OTHER TURFGRASS RESEARCH CURRENTLY IN PROGRESS

1. Causal Factors in High Temperature Growth Stoppage of Grasses -- Two phases of this study are now underway: (a) effect of high temperature on the nitrate reductase activity of creeping bentgrass and bermudagrass, and (b) effect of high temperatures on nitrogen metabolism. Specifically included are the keto-acids and amino acids such as glutamic acid, aspartic acid, and arginine.

2. Desiccation Causes and Prevention -- The influence of cultural practices on water loss by desiccation are being investigated using a controlled wind tunnel chamber. The physiological basis of the response are to be studied. Also under evaluation are the effects of various stomatal regulators and turf covers in controlling desiccation. R. C. Shearman and J. B. Beard.

3. Determination of nitrogen release curves from several nitrogen sources -- Studies are being conducted under field and greenhouse conditions with special attention to soil and turfgrass nitrate tests. P. E. Rieke.

4. Disease Resistance Studies -- A technique for screening red fescue lines for resistance to Helminthosporium leafspot in the greenhouse is underway. J. M. Vargas, Jr. and K. T. Payne.

5. Effect of arsenicals on soil tests and on germination and growth of several turfgrasses -- Studies are being conducted under greenhouse and laboratory conditions to determine the influence of varying rates of arsenicals and phosphorus on the phosphorus soil tests and on germination of several turfgrasses. Soil samples obtained from several golf courses with a long history of arsenical application will be analyzed for arsenic concentration. R. N. Carrow and P. E. Rieke.

6. Effect of soil pH on development of turfgrass diseases --Field plots are being established with pH valued from very acid to strongly alkaline to determine the susceptibility of Merion bluegrass to turfgrass diseases under specific pH conditions. J. M. Vargas, and P. E. Rieke.

7. Fertilizer Placement in Relation to Turfgrass Establishment -- Placement of fertilizer relative to seed placement is being studied in terms of germination, seedling growth and root development in the greenhouse and field. P. E. Rieke.

8. Fungicide evaluation study -- An extensive fungicide testing program is underway in an attempt to find a chemical which will control Fusarium blight. Also, some of the systemic fungicides are being tested to determine if powdery mildew can be controlled on Merion Kentucky bluegrass in the shade with as few as 3 applications per season. J. M. Vargas, Jr., and A. Anderson.

9. Fusarium blight -- All aspects of this disease are being studied in the laboratory, greenhouse, and field. Typical investigations include the effect of fertilizers &water in relation to disease development, to mention a few. J. M. Vargas, Jr., and Paul Rieke.

10. Highway Vegetation Studies -- A three year investigation of grass mixtures, seedbed fertilization, seeding rates and dates, and establishment procedures which is supported by a grant from the Michigan State Highway Department and Public Bureau of Roads. The location is a four acre area sandy site south of Marshall, Michigan. J. Kaufmann and J. B. Beard.

11. Movement of Nitrogen, Phosphorus, and Potassium -- Movement of surface applications are being studied over a period of years in the field and greenhouse. P. E. Rieke.

12. Northern Michigan Turfgrass Investigations -- Bentgrass, bluegrass, red fescue, ryegrass and tall fescue variety, mixture, and management studies, plus nitrogen rate, carrier and frequency of application studies conducted at the Traverse City Country Club, Traverse City, Michigan. Soil on the site is 91% sand, 6% silt and 3% clay. All studies are being maintained under both irrigated and non-irrigated conditions. J. B. Beard and P. E. Rieke.

13. Plant Nutrient Removal Study -- The total annual leaf production of Toronto creeping bentgrass, common Kentucky bluegrass, and Pennlawn red fescue has been collected and are being analyzed for both major and minor essential element content. The study has been underway three full growing seasons. J. B. Beard and P. E. Rieke.

14. Requirements of several turfgrasses for fertilizer iron -- Grasses growing on soils with pH values above 7.5 are being treated with several iron sources under field conditions. This work will be continued in the greenhouse. P. E. Rieke.

15. Snow Mold Studies -- A re-evaluation of previously recommended fungicides for the severe snow mold conditions of Northern Michigan. Also the possibility of being able to apply a systemic fungicide early in the fall of the year for the control of snow mold is being investigated. J. M. Vargas, Jr., and J. B. Beard.

16. Sod Heating Studies -- The effects of pre-harvest management factors on the extent of sod injury under simulated load conditions are being investigated. Management factors studied include clipping height and removal, N rate, irrigation rate, and effect of a respiration inhibitor (N^6-benzyl-adenine. Controlled atmosphere studies are being conducted to define the mechanism of sod injury. J. W. King and J. B. Beard.

17. Sod Production Studies -- The rate of sod formation and sod strength are being evaluated in relation to (a) varieties, (b) blends, (c) bluegrass-red fescue mixture, (d) nitrogen fertilization rates, carriers and timing, (d) nitrogen fertilization rates, carriers and timing, (d) seeding rates, (e) mowing height and frequency, and (f) dates of seeding. Subsidence and clipping utilization studies are also being conducted.

18. Turfgrass Breeding -- A large single plant nursery of red fescues representing third cycle selection, foreign plant introductions and other sources to combine leafspot resistance and creeping habit with other quality characters was established in 1969. A bentgrass program to develop varieties better adapted to tee and fairway use has been initiated. K. T. Payne.

19. Turfgrass Ecology Study -- Mechanisms of turfgrass adaptation to shade including the influence of light quality. J. B. Beard.

20. Upper Peninsula Turfgrass Investigations -- Bluegrass, red fescue, ryegrass and tall fescue variety, mixture, and cultural studies; being conducted at Iron Mountain, Michigan. Soil on the site is a loamy sand. All studies are being maintained under irrigated and non-irrigated conditions. J. Reid, D. Christenson, P. E. Rieke, and J. B. Beard.

21. Winterkill of Turfgrasses -- Continuing investigations of the causal factors in winterkill and cultural factors which can minimize kill. Factors under study include the affects of nitrogen and potassium fertilization rates, timing of fertilization, nitrogen carriers, soil and crown moisture content, thatch and pesticides. J. B. Beard.