

RENOVATING & ESTABLISHING PERENNIAL PASTURES
ON THE TABLELANDS

Robert Gordon,
"Earlstoun",
Guyra, NSW.

The property is located 3 km. west of Guyra and has the following characteristics:

- Area: 540 ha.
- Soils: Approx. 75% red basalt, 25% grey ironstone.
- Rainfall: 825 mm usually 60%/40%, summer/winter incidence.
- Topography: Undulating.
- Arability: Varies from good to impossible.
- Subdivision: 40 paddocks, from 3 ha to 24 ha in size.
- Enterprises: Second cross prime lamb production, cattle fattening as a secondary enterprise.
- Stock numbers: Are normally 2400-2700 first cross ewes; 70-100 steers.

FERTILISER HISTORY AND CURRENT TOPDRESSING POLICY

Superphosphate has been applied to the whole property during most of the past 30 years - annual applications for the first 20 years (approx.), biennial over the past 10 years. The usual rate is 125 kg/ha of single superphosphate, using soil testing at permanently marked sites as a guide.

General Comments

The whole property has been pasture improved over the past 28 years using a combination of prepared seed bed, sod seeding, aerial seeding and, more recently, direct drilling. A number of indifferent to droughty seasons have resulted in sparse establishment of unimproved species, with subsequent invasion by rat's tail fescue and 'high fertility' weeds: e.g. brome, barley grass and black thistle.

Dry seasonal conditions, wingless grasshoppers, and preferred grazing of white clover by sheep, have all mitigated against white clover competing successfully against these invaders in most years. Consequently, approx. 30% of the pastures still require upgrading to a first class status.

The objective of using the direct drilling technique is to lift production by replacing these annual weeds with productive perennial grasses and clovers at an acceptable cost. At the same time the existing desirable species would be retained.

This replacement is necessary to maximise the availability of high quality feed, particularly for fattening lambs and cattle during the summer period when stock numbers are at their maximum.

The resultant perennial sward is also more stable than the mixed perennial/annual pasture.

This increase in the production and stability of the renovated pasture represents a profitable return on the resources invested in the upgrading exercise.

The Advantages of direct drilling as a renovation technique are listed by the NSW Department of Agriculture (McDonald, Duncan 1983) as follows:

- . less fuel needed
- . less labour needed
- . reduced erosion risk
- . extended grazing before direct drilling
- . enables drilling under wetter and sometimes drier, conditions than the conventional method, allowing more timely drilling of seed.
- . the need for cropping phase is reduced, or eliminated in some situations, thus saving in machinery overheads and maintenance costs.

These advantages appealed to me, especially as one who is not keen to spend more time than necessary on a tractor.

The recommended technique seemed appropriate to my conditions, and the stated advantages appeared achievable.

I therefore embarked on the following direct drilling programme over the years 1982-85. The 1986 autumn was judged to be too dry to risk any direct drilling.

"EARLSTOUN" Paddock DETAILS

1982

Paddock 1

Area 3 ha.

Sprayed for annual rat's tail fescue, soft brome in May

Sown late May with:

Demeter fescue 7 kg/ha

Red clover 2 kg/ha

NZ white clover 1 kg/ha

Vic. perennial ryegrass 2 kg/ha

125 kg/ha single superphosphate drilled in with pasture

Seasonal conditions - drought

Result - failure.

1983

Paddock 2

Sprayed for sorrel during March with a combination of dicamba (1l/ha) and 2,4-D amine (1.4l/ha).

Sprayed for rat/s tail fescue, barley grass, soft brome in July with 2l/ha Gramoxone^R.

Sown first week in August with pasture mixture consisting of:

Demeter fescue 7 kg/ha

Sirosa phalaris 2.5 kg/ha

Red clover 2 kg/ha

White clover	1/2 kg/ha
Perennial ryegrass	1 kg/ha

125 kg/ha single superphosphate drilled in with pasture at sowing.

Seasonal Conditions	- excellent
Result	- very good.

Paddock 3

No sorrel of significance in this area. Sprayed for annual grasses with 2l/ha Gramoxone^R in July.

Sown late July with pasture mixture consisting of:

Demeter fescue	- 8 kg/ha
Australian phalaris	- 1 kg/ha
Siroso phalaris	- 1 kg/ha
Red clover	- 2 kg/ha
White clover	- 1/2 kg/ha
125 kg/ha Starter 18 ^R (17.5:8:0) drilled in with pasture.	

Seasonal conditions	- excellent
Result	- establishment very good.

1984

Paddock 4

Sprayed for annual grasses in May with 2l/ha Gramoxone^R.

Sown late May with pasture mixture consisting of:

Demeter fescue	- 7 kg/ha
Siroso phalaris	- 2.5 kg/ha
Red clover	- 2 kg/ha
Haifa white clover	- 1/4 kg/ha
Subclover	- 1.5 kg/ha
Perennial ryegrass	- 1 kg/ha

125 kg/ha single superphosphate drilled in with pasture at time of sowing.

Seasonal conditions	- poor
Result	- fair

Paddock 5

Sprayed for annual grasses with Gramoxone^R at 1.75l/ha in May.

Sown late May with pasture mixture consisting of:

Demeter fescue	- 10 kg/ha
Siroso phalaris	- 1.5 kg/ha
Red clover	- 2 kg/ha
Haifa white clover	- 0.5 kg/ha
Subclover	- 1 1/2 kg/ha
Perennial ryegrass	- 1 kg/ha

125 kg/ha Starter 18^R drilled in with pasture.

Seasonal conditions	- poor
Result	- fair

1985

Paddock 1

Sprayed to suppress phalaris with Gramoxone^R at 1.75 l/ha late May.

Sown early June with pasture mixture of:

Demeter fescue	- 8 kg/ha
Red clover	- 2 kg/ha
Haifa white clover	- 1 kg/ha
Vic. perennial ryegrass	- 2 kg/ha

125 kg/ha single superphosphate drilled in with pasture.

Seasonal conditons	- fair
Result	- good grass establishment
	- poor clover establishment.

PROCEDURE

In all the above examples recommended steps to successful direct drilling were followed as closely as practicable. These steps are discussed in the light of my limited experience, and, of course, in my operating circumstances.

Paddock selection Paddocks were selected the previous spring and closely grazed to minimise seeding of the target weeds.

Paddock preparation The relatively small size of the selected paddocks enabled heavy grazing pressure to be applied whenever necessary to keep weed growth short.

Herbicide selection and application The appropriate herbicide and its application rate were selected in consultation with the local district agronomist.

Spraying was by a rented boom - sprayer, and generally results were satisfactory. However, under dry, frosty conditions in 1984 the control of rat's tail fescue was marginally unsatisfactory.

Drilling The machine used in the 1982 failure was a Duncan Triple-Disc. However, I believe conditions were far too dry for success with any machine.

All other sowings have been with a Connor Shea Tyne Seeder with lucerne points or modified lucerne points, at the recommended sowing depth of 10-15 mm.

No covering harrows were used, but occasionally sheep haves been used post-drilling, to assist in covering the seed.

Post sowing management Grazing management after drilling has varied depending on circumstances. Occasionally crash grazing has been necessary to suppress weed competition e.g. wireweed.

Naturally the pasture is not grazed until the young plants are sufficiently established not to be pulled out.

DISCUSSION

From my experience the following points are also worth making:

- . A study of the relationship between the season and the result achieved in each of examples given above, reveals that, in common with other methods, seasonal effects can still be critical to success.
- . When growing conditions are unfavourable, spraying rates need to be increased.
- . Costs have not been detailed as these vary considerably with time and circumstances.
- . The question of when is the optimum time to sow, is still unresolved. Indications are that late winter (early August) may be preferable to late autumn/early winter (May, June) in the Guyra district.
- . The lack of persistence of the traditional legumes used in the higher parts of the New England (white and red clovers) should be the subject of research into improved cultivars.
- . The seedling vigour of Demeter fescue appears to be unsatisfactory making it difficult to achieve a satisfactory establishment in less than ideal conditions.
- . If soil moisture is limiting and the weather pattern is dry, direct drilling should be postponed - even until the following year.

CONCLUSION

The results I have obtained from direct drilling since 1982 have ranged from total failure to excellent.

While a few questions of detail remain to be answered, I believe the technique is generally sound and appropriate to my objectives and circumstances.

I intend to continue to use direct drilling to establish and renovate my pastures, with a programme already planned for early August, 1987.

REFERENCES

- McDonald, W.J., Duncan, M. (1983) Direct drilling pastures. NSW Department of Agriculture. Agfact P.2.2.5.