

Redtop Seed Production in Illinois

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Redtop is an old grass in the United States. It was introduced into the agriculture of the early colonies. It spread west with the advance of civilization and has at last become well established in southern Illinois as an integral part of its agriculture. Suffice it to say, redtop is widely grown throughout the United States regardless of the fact that its seed production is concentrated in a small area of 4,000 square miles in one state.

Redtop (*Agrostis alba* L.) is the most important of grasses belonging to the genus *Agrostis* and the second most important pasture grass in America. It ranks second to Kentucky blue grass in general use as a turf plant. Because of its vigorous growth it will form a turf more readily than most plants. Its seed is the smallest seed among the agricultural grasses, there being from 4,000,000 to 6,000,000 seeds in a pound. The seed is similar to the seeds of other bent grasses and is not easily distinguished from them.

Redtop has many common names, such as whitetop, white bent, marsh bent, southern bent, English bent, fiorin, and Herd's grass. These names are confusing and should not be used in connection with this grass. It is a perennial with a creeping habit of growth and propagates by stolons as well as by seed. It is one of the coarsest of the turf plants. Because of its size it is used for hay and pasture. It also offers possibilities as a soil binder where erosion is prevalent. The seed of redtop is a component part of most grass seed mixtures. While it is the best wet-land grass that we have, yet it is relatively drought-resistant. All things considered, redtop is the most widely adapted of the cultivated grasses.

Eighty-five per cent of the world's supply of redtop grass seed is produced in a dozen counties in southern Illinois. This area furnishes about 95 per cent of the total production in the United States. Some

Outline map of southern half of Illinois. Eighty-five per cent of the world's supply of redtop seed is produced in the dozen counties covered by the shaded area

seed is also harvested in Indiana, Iowa, Kentucky, and Missouri. The redtop region comprises about 2,500,000 acres. There are 19,700 farms in this area, 7,000 of which grow practically all the redtop seed. The average annual production of seed from 1922 to 1930 was over 10,000,000 pounds. At the average price of 15 cents a pound, the crop has a gross value of \$1,400,000. A record year for seed production was established in 1927, when 18,000,000 pounds were harvested. In 1930 only 6,000,000 pounds of seed were secured. During the past six years, the highest yield of seed was 70 pounds an acre, in 1927, and the lowest 31 pounds an acre, in 1925. The pound price

from 1922 to the present ranged from 10½ cents in 1927 and 1928, to 22 cents in 1925 and 1926. The average annual production of redtop seed for a single farm is 1,500 pounds, having a value of \$225.

There seems to be no single reason why redtop seed production is concentrated in a small area in southern Illinois. It is probably a combination of environmental factors, such as soil, climate, and economic conditions. The producing area and the location of a certain type of soil are almost duplicate patterns. When one speaks of the redtop area he not only thinks of the region producing redtop seed but of definite soil conditions and of a certain type of agriculture.

While redtop is adapted to the soil and climatic conditions of this region, yet this does not mean that the environment is ideal. One should feel that redtop is one of the best crops for this region rather than assume that the region is the best for redtop. Because the land is flat, level, and poorly drained, besides being acid and low in fertility, it is not well adapted for most crops. If the soil in general were more fertile it would be better suited for the production of redtop seed. The few fertilizer experiments which have been conducted indicate that the redtop plant responds very markedly to soil treatment as measured by hay and seed yields. This is especially true where limestone and nitrate fertilizers are added. The soil in this region is largely a light gray silt loam underlaid with a tight or impervious subsoil which will not permit of even fair drainage. Since redtop is the best wet-land grass yet to be brought into cultivation, it appears to be one of the most profitable crops for these conditions.

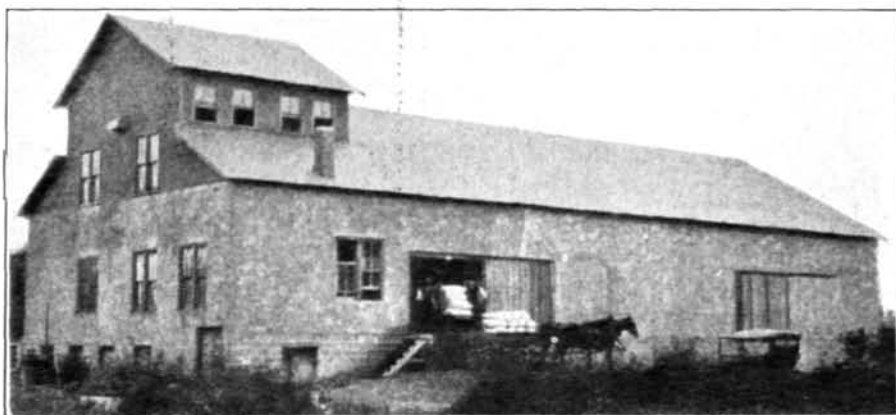
The producers of redtop seed, instead of receiving encouragement and help, have been condemned from many sources for not practicing a better type of agriculture, and as a result little has been done to improve the crop or the environmental conditions under which it is grown. More recently it is believed that a wise choice of a crop for this region has been made and that an effort should be put forth to make redtop seed production more profitable.

Because redtop seeds are small, a fine, compact seed bed is required. The seeds are usually sown broadcast and little or no covering is necessary. The rate of seeding is from 8 to 15 pounds of seed an acre. The time of seeding varies with the cropping system in practice. Redtop is seeded in the fall, early in September, on a well-prepared seed bed or in a field which had previously grown a cultivated crop like corn or soybeans. In the latter case the seed bed is usually prepared without plowing. The crop may be seeded in the month of February on a winter grain, such as wheat. It may also be sown with a spring grain, such as oats. Occasionally it is seeded alone in the early spring on clean land. There is a growing tendency on soils that have been limed to seed some legume such as Grundy County sweetclover, white clover, or alsike clover with the redtop. The associated influence of the legume appears to increase the yield of seed. All redtop except that sown in spring grain should give some seed the first year. Fall seeding seems to give the best results, at least for the first year. It is a general practice among growers to pasture the redtop in the spring and then again in the fall after the seed crop is harvested. This is believed to be beneficial to the crop. Fields are usually maintained until they become so weedy as to necessitate plowing them up and reseeding.

Mowing is the usual method of harvesting redtop seed. The time of cutting is important. If cut too soon many light, green seeds

result, while if it is harvested too late much seed is lost by shattering. The time at which redtop may be harvested to advantage is short. Blooming usually begins at the top of the panicle about the 1st of July and is complete at the base of the panicle by the middle of the month. The crop should be mowed within a few days after blooming is completed, as shattering of seed begins a week later. As the time of harvesting is delayed, the loss from shattering increases rapidly. Earlier cutting also makes the straw more valuable as feed.

After the crop is mowed it is cured and stacked, much in the same manner as hay is made. Redtop may be threshed any time after it is cured. Any common grain separator may be used after making proper adjustments. The grain riddle is replaced by a screen with from 18 to 24 meshes to the inch, depending upon the quality of seed desired. Air adjustments must be made, as the seeds are very light and are easily blown into the straw stack.



Courtesy of Illinois Agricultural Association Record.

Redtop seed warehouse at Flora, Ill. Here the pooled seed is cleaned and stored awaiting sale and shipment

After threshing, the seed is sold to local dealers or to cleaners who clean the seed to the desired purity. A purity of 90 per cent is the standard or common grade. Fancy re-cleaned seed will have an average purity of 93 per cent or above, and an average germination of 90 per cent or better. This seed may test 30 to 40 pounds to a bushel.

Before the seed is cleaned, it is referred to as chaffy. It is darker in color because of the adherence of the outer glumes and short stems, and lighter in weight because of chaff and stems. This seed usually tests not more than 14 pounds to a bushel, which is the legal weight of redtop for most states. The material separated from the fancy re-cleaned seed consists of chaff and light seeds. This poor grade of seed is sometimes referred to as "extra." The cleaning process is accomplished by the use of a good fanning mill.

Redtop seed was originally marketed entirely through local dealers. In recent years a part of the crop has been cleaned, graded, and marketed through the Egyptian Seed Growers' Exchange, and the Redtop Growers' Warehouse Association, a subsidiary of the Exchange. These two associations are organized under the Illinois Agricultural Cooperative Act of 1923, and are the first cooperatives in the state to be recognized with a loan by the Federal Farm Board. The

Warehouse Association issues warehouse receipts to the exchange, which in turn uses them as collateral for loans from the local banks, the intermediate credit banks, and the Federal Farm Board. Usually by the middle of October, 85 to 90 per cent of the seed has left the farm and is in the hands of the dealers.

The production of redtop seed is in response to the demand for seed for sowing. Because of the merits of redtop, when used for hay, pasture, or a turf, the demand for seed will continue and southern Illinois will remain a great seed-producing center.

Many weed seeds retain vitality for years.—An article entitled "The Weed Seed Population of Arable Soil," prepared by Winifred E. Brenchley and Katherine Warington, recently appeared in *The Journal of Ecology*. This article is a report of some work done in England to determine the number of viable weed seeds in soil samples of a known area taken from permanent wheat and barley fields at the Rothamsted and Woburn experiment stations. The report deals chiefly with agricultural weeds but some of the results will prove of interest and value to golf clubs in the United States which are trying to rid their top soil of weeds.

Samples of soil were collected at intervals over a period of several years and placed in conditions favorable for the germination of weed seeds. The number of weeds which germinated from the various samples was recorded and the total number occurring in an acre of soil was calculated from these samples. It was found that the number of living seeds of some species of weeds was very large, poppies, for instance, averaging 113,000,000 viable seeds to the acre, with some samples indicating a much greater number. It was also found that comparatively few species of weeds germinated freely throughout the year and that most seeds showed a definite periodicity, the majority of the seedlings appearing during the autumn or winter or both and relatively few in late spring and summer. The report states that "Intensive methods of cultivation indicate that many weed seeds in the soil have a period of *natural* dormancy, during which they will not start into growth even if they are placed under conditions favorable for germination. The length of this period varies with the species, which are considered individually. Seeds buried in the soil under conditions unsuitable for germination may retain their vitality for many years, this prolonged dormancy being termed *induced* in contrast to the *natural* dormancy."

Annual bluegrass, one of our common golf course weeds, was studied during the course of this investigation. It was observed that most of the seeds of this plant germinated at once but that a small number continued to germinate fairly regularly during the two succeeding years.

Digger wasps hunt down cutworms, paralyze them by several stings, drag them to their nests, and deposit eggs on them. When the eggs hatch the larvae feed on the cutworm. The wasp eggs, however, do not always hatch, as during the operation of the digger wasp a small grayish fly hovers around and at an opportune time deposits its own eggs on the captured cutworm. Upon hatching, the fly larvae usually eat the wasp eggs immediately and then devour the cutworm.