

## Some Simple Facts About Our Northern Golf Grasses

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Every day brings evidence of the need for plain statements of fact regarding our northern turf grasses and their use on the golf course. Such evidence comes directly in inquiries from those who are new at the game and who wish to avoid mistakes in selecting species for their particular conditions; and it comes indirectly from those who, year after year, use grasses that in the very nature of things can not do otherwise than fail to give results that come up to expectations. The first group recognizes its need for help; the second, may or may not recognize it; but the need for assistance is there nevertheless. This constitutes the justification for pounding away on a much-discussed and to some a threadbare subject.

The list of our important northern golf grasses is not long, thanks to the common sense tendency to eliminate valueless species that lay claim to place through their behavior abroad and also the tendency to do away with those whose places can be filled better by others. This sane course of elimination leaves us with *Kentucky bluegrass*, *redtop*, *the bents*, and *red fescue* as our important species. *Canada bluegrass* and *sheep's fescue* also may be included—not because of any extensive use to which they might be put but because of the special purposes they fulfill. *Rough-stalked bluegrass* or *bird grass* is the most desirable of all shade grasses, and well to the northward is also valuable in the fairway. There are also other species, but they play decidedly minor parts. That there may be no misunderstanding of the term *northern* as applied to golf grasses and golf courses, it is used here broadly to mean that part of the golf belt that lies north of the latitude of central Virginia.

### THE BLUEGRASSES

The grasses belonging to the genus *Poa* are commonly called bluegrasses. There are many of them, but only one (*Kentucky bluegrass*) is purposely cultivated to any considerable extent on our northern golf courses. *Canada bluegrass*, however, is valuable, but only for the rough. *Annual bluegrass* (*Poa annua*) is a very common species on putting greens, where it volunteers abundantly and is largely regarded as a weed; however, it is not without merit.

### KENTUCKY BLUEGRASS

Because of its wide range of adaptation and the character of its turf, *Kentucky bluegrass* tops the list of fairway grasses for northern courses. It requires fairly rich soil for its best growth, and when given such soil the other perennial turf grasses can scarcely compete with it under fairway conditions. *Kentucky bluegrass* should be used as an important constituent of fairway mixtures on all northern golf courses. On very sandy soils, *red fescue* may sometimes do better, but such soils to produce really good turf should be top-dressed with clay and manure; when so treated they will produce better turf of *Kentucky bluegrass* than of *red fescue*. In the Northeast (particularly in New England) the bents make excellent fairway turf. But even here for original seedings, at least while the supply of bent

seed is far from plentiful, Kentucky bluegrass should always be used. It should not, however, be sown alone, since the seed is slow to germinate, and it usually takes a year or more from the time of seeding until it produces good playable turf. This fact has given rise to the well-known bluegrass-redtop mixture. These two grasses make an almost ideal fairway combination. Redtop is an excellent starter but a poor finisher. Kentucky bluegrass is the reverse—it starts slowly but finishes well. The first year from time of seeding, redtop is the dominant grass; after that, Kentucky bluegrass characterizes the turf. It is a vital mistake therefore to sow Kentucky bluegrass seed alone on fairways or lawns. Redtop seed should always be sown with it. Four pounds of the former to one pound of the latter is the standard proportion, and the rate of sowing should be 100 to 150 pounds to an acre of well-prepared seed bed. In the Northeast, especially in New England, some bent seed, as much as ten pounds to the acre, should be added if available, since conditions there in general favor the ultimate dominancy of the bents. Seeding should always be done in the late summer or early fall.

Kentucky bluegrass is generally regarded as a lime-loving grass. It is probable that because it requires a rich soil (most limestone soils where bluegrass luxuriates are rich soils) it has acquired much of its reputation as a calcophile or lime-lover. Really poor soils must have added to them something besides lime before they will grow good bluegrass, but rich soils will produce excellent bluegrass turf, other conditions being favorable, even though they be low in their lime content. Kentucky bluegrass is not at its best during the hot, dry periods of summer, but over much of the area where it is used as a fairway grass, summer annual grasses, including crab grass, come in to produce playable turf. When the long days and cool weather of fall arrive, bluegrass asserts itself and produces turf of almost ideal quality, so that the weedy summer grasses often really are a benefit rather than a detriment.

Good Kentucky bluegrass seed should weigh approximately 22 pounds to the bushel and should not have more than 13 per cent. of inert matter (chaff and trash). It should have less than 2 per cent. of weed seeds, and it should germinate not less than 80 per cent. However, new-crop seed, as it is called, may be potentially viable but because of its freshness may not germinate as high as it will one year later. Conditions of harvesting and curing being satisfactory, seed one year old, if properly stored, will usually germinate appreciably higher than new-crop seed.

#### CANADA BLUEGRASS

While often recommended for the fairway and frequently included as a constituent of fairway and putting green mixtures, Canada bluegrass has no place on the fairway proper in any part of this country. The stubbly nature of its turf makes it undesirable as a fairway or putting green grass. For the rough, however, it is very good, especially south and west of New England, on clay soils. Canada bluegrass does not require as rich soil as does Kentucky bluegrass; in fact, it will make better rough on poor clay soil than on good soil. It fits in well with sheep's fescue, and the combination makes an almost ideal one for the rough. For original seedings of the rough, 30 to 40 pounds of Canada bluegrass, and 40 to 50 pounds of sheep's

fescue are sufficient for one acre of well prepared soil. The seed of Canada bluegrass closely resembles that of Kentucky bluegrass, but specialists can easily tell one from the other.

#### ROUGH-STALKED BLUEGRASS OR BIRD GRASS

Rough-stalked bluegrass or bird grass is a beautiful turf grass of a lively apple-green color, very unlike the color of Kentucky bluegrass. It makes exquisite turf and is the *best of all shade turf formers*. There is much of it on the lawns and golf courses of Canada and New York. Seed comes from Europe and is usually of good quality. It may be seeded at about half the rate indicated for Kentucky bluegrass, as it spreads more rapidly.

#### REDTOP

In the language of Ingalls, redtop is a "valuable servant." In making turf on northern golf courses its chief function is to supplement other grasses. Although very closely related to the bents botanically, it is quite different from them in its turf-forming habits. Used alone it makes good turf only in the early stages of its development. After the first year it becomes too coarse and open in its habit of growth to make turf of satisfactory quality. Redtop should never be sown alone on the fairway or elsewhere where permanent turf is desired. It is an ideal grass to mix with bluegrass for seeding fairways, since it makes up the turf for the first year, or until bluegrass becomes established. Usually after the first year it gives way almost completely to bluegrass where the conditions are even fairly well suited to the latter.

The great value of redtop lies in the ability of its seed to germinate quickly and produce vigorous seedlings. It is because of this that it should be used extensively with other grasses, particularly Kentucky bluegrass, for the original seeding of fairways. The bents have the same characteristic, but their seed is too scarce to be used extensively on fairways at this time. One pound of re-cleaned redtop seed to 4 pounds of Kentucky bluegrass is the standard mixture, but considerable latitude may be allowed in the proportions.

Where red fescue is used either on the fairways or greens, redtop helps out greatly. Red fescue does not form close turf quickly and needs a grass of the habits of redtop as a temporary filler. The usual proportions of the red-fescue-redtop mixture, either for fairways or greens, is approximately 4 pounds of the former to 1 pound of the latter. Under putting green conditions redtop disappears relatively quickly. It can not stand the close cutting that is necessary for the making of a good putting surface.

In the South it has become quite a common practice to sow redtop seed in the fall for winter putting greens. This is done either on newly prepared seed bed or on old Bermuda turf. Redtop seed is always abundant, relatively cheap, and of good quality. Re-cleaned redtop seed should weigh approximately 40 pounds to the bushel.

#### THE BENTS

The present market names for the bents are as follows: *South German mixed* or *creeping bent*, *Rhode Island bent*, and *Colonial bent*. South German mixed bent seed, as the name implies, comes from Germany. It is

composed of a small percentage of seed of true creeping bent or carpet bent, and usually from a trace to a small percentage of seed of velvet bent. The remainder, excluding weed seeds and redtop, if present, is seed of the same species as that commercially called Rhode Island bent. Rhode Island bent seed at present is harvested only in Rhode Island, although the grass is very abundant in the northeastern part of the United States. Colonial bent seed comes from New Zealand, and botanically is the same as Rhode Island bent—that is, it produces the same kind of plants and turf. However, the seed of Colonial bent as it is now on the market contains very much less chaff and other inert matter than does commercial seed of Rhode Island bent.

The bents taken collectively are by far the best of our northern putting green grasses. There are few that will dispute this. They make playable turf quickly from seeding and produce permanent turf that resists unfavorable conditions imposed by soil, climate, disease, and play better than does red fescue—their closest competitor for putting green honors. There is scarcely a place where red fescue does well that the bents will not do equally well or better, and there are many places where the bents thrive but where red fescue practically fails. The bents will withstand poor drainage better than red fescue, and likewise continuously high temperatures; consequently, they can be used farther south than can red fescue. Furthermore, the bents seem to be more resistant to the brown-patch disease, which is a very important characteristic.

The question frequently has been asked, "Why are the bents so enthusiastically recommended when the seed supply is insufficient to meet the present demand?" An answer to this question, if one is needed, might well be that the condition of the seed supply does not affect the relative merits of these grasses. It might surprise some to know that between November 1, 1921, and September 1, 1922, approximately 103,000 pounds of bent seed have been imported and actually put on the market in this country. If this quantity had been used as it should have been used there would have been enough bent seed for all legitimate needs.

Creeping (or carpet) bent and velvet bent can be propagated vegetatively. The former lends itself better to this method than does the latter, because it spreads much more quickly by runners or stolons. This year for the first time the supply of bent seed is being appreciably augmented by the use of bent runners as substitutes. There will probably be nearly 200 new greens planted by the vegetative method this fall.

Preference has been expressed for German bent seed as compared with seed of Rhode Island or Colonial bent. This is due to the fact that it contains a small percentage each of creeping bent and velvet bent seed, while commercial seed of the other bents does not contain them. Creeping bent and velvet bent are regarded as exceedingly valuable in putting green turf. On old greens that have been sown with German mixed bent seed there will be found distinct patches of creeping bent and velvet bent a foot or more in diameter. Some greens are made up almost completely of these patches. On some of the New England courses velvet bent constitutes most of the turf of the greens, and also covers large areas of fairway. The reason for this is not known. Southward creeping bent predominates over velvet bent where the two are found together. The species of bent com-

monly known as Rhode Island bent and the seed of which makes up the great bulk of seed of all commercial bents, makes an excellent turf for putting greens or fairways. The plants of this species spread but not so rapidly or in quite the same manner as those of creeping bent or velvet bent.

Trained seed analysts now can tell the seed of the bents from that of redtop. The ultimate user therefore may be fully protected if he will take the trouble to send samples to be properly examined before he makes his purchases.

#### THE FESCUES

The common fescues of our northern golf courses are red fescue and sheep's fescue. There are several others that occur to some extent but they are relatively unimportant. In the past considerable quantities of meadow fescue seed were used in fairway mixtures, and even now there are some who recommend this grass for the fairway. It is a serious mistake to use meadow fescue on any part of the golf course, since it is a relatively coarse, tufted grass and not a turf former. The name "fescue" doubtless has aided in placing it among the golf turf grasses, where it clearly does not belong.

#### RED FESCUE

Seed of red fescue is on the market under two designations, namely, *European red fescue*, and *Chewings' (or New Zealand) red fescue*. The former is produced mostly in Germany and the latter in New Zealand. Whatever their botanical differences may be, they appear to have essentially the same characteristics so far as their turf-making habits are concerned; therefore the single designation *red fescue* is used here to include both. The seed of the variety known as Chewings' fescue (named for a Mr. Chewings) is the kind now most abundant on our market. A careful, extensive, and unprejudiced study of golf grasses in America leads to the definite conclusion that red fescue is a much overrated grass so far as its use in this country is concerned. The reputation which it enjoys abroad and the shortage of good bent seed doubtless has helped to make it easily possible to extend the use of red fescue here. Those who are making a careful study of golf turf grasses are coming to realize that it is not all that its advocates have claimed for it. Red fescue, under the best conditions, makes excellent turf. Its leaves are unusually fine, but they are somewhat wiry in texture. This is particularly noticeable in hot, dry weather of summer, and although not seriously objectionable it is not a very desirable characteristic. Red fescue is capable of making both good greens and fairways. It can withstand more shade than can our other common golf turf grasses, and it has the ability to grow on very sandy soil in the northeastern part of the United States. This, however, is not a great asset, as the turf it forms on such soils is not first-class fairway turf. The chief objection to red fescue is that it forms close turf very slowly; and on poor soils, especially poor sandy soils, it has a decided tendency to become bunchy. It is largely because of this fact that Kentucky bluegrass and the bents are very generally preferred to it. Where red fescue has made euppy or bunchy turf it is a very difficult matter to get it or other grasses to fill in successfully. Hot weather affects red fescue much more

adversely than it does Kentucky bluegrass, redtop, or the bents; therefore it can not be used successfully on courses as far south as Washington, D. C. Brown-patch also seems to attack it more severely than it does the bents. Kentucky bluegrass, it will be remembered, is practically immune to this disease.

Everything considered, red fescue is decidedly second to Kentucky bluegrass as a fairway grass and to the bents on the putting greens. The cases where it is superior to these grasses are very few indeed. It is by no means uncommon for the bents to crowd out red fescue on the greens and for Kentucky bluegrass to overrun it on the fairways; but no cases have been noted where red fescue has replaced either the bents or Kentucky bluegrass.

The germinability of red fescue seed is not very dependable. The seed loses its vitality quickly. It does not remain viable as long in storage as does seed of the bluegrasses, bents, or redtop. Every lot, therefore, should be tested before it is sown. Most of the seed that is on the market is relatively free from other seeds and inert matter; this is particularly true of seed of Chewings' fescue.

#### SHEEP'S FESCUE

As a grass for the rough on northern golf courses, sheep's fescue is nearly ideal, especially if it is grown upon poor soil. It forms just about the right kind of bunches to afford the proper penalty to the player. It is also useful on bunkers to produce what is commonly called "whiskers." On most of the older courses in the North there is more or less sheep's fescue on the fairways and some even on the greens. Many of the fairway and putting green mixtures formerly used contain seed of it. It should never be sown on either fairway or green, as it is not a turf-forming species. The use of sheep's fescue should be confined strictly to the rough and bunkers. For the rough it should be sown at the rate of about 50 to 70 pounds to the acre. Seed of Canada bluegrass can be sown with it to advantage. The commercial seed of sheep's fescue is difficult to distinguish from that of red fescue.

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### Changing the Cup

LYMAN CARRIER

The question was asked us recently why the plugs of turf transplanted in changing the cup on putting greens often die. We have noticed these dead and brown spots of turf on the greens of several golf courses marking the previous locations of the cup, and wondered why, as we often use a hole cutter to patch bare spots, or replace weeds with turf without having any trouble from the plugs dying.

An experiment was started to try everything we could imagine a greenkeeper might do in changing the location of a cup. Plugs were taken to the full depth of the hole cutter. With some all of the soil was knocked loose, leaving just the turf about three-fourths of an inch in thickness. The loose soil was then put back in the hole, tamped slightly, more soil added to bring it to the proper height, and lastly the piece of turf was put