47), and Park appear resistant to the disease.

Nitrogen Affects Disease

Nitrogen fertilization is a key management practice in turf production since it is related to vegetative growth, leaf density, and turf color. Claims have been made that aqueous urea as a nitrogen source is effective in reducing stripe smut in Kentucky bluegrass. Results of trials conducted at Rutgers show that both aqueous and granular fertilizers stimulated vegetative growth in early summer, resulting in a temporary lowering of stripe smut in the treated turf. However, by October, all fertilized plots showed significantly higher stripe smut counts than the untreated plots (Table 2).

Table 1. Reaction of Kentucky bluegrass varieties to infection by Stripe smut (Ustilago striiformis)

Variety	No. smutted tillers per square foot	Reaction
Dwarf *	1.1	Resistant
Park	4.2	Resistant
Pa.K5(47) *	4.7	Resistant
Delta	20.0	Susceptible
Newport	37.0	Susceptible
Cougar	46.8	Susceptible
Merion	112.2	Highly Susceptible
LSD at 5%	21.8	--

* Experimental selections not available commercially.

Control Needed

At the present time no effective chemical control measure is known for reducing the incidence of stripe smut in bluegrass turf. Trials conducted at Rutgers with the fungicides nabam and zineb applied as soil drenches were not effective in reducing disease severity.

Several new systemic fungicides are currently being evaluated for their effectiveness in controlling stripe smut in Merion bluegrass. In the interim, however, the best method for smut control appears to be through breeding for disease resistance. A number of promising experimental selections of Kentucky bluegrass presently being tested at Rutgers show good resistance to stripe smut.

Table 2. Effect of nitrogen fertilization on stripe smut incidence in Merion Kentucky bluegrass turf

Nitrogen source [1]	Number smutted tillers per square feet	
	May-June 1965	October 1965
Aqueous fertilizer		
Urea (45-0-0)	26	78
Ammonium Nitrate (33-0-0)	24	80
Control	45	42
LSD at 5%	11	27
Granular fertilizer		
Complete (10-6-4)	10	95
Control	135	35
LSD at 5%	48	32

1. All fertilizers were applied at the rate of one lb. of actual nitrogen per 1000 sq. ft. of turf per application. The granular fertilizer was applied six times during the summer; the aqueous fertilizer once.

WEEDS TREES AND TURF 1967 SUPPLIERS GUIDE

Weeds Trees and Turf presents below its annual Guide to Suppliers of vegetation control chemicals and equipment for use in urban/industrial areas. There is a mixture of common and trade-marked names (indicated by an asterisk*). This has been unavoidable since usage and recommendations of researchers refer to a particular chemical by one or the other, depending upon the newness of the compound, whether its common name is easier to use, or industry acceptance. There will also be some differences of opinion over the inclusion or omission of certain chemicals under particular use categories. Here again confusion exists among reference sources. We have made our choices on the basis of most frequent mention in our surveys which preceded this compilation. Readers' comments and suggestions are invited to help us improve future editions. Keep this year's Guide handy for frequent use.

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