

There has been an extensive development of commercial seed production of Seaside creeping bent and various colonials such as Astoria and Highland from predominately native stands. Although some differences of opinion still exist concerning the relative merits of the vegetative versus seeded, and creeping versus non-creeping, the greater weight of opinion and experimental evidence overwhelmingly favors the vegetative, creeping types.

As early as 1921, Piper and Oakley reported that vegetative creeping bent is "all in all, the best of putting green grasses". This has been further substantiated by the later work of the USGA Green Section, various experiment stations and performance on many courses.

Significant Improvement

Practically all improved vegetative strains were isolated following years of natural selection under actual playing conditions of early mixed seeded types such as South German bent. Undoubtedly, the continuous use of this technique has resulted in a very significant improvement in the quality of turf over the years. We need only to compare the present day performance of our "named strains" versus the old Virginia, Columbia and Washington, or with the turf produced with commercially available seed to appreciate what has been accomplished.

What are the limitations and problems with the vegetative bents?

Being confined in germ plasm these strains are limited to "optimum" performance to local regions of adaptation. Original selection and proper testing have been limited to a rather small section of the country, yet the strains have been used quite extensively at the larger fringe areas.

Documented Evidence Lacking

Within a region of proved adaptation the performance of these strains may vary significantly from year to year due to fluctuations in climatic conditions. Even more pronounced may be the use, management and growing environment to which they are subjected. Documented evidence in differential wearing ability, nutrient requirements and other specific management practices is practically non-existent. As a result, it may take a quarter of a century before the relative merits of a single strain are recognized.

Lacking certification and proper handling, many cases of lost identity have re-

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Vegetative Bent Has Improved Quality of Turf

By **JOSEPH M. DUICH**
Agronomist, Pennsylvania State U.

This article has been condensed from a speech made by Joe Duich at the GCSA convention,

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Vegetative Bent

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sulted from the hand-me-down type of distribution which has been so prevalent with vegetative strains.

Many new greens have been seeded to common quality bents because the better vegetable strains were not available for planting. In other cases \$150 worth of seed appeared many times cheaper than the outright purchase of stolons for planting an entire course's greens. Another common problem, unfortunately, is when the decision on what to plant is made by the unqualified or the uninformed.

Widest Adaptation Range

Based on practical use observations, Congressional bent appears to possess the widest range of adaptation of the vegetative strains. Cohansey stands out in the higher temperature regions, whereas the older Washington strains appear best adapted in cooler areas where dollarspot prevails as the major disease. The velvets are definitely limited to New England and in the Midwest we see the best adaptation of Old Orchard, Collins and Toronto.

The seeded Seaside gives its best account in less humid areas where diseases

are definitely less prevalent. One can also find satisfactory greens of Seaside where natural selection has eliminated the weaker types over a period of years. In these cases we must also recognize the efficiency of individual supts. as a determining factor.

Best of Seeded Strain

The first departure from the relatively simple method of selection has been the synthetic or polycross approach used by Musser to develop Penncross seeded bent. This consisted of using one of the systematic methods of breeding that is available to plant breeders. Objectives of this program were to produce a superior seeded bent and to overcome some of the very apparent limitations of vegetative strains.

Practical experience is now confirming experimental results which showed that as a synthetic with a broad gene-base, Penncross would perform over a much wider region than a single strain. It will produce significantly better turf than any other presently available commercial seeded bent, and it will compare very favorably with the better vegetative strains in most areas, and surpass others in fringe areas. However, it is not a supergrass and requires good sound management just as

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Fairways: Orphans of Course

Fairways continue as the chronic over-all problem. Many retain the designation of 25 years ago as being "the orphan" of the golf course. The most plausible explanation appears to be the non-existence of grasses capable of satisfactory performance under the level of management given fairways. The problem is most perplexing with the cool season grasses, especially in the crabgrass belt.

Bluegrass can't be held on close-cut, watered fairways, especially when weakened by diseases, high temperature and excessive water. At best, its density leaves something to be desired. Fescue is even less adept under these conditions.

Introduction of leafspot resistant Merion was looked upon as a major development for both irrigated and non-irrigated fairways. Although it was formally released 13 years ago, we have yet to see exactly where it fits into our region of adaptation picture.

Merion will provide a tight, dense turf when adequately fertilized. It tolerates reasonably close clipping due to its decumbent growth habit. Its overall average performance is definitely superior to common and other current bluegrass varieties. However, diseases may still be a major problem in some areas, especially when the grass is subjected to excessive water or low fertility.

Accumulate Thatch

Older stands of Merion show a tendency to accumulate a heavy thatch layer. Thatch will always be a problem with any vigorous grass, stoloniferous or rhizomatous, and must be contained by good management.

Our most promising approach in the near future with the bluegrasses is a seed mixture of improved types. Individual strains will have to be compatible in germination, seeding vigor, general vigor and fertility requirements. Similar texture and color are desirable but not an absolute necessity.

Creeping bent is impractical on large fairway areas due to its growth characteristics and demands. Vigorous growth during favorable conditions quickly results in a spongy, thatched sod which perpetuates its high susceptibility to many diseases and insects.

Colonial May be Useful

Colonial bent, though, offers hope for irrigated fairways in cooler areas. High leaf density and rapid growth permit

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quick recovery from injuries and makes them tolerant to close mowing. Colonials do not thatch as readily as the creepers.

Most commercial seed is contaminated with creepers and susceptibility to disease, especially brownpatch. It must be realized that no improved types exist and our knowledge of the species is limited.

U-3 Bermuda and Meyer zoysia are now being accepted as a practical approach toward solving the perplexing question of fairway and tee grasses in the 'no man's land' area between our northern and southern climatic zones. The decision was undoubtedly reached only after a fair trial was given to these grasses, and due credit must be given to those individuals who pioneered the effort by abiding by the principles of good turf

management and rational thought. Trials consisting of "just plugging these grasses and waiting to see what happens" contributed very little practical information.

Musser Text Revised

"Turf Management," has been revised and brought up to date by its author, H. B. Musser, professor emeritus of Pennsylvania State University. It soon will be published by McGraw Hill Books, Inc., for the USGA green section.

Ryder Cup Matches

The 1961 Ryder Cup matches will be played over Royal Lytham and St. Anne's, St. Anne's-by-the-Sea, Eng., Oct. 13-14. This will be the 14th meeting of PGA teams representing U. S. and Great Britain.