Dr. James Beard, left, MSU turfgrass researcher, and Dr. Paul Rieke, right, MSU soil scientist, confer with Dr. Marvin Ferguson, Mid-Continent Director, USGA, and Dr. Joseph Duich, Penn State University agronomist.

Research Report

Michigan Turf Conference

MORE than 500 professional turfmen attended the recent Michigan Turfgrass Conference at Michigan State University and heard reports on late research developments and recommendations.

Here, in a nutshell, are highlights of reports given during the meeting:

—Variety "blends" produce better turf than any single variety grown alone.

—Organic sod has more root development, will not wilt as readily during a water shortage and generally establishes as rapidly as sod grown on mineral soils.

—Pesticides of the organic phosphate type can stimulate turfgrass growth by making nitrogen more readily available to the turfgrasses.

—The best all-around control of broadleafed weeds can be provided with a combination of 2,4-D and 2,4,5-TP.

—A mixture of soil, sand and organic matter in the proper ratio provides a good base for establishing putting greens, if this layer is above coarse sand and gravel to allow good drainage.

Variety "Blends" Best:

The report on variety "blends" producing better turf than any single variety grown alone was made by Dr. James Beard, MSU turfgrass researcher. Since there are no "ideal" varieties, he said, blending together several varieties provides a higher quality turf adapted to a wider range of soil management and environmental conditions.

An example would be a blending of Merion, Newport and Delta to establish a good bluegrass turf. Merion is attractive and resistant to leafspot disease, but it requires high management and does not adapt to shade. Newport is better adapted to shade and is fairly resistant to powdery mildew. Delta requires

C. J. Chapman, left, Detroit, receives the second annual Meritorious Service Award from Dr. K. T. Payne, chairman of Michigan State University's crop science department. Payne presented the award on behalf of the Michigan Turfgrass Foundation. W. Bruce Matthews, center, accepted the first annual award on behalf of Dr. James Tyson, MSU soil scientist. Tyson was presented the award posthumously for his contributions to Michigan's turf industry.

Certificates of scholarship awards were presented to two outstanding students in Michigan State University's two-year turfgrass maintenance course offered by MSU's Institute of Agricultural Technology. Receiving the award were Frederick McMullen, left, East Lansing, and Scott Sincerbeau, center, Flint. The awards were presented by Norman Kramer, right, Benton Harbor, a board member of the Golf Course Superintendents Association.

low management and is resistant to stripe smut.

Blends, said Beard, give professional turfmen a better chance to establish more hardy grass under a variety of conditions.

Organic vs. Mineral Sod:

John King, another MSU turfgrass researcher, reported on research which showed organic sod to have some advantages over sod grown on mineral soils.

In seven different trials, noted King, organic sod exhibited more root development and better establishment than mineral sod.

In another study, King saturated sod grown on mineral and organic soils, then allowed both types to dry. He found that the organic sod lost more water, but the sod grown on mineral soil showed wilting two days earlier. Watering is more critical in the establishment of mineral sod.

Beard and King also noted that sod cut at normal thickness (¾ inch) had better rooting and establishment than sod cut at either ⅜ or 2 inches thick.

They also reported data showing that soil should be moist at the time of laying to insure good establishment.

Best Nitrogen Carriers:

Dr. Paul Rieke, MSU soil scientist, discussed the importance of fertilizer, particularly nitrogen, and he pointed out some of the shortcomings of some nitrogen carriers.

In a comparison of soluble nitrogen carriers vs. organic carriers, Rieke found that the soluble carriers are both faster acting and less expensive. The ureaform aldehyde types do not give quick "green up" to turf, particularly during the cool times of the year.

He also advised turfmen to be wary of applying fertilizer through their irrigation systems. While this may seem like a more convenient method, he said, it is only effective if distributed evenly over the turf. The irrigation system must be properly designed to achieve this uniformity.

Dr. Beard noted that sod which had been produced with high levels of nitrogen tended to heat up more quickly during shipping. In early trials, however, there has been no indication that the faster heating has caused greater damage.

Pesticides Increase Nitrogen:

In another report, J. Timmerman, MSU graduate assistant in soil science, reported on his study which showed that pesticides, particularly organic phosphates, can increase turfgrass growth by making nitrogen more readily available.

Apparently, he said, certain organic pesticides stimulate the microorganisms that make nitrogen available, but he admitted that more research needed to be done to determine why these

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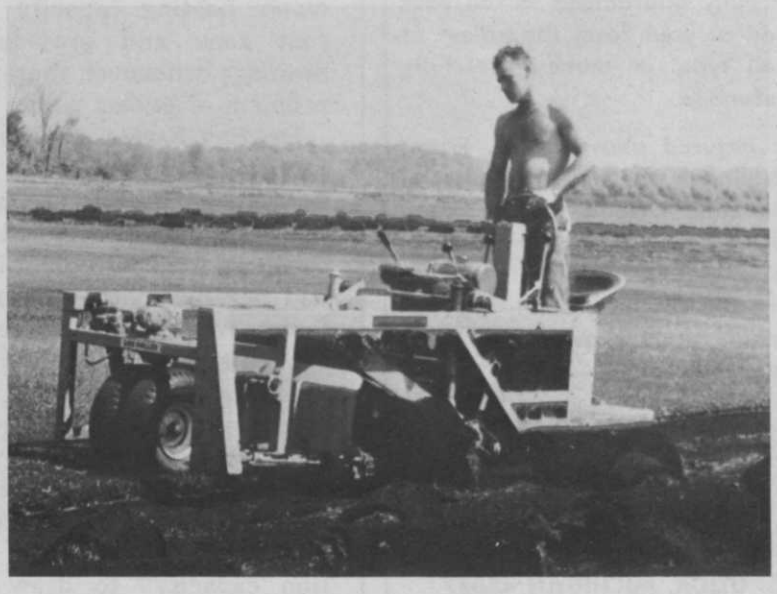

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organic pesticides have this effect.

Weed Control:

Dr. William F. Meggitt, MSU crop scientist, noted that there weren't any recent spectacular "breakthroughs" in turfgrass weed control, but there were some useful guidelines to follow for an effective control program.

He said good management is the key to many weed problems, because a well-kept turf gives the grass a fighting chance against competing weeds. Herbicides can be a big help, he added, but there is no herbicide label that will claim the chemical will grow grass.

Meggitt said a combination of 2,4-D amine and 2,4,5-TP, applied at the rate of one pound of active chemical per acre, will control dandelions, plantains, clover, chickweed, black medic, creeping charlie, red sorrel and round-leaved mallow.

Soil Mixtures:

Three researchers commented about the importance of a good soil mixture to the establishment of turf. And all three suggested mixtures that would reduce compaction, maintain adequate water holding capacity in the root zone and provide good drainage whenever there was a problem of excess water.

Dr. Ray Kunze, MSU soil scientist, recommended a special mixture for putting greens. This included a layer, about 12 inches thick, of a mixture of soil, sand and organic matter. Below this layer would be coarse sand (about 4 inches), then pea gravel and, finally, subsoil. Tiling would be placed in the area just under the sand in the pea gravel.

Dr. Kunze explained that the coarse sand and pea gravel did not have the "capillary attraction capacity" to draw water from the upper zone. As a result, water does not move down until the upper area is saturated.

Dr. Joseph Duich, Penn State University agronomist, pointed to a project which he had started in 1960 which showed that many turfmen pay too much attention to the quantities in soil mixtures rather than the quality of the sand, soil and peat. For example, he said, the important thing in concrete sand is the particle size distribution. He urged turfmen to examine this particle size to determine how well it will hold water and allow drainage.

Duich noted that with 10 per cent peat in a mixture, turfmen would need 40 per cent coarse sand to get any infiltration at all. They would need at least 60 per cent sand for good infiltration (drainage) of water.

Duich also studied mixtures which had undergone two years of compaction. He found that the best infiltration rate was given with a mixture made of 40 per cent Turface, 10 per cent peat and 50 per cent soil.

Dr. Marvin Ferguson, Mid-Continent Director, U.S. Golf Association, Greens Section, Texas A & M University, noted that the relationship of pore space between soil particles had the biggest influence on soil mixtures.

He noted that by constructing different textural layers in the proper order, a surface could be constructed that would hold enough water and still allow enough drainage for good turfgrass establishment.

Plant Diseases:

Dr. M. Britton, University of Illinois plant pathologist, listed the major turfgrass diseases, noting that there has been very little success in finding a control for them. But he did have a recommendation for getting rid of much of the guttation water which encourages turfgrass diseases.

Guttation water, he explained, is a solution from within the leaf which contains nutrients that encourage turfgrass disease. Most of this solution can be removed with light applications of water (syringing) before mow-

ing. Syringing washes the guttation water off the leaves.

Britton also noted that temperature, light and mowing affect the severity of diseases. He pointed out that most disease causing organisms have survival mechanisms (such as spores) to grow under any conditions. Free moisture keeps fungi alive outside of the plant.

Decreased light decreases photosynthesis and increases carbohydrates, said Britton, making the plant more susceptible to diseases. This decreased light also affects temperature which, in turn, affects various organisms, depending on which temperatures they need to survive.

Britton also pointed out that close mowing increases plant numbers, decreases plant size and increases the effect of a single infection on turf. The smaller plants in a denser population are weaker and less able to fight off disease.

Manage Fertilizer For More Heat Tolerant Bent

Using less nitrogen and boosting the potassium rate when hot weather arrives may reduce heat damage to creeping bentgrass. This type management may increase the use of bent on southern golf courses.

Results from experiments on Pencross bentgrass indicate proper fertilizer will improve year-round performance of the grass, even in warm, humid climates. Results show that nitrogen should be reduced and potassium increased at the start of hot weather. This hardens the grass against high temperature.

Research was conducted at the University of Arkansas, Fayetteville, Ark., by Dr. C. L. Murdoch, agronomist. It was supported in part by a grant from Arkansas State Golf Association. A number of Arkansas golf course superintendents, have found bentgrass hard to maintain during the summer when temperature and humidity are high.

Experiments by Murdoch were based on the common knowledge that nitrogen will increase succulence of plant tissue, and at the same time decrease hardiness. It is also known that potassium decreases succulence and increases hardiness. Purpose of the research was to determine if Pencross bentgrass could be hardened against heat injury by varying applications of potassium and nitrogen fertilizers.

Pencross bentgrass seeds were grown for 30 days on a greenhouse bench at 80° F. They were in soil which contained adequate nutrients for favorable plant growth. Plants were clipped to ½ inch and kept at this height throughout the experiment. After 30 days, the various fertilizer treatments (listed in table) were applied to the plants and they were kept on the bench for an-

(Continued on page 38)

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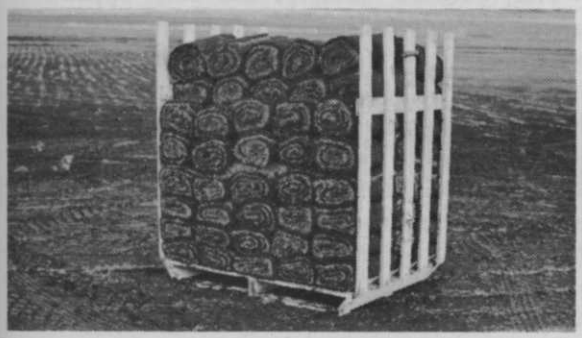

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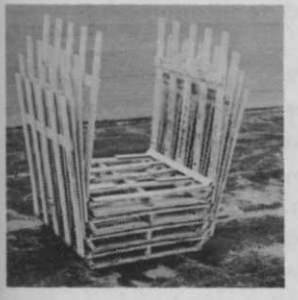

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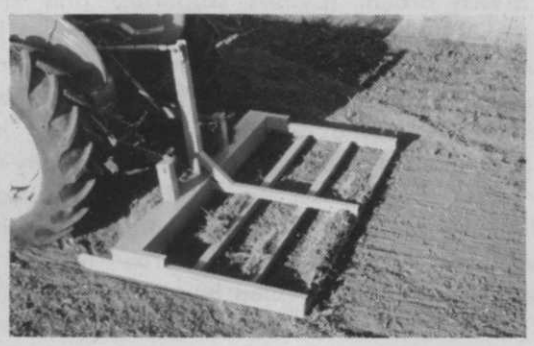

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