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D B. Argyle

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BARREL MEDICs

for Eastern Wheatbelt Pastures

There is a big potential for the use of barrel medic in wheatbelt pastures, and prospects have been further improved by the advent of the early-maturing Cyprus strain.

In this article Merredin Agricultural Adviser D. B. Argyle gives some hints on establishment and management of barrel medic pastures in the eastern wheatbelt. Much of what he says also applies to other areas; contact your local adviser for further information.

By D. B. ARGYLE, B.Sc. (Agric.), Agricultural Adviser, Merredin

ALTHOUGH millions of acres of improved legume-based pastures are making a valuable contribution to agriculture in parts of the cereal and sheep areas which receive 14 in. or more annual rainfall, there are millions of acres in the lower rainfall outer wheatbelt districts where improved pastures have never been established.

Apart from economic considerations, the lack of suitable species and strains of pasture plants and difficulties of establishment and management under large area-low rainfall conditions are the main reasons for this.

Subterranean clover is the basis of the sown pastures of the higher rainfall areas of the wheatbelt, but in the outer wheatbelt this is unsuitable for big areas of heavy forest soils. It is on such soils that the medics thrive, and in places good stands of volunteer medic species (often called native trefoils) have become established.

The volunteer pastures of the heavier soil types of the outer wheatbelt consist mainly of grasses such as barley grass (Hordeum spp.), wild oats (Avena fatua) and annual phalaris (Phalaris minor), with the legumes burr trefoil (Medicago denticulata), Goldfields burr (M. minima), cluster clover (Trifolium glomeratum) and woolly clover (T. tomentosum). The two medics have the disadvantage of objectionable seed pods, and the two clovers of low productivity.

Barrel medic is the most satisfactory legume available for sown pastures on the heavier soils in these areas. Its advantages over the volunteer legumes include higher production, seed pods which do not cling to wool to any great extent, and the ability to maintain green growth later in the season.

Barrel medic is well suited to much of the outer wheatbelt, and while some thousands of acres of the commercial strain have been established in the past there remains a huge potential for pasture improvement with barrel medic and other pasture legumes. Prospects of this have been further improved by the advent of the early maturing Cyprus strain of barrel medic, and Geraldton subterranean clover.
STRAINS OF BARREL MEDIC

Like subterranean clover, barrel medic has a number of strains which differ in various characteristics, but until recently the range available has not been great enough to allow the sort of selection which has been done with subterranean clover.

Development so far has been achieved with an unselected type known generally as "commercial," most of the seed supplies of which have come from South Australia.

While this has given good results in some places it is too late in maturity for much of the outer wheatbelt, and the absence of early maturing types has restricted the expansion of barrel medic pastures.

This gap is likely to be filled by the early maturing Cyprus strain, which was introduced some years ago by the C.S.I.R.O., and tested by the University Institute of Agriculture.

Cyprus is three or four weeks earlier than the commercial strain, has a far greater capacity to set seed—especially under poor seasonal conditions—and has greater winter vigour.

It seems certain that Cyprus will not only largely replace commercial barrel in many districts, but will extend the area in which pasture legumes can be established to the outer edges of the cereal growing districts.

Another strain which has been tested locally is MTR 173, which was produced in New South Wales. It is later maturing than commercial, and has not performed well in Western Australia.

Selection of superior types from both commercial and Cyprus is continuing, as well as testing of a range of strains of barrel medic and other medic species introduced from other States and overseas.

SOIL TYPES

Most of the heavier soils of the wheatbelt are suitable for barrel medic, which has a definite preference for the more alkaline soils as well as having some degree
of salt tolerance. Experience has shown that it can be successful on the salmon gum and gimlet country, the morrell soils (including the more fluffy types) and the better (reddish) mallee soils with a clay subsoil reasonably close to the surface.

There are some indications that the Cyprus strain may be well suited to the medium and better light soils, but pending more definite information from experiments in progress only trial sowings should be made on these.

Barrel medic should not be sown on typical sandplain soils, and areas of sticky grey clay should also be avoided.

SOIL PREPARATION

Because weed control is important for the establishment of barrel medic, land preparation should be better than is generally necessary in higher rainfall areas.

Sowing into a stubble paddock is recommended; the technique which has given best results at the Merredin Research Station is to plough in the stubble after the first weed germination and sow into a moist seed bed. This is likely to succeed whether the barrel medic is sown alone or with a grazed cover crop.

Where barrel medic is sown on old pasture land weed control becomes even more important and ploughing after a good weed germination is essential, again followed by sowing into a moist seed bed.

INOCULATION

Inoculation is essential in many areas of the wheatbelt. In all north eastern and eastern wheatbelt areas, major responses to inoculation have been shown and many failures have occurred through lack of or poorly carried out inoculation.

It is recommended, therefore, that all barrel medic seed should be inoculated with fresh peat culture of Group 1. (The lucerne-barrel medic group of Rhizobia.)

Ordinary inoculated seed should not be sown into dry soil or soil with poor moisture conditions, nor should it be mixed
with superphosphate. If the seed has to be mixed with fertiliser it is best to have the inoculated seed lime pelleted. If this is not done, basic super or 50/50 lime super should be used.

Lime pelleting is a simple process which provides a protective coating for the bacteria, enabling them to survive for up to several weeks under dry and possibly hot conditions and also protecting them from the action of superphosphate.

When sowing medic into lighter soil types, lime pelleted seed should always be used.

Lime pelleted seed cannot be sown satisfactorily through small seed attachments. Special low gears are available for ordinary seed and fertiliser drills which enable the treated seed to be sown through the fine side of the grain box. Failing this, the seed would need to be mixed with the cereal grain or the fertiliser.

Detailed instructions for lime pelleting of seed are available from the Department of Agriculture.

SOWING BARREL MEDIC PASTURES

Efficient sowing techniques are important when sowing barrel medic, particularly in lower rainfall districts, and extra care will be repaid by better establishment.

It is often also an advantage to sow a small quantity of a suitable grass species at the same time as the legume, and mixing from \(\frac{1}{4}\) to \(\frac{1}{2}\) lb. per acre of the Merredin early strain of Wimmera rye grass with the barrel medic seed is suggested.

Time of Sowing

Ideally, barrel medic should be sown as soon after the opening rains as possible, allowing for good weed control. Late planting of barrel medic may result in poor nodulation, growth and seed setting, and increases the dependence on spring rains. Dry seeding, particularly with initial sowings, is not generally recommended because of the need to inoculate in many areas, and weed problems. Lime pelleting will protect the bacteria for at least two weeks and should be used if dry seeding is unavoidable.

Depth of Sowing

The suggested planting depth for most heavy soils is from three quarters to one inch. This will give some protection for the seed while allowing the young seedling to reach the surface fairly readily. Shallower planting may be preferable if the surface of the soil is liable to form a hard crust which is difficult for seedlings to penetrate.

Where a small seeds box is used, sowing depth can be regulated if plastic hoses are attached from the outlets of the small seeds box and with small wire supports to behind the seeding boots so that the pasture seed falls behind the grain and super. Adjusting the plastic hoses will allow the depth of planting to be varied independently.

Rate of Sowing

The higher the seeding rate the better the establishment so selection of seeding rate becomes a balance between rate and cost of seed. The amount of seed warranted will vary according to the establishment method used, and generally the more certain the technique the higher the seeding rate should be.

On present day prices of about 7s. and 3s. respectively a pound, suggested rates are 3 lb. per acre for Cyprus and 4 to 5 lb. per acre for commercial. If it is intended to gather seed, higher rates should be used.

Fertiliser

The rate of superphosphate to use depends on the soil type and past fertiliser history. With the heavier land, about 60 lb. per acre would be satisfactory for older cleared areas that have a good buildup of residual super. On more recently cleared land, up to about 120 lb. should be used.

For trial plots on light land, copper and zinc should be also applied if this has not been done previously.

When sowing pastures, placement of the fertiliser can be important and drilling it in is essential so that it is readily available to the young seedlings. When sowing on the lighter soils, using either basic super or 50/50 lime super could be an advantage although lime pelleting is preferable.
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SOWING TECHNIQUES

There are a number of methods of sowing barrel medic and all have advantages and disadvantages. The method chosen will have a major effect on the results achieved.

(1) Sown by Itself

This is the best way of getting a good seed setting and obtaining a first class stand.

A good seed setting will be achieved in almost all years if planting is at the right time and weed control good. Any appreciable weed growth should be grazed off, or much of the benefit of this method will be lost.

Despite the very dry year in 1961 at Merredin, both commercial and Cyprus barrel medic set enough seed to give good stands in 1962 where they were sown without a cereal crop. Cyprus was nevertheless considerably better, its seed production being about double that of commercial barrel.

The major disadvantages are cost of sowing, little return of grazing in first year and the difficulty of sowing both pastures and cereals during a limited period.

(2) With a Normal Grain Crop

The barrel medic is sown in the last grain crop before the paddock goes back to pasture.

With this method the main difficulty for the barrel medic is the competition for soil moisture from the cereal, so that adequate spring rains are of much more importance than where it is sown without crop.

Failures in dry seasons are common with commercial barrel, and in 1961 at Merredin no seed at all was set when this strain was sown in a wheat crop, compared with 150 lb. an acre of seed where it was sown without a cereal crop. Even in 1960, when good spring rains were received, the commercial strain sown with the cereal crop at Merredin set only 10 per cent. of that
set when it was sown on its own. Sowing
the commercial strain with a normal cereal
grain crop is therefore not recommended.
 Prospects with Cyprus are much better.
Even in the very dry year of 1961 moderate
amounts of seed were set in a normal
wheat crop, equal to about 15 per cent.
of seed set by Cyprus sown without a cereal
crop. In average years, seed setting
should be much better than this.
 For this method to have reasonable
chances of success, early sowing is im-
portant, and not later than early June is
suggested. It can be seen that this method
is risky, but it has advantages in its low
cost and the fact that it entails little
additional time and labour.

(3) Sown with a Light Cereal Crop and
Grazed
 Seedsetting is usually midway between
the two methods above but varies greatly
with the season.

The cereal crop should be sown at a
maximum of 15 lb. per acre, and if it is
sown on stubble allowance should be made
for any self sown cereal. Grazing must
be carried out early—four to six weeks after
germination—and thoroughly so that the
cereal plants make little recovery. Late
grazing may bring little benefit as barrel
plants may have been severely retarded
by the cereal and late rains may become
essential.

Success with this method is very de-
pendent on the grazing management and
if sufficient stock are not available, either
method (1) or (2) should be used. Sowing
pastures with a grazed cereal cover crop
is particularly suited to the better rainfall
districts with more reliable spring rains.

If sown by this method and adequate
grazing is not possible, topping of the
paddock should be done. This could also
apply to method (1) when weed growth
becomes excessive.

(4) Sowing over two years
 Some seed is sown in the cereal crop and
the balance in the stubble the following
autumn.

Where nodulation is not a problem,
this can be fairly successful, but early
germinations can cause a problem in some
years.

The best method to use will depend on
annual rainfall, soil type, the ability of
the farmer to sow both cereal and pasture
in the limited seeding period, the cost of
seed and many other factors.

INSECT ATTACKS
 The most serious damage to barrel
medic is usually caused by red mite and
lucerne flea, and occurs in mid winter
when growth is slow. These can seriously
damage a first year stand of barrel medic
and if necessary, the stand should be
sprayed with recommended rates of DDT
and malathion, namely 1 oz. (¼ pint) 2 per
cent. DDT plus 1 oz. (2 fluid oz.) 50 per
cent. malathion per acre.

Another alternative is to use seed which
has been treated with one of the systemic
insecticides.

SPRAYING FOR WEED CONTROL
 The medics, in general, are susceptible
to the hormone sprays used in the control
of wild turnip and radish, and particularly
to the 2-4D esters. Seed production can
be seriously affected, and barrel medic
stands should not be sprayed unless abso-
lutely unavoidable with first year stands
sown with a grain crop. If spraying is
necessary, use only 2,4-D amine or M.C.P.A.
sprays.

FUTURE MANAGEMENT
 In the second and following years, pad-
docks established with barrel medic should
be grazed well down within two or three
weeks of the opening rains and should be
kept well grazed during the growing
period. Early grazing is of particular im-
portance if a heavy stand of barley grass
is also present.

Topdressing rates will vary considerably,
depending on past history, but on many
areas will be 56 lb. per acre each year or
less, especially with old land which has
had plenty of super in the past.

ROTATIONS
 In these areas of lower rainfall cereal
cropping is a highly important item in the
farm programme, and usually takes first
precedence. However, once barrel medic
has become established some changes in
the rotation will be necessary to capitalise on the improving fertility.

It is possible that best results will come from a three- to four-year period of barrel medic followed by two or three successive crops. Work is in progress on these aspects of crop rotation, as well as others such as the need for bare fallow.

In time, the expanding acreage sown to barrel medic could result in the development of a ley farming system comparable with that of the subterranean clover areas. Such a development should bring better crop yields and higher stock carrying capacities to farms in the lower rainfall districts.

Cover Picture...

THE EXPORT LAMB COMPETITION

Our cover picture, taken during the display of entries in the West Australian Export Lamb Competition just before the results were announced, gives a good indication of the striking uniformity achieved by West Australian export lamb producers. The carcasses pictured were not among the top place getters.

A point of interest in the judging of this competition was the close agreement between the placings given by the local judges from the meat trade in London.

The first prize lambs at Robbs Jetty were judged second in London, and vice versa, with only two points separating them. The third prize winner in the local competition was placed fourth in London, and the fifth place getter in London was placed third by the local judges. As there were very few points separating the first five placings these differences in placings were of little importance. The similarity in judging can be taken as a good indication that the local judges have an excellent idea of what is required by the meat trade in London—and can advise growers accordingly. This, incidentally, gives yet another indication of the value of the Export Lamb Competition to West Australian growers, particularly those who take part in the competition.

A report on the competition from one of the London judges, Mr. L. A. Ware, is printed below:

The improvement as regards excess fat commented upon last year was maintained this year but there were still a number of carcasses that carried too much fat across the forequarters, in fact the impression they gave me this year was that they were leaner and smaller on the leg and carried too much fat on the loin and forequarter.

This criticism is to be taken as a very fine point because practically all those in Class 1 showed good signs and characteristics of the Down breed. There was not so much kidney suet this year but perhaps slightly more fat on the backs.

It is pleasing to note that the judging in Western Australia is being carried out on the lines of the type of meat required for the U.K. trade, although these lambs are still on the heavy side. The 32-lb. lamb is more ideal.

The handling was still very well done. One or two could have been flayed better, but this—together with poor colour—was disregarded for judging purposes.