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Wimmera Rye Grass
— major pasture grass of the cereal and sheep areas

By H. G. CARISS, B.Sc. (Agric.), Adviser, Wheat and Sheep Division

Many of the volunteer pasture species of the cereal and sheep areas seed profusely, persist well and produce useful early green feed. Mostly, however, they produce poor quality herbage of low forage value, particularly during the spring and summer months. The seeds of many species cause problems in stock husbandry and lower the value of wool.

In most areas there is scope for increasing production by introducing improved grasses and legumes which produce more bulk herbage of higher quality and which do not have the objectional features of the volunteer species.

Up to date, little difficulty has existed in introducing good legumes. However, despite the testing of a wide range of grasses over a long period, only one or two types have given satisfaction.

The most satisfactory and most widely used is Wimmera rye grass.

In higher rainfall districts, soft bromes such as Blando brome are showing great promise and could become valuable in the pasture mixture.

WIMMERA RYE GRASS

Wimmera rye grass was first believed to be the result of hybridisation between Italian (Lolium italicum) and rigid (Lolium loliaceum) rye grasses, but is now classed as a distinct species (Lolium rigidum).

It is apparently made up of a mixture of strains; this accounts for the wide range of types found in plantings of commercial seed.

Range of Maturity

The wide variability ranges from late maturing plants with vigorous, prostrate growth habit, to very early maturing, sparsely stooling, erect types.

This wide range of maturity is a disadvantage in the lower rainfall areas. Grazing management is difficult to adjust and stands of Wimmera are often grazed too late into the season. This prevents the early types from setting seed, and the later types also fail to set seed, because of lack of moisture.

Value as a Pasture Plant

Wimmera rye grass is a nutritious fodder. It is readily eaten by stock in the green and dry stages, and in the later maturing districts remains green for some time after the other grasses have dried off.

Wimmera rye grass has a high degree of salt tolerance and the early strain in particular is useful in reclamation of some salt affected areas.

If Wimmera rye grass is cut early enough, it makes good quality hay and when harvested for seed is a useful sideline income.

Strain Selection

Selection for improved strains of Wimmera rye grass started at the Merredin Research Station in the early 1940’s. Seed from early maturing plants in various localities was collected and a promising
1.—RIGID RYE GRASS  
*Lolium loliaceum*

2.—WIMMERA RYE GRASS  
*Lolium rigidum*

3.—ITALIAN RYE GRASS  
*Lolium italicum*

A.—Flowering stalk  
B.—Floret  
C.—A single spikelet

Wimmera rye grass was at first believed to be the result of hybridisation between rigid and Italian rye grass, but is now classed as a distinct species. It is apparently made up of a mixture of strains. This accounts for the wide range of types found in plantings of commercial seed.

early maturing vigorous, erect and leafy type was finally selected. It was hoped that this would have particular value in the drier districts of the cereal and sheep areas.

“Merredin” Strain

The strain appeared to mature about 10 to 14 days earlier than stands from ordinary commercial seed and its early growth was more vigorous. It was named the “Merredin” early strain of Wimmera rye grass and pedigree seed has been available to farmers for several years. It has proved most useful in the drier and shorter growing season districts, and is valuable over a wide range of climatic conditions. The strain was first described in the *Journal of Agriculture* by Reeves and Fisher (1960).
Other Experimental Work

Besides the plant selection work, investigations have been carried out at the Merredin, Salmon Gums and Wongan Hills Research Stations on the establishment and management of this grass. The early experiments at Merredin covered methods of establishment and the results and conclusions were reported in the Journal of Agriculture (Thomas and Shier, 1944). Later work at the three stations dealt mainly with regeneration and management problems and was of a long term nature. The results of the work at Salmon Gums, where Wimmera rye grass has proved invaluable for sheep raising, were published in 1952 (Shier, 1952).

The early work with Wimmera rye grass dealt primarily with its use as a single pasture component. To-day, it is mainly established as a part of a pasture mixture, but the results from the experimental work still apply.

Soil Types

Wimmera rye grass can be grown on a wide range of soil types, but thrives best on those of relatively high fertility. On lighter soils of inherently low fertility it can be grown satisfactorily, but must be sown in association with a legume, except when sown purely for seed purposes.

Establishment

Wimmera rye grass, except when sown for seed production or salt land reclamation, is usually established as a component of a pasture mixture. The methods used for establishment depend on whether it is for a new pasture, being introduced into an existing pasture, or on to stubble land.

- Sowing on new land should follow a good fallow. A tandem disc-disc drill combination is recommended for the sowing operation.
- On old land the best results are obtained on stubble areas. The tandem disc-disc drill is recommended.
- On old pasture land it is best to wait for the first germination, then plough the area and seed with the tandem disc-disc drill combination.

Seeding Rates on New Pasture

In a new mixed pasture the recommended seed mixtures are:

- On lighter and more acid soils 10 lb. subterranean clover with 1 to 2 lb. of Wimmera rye grass.
- On the heavier and more alkaline soils, 4 lb. barrel medic with 1 to 2 lb. of Wimmera rye grass.
Where good winter grazing is possible, add about 20 lb. of oats an acre to both mixtures. If a cereal cover crop is sown it should be grazed off later in the winter.

With initial sowings of Wimmera rye the cover crop should not be cut for hay, otherwise a poor stand is likely in the following years.

Lower Seeding Rates

Much lower rates of sowing Wimmera rye grass are often desirable, irrespective of rainfall.

Rates as low as a few ounces to the acre have been found satisfactory in the drier areas and in districts such as Esperance where the land has been sown direct to pastures. In the drier areas moisture could be lacking if the stand is too thick and if the land is sown direct to pasture too thick a stand can cause excessive competition with the legume. This is important when only limited grazing is possible on newly developed properties.

Sowing into Old Pastures

If the growth of the existing pasture is not likely to be vigorous in the early stages, a light scarifying in the autumn to open up the pasture is sufficient for the introduction of rye grass sown before or after the opening rains.

With vigorous pastures, however, this method is not often successful. Nor is it successful when it is desired to build up the grass component as rapidly as possible, especially in clover-dominant stands.

Cover Crop

When Wimmera rye is sown after a light scarifying only, it is best to use a light cover crop. A mixture of 1 to 2 lb. of rye grass to the acre should be sown with about 20 lb. of oats. The oat cover crop should be well grazed during the winter.

This method gave very good results at the Salmon Gums Research Station.

Sowing with the Cereal Crop

Work on the introduction of Wimmera rye grass into existing pastures has shown that one of the best methods is to sow about ½ lb. per acre of seed with the last grain crop before the paddock goes back to pasture. Enough seed is usually set to give a useful admixture to the legume in the following year’s pasture.

This is a quicker way of establishing a balance between grass and legume, and could be an advantage in areas where sheep infertility occurs.

This has been a successful practice at Avondale, Chapman and Wongan Hills Research Stations.

The difficulties of introducing Wimmera rye into an existing vigorous pasture were shown at Esperance Downs Research Station. But by sowing with the crop, even though a dense one, Wimmera rye grass was successfully introduced into the next year’s pasture.

Time and Depth of Planting

Planting should be as early as possible and preferably into a moist seed bed. This is important in the lower rainfall areas. Subject to rainfall, early planting will give the greatest production of green material for feed.

Shallow planting, from the surface to half an inch deep is recommended. Planted deeper than one inch the percentage germination will be low. Experiment has shown that with each inch of depth, 20 per cent. less green material may be produced.

If a small seeds attachment is not used on the drill it is best to remove the hoses from the boots. The seed will then be placed as a scatter band close to the surface. The seed must then be covered by a light cover harrowing.

Fertiliser Requirements

Phosphate

Wimmera rye grass responds to superphosphate. With average old land, a rate of about 1 cwt. to the acre should be used. Where there is a high phosphate residue, rates could be lowered to about 56 lb.

On new land, higher rates up to 150 lb. per acre should be used.

These rates are comparable to the general recommendations for the establishment of legumes.

Zinc

Wimmera rye grass is sensitive to zinc deficiency, deficient plants showing a darkening of the lower leaves similar to the zinc deficiency symptoms seen in oats. If a deficiency is suspected and the element has not been applied before, zinc-super should be used on the pasture.
Diseases

Although Wimmera rye grass is susceptible to such diseases as rust and flag smut, the strains which cause the infection on this grass are not transmitted to cereal crops.

Wimmera rye grass is not a carrier of the “take-all” root rot complex as are such grasses as barley and brome.

MANAGEMENT

Cultivation

Periodical cultivation of Wimmera rye grass stands is essential.

This has been proved by experiment and broad acre observation, and is true whether the grass is on its own or in mixed pasture.

Winter feed from the stand can be increased by scratching in 20 lb. of oats per acre at the time of cultivation.

Grazing Management

After the initial establishment of Wimmera rye grass, grazing must be carefully controlled. This is important during the flowering period, when care must be taken to ensure that enough plants mature and re-seed for the following year. After maturity, stands can be grazed normally.

Wimmera Rye Grass as a Pest of Cereal Crops

Wimmera rye grass can become a serious weed in cereal crops.

If it is intended to crop a paddock which has been under Wimmera rye for some years, the area must be heavily grazed over the flowering and seed setting periods. If this is not possible, the pasture should be topped with a mower.

Even though these measures are taken, some rye grass will still be present in the crop. This however, will ensure the continuity of the pasture and balance with the subterranean clover.

Under good management, the amount of seed remaining is not likely to be more than that suggested when Wimmera rye is introduced by seeding with the cereal crop at ½ lb. to the acre.

Topdressing

Topdressing improved pastures not only benefits the legume, but also improves the growth and the palatability of the Wimmera rye grass. Topdressed rye grass is usually more heavily grazed than unfertilised rye grass. The combination of cultivation and superphosphate is better than topdressing only.

INTRODUCING LEGUMES INTO WIMMERA RYE GRASS STANDS

Where rye grass stands were originally sown for seed production and are no longer needed for that purpose, a suitable legume should be introduced as soon as possible.

This can best be achieved by ploughing the area after the first germination of Wimmera rye grass, leaving it for about a fortnight to allow further germination, and then giving it a second cultivation. It should be left for a few days and then the legume planted, preferably with a tyned implement. High seeding rates are needed for a good initial stand of the legume with minimum competition from the grass.

WIMMERA RYE GRASS SEED PRODUCTION

Planting

Before planting for seed production, the land should be clean and as free as possible from species likely to be troublesome during the growth and harvesting of the new crop. It is therefore best to sow on fallowed land, ploughed up clover ley, or well prepared new land. The extra care needed to give near-complete weed control will be rewarded by greater returns.

Relatively heavy seeding rates should be used. At least 4 lb., and preferably about 8 lb. an acre should be sown.

Nitrogenous Fertilisers

Pasture grasses in general respond well to nitrogen applications.

Wimmera rye sown for seed benefits from nitrogenous fertilisers such as sulphate of ammonia or urea, giving higher seed production.

Applications of ½ cwt. of sulphate of ammonia or its equivalent in urea in the autumn, and again in the spring, are an advantage in the medium to higher rainfall areas.

A nitrogen application with a seed crop sown on new land would be most desirable, if not essential.
A paddock of Wimmera rye grass for seed production being discussed at a farmers' field day. Paddocks for seed production should be as free as possible from weeds. The seed crop does best on fallowed land, ploughed up clover ley, or well prepared new land.

Harvesting

Grown in the right conditions, Wimmera rye grass can yield a high return of seed. Returns of 10 to 15 bushels of clean seed an acre are considered good average yields. (1 bushel = 20 lb.).

Methods

There are several successful methods of harvesting the seed. These are set out in order of efficiency.

- Mowing, stooking and threshing.
- Mowing, then using a “pick-up” attachment on a header.
- Direct harvesting with an all-crop machine.
- Direct harvesting with a header harvester.
- Direct harvesting with a stripper harvester (a very inefficient method.)

When to Harvest

The first and second methods, although yielding a good percentage of clean seed, are not favoured in Western Australia because of the extra labour needed compared with direct heading. If this method is used however, mowing is done just as the plants reach maturity, but before they start to dry off. When the cut material is dry enough, threshing can be done using stationary equipment or feeding it through a header.

When direct heading, the seed is harvested at a later stage of maturity than when mowing. The tops should be just turning brown, and mature seeds should shake out readily against the inside of a hat swept across the flowering heads.

Harvesting too early results in a high proportion of immature seeds and a poor percentage germination. On the other hand, if harvesting is delayed too long after the plants have dried off, a considerable reduction in yield will result.

If there is excess moisture in the seed sample, half filled bags should be hung on a fence to dry.

Harvesting Equipment

The all-crop type of machine appears to be the best for harvesting Wimmera rye grass. With direct harvesting, a header is more suitable than a stripper. Both machines however must have the correct riddles and the blast carefully adjusted. The combs should be set well open; an opening up to half an inch is sometimes necessary. This allows the fine straw to come back to the knife, whereas too small an opening restricts it. The knife and ledger plates should be in good order, and the back, or rear end of the fingers kept well down so that the knife has the smallest possible clearance for this relatively tough cutting crop.

If the crop is down it is advisable to use crop lifters.
The tail board at the rear should be removed to stop straw coming down on the grain tray. It will be found that all the seed will pass through the walkers before reaching the tail, so there should be no loss of seed from the removal of the tail board. A slow walker speed generally gives the best results.

The standard wheat drum and concave are entirely suitable for rye grass but the drum speed should be reduced to minimise blast. To reduce the blast cut-off devices are available to cover the lower half of the fan openings.

For best results it is an advantage to use an extended riddle box. For heavy crops it is suggested that two riddles be used and the material re-cleaned afterwards by working the machine as a stationary thresher using three riddles with a medium or light crop.

More specific information is supplied by the machinery firms for correct settings for harvesting small seeds.

Final cleaning and grading of the seed can be undertaken with a suitable grader.

**IN BRIEF**

1. Wimmera rye grass should be sown reasonably early using relatively light seeding rates: ½-2 lb. per acre in a pasture, and 8 lb. for seed production.
2. Shallow seeding is most desirable.
3. Sow Wimmera rye grass on its own for seed production and with a legume for a good pasture.
4. In the initial year, grazing management must be carefully organised. Do not mow seed stands.
5. Use adequate fertilisers relevant to the local conditions, whether for pasture or seed production.
6. Graze heavily before cropping a Wimmera rye grass paddock.

**REFERENCES**


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