

NOT FOR PUBLICATION

TURFGRASS RESEARCH REPORT
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Prepared for 1963
Michigan Turfgrass Conference
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I. Establishment of experimental areas.

During the fall of 1961 and spring of 1962 two acres were leveled, drained, and prepared for planting with a complete irrigation system being installed. Turfgrass maintenance equipment and materials were obtained for establishing and maintaining the areas. In June and July the experimental areas were established. To date all data obtained from these areas concerns establishment only. Overall turfgrass performance requires 3 to 4 years of evaluation. Tentative plans are being made to establish an outstate turfgrass experimental area in northern Michigan this year.

II. Ecological Studies

- A. Shade turf studies involving 18 mixtures cultured under heavy natural shade. At the end of one growing season, mixtures containing over 33% Poa trivialis have performed acceptably for the extreme shade conditions. All mixtures not containing Poa trivialis failed. Failure was not due to light deficiencies but was a result of disease. Red fescue failure was due to Helminthosporium sativum while the failure of Kentucky bluegrass was due to severe powdery mildew. Merion was completely killed. Ryegrass and tall fescue also performed poorly. The performance of Poa trivialis is particularly interesting since it occurred on a dry site while it is thought to be adapted only to wet sites.
- B. Lawn mixture investigation involving 18 entries with emphasis on quality mixtures grown under two fertility regimes.

III. Grass Management

- A. Merion bluegrass management involving an investigation of optimum management systems for long-term maintenance. Serious problems have occurred with merion in Michigan in the fifth and sixth year following establishment. This investigation was initiated to ascertain the degree to which management practices may have contributed to this problem.
- B. Fall bermudagrass management study includes practices required for maximum winter survival under Michigan conditions.

IV. Grass Breeding and Variety Evaluation

- A. Turfgrass Breeding -- Fred Elliott
1. The preliminary evaluation of introductions on a spaced plant basis, selection of adapted clones with disease resistance and other desirable characteristics, polycross nursery establishment, and progeny testing. Dr. Elliott is concentrating on the red fescues, perennial ryegrasses, annual ryegrasses, and tall fescues.

B. Variety evaluation for turfgrass utilization.

1. Evaluation of promising polycrosses and progenies from Dr. Elliott's breeding program. A red fescue and a perennial ryegrass polycross are showing great promise.
2. Evaluation of commercially available and near-release selections of bluegrasses, red fescues, ryegrasses, tall fescues, bentgrasses and bermudagrasses. Establishment data are available on request.

V. Physiological Investigations

A. Turfgrass carbohydrate-nitrogen balance studies. Seasonal effects of six nitrogen levels on the carbohydrate composition of bentgrass, merion bluegrass, common kentucky bluegrass, red fescue and perennial ryegrass. Purpose is to determine when the nitrogen rates become excessive and detrimental.

B. Internal nitrogen metabolism associated with high temperatures.

1. Influence of high temperatures on plant nitrogen fractions of cool season grasses.
2. Effect of nitrogen carriers and phosphorous-potassium levels on the internal plant nitrogen reactions.
3. Elucidation of the point or enzyme site at which high temperature effects are expressed.

C. Winterkill

1. Determination of the types of winterkill associated with ice and water covers, as well as their relative importance. A new type of winterkill has been observed in turfgrasses which is caused by lower crown ice damage. The leaves and upper crown are healthy while the roots and lower crown are severely damaged as indicated by browning and deterioration; thus, resulting in eventual death to the total plant.
2. An evaluation of the conditions under which these various types of injury occur.
3. Investigation of species susceptibility to types of winterkill. Large differences have been observed in preliminary studies.
4. Study of freezing patterns and types of ice crystals formed within tissues of five turfgrasses.

VI. Turfgrass Pests

A. Weeds - William F. Meggitt has assumed the responsibilities of turfgrass weed control and will be working primarily on crabgrass, bentgrass and Poa annua problems.