



Profitability. Sustainability. Competitiveness.

Pastoral 21 Waikato Next Generation Dairy Systems

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technical and farm staff**

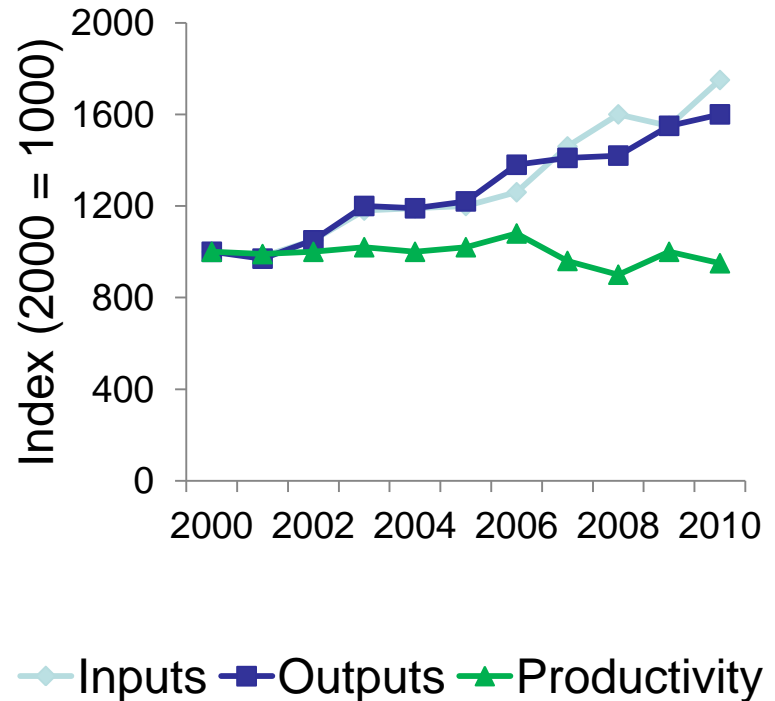
Presentation Outline

- Production and Productivity
- Pastoral 21 Waikato
- Year 1 Results
- Future

Production and Productivity (2000-2012)

- Land area: 1.32m to 1.64m
- Stocking rate: 2.6 to 2.83
- Total cows: 3.5m to 4.6m
- MS per cow: 310 to 364 kg
- Total MS: 1.1b to 1.7b kg
- Productivity: 0.5% decline/yr

$$\text{Productivity} = \frac{\text{Physical outputs}}{\text{Physical inputs}}$$



Historical path to increased milk production

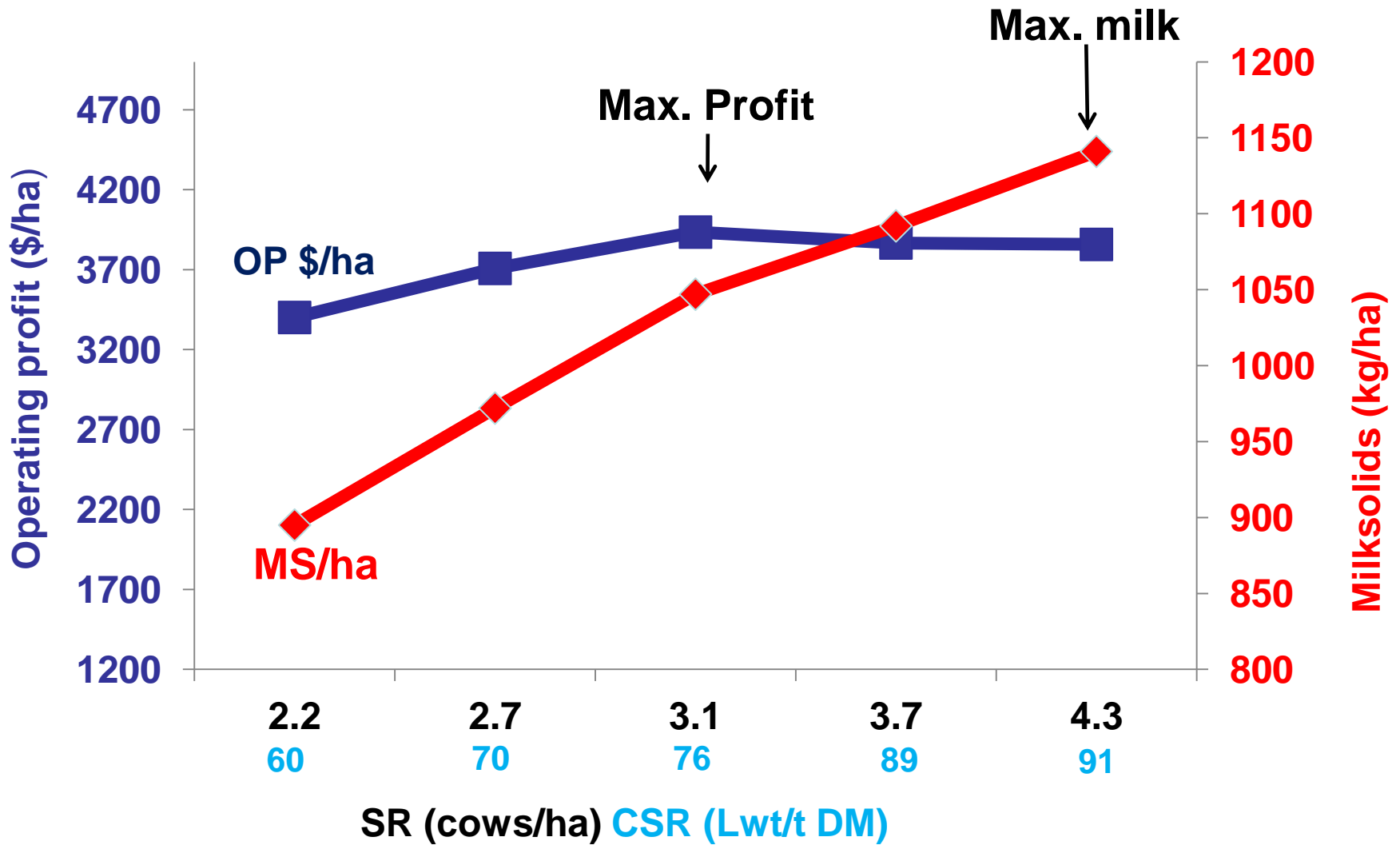
- Increased stocking rate to increase pasture utilisation
- Increased N fertiliser to support higher stocking rate and fill in late winter feed deficits
- Increased grazing off of young stock and dry cows
- Increased supplements from off-farm – Maize Silage and Palm Kernel Expeller



High stocking rates have been challenged due to

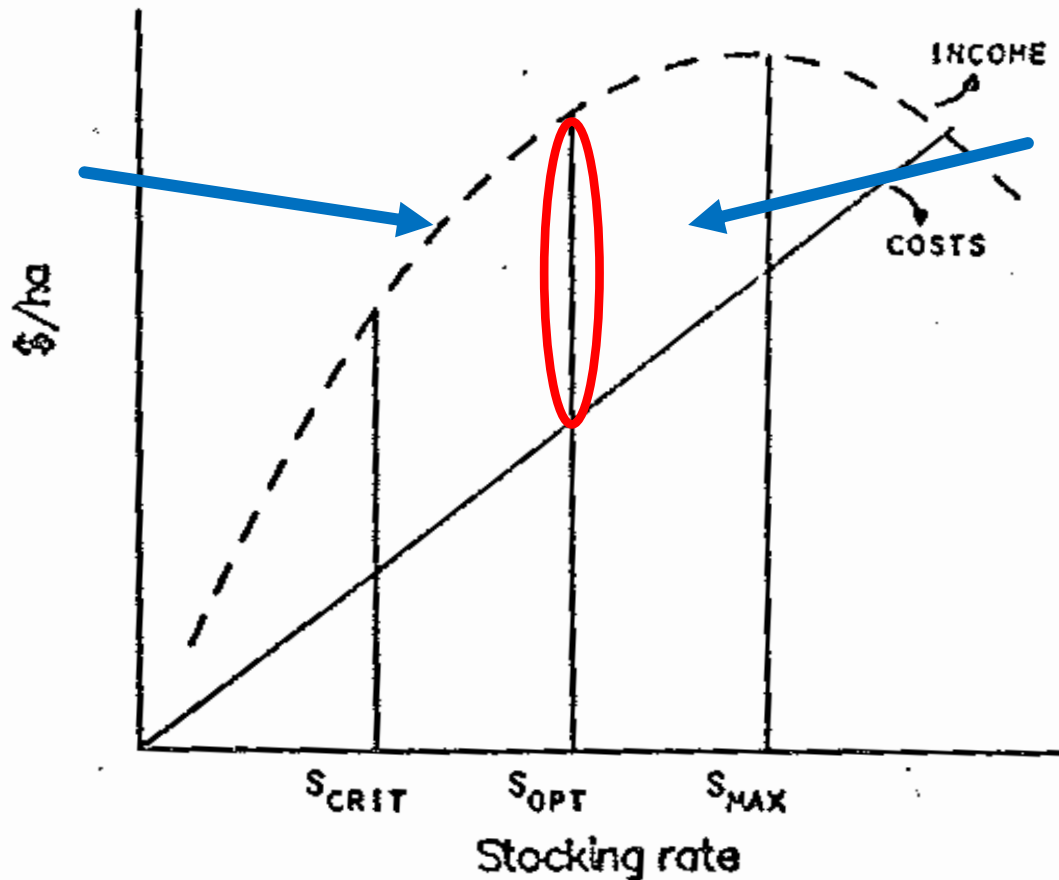
- Impact on environment
- Greater feed allowance/cow to realise genetic improvement
- Maximum milk production and pasture utilisation per hectare does not equal maximum profit

DairyNZ Stocking rate trial



Old News: Pringle and Wright, 1983

FIG 3: The stocking rate for maximum gross margin/ha



More cows increases revenue faster than costs

More cows increases costs faster than revenue

Pastoral 21 Waikato - Concept

Redesign dairy systems for Waikato to obtain:

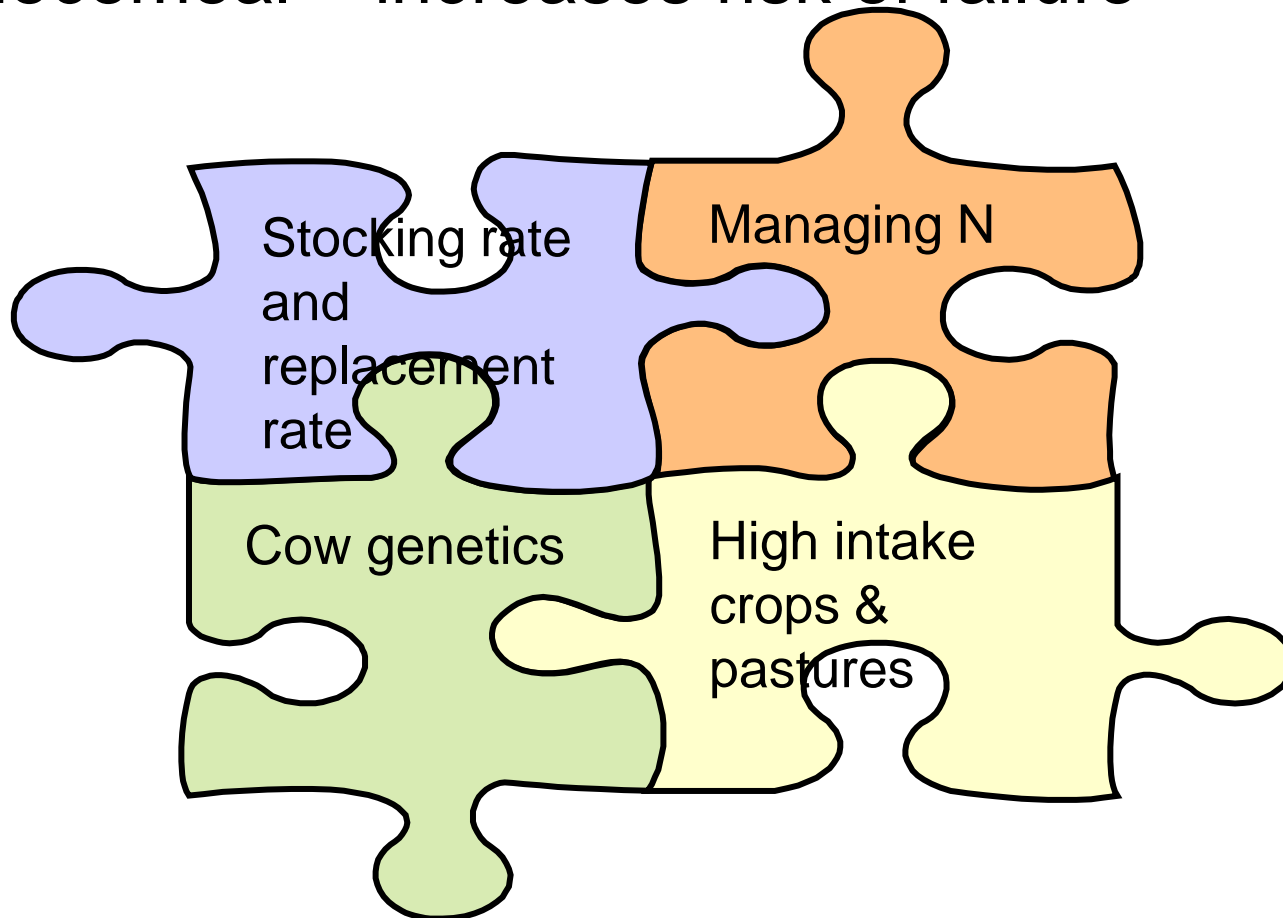
- more profit (+\$500/ha)
- less environmental impact
 - (from current 40+ to 25 kg N leached/ha)

Computer models achieve this by

- lowering stocking rate, increasing cow merit, lowering replacement rates, reducing N fertiliser, using nitrification inhibitors/standoff
- Total area considered – milking platform, runoff and cropping area if supplements brought in

Integrated redesign

- NB cannot institute these suggested changes piecemeal – increases risk of failure





Testing the concept – Farmlets Scott farm (2011-12)

	Current	Efficient
Stocking rate (cows/ha)	3.2	2.6
Cow genetic merit (BW)	90	170
Replacement rate (%)	22	16
N fertiliser (kg N/ha)	Up to 150	Up to 50
Nitrification inhibitors	No	Yes (now No)
Standoff- urine collected	No	Yes
Grain feeding (kg/cow)	0	Up to 400

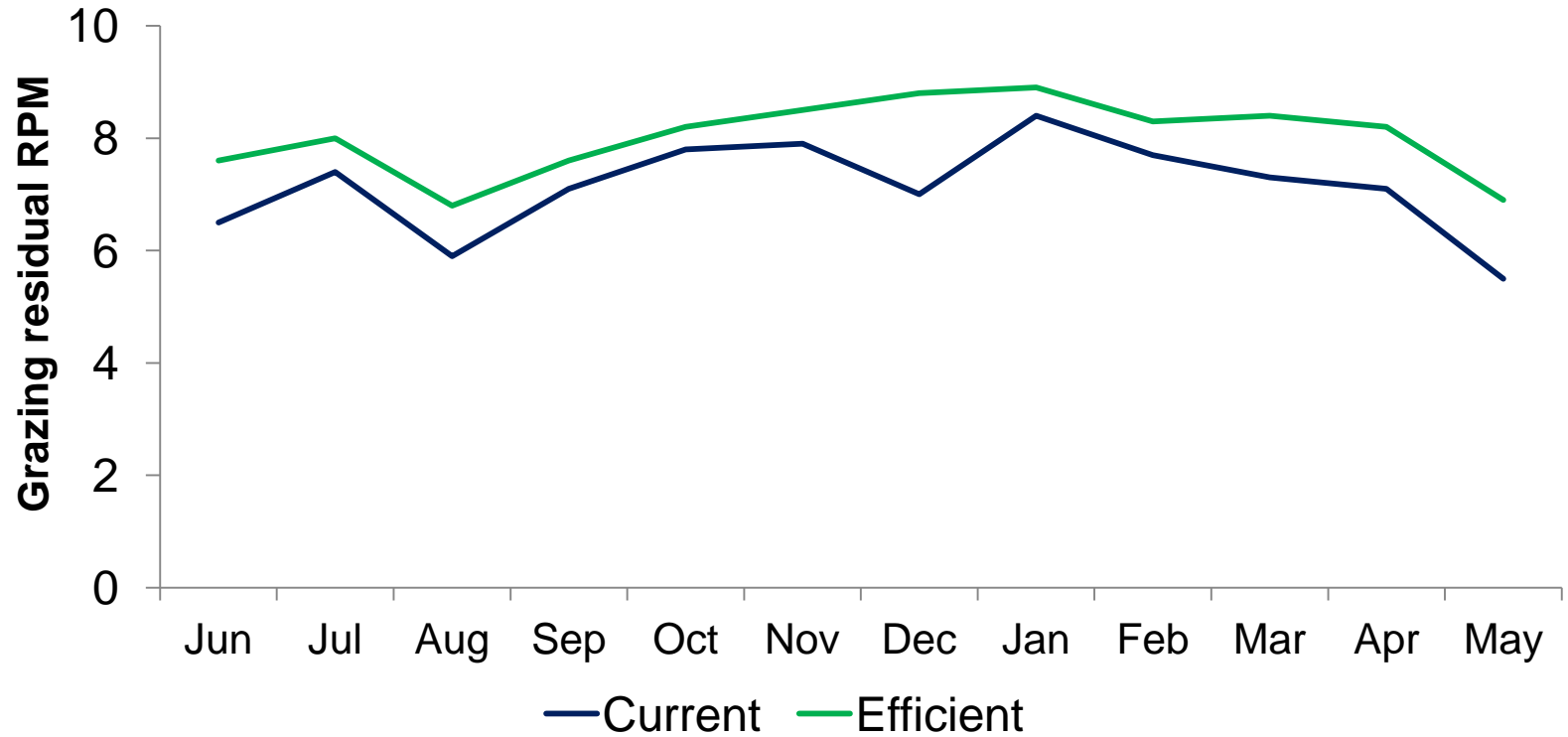
Input data – 2011/12

	Current	Efficient
Fertiliser (kg N/ha)	142	51
ProGibb	No	65% of farmlet
DCD x2	No	Yes
Standoff use	No	1 March- early July
Grain fed (kg DM/cow)	0	177
Pasture grown (t DM/ha)	19.3	17.8
Silage made (t DM/ha)	0.91	1.02
Total pasture harvested (t DM/ha)	15.6 (81%)	14.4 (81%)

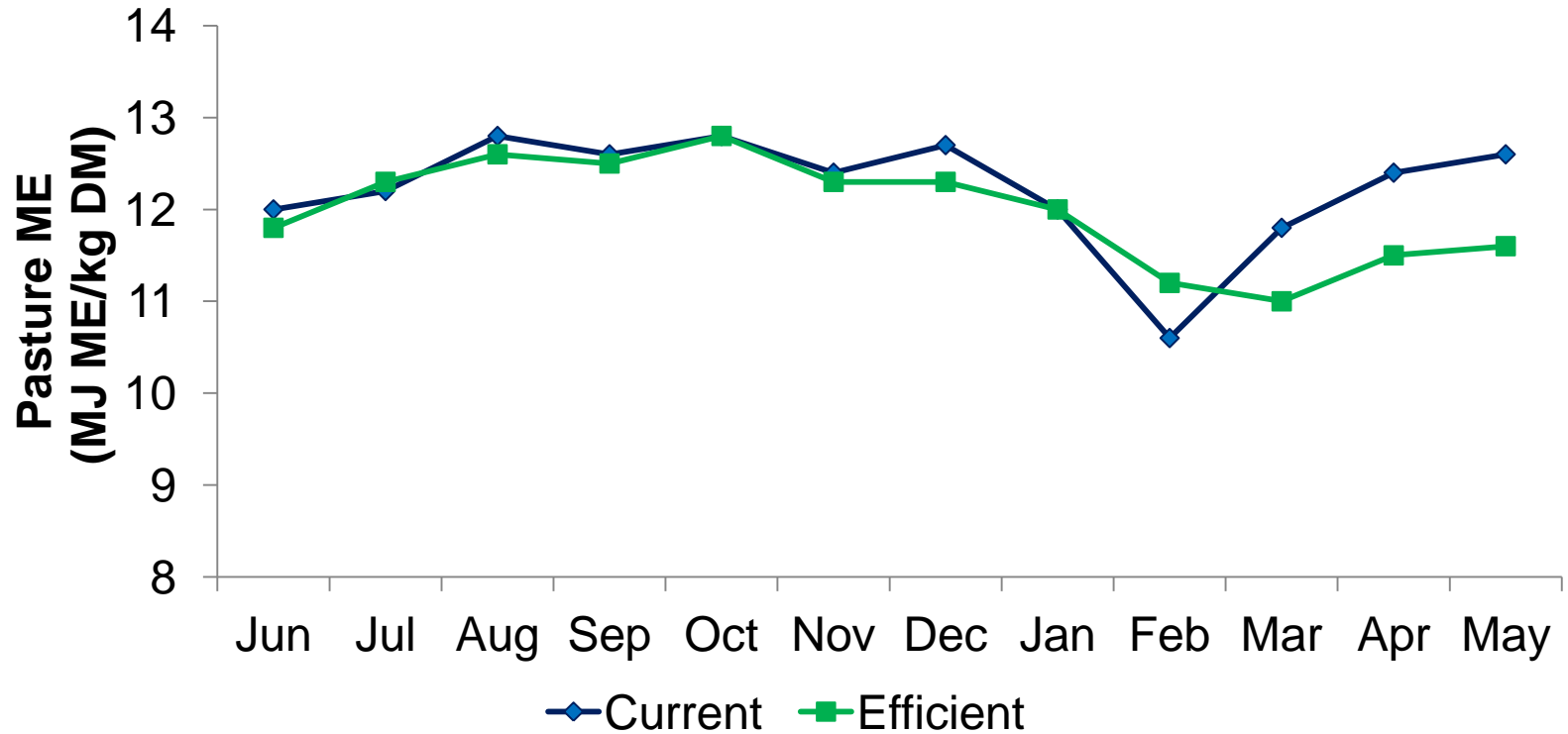
Production data – 2011/12

	Current	Efficient
Stocking rate (cows/ha)	3.2	2.6
Milksolids (kg/cow)	375	461
Milksolids (kg/ha)	1202	1207
10-week pregnancy rate (%)	93	91
BCS/LW (Dry off May)	4.2/513	4.1/526
BCS (June 2012)	5.2	5.2

Residual grazing levels: P21 farmlets 2011/2012



Pasture ME 2011/12



Financial data -2011-12 (draft)

	Current	Efficient	Contributing factors
Dairy Farm Gross Revenue (\$/ha)	7832	7792	Culls and calves
Dairy Farm Operating Expenses (\$/ha)	4724	4788	Grazing, fertiliser, wages, feed, health, breeding, electricity, dairy
Operating costs (\$/kg MS)	3.93	3.97	Standoff, DCD, ProGibb
Dairy Operating Profit (\$/ha)	3109	3004	

Milk price = \$6.05/kg milksolids

Year 2: Season to 15th Feb 2013

	Current	Last yr	Efficient	Last yr
Kg MS/ha	1115	+6%	1013	+4%
kg MS/cow	345	+6%	387	+4%
Pasture Growth t DM/ha	12.7	-9%	11.2	-15%
N fertiliser kg N/ha	89	-9%	27	-75%
10 week pregnancy rate	83%	-10%	82%	-9%
Present situation				
Kg MS/ha/day	2.42	-42%	2.74	-29%

Measurements – Environment

(Mark Shepherd and AgR technical team)

- Nitrate leaching – porous cups (260 per treatment)
- Soil mineral N on selected paddocks
- Routine soil analysis (P, K, Mg, etc) every two years (first – baseline – sampling spring 2011)
- Soil physics measurements on selected indicator paddocks.
- Subsidiary measurements on longevity of urine patches and contributions to N leaching.

Nitrogen leaching – control

- Efficient farmlet control measures:
 - Standoff March – calving
 - Nitrification inhibitors – 2x in winter
 - ProGibb instead of N fertiliser in spring
 - Low N supplements used e.g. grain







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Conclusions/Questions

- Early days - but the concept still lives!
- Important questions yet to be answered:
- Profitability of the 2 systems in a range of years?
- Actually N leaching?
- Consistent achieve > 1 kg MS/kg LW (500 kg MS from 500 kg cow) from pasture feeding alone?
- Do we need to revisit industry recommendations for grazing residuals?