

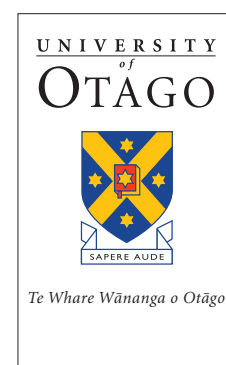


AGRICULTURE RESEARCH GROUP ON SUSTAINABILITY



Update on ARGOS Comparative Dairy Research

September 2007

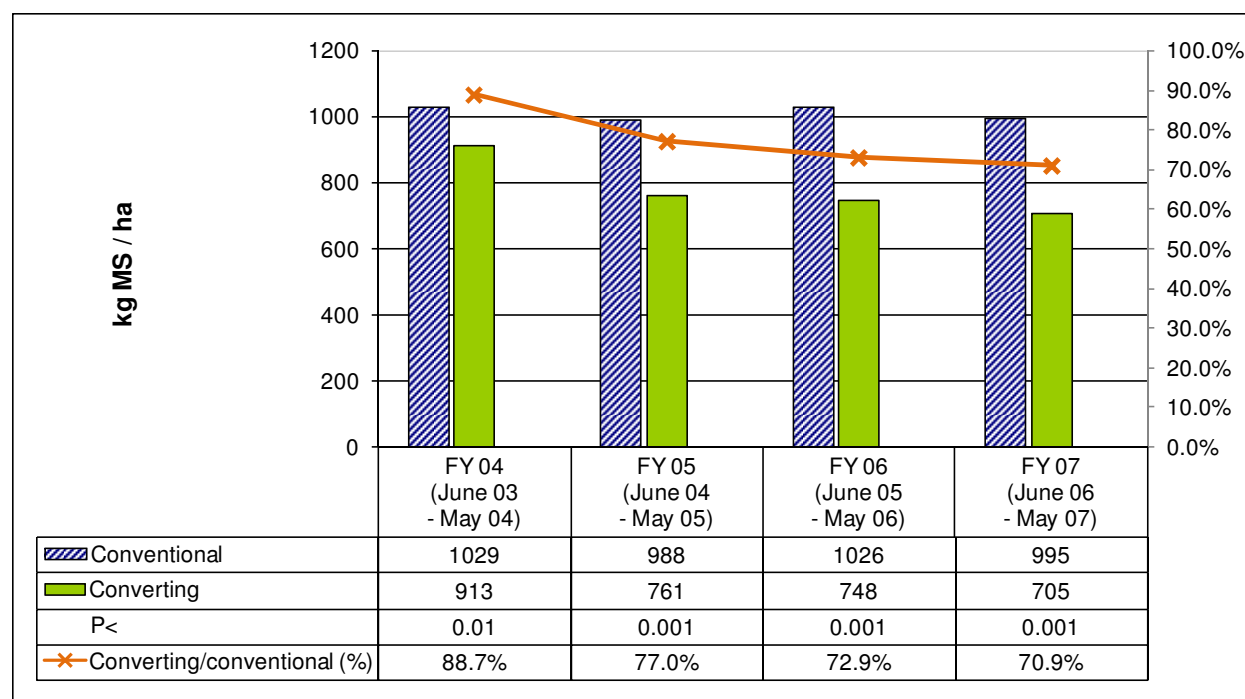


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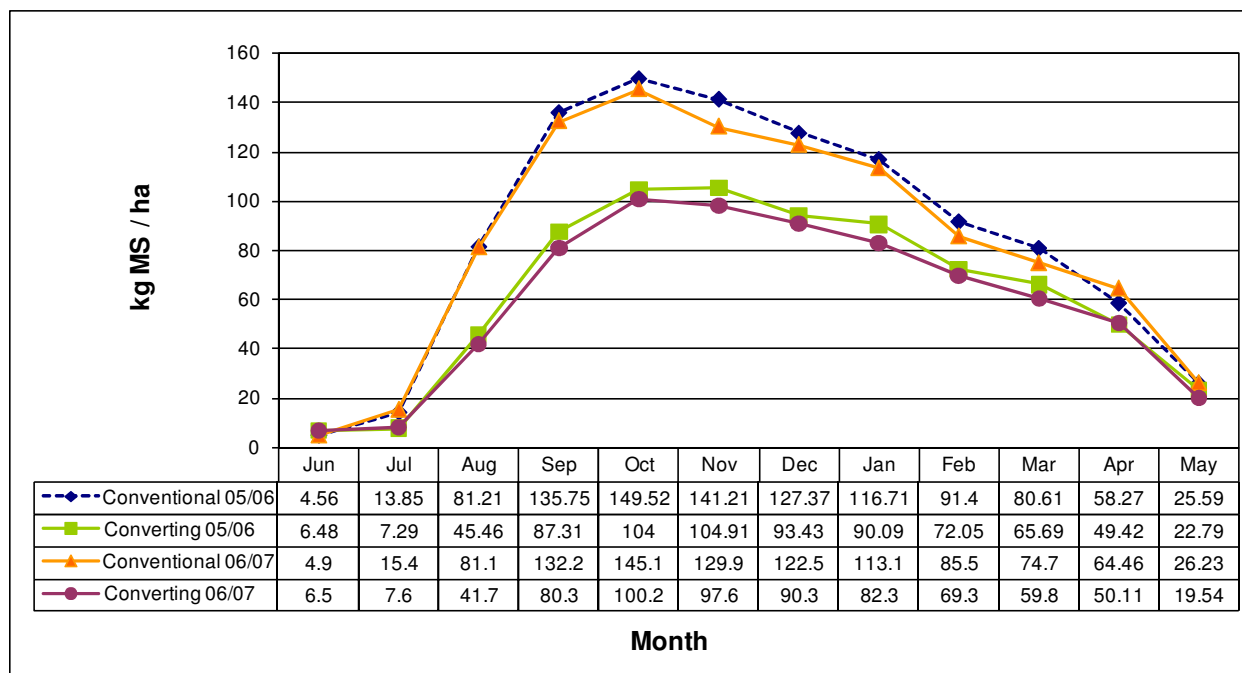
Production

The milksolid production per hectare decreased another 2% on the organic farms compared to their conventional neighbors/comparators in 06/07 season (June 2006 to May 2007). This is markedly less than the decrease in the 05/06 season which is illustrated by the orange line in the graph below. There seems to be a trend towards a stable difference between the conventional and organic farms.

We could possibly expect an increased difference for next season as well as payout increases and the affordability of fertilizers and supplementary feed increase for the conventional farmers. If the difference in milksolid production will mean a difference in farm cash surplus is another story though. The 05/06 accounts are currently being analyzed and results should be available shortly.



The monthly production curve shows a similar pattern in the 06/07 season as the previous season; conventional is off to a stronger start, benefiting from spring nitrogen as well as earlier calving.



Birds

Birds in grassland ecosystems are increasingly seen as indicators of sustainable resource use, due to their sensitivity to many agricultural management practices and widespread familiarity with farmers and the general public. While it has been shown that bird species benefit from organic farm management internationally, there is little information on birds in production landscapes in NZ. In this paper we apply ArcGIS to compare the spatial distribution and habitat use of birds on selected organic conversion and conventionally managed North Island dairy farms. There was evidence of increased use of pasture on organic conversion farms by blackbirds and song thrush, which may be related to greater plant diversity and associated food resources. There were significantly more skylarks recorded on conventionally managed farms. There were few differences in overall bird abundance or diversity between the two management systems. The comparable use of woody vegetation and open pasture may reflect its similar extent and composition on the study farms. Once fully converted, organic dairy production systems may offer benefits for some bird species, although the composition and management of the farm and surrounding landscape are probably also key factors.

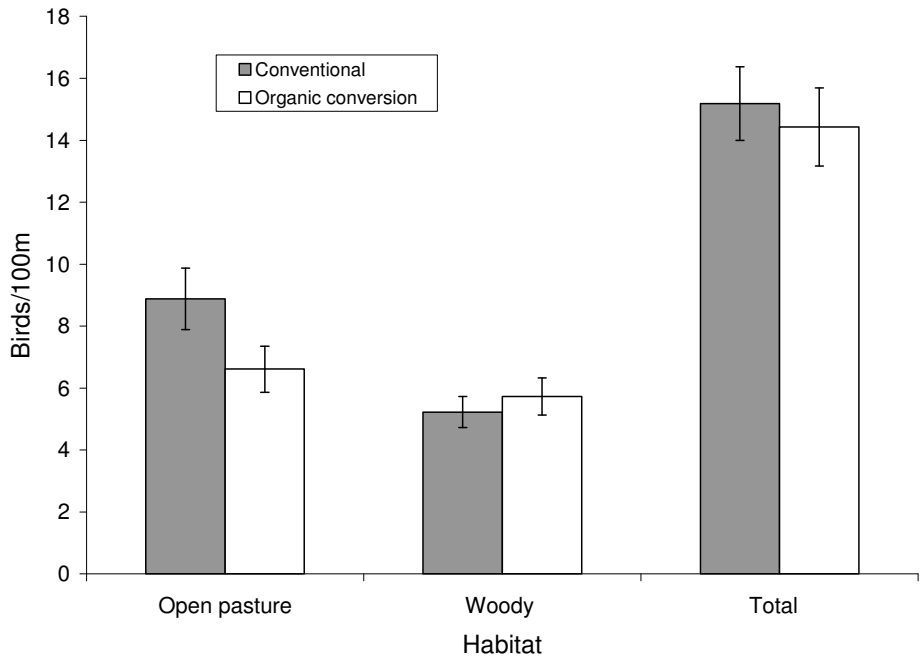


Figure: The average abundance of birds recorded (birds/100m of transect) in open habitats, woody habitats and in total.

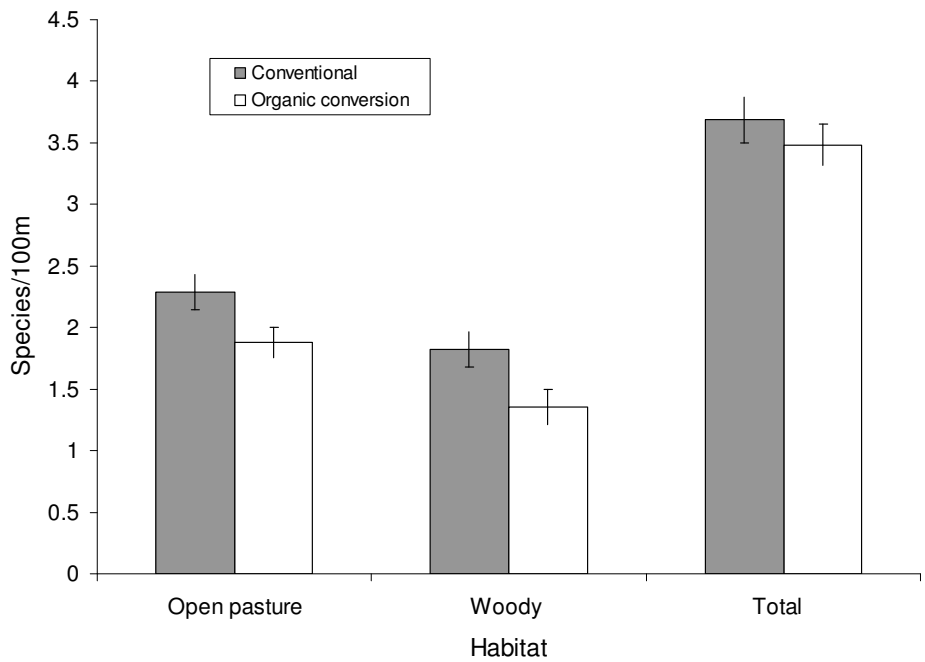


Figure: The average species richness/100m in open habitats, woody habitats and in total on 12 matched-pairs of dairy farms.

Food miles and Carbon Footprinting

The Lincoln report on Food Miles has been updated with a Methane and Nitrous Oxide comparison (see tables below. In summary the results are;

- NZ uses under half energy than the UK does
- Even when methane and nitrous oxide are included the UK produces 34% more Greenhouse gas (GHG) emissions per kgMS and 30% more per ha.

Item	Energy MJ/Tonne MS		CO ₂ Emissions kg CO ₂ /Tonne MS	
	NZ	UK	NZ	UK
Direct energy (diesel, elec.)	9,558	17,215	385	1,007
Indirect energy (fertiliser, feed, chem.)	10,494	39,082	689	2,318
Capital energy (tractors, buildings)	2,023	1,199	173	147
Total Energy	22,074	57,497	1,246	3,472
Shipping (NZ to UK) (17,840 km)	2,030		125	
Total Energy Input/Emissions	24,104	57,497	1,371	3,472

Item	GWPkg CP2 equivalent/ha		GWPkg CP2 equivalent/kgMS	
	NZ	UK	NZ	UK
Energy	1,145	2,825	1.37	3.47
Methane	5,320	5,310	6.36	6.52
Nitrous Oxide	2,375	3,365	2.85	4.15
Total Emissions (85 % allocation to milk)	7,530	9,775	9.01	12.01
Total Emissions (100 % allocation to milk)	8,840	11,505	10.58	14.13

Causal Mapping

The social team visited the farmers in May/June, applying the “causal mapping” methodology. Some tentative results are incorporated in this update but the full report will be available shortly.

The casual mapping methodology allows us to type farmers into two groups based on how they arranged a number of factors in relation to their importance for how the farm is managed. The first table below depicts how the farmers were distributed into the two identified “types”.

	Type 1	Type 2	
Organic	5	5	
Conventional	7	3	
	12	8	20

The second shows the top factors for the two groups and the third highlight the biggest differences between the groups. A full report including description of the methodology as well as interpretation of the results will be available before the end of year.

Score	Type 1	Type 2
4	Net profit before tax	Family needs
3	Family needs	Fertiliser & soil fertility health
3	Farmer decision maker	Production
3	Weather/climate	Satisfaction
2	Production	Farm environmental health
2	Fertiliser & soil fertility health	Farm env. as a place to be
2	Cash farm income	Farmer decision maker
2	Satisfaction	Future generations/succession
2	Farm working expenses	Time in farm work

	Type 1	Type 2
Net profit before tax	1.7	0.1
Exchange rate/macroeconomy	0.4	-1.1
Marketing organisation	0.6	-0.8
Farm working expenses	1.2	0.0
Farm environment health	-0.1	1.4
Family hist and background	-1.2	0.3
Future generations/succession	-1.1	0.8
Community	-1.4	0.5

Work in progress

FRST bid

A concept document for a FRST bid titled “ARGOS dairy: Pathways to resilience in primary production” has been developed in collaboration with AgResearch, Dexcel and Fonterra. The concept document will be submitted on the 6th of September and a full bid is due by the end of February next year. If we are successful the funding will commence in August/September 2008. The full concept document is attached.

Soils

A round of soil sampling is taking place on the ARGOS dairy farms in September 2007. Results and comparisons with the 2005 soils should be available before the end of the year.

Water

The streams on the ARGOS dairy farms were sampled for the second time in the summer of 2006/2007. Results and comparison to earlier sampling should be available by the end of the year.

Economics

The accounts for the 05/06 season are currently being rearranged (normalized for comparison) and analysed. Results should be available before the end of the year.