The Ryegrasses

U. S. DEPARTMENT
of AGRICULTURE
LEAFLET No. 196

THE RYEGRASSES[1]

By H. A. Schoth, *agronomist*, and M. A. Hein, *agronomist, Division of Forage Crops and Diseases, Bureau of Plant Industry*

The common name, ryegrass, is applied to a group of plants comprising two species of the genus *Lolium*. One of these, *Lolium multiflorum* Lam., is known as Italian ryegrass, and the other, *L. perenne* L., as perennial ryegrass. Selections and hybrids of these two species have received special varietal names, and seed is offered in the trade under such designations.

Italian Ryegrass

Italian ryegrass is a hardy, short-lived grass, usually an annual. When seeded in the spring, late summer, or early fall it makes rapid growth and soon covers the ground, furnishing grazing in a remarkably short time. It is tender and very palatable to livestock and has excellent carrying capacity. The plants grow from 2 to 4 feet in height (fig. 1) and make excellent hay. It generally is distinguishable

Figure 1.—Strains of Italian ryegrass in the nursery at Corvallis, Oreg.

from perennial ryegrass by the awn and stem characters and by the arrangement of the leaf in the bud. Awns are present on seed of Italian ryegrass and usually absent on perennial ryegrass. The culm, or stem, of Italian ryegrass is cylindrical whereas that of perennial ryegrass is slightly flattened; and the leaves of Italian ryegrass are rolled in the bud whereas those of perennial ryegrass are folded. The plants of Italian ryegrass are yellowish green at the base while those of perennial ryegrass are commonly reddish.

[1] Cooperative investigations of the Division of Forage Crops and Diseases, Bureau of Plant Industry, U. S. Department of Agriculture, and the Oregon Agricultural Experiment Station.

Issued May 1940.

203820°—40

Commercial Italian ryegrass seed usually produces some plants that live into the second season. It is not definitely known whether these plants are long-lived Italian ryegrass or hybrids of Italian ryegrass and perennial ryegrass. Their characteristics, however, suggest they probably are hybrids. Selections from Italian ryegrass have been made abroad that persist 2 years, but these strains do not appear to any extent on the market in the United States. Westerwold ryegrass, a rapid growing variety of Italian ryegrass, has been tested in several States, but has never become popular in this country. Since Italian ryegrass is a heavy seeder if not kept closely grazed or mowed many new plants appear from volunteer seeding. If moisture and fertility are sufficient for rapid growth, it may be cut twice during the season.

Italian ryegrass has many uses. It makes an excellent nurse crop for spring-seeded permanent pastures and lawns, and gives a quick cover for early grazing in pastures. When sown in combination with winter grains for temporary pasture it makes a desirable bottom grass and increases the length of the grazing season. Italian ryegrass is a most desirable annual grass for temporary poultry range. In the South it is used extensively for fall seeding on permanent lawns in order to furnish a green cover in winter. It also makes a fine temporary lawn. In the Northern States it is frequently seeded on lawns in the spring to be spaded up in late summer for a permanent lawn seeding in the fall. The cultural practices and rates and methods of seeding are the same as given for perennial and common ryegrass.

Perennial Ryegrass

Perennial ryegrass, also known as English ryegrass, is quite similar in general appearance to Italian ryegrass, except for the characters described under Italian ryegrass. Plantings from commercial seed of perennial ryegrass often disappear in 3 or 4 years, probably for the reason that such plantings are from seed that is a mixture of perennial ryegrass with hybrid strains of the perennial and annual species, and the latter are usually short-lived.

Perennial ryegrass differs considerably from Italian ryegrass in quality. The general run of perennial ryegrass plants are very tough, and therefore the grass is unpopular for lawns as it does not cut easily with the lawn mower. The tough character of the foliage is not particularly noticeable while the plants are young, but becomes more noticeable as they become older. This is true especially during the hot, dry weather of July and August.

Several strains of truly perennial ryegrass are now advertised commercially, especially in England and New Zealand, and the seed is used very extensively in seeding permanent pastures in those countries. These strains and many others have been tested in this country. The results indicate that these strains are short-lived, although some plants survive for a number of years. They are best adapted to regions with cool temperatures and ample moisture during the summer.

Pacey's ryegrass, as received in this country, is merely the small seed of perennial ryegrass, separated mechanically, and as no particular advantage is derived from planting such seed, it has not been popular here.

The main use for perennial ryegrass in this country is for permanent pasture seedings. It starts quickly and furnishes early grazing while other longer lived grasses are becoming established. The hot, dry weather of July and August affects the growth; and if the drought continues very long into September, the recovery is slow.

Common Ryegrass[2]

Domestic ryegrass, Oregon ryegrass, western ryegrass,[3] native ryegrass, and Pacific ryegrass are names used to designate common ryegrass seed grown in the United States. Seed sold as pure Italian ryegrass may be just that, but more often it is a mixture with common ryegrass predominating.

Common ryegrass is also often referred to as the South American type of Italian ryegrass. In its conglomerate make-up, numerous types are present and the type prevailing in South American seed sometimes appears in varying amounts. There are many intermediate types resulting mostly from field crossing.

Common ryegrass is rapidly increasing in importance as a forage, lawn, and seed crop in the United States. In plant and seed characteristics it resembles Italian ryegrass very closely, although usually it does not grow so tall, the stems are somewhat stiffer and heavier, and the seeds are more hispid and plump with shorter and weaker awns.

Common ryegrass grows from 2 to 3 feet tall, is leafy and tender, and when used as pasturage is very palatable to all classes of livestock. Since it furnishes early grazing and acts as a nurse crop to the more permanent grasses that are generally slow in becoming established, it makes an excellent addition to a permanent pasture mixture.

It also gives very good fall, winter, and early spring grazing when seeded alone. It is a heavy yielder and when properly handled gives a high grade of very palatable hay.

For lawns and putting greens in the Southern States it is very satisfactory, producing a rapid growth from seeding and making possible green lawns during periods when the southern permanent grasses are dormant or are frosted and brown. Used in this manner, it generally dies out in late spring or early summer as the permanent lawn grasses become vigorous.

Climatic and Soil Adaptations

Ryegrasses are not so winter-hardy as many other grasses, including timothy and orchard grass, and in the United States they are grown principally in the Pacific Coast States west of the Sierra Nevada and Cascade Mountains and in the southern humid States, although in many cases they are used much farther north. They are grown to some extent east of the Cascade Mountains in the Northwest, where ample moisture is available, and in other sections in the United States where climatic conditions are not too severe.

---

[2] In this publication the term "common ryegrass" is used to designate domestically grown ryegrass, usually a mechanical or genetic mixture of Italian ryegrass and perennial ryegrass.

[3] This term is also commonly used in Minnesota and the Dakotas, as well as in Canada, to designate slender wheatgrass (*Agropyron pauciflorum* (Schwein.) Hitch.)

The ryegrasses have a very wide range of soil adaptability. In some sections they are considered wet-land grasses, although production usually declines as the drainage gets poorer. For most desirable production the ryegrasses require soils of medium to high fertility, although they will make growth equal to most grasses on soils of low fertility. On the latter soils heavier seedings are required since the ryegrasses do not stool so much as on more fertile land.

Time, Rate, and Method of Seeding

The ryegrasses can be seeded in the fall or early spring. In sections where winters are severe, spring seedings are made because of probable heavy winter injury to fall seedings. Where the winters are mild early fall seedings are advisable. Late fall seedings are usually successful, but severe freezing, especially when accompanied by soil heaving, may cause heavy plant loss. Spring seedings should be made as early as possible and are most successful in sections having cool summers and frequent rainfall.

The ryegrasses may be broadcast by hand or seeded with an endgate seeder and covered with a smoothing harrow, or they can be sown with a grain or grass-seed drill. When a grain drill is used it may be necessary to reduce the size of the seed outlets to prevent sowing too much seed. The seed should be covered with approximately one-half inch of soil. When seeded alone for forage or seed production, 20 to 25 pounds of seed per acre are sufficient. When seeded with small grain for annual pasture 8 to 10 pounds per acre will furnish a satisfactory stand. When used for seeding on established grasses to furnish green lawns for winter or when seeded alone in spring or fall for a temporary lawn, 3 to 5 pounds per 1,000 square feet are used.

When ryegrass is to be grown for forage or for seed production, a seedbed prepared as for small grains is desirable. Seedings for these purposes usually are made without a nurse crop, although in the Pacific Northwest when ryegrass is grown for seed production, the practice of seeding with winter oats is increasing. When seeded with oats, which should be at the rate of 1 bushel of oats to 20 to 25 pounds of ryegrass per acre, there seems to be little or no reduction in the yield of ryegrass seed; a fair yield of oats usually is obtained, and harvesting, particularly binding, is easier. The two crops are harvested together, and the oats and ryegrass seed are separated with a fanning mill.

Management for Hay and Pasture

Ryegrass is generally cut for hay when the seed is in the soft-dough stage. The hay cures rapidly and when handled properly has a bright-green color. Because of its leafiness and medium fine stems, it makes a high-quality hay that is considered excellent for horses and is fed successfully to cattle and to sheep. One crop of hay is obtained, and under favorable soil and moisture conditions considerable pasturage is produced after the hay crop is removed.

Ryegrass makes very rapid winter and spring growth, and new seedings often are ready to pasture in 3 months (fig. 2). Unless pastured too heavily, it can be used continuously until summer in the West, and

until late spring in the South. Heavy pasturing is quite desirable as it keeps the grass in succulent condition and utilizes all the forage produced during its short productive period. At Beltsville, Md., in 1931 and 1932, sheep were grazed on common ryegrass, largely of the Italian type. As an average for the 2 years, the grazing season extended from April 25 to August 1, and 650 sheep-days grazing per acre were secured. In addition, approximately three-quarters of a ton per acre of field-cured hay was removed about June 15, because of lack of sufficient sheep to keep the grass down during the flush period of growth.

FIGURE 2.—Fall growth 1 month after seeding. Beltsville, Md., October 20, 1933.

When necessary to remove hay from a grazed field, it is advisable to set the mower to clip at least 3 inches from the ground.

For pasturage, ryegrass is not often seeded alone except for temporary use. Because of its rapid growth and its value in producing forage while other longer lived plants are becoming established, it is used extensively in mixtures.

Use as a Lawn Grass

Large quantities of common ryegrass and imported Italian ryegrass seed are used for lawns, particularly winter lawns in the Bermuda grass sections. These are very satisfactory for seeding in the fall on other grass sod to maintain a green, pleasing appearance during the winter months, and do not offer any interference when other grasses and legumes are in good condition.

Because of the rapid germination and short time necessary to produce a green covering, both common ryegrass and imported Italian ryegrass often are used in lawn mixtures. When this seed is sown with long-lived grasses under lawn conditions, it seldom maintains

itself for 2 years, although occasionally when the percentage of perennial ryegrass in common ryegrass seed is rather high, perennial ryegrass plants will remain for several years. As stated previously, perennial ryegrass is not popular in lawns.

Seed Production

Practically all the seed of common ryegrass is produced in the Willamette Valley in northwestern Oregon. In recent years a few counties in Kentucky have been producing a quantity of ryegrass seed—presumably Italian. Harvesting practices are the same as for small grains. When cut with binders, stationary threshers are used for threshing. When the crop is cut with a header and windrowed, or when allowed to stand until mature, combines are used for threshing. As the seed shatters easily, larger yields are secured by cutting with the binder or header when the seed is in the early hard-dough stage. Combining the standing crop when the seed is ripe enough to thresh satisfactorily often results in heavy losses from shattering. To prevent shattering, there has been a tendency to harvest the seed with a combine while it is still in a slightly immature stage. Such seed when sacked or piled in large quantities often heats and molds with the possibility of reduced vitality.

Seed yields vary considerably. On the better soils from 1,200 to 1,500 pounds of clean seed are obtained; average yields are 600 to 700 pounds an acre. Seed production on a large scale has been carried on in the Pacific Northwest for the past 14 years. Production varies widely from year to year as shown in table 1, with the production of perennial ryegrass seed steadily increasing.

TABLE 1.—*Production of ryegrass seed in the Pacific Northwest*

Year	Common	Perennial	Year	Common	Perennial
	Pounds	*Pounds*		*Pounds*	*Pounds*
1934	9,000,000	112,500	1937	7,480,000	425,000
1935	6,496,000	130,000	1938	18,300,000	932,000
1936	12,898,000	200,000			

Very little seed of pure Italian ryegrass or perennial ryegrass is grown in the United States, which is unfortunate, as imported seed generally sells at a premium.

The amount of Italian and perennial ryegrass imported into the United States decreased rapidly from 1926 to 1936. In 1937, however, an increase in imports was shown, partly owing to the inadequacy of the domestic seed supplies in addition to the increased demands for pasture and lawn purposes. The figures given in table 2 show a shift in the amounts of Italian and perennial ryegrass seed imported. From July 1, 1925, to June 30, 1938, importation of perennial ryegrass was consistently greater than that of Italian ryegrass. Within the last 2 years, however, the importation of Italian ryegrass has increased materially because of the place it has made for itself in the annual pasture program and for winter-lawn purposes.

TABLE 2.—*Amount of Italian and perennial ryegrass seed imported into the United States*

Date	Italian	Perennial	Date	Italian	Perennial
	Pounds	*Pounds*		*Pounds*	*Pounds*
July 1, 1925, to June 30, 1926	1,683,200	2,301,600	July 1, 1934, to June 30, 1935	36,900	419,300
July 1, 1929, to June 30, 1930	243,900	937,100	July 1, 1935, to June 30, 1936	29,900	507,200
July 1, 1930, to June 30, 1931	200,400	823,500	July 1, 1936, to June 30, 1937	39,700	972,800
July 1, 1931, to June 30, 1932	75,100	645,500	July 1, 1937, to June 30, 1938	1,197,100	1,270,600
July 1, 1932, to June 30, 1933	42,300	462,800	July 1, 1938, to Jan. 31, 1939	872,800	298,100
July 1, 1933, to June 30, 1934	26,400	531,600			

U. S. GOVERNMENT PRINTING OFFICE: 1940

For sale by the Superintendent of Documents, Washington, D. C. - - - - Price 5 cents