Bluegrass Perils, All-in-One Sod Harvester Shown at Rutgers Sod and Research Field Days, June 20-22

The sod industry's greatest needs are for improved disease-resistant turfgrasses and new harvesting and production equipment, turfmen were told at the Rutgers Sod Producers Field Day, June 22. More than 100 turf specialists toured Rutgers research plots and saw equipment demonstrated at Princeton Turf Farm's Croshaw Farm, Hightstown, N. J. Sponsored by the Cooperative Extension Service, Rutgers University, New Brunswick, N. J., and the Cultivated Sod Association of New Jersey, the sod producers day climaxed three days of lawn and turf activities at Rutgers.

New grass varieties may soon be available to the sod grower. Dr. C. Reed Funk, research specialist in turfgrass breeding and selection at Rutgers, cautioned that new varieties would probably be expensive. "Almost inevitably, when we select for good turf potential we get poor seed potential," the Rutgers expert noted. "Nevertheless," he continued, "though their cost is greater than Merion bluegrass, some experimental varieties could be adapted for use by the sod industry."

Stripe Smut Attacks Merion

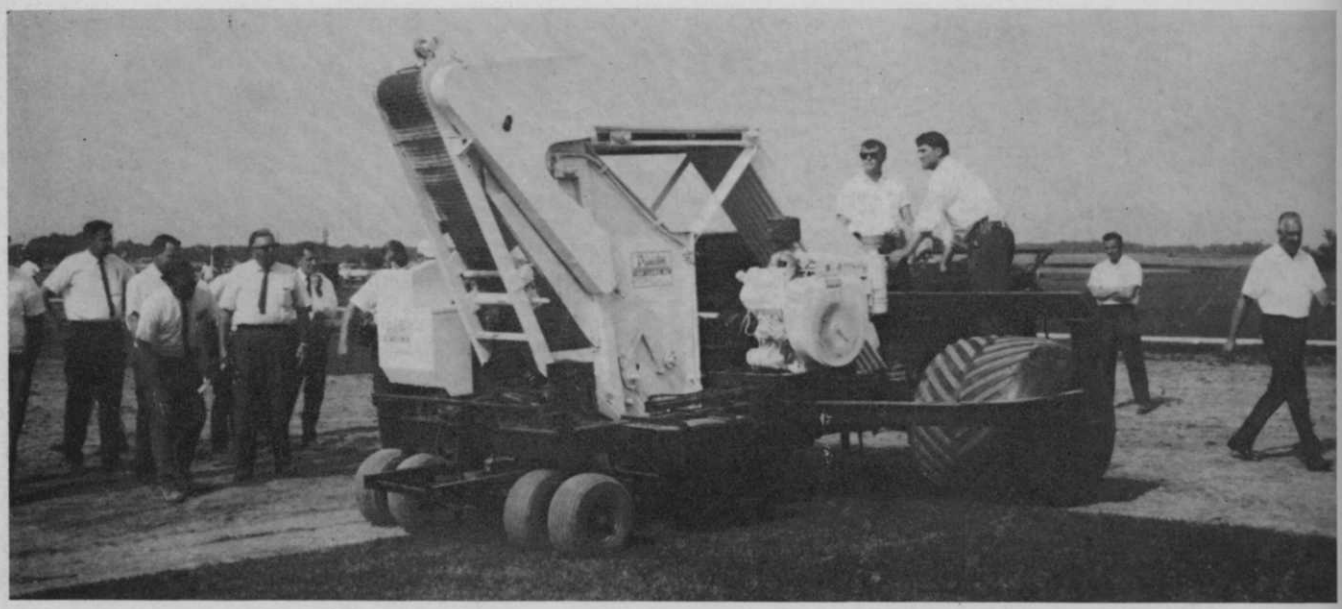
"The sod industry is in danger of becoming a one-variety industry in the Northeast," Dr. Funk told the CSANJ dinner meeting, held in conjunction with the field day. Emphasizing the need for developing new grasses, he pointed out that Merion, though popular and an excellent performer, is highly susceptible to stripe smut disease, for which there is no effective control at present. Stripe smut may be described as an old age disease that limits the life expectancy of Merion to about 7-8 years in infested areas.

Dr. P. M. Halisky, department of plant biology, Rutgers, described the disease as a parasite affecting Merion lawns in their second or third year, becoming progressively worse until the lawn is destroyed. Many grass varieties are attacked by smuts, but bluegrass smuts do not affect other plants. Adding that stripe smut is both seed borne and soil borne, Dr. Halisky concluded that there is hope for eventual control of the widespread disease by soil treatment, seed treatment, or development of a selective, systemic fungicide. "I believe that stripe smut can be knocked out or greatly reduced in Merion," the plant biologist said.

Hybridization Holds Hope

"I'm optimistic on the future of hybridizing rather than simply selecting bluegrasses," Dr. Funk told an interested group at the Turfgrass Research Field Day, June 21. Sponsored by Rutgers' Cooperative Extension Service and College of Agriculture and Environmental Science, this field day gave participants a chance to look closely at the turf research program.

Showing plantings of about 6,000 bluegrasses collected, or "selected," from pastures, parks, and golf courses, the research



Princeton Turf Farm's experimental sod harvester, demonstrated at Princeton's Croshaw Farm for Rutgers June 22 Sod Producers Field Day. Self-propelled, hydraulically operated harvester requires 3 men, a driver and 2 handlers, to cut, convey, and palletize sod in a single operation. Future developments will aim for automatic palletizing.

specialist noted that most of these selected plants are rejected because of poor disease resistance. Though valuable plants can be obtained in this manner, Dr. Funk reported that the greatest promise for future turfgrass development lies in hybridization of the finest selections with each other.

Anheuser dwarf bluegrass, a Purdue University, Lafayette, Ind., development of a grass selected in St. Louis, was called one of the most promising experimental varieties. Some of the wider bladed varieties are more resistant to leaf spot infection, Dr. Funk explained. Dark-colored and wide-leaved, Anheuser shows good resistance both to stripe smut and leaf spot, and is being tested as a parent in hybrid plants. Though this variety does not form an extremely dense turf, the researcher also remarked that too dense turf often poses more problems than grasses with less density.

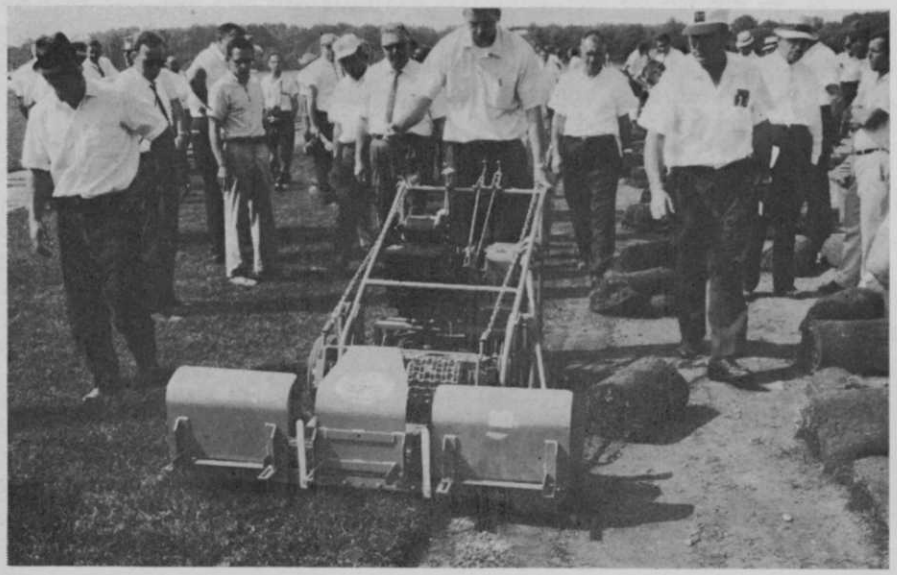
Other promising bluegrasses include K5(47), an experimental variety that dates back to 1947; 0217, commercially developed; N.J. P30, a New Jersey grass; and Pennsylvania State University's varieties, K-106 and K-107. None of these varieties is commercially available at present, since wide regional testing always precedes release. If made available, all would have high seed cost because of poor germination characteristics. Adding that only 1 out of 5 bluegrass plants will reproduce by apomixis (without fertilization), Dr. Funk explained that reproduction by apomixis is necessary to insure uniformity of characteristics in a grass variety. Rutgers research also seeks to develop fundamental information on genetics and breeding procedures, according to the researcher. "Turfgrass breeding is a relatively untouched area," he said, "and our work can't be accomplished in a year's crash program; it will take 10 to 20 years."

Promising experimental variety of hybrid bluegrass has shown excellent disease resistance, Dr. Reed Funk, Rutgers University turfgrass research specialist, tells field day gathering.

New perennial ryegrasses that form a more dense turf, and are finer leaved than current ryes, are also being developed by Rutgers. Noting that a new ryegrass could be available in about 3 years, the question was asked: "Would you object to having this grass in your own lawn?" Many who attended the field day weren't too certain. Though attractive, the new ryegrasses still are difficult to mow.

Advantages of the hardy, experimental ryegrasses include ease of establishment and growth under many soil conditions. Perennial ryes may find a place in roadside, school ground, and athletic field sites. Better summer and winter performance, and greater resistance to brown patch, chinch bugs, heat, and drought are also sought in the new varieties. Experiments have been conducted with mixed seedings of Merion and ryegrasses, with the bluegrass generally crowding out the ryes.

Other grasses being tested include zoysia, bentgrasses, and red fescues. Several rapidly spreading types of fescue have been developed. Field day participants were also shown turfgrass fertilization tests in progress. Dr. Ralph E. Engel, turfgrass research specialist at Rutgers, counseled that moderate application of nitrogen will help control poa annua in bent-



New automatic sod roller is demonstrated for turfmen by the maker, Ryan Equipment Co., St. Paul, Minn. Not yet in production, pilot rollers are under test throughout country.

grasses. "With herbicides, we can work with lower levels of nitrogen," he continued. Fertilize more than twice a year for best color and performance, and discourage poa annua by avoiding heavy fertilization in the cooler months. May to August applications were suggested.

Nematocides on bentgrass, turf thinning experiments, and cutting height experiments were also included in the research tour. These tests are in their early stages with results inconclusive.

Disease is Encouraged

Rutgers research plots are mistreated to encourage disease. Herbicides are not applied to most plots. Irrigation is irregular. Fertilization is apt to be either indifferent or excessive. Some plots are closely barbered and others allowed to grow as high as 3½". Such mistreatment is part of a studied attempt to find the limitations and susceptibilities of the grasses under test. Whenever a particular grass variety comes down with a disease, the researchers have a new problem, but they also have more information about that variety.

Merion is a case in point. Said to be resistant but not immune to the leaf spot disease and consequent melting out of turf, much of the established Merion was attacked by the disease this spring. Cool, wet weather favored the disease, but questions have been raised. Could the resistance of Merion be breaking down, or is there a new strain of the fungus, or was it attacked because stripe smut had previously weakened it? The only answer lies in further observation.

For the turfmen, the answer to leaf spot lies in good management, the experts say. Watering too often keeps the leaves wet and encourages the disease. Excessive fertilization and too-close mowing also encourage leaf spot. Water to a depth of 6" to 8" about every 10 days, depending on local soil and weather conditions. Fertilize moderately, preferably in the cooler months of April, May, Sept., and Oct., applying over half the fertilizer in the fall. In New Jersey, with grass clippings left on the ground, 3 to 4 pounds of nitrogen per 1,000 square feet a year is adequate for Merion. Other bluegrasses take less, 1 to 2 pounds of N. Finally, mow 1½" to 2" at 7-day intervals. Regular mowing is important.

New Varieties Needed

While leaf spot is not a serious problem in Merion, Rutgers researchers describe it as "the most destructive disease of Kentucky bluegrass in New Jersey." Often confused with drought or heat injury, the leaf spot fungus attacks the roots and rhizomes of bluegrass plants in the late spring and early summer, causing the turf to "melt out." The leaf spot phase will often clear itself up, but melting out is far more serious. The disease may be seen from dark, red-purple lesions on the leaves and brown, thin or bare turf. Tests show that, in general, the greater the area of turf loss from melting out, the greater the takeover by

broad-leaved weeds and crabgrass.

Underlining the need for new varieties to supplement Merion, the June 21st and 22nd field days observed plots of Merion weakened by stripe smut, called Merion's worst enemy. Pausing to examine an infected plant, Dr. Funk said that, "though good management will help grass recover from stripe smut, it will still get progressively worse." The disease may be identified by gray stripes on leaves. In later stages, leaves turn black, curl and tear, exposing the smut spores.

Thatch accumulation is another problem causing frequent deterioration of Merion. According to Dr. Henry Indyk, extension specialist in turfgrass management at Rutgers, grass clippings do not, in themselves, create thatch. With regular mowing, and under normal conditions, clippings do not have to be removed.

Zoysia nursery plants and test plots were another field day stop. Recalling that zoysia was once considered nearly disease-free, Dr. Engel reported that plants have shown susceptibility to disease in New Jersey tests. Later, Dr. Funk remarked to an evening session that "It is safe to assume that any variety will develop problems after a few years." In other words, it is unlikely that cure-all grass varieties will be developed, underscoring the need for continued research to make new, disease-resistant grasses available through the sod producer. Dr. Funk also suggested that organizations, such as the Cultivated Sod Association of New Jersey, could aid in testing new sod grasses if member growers would plant and evaluate samples in their locations.

Sod Mechanization Shown

Predicting that the sod industry will move more and more toward mechanization, Dr. Henry Indyk added that the need is for strictly specialized equipment for sod producers faced with a labor shortage. Mechanization will bring costs down and increase the popularity of sod, the extension specialist indicated.

Mechanization from stone picking to boom loading of pallets was demonstrated in the June 22 afternoon session, hosted by Princeton Turf's Croshaw Farm. First to be demonstrated was the Anderson Rotary Rock Picker, manufactured by Armor Metal Products, Helena, Mont. Said by the maker to be capable of picking rocks from 1½" to 200 pounds, the Anderson picker works as deep as 6" at speeds of 1 to 5 mph, with a hopper capacity of 4,000 pounds. It is claimed the equipment can remove 100 tons of rock in a day.

Next shown was the Howard Rotavator, which the manufacturer says is suitable for turf thinning and light tillage. Howard Rotavator Co., Harvard, Ill., makes the rotavator which has a tillage width of up to 130" and a tillage depth of about 8".

Land Leveler Shown

The Eversman Land Leveler demonstrated is used by Princeton Turf Farms to prepare areas for seeding. Made in Denver, Colo., the leveler operates by cutting through highs and dumping in low spots.

Also shown were 3 types of seeders: the Brillion, made by Brillion Iron Works, Brillion, Wis.; the Viking, Viking Manufacturing Co., Manhattan, Kans.; and a new model grader, seeder, fertilizer, introduced by the John B. Adt Co., Timonium, Md., which claims the equipment will pulverize dirt, mix seed, plant, and roll in one operation.

Jacobsen Manufacturing Co., Racine, Wis., demonstrated its Model F-10 mowing tractor. With 5 or 7 gang combinations, the mowers can be raised or lowered hydraulically from the operator's seat while the tractor is moving. Front-mounted cutters are claimed to permit closer trimming and mowing before grass is packed down by wheels.

Other equipment shown included irrigation pipe by Johns-Manville; a soil fumigation injector by Morton Chemical Co.; Rainbird sprinkler heads; sweepers by Rogers Manufacturing,

and Giant-Vac; Travelite and Side-O-Matic boom loaders-unloaders; and fertilizer spreaders.

Harvesting Need Critical

"One of the most critical needs in sod production is in the area of harvesting," according to Dr. Indyk. Harvesting equipment shown at the field day included an 18″ Ryan Sod Cutter with cutoff unit. Ryan Equipment Co., St. Paul, Minn., also demonstrated its experimental automatic sod roller. Though not yet in production, 40 units are being tested throughout the country. It is said to be able to roll 1,000 to 1,200 yards of turf in an hour.

The Finland Turf Cutter combines the best features of an oscillating blade cutter and the old-style drag cutter, according to its maker, Finneyfrock's, Olney, Md. The recently introduced equipment has been dubbed "Big Brute" by the manufacturer, who says machines with cutting widths of up to 24″ will soon be available.

Highlight of the demonstrations was Princeton Turf Farm's experimental harvester. Princeton feels it is getting closer to perfecting the one-step harvester in this latest reworking of its own development, but emphasizes that there is still a lot of work to be done. The self-propelled, hydraulically operated harvester requires 3 men, a driver and two handlers. With the capacity to harvest 6,000 to 8,000 feet per hour, the machine can strip off excess top soil to reduce weight and insure uniformity of cut sod. Future developments, Princeton says, will aim for complete reliability, automatic stacking to eliminate handlers, and a hydraulic "feeler" steering system.

In addition to the Sod Producers Field Day and Turf Research Field Day, Rutgers' '66 Lawn and Turfgrass Equipment and Products Show was held on June 20-21. With a clinic to advise lawn owners on their weed and turf problems, and nearly 40 manufacturers showing their equipment, the show also gave homeowners an opportunity to see the research plots and, perhaps, their lawn of the future.