final report

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Irrigated Pasture

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Contents

1. Background

The Mid South East Irrigators Association has been involved in various projects involving trials in water use efficiency and livestock production using irrigated pastures. The group decided investigate the production gains that might be gained from increased feed utilisation when using cell grazing.

2. Project Objectives

- To increase carcass meat production by 10%.
- To compare set stocking to cell grazing.
- To determine productive pasture mix, growth rate, water efficiency.
- To compare production results with other members of the group.

3. Methodology

2006/07
The original irrigated area of 17ha was subdivided into four cells of 4.8ha, 3.2ha, 4.8ha and 4.2ha.
Pasture production was measured by PIRSA in conjunction with another trial.
Lamb production was recorded for the irrigation period.
A Field Day was held at the end of the irrigation season.

2007/08
Pasture growth was measured by PIRSA.
Lamb production was recorded for the irrigation period.
A Field Day and Site inspection held during the irrigation period.

2008/09
Lamb production was recorded for the irrigation period.
Results compared for the trial period.

4. Results

2005-2006 The year prior to the commencement of the trial was selected to be used as a base from which to measure any improvement in production. The number of lambs put through the site, the number finished and sold, the weight gained were key measures of the trial.
1 303 lambs passed through the system with 587 (45%) being sold directly off.
4,371 kg LW gain was produced.

2006-2007
1117 lambs passed through the system with 518 (46%) being sold directly off.
8 956 kg LW gain was produced.

2007-2008
1730 lambs passed through the system with 595 (34%) being sold directly off.
9 269kg LW gain was produced.

2008-2009
1110 lambs passed through the system with 783 (70%) being sold directly off.
4624 kg LW gain was produced from the reduced area [-10%] due to less irrigation water available. Pasture growth was also reduced due to the much hotter temperatures and almost no summer rainfall.

Season	Lambs in trial	Lambs sold	Variation From 05/06 base	LW GAIN kg	Variation From 05/06 base	DW sold kg	Variation From 05/06 base
2005-2006	1303	587	100	4371	100	11437	100
2006-2007	1117	518	88	8956	205	10465	92
2007-2008	1730	595	101	9269	212	12690	111
2008-2009	1110	783	133	4624	106	15732	138

5. Success of Objectives

To increase carcass meat production by 10%.

Over the duration of the trial the stocking rate was increased from 30dse/ha in 2005-2006 to 35dse/ha after the cell system was implemented and then reduced to 31dse/ha during the latter part of 2009. The overall effect of the change to cell grazing was an increase in kg LW kg produced more than double (112%) in the 2007-2008 season but this was offset by an increase of only 6% in 2008-2009 due largely to a very hot and dry summer that restricted the area irrigated by 10% as well as pasture growth.

The actual lambs marketed directly off the irrigation increased by 33% over the duration of the trial with total Dressed Weight increasing by 38%.

To compare set stocking to cell grazing.

Overall the trial showed that various aspects of production could be increased by introducing cell grazing into the irrigation system. Live weight produced was doubled by the introduction of the cell system when stocking rates were increased by 20% but with limited increase in lambs that were finished to sale condition. However lambs and carcass weight sold increased by approx. 35% sold when stocking rate was kept at 30 dse/ha.

To determine productive pasture mix, growth rate and water efficiency.

The comparison of pasture bases of fescues and annual clovers and ryegrass and annual cloves showed that while the fescue based pastures produced more the lambs preferred the softer ryegrass pastures. The fescues gave greater growth during midsummer but the ryegrass based pastures were better early and later in the season. Ryegrass will be the base perennial for future pastures.

Water efficiency improved during the trial with consistent pasture growth obtained when an irrigation cycle of 10 to 14 days was adhered to but pasture growth dropped markedly if the rotation exceeded the 14 days. The second and third seasons were contained within the 14day rotation period although season three saw a dramatic

drop in area able to be irrigated due to lack of summer rain to boost the rotation and thus area irrigated had to be reduced in order to maintain the 14 day rotation.

Success of Objectives (continued)
To compare production results with other members of the group.

Results varied between members of the group due to many variables. The trial did not match several members who introduce large numbers for shorter periods under pivot irrigation but was better than other surface irrigation systems.
Some group members abandoned full season irrigation in year three due to losses incurred the previous year due to high fuel prices that made their operations unprofitable.

6. Benefits

The trial proved that there are definite gains to be made by reducing grazing areas by the use of cell grazing but also showed that the desired result of whether to produce more kilograms of meat or finish more lambs for an earlier sale need to be determined. Seasonal conditions can dictate the best option.

Over the duration of the trial the pasture production was improved by the more efficient use of the water available. It was learnt that it was more important to keep within the optimal rotation period rather than trying to maintain the maximum area capable of being irrigated.

The field days created a lot of interest in the concept of dividing irrigation areas into smaller areas such as in the cell grazing concept. They also gave members and other irrigators an opportunity to meet and discuss with both commercial suppliers and government advisors on latest developments and improved technology.

7. Conclusions

The trial has fulfilled its objectives while at the same time highlighting deficiencies within the system. It has created a lot of interest and discussion within the group as well as offering a platform for other irrigators to observe another irrigation system.
Among the deficiencies was the fact that the ryegrass based pasture had exceeded its optimum life cycle in order to finish the trial and so production from those cells were severely affected. (These cells have since been resewn.)
The trial has also demonstrated that a system is never at its full potential and constant monitoring and ongoing improvement is required to maintain optimum production.
The trial has highlighted the cost effectiveness of cell grazing as compared to one larger area.

The one off setup costs were:	Material	$2,445
	Contract	$1,500
	Labour	$2,500
	Total	$6,445

The irrigation uses artesian water so has no pumping costs, but as mentioned can have reduced water available in hot dry summers due to others using more water and reducing pressure.
The increase in production averaged 3,245kg of live weight and 1,525 kg of dressed weight lamb over the three years. This equates to an increase in return $5,490 / year when a value of 360c/kg has been received. Thus the cost benefit from the change to the system was met early within the second year.

8. Project Activities & Coverage

May 2007. Fifteen members present.
This first field day was held to inspect the trial site and discuss the subdivision of the paddock into cells and to inspect the established pasture. Gerard Williams (Gallagher) was present to explain the construction of the electric fencing and the maintenance of the system. Michael Zerk (PIRSA) talked to the group about the pasture growth for the past season and the water use.
February 2008. 45 members and visitors present.
BBQ lunch was supplied to members and visitors while Gerard Williams (Gallagher) explained the requirements and latest innovations in electric fencing. The trial site was then visited and Michael Zerk (PIRSA) talked about the water and pasture monitoring. Karen Hunt (ABC Rural Reporter) was in attendance and conducted several interviews to be played on the local ABC Rural Report and Country Hour.

9. Follow-up

The trial as well as proving the benefit of reducing the grazing area from one paddock to four cells within that paddock, has posed a number of other factors that need to be followed up.

From observations and measurements conducted during the three years it was seen that the greater the volume of water delivered to each bay when irrigated, the quicker the bay is watered, leading to less water being used and greater efficiency of water use. However on the trial site free flowing water is sourced and the cost of pumping equipment and fuel would be unviable. This was experienced by other irrigators in the group whose irrigation systems were unprofitable in 2007-2008 due to the high cost of fuel used in order to pump their water.
The optimum stocking rate still requires further refining as at a high stocking rate more kg of live weight can be produced but the lambs are not finished to the required fat score. The last year of the trial saw less live weight produced but more lambs sold directly off the irrigation. This could be further investigated by trialling various stocking rates in order to find the optimum stocking rate for both live weight production as well as direct sales.

10. Appendices

Following are the production tables for the three years of the trial.
The tables account for the introduction of the lambs (Start dates) onto the irrigation, their weight at introduction. They then show the sale of the lambs (Finishing dates), their live and dressed weights as well as the dollars received. The lambs not finished at the end of the irrigation season were in a forward condition and were able to be sold within 4 weeks following the break of the season.

Start Dates	Mob Name	No Lmb	Live wt	D wt	Dress %	Skin	$/kg	$/Lm	Total Live Wt	Total D Wt
26/09/06	**XB Lambs**	211	36	0		0.00		40.00	7596	0
13/10/06	**XB Lambs**	31	38	0		0.00		45.00	1178	0
17/10/06	**XB Lambs**	32	39	0		0.00		45.00	1248	0
2/11/2006	**XB Lambs**	417	38	0		0.00		45.00	15846	0
11/12/06	**XB Lambs**	421	37.5	0		0.00		45.00	15788	0
14/02/07	**XB Lambs**	5	38	0		0.00		45.00	190	0
				0					0	0
		1117							**41846**	**0**

Finish Dates	Mob/sale name	No Lmb	Live wt	D wt	Dress %	Skin	$/kg	$/Lm	Total Live Wt	Total Dressed Wt
13/10/06	**XB Lambs**	109	47	20.1	43	10.25	2.71	64.72	5123	2191
5/12/06	**XB Lambs**	302	46	20.4	44	14.35	2.97	74.94	13892	6161
13/02/07	**XB Lambs**	107	46	19.8	43	13.25	3.45	81.39	4922	2113
									0	0
	Deaths	2								
23/04/07	**Remaining**	597	45					60.00	26865	0
		1117							**50802**	**10465**

Start Dates	Mob Name	No Lmb	Live wt	D wt	Dress %	Skin	$/kg	$/Lm	Total Live Wt	Total D Wt
18/10/07	**XB Lambs**	179	36	0		0.00		40.00	6444	0
31/10/07	**XB Lambs**	224	38	0		0.00		40.00	8512	0
2/11/07	**XB Lambs**	485	39	0		0.00		40.00	18915	0
15/11/07	**XB Lambs**	81	38	0		0.00		40.00	3078	0
12/12/07	**XB Lambs**	585	43	0		0.00		40.00	25155	0
8/02/08	**XB Lambs**	176	40	0		0.00		40.00	7040	0
				0					0	0
		1730							**69144**	**0**

Finish Dates	Mob/sale name	No Lmb	Live wt	D wt	Dress %	Skin	$/kg	$/Lm	Total Live Wt	Total Dressed Wt
15/11/07	**XB Lambs**	416	48	21.9	46	8.35	2.80	69.67	19968	9110
8/12/07	**XB Lambs**	553	44	0.0	0	0.00		50.00	24332	0
22/01/07	**XB Lambs**	179	48	20.0	42	7.25	3.59	78.95	8592	3580
22/01/07	**XB Lambs**	32	52	0.0	0	7.25	3.60	86.25	1664	0
25/02/07	**XB Lambs**	379	44	0.0	0	0.00		60.00	16676	0
									0	0
	Deaths	4								
02/04/08	**Remaining**	167	43					70.00	7181	0
		1730							**78413**	**12690**

Start Date	Mob Name	No Lmb	Live wt	D wt	Dress %	Skin	$/kg	$/Lm	Total Live Wt	Total D Wt
10/11/08	**XB Lambs**	218	46	0		0.00		50.00	10028	0
24/11/08	**XB Lambs**	397	40	0		0.00		50.00	15880	0
2/12/08	**XB Lambs**	361	42	0		0.00		50.00	15162	0
16/01/09	**XB Lambs**	18	42	0		0.00		50.00	756	0
12/02/09	**XB Lambs**	116	40	0		0.00		50.00	4640	0
	XB Lambs	0	0	0		0.00		50.00	0	0
				0					0	0
		1110							**46466**	**0**

Finish Date	Mob/sale name	No Lmb	Live wt	D wt	Dress %	Skin	$/kg	$/Lm	Total Live Wt	Total Dressed Wt
3/12/08	**XB Lambs**	299	47	21.0	45	8.00	3.90	89.90	14053	6279
15/12/08	**XB Lambs**	243	47	20.0	42	6.00	4.40	93.82	11421	4850
12/02/09	**XB Lambs**	241	47.5	19.1	40	3.50	4.00	79.90	11448	4603
									0	0
	Deaths	5								
23/04/09	**Remaining**	322	44					70.00	14168	0
		1110							**51090**	**15732**

Appendix 1

FIELD DAY and SITE INSPECTION
WEDNESDAY 23rd MAY 2007 2pm
Garry & Lyn Possingham's property
BISCUIT FLAT (OPPOSITE THE BISCUIT FLAT FIRE SHED, PRINCES HWY)
PROGRAM

Update Lamb Finishing Project	Wayne Hancock
Inspection Irrigation Site (Weather permitting)	

Gallagher Newly installed Electric Fencing

Pasture	
Pasture growth & water efficiency	Michael Zerk PIRSA
Water allocation validation	Brian Latcham DWLBC
Internal Parasite Control	Dr. Ian Carmichael PIRSA
General Meeting	
Tea and Coffee available	
Please bring a chair	

Contact

Garry Possingham	8768 9075

MID SOUTH EAST IRRIGATORS ASSOCIATION

Welcomes you to a Irrigation Systems and Fodder Utilisation Field Day on the 26th February 2008.

10.00am Morris Oliver's Avondale Property, West Avenue Road, Avenue.
MLA Prime lambs on irrigation growth rate site using Lucerne/Chicory/Plantain under a Pivot SARDI - MLA Worms Control project Terry Rivett – Hay Inoculant

11.30am Terry Zohs's Bowaka Road Property Reedy Creek
Weight gain with weaner cattle
Cut and carry fodder incorporating a Keenan Feed Wagon
Kim Richards Landmark Agronomist

1.00pm Barbeque Lunch at Garry Possingham's Biscuit Flat property
Princes Highway Biscuit Flat

2.00pm MLA cell grazing trial site
Brian Latcham (DWLBC) National Water Initiative – soil moisture project
Gerard Williams Gallagher
Auto draft, Electronic tag draft system
Electric fencing on cell grazing blocks
Michael Zerk (PIRSA) – Irrigation flow monitoring
Trial sites will be sign posted
Supported by the Department of Water, Land & Biodiversity Conservation