

SOD INDUSTRY SECTION

Bill Johnson Uses Forklifts Equipped With Torque Converter



PRODUCTIVITY has become a key factor in success or failure for many sod producers. With the housing market slowing down substantially, growers are finding that every day land is not in sod, profits are lost.

On the brighter side, however, the Federal Housing Authority now requires sod on all Federal housing projects. This means a high degree of competition among sod growers. Again, productivity will become a key issue.

Sod producers in Michigan experiencing these events are coping with them in a variety of ways. Take the Halmich Sod Nursery in

Bill Johnson, one of the nation's top sod growers with 1800 acres operating as the Halmich Sod Nursery, uses a six-cylinder, 63-horsepower White forklift at his East Lansing outlet. Downtime on the forklift, Bill says, has almost been eliminated. A torque converter on the forklift provides flexibility for clutching involved in the loading proces.

East Lansing, for example. It is one of the largest sod farms in the mid-west. Actually, it's composed of three farms totaling about 1,800 acres.

During the growing season, Halmich will ship eight to ten flatbed truck loads of sod (1,800 yards) daily. Each truck carries sod packed securely on 10-14 wood pallets.

For Halmich, until the beginning of the growing season this year, moving pallets through muck beds to trucks and positioning pallets once on the trucks was a serious problem.

There was no problem securing the sod, because it could be cut and efficiently packed on pallets. But picking the pallets up and then moving them with a forklift to the flatbeds was apparently too much for most forklifts to handle over an extended period of time.

"Our season is short, and we direct sell," says Lyle Young, manager of the East Lansing, Halmich farm

Certified

Manhattan

Turf Type
PERENNIAL RYEGRASS

Manhattan perennial ryegrass was selected and developed by Dr. C. Reed Funk, Rutgers University. Manhattan develops a uniform dark green, leafy, dense turf with leaf blades finer than most Kentucky bluegrasses. Excellent for hard use areas such as tees, green aprons, cart path flare areas and hard use problem areas. Mowability ratings are excellent.

■ Exclusive Marketing Agent
 CERTIFIED MANHATTAN IS GROWN BY THE
MANHATTAN RYEGRASS GROWERS ASSOCIATION
 P. O. Box 145 • Hubbard, Ore. 97032

52 Leslie St. • Buffalo, N. Y. • 14240



Manhattan blends well with other grasses. Here it is combined with Bluegrass.



Manhattan is outstanding for hard use areas. Cartpath flare area reseeded with Manhattan perennial ryegrass.

It's Kid Proof!

Manhattan's fine texture is illustrated in this comparison.

Left: FINE LEAF FESCUE
Center: MANHATTAN PERENNIAL RYEGRASS
Right: KENTUCKY BLUE GRASS

and 12-year veteran of the business. "Every yard of sod is cut to order. We can't afford the downtime of repairing forklifts or inefficiencies of forklifts that can't move through the beds."

One of the biggest problems on many Michigan sod farms is flotation of equipment — including forklifts — on the decomposed and decayed roots underlying the fertile, rich muck soil.

"When pallets are lifted and loaded on to flatbeds, a tremendous amount of clutching is required," adds Young. "There is slippage, particularly during the truck loading process, and without a torque converter, for example, a drive train might be lucky to last a month."

During the growing season, the pallet loading process might be in operation 10-12 hours a day or a total of 800 hours during a normal growing year. Without a forklift of the capacity and stability to get the job done, a sod farm might easily revert back to a swamp.

At the Halmich Sod Nursery, the answer was found in a two-wheel-drive, 63 horsepower forklift from Paty's, Inc., and built by Construction Equipment Division of White Motor Corporation. "It helps keep the nursery producing at capacity," said Young. "With a six-cylinder engine, we knew that the forklift was not under-powered and could be called upon to handle anything we might 'dig up' for it."

Bluegrass Insecticide Study Progress Report Presented

Insecticide use failed to stop development of brown seed heads in bluegrass seed fields during 1973 University of Idaho trials.

That was one of the findings in a preliminary progress report by Roland Portman, UI state entomologist who headed up the insecticide trials.

Insecticides used were Furadan, Dylor, Meta-Systox-R, Orthene, Dursban and Cygon. Two application rates were used—one half and one pound actual material in about 80 gallons of water per acre.

The first treatment was made April 18. A second set of plots was treated May 5.

Counts of brown seed heads, made June 12, revealed insecticide treatments failed to prevent brown seed heads. Sixteen of the 48 treated plots had more brown heads than did adjacent untreated field areas.

At this point, cause of the blank

brown head condition in bluegrass seed fields is unknown.

The condition is characterized by a withered stem above the top node and a brown blank seed head. Brown seeds heads occur more often in fields of common bluegrass than in fields of patented bluegrass varieties.

Another condition, although not serious in Idaho but found in the state, can also reduce bluegrass seed yields.

It is silvertop, caused by grass bug and grass thrips feeding.

Grass bug-caused silvertop is accompanied by a beak puncture through the seed stem sheath leaf into the seed stem. The stem above this feeding puncture is withered and distorted. The seed head is a silver color.

Grass thrips, found throughout Idaho, enter the upper sheath and feed on the developing spikelets while grass is in the boot stage. The pedicel and florets beyond the feeding injury turn silver or white. These florets are seedless.

The economics of silvertop injury has not yet been evaluated in Idaho.

Portman said that in an associated study dealing with insect and bluegrass seed production relationships, post-harvest burning of seed fields killed almost all insects. Surviving the burning were larvae of wireworms, sod webworms and some cutworms—all soil inhabitants.

Grass sod core samples collected in burned bluegrass seed fields from March until mid-April showed an absence of insects. Sample from the roadside showed ants, thrips, weevils, springtails, plant bugs, cutworms and leafhoppers were present.

Sweeping samples taken in mid-April showed that leafhoppers had moved back into the seed fields.

Grass Production Practices Urged To Reduce Pollution

Ensign called on plant breeders and seedsmen to look for grass varieties which have low burn requirements. "Hopefully, some may exist," he said.

Some growers are increasing width between drilled rows beyond 12-14 inches at seeding time. Under some conditions this may sustain seed yields in a short term rotation better than the closer spacing, the plant breeder stated. Thus, thatch build-up is not as rapid.

It was suggested growers burn residue from bluegrass seed fields

during early August. Ensign reasoned that this is the time when residues are usually driest, combustion levels are high and the expected pollution index lowest. However, burning may have to be delayed if conditions are hazardous for nearby fields and forests.

Another reason for early burning is that resulting seed yields are higher than for late burning.

A University of Idaho plant breeder has suggested ways to reduce air pollution caused by burning fields in the production of grass seed.

Dr. R. D. Ensign told the Intermountain Grass Seed Growers in January that one way might be to burn fields every other year where grass varieties permit. He noted that some varieties "need burning more than others to sustain yields."

Short term bluegrass stands, those from four to five years old, may not need annual burning which is required to get rid of heavy thatch in older stands, he said.

New Chemical Promises Control Of Johnsongrass

showed that glyphosate leaves no soil residue. The research found that:—To be most effective, glyphosate should be applied in mid-summer when Johnsongrass plants are fully mature. Temperature is a fairly critical factor; best results occur when spray applications are made in a temperature range of 60 to 80 degrees F.

Roundup has not been registered for use by EPA.

Agricultural research workers at two Middle Atlantic agricultural experiment stations have achieved still another calibration mark for zeroing in on an effective control program for Johnsongrass.

At the fourteenth national meeting of the Weed Science Society of America, Dr. James V. Parochetti, associate professor of agronomy at the University of Maryland, reported on promising results obtained in a 3-year study with glyphosate (Roundup), an experimental foliar systemic herbicide.

Studies were concentrated on the Eastern Shore areas of both Maryland and Virginia in cooperation with Dr. Gordon W. Burt, fellow agronomist at the University of Maryland, and Dr. H. P. Wilson, plant physiologist for the Eastern Shore branch of the Virginia Truck and Ornamentals Research Station at Painter, Va.

Results of the research effort



Meet two hard-working turf-care specialists. Art Marston. And the F133.

Art knows a good five-gang mower when he sees it. He has to know because he's an independent businessman with Northwest Mower, Inc. in Seattle, Washington. So when he recommends the Jacobsen F133, you know he's done his homework. And, like the rest of us Jacobsen Distributors, his recommendation is backed by some pretty solid thinking.

To start with, this husky F133 mowing tractor cruises through those big, tough mowing areas at up to 6 mph. It cuts a wide, 11' swath. What this means is that one man and an F133 can mow 40 to 50 acres in a single 8-hour day.

Where? Schools. Parks. Cemeteries. Golf courses. Apartment complexes. Industrial sites. You name it.

Not only that, it always makes a smooth cut, even on slopes. Follow-up trimming with a hand mower is minimized because it can get into tight places for close mowing. Like around bushes, trees and buildings.

It's also got a lot of features that keep the guy happy who has to use it. Like a bucket seat, foot controlled hydrostatic drive, variable cutting frequencies, and the new, optional hydraulic system that lifts all the reels at once for transport. And, for getting into tighter cutting areas it can be quickly converted into a three-gang mower.

So talk to your Jacobsen Distributor about how to tackle those big mowing jobs. You can bet that his answers will match your questions.

Your Jacobsen Distributors.

Before we sell it, we buy it.

For the name of the distributor near you write: Jacobsen Turf Directory, 1721 Packard Avenue, Racine, Wisconsin 53403

Circle 154 on Reply Card

For More Details Circle (154) on Reply Card

Industry Spokesmen Discuss Pesticide Law

"The biggest problem we'll have in this industry is understanding and not implementing the new pesticide law."

That is the summary statement by Dr. Charles E. Rieck of the University of Kentucky at Lexington, Ky., highlighted in a presentation of the Federal Environmental Pesticide Control Act (FEPCA) of 1972 during the Southern Weed Science Society.

FEPCA, now known as the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), with amendments is scheduled for final Implementation in the fall of 1976. It is the Federal act that controls the handling, distribution, use and registration of pesticides and applicators, both commercial and private, that apply these agriculture chemicals.

James A. Sample, editor of WEEDS TREES AND TURF, explained that "as concerned professionals we must consider carefully the trade-offs available between environmental and human health, weed control and pesticide exposure and others. The choice of material by the applicator must be based on



James A. Sample (left), editor of WEEDS, TREES and TURF, discusses the Federal Environmental Pesticide Control Act of 1972 with Thomas A. Evans, and John Lenard, technical representatives for E. I. DuPont and Chemagro chemical companies, at the Southern Weed Science Society.

evaluation of the benefit to hazard, not solely on the basis of toxicity."

At the present time, the Federal government is attempting to establish a restricted chemical list of pesticides that are deemed "dangerous" solely on the basis of toxicity ratings. Some state regulations have gone beyond the Federal search and established restricted use lists—North Carolina, for example.

The restricted list, a consistent labelling section, applicator licensing and provisions for law enforcement are key measures in the FIFRA legislation. It is also the areas for some confusion by the various states represented at SWSS.

Industry spokesmen, Thomas M. Evans and John Lenard, technical representatives for E. I. DuPont and Chemagro chemical companies, respectively, presented views for North Carolina and Louisiana.

Evans noted that while most states will seemingly go along with the Federal standards others will move faster in the implementation. Such is the case for North Carolina. While the USDA will require applicators to be trained and licensed by 1976, the NC State law requires the same permission by October of 1974.

Lenard also noted that while many states will be and have set up numerous Pesticide Advisory Boards the manpower and budget requirements for licensing and enforcement will always be on the increase. In Louisiana, for example, the budget for 1977 is allocated for over \$866,000 and a total of 44 employees. This compares to less than 10 employees in the state for 1974 and half the budget.

Sample pointed out that the initial phases of FIFRA will largely be voluntary. Particularly so in the training and preparation for licensing. But, Dr. Rieck pointed out that such voluntary provisions of the new law are actually few and that most parts are open to forced compliance.

"But, until we figure out how to economically enforce the law," said Dr. Rieck, "it will have to be a voluntary system. I have no doubt but what the Federal government will figure out how to do that, too."

Thus, Dr. Rieck urged the more than 1,000 weed scientists, extension personnel and agrichemicals representatives present at the SWSS meeting to carefully review the FIFRA law and gain a better understanding and while there is still time.

Chemical Composition of Trade Names Studied

A federal agency and a private firm in Philadelphia are cooperating in a research project to identify specific chemicals to which American workers are exposed.

The National Institute for Occupational Safety and Health (NIOSH) has contracted with Auerbach Associates, Inc. for a 20-month study of up to 40,000 trade name products made by some 5,000 manufacturers.

These trade name products were identified by NIOSH as part of its National Occupational Hazard Survey, a two-year study designed to collect information relating biological, physical and chemical exposures to workers in industry.

**KILL GOPHERS
FAST!**

**GOPHER
GETTER JR.**



Eradicates gophers in small acreages fast—economically. Light weight, easy-to-use, poison bait is automatically dispensed underground into pocket gopher runways.



rue r. ELSTON Co., Inc.
815 East 79th Street
Minneapolis, Minnesota 55420

We're more than middle-of-the-road.



The best automatic sprinkler systems... for the least problems.

Whether you're irrigating a median strip or a National Park, TORO can meet your specifications. And then some.

OUT OF SIGHT, OUT OF MIND TORO heads pop up higher than most . . . then pop down below ground surface to prevent vandalism and accidental damage. Nozzles are mounted on a stainless steel spring so there's never a hang-up.

NO WASTE, NO WORRY Our Stream Rotor head's low precipitation rate stops run-off, even on steep road banks. But that solves just one of your problems. TORO offers 586 different head variations to handle the others. Right

now we're developing a 12" pop-up to rise above ice plant problems.

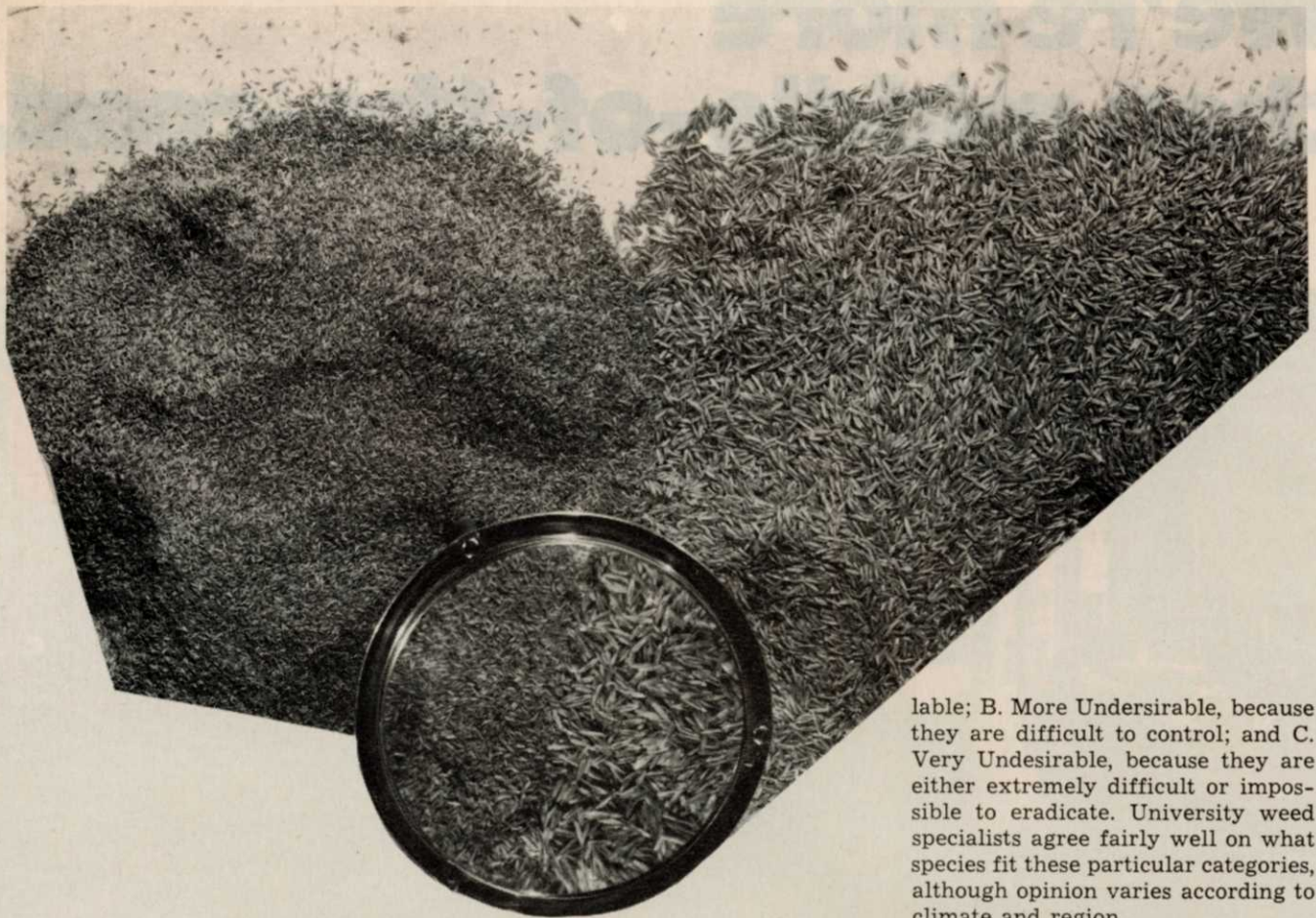
THE STRONG, SILENT TYPE TORO heads are made of tough, indestructible Marbon CYCOLAC.[®] Self-contained gear assemblies of DuPont DELRIN are sealed in oil for less wear and tear and the nozzle is protected by a basket filter. TORO heads operate silently. So with one setting on a central controller dial, you can program a TORO system to go on automatically long after your maintenance crew's gone home.

AT YOUR SERVICE TORO's nationwide network of distributors and contractor/installers is available whenever, wherever you need them . . . with no two or three week delays. And they're backed by 50 years' experience in the turf care business. So next time you're looking for the most system for your money, be specific. Specify TORO. For details, write TORO Irrigation Division, Dept. W-374, P.O. Box 489, Riverside, CA 92502.



The Vari-Time 4000 Controller operates your whole system automatically for up to 14 days.

For More Details Circle (146) on Reply Card



Turf Contaminants

By DALE E. KERN
Seed Technology

As a commercial seed testing laboratory, Seed Technology has been intimately involved in lawnseed testing, its specialty, for over two decades. We have accumulated records until they "run out of our ears" on what foreign seeds are contained in the bluegrasses, fine fescues, bentgrasses, and turf-type perennial ryegrasses. These seeds end up in a sod field, on golf courses, and in homeowner front yards wherever cool season grasses are planted in North America.

Some species are serious lawn pests, — but they may or may not be "weeds" by legal definition (oftentimes "crop" is far more "weedy" than are weeds). Others are of little consequence, because they are squeezed out of a turf by any well-adapted turfgrass. Still others make themselves quite a nuisance, but can be controlled inexpensively, and with rather little effort.

We don't hold things like dande-

lion and plantain to be too serious, even if they are among the most ubiquitous lawn weeds, because they are so easily eliminated selectively with inexpensive herbicides such as Trimec. A few are almost never carried in lawnseed (at least in the seed which is produced domestically), — rough bluegrass, *Poa trivialis*, for example. *Poa trivialis* can be a real hazard in a rainy year if it ever gets started in the sod (as Dr. Bob Newman reports for Wisconsin in 1973).

We are almost drowning in a sea of data (records accumulated from thousands upon thousands of official tests), but a logical way of pulling something together for the benefit of the sod grower, golf course superintendent, and the homeowner is not easy.

The first thing we must attempt is a rough assemblage of those species which are: A. Not too much of a problem, because they are control-

lable; B. More Undesirable, because they are difficult to control; and C. Very Undesirable, because they are either extremely difficult or impossible to eradicate. University weed specialists agree fairly well on what species fit these particular categories, although opinion varies according to climate and region.

Because some of the off-types seeds are found in a large percentage of the seed lots entering commerce, perhaps they should be considered more serious than others which show up only occasionally, and are represented by only a few seeds when they do occur. This is a rather unpleasant complication, for which we have no ready solution (say some mathematical formula for "seriousness," which might weigh both frequency of occurrence and abundance when found.).

Yet, one could equally well argue that even one seed of a Class C species is too much, even though seed lots containing it show up only rarely. There is really no alternative for a professional turf grower but to have each lot of seed that he is planting given a complete analysis for all contaminants. This service is, of course, the function of Seed Technology, and our commercial *raison detre*.

We maintain lists of contaminants likely to occur in various kinds of seeds produced in various regions. And we know the regions where the seed is offered and just which seeds are the cause for greatest concern. In a general way let's take a look at how the situation shapes up regionally, drawing upon the expertise of

(continued on page 78)



Now Velsicol spans your vegetation control program

Six New BANVEL® Pre-Mix Combination Added To The BANVEL® Herbicide Line.

Banvel pre-mix combinations containing 2,4-D and 2,4,5-T are available in either oil or water soluble formations, lets you eliminate *selectively* tough brush, vines and broadleaf weeds that other herbicides often miss.

With this choice, the herbicide can be matched to type of vegetation, season, location, soil type, topography, environment, and other considerations. See your Velsicol representative or herbicide applicator for details.

Why Banvel is the 3 E's Herbicide

EFFICACY—BANVEL herbicide is systemic—it translocates throughout the entire plant killing leaves, stems and roots. Broad-spectrum BANVEL gets the hard-to-kill vegetation.

ECONOMY—Long-lasting BANVEL herbicide offers low cost. Often one application per season is all that is required for weed and vine control. Brush can be controlled for several

growing seasons, with a 3- to 5-year root kill.

ECOLOGY—BANVEL has relatively short persistence in the soil. It has established tolerances for many food crops and milk. BANVEL is not harmful to animals eating foliage.

For information, fill in blanks below.

I am interested in controlling _____ on _____
(vegetation) (place)

Please send sample labels and
information to:

Name _____

Title _____

Company _____

Street or Box _____

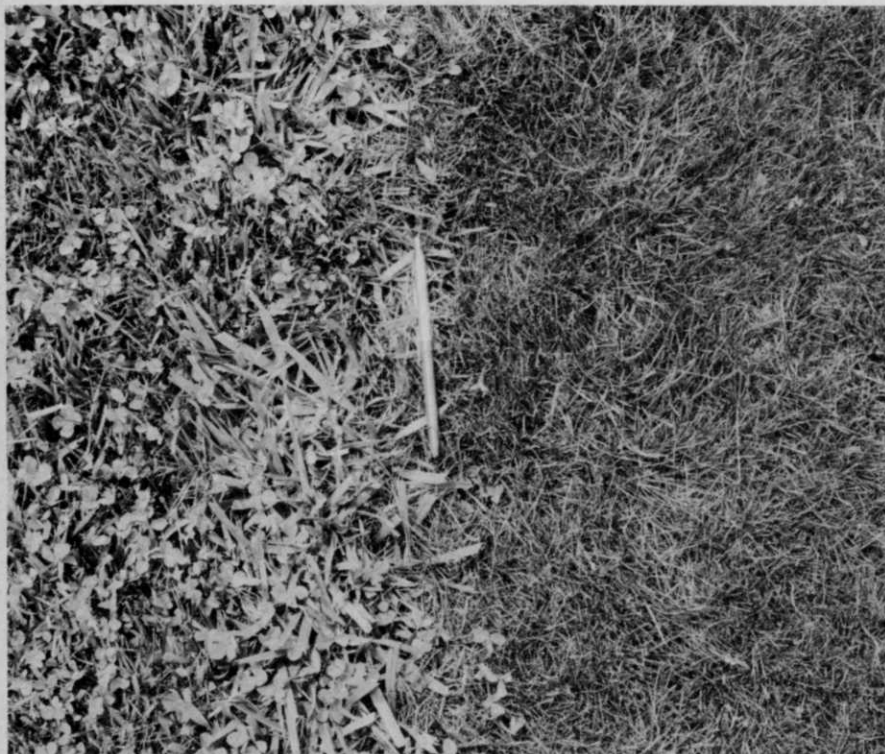
City _____ State _____ Zip _____

VELSICOL

Interested in Your Success
A Subsidiary of Northwest Industries, Inc.

Velsicol Chemical Corporation
341 East Ohio Street
Chicago, Illinois 60611

For More Details Circle (175) on Reply Card



Look at the difference choice of seed can make. At above right, top quality seed free of undesirable inclusions has been sown. At left, a variety of troublesome weeds have appeared.

TURF CONTAMINANTS

(from page 76)

weed specialists at leading universities. (See Box)

CLASS A SPECIES — CONTROLLABLE

About thirty-five species seemed worthy of listing in this category, as being common or fairly common in commercial turf seed. We realize that a goodly number occur infrequently in certain kinds of seed, and may not even be a problem in some areas. Typical of this group of contaminants which compete poorly with turfgrass, or which are easily controlled with readily available herbicides are: Carpetweed *Mollugo*

verticillata, chickweed *Stellaria media*, dandelion *Taraxacum officinale*, knotweed *Polygonum aviculare*, plantain *Plantago spp.*, purslane *Portulaca spp.*, Shepherd's purse *Capsella bursa-pastoris*, and several annual grasses.

CLASS B SPECIES — MORE UNDESIRABLE

Here are some of the weeds which are more persistent or have other objectionable features. Obviously there is no hard-and-fast separation from Class A species, and what may be a problem in one region may be a nuisance at most in another. Tenacious species such as white clover *Trifolium repens*, goosegrass *Eleu-*

sine indica, puncturevine *Tribulus terrestris*, sandbur *Cenchrus spp.*, Canada thistle *Cirsium arvense*, and wild onions *Allium spp.*, are typical problem pests that are sometimes spread through lawnseed.

CLASS C SPECIES — VERY UNDESIRABLE

This group includes many of the perennial haygrass "crop" plants, and a few of the respected lawngrass species (such as volunteer *Agrostis spp.* if introduced where unwanted). Some, such as bermudagrass, may be serious in the border states, but not in more northerly states where it will winterkill. Most are Monocots not susceptible to selective elimination with familiar phenoxy formulations. Several are widely recognized agricultural weeds including nut-sedge *Cyperus spp.*, quackgrass *Agropyron repens*, and familiar pasture perennials such as brome grass, tall fescue, orchardgrass, redtop, and timothy. Perhaps a few dicots, such as speedwell *Veronica spp.*, should be included here rather than in Class B.

Here, in very brief review then, are what the pros tell us are the major lawn weeds and problems for their regions:

Northeast: In New Jersey, Dr. Engle observed that many familiar lawn weeds are a "problem," even though controllable, commonly from residual seed in the soil. Chickweed, cinquefoil, clover, crabgrass, dandelion, dock, goosegrass, ground ivy, heal all, horsenettle, knotweed, black medic, wild onion, oxalis, plantain, sheep's sorrel, sowthistle, spurge, violet, and yarrow are such nuisances, even if only Class A or B.

Bermudagrass can be a serious problem in middle Atlantic latitudes. So are cool season grasses such as annual bluegrass, bentgrass, tall fescue, nimblewill, orchardgrass, quackgrass, and velvetgrass. The sedges and speedwell might merit a Class C rating.

Dr. Skogley, in Rhode Island, feels there has been over-reaction about annual bluegrass and Canada bluegrass, which he considers infrequently serious in lawnseed. Dr. Jagschitz concurs that goosegrass is quite a problem, very difficult to control (particularly in "sensitive" turf such as bentgrass). But he has faith in modern measures for handling most of the above-cited weeds.

Dr. Troll, for Massachusetts, would add crabgrass, ground ivy, and oxalis to goosegrass, as the most serious lawn pests, — all typically adventive in the soil. He agrees that the coarse perennial grasses, as well as sedges

(continued on page 80)

Everyone In The Act

The Lawn Institute suggested sending our rough lists of contaminants to the University of Massachusetts, University of Massachusetts, University of Rhode Island, Cornell University, Pennsylvania State University, and Rutgers University for the Northeast; Ohio State University, Michigan State University, University of Wisconsin, University of Minnesota and Iowa State University for the upper Midwest; Purdue University, and University of Illinois for the lower Midwest; Vir-

ginia Polytechnic Institute and the University of Missouri for the border states; Kansas State University, Oklahoma State University of Colorado for the Plains environment; and the University of California for the Far West. Bingham, Daniel, Engle, Fults, Hodges, Jagschitz, Keen, Martin, Newman, Payne, Troll and Youngner, many of whom have consulted with other colleagues. We are especially grateful for their helpful comments, some of which are referred to in this review.

**The
COST
CUTTER**



W. G. "Buck" Siler, who is pro and owner of Longview Golf Club, in the Guilford College section of Greensboro, N.C., says

"So far, this old Yazoo has saved me \$28,000 in payroll"

"I bought it ten years ago; it replaced a 42" belly-slung tractor.

"I was using two hand mowers trimming continuously during the season. After I got the Yazoo, we had one hand mower trimming two to three hours a week. I was able to save one man and put the other to work on spot seeding, repairing eroded spots, maintaining traps and manicuring the fringes of greens. The course looks a lot better because the work doesn't pile up.

"The trimming ability of this mower is remarkable. It can mow a 360-degree turn around the trees, without scoring the bark, as we did

with the belly-slung mowers. We use it to trim 90% of the lake banks.

"In 1969 I replaced a flail with a second YR-60. Switching to the two Yazoos is saving me \$5,600 a year in payroll. They also free the regular men to do jobs that used to get neglected. Mowing doesn't dominate our time the way it used to."

The YR-60 will cut up to 18 acres a day. A Yazoo will mow under shrubs. Under guard rails. Around poles in one pass. Along walls. In and out of ditches. In high grass or low. You don't follow up with a trim mower and another man.

The reason: it's designed around the Yazoo Transaxle, the only power train specifically designed for mowing operations.

Now in 76-inch, 60-inch, 48-inch, 42-inch and 36-inch cuts. Original cost is about half of comparable machines. Call or write; we'll arrange a demonstration on your home turf.

YAZOO

MANUFACTURING COMPANY

P.O. Box 4207 / 3607 Livingston Road / Jackson, Mississippi 39216

MAKERS OF THE ORIGINAL BIG-WHEEL MOWERS



When sowing a lawn, weeds like these (above) are certainly non-grata. Many come from residual seed in the soil. They can be pruned when good, weed free seed of modern cultivators is planted.

TURF CONTAMINANTS

(from page 78)

and speedwell, are especially injurious in the lawn and worthy of a C rating. Troll marks 26 of the controllable weeds (Classes A and B) of our talley as being introduced through lawnseed, at least occasionally.

Midwest and Border States: The situation in the upper midwest is not greatly different than in the northeast. Dr. Newman, Wisconsin, says that, unexpectedly, *Alopecurus aequalis* (a foxtail), a water-loving species, was quite a problem during 1973. *Poa trivialis*, also thriving on moisture, has been an even worse pest in sod. In Wisconsin most sod is grown on muck soil, where pre-emergence preventers don't work well.

Dr. Daniel, Indiana, lists the same coarse grasses and sedges as occur in the Northeast as being among the most pernicious, certainly Class C candidates. In the southern Midwest bermudagrass and even dallisgrass join the group (though neither survives in the northern Midwest). Nor does Daniel think kindly about *Poa annua*. Barnyardgrass, crabgrass, goosegrass, and *Setaria* foxtail are universal pests, controllable but troublesome.

In the border states lawn weeds become more diverse, and often harder to control (crabgrass, for example). Dr. Bingham says that in Virginia goosegrass, ground ivy and sandbur *Cenchrus* can be controlled, but not easily. He'd go along with

Class C weeds troublesome farther north.

Plains States: In the prairie environment the weed cast changes, though irrigation brings in weeds typical of more humid climates. Dr. Keen, Kansas, finds clover, henbit, knotweed, and violet fairly troublesome, wild onion, very bothersome. On the other hand, bentgrasses are not much of a problem, nor most of the coarse perennial pasture grasses. It seems to add up to fewer Class C problems in Kansas.

In Colorado, Dr. Fults finds bentgrass, dandelion, tall fescue, orchardgrass, quickgrass, and spurge to be weeds of major importance. Though persistent, some of them are, of course, controllable, and then Class B rather than C. Some weeds causing difficulty in the east are of little or no importance, — dallisgrass, oxalis, wild onion, violet, even sedges and *Panicum* witchgrass. He notes that a lot of grama *Bouteloua* crops up in lawns in southern Colorado, a prairie species seldom encountered in the east. Surprisingly, puncturevine *Tribulus* is only slightly important, are as nimblewill and bermudagrass. Bromes, chickweed, clover, crabgrass, ryegrass, sandbur, yarrow and some of the other weeds rating Class C farther east are only "moderately important."

Far West: Dr. Youngner, California, seconds the nomination of difficult eastern pests (goosegrass and dallisgrass, for example), and adds a few notorious local examples as well: dichondra and pennywort *Hydrocotyle*.

Of course in California some of the "weed" grasses are also used as lawngrasses, — common bermuda and tall fescue. The eastern haygrass species such as orchardgrass and brome grass are not serious in lawns in California. Velvetgrass is quite difficult, but not too commonly met with.

Prostrate spurge is vicious, as may be bur clover *Medicago hispida*. Occasionally *Poa trivialis* is noted as a contaminant in some seed lots. Fortunately, nimblewill is seldom met with. Kikuyugrass *Pennisetum clandestinum*, a tropical introduction, is nearly uncontrollable where it gets started, though hardly a lawnseed problem. □

European Eupip. Dealers See Mfg. Plant, Sod, Turf

Fifty-two European turf maintenance equipment dealers toured a sod farm, two high school athletic fields and the Ryan Equipment Company manufacturing plant in St. Paul, Minn.

The two-day field trip was hosted by Ryan officials in cooperation with Orag Inter Ltd. of Baden, Switzerland. Orag Inter Ltd., one of 19 Ryan distributors operating in Europe, arranges similar tours to the United States every two years for its dealers and their wives.

The visitors from France and Switzerland represented turf maintenance markets including landscaping, retail sales and golf course maintenance. The dealers were in greater St. Paul in mid-October. They were accompanied by James B. Briggs, group vice-president of non-marine products with Outboard Marine Corporation; Vaughn E. Border, director of marketing with OMC-Lincoln; Vern Worrel, general manager of Cushman and Ryan turf maintenance equipment; and Russell Rose, a district sales manager.

On the first day, dealers toured the Label Lawn sod farm in nearby Lake Elmo, Minn. Label Lawn covers more than 600 acres and is one of the largest sod farms in Minnesota. The dealers also visited athletic fields in neighboring White Bear Lake and Anoka, Minn. Both fields are undergoing a five-year experimental turf maintenance program co-sponsored by Ryan.

The educational trip ended with a visit to the Ryan manufacturing facility. The plant manufactures turf maintenance equipment and employs more than 100 persons.