

## TURF FIELD DAY REPORT (continued)

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 center 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 adjacent fairway illustrate the control 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 rapid decline in growth results from lack of oxygen for root respiration." Does this fit your greens? We know water cools the soil as it 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 over-water 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 1/2 inch from tip.

For example, Radko and 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.