



Source —

Dr. E. E. Gamble
Crop Science Department
University of Guelph

AGDEX NO. 127
15

Date 90/03

Perennial Ryegrass Seed Production in Ontario

Perennial ryegrass seed production is an alternative crop with potentially good economic returns for Ontario producers. Production procedures are outlined in this article.

On Ontario farms seed yields of turf type perennial ryegrass have varied from 840 - 1065 kg/ha (750 - 950 lbs/acre) of clean seed in 1988 and 1010 - 1230 kg/ha (900 - 1100 lbs/acre) in 1989. The April to June period in 1988 was dry while in 1989 there was generally good moisture availability. On sand soils in the tobacco region of Ontario yields were about 560 kg/ha (500 lbs/acre) in 1988 and 1065 kg (950 lbs/ac) in 1989. Growers, who have harvested seed crops, have planted additional acreages. In addition other growers have planted the crop in 1989 for seed production in 1990.

Following are the recommendations for seed production of perennial ryegrass based on current knowledge from research in Ontario and other areas of production.

Seed Source and Varieties

All of the currently registered varieties of perennial ryegrass are proprietary or privately owned. Accordingly, it will be necessary to obtain stock seed from a seed company by contracting to produce seed for that company. Initially the company may only contract common seed production until experience is gained in producing the crop. To harvest certified seed, it is necessary to plant Foundation seed.

Not all registered varieties of perennial ryegrass have been tested for seed yield in Ontario. Most of the varieties evaluated have been turf types developed in the USA. In general, early varieties

yield higher than medium or late maturing varieties. Very limited evaluation of European forage type varieties suggest the possibility of lower winter survival.

Seeding Date

Most field stands in Ontario have been planted in August. In areas with less than 3000 heat units, plant before mid-August. In areas with 3000 heat units or more seeding may be extended to late August. In 1987 and 1988 stand failures could be attributed to September plantings, although the open winters of 1988 and 1989 may have contributed.

Seeding can be done in the spring either in a pure stand or under a companion crop such as oat or barley. Even with a spring seeding, seed will not be produced until the next year.

Seeding Rate

A seeding rate of 4 to 6 kg/ha is recommended. If a companion crop is to be used in the spring, the rate could be increased to 8 kg/ha. The seed should be planted less than 1 cm deep into a firm seedbed. If the soil is dry, packing is desirable.

Row Width

Use either a 17.8 cm (7 in.) or 35 cm (14 in.) row width. Yield may be slightly higher under the 35 cm row width.

Planting Equipment

The forage seed box on the grain drill has been used by most growers to plant the crop. Unless the box contains an agitator, bridging of the seed will occur and a person may be required to ride the drill to prevent this. At least one grower has planted through the grain box, which is the best procedure if you can set the appropriate rate.

Fertility

Apply phosphorus and potash according to the OMAF soil test for forages.

Approximately 30 kg/ha of actual nitrogen should be applied by early September. If this is applied at seeding time ensure that the seed is separated from the nitrogen to prevent burning of the seed. In the following spring apply 90 kg/ha of nitrogen as early as possible (similar to winter wheat). If you have a low soil nitrogen base you may need to apply additional nitrogen for optimum yield.

The above fertilization program would be followed in subsequent seed crops.

Weed Control

Perennial ryegrass must be seeded on land free of quackgrass. In areas, where it is a problem, the land should also be free of loose silky bentgrass.

In the seedling year, the same herbicides as used for cereals (2,4D, MCPA, bromoxynil) can be used for broadleaf control. Don't apply herbicides prior to 3 to 4 leaf stage of the perennial ryegrass. Alternatively, at about the 3 to 4 leaf stage, simazine or atrazine can be applied up to 0.84 kg/ha (0.75 lb/ac) active ingredient. This will provide weed control into the early spring of the next year as well. It is desirable to walk the fields of the growing crop with a backpack sprayer to observe any quackgrass plants that may exist. They can be sprayed with Round-up and prevent either a reduced price for your seed or complete rejection of the seed.

Following seed harvest and removal of the straw, spray the stand with 1 to 1.25 kg/ha of atrazine or

simazine. This application will not only control weeds for the next year but, most importantly, will control any seedling growth from shed seed of the previous crop. If the stand thickens because of seedling growth seed yield in subsequent harvests will be reduced by 30 to 50%.

Control of Winter Wheat Seed

If establishing a stand following winter wheat, it is important to prevent volunteer wheat seedlings. A heavy stand of wheat seedlings may reduce the stand of the ryegrass and will cause yield reductions of the ryegrass the next year.

Control the seedlings by tillage prior to seeding. If winter wheat seedlings still occur, apply 6 kg/ha TCA at the 2 to 3 leaf stage of wheat. Most, but not all, wheat seedlings will be controlled.

Harvesting the Seed

It is important to be timely with harvest to minimize seed shedding for early maturing varieties seed harvest will occur from early July in the longer heat unit areas to July 15 to 20th in the shorter heat unit areas.

Perennial ryegrass lodges severely, but no harvest problems have been encountered. Most of the crops grown in Ontario have been harvested by swathing, followed by combining in 4 to 5 days. Swathing should be done at 45 to 48% seed moisture content (the tip of the head will have started to turn a light brown). One or two fields have been direct combined with no reported problems. If combining direct, harvest should occur at 32 to 35% seed moisture content. When the crop is mature it will easily shed seed.

The moisture content of the seed must be 12% for storage (and for delivery to the seed company). Drying, when required, has been accomplished by blowing air through the seed.

Straw

The straw should be removed immediately after harvest. This will prevent disease build-up and also permit better herbicide coverage for control

of seedlings from shed seed and of weeds.

Straw from the research plots at the Elora Research Station has tested about 7% crude protein content and 50 to 55% digestible dry matter.

Because of environmental concerns burning of the straw is not recommended.

Duration of Stand

Canadian regulations for the production of pedigreed seed of perennial ryegrass permit 3 consecutive years of certified seed production from a stand established with foundation seed. Any additional years of production would be downgraded to common class of seed. In order to maintain high seed yield the stand must not be allowed to thicken up. It is essential to prevent shed seeds from germinating and establishing seedlings. Regulations for the production of certified seed are outlined in Circular 6, Regulations for the Production of Pedigreed Seed, and are available from the Canadian Seed Growers' Association, Ottawa.

Winter Survival

Perennial ryegrass is susceptible to icing damage. The only problems with winter survival have occurred in the first winter following seeding. They have resulted from seeding too late in the fall or from ice formation following winter rain or snow melt. Late seeding is the most serious problem. It is also reported that perennial ryegrass is susceptible to snow mould species. If winter wheat in your area suffers snow mould damage, perennial ryegrass may also.

To date there have been no problems with winter survival on established stands.

Fall Clipping

If there is much top growth in the fall, clipping of the stand to a 5 to 8 cm height can be considered. This will allow faster growth of tillers in the spring.