Clean Seeds and Fewer Weeds

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Editor's Note:
Considering the original cost of grass seed, the expense involved in seeding a golf course, and the possibility of infesting turf with obnoxious weeds, quality in seed sown is of tremendous importance. Mrs. Pattison is one of the outstanding authorities on seed analysis in the United States.

A GROSTIS of all the genera in the grass family is the most important to the person interested in golf. Much has been written regarding this interesting genus, both in America and Europe in order to clear away the uncertainties that exist.

The most helpful and enlightening work has been done by three scientists of the U. S. Department of Agriculture, Prof. A. S. Hitchcock, Systematic Agrostologist, the late Dr. C. V. Piper, Agrostologist in charge of Forage Crop Investigations, and Prof. F. H. Hillman, Associate Botanist, Seed Laboratory. It is to Prof. Hillman that we owe our present knowledge of the seed characteristics.

Of all the species of Agrostis, Redtop is the most valuable agriculturally. It is known botanically as Agrostis alba, and its other common name is Herd's grass. Besides its use as a turf grass it is widely used as a meadowgrass, but it will be discussed here only in its relationship to turf. Redtop is a perennial and is a much larger plant than any in the bent group which will be discussed later. It is not indigenous to North America but was introduced from Europe. It thrives best on acid soil. The principal seed producing area is Southern Illinois. Two hundred cars, or 6,000,000 pounds of seed is considered a normal crop. Wholesale prices during the last ten years have ranged from 10 cents to 35 cents per pound for recleaned seed.

Virgin is the name given to the rough seed. This seed after reconditioning is marketed as Fancy Redtop, which means recleaned seed minus its outer glume; unhulled Redtop, the seed with the outer glume adhering, and chaff Redtop, which is practically free of any seed.

There is no call for unhulled and chaff from Golf Clubs. These by-products are often used as fillers in the cheap lawngrass mixtures.

Identification of Redtop Plants

The standard commercial grade of Fancy Redtop seed tests 90 per cent pure and 90 per cent germination, but, higher testing qualities are generally demanded by those wanting the best turf results. The highest grade now offered tests 98 per cent pure. But technical purity isn't the only thing that should be considered. It is better to have 96 per cent with practically no weed seed content than to have 98 per cent with 1 per cent weeds. Seed containing 1 per cent weeds may mean sowing 50,000 weed seeds with every pound of seed.

The plant at maturity is from one to four feet tall, with rootstocks, flat blades and an erect often reddish panicle from four to eight inches long with verticillate lower branches. As previously stated, it is a much coarser plant than any of the Bents. It is better suited to fairways than to greens.

Seeding Mixtures

When the seeding of greens with pure Bent is too expensive for a club, economy can be practised by seeding two pounds of Redtop seed and three pounds of Bent per thousand square feet. Any mixture containing a larger amount of Redtop will not give a satisfactory putting surface because of too many Redtop plants. Redtop when used for fairways is usually mixed with Kentucky Bluegrass and Red Fescue. The late Dr. Piper advocated a mixture of four pounds Kentucky Bluegrass and one pound of recleaned Redtop, using 150 pounds of seed per acre. Very excellent results have been obtained in the Metropolitan section by using the following formula:

| 40% Kentucky Bluegrass (24 lbs. 85% ) |
| 25% Fancy Redtop (95% ) |
| 20% Red Fescue (95% ) |
| 15% South German Mixed Bent (90% ) |

The best seeding time in northern states is between August 15th and September 15th. The amount of seed used is 150 pounds to the acre.

Time will not be taken here to discuss seedbed preparation and sowing. These will be discussed in the final chapters after we have finished with all the groups.

There was a time not so long ago when unhulled Redtop was generally sold for Rhode Island Bent, and this practice could not be stopped until Professor Hillman made it possible to identify the seeds of the various genera. Too much credit cannot be given Professor Hillman for this valuable and useful contribution.

Even though the seed characteristics are well known it takes the most skillful of analysts to make perfect determination. A great deal of harm is yet being done by improperly trained analysts who are attempting analy-
sis of Bent and Bent mixtures. Present space does not permit a recital of golf tragedies that are the result of these faulty analyses. In our chapter on Bent, a few cases will be given.

For the benefit of those who wish to study the seed characteristics we are giving them.

**Description of Redtop Seed**

The seed of Agrostis alba (Redtop) is larger than the seed of any of the Bents. The lemma is yellowish, thick and glaced. The prickles near the apex are not more than one-quarter the distance from the apex. The apex is pointed, the base hairs long and fairly spreading, the palea is broad and two-veined. The adherent type of palea is generally wrinkled. The palea tip is not rounded. The prevailing condition of the palea tip is truncate or broadly notched. The hilum is usually long, slender and dark, linear, not wedge-shaped and elevated. While the seeds of Redtop are sometimes awned, the awn is very rarely below the middle and very rarely long or twisted.

**Weed Seeds Commonly Found in Redtop**

- Achillea millefolium
- Potentilla monspeliensis
- Cerastium vulgatum
- Plantago rugelii
- Juncus tenuis
- Anthemis cotula
- Rudbeckia hirta
- Panicum lanuginosum
- Eleocharis obtusa
- Silene antirrhina
- Rumex acetosella
- Chrysanthemum leucanthemum
- Panicularia nervata
- Agrostis elliottiana
- Scripus sp.
- Plantago major
- Yarrow
- Cinquefoil
- Mouse-ear chickweed
- Blackseeded plantain
- Slender rush
- Mayweed
- Browneyed Susan
- Hairy panicum
- Blunt spike rush
- Sleepy catchfly
- Sorrel
- Oxeye daisy
- Nerved manna grass
- Plantain

The presence of certain of the above weeds in a sample of Agrostis indicates American Redtop.

The next article will be devoted to Agrostis Vulgaris—Rhode Island Bent.