

# PROGRESS REPORT

**Ben Warren**

About six years ago our company made the decision to undertake the task of looking for better turf-grasses. Shortly after this program got underway the Midwest Association was kind enough to ask us to discuss this new program at the fall clinic. It would seem in order to present a report at this time of progress and lack of progress that has occurred in the span of 5 years.

This work is divided in two general categories. One is that of finding variants or aberrants that differ from the parent strain. The second division is that of evaluating these variants.

## **Search for Variability**

Our search for variable material has gone in several directions. Much time has been spent in walking fairways of older golf courses and cemeteries, taking small plugs of any grass that seems to be different from the surrounding grass. Courses have been surveyed in Illinois, Missouri, Kentucky, Ohio, New York, Connecticut, and Rhode Island. Another source of candidates for evaluation have been seedlings from different sources. These sources have been seed lots from many parts of the world, standard varieties which had been treated to induce mutation, seed from known sexual strains, and second and third generation of promising experimental strains which have been both self pollinated and crossed with other strains. These plugs and seedlings are space planted as individual plants.

## **Evaluation**

The spaced plants are planted 30 inches apart and allowed to develop into individual turf patches maintained by conventional mowing, fertilizing, and watering. These are observed for about 3 years. During this period any selections displaying superior characteristics are increased vegetatively into plots 3' x 18'. These plots are subjected to two mowing heights and three fertility levels. After two years the superior strains of these lots are increased to plots of 60 to 70 sq. yds. for material to place in our out field plots. Today we have such plots in New York, Indiana, Missouri, Illinois, and California which are under constant surveillance by our own people for disease activity and general performance. In addition several of our most promising strains have been supplied to Experimental Stations from coast to coast for evaluation in their plot work.

## **Pathological Work**

From the start of this work we had felt that the most important aspect of selection was accurate and rapid determination of the disease relationship of new strain.

In 1961 we were fortunate in obtaining the services of Dr. Timothy Gaskin whose training in Pathology and Genetic was a significant factor in the progress we have made. Tim did considerable work in crossing, irradiation, technique of flower induction, evaluation of chemical damage and inhibition and disease inoculation. We have several drawers full of seed yet to be evaluated that are the result of his work. The remark made earlier in this discussion regarding lack of progress referred to our efforts to develop practical techniques to induce disease under artificial conditions. We have not been as successful here as we would like and must still rely on natural conditions for reliable information.

The major portion of our work has been with the strains of Kentucky Blue Grass however, minor effort has been expended with fine leaved and tall Fescues, and with Creeping Bent. We have collected 25 vegetative bents which are under observation.

## **Results to Date**

There have been black days in these past years but for the most part our results are encouraging. It has become apparent that Kentucky Bluegrass strains can be found that are capable of good performance under cultural practices which are departures from the environment that has been considered necessary for the well being of the species. One selection that has been outstanding in test plots at St. Louis for four years, seems to demonstrate that this latitude that has been poorly served by turf grasses in the past may expect more from which to choose. Another strain has come through with good marks in shady areas. Probably the most interesting to golfing are those selections which tolerate rather low mowing heights. We have some 6 or 7 selections that are maintaining good density and appearance after several years of mowing 1/2 inch and under. Because there are several to choose from one hesitates to commit to commercial production until the disease weaknesses have been evaluated as thoroughly as possible.

It is very unlikely that we will ever have a variety that is resistant to all of the known parasites but a strain about which our enthusiasm continues to grow has been free of four of our major Blue Grass diseases under a wide range of environmental conditions.

We are beginning to develop a time pattern and estimates of anticipated results. From 10,000 seedlings started in the greenhouse this year we may expect 10 to 20 selections worthy of going into initial plots two years later. From 100 such plots after two years observation at rate of 5 to 10 surviving to go into additional broad scale testing seems to be the normal. If one of these after 3 to 4 years merits limited commercial production we feel the effort has been justified.

It is not work for the impatient man.

Some of the more or less basic research projects we have undertaken are: Determination of light and temperature conditions necessary for induction of flowering of Blue Grass chromosome counts of Blue grass, degree of gamma and x-ray irradiation necessary to induce mutation, isolation and identification of pathogenic fungi, general response of desired grasses to herbicides, techniques of artificial induction of grass diseases. We are currently investigating the possible application of the technique of collodion leaf prints to identification of varietal aberrants.

It has been an interesting five years and it is hoped that the next five will be the same as well as rewarding to ourselves and to turf grass in general.