MIDWEST TURF FIELD DAY REPORT

Purdue University, Lafayette, Ind.

The next Midwest Regional Turf Conference is scheduled for March 6-8, 1967.

Graduate student Hayden Watkins has been minutely examining the possible benefit of several sucrotallowates, bi-products of animal processing, for spray additives. Such materials can make effective, easily-bio-degradable wetting agents.

Can lower rates of pesticides be used? Can better selectivity be secured? Can plant uptake be increased? Such questions are the basis for continued research—Compare clover control and weed kill in plots.

Continued Fertilizer Research

During 1966, nine sources of nitrogen, including 5 experimental fertilizer blends, are being compared at rates of 0, .5, 1, 2 and 4 pounds actual notrogen per 1,000 sq. ft.

Test No. 1 was initiated June 14; Test No. 2, July 19. Ratings (1-best—9-poorest) are taken prior to each clipping harvest. Of particular interest is Ureaform 4# actual N/1,000 sq. ft. per application. Where this has been repeated for three years, its release pattern is quite uniform compared to single applications of previous years.

AA data from experiments are shared with the sponsors. General rates of nitrogen are well known. Merion bluegrass needs 4 pounds of nitrogen per 1,000 sq. ft. per year for continued amplpe growth.

Crabgrass Killing

Field Day report of 1954, twelve years ago, first showed the selectivity of the organic arsenicals. Since then widespread usage has occurred. Crabgrass infestations have been treated in test No. 2 (west) before fertilizer was applied. In test No. 1 (east 20 ft.) three applications have been made during three previous weeks. No bluegrass damage has occurred.

Midwest zoysia

Zoysia has been grown on eleven locations of our turf plots since 1950. Currently sample plots are maintained for general observation. These are mowed at 3/4 inch with clipping removed and fertilized three to four times a year.

Midwest zoysia now three years old is marked. It is providing a medium density turf, which was our aim. Ample supplies of Midwest are available from Agricultural Alumni for starting nurseries. Limited supplies may be available from commercial nurseries in some areas. Midwest zoysia spreads approximately twice as fast as Meyer zoysia under comparative growing conditions.

A space planting of some experimental types is being maintained for further Zoysia selection work.

Fall Seeding Lawn Varieties

One annual, six perennials, two red fescues, four bluegrasses and one bent were planted September 27, 1965. Note continued thinning of annual—it was badly damaged during the winter and continues to be thin. Of these the bluegrasses provide the better turf. All grasses have done well during 1966 with minimum disease showing in these new plonts.

Older Bluegrass Performance

Since 1959 we have recommended the blending of available bluegrass varieties so that the vigor and disease characteristics of each grass could be combined into best adaptation and turf performance. Generally blends give ratings intermediate to the best grass present under its best performance. Generally when disease takes down the worst performer (for example, leafspot on Newport), the performance is above that of the individual.

Several sod growers are using blends for multi-purpose, and specify the same pricing as Merion sod. New selections appearing on the market can be incorporated into blends even at light rates as desired.

How Much Density in Bluegrass?

Note thatch and cores taken from a "dense bluegrass" and "thin bluegrass" after six years of uniform management. Generally density has been desired as a means of weed control by ground covering.

At the 1965 Field Days the gradual involvement leading to current space planting of bluegrass was stressed. Currently we are testing three U.S. experimentals, four experimentals from Europe, and three private experimentals. No new varieties of bluegrass have been put on the market in 1966.

"Shall We Release It?"

Recent compilation of data shows that a dark green blugrass selection has some of the best disease resistance observed. The grass has been planted in numerous states and research from Rutgers is encouraging. Because of its slow growth as young and mature grass, it is suggested it could be a desirable grass for sod growers.

Normal procedure would be to release the grass through Agricultural Alumni Seed Improvement Association. They would make contracts with seed growers in the Northwest, as well as make contracts with sod growers in the Midwest and East so that seed is both grown and sold under contract for an initial period, perhaps three years. Breeder seed has been secured. A plan is being considered—it may be implemented over winter. At the earliest, seed could be available to sod growers in the fall of 1968. It may be that more than one selection having similar turf performance characteristics would be released as a blend. The question—"Shall we release It?"

Dwarf Blugrasses

Graduate student Terry Riordan continues his research on low-growing blugrasses which have good rhizome development. Over 100 selections have been made. All of these are space plant experimentals, but the work is most promising.

Similar effort is being devoted to finding vigorous, aggressive, fast spreading clones which would be suitable for highway usage. Note variation in space plantings. Available varieties from this work are at least six years away.

Close Cut Bluegrass

For three years a block of bluegrasses, both commercial and experimental, have been maintained at 3/4 inch cut with weed and insect control, but without disease control. Severe damage from extensive leafspot occurred in April and May of 1966. The Anheuser dwarf has continued to be outstanding under such good management. Prato was badly damaged with leafspot, but is coming back well. 0217, an experimental, has been one of the better performers. K-5-47 experimental continued to look good.

The two outer sections have had two years of calcium arsenate use for crabgrass and **Poa annua** control. The center section has not had crabgrass prevention.

Vertical Mowing

Numerous tools are available for vertical thinning and mowing of grasses. These assist in renovation, assure better coverage and permit the use of less

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seed in overseeding programs. Those providing openings in the soil are preferred for overseeding.

Crabgrass Preventers

Continued research on new materials includes Planavin of Shell Oil Company, Z-5 of Sherwin-Williams, an experimental of American Cyanamid, plus new formulation-combinations of others. Because of extended dry weather, limited observations are available.

Purdue Stadium

Maintenance on the Stadium continues to favor bluegrass. The Zoysia originally planted, mixed with bluegrass, has completely died due to fall fertilization combined with wintertime temperatures. Note the dense turf formed by the light green 16-B in the renter of the field. The field has a 1% slope (10" crown center above sidelines).

Vertical Slitting

Wherever disposal of surface water is a problem, vertical slitting (thus making narrow trenches into which porous materials are placed) may benefit. This is being widely done in low areas on golf courses, and some is being done on athletic fields. The idea is to trench as deeply as possible with as narrow a trench as possible. Either pea gravel or coarse sand may be used for filling the trench. Sand or calcined clay should cap the trench to overflowing. Where possible tie into tilelines by crossing tilelines. Usually use of the area may continue immediately after trenching.

Rootzones

After seven years the durability of numerous calcined clays appear adequate. The exposure to wear, weather and chemicals has not caused a rapid deterioration. Where soil under calcined clay pulls much of the capillary water out of the calcined clay above it the rootzone is too drouthy. Where there is a sand layer, which reduces capillary pull, adequate moisture is retained.

Subsurface Irrigation

A new and different approach is also being undertaken. We have large sheets of plastic; we have plastic tile with slits. Adjustable float valves will maintain a reservoir of water in base sand. Distribution pipe will serve as drainage for excess rain also. Laboratory determinations have shown a column of sand placed above a reservoir can be kept moist at the surface. Research of David Ralston and David Bingaman utilize the north edge of the experimental green to determine reservoir depth, rootzone depth, exact rootzone texture needed and possible mires which can be used for this. Individual plots are one meter square.

Wilt Reduction

Continued research on foliage coatings utilizing materials available show that some wilt reduction can be accomplished as a part of good grooming on golf greens, etc. Dilutions of concentrate 1 into 19 water seem practical with most materials currently available.

Zoysia in Fairways

In 1959, rows two feet apart were planted as sprigs of Zoysia selections in the north half of No. 8 fairway Lafayette Country Club. Without irrigation and no weed control it took two years before small areas began to show. Complete take-over by these Zoysias indicate extent of adaptation.

Arsenicals used in 1964 on part of the adiacent fairway illustrate the contral of **Poa annua** and the extensive bluegrass spread since then.

FROM THE MIDWEST TURF NEWSLETTER

Keeping Turf Turgid!

Turfgrass clippings are normally more than 80% water and up to 90% under some conditions.

Grass will show obvious wilting when the moisture in leaf approaches 75% and will show severe wilting below 70%. (Incidentally, corn grain has stopped growing when the moisture content drops below 40%.

Leaf sensitivity to moisture has been repeatedly observed by turf managers. The green starts to wilt. Hand-rinsing reduces wilting—in ten to fifteen minutes the leaf look turgid. Perhaps that leaf moisture was always above 70%. Zoysia leaves that appear to be dormant will show turgidity in as little as ten minutes. This plant is most sensitive to leaf moisture changes due to its thin-walled cells.

Bluegrass responds slower than bentgrass; yet tolerates additional dryness before going completely dormant. Fortunately the wilting of grass serves as an initial warning before severe damage occurs. However, very prompt watering is necessary in many cases to prevent damage. Certainly it is well known that bentgrass loves water, and, as a rule, if in doubt, water bentgrass. In contrast, if in doubt don't water bluegrass.

RESEARCH ON WILT REDUCERS

For four years limited effort has been spent on observing the response to various wilt reducing compounds available. The question is—will wilt reducers slow down transpiration and reduce foot traffic damage sufficient to lessen the need for supplemental irrigation or cooling of grass during hours of golf course use? Our 1966 research program includes Foli-cote 128, Foli-gard (regular) and Foli-green.

The Mid-Atlantic Newsletter, vol. 15, No. 6, '66, says—"remember also when water is added to the soil the soil pores become filled with water; then a rapidly decline in growth results from lack of oxygen for root respiration." Does this fit your greens? We know water cools the soil as is evaporates. On many greens, as soon as the surface starts to dry, the green seems hard and in need of water; thus, the tendency to overwater is constantly repeated.

An article, "Summer Wilt on Bent Greens," Turf Management Bulletin 32-54 was published about 1954. It stated that "shallow rooting was the main cause of wilting. It has been said that much more turf is lost in the Midwest from wilting than from all combinations of disease damage; thus, the trend towards syringing, day-time watering, etc., to assure adequate water within the leaf tissue in the hot afternoons of summertime drouth." Active roots affect moisture for about ½ inch from tip.

For example, Radko ond others have reported the astonishing number of bruises made by golf spikes of a single player during a round of golf. We have counted up to 700 leaves per square inch in putting green turf, thus, one golf spike may damage or bruise several leaves, causing extra water loss and wilting. For many conditions when this becomes severe, surface rinsing is an immediate and partial solution.

Whatever can be done to reduce bruising by equipment, golfers, etc., should improve the survival of bentgrass. Probably the most important is a clean, sharp cut by the mower rather than a leaf bruising action.

Those hot, muggy nights, and warm, humid days of the midwestern summer can spell trouble. Those that maintain good turf try to counteract extremes, thus protecting their grasses until favorable conditions come.