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Epidemiological Study of Removals in New Zealand Dairy Goats

A thesis presented in partial fulfilment of the requirements for the degree of Master of Veterinary Studies at Massey University

Milan Gautam 2012



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- Abstract -

This thesis provides a description of the demography, production and reproductive characteristics of dairy goats on commercial dairy goat farms in New Zealand. In addition, it quantifies the influence of individual animal-level characteristics on the length of productive life (LPL).

A secondary set of data provided by the New Zealand Dairy Goat Co-operative formed the basis of the analyses presented in this thesis. Details were available for 23,771 does from 38 herds which were born between 1 January 2000 and 31 December 2009. Survival analyses were used to describe the pattern of removal of does as a function of age and within a lactation cycle, as a function of days in milk and days dry. A piece-wise Cox model was used to quantify the effect of individual doe level characteristics on LPL.

The median age of does at first kidding was 394 days (Q1 369 days, Q3 722 days). The median age at the time of removal was 3.7 years (Q1 2.5 years, Q3 4.9 years). On average does completed less than three lactation cycles at the time they were removed from the herd. Within a lactation cycle the majority of removals took place soon after dry off date. We found that the majority of does were removed as culls as opposed to those removed by sale or death. Compared to dairy cows, does were removed for a wide range of reasons, the majority of which comprised various infectious and non-infectious health disorders. This indicates that those managing animal health on dairy goat farms require detailed knowledge on the control and prevention of a wide range of caprine health disorders.

The effect of first lactation milksolids yield (MSL1) on LPL varied over time. During the first two years following the date of second kidding, high MSL1 yields had a protective effect on removal whereas beyond two years from the date of second kidding, does with high MSL1 yields were at a greater risk of removal compared to average producers. These findings indicate that high MSL1 producers should be preferentially managed beyond two years from the date of second kidding, in order to avoid preventable losses. In turn this should ensure longer LPLs among a more profitable sub-group of the herd.

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Nomenclature

CI	Confidence interval
DP	Dynamic programming
FAO	Food and Agriculture Organization of the United Nations
GDP	Gross domestic product
KM	Kaplan-Meier
LIC	Livestock Improvement Corporation (New Zealand)
LPL	Length of productive life
MNR	Marginal net revenue
MSL1	Milksolids yield in the first lactation (kg)
NZDGC	New Zealand Dairy Goat Co-operative
Q1	First quartile
Q3	Third quartile
RPO	Retention pay-off
SD	Standard deviation
US	United States
USD	United States dollars

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