There was an advantage to using a wetting agent with potassium cyanate, the types and amounts tested appearing unimportant. There was an advantage to combining 2, 4-D with potassium cyanate for weed control. A fairly fine spray gave best results. *Thorough coverage and uniform distribution over the prescribed area appear essential to the successful use of potassium cyanate for killing crabgrass.*

From general observations during the season, it was also concluded that even though crabgrass was not completely killed, it was thinned out so permanent grasses either were not crowded out or were able to re-establish themselves. Such crabgrass was stunted, did not appear to develop further, and did not set seed. Seed sown on treated spots, even when crabgrass was not raked out, germinated and overcame crabgrass remnants. Re-treatment should be made in about a week if crabgrass shows signs of recovery.

Although discoloration of permanent grasses was often noted, it was temporary and was usually eliminated with the first mowing after treatment. Some fescues and bent grasses appeared more sensitive to potassium cyanate than other grasses and should be treated cautiously. Turf less than a year old should not be treated with potassium cyanate, and treatment of all turf should be avoided during very hot or dry weather.

Permanent grasses injured by mid-summer treatment were slow to recover. Results with potassium cyanate at that time were erratic, and there seems to be little advantage to treating in mid-summer. More advisable times are late spring when crabgrass seedlings are appearing and early fall when permanent grasses are resuming strong growth. Spring treatment is useful where crabgrass infestation is light, but early fall treatment is more advisable where infestation is heavy. Fall treatment should be followed by reseeding and adequate fertilization to heal over bare spots left by dead crabgrass.

This report concerns one year's observations. Some of the tests will be repeated next year under different conditions. There are several other factors which may have direct bearing on the successful use of potassium cyanate to control crabgrass in turf, and some of them will be tested also during the coming year.

IMPROVED TURF GRASSES

February 10, 1951, marked the 30th anniversary of the Green Section's existence. During those 30 years a large part of the research effort has been aimed toward improvement of turf grass strains. The research program has involved selection, increase, and testing.

The testing phase has been done on as broad a scale as possible. The assistance of golf courses and state experiment stations in this has made the release of some strains possible. Many readers remember the "pie greens" in which strains of bentgrasses for putting greens were tested.

In recent years, the Green Section has cooperated much more closely with state experiment stations. Research grants established at many experiment stations by the Green Section have facilitated testing strains developed by the Green Section and development of new strains by the stations themselves. The Green Section has attempted to reciprocate by aiding in the proving of these strains developed at the state experiment stations and by coordinating the testing program in other areas.

The search for improved strains of turf grasses has been successful, as evidenced by the commercial availability of many of these strains. More will be coming into use as strains now being tested are released for commerce.

Merion bluegrass is one of the most promising grasses developed by the Green Section. It was described in an article by Charles G. Wilson and Fred

V. Grau in the April, 1950, issue of the USGA JOURNAL.

Several strains of bentgrasses for putting greens have been developed by the Green Section. Some have been in general use for a number of years and have come to be used on a broad scale. Arlington (C-1), Congressional (C-19), Collins (C-27), Cohansey (C-7), and Toronto (C-15) are vegetative strains known to practically all greenkeepers who make an effort to keep abreast of developments. There is little need to repeat the virtues of these grasses. They have performed well under a wide variety of conditions and have been proved over a long period of time.

One of the newer bentgrass selections which shows a great deal of promise is Dahlgren (C-115). This strain was selected in December, 1946, from a lawn at the Naval Proving Grounds, Dahlgren, Va. At the time of its selection, the following notes were made: "Weed-free, spreading over a 20-foot diameter; a solid patch, very uniform in partial shade." C-115 has been grown in the Green Section test plots since its selection. It is an extremely vigorous grass, holds its color well throughout the entire year, and has been completely free of disease. Another important attribute of C-115 is its ability to thrive at Beltsville, Md., the Green Section's home, with no supplemental irrigation. Further testing is needed, but for the present C-115 appears to be an outstanding strain of bentgrass.

A great deal of work has been done at Pennsylvania State College in attempting to develop superior strains of creeping bentgrass from seed. The progress is encouraging. It seems likely that the development of superior bentgrass strains which may be propagated by seed will be accomplished in the relatively near future.

The improvement of red fescues is a project that also has been emphasized at Penn State. In many areas the Penn State Blend of Chewings fescue has produced turf superior to that of common Chewings fescue. It is recognized that the Penn State Blend of Chewings fescue is not the ultimate turf variety, but it has served a useful purpose. In the meantime, the testing program has continued to deal with many promising selections. The Green Section has cooperated in testing an extensive series at Beltsville. We may look forward to better varieties of red fescue as a result of these research efforts.

The zoysiagrasses have been the object of much research work at Beltsville. The Division of Forage Crops and Diseases has sponsored a rather intensive research project on the cytogenetics of the zoysias. A number of selections of the zoysias have been tested by the Green Section and the Division of Forage Crops and Diseases. Outstanding strains from the standpoints of turf and of high seed yield have been developed.

The Z-52 strain is available commercially as vegetative material. This strain is not a particularly heavy seed-producer and there is a diversity of plant types produced from seed of Z-52. However, its outstanding attributes of fine texture, winter-hardiness, good color and vigorous spreading ability will encourage widespread use of Z-52 in vegetative plantings.

It is expected that high seed-yielding strains of zoysia will be released in the near future. This development should do much to encourage the use of zoysia in turf.

Although no strains of tall fescues have been developed especially for turf use, these grasses have come to be used extensively in turf only during the last decade. They offer much in the way of economical maintenance of turf because of their drought tolerance, wear resistance, and relatively low fertility requirements.

Bermudagrass is one of the most important turf grasses in the United States. Improved strains of Bermudagrass for use in turf have been selected at a number of state experiment stations and testing of them is under way.