Grasses

A high percentage of the total research effort toward the improvement of turf has been expended in breeding projects for the improvement of various individual grass species. Breeding projects include various phases such as selection, hybridization through crossing individual plants and through polycross techniques, and selection from progeny nurseries. The practice of these techniques has provided a number of improved strains of grasses for turf purposes.

Improved strains of creeping bent include Washington (C-50), Old Orchard (C-52), Arlington (C-1), Congressional (C-19), Collins (C-27), Cohansey (C-7), and Toronto (C-15). One of the more recent developments, Dahlgren (C-115), has not been tested extensively but it shows promise of finding its place alongside the proven strains.

Stations which are actively engaged in projects for the improvement of bentgrasses include Pennsylvania. Purdue, Rhode Island, Oregon, etc. Many of the strains currently under test show promise, but require further testing. One of the great needs is for a strain of creeping bentgrass which will produce a satisfactory putting surface and which may be produced by seed. Current polycross studies in Pennsylvania give hope that we may have such seed soon.

Merion (B-27) bluegrass is one of the outstanding contributions of the effort to discover improved grasses. Merion bluegrass has been tested extensively over a period of fourteen years. An increase in commercial supplies of Merion bluegrass seed gives promise of a greater use of this grass.

The Penn State Blend of Chewings Fescue is a blend of selections from Chewings fescue which has produced turf of superior quality. Many of the newer strains of red fescue being tested at Penn State show promise of doing as well as or better than this blend. However, these strains have not been used very widely. They include F-74, F-65, F-79, F-80 and others. Some seed increase work is being done concurrently with the testing work because of the outstanding performance of the grasses in early tests.

U-3 bermudagrass, Tifton 57 bermudagrass, and some of the strains developed at the Everglades Experiment Station at Belle Glade, Florida, are among the most promising of the improved strains of bermudagrass. U-3 has been used for a number of years and has been outstanding in its performance on tees and other areas that are subjected to heavy wear.

Tifton 57 is the product of an extensive breeding program at the Georgia Coastal Plain Experiment Station. Many other selections of bermudagrass are under test at the present time.

Stations engaged currently in bermudagrass improvement include: Georgia Coastal Plain Experiment Station, Florida Agricultural Experiment Station, Texas Agricultural Experiment Station, Oklahoma Agricultural Experiment Station, California Agricultural Experiment Station and the USGA Green Section at Beltsville.

As this Review is being prepared plans are underway for an official release by the USGA Green Section and the U. S. Department of Agriculture of Z-52 strain of Japanese lawngrass (Zoysia japonica). Readers are asked to contact their own state experiment stations for information on this grass. Local recommendations vary because of climatic adaptation. In the so-called "crabgrass belt" Z-52 zoysia is able to crowd out crabgrass under ordinary lawn management.

Management

Studies of the proper use of fertilizer materials are among the most important pursuits of turf research workers. Many of the fertilizer practices that are now in use have been derived from the experience of turf users over a period of many years. Almost every experiment station that has been engaged in turf research has conducted one or more series of fertilizer tests under field conditions. Unfortunately, many of these experiments have not been well designed nor have they been conducted to yield data which could be used as a basis for determining proper fertilization practices.

In recent years, fertilizer and nutrient studies have been conducted by more refined experimental methods and a great deal of fundamental data have been developed. Greenhouse tests in which nutrient solutions were used to grow bent and bluegrass were first conducted at Arlington Farm by Dr. Mary E. Reid. Dr. Reid wrote an article for the October, 1933, number of the Bulletin of the USGA Green Section on the "Effect of Variations in Concentration of Mineral Nutrients Upon the Growth of Several Types of Turf Grasses." After her initial work, nothing further was done along this line until after World War II.

Purdue University, Rutgers University, and the USGA Green Section are among the stations which have done some of the most critical nutrient culture studies on turf. The work done by the Green Section has been based upon the assessment of the nutrient status of grasses by analysis of the clippings. Concentrations of nutrient elements in the leaves of the grass have been determined and correlated with the performance of the grass from the standpoint of vegetative growth and seed yield. It is proposed that data of this kind may be used as a basis for fertilization of turf grown in the field. The successful use of similar techniques in the growth of various horticultural food crop lends encouragement to the hope that improved turf fertilization practices may be derived from such studies.

The ureaform products have been the subject of a considerable amount of investigation. Both greenhouse and field studies have been conducted in which ureaform products have been compared with other nitrogen carriers. It is agreed generally that research findings indicate that there is a place in turf management for a product having the properties of the ureaform materials. Details of the practical usage of these products probably will have to be worked out in practice, but sufficient information is now available to serve as an adequate guide to the practical user of ureaform materials.

The years since World War II have seen a growing consciousness among technical workers and practical turf maintenance men alike on the dangers of overwatering turf. Much research has been aimed toward determining the detrimental effects of overwatering and toward working out criteria for determining the optimum irrigation