final report

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Prepared by: Mike South

Milang Productive Grazing

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2005/S02 Extended Quality Grazing

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2005/S02 - Milang Productive Grazing
Extended Quality Grazing
Mike South
PO Box 188
MILANG 5256 SA

BEEF - SOUTHERN

BUDGET $15,000.00

Aim:
To develop fodder production systems that can offer both early and extended quality pasture growth and thereby increasing livestock carrying capacity and meat production per hectare. It is our intention to find and use plants which have the ability to utilise summer rainfall to extend the pasture growing season and therefore increasing overall carrying capacity of farm.
To identify and better utilize DSE's per hectare through benchmarking across the membership.

Objectives:
To have twelve members proficient in using Grazfeed.
To achieve four weeks more pasture production annually.
Identify best practice increase carrying capacity by 10% through better pasture utilization.
To develop linkages with other past Prograze participants.

Co-ordinator's Comments

31/07/2009 Final Report sent to Sydney but missing members' comments which have been requested to be added.

28/07/2009 The group started this project as a product of an MLA Prograze Course that they attended, a good start. Two lousy years have caused their results to be limited. They can clearly see though that lucerne has been the most productive in these tough years, a lesson it itself. Leader Mike South was adamant that members have learnt a lot and are putting into practice their new knowledge.

23/12/2008 Third Interim Report was poor as Mike South busy on lake water issues therefore Lynton Arney now best contact. Sent him Interim Report format and requested more detail of their trials.

11/12/2008 Report provides no details therefore requested more info. Group still struggling with poor year with very dry spring-summer. 16 attended inspection of lucerne plantings. Summer fodder crops have either not been planted or failed. Members still keen despite dry and still using Grazplan and feeding strategies. Economic analysis delayed until 2009.

30/05/2008 Group has done very well in a tough year using a shared computer with Grazfeed on to calculate grazing system. Need to extend to get another years data due to the 2 dry years holding up good records of feed and crop performance.

14/06/2006 Group appears well led and right into their planned actions.

10/03/2006 Looking OK with good leadership. Chasing first report.

6/07/2005 Sent to MLA for preparation of Funding Agreement

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FINAL REPORT JULY 2009

What has been done

The project had three parts:

1. Summer Forage Crops

This part of the project was run for us by Nigel Wilhelm of SARDI. He sowed and monitored forage sorghum, millet, cocksfoot, Hunter pasja, Arrowleaf clover, lucerne, chicory and forage brassica.

2. The Use of Grazfeed by Graziers to Better Set Supplementary Feed Rations

A copy of Grazfeed was purchased and installed onto a laptop computer. The laptop was shared by most members of the group to estimate required supplementary feed rations.

3. Fodder Crops to Fill Feed Gaps

A number of group members sowed fodder crops to fill expected feed gaps. Lucerne, a variety of cereal crop mixes and Italian ryegrass were all sown and rotationally grazed

Methodology

1. Summer Forage Crops

SARDI sowed and monitored the growth of forage sorghum, millet, cocksfoot, Hunter pasja, arrowleaf clover, lucerne, chicory and forage brassica on the property of Brian Landseer's in spring 2006.

2. The Use of Grazfeed by Graziers to Better Set Supplementary Feed Rations

A copy of Grazfeed was purchased and installed onto a communal laptop computer. A training session on how to use Grazfeed was held by Tim Prance of PIRSA Rural Solutions.

The laptop was then borrowed by most members of the group to estimate required supplementary feed rations and to assess their grazing systems and stock performance.

3. Fodder Crops to Fill Feed Gaps

Five group members sowed fodder crops to fill expected feed gaps. Lucerne, a variety of cereal crop mixes and Italian ryegrass were all sown and rotationally grazed. Members kept details of the costs of sowing the crops as well as the numbers and classes of livestock and the dates stock went into and out of the paddocks for 2006 and 2007.

An attempt has been made to estimate the benefit:cost of sowing the fodder crops.

Results & Analysis

1. Summer Forage Crops

Unfortunately, this trial had no measured outcome as there was a thick mat of potato weed across the site and then cattle broke into the plots and grazed all sites to the ground. SARDI researcher Nigel Wilhelm did, however, make the following observations:

- Stock showed strong preferences for the legumes, followed by the millet and cocksfoot and last of all the forage sorghum.
- There were major differences in the ability of the fodder crops to outcompete the potato weed. Hunter pasja forage brassica, forage sorghum and arrowleaf clover both did very well, while the other brassica and the serradella were swamped out by the potato weed. The lucerne did not compete well, but was still alive and may kick on later.
- The plantain and chicory started with good early growth, but then died off early with the hot weather.
- The forage sorghum and millet visually produced the most feed. Megasweet millet in particular did well.
- There was a major difference between the two forage brassicas in susceptibility to caterpillars.
- Atrazine did an excellent job of weed control on the forage sorghum plots.

2. The Use of Grazfeed by Graziers to Better Set Supplementary Feed Rations

Members started off using Grazfeed on a number of occasions. By the time of preparing this report, the use had dropped to almost zero.

We believe that Grazfeed allowed members to initially set their rations under a number of scenarios. Once done and ground-truthed, these rations were adjusted and used as the starting point in future without the need to re-use Grazfeed.

We expect that members will continue to use the program periodically as new, untested feeding situations arise.

The sharing of Grazfeed between group members has worked effectively. No member of the group has purchased their own copy of Grazfeed.

3. Fodder Crops to Fill Feed Gaps

Group activities have been severely affected by poor spring and summer rainfall in 2006 and 2007 (particularly), which dramatically limited the growth of the fodder crops. In addition, the low water level in Lake Alexandrina shifted focus away from feed production to water quality and availability in 2007.

Even so, the value of fodder crops to fill specific feed gaps in either quality and/or amount has been demonstrated.

The attached table 1 summarises the grazing performance, establishment costs of the fodder crop paddocks. Some comments on the results:

1. There was a range of fodder crops grown and a range of costs to establish them (from $75 to $275 per hectare). We believe that there is potential to reduce the preparation process, and so costs, by reducing the number of workings and sprays.

   Early sowings in particular can be direct seeded with no sprays – up to 30th April for this district. Later sowing can be done with one knockdown spray and direct drilling.

2. There was a large seasonal impact on summer fodder crops. Good results were obtained in 2006, while in 2007 the crops failed and most of the money spent on the crops was lost. If droughts become more common, late sown fodder crops will become more risky.

3. In 2007 there were erosion problems created by failed, late-sown fodder crops not establishing enough ground cover.

4. Established lucerne was much less affected by season than annual, sown summer fodder crops.

5. The careful rotational grazing system used in the trials dramatically increased the carrying capacity of paddocks. Most of this increase was the result of two things - allowing the plants recovery time after grazing and higher feed utilisation. On a whole farm basis this is more difficult to achieve.

6. Cereal regrowth and early sown cereal can provide 2-3 times more early feed than an unimproved pasture on Hindmarsh Island.

7. The percentage of potential feed grown varied dramatically between season and property.

Some observations on fodder crops:

1. You have to define when the feed gap is and plan to sow a fodder crop to fill that gap.

2. Don’t expect targeted fodder crops to replace good pastures.

3. You have to properly fertilise fodder crops to get the best growth out of them.

4. If you early sow a cereal fodder crop, it is very important not to graze it until after the break of the season when there is adequate soil moisture to sustain the crop.

5. Early sowing gives excellent early feed.

6. Fodder crops can, with planning, be grown to provide extra feed at almost any time of the year. This, in turn, can allow a significant increase in the annual stocking rate of the property.

7. Italian ryegrasses respond better to nitrogen than annual grasses and pasture legumes – provided there is need for additional feed and there is soil moisture to allow it.

8. Members observed extra early feed in the year following the sowing of a late cereal crop for fodder.

9. Late sown fodder crops can be an excellent weed-cleaning process because weeds are killed later in the season than usual giving a higher kill rate. A paddock can then be sown to a permanent pasture like lucerne.

10. Because of the way fodder crops are grazed, weeds are eaten with the sown species.

11. Stock do not like to graze the early growth from Mundah barley.

12. Early in the season stock preferentially eat weeds over lucerne.

13. Cereal fodder crops are a good, safe introduction of young stock to grain.

The attached table 2. summarises soil test results for some of the paddocks studied. Some comments on these results:

1. Soil fertility was on balance quite good for all paddocks tested.
2. There was a range of soil acidity (from pH in water 6.4 to 8.1).
3. Two paddocks were likely to be affected in parts by salinity.
4. Growth of fodder crops is likely to be significantly reduced where soil fertility is poor.

There were three major limitations to the analysis of the data:

1. In all but one case, there was no control paddock setup to allow proper comparison with the fodder crop.
2. There was limited weighing of stock to calculate growth rates.
3. There was limited estimation of feed on offer as stock went into and out of paddocks.
4. Record keeping was not ideal. Extra help with the design of the forms at the start of the trial would have been valuable to give better data.

These limitations make it difficult to do a reliable economic analysis of the value of fodder crops. In one case, however, fairly reliable data was available. This showed:

Table 3. Profitability of Fodder Crop for Ram Lambs in 2006

	Control paddock	Oats & peas
Growth rate of ram weaners	55 grams/day	240 grams/day
Additional growth over 80 days		14.8 kg liveweight/weaner
Additional growth per hectare		293 kg liveweight/ha
Carcase weight difference		6.5 kg
Value of extra meat @ $2.60/kg		$16.90/weaner
Value of extra meat per hectare		$334
Less handfeeding costs	$2,128	$0
Less additional fodder crop costs	$0	$2166
Net advantage of fodder crop over 24 hectares		$8004
Net advantage of fodder crop		**$333/ha**

Other issues:

1. The control weaners had 40 hectares of grazing rather than the fodder crops 24 hectares. This released pasture for other stock.
2. The weaners grew on the fodder crop, but little on the dry pasture. This can make weaner management easier.
3. In 2007 the fodder crop really did not grow at all because of the lack of spring rain.

Field Days

A training day on the use of Grazfeed was held in July 2006. It was run by Tim Prance of SA Rural Solutions and attended by 9 local producers.

The group held a pasture walk on 17th of September 2006 with the Milang Agricultural Bureau and it was attended by 16 farmers. We looked at looked at Lucerne establishment techniques with one property comparing scratching the Lucerne in to sand some rolled behind the seeder with culti-packer and some of the paddock without the culti-packer. The farmer considers a 40 % better establishment without the culti-packer as it tended to flatten all the ground loosing the ability to harvest moisture. This farmer chose to use Silverado which is a 10 winter active Lucerne which was chosen for its ability to fill a feed gap in April/May. Another farmer visited had a very good establishment using knife points and press wheels. During discussion it was felt that uncoated seed gave better establishment compared to coated seed.

After this field day, the group moved on to an inspection of fodder sorghums trial plantings presented by Pacific Seeds on the property of local farmer Charlie Michelmore. The plantings highlighted the need to select the cultivar best suited to an area and soil type.

Due to dry conditions summer fodder crops were generally not sown and what was failed giving next to no productivity, so the group has not held a meeting to compare summer crop utilisation and grazing.

The group held its first field day on beef cattle management in conjunction with the Milang Agricultural Bureau on 21st March 2007. Held on Brian Landseer's property at start of the project it was attended by 18 producers who viewed the summer fodder crops planted by Research Officer, Nigel Wilhelm of SARDI.

A farmer breakfast was held on sheep and beef cattle nutritional deficiencies on 18th June 2007. it was attended by 12 graziers.

A final field day was held on 8th February 2008 attended by 10 farmers. We looked at Italian ryegrass and clover fodder pasture, a peas and oats fodder crop and French millet and sorghum fodder crops.

The field day highlighted that fodder crops are a valuable, although costly, way of filling feed gaps. It also highlighted that sorghum and millets are less reliable in low rainfall years than Italian ryegrass and oat/pea crops.

Key Outcomes

The key outcomes of the project are:

1. Fodder crops can provide significant extra feed in both winter and summer feed troughs. This allows higher stocking rates to be run on the farm over the whole year.

2. Fodder crops can provide high quality feed in summer that allows young stock to grow when they normally would not. This makes retained stock easier to manage over summer and sale stock can be finished out of season and achieve premium prices.

3. Fodder crops vary widely in their ability to compete with weeds and in their palatability to stock, so the species and varieties should be selected carefully to suit the local environment.

4. Late sown cereal and summer fodder crops can reduce the risk of grass seed damage to lambs, so avoiding price penalties for damaged skins.

5. Fodder crops are expensive to grow – between $75 and $275 per hectare. This can make late sown and summer fodder expensive failures if the season ends early – as happened in 2007 and 2008. There can also be low ground cover leading to an added erosion risk in these years.

6. Cereal fodder crops can be direct drilled dry without sprays if done before 30th April in this district. Later sowing can be done with one knockdown spray and direct drilling.

7. You have to define when the feed gap is and plan to sow a fodder crop to fill that gap.

8. Targeted fodder crops do not replace good pastures.

9. There is a range of species and cultivars of fodder crops available and strongly promoted to graziers. It can often be difficult to select the best crop for a particular situation.

10. Local trials are required to establish which species and cultivars are best suited to a district.

11. If properly selected, fodder crops can be very profitable in filling specific feed gaps in winter and summer.

12. Fodder crops are an excellent weed-cleaning crop before the resowing of a permanent pasture like lucerne.

13. Careful rotational grazing dramatically increases the carrying capacity of a paddock.

14. Grazfeed is a useful computer program to help graziers establish initial rations for supplementary feeding livestock.

Table 1. Grazing performance of Fodder Crop paddocks

	Property	Year	Rainfall	Sowing date	Annual DSE/ha for paddock	Theoretical potential DSE/ha *	Percent of potential achieved	Main grazing period	Cost/ha
Pea & oat sown crop	Lynton Arney, Finniss	2007/8	390	01/09/07	9.6	21.3	45%	Dec-Feb	$90
Winter Star ryegrass	Brian Landseer, Milang	2007	400	18/05/07	5.1	21.9	23%	July-Oct	$273
Sown barley & clover	Brian Landseer, Milang	2007/8	400	30/04/07	7.7	21.9	35%	Aug-Feb	$94
Sown triticale, vetch, Guard ryegrass & Balansa clover	Rodney Arhns, Pt Sturt	2006/7	302	17/05/06	10.9	16.5	66%	Aug-March	$273
Sown triticale, vetch, Guard ryegrass & Balansa clover	Rodney Arhns, Pt Sturt	2007/8	394	17/05/07	9.1	21.6	50%	Aug-March	$236
Sown to lucerne	Colin Grundy, Hindmarsh Island	2006	250	13/06/07	10.6	13.7	77%	March-Oct	$190
Failed lucerne + annual volunteer	Colin Grundy, Hindmarsh Island	2007	339	NA	2.5	18.6	13%	Aug	$0
Sown barley	Colin Grundy, Hindmarsh Island	2006/7	250	15/05/07	4.8	13.7	35%	Mar-Sept	$70
Barley regrowth	Colin Grundy, Hindmarsh Island	2007	339	NA	0.9	18.6	5%	Feb	$0
Annual pasture (control)	Colin Grundy, Hindmarsh Island	2006	250	NA	3.3	13.7	24%	Apr-Sept	$0
Annual pasture	Colin Grundy, Hindmarsh Island	2007	339	NA1	0.0	18.6	0%	NA1	$0
Established lucerne	Mike South, Pt Sturt	2006	302	2000	16.3	16.5	98%	All year	$60
Established lucerne	Mike South, Pt Sturt	2006	302	2000	23.7	16.5	143%	All year	$60
Established lucerne	Mike South, Pt Sturt	2007	395	2000	23.4	21.6	108%	All year	$120
Established lucerne	Mike South, Pt Sturt	2006	302	2000	25.5	16.5	154%	All year	$60
Established lucerne	Mike South, Pt Sturt	2007	395	2000	19.1	21.6	88%	All year	$120
Veldt grass and kikuyu	Mike South, Pt Sturt	2006	302	2000	12.0	16.5	72%	All year	$60

* theoretical potential based on 20 kg of dry matter/ha/mm of rainfall.

NA - denotes not applicable

NA1 - denotes not available

Paddocks also received an application of a biological blend from Lawrie & Co costing $285/ha.

Indicates that undrinkably saline stock water reduced stocking rates for these paddocks.

Table 2. Soil test results of paddocks taken in Summer 2006/7

	Property	Year	Phosphorus (Colwell mg/kg)	Sulphur (mg/kg)	Potassium (Colwell mg/kg)	pH (water)	Salinity (conductivity dS/m)
Sown triticale, vetch, Guard ryegrass & Balansa clover	Rodney Arhns, Pt Sturt	2006/7	32	16	247	6.4	0.10
Sown to lucerne	Colin Grundy, Hindmarsh Island	2006	32	8	676	7.9	0.27
Sown barley	Colin Grundy, Hindmarsh Island	2006/7	35	11	518	8.1	0.26
Established lucerne	Mike South, Pt Sturt	2006	30	6	164	7.2	0.05
Veldt grass and kikuyu	Mike South, Pt Sturt	2006	25	7	213	6.9	0.07