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## BRIEF COMMUNICATION

## Frequency of mastitis and variation in somatic cell counts throughout the lactation in cows managed organically or conventionally; Year 1

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**Keywords:** organic; mastitis; somatic cell count; dairy cattle.

Interest in organic milk production is growing in New Zealand. At present milk is being collected from 13 organically certified farms in the North Island and 66 farms have been identified as either certified organic or interested in converting from conventional production (Stevenson, 2002).

Massey University started a trial on August 2001 to monitor the difference between organic and conventional dairy farming systems, and to provide New Zealand dairy farmers with proven information on differences between the two systems. A key focus of the organic farming system is the maintenance of health and well-being of cows in the herd, without the routine use of conventional methods (e.g., antibiotics). Mastitis has been recognised as the main disease problem. The objective of this report is to present results on the variation in somatic cell counts (SCC), frequency of clinical mastitis (CM) and frequency of acute levels of SCC of cows managed according to either organic or conventional farming practices for the season 2001 to 2002, the first year after the change to organic farming.

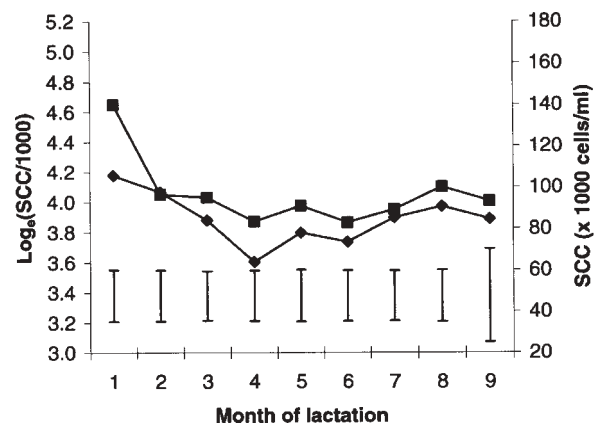
The Dairy Cattle Research Unit at Massey University has allocated 44 cows to a conventional farm and 44 cows to an organic farm. Monthly herd-test records for each cow and individual health records were used in this study. In a first analysis, lactation averages of SCC, expressed as geometric means, for each cow were analysed using the PROC MIXED procedure of SAS (2001) considering only the effect of type of farming (organic vs. conventional). In a second analysis, monthly herd-test records of SCC for each cow were analysed, after natural logarithmic transformation, using the MIXED procedure in SAS (2001) with a linear model that considered type of farming, month of lactation, age, interaction between type of farming and month of lactation and the random effect of cow within type of farming. Using the Akaike's information criterion, a compound symmetry error structure was determined as the most appropriate residual covariance structure for repeated measures over month of lactation within cows.

Finally, frequencies of CM and frequencies of acute levels of SCC for each type of farming were compared using the FREQ procedure of SAS (2001). Frequency of mastitis was defined as the number of cows that were diagnosed with CM one or more times during the lactation and were treated with antibiotic (conventional) or a

homeopathic (organic) treatment during the lactation divided by the total number in the group. Frequency of acute levels of SCC was defined as the number of monthly herd-test SCC with a value greater than 500,000 cells/ml of milk divided by total number of herd-test SCC records in each farm type.

Lactation average of SCC for cows in the organic herd were slightly higher than those of cows in the conventional herd (84,886 vs. 71,091 somatic cells/ml of milk) but the differences were non-significant. Other studies (Vaarst, 2001) have reported similar results comparing organic and conventional herds in Denmark.

**FIGURE 1:** Monthly somatic cell counts (SCC) throughout lactation in cows managed organically (■) or conventionally (◆) at Massey University; Year 1. (I = SEM).



Monthly SCC throughout the lactation for the two herds are shown in Figure 1. Values of SCC were high at the start of lactation, decreased during mid lactation and increased again in late lactation. The patterns between farming systems did not differ significantly.

Frequencies of CM and acute levels of SCC in cows managed organically and conventionally are shown in Table 1. Frequencies of CM were similar for cows in the organic and conventional farming systems, 15.9 vs. 13.6% respectively. Frequencies of acute levels of SCC were also similar in both systems (3.3%). These results agree with those reported by Vaarst (2001) in Denmark.

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**TABLE 1:** Frequency of cows that presented at least one case of clinical mastitis and were treated during the lactation, and frequency of herd-tests with acute levels of somatic cell (SCC) during the lactation in organic and conventional farming systems; Year 1.

	Conventional	Organic	Significance
Clinical mastitis	13.6% of 44 cows	15.9% of 44 cows	ns
Acute level of SCC (>500,000 cells/ml)	3.3% of 334 herd-tests	3.3% of 336 herd-tests	ns

ns = non significant.

Vaarst (2001) referred to results from a previous (1991-1994) trial in Denmark comparing udder health in organic and conventional herds. Percentages of mastitis treatments, sub-clinical mastitis, cows with SCC levels greater than 500,000 and bulk milk SCC were found to be lower in organic dairy herds than in conventional dairy herds. The author indicated that one factor that seemed to characterise these organic dairy herds was the relatively high degree of what was characterised as care-taking during milking and health promoting routines. The difference between organic and conventional dairy herds was explained not by 'being organic' but rather by 'being good dairy herd managers'.

The results from the first year of this study confirm that the udder health of cows managed according to organic farming practices did not differ from cows managed in a conventional farming system. This is in agreement with results from other countries.

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