

1964 TURFGRASS RESEARCH REPORT

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for the 1965 NCR-10 Meetings

Prepared by
James B. Beard
Department of Crop Science
Michigan State University

I. TURFGRASS VARIETY AND STRAIN EVALUATIONS

Bluegrass, fescue, ryegrass, and bentgrass evaluations have now been in progress 2.5 years at East Lansing and 2 years at Traverse City on 91% sand. Results for the 1964 year can be summarized as follows:

- a. Kentucky Bluegrasses--K5(47) and Prato were superior to Merion, Park, and Delta during 1964. CB, Campus, ZWB and Brabantia ranked below Delta but above Common Kentucky. The density of Prato was much higher than any other entry. As in 1963 leafspot lesions were noted on Prato but no significant thinning occurred. A severe leafspot attack occurred in May, 1964, but rust was not a problem.

Bluegrass Blends--As little as 10% Merion was found to be sufficient to greatly reduce leafspot thinning of Common Kentucky.

- b. Red Fescue--S-59, Golfrood and Highlight were much superior to the commercially available red fescue varieties in turf quality and density. The MSU red fescue polycross has continued to show promise. Pennlawn and Rainer continued to rank best of the commercially available varieties.

Species mixtures--Mixtures containing 30% or more ryegrasses continued to perform poorer than non-ryegrass mixtures through 2.5 years.

- c. Bentgrasses--Congressional, Cohansey, Toronto and Penncross, in that order, rank as the best bentgrasses under putting green management. Evansville, Seaside and Cohansey proved susceptible to snow mold (Typhula spp.). Jagreen Evansville, and Pennlu showed extensive thatching and puffiness. A tendency to thatch was noted in Toronto whereas Congressional and Cohansey were free of thatch. Nimisilla did not recover from the severe disease attack in 1963.

- f. Ryegrasses--S-23 and Norlea ranked better than Common perennial in turf quality, density, and winter hardiness.

Tall Fescue--Syn A from Canada performed best in turf quality and density. Kentucky 31 showed better turf quality, density, and winter hardiness than Alta.

Other--Drayler bluegrass was not found to be any improvement over Canada bluegrass under Michigan conditions.

NOT FOR PUBLICATION

2. a. Nitrogen--Rate, Carrier and Frequency Studies on Sand--Studies on 91% sand indicate an annual nitrogen requirement for irrigated Merion of 12 to 14 # of N per 1,000 sq. ft.
3. e. Herbicides--Silvery cinquafoil, which is a problem weed in unirrigated turfs on sandy soils, was best controlled with Silvex at 1 #/Ac. or 2,4-D + 2,4,5-T at 1 + 1 #/Ac.
8. a. Mowing Studies--In reel vs. rotary comparisons, the rotary type was inferior in mowing quality for 4 to 5 days after each mowing. Differences have continually been observed for 2 years, but only on higher maintenance turfs.

Clippings--Removal Effects--The removal of clippings from Merion was found to increase in the annual nitrogen requirement of 2# per 1,000 sq. ft.

- d. Shade Ecology Studies--Seven individual grasses and eight grass mixtures were grown in a tree shaded area without irrigation. The findings were as follows: Disease was the dominant factor in turfgrass adaptation to shade. The microenvironment conducive to disease activity, and not light, moisture, or nutrient deficiencies, proved to be most significant in affecting grass adaptation to shade. The Kentucky bluegrasses were not adapted to shade due to severe powdery mildew incidence. Red fescue was severely thinned by Helminthosporium leafspot during the first growing season, but good recovery occurred the following spring. The severity of leafspot attack was reduced in each subsequent year. Roughstalk bluegrass proved capable of producing a good turf under droughty conditions in dense shade. Kentucky 31 tall fescue, common perennial ryegrass, and Norlea ryegrass produced an unsatisfactory turf throughout the experiment. The mixing of species under shade proved valuable in reducing the effects of disease on any one species.

Ice Cover Effects in the Field--Studies under field conditions have shown no serious injury to common Kentucky bluegrass and Toronto creeping bentgrass after 51 days coverage with a 2-inch ice sheet. These results support the previous cold chamber studies concerning the tolerance of Kentucky bluegrass leaves, crowns and rhizomes occurred.

Bentgrass Varietal Tolerance to Ice Covers--Cold chamber studies where six bentgrass varieties were flooded, frozen and held at -4°C. for up to 120 days showed creeping bentgrass varieties to be much more tolerant of ice covers than the colonial bentgrasses. As a group, the bentgrass varieties were quite tolerant of extended ice coverage. Toronto, Cohansey, and Penncross showed 100% survival after 120 days of ice coverage.

Turfgrass Low Temperature Tolerance--21 turfgrass species have been evaluated for susceptibility to low temperature kill at four levels of hardiness. Specific results will be published in Crop Science within 8 months.

Effects of Freeze and Thaw Combination on Turfgrass Species--Poa annua, which is in a reduced state of hardiness, is killed by certain combinations of freezing and thawing while Kentucky bluegrass and creeping bentgrass are not injured.

10. Roadside Research

Roadside Rate of Seeding--Studies show the minimum seeding rate for initial erosion control to be 80 pounds per acre. The 100 lb./A. rate was better but could not be justified on an economic basis.

Roadside Mulch Evaluations--Studies under Michigan conditions have shown straw to be far superior to any of the fabricated mulches such as jute net, erosion net, soil set, etc. The fabricated mulches gave good initial erosion control but only straw provided the microclimate (moisture retention) for grass seed germination.

Other Studies Currently in Progress Which Were Not Previously Mentioned

- A. Causal factors in thatch formation.
- B. Biochemical mechanisms of high temperature growth stoppage in grasses.
- C. Effects of management practices on low temperature injury of grasses.
- D. Principles of fairway renovation.
- E. Evaluation of grass mixtures for roadsides.
- F. Principles of roadside turf establishment, on Michigan soils.
- G. Effects of pre-emergence herbicides on existing stands of quality turf. Dr. Meggitt.
- H. Red fescue, ryegrass and tall fescue selection and breeding. Dr. Fred Elliott.
- I. Nitrogen--fungicide relationships in snow mold control.