

South German Mixed Bent Seed Described

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The importance to the golf course of the proper seed and the uncertainties and disappointments experienced in its purchase, justify a description of the seed which has been most sought and, as an available article, is the most desirable seed now obtainable. This is the imported seed which now bears the name "South German mixed bent" and which for many years prior to the world war was handled by the trade under the names "Agrostis stolonifera," "Creeping bent," "German bent" and various combinations of these names. "Creeping bent" and "German creeping bent" appear to be the names in common use at the present time.

As the name implies, this seed is imported from Europe, sometimes from Germany, but more frequently from Holland, Belgium or England. The origin of the seed, however, is southern Germany.

The uncertainty and disappointment connected with the purchase and use of this seed have resulted chiefly from the use of redtop as an adulterant of, or a substitute for, the bent seed. This has been possible in the past because of the difficulty and improbability of detection. Studies upon this group of seeds within recent years have made it possible to distinguish the several kinds of seeds involved and thus prevent the sowing of undesirable seed.

The nature of the South German mixed bent seed may best be understood by considering the several kinds of seed which constitute the fine bent seed from different sources.

The name "bent" is applied to the different species and varieties of species of the genus *Agrostis* of the family of grasses. Of the twenty-five or more species of *Agrostis* known to prevail in this country, but three of them are commonly of interest in connection with turf making, while another kind from Europe is coming to be recognized as having an important bearing on the question of the most desirable golf turf. Of the four kinds referred to, one is the common agricultural redtop (*Agrostis alba*) sometimes called "white bent." Another is the Rhode Island bent of New England (*Agrostis tenuis*) often referred to as *Agrostis vulgaris*. Another is velvet bent (*Agrostis canina*), and the fourth a species having pronounced creeping habit, is now called carpet bent. Its proper technical name is at present undecided. While this grass is closely allied to, if not identical with *Agrostis stolonifera*, the very limited occurrence of its seed in commercial bent seed does not justify the application of this name to the German bent seed.

In addition to understanding the kinds of *Agrostis* seeds connected with the bent seeds handled commercially, it is important to know their commercial sources. Redtop seed is produced chiefly in southern Illinois, which is the source of the American commercial seed even though it may have been returned to this country in commercial quantity from Europe. Rhode Island bent is produced chiefly in Rhode Island. Seed of the same grass is produced commercially in New Zealand where it is called "colonial bent" and "brown bent." Again it is produced in south-

ern Germany and comes to us in the German bent seed, but we have no English name in common use referring to this seed as coming from Germany. Velvet bent seed comes only from Germany and only as an ingredient of mixed seed, never as a single kind, as redtop and seed of other grasses. The occurrence of this grass in this country is confined to places where the imported bent seed has been sown or their vicinity. Carpet bent is known only where German bent seed has been used. Its seed is not available commercially as an individual kind.

South German mixed bent seed is likely to contain as ingredients each of the kinds named above. Redtop seed varies in quantity from a mere trace to five or ten per cent. of the actual seed of the bulk. Its presence to this extent is merely incidental to its growth with the other bents and thus is unavoidable. Seed of *Agrostis tenuis* (identical with Rhode Island bent) is the most abundant ingredient of the South German mixed bent seed and generally constitutes three-fourths or more of the actual seed. The other ingredient appearing in quantity is the velvet bent. In some lots this amounts to 40 to 50 per cent. of the total seed. Fifteen to thirty per cent. is the usual proportion, but some lots appear to contain not more than 5 to 10 per cent. Since velvet bent is, to some extent, a creeping plant, the presence of this seed appears to be the chief excuse for the commercial use of the name "creeping bent" as applied to the South German mixed bent seed. Seed of carpet bent is known to be present in at least some lots of the German bent, but it is not certain that it occurs in all lots. Its seed can be distinguished from that of the other bents referred to, but only by careful, expert examination. Owing to its very small quantity and relative unimportance in consequence, search for its presence in the usual sample of the German bent seed is not made.

Stated briefly, the important characteristics of the South German mixed bent seed are the small proportion of redtop, the large proportion of seed identical with Rhode Island bent, the usually large proportion of velvet bent which comes only in the South German mixture, and the possible presence of seed of carpet bent. This mixture may be contrasted with the Rhode Island bent of the trade which consists of the Rhode Island bent and a variable proportion of redtop; and with the New Zealand colonial bent of the trade which consists of *Agrostis tenuis* only thus differing from the commercial Rhode Island bent only in the absence of the redtop.

The important thing to consider in the purchase of fine bent seed is to avoid adulteration by the use of redtop seed. Some lots sold as fine bent have been found to consist largely of redtop, while other lots have consisted wholly of this seed.

Owing to the minute size of fine bent seed, thorough cleaning of the seed is not done as a rule and in consequence it is very chaffy. The only exception to this we have observed has been in some of the South German mixed bent seed shipped from England, where most of the chaff had been removed.

Important significance is to be attached to the character of the chaff of the fine bent seed. Seed that is well matured readily falls away from the chaff, which, in turn, separates into individual scales which constitutes the bulk of what is termed "chaff" in this seed (see fig. 4, c). On the other hand, poorly developed seed does not fall apart and the chaff has the appearance shown in fig. 4, a and b. Seed covered by the chaff in this way is practically worthless. It may be said that very little of this condition prevails in the South German mixed bent seed.

Many kinds of weed and other grass seeds are found in seed of the fine bents from all sources, but none is sufficiently serious to command attention. They are very helpful to the seed analyst, however, in determining the source of the seed.

Enlarged illustrations of the three important kinds of bent seed are presented for comparison. It will be seen that seeds of redtop are slightly larger than those of either of the other kinds. Some of the seeds of Rhode

Redtop (*Agrostis alba*)Rhode Island bent
(*Agrostis tenuis*)Velvet bent
(*Agrostis canina*)

Chaff of bent grass

a and b, side and edge views of poorly developed chaffy seed. c, the chaffy scales separating, as in well developed seed.

Island bent bear an awn, or bristle, from near the broad end of the seed. Many of the velvet bent seeds bear a similar bristle from near the middle of the seed. Seeds of redtop and of Rhode Island bent are smooth, while those of velvet bent are minutely roughened and dull. With the aid of a good hand lens (not a reading glass) any observing purchaser can determine the presence of a large proportion of redtop.

Annual Bluegrass (*Poa annua*)

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In early spring perhaps no other grass is as much the subject of inquiry as the subject of this sketch. At this time of the year it is conspicuous in lawns and on putting greens as well as in shady places where most other grasses do not thrive. On putting greens it commonly appears in autumn, and indeed in the latitude of Washington, D. C., often blooms before winter. In the early spring it grows rapidly and blooms before any other turf grass. When once established it volunteers year after year, increasing in abundance. In spring it is often the most abundant grass in some putting greens and in shady lawns. It vanishes completely by mid-summer, at least as far north as Washington, D. C., but in Philadelphia and northward some plants may be found at any time during the summer.

Poa annua, the scientific name being quite as familiar as its common name, is easily distinguishable by its small tufts, fibrous roots, bright green not at all bluish color, soft texture, and the cross crumpling of the leaves near the base. The grass is native to Europe, but it now occurs practically everywhere in the United States.