SEED PRODUCTION OF TURF GRASSES ON THE PACIFIC COAST

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The production of seed of turf grasses on the Pacific Coast for use on golf courses, parks, recreation fields, lawns and cemeteries began in 1924 with the harvesting of natural stands of seaside bent, *Agrostis palustris* Huds., in southwestern Oregon. In 1926 the first seed of Astoria Colonial bent, *Agrostis tenuis* Sibth., was harvested in northwestern Oregon from natural stands. The first seed of highland Colonial bent, *Agrostis tenuis,* also from natural stands was harvested in 1928 near Yoncalla, Oreg.

The production of bent grass seed increased rapidly until 1936 when a crop of considerably over a half million pounds of all kinds was harvested. Since that time production has been rather stationary with an annual out-put of close to one-half million pounds.

Up to 1934 most of the production of bent grass seed was from natural stands. Many of the fields that were harvested for several years declined in production as weeds and other plants increased. As a result of this reduced yield from native stands and continued good demand for seed, several extensive seedings have been made on cultivated lands. Most plantings have been in the Lower Columbia River and Klamath Lake sections of Oregon and consist of seaside, Astoria and Highland bents.

Bent grass seed production on the Pacific Coast is centered in western Oregon but considerable amounts are also produced

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Threshing colonial bent seed in Astoria, Oregon

in western Washington and small amounts in northwestern California.

The highland Colonial bent, *Agrostis tenuis,* was apparently introduced so early that it behaves as a native in western Oregon and Washington. While the first seed was harvested in 1928 it has been only during the past 4 years that the amount of seed available for market has assumed sizeable proportions. It is versatile in adaptation and under Pacific Northwest conditions is better suited to soils that are low in fertility and get very dry in summer, than any of the other species of bent

grass. It spreads rapidly by rhizomes and develops a tough sod. On cultivated land it is often considered a weed. Up to this time most of the seed has been harvested from more or less natural stands occurring for the most part on lands that are wet in the winter and dry in the summer. A small acreage has been seeded in the Klamath Lake region. It is considered a good pasture plant and an excellent sod former.

Seed yields generally are low, seldom being above 50 to 75 pounds to an acre with a total production of about 30,000 pounds. Most of this seed is used locally for either pasture or lawn purposes.

Velvet bent, *Agrostis canina* L., has been grown under cultivation on a small acreage for a number of years for seed production. The seed produced has been for the most part used on golf courses near the place of production and little has reached market channels.

During the past 5 years there has been increasing activity in production of seed of a number of turf grasses other than the most common bents. The outstanding one is Chewings fescue.

Fescue

The acreage of Chewings fescue harvested for seed has increased from about 5 in 1932 to close to 500 in 1938. Over 90 percent of this acreage is in western Oregon in the Willamette Valley with the remainder distributed equally between eastern Oregon and in the Grand Ronde Valley and western Washington. The acreage is increasing rapidly in all sections.

Seedings of Chewings fescue have been made on a wide range of soil types and degrees of fertility. Stands are comparatively easy to secure and maintain on practically any well

drained soils where there is moisture enough for fair growth most of the year. For seed production, soils having good drainage, fair supplies of moisture during fall, spring and early summer and fertility enough to put them into the class that will produce good crops of red clover and winter wheat, are most desirable. On lands of low fertility Chewings fescue makes good vegetative growth but seed production is low. Under heavily shaded conditions the vegetative growth is usually good, but little seed is produced.

Chewings fescue makes fairly satisfactory growth on soils that become dry during summer and fall, but for seed production the plants should not suffer from lack of moisture before seed maturity. Where soil moisture is low before seed maturity, yields are reduced and the seed is light and inclined to be chaffy.

Field cutting for seed begins when the early heads are at the point of shattering, except in areas near the coast in Oregon and Washington where climatic conditions are fairly cool and humidity is high. Then the crop may be left standing without shattering until almost mature.

Yields of Chewings fescue seed vary from 50 to 600 pounds an acre with an average of about 150 pounds. The lower yields are generally from seedings on low, wet and poor lands or on lands that dry out early. The higher yields are on the best lands.

Some seedings are in cultivated rows. Under favorable conditions such seedings outyield solid seedings. Production costs are also higher. An extremely high quality of seed is usually secured.

During the past 2 years small seedings of creeping red fescue, *Festuca rubra* L. have been made in western Oregon for seed

Harvesting Chewings fescue seed in Oregon 1938. This 20 acre field planted in cultivated rows yielded 600 pounds an acre.

production. Only small amounts of seed have been harvested so far but indications are that within the next few years the acreage will increase rapidly. This fescue shows considerable promise for pasture as well as turf as it is hardy, grows under a wide range of conditions and requires less care than some of the other turf grasses. The practices in growing and handling are similar to those for Chewings fescue.

Ryegrasses

The production of ryegrass seed in the United States is concentrated in the Pacific Northwest with 90 percent in the

Willamette Valley of Oregon and the remainder in western Washington. Annual production has varied from 3½ to 14 million pounds with an average of between 7 and 8 million pounds. Ninety percent is of the Italian type (*Lolium multiflorum*) and the remainder perennial (*Lolium perenne*).

Italian ryegrass is considered an annual although some plants may live over into the second year. Perennial ryegrass plants usually live from 4 to 6 years.

The ryegrasses for seed production are mostly grown on low rather wet soils. Seedings are practically always made in the fall using 20 to 25 pounds of seed an acre.

Italian ryegrass produces its one crop of seed the first summer after seeding. English ryegrass also produces some seed the first year after seeding, but the second and third years crops are the best. Harvesting is similar to that of small grains.

Seed yields vary from 1,200 to 1,500 pounds an acre on the better soils to 200 or 300 pounds on poor soils with average yields of from 600 to 700 pounds an acre.

Bluegrasses

Until 1933 the Pacific Coast was not considered as having worthwhile possibilities of commercial production of seed of Kentucky bluegrass, *Poa pratensis* L. This grass has been used for many years for forage purposes, but from the seed production standpoint it was given little consideration until 1936 as generally it produced little seed and market prices were low. Since that year 60 to 70 thousand pounds of high quality seed have been harvested each year, mostly in the Klamath Lake section.

Poa trivialis L. grows well in the Pacific Northwest and some

interest has developed in seed production. While a few small seedings have been made, yields have been low and it has been hard to get high quality seed free from mixture.

Poa bulbosa L. is produced in the Rogue River Valley of southern Oregon. The "seeds" are really bulblets and are secured by threshing the first cutting of alfalfa hay. Production depends largely on market prospects and varies from 20 to 50 tons a year.

Miscellaneous Grasses

The Fairway strain of crested wheatgrass *Agropyron cristatum* (L.) Beauv., is used to some extent as a turf grass in regions of comparatively low rainfall. The production of seed on the Pacific Coast has been largely in the dry farming sections of the Northwest. The demand for turf purposes has been small. The main outlet for seed has been for pastures. The handling of the Fairway strain for seed is the same as that of the regular crested wheatgrass.

Several seedings have been made of the low growing semi-creeping type of timothy. The first commercial lot of seed was harvested in 1938. The practices in growing and harvesting are the same as for the regular timothy.

Some interest has developed in the possible use of Lemmon's alkali grass *Puccinellia lemmoni* (Vasey) Scrib. for turf purposes. It shows promise on heavy alkali soil where other grasses do not grow well. Small amounts of seed are being harvested, but yields are low and the quality of the seed is variable.

Harvesting

Harvesting, threshing and cleaning operations are carried out on a field scale. Farm mowers or other forms of large

harvesting machinery are used. In some cases the combine, used so much in the Northwest to cut and thresh at one operation, can be used. Rarely are bent fields so located that mowers cannot be used, and then, if labor is plentiful, harvesting may be done with sickles.

As a rule operations are on a large enough scale to warrant the use of the most modern machinery, either horse or tractor drawn.

Large scale threshing of bent seed in Coos County, Oregon. Here three machines are operating in a 100-acre field of seaside creeping bent

Grain threshers are used for threshing but are equipped with appropriate screens and the parts are adjusted for handling bent seed, fescue or ryegrass as required.

Profitable Business Developed

With the development of the culture of turf grasses for seed production in this region a rather profitable business has developed. Growers and distributors have taken a keen interest and as a consequence the majority of seed sold is of high quality both as to purity and germination. Certification is practised extensively for all of the bent grasses. This industry has made necessary a number of improvements in harvesting and cleaning equipment.

In the early stages of production of seed of turf grasses many growers handled their own crops. During recent years, however, there has been a decided trend toward larger seed concerns assuming control of acreages and taking care of all harvesting, cleaning and distributing of the seed. Individual growers not connected with seed companies generally market their seed through local concerns.

Because of the extremely good growing conditions in this region and wide diversity of production possibilities, there are indications of a continually expanding acreage of turf grasses for seed production. There is always interest in securing new strains, varieties and species and the majority of people interested in this kind of seed production sense the possibilities of possible market changes so want to be in a position to take advantage of new or improved plants.

Crabgrass and other weed seed is common in most hay. In this manner seed gets into the manure, and when fresh manure is used on turf an infestation of crabgrass and other weeds may result. Composting the manure for six months or more will kill most of the weed seed.

Rolling of turf is an important operation but it can be overdone on heavy land. This is especially true when a very heavy roller is used or when the ground is too wet. On sandy soil excessive rolling does no harm unless done when the ground is almost saturated. The time to roll is early in spring as soon as the ground is fairly dry and the grass has commenced to grow. This will compact the surface soil which has become loosened from freezing and thawing and will smooth the turf.