
TIMELY TURF TOPICS

from the USGA Green Section

POA ANNUA—FRIEND OR FOE?

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Annual bluegrass is best known by its scientific name, *Poa annua*, which, among golf course superintendents, frequently is shortened to "Po'anna." This grass has a number of remarkable characteristics which force us to place it in the class of desirable turf plants rather than in the weed category where it is placed so often. Let us review these characteristics, pro and con, and attempt to arrive at a logical conclusion.

PROS

Poa annua stands close cutting. It thrives at 3/16 inch on putting greens. It thrives in fairway turf cut at 1/2 inch.

thrives on compacted soils. The compacted condition of many soils under turf has destroyed most of the turf grasses which we try to grow.

..thrives in shade or sun.

..adapts itself virtually on a worldwide basis where moisture conditions are adequate.

reseeds itself naturally.

. produces a highly desirable turf for many uses so long as it is growing.

. is soft and easy to cut.

. has an attractive color.

.. thrives under continuous moisture.

CONS

Poa annua is an annual grass which disappears during extremes of heat or drought but returns spontaneously with the return of moisture and more temperate climate. The disappearance of *Poa annua* in summer is the only black mark against this grass where excellent turf in summer is needed.

It would seem that our desire to berate *Poa annua* and to class it as a weed is to admit our inability to grow a companion grass with it which will provide desired turf conditions when *Poa annua* is resting. It also represents our failure to modify the conditions which do not permit the growth of the turf grasses which we would like to grow. Perhaps the answer is a *dual* approach.

It is obvious that the demands of golfers to have *green* turf have greatly encouraged *Poa annua* by virtue of the large quantities of water applied to turf to "keep it green." Under natural conditions bluegrass, fescue and bent become brown during their resting stage when summer drought hits. The playing quality of brown turf is unimpaired, but golfers dislike brown, crackly grass so a water system often is installed. Once a water system is installed, the tendency is to use it to excess. Green committee chairmen have been known to say, "Why do we have this \$30,000 water system if we don't use it?" This is the first step to a *Poa annua* turf which, because it is poorly understood, is unsatisfactory.

With increased use of water, the soil is saturated most of the time and the grass must be mowed more often. Heavy machinery operating frequently on wet soil causes compaction by forcing the air out of the pore spaces. With reduced air in the soil, the perennial turf grasses disappear and *Poa annua* and weeds are free to develop unhindered by competition. When *Poa annua* produces seeds in early spring and the plants become yellow and die, crabgrass, knotweed and clover are the logical invaders. Then golfers protest about the condition of the course, forget-

ting that, in large measure, they have been responsible.

There never have been sufficient funds to conduct the extensive research needed to answer many problems induced by the demands of specialized uses of turf grasses. Part of our trouble today is inadequacy in our research program and in the service or extension teaching. Production of turf is a highly specialized part of agriculture, and it is therefore entitled to a legitimate share of funds for agricultural research.

We can cite many instances of nearly ideal combinations of *Poa annua* with other turf grasses. They suggest avenues of practical research which can be of lasting benefit to the millions of taxpayers who love and enjoy good turf. It is hoped that several experiment stations, working with the USGA Green Section, may make a coordinated approach to this national problem.

Modifying Soil Conditions

This approach to the *Poa annua* problem is direct, but we do not have the data on which to base definite recommendations. In general we know that, by relieving soil compaction by cultivation, and by aerating the soil to provide more natural growing conditions, we can do a better job of growing the turf grasses we would like to have. This principle is basic to all types of turf the world over.

To reduce *Poa annua*, it is necessary to reduce moisture in so far as it is practicable and feasible. *Poa annua* will not thrive when moisture is deficient, but we cannot control natural moisture.

Research in progress at present may help us to give better recommendations on modification of soil conditions. Meanwhile, we urge wider, more frequent use of soil-conditioning machines which aerate the soil but do not interfere with use of the turf areas.

Other Turf Grasses

Poa annua disappears when the soil becomes dry, when temperatures rise and when the grass finishes seeding. There are exceptions, of course. In Minnesota it may

be possible to hold *Poa annua* turf throughout the summer. In Washington, D. C., this is very unlikely.

What are some of the turf grasses that thrive under the same conditions as *Poa annua* grasses and that are at their best when *Poa annua* is at its worst, and vice versa?

1. BERMUDA GRASS: Bermuda is one of the best turf grasses in existence. It has been damned for its persistence and aggressiveness, but of such, good turf is made. Bermuda grass is not confined to the southern States. There are large areas of excellent Bermuda turf on the campus of Michigan State College at East Lansing. Isolated areas of Bermuda strains occur in New Jersey, Pennsylvania, New York, Ohio, Iowa and other northern States. A casual observation of these areas indicates that some strains are natural companions of the bluegrasses. It is a "natural" because, when the bluegrasses are weakest during the heat of the summer, Bermuda is at its best. On many Bermuda putting greens in the South, *Poa annua* is the natural invader in the fall when Bermuda goes dormant. Golfers brag about the putting conditions on these greens during the winter. At Pinehurst, N. C., considerable progress is being made in growing bluegrass in Bermuda fairways. In this direction, the possibilities of combining a winter-hardy, good turf strain of Bermuda with bluegrass for fairways, tees, lawns, and other purposes are very promising.

2. ZOYSIA GRASSES: Less is known about the Zoysias than about the Bermudas, but in general their characteristics are similar to the Bermuda grasses, both in habit of growth and in their ability to produce excellent turf. Among the Zoysias are many strains, some of which have good combining ability with the cool-season grasses. As yet there is no seed of Zoysia grasses, but there is a great possibility ahead in combining Zoysia with a cool-season grass such as *Poa annua*, bluegrass, red fescue, bents or others. At the Audubon Country Club, Louisville, Ky., the Zoysia tees fill with *Poa annua* in the fall and provide

nearly **ideal** playing conditions throughout the winter. In the spring when temperatures rise, the *Poa annua* disappears and the *Zoysia* assumes command. Its great drought- and heat-resistance makes it a valuable turf grass.

3. **ALTA FESCUE**: Experiments with Alta fescue as a fairway or tee grass have **not** progressed far enough so that we can recommend it for these uses. It appears, however, to have excellent possibilities in this direction, particularly if finer-bladed strains are developed through breeding and selection. It, too, has the drought- and heat-tolerance of *Zoysia* and Bermuda; also it is able to grow better than do most grasses in compacted soil and under an excess or deficiency of moisture. There are already a number of observations which would indicate that where *Poa annua* is a severe problem, trial plantings of Alta fescue might be made with considerable confidence.

4. **BENTGRASSES**: Among the turf grasses, the bents require the most highly specialized management. They usually will not, however, thrive under precisely the same conditions under which *Poa annua* thrives. Where the soil is too compact, bentgrasses cannot compete with *Poa annua*. Where the soil conditions are modified, bentgrasses offer much help in combatting *Poa annua* **because**, with careful management through the summer, they can be encouraged to occupy the soil completely when *Poa annua* is dormant or dead.

In our present stage of research with turf grasses, we cannot yet say which of these possibilities offers the greatest promise. Perhaps it may be a combination of grasses. Our great problem are today, so far as fairways and tees are concerned, is the great Middle Belt across the country commonly referred to as the "crabgrass belt." This is the area where the southern grasses have not been encouraged to move northward and where it has been extremely difficult to grow good turf of the northern grasses.

Happily for the future of lovers of good turf, a coordinated effort is being made to discover the principles of combining

northern and southern grasses and to learn to manage the combination for best results. Work of this nature at present is being conducted at the Beltsville Turf Gardens, at Purdue University and recently in the St. Louis district through the University of Missouri.

Assistance in this phase of the program is being rendered by the Georgia Coastal Plain Experiment Station, where northern strains of Bermuda grass are being bred with good turf strains so that the progeny can be tested in northern latitudes. Additional work is being carried on at Belle Glade, Fla., and is contemplated at Raleigh, N. C. It is anticipated that further work of this nature will be conducted at Michigan State College, Pennsylvania State College and other northern colleges.

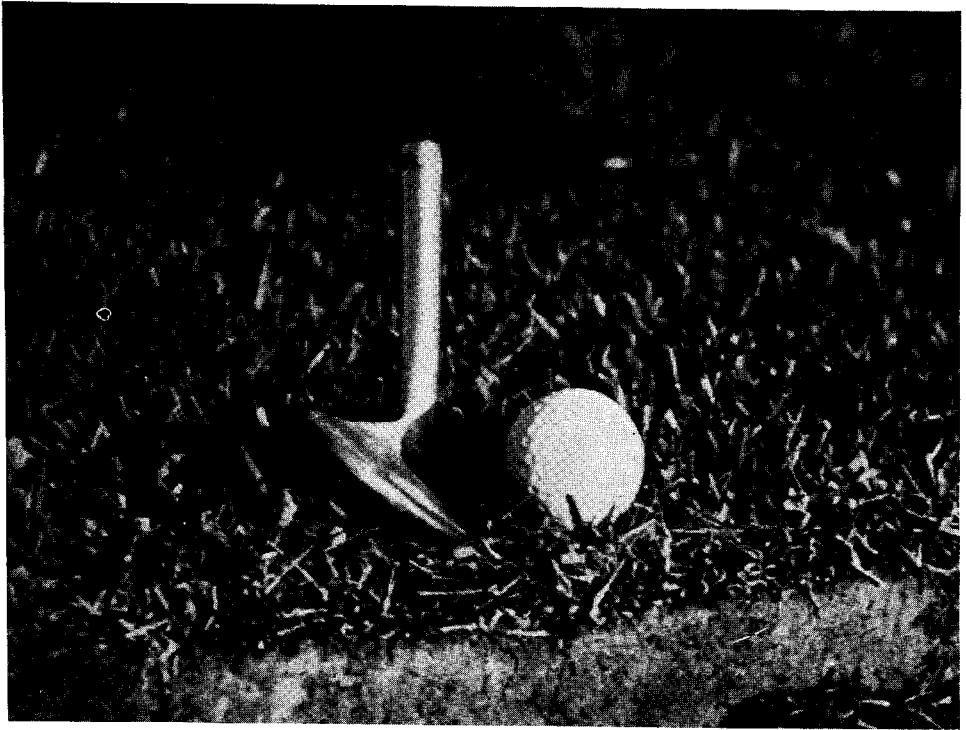
Vegetative planting of highly desirable strains of turf grasses is very much in the picture today because the difficulty involved in producing seed of certain species is almost out of the realm of immediate possibility. Without a doubt, machinery designed for rapid, economical planting of vegetative material into permanent turf areas will be developed in the near future. It is essential to maintain turf areas so that they can be used continuously, even when a new species is introduced into existing turf. Considerable progress already has been made in this direction.

Let us not despair, then, of *Poa annua* as a turf grass. Let us learn to use it and encourage it where it deserves encouragement and where we are able to grow it on a base of a sturdy, summer-growing turf grass.

Not all of this practical research can be accomplished at experiment stations. It is the responsibility of the golf course superintendent on every golf course in the country to take advantage of samples of new grasses offered to him and to make trial plantings under actual playing conditions. This is research in its final form. It is the practical, applied phase of research.

Superintendents are urged to keep in close contact with their State experiment stations for developments along these lines. Through coordinated effort, the answers can and will be found to virtually every problem in the production of better turf.

Is This the Kind of Lie and the Type of Turf You Want?



USGA Green Section Photo

This turf in the Beltsville Turf Gardens is dense, firm, and virtually weed-free. The ball is at rest one-half inch above the soil. Shots played from this turf can be controlled with great accuracy.

SALUTE TO THE SOUTH

The following quotation is from the Southern Golf Association Year Book for 1917:

"The Southern Golf Association is deeply grateful to those Member Clubs and other organizations who have shown themselves so vitally interested in the success of the Experimental Turf Work at the Georgia Coastal Plain Station, Tifton, Georgia by their generous and willing appropriations and contributions to the fund now being sponsored and collected by this Association.

"Additional appropriations and donations will be accepted by the Southern Golf Association from all Golf Organizations whether Association members or not, who wish to aid and support a project for the development of Southern Turf under typical conditions and capable supervision."

The USGA salutes the Southern Golf Association for its magnificent pioneer work in developing support for the program of Better Turf for Better Golf in the southern States.

SOIL SAMPLES

The Green Section cannot accept soil samples for chemical tests because of limitations in personnel and facilities. This sort of testing is best done in the laboratories of State experiment stations or of fertilizer and seed firms which maintain this type of service.

Samples intended for the examination of physical characteristics will be welcomed, because the physical nature of the soil for specialized turf areas is basic to a proper chemical and nutrient balance and to the desired growth of turf grasses. This is especially important in construction or in the renovation of important turf areas.

Special physical studies of putting-green soils are in progress at the Saratoga Laboratories, Saratoga Springs, N. Y. Results of these studies will be reported at the American Society of Agronomy meetings in Fort Collins, Colo., August 24-27, 1938, and will be published in the Journal of the American Society of Agronomy.

HUNGER SIGNS

The National Fertilizer Association, 616 Investment Building, 15th and K Streets, N.W., Washington, D. C., is revising the book, "Hunger Signs in Crops." It will be available at a later date.

A great deal of work has been reported (on the various food crops) supported by excellent color illustrations, but virtually no information is given on how to recognize hunger signs in the grasses. Recommendations for the nutrition of grasses largely are based on empirical data, observations and experience. Surely the grass family (of which corn and the cereals are members) must exhibit characteristic symptoms of malnutrition with respect to N, P, K, Ca, Mg and other nutritive elements if we but knew where and how to look for them.

A grass symptom of N starvation is a yellowing of the blades. In some species, this occurs after the starvation has become so acute that weeds already have gained a foothold. Phosphorus deficiency produces a purpling in corn leaves, but who has seen this in the minute blades of bentgrass?

Potash requirements in turf grasses are being studied at Pennsylvania State College and Purdue University; they offer some real hope in the future. Purdue Uni-

versity has reported excellent work on two bentgrasses (Notes: The Journal of the American Society of Agronomy, Volume 40, No. 3, March, 1948), with respect to Ca and P, but it is only a start.

Tissue testing is being explored with some promising indications, but it still is a laboratory procedure and has not gained a firm foothold among turf superintendents.

The Green Section supports the trend whereby the research workers in grasses pool their efforts from the forage and the turf standpoints. It has been our contention that the forage grasses, when mowed closely and frequently as turf is managed, exhibit their weaknesses more quickly and more prominently. In a study of the nutritional requirements of any single grass, it would appear that the growth requirements of that grass would be a constant factor, regardless of the use to which the grass would be subjected.

Balanced nutrition is the goal in the production of grass for whatever purpose it is used so that the full capabilities of the plant can be utilized to the maximum. Management of the grass always will be a particular problem of the purpose for which the grass is used.

WHAT PRICE RYEGRASS?

A recent visitor to the Green Section & vice was Dr. Davies, Director of Agriculture, Canberra, Australia. A great deal of ryegrass has been imported from "Down Under" for use in the United States. Apropos of recent work reported in The Journal of the American Society of Agronomy (TIMELY TURF TOPICS, November, 1947, p. 2), the question of the use of ryegrass in permanent seed mixtures was raised. Dr. Davies stated that ryegrass has been eliminated from all mixtures of perennial species for turf in Australia.

Similar action is being contemplated by the Turf Committee of the American Society of Agronomy. The Green Section will welcome your experiences and your statements regarding the use of ryegrass (Italian, common or perennial) in mixtures

with bluegrass, bents, fescues, Bermuda and other permanent species.

At the Beltsville Turf Gardens, the most troublesome weed is ryegrass, which volunteers in all plantings. The field where the turf plots are located once was seeded to ryegrass as a cover crop, and seed was allowed to mature.

Agronomists in Oregon and Washington, where ryegrass seed is grown, deprecate the use of ryegrass where turf is the objective. By no stretch of the imagination can ryegrass be considered a turf grass. It is a special-purpose grass and as such has a special place for winter turf, particularly in the South where the summer heat and the competition of southern grasses eliminate it completely after it has served its purpose. In mixtures with cool-

season grasses in the North, it appears to be little else than a detriment and a nuisance which defeats the purpose for which it was included—as a “nurse” grass.

A number of leading seed firms have eliminated, or plan to eliminate, ryegrass from the seed mixtures they sell. It appears to be a step in the right direction. If all seed firms would agree to act similarly, there no longer would be the need for competitive mixture, at low price but high cost, which would be green in five days. If protection of the new seedling is needed, a straw mulch, or similar material, would be cheaper and more effective and the resulting turf would be far more satisfactory to the user.

The Green Section will appreciate your vote on this question: “Should ryegrass be eliminated from mixtures of permanent turf grasses?”

Send your vote, YES or NO, on a penny post card to:

USGA Green Section
Plant Industry Station
Beltsville, Md.

Please give your name and address. Results will be tabulated and reported.

INTERESTING READING

“Newsletter” for Iowa Greenkeepers, March, 1948. H. L. Lantz. Iowa State College, Ames, Iowa. Report of the 14th Annual Greenkeepers’ Short Course.

“Putting Theory,” by Leonard Crawley, London Daily Telegraph, in *THE PROFESSIONAL GOLFER*, March, 1948, p. 18. Golf course superintendents in the United States can well be proud. Of our courses, Mr. Crawley concludes: “Gentlemen, I wish we had your putting greens.”

“Retiring President’s Report” in the *GREENKEEPERS’ REPORTER*, Vol. 16, No. 1, January-February, 1948, p. 2. This article by Mr. Farnham merits re-reading and a permanent place in every superintendent’s files.

“Control of Fall Army Worm,” by Glenn W. Burton, *THE GREENKEEPERS’ REPORTER*, Vol. 16, No. 1, January-February, 1948, p. 50.

“Control of Soil Insects” by John C. Schread, *THE GREENKEEPERS’ REPORTER*, Vol. 16, No. 1, January-February, 1948, p. 7.

“Chlordane Rates High in Insect Control Tests,” by John C. Schread, *GOLFDOM*, March, 1948, p. 39.

“We Discuss Shady Lawns,” in *BLADES OF GRASS*, XVII, and “Renovating the Established Lawn,” The Lafkins Golf and Lawn Supply Corp., White Plains, N. Y.

BERMUDA GRASS TEES

The following quotation is reprinted in its entirety from *TURF NEWS*, the official organ of The Heart of America Greenkeeping Association, Volume 2, No. 3:

“Like many other golf courses, we are continuously trying to improve the quality as well as the toughness of grass for use on grass tees. Tees at Hickory Hills Country Club receive quite a beating each season, and it is almost impossible to keep them covered with grass and maintain a worthwhile appearance.

“We have debated the wisdom of planting Bermuda grass as a means to improve the condition, but have been encouraged to do so by observing several large patches scattered over the course. The patches of Bermuda which we have on the course have been spreading quite rapidly, and have not experienced any winter kill whatsoever. It is dormant from November until May, and although it takes on a brown appearance during these months, it still makes a fairly good playing turf. Two strains of Bermuda have been found on the course. One is quite coarse and does not seem to mat very well, while the other is much finer and produces a closer mat. The appearance of this latter strain during the growing season is quite beautiful, and it is the one which we have decided upon for the tees which we are going to rebuild.

“Just what the outcome will be is for time alone to tell. Since we have never planted Bermuda, we have no idea as to how long it will take to root well and to grow into fine turf. As soon as the frost is completely out of the ground and growing has started in the Bermuda patches on the course, we will obtain stolons and go to work. It is hoped that in the next several months we will be able to report our results at one of the monthly meetings of the Greenkeepers.”

(JOHN ARROWOOD, HICKORY HILLS COUNTRY CLUB, SPRINGFIELD, MO.)

SLUDGE OR MANURE

The following quotation is from “Potash News Letter for Northeast Territory” No. 44, April, 1948, published by American Potash Institute, Inc.:

“Is Sewage Sludge a Good Fertilizer? Used at the rate of 20 tons annually for three years, sewage sludge was found to be not so effective as cow manure. When extra potash was applied with the sewage sludge, there was little difference in the crop-producing powers of these two types of material. This is to be expected since most of the potassium in sewage escapes with the water. Thus the potash content of the manure averaged nearly 1.2 per cent on the oven-dry basis, whereas that of sludge averaged .2 per cent, or only one-sixth as much. The nitrogen and phosphoric acid content of sludge averaged about 1.5 per cent each. (Science and the Land, New Jersey Ann. Rpt., 1944-45.)”