

# MACALISTER DEMONSTRATION FARM

## – A STORY OF IMPROVED PRODUCTIVITY AND PROFITABILITY



Information Sheet 11  
Februarv 2012



### BACKGROUND

After an unsuccessful move into farm expansion that was followed by the drought year of 2006-07 the Board of the MDF increased their efforts to re-focus on farm productivity and profitability. With the support of Dairy Australia funding the Farm Profitability Project engaged farm consultant, Frank Tyndall, to work with new Farm Manager, Mike O'Brien to improve farm performance. A summary of farm performance from 2004-5 to 2010-11 can be seen in Table 5.

The strategy to lift performance was guided by a number of farm management packages developed by DPI/Dairy Australia - packages such as Target 10 Grazing, Target 10 Soils and Fertilisers, Target 10 Cow Nutrition, In-Calf, Countdown DownUnder, The People in Dairy, and Feeding Pasture for Profit. The result has been a significant turnaround in farm profitability.

Today the farm runs a Spring-calving herd only, grazing 73 ha with replacements reared under contract off-farm and milkers carried at home during their dry period.

The herd is the result of a long term AI crossbreeding program with semen provided by Genetics Australia. The

herd is 30% Friesian with the remainder Friesian-Jersey crosses and some Red Breed crosses.

The MDF runs a high stocking rate (around 4 cows per ha) and milks twice per day in a low capital dairy. Empty cows are milked until they get down to 10 litres. The MDF has relatively high pasture inputs and supplements with purchased feed, mostly wheat, with a mineral supplement but no crops. It has a low capital feed infrastructure (i.e. no wagon, no concrete feed pad).

The MDF feeds farm production data into both the Red Sky Monitor and the DPI Dairy Farm Monitor to benchmark performance on a wider stage. Feeding performance is monitored in a Margin Over all Feed (MOAF) analysis against a group of local farms as part of the MID Tracker Project. The MID Tracker results for 2009-11 are presented in Table 1.

An important part of the management thinking at the MDF is that success will be achieved if everyday things are done well. The range of on-farm actions taken to deliver the farm performance are discussed.

**Table 1: MID Tracker Project farm performance 2009-2011**

To: June 2010																
FARM NUMBER	MDF	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
TO:	Jun-2010	Jun-2010	Jun-2010	Jun-2010	Jun-2010	Jun-2010	Jun-2010	Jun-2010	Jun-2010	Jun-2010	Jun-2010	Jun-2010	Jun-2010	Jun-2010	Jun-2010	Jun-2010
No of cows (305 day lactations)	273	371	166	172	188	296	14	34	464	149	181	1091	187	229	232	411
Stocking rate	4.5	4.0	4.0	4.1	4.1	3.4	0.2	0.4	4.4	3.9	4.0	4.2	4.3	3.6	4.3	3.9
Factory LITRES	1,868,435	2,730,485	1,031,095	978,470	1,259,660	1,636,200	121,340	120,850	3,552,365	782,600	767,893	6,196,210	1,226,620	1,773,070	1,738,790	2,799,950
Factory FAT%	4.26	4.38	4.18	4.31	4.01	4.45	4.56	4.72	3.58	4.34	5.24	4.56	4.26	4.17	4.36	4.25
Factory PROT%	3.53	3.57	3.36	3.38	3.29	3.39	3.70	3.52	3.26	3.38	3.84	3.65	3.35	3.24	3.33	3.35
Factory FAT	79,565	119,711	43,141	42,143	50,510	72,882	5,530	5,700	127,022	33,956	40,221	282,592	52,244	74,020	75,755	119,121
Factory PROT	65,959	97,553	34,615	33,063	41,502	55,505	4,494	4,255	115,899	26,457	29,471	226,030	41,032	57,458	57,983	93,753
Litres /cow	6,843	7,353	6,229	5,687	6,694	5,531	8,607	3,575	7,651	5,237	4,234	5,678	6,553	7,743	7,510	6,817
MS /cow	533	585	470	437	489	434	711	295	523	404	384	466	498	574	578	518
MILK PRICE	\$4.46	\$4.47	\$4.37	\$4.43	\$4.43	\$4.45			\$4.54	\$4.62	\$4.92	\$4.55	\$4.53	\$4.41	\$4.42	\$4.42
OWN CROP tonne DM fed per year	0	0	0	148	0	0	0	0	0	0	6	0	0	0	0	0
OWN SILAGE, tonne as fed per year	1	39	46	0	78	157	0	25	228	17	152	0	138	44	91	224
OWN hay, tonne as fed per year	0	0	29	2	4	110	0	0	0	4	13	0	10	12	0	0
Conc 1, tonne as fed per year	457	477	221	176	284	346	30	46	759	59	228	1,747	255	513	0	648
Conc 2, tonne as fed per year	51	129	0	0	0	0	0	0	379	113	0	0	0	0	470	0
Other purch, tonne as fed per year	0	0	0	0	0	43	15	0	0	0	0	417	0	0	0	0
Purch silage, tonne as fed per year	11	15	6	7	8	14	1	1	17	3	7	40	7	11	0	16
Purch hay, tonne as fed per year	4	6	0	23	32	0	0	34	179	6	5	0	0	0	8	0
Purch FKE, tonne as fed per year	96	0	19	3	0	0	0	0	0	47	0	122	0	11	79	0
Total purch feed as fed	619	626	245	209	325	402	46	81	1,334	228	241	2,325	323	535	557	664
Max grazing area	73	110	41	55	46	95	90	93	110	43	50	280	60	76	55	118
AVERAGE grazing area	61	93	41	42	46	88	90	93	107	38	46	258	44	64	53	104
Milker average w t	550	550	550	504	553	550	530	550	575	550	392	550	550	580	550	550
Water ML used	468	796	351	268	376	770			752	247	272	1,678	328	679	363	816
N tonne element used	31.5	44.9	14.5	11.1	18.5	32.1				6.5	1.2	107.5	9.7	21.3	28.8	23.8
P tonne element used		1.1		1.6	1.7	1.6	0.3	0.4		0.3				2.6	3.0	4.2
K tonne element used	3.2	4.5	1.8	2.0		6.4	0.3	0.7		0.3		18.2	1.0	1.6	2.7	10.2
Renov spent	\$4,234	\$6,738	\$3,073	\$1,166	\$1,507	\$5,131	\$891	\$1,116	\$14,404	\$2,015	\$3,141	\$17,751		\$1,625	\$3,694	\$4,515
Topping spent	\$8,149	\$10,007	\$2,667	\$453	\$3,698	\$11,514			\$2,200	\$2,681	\$3,674	\$30,944		\$1,949	\$6,956	\$2,713
Ass,crop, consvd, consump/ milk ha/dy	14.9	15.7	13.9	14.4	13.6	10.5			11.2	12.1	9.8	13.1	13.4	11.8	14.6	14.2
DMI grass /cow/dy	4.2	4.6	4.1	3.1	4.0	3.8	0.4	0.2	3.1	3.7	3.0	3.6	4.0	4.0	3.9	4.3
Anticip Margin over all Feed/cow/day	\$1,733	\$2,145	\$1,510	\$1,413	\$1,599	\$1,287	\$338	\$140	\$1,571	\$1,557	\$1,411	\$1,647	\$1,732	\$1,630	\$1,609	\$1,717
Anticip MOAF /ha/day	\$6,295	\$7,208	\$5,230	\$5,147	\$5,441	\$3,605	\$537	\$387	\$5,755	\$5,302	\$4,872	\$6,001	\$6,145	\$4,921	\$6,003	\$5,704

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Information Sheet 11  
February 2012

T0: June 2011																
FARM NUMBER	MDF	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
No of cow s (305 day lactations)	285	458	161	180	189	350	299	243	510	149	213	1094	193	200	224	400
Stocking rate	4.6	4.1	4.1	3.5	4.1	3.9	3.9	3.8	5.1	3.9	5.1	4.2	3.6	3.4	4.3	3.9
Factory LITRES	2,014,905	3,428,500	1,061,880	1,071,855	1,349,290	2,030,340	2,024,480	1,049,710	3,707,910	637,770	1,064,130	7,130,480	1,298,600	1,560,040	1,739,610	2,830,015
Factory FAT%	4.22	4.12	4.30	4.24	4.09	4.37	4.15	4.49	3.62	4.20	5.31	4.30	4.21	3.88	4.44	4.30
Factory PROT%	3.53	3.63	3.29	3.35	3.36	3.43	3.49	3.54	3.25	3.37	3.91	3.46	3.38	3.36	3.40	3.33
Factory FAT	85.034	141.412	45.622	45.466	55.129	88.646	84.102	47.134	134.288	26.813	56.458	306.750	54.731	60.595	77.210	121.740
Factory PROT	71.032	124.483	34.944	35.956	45.292	69.540	70.576	37.199	120.351	21.507	41.574	246.761	43.939	52.469	59.174	94.115
Litres /cow	7,058	7,481	6,595	5,962	7,152	5,805	6,779	4,313	7,268	4,268	5,003	6,520	6,736	7,783	7,773	7,073
MS /cow	547	580	500	453	532	452	518	346	499	323	461	506	512	564	609	539
MILK PRICE	\$5.48	\$5.60	\$5.37	\$5.48	\$5.63	\$5.61	\$5.90	\$6.00	\$5.54	\$5.68	\$5.55	\$5.43	\$5.69	\$5.58	\$5.42	\$5.38
OWN CROP tonne DM fed per year	0	0	0	0	0	0	0	17	184	0	0	0	0	0	0	0
OWN SILAGE, tonne as fed per year	97	60	141	0	136	128	157	59	315	84	71	204	51	35	143	244
OWN hay, tonne as fed per year	0	44	0	0	0	86	14	0	13	33	0	0	0	0	0	0
Conc 1, tonne as fed per year	509	792	205	257	326	441	590	321	715	12	378	901	265	434	0	720
Conc 2, tonne as fed per year	104	191	0	0	0	0	0	0	358	26	0	846	0	0	500	0
Other purch, tonne as fed per year	0	33	0	0	44	0	40	0	0	0	0	573	0	0	0	0
Purch silage, tonne as fed per year	11	18	6	7	8	16	15	9	19	1	8	40	8	9	0	17
Purch hay, tonne as fed per year	23	9	0	5	145	0	0	30	149	9	36	0	18	6	11	0
Purch PKE, tonne as fed per year	1	0	0	0	0	0	0	0	0	21	0	0	0	0	0	10
Total purch feed as fed	648	1,043	211	269	524	457	645	360	1,240	69	422	2,361	291	448	510	747
Max grazing area	73	120	41	55	47	112	90	93	110	44	50	280	65	74	55	115
AVERAGE grazing area	63	111	39	51	46	90	77	65	101	38	42	258	53	58	51	104
Milker average w t	550	550	550	500	560	550	530	550	575	550	380	550	550	580	550	550
Water ML used	240	326	194	216	166	315	217	62	357	129	115	948	188	222	171	309
N tonne element used	29.9	40.6	10.5	14.8	5.7	33.8	8.3	9.4	2.2	5.9	112.9	10.3	2.8	20.9	33.9	
P tonne element used			0.7	1.7	0.4	1.6	1.1	2.4	0.2	1.2					0.9	6.9
K tonne element used	1.6		2.2	4.1		6.6	0.8	4.7		0.4	0.6	0.3			5.9	9.8
Renov spent	\$4,331	\$8,122	\$2,586	\$109	\$1,460	\$5,244	\$9,344	\$7,115	\$13,616	\$2,872	\$2,176	\$17,875	\$12,599		\$3,522	\$4,499
Topping spent	\$1,961	\$12,648	\$492	\$1,120	\$2,778	\$4,820			\$2,196	\$1,123		\$33,044	\$120	\$1,398	\$8,341	\$2,412
ss,crop, consvd, consump/ milk ha/ day	14.3	13.1	14.3	11.5	11.2	12.8	11.7	12.1	13.7	12.7	12.1	13.4	12.9	11.8	14.6	12.6
DM grass /cow/ dy	3.8	3.8	4.3	3.5	3.1	3.8	3.5	3.5	2.8	3.9	2.8	3.8	4.4	4.0	4.0	4.0
Anticip Margin over all Feed/cow/day	\$2,462	\$2,829	\$2,450	\$1,939	\$2,287	\$2,247	\$2,556	\$1,753	\$2,193	\$1,881	\$2,067	\$2,449	\$2,602	\$2,783	\$2,546	\$2,357
Anticip MDAF /ha/day	\$9,105	\$9,682	\$8,123	\$6,251	\$7,930	\$7,367	\$8,507	\$5,928	\$9,252	\$6,014	\$8,899	\$8,507	\$7,818	\$8,244	\$9,193	\$7,355

### FEEDING

Feeding is based on the Feeding Pasture for Profit (FPFP) principles. FPFP involves making observations in the paddock, and then assessing what is the best grazing rotation, the best grazing residue, and the best amount of supplement to feed. This process is known as collecting “the body of evidence”, to inform which way to move. .

Once the grazing rotation is decided, (down to 28 days in spring up to 55 days in winter) the Rotation Right tool is used to allocate the number of feeds in each paddock -. Supplements are adjusted after assessing the grazing residue and whether the cows appear to be able to eat more or not, aiming to graze to a 5 cm residue, erring on side of leaving more residue rather than push the cows to eat into it. If a margin seems apparent the supplement is fed. The type of supplement is used to get the desired diet balance.

Paddocks are mowed to waste about every third grazing rotation. Pasture consumption of around 13 tonne per hectare and 3.3 tonne per cow is typical. Very little silage is conserved and is mostly taken only to clean up any build up of residue.

More information:

[www.dairyextension.com.au/edit/conference/FEEDING%20PASTURE%20FOR%20PROFIT.pdf](http://www.dairyextension.com.au/edit/conference/FEEDING%20PASTURE%20FOR%20PROFIT.pdf) or contact your local DPI office for course dates

### FERTILISER POLICY

The farm carries out soil tests in ten representative paddocks in most years. Soil Phosphorus is high but, on advice, we have recently decided to apply a little anyway. Soil Potassium is slightly low, so we are applying potassium. We have recently started using lime in the low pH paddocks. Molybdenum was applied last year, for the first time in many years

Nitrogen is applied after each grazing at a rate of about 350kgN/ha/year. The farm has recently switched to Green Urea as trials indicate this is more efficient in warm weather.

### MASTITIS

Broadly speaking, the Countdown Down Under program is a Mastitis management system that aims to minimize exposure to environmental infection, refine the milking process to minimize transfer of infection, regularly monitor cow condition through herd test and factory test information, systematic checks for new infections and treatment applied at the first appearance of symptoms, and put in place a drying off process to minimize infection.

For farm management the main areas of focus have been:

- Dry cow management - drying off at the right volume (7-12L), and controlling environmental challenge pre- and post-dry off.

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Information Sheet 11  
February 2012

- Calving time management - environmental control, removing calves as soon as possible, milking cows as soon as possible, rapid detection of clinical cases and appropriate therapy based on culture results.
- Lactation management - improved awareness of milk harvesters' role in reducing mastitis, improved teat disinfection using teat sprays.

The effect of the mastitis control program can be viewed from a number of angles. There has been a dramatic improvement in both the incidence of mastitis in heifers at calving (Table 2) and in the Individual Cell Count (ICC) across the herd (Table 3).

**Table 2: Cases in herd of calving time mastitis**

	Season 2007-08	Season 2008-09
Heifers	26%	3%
Cows	8%	2%

**Table 3: Number of high ICC cows in the herd**

	Cows in herd with one ICC greater than 250 000 cells/ml in the season
2006 - 07	67%
2007 - 08	35%
2008 -09	25%

This improvement can be seen at the herd level by following BMCC levels. The herd is now consistently under the level required for a premium payment. With BMCC hovering around 100,000 the farm is often in the top ten at factory and in 2011 received a Dairy Australia Top 5% for low cell count in Australia Award.

More information: [www.countdown.org.au](http://www.countdown.org.au)

### COW FERTILITY

By applying In-Calf best practice the herd fertility is slowly improving. The 6 week in-calf rate is a measure of how quickly the cows are getting in calf and is the main way in which to compare farms' fertility (Table 4). The average 6 week in-calf rate for the Macalister Irrigation District (which is not dissimilar to other areas in Victoria) is 55%.

The herd calves in August only. The MDF transition feeds the cows with cereal hay, 1 kg grass, and anionic salts. Cows calve at an average body condition score of 5 and are fed to lose about 0.5 of a score in early lactation.

Over the past few years increased effort has been put into increasing mating and calving weights of the 2 year old heifers. Heifers are mated for 8 weeks and if any are found to be empty after that they are sold. The recently calved 1st lactation heifers were 535 kg at 6 weeks before calving.

A strong emphasis has been placed on accurate heat detection and insemination timing. Non-cycling cows (typically around 12% of the herd) are identified early and treated. Some induction is still necessary to maintain the single period calving pattern. The farm continues to use experienced AI technicians.

To minimise uterine infection all cows are Metrichchecked 7-28 days after calving for the presence of pus in the uterus (metritis). Early treatment of cows (about 10% of the MDF herd) with metritis improves fertility.

**Table 4: In calf rates 2008-11**

Year	6 week in-calf rate	Not in-calf rate
2008-09	56 %	13 %
2009-10	57 %	9.6 %
2010-11	63 %	7.3 %

More information: [www.dairyaustralia.com.au/animals-feed-and-environment/fertility.aspx](http://www.dairyaustralia.com.au/animals-feed-and-environment/fertility.aspx)

### PASTURE RENOVATION

The milking grazing area is all sown to perennial ryegrass. Some flatter/wetter paddocks have had fescue replaced with ryegrass after drainage was improved. The farm renovates about 10 ha per year, sowing one variety per paddock.

### IRRIGATION

The farm uses five irrigation methods: old flood, lasered flood, bike shift sprays, fixed sprays, and sub surface drip. Water usage varies from 4.5 to 7.0 ML per hectare per year, supplied from the Southern Rural Water channel system, a bore, and a re-use drain. The bore and "high reliability" channel water amount to 507 ML which is a relatively secure 6.9 ML per grass growing hectare. The bike shift area is the least productive, and needs improvement. Irrigation management is considered the most difficult pasture management issue, and the most common cause of not meeting pasture consumption expectations.

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## – A STORY OF IMPROVED PRODUCTIVITY AND PROFITABILITY



Information Sheet 11  
February 2012

**Table 5: Summary of farm performance 2004-2011**

YEAR	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11
Irrigated hectares Home	120	120	65	68	68	73	73
Milkers (300 day lactations)	420	380	350	305	290	280	291
Stocking rate (hd/ha)	3.5	3.2	5.4	4.5	4.3	3.8	4.0
Replacements (hd)	0	0	150	155	159	145	145
Litres	2,335,150	2,098,490	2,170,575	2,117,305	2,000,330	1,868,435	2,014,905
Litres/cow	5,560	5,522	6,202	6,942	6,898	6,666	6,929
Fat %	4.28%	4.12%	3.92%	4.12%	4.32%	4.26%	4.22%
Prot %	3.41%	3.49%	3.63%	3.49%	3.52%	3.53%	3.53%
Fat kg/cow	238	228	243	286	298	284	292
Prot kg/cow	189	193	225	242	243	235	244
Milk solids	179,485	159,639	163,959	161,248	156,916	145,534	156,066
MS/cow	427	420	468	529	541	519	537
MS/ha	1,496	1,330	2,522	2,371	2,308	1,994	2,138
Purchased feed (tDM/milker)	2.7	3.1	3.8	2.7	2.9	2.9	2.8
Nitrogen (element N /ha)	196	161	246	286	288	307	376
Irrigation (ML/ha)	8.3	8.2	6.0	6.9	7.2	6.6	4.5
Pasture consumption - ha (tDM/ha)		8.2	7.7	13.0	14.4	12.1	12.9
Pasture consumption - cow (tDM/cow)		2.6	1.4	2.9	3.2	2.8	3.1
All feed (tDM/cow)		5.7	5.2	5.6	6.0	5.7	5.9
Herd Costs (\$/cow)	\$100	\$140	\$150	\$125	\$182	\$130	\$148
Shed Costs (\$/cow)	\$24	\$45	\$66	\$103	\$90	\$135	\$110
Overheads (\$/cow)	\$95	\$126	\$178	\$94	\$92	\$66	\$105
Overheads (\$/ha)	\$333	\$400	\$958	\$421	\$392	\$254	\$419
Labour Costs (\$/cow)	\$305	\$369	\$323	\$466	\$431	\$469	\$485
Milk Price (\$/litre)	\$0.33	\$0.33	\$0.33	\$0.51	\$0.36	\$0.34	\$0.42
Milk Price (\$/kgMS)	\$4.34	\$4.40	\$4.31	\$6.65	\$4.56	\$4.42	\$5.45
MOAF (\$/ha)	\$3,034	\$2,657	\$2,296	\$8,458	\$4,028	\$4,294	\$6,580
MOAF (\$/cow)	\$867	\$839	\$426	\$1,886	\$944	\$1,118	\$1,652
EBIT/ha	\$1,122	\$521	-\$2,904	\$4,033	\$105	\$562	\$2,661
EBIT/cow	\$321	\$165	-\$539	\$899	\$25	\$146	\$668
Return on Assets (%)			-10.3%	14.9%	0.3%	1.7%	8.3%

### CHALLENGES AND OPPORTUNITIES INTO THE FUTURE

The MDF is able to achieve its profitable production levels because of a high stocking rate; a relatively simple, self-contained system; a capable farm manager; an attention to feed margins; and not much debt.

However, at a high stocking rate the challenges to the business are in the form of risk management – risk of a low

water allocation; risk of high feed price; risk of low milk price; and is dependent on a good operator.

Opportunities for an improvement in business performance are in Irrigation development of less productive areas and creating more re-use capacity as well as constantly fine tuning grazing, supplementary feeding, fertiliser, and irrigation.