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**A STUDY OF WINTER MILK PRODUCTION AND A
COMPARISON OF TOWN MILK AND SEASONAL
SUPPLY DAIRY FARMS IN THE MANAWATU**

A thesis presented in partial fulfilment of the requirements for the degree of Master of Agricultural Science in Animal Science at Massey University.

**GRAY WALTER BALDWIN
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ABSTRACT

The literature review commences with a brief description of the past and present town milk industry and reviews the consequences of recent legislative changes which have already wrought substantial change to the town milk industry.

This is followed by a review of factors affecting milk production per cow (feed intake, level of supplementation, cow quality, breed, stage of lactation, calving date) and factors affecting milk production per hectare (stocking rate) on pastoral dairy farms. The likely effects of these factors on the productivity of town milk and seasonal supply farms is also discussed.

There were two major objectives to the present study. The first was to measure the productivity of town milk farms over the winter period. The second was to compare the overall annual productivity of town milk farms with that of seasonal supply farms in the same district. To achieve these objectives, a survey of 58 Manawatu dairy farms (both town milk and seasonal supply) was carried out during the 1988 winter.

Average daily milk production per cow on town milk farms during winter was 12.6 litres/cow/day and ranged from 8 to 19 litres/cow/day. Mean pasture cover and mean cow condition score decreased slightly over the winter period. Average daily production per cow of milkfat, protein and total solids fluctuated during winter, but showed a universal downward trend. The percentage of fat, protein and total solids in milk all decreased over the winter period. Average daily milk production per cow in winter was positively correlated with a number of other variables measured including cow condition score and pasture cover in May, annual milkfat production per cow and per hectare, and digestibility of supplement eaten.

Daily production per cow was negatively correlated with milkfat % and somatic cell count. Farmers who practiced an "all autumn" calving policy to provide winter lactating cows had significantly higher winter milk production than those farmers who continued to milk late spring / summer calved cows through the winter.

(ii)

On an annual basis, town milk farms produced considerably less milkfat per cow and per hectare than seasonal supply farms although stocking rate on the two farm types was similar. As a consequence of a high winter feed demand, town milk farmers made, brought in and fed more hay and silage supplement than seasonal supply farmers. Town milk farmers grew more forage crops, fed more concentrates and made more extensive use of irrigation and nitrogen fertilizer to boost pasture growth at strategic times of the year than seasonal supply farmers. No significant differences in youngstock grazing policy was observed between farm types. Both seasonal supply and town milk farms were assumed to grow similar amounts of feed per hectare, but town milk farms fed more per hectare when brought in supplements were considered. However feed consumption per hectare was estimated to be significantly higher on seasonal supply farms due to their higher milkfat production per hectare. This resulted in seasonal supply farms having a significantly higher annual feed utilisation efficiency (95 %) compared with town milk farms.

Hay and silage quality in terms of DM Digestibility, protein % and DM % was measured on all farms. Mean digestibility of DM was 56.1 % and 64.5 % for hay and silage respectively.

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TABLE OF CONTENTS

	Page No
ABSTRACT	(i)
ACKNOWLEDGEMENTS	(iii)
LIST OF TABLES	(ix)
LIST OF FIGURES	(xi)
LIST OF ABBREVIATIONS	(xv)
 CHAPTER ONE	
Review of Literature	
1.1 Town milk and seasonal supply farms in New Zealand.	1
1.2 Factors affecting milk production per cow.	3
1.2.1 Feed intake	3
1.2.1.1 Animal factors	3
1.2.1.2 Plant factors	4
1.2.1.3 Environmental factors	6
1.2.2 Feeding of supplements	7
1.2.2.1 Substitution	7
1.2.2.2 Quality of supplement	7
1.2.2.3 Stage of lactation and level of production.	8
1.2.2.4 Body condition	8
1.2.3 Cow quality	8
1.2.3.1 Milk and milkfat production.	8
1.2.3.2 Liveweight and liveweight change.	9
1.2.3.3 Feed intake	9
1.2.3.4 Grazing behaviour.	9
1.2.3.5 Feed conversion efficiency.	9

1.2.4	Breed	10
1.2.5	Stage of lactation	10
1.2.6	Calving date.	12
1.2.6.1	Seasonal supply farms.	12
1.2.6.2	Town supply calving dates.	13
1.3	Factors affecting milk production per hectare.	14
1.3.1	Introduction to Stocking Rate.	14
1.3.2	The production per hectare - stocking rate relationship.	14
1.3.3	Level of feeding and milk production per cow	17
1.3.4	Pasture Utilisation	19
1.3.5	Total net pasture production.	20
1.3.6	Pasture quality.	22
1.4	Effects of these factors on the productivity of town milk farms compared with seasonal supply farms.	23
1.4.1	Annual milkfat production per cow.	23
1.4.2	Annual milkfat production per hectare	24

CHAPTER TWO

Objectives and Methods

2.1	Objectives of the study.	26
2.2	Selection and surveying of farms.	26
2.3	Location of farms/Soil types	26
2.4	Information collected.	28
2.4.1	Town milk farms only.	28
2.4.1.1	Average daily milk production per cow during winter.	28
2.4.1.2	Condition score	28
2.4.1.3	Pasture cover.	29
2.4.1.4	Other town milk information	29
2.4.2	Town milk and seasonal supply farms	30
2.5	Statistical procedures	30

CHAPTER THREE**Results**

3.1	Town milk farms	32
3.1.1	Summary Information for town milk farms.	32
3.1.1.1	Area, Stocking Rate and Milkfat Production	32
3.1.1.2	Quota levels	38
3.1.2	Changes in Pasture cover and cow condition score over winter	42
3.1.2.1	Farm average pasture cover	42
3.1.2.2	Average cow condition score.	42
3.1.2.3	Relationship between condition score and average farm cover.	43
3.1.3	Production levels per cow achieved on Town milk farms during Winter 1988	45
3.1.3.1	Daily volumetric milk production.	45
3.1.3.2	Average daily production of Milkfat, Protein, and Total solids.	49
3.1.4	The association between Average daily milk production per cow over winter and other variables as shown by regression.	53
3.1.5	Trends in milk composition over winter.	58
3.1.6	Comparison of town milk farmers who calved all winter milking cows in Autumn and farmers who retained some spring calvers through winter.	61

	Page No
3.2 A comparison of Town Milk and Seasonal Supply milk production for the 1987/88 season.	63
3.2.1 Comparison of farm areas, cow numbers and production	63
3.2.2 Comparison of town milk and seasonal supply farms for feeding policy.	65
3.2.2.1 Hay and silage	65
3.2.2.2 Cropping	67
3.2.2.3 Nitrogen, concentrate feed and irrigation usage.	68
3.2.3 Comparison of Town milk and seasonal supply farms for stocking policy.	69
3.2.4 Comparison of town milk and seasonal supply farms for feed utilisation efficiency	71
3.2.5 Supplement quality.	72
3.2.6 Comparison of production and feeding for the top five (on a milkfat per hectare basis) town milk and the top five seasonal supply farms.	75

CHAPTER FOUR

Discussion

4.1 Farm size and milk production on town milk farms.	76
4.1.1 Comparison of surveys	76
4.1.2 Production and quotas on Manawatu town milk farms.	78
4.2 Pasture cover and cow condition score changes	79
4.2.1 Pasture cover	79
4.2.2 Cow condition score	80
4.2.3 Interaction of condition score and pasture cover.	81
4.3 Average daily milk production per cow over winter.	81
4.4 Trends in per cow production of milkfat, protein and total solids and milk composition over winter.	85

	Page No
4.5 Regression relationships of cowADM on other variables.	86
4.5.1 Condition score.	86
4.5.2 Pasture cover	86
4.5.3 Production per hectare	87
4.5.4 Annual milkfat production per cow.	87
4.5.5 Digestibility of supplement.	88
4.5.6 Milkfat %	88
4.5.7 Somatic cell count.	89
4.6 Comparison of all autumn calved vs some spring calved winter herds.	89
4.7 Town milk and seasonal supply farms in the Manawatu district.	92
4.8 Feeding policy on town milk and seasonal supply dairy farms	93
4.9 Stocking policy	95
4.10 Feed utilisation efficiency.	96
4.11 Supplement quality	97
4.12 The "top five" town milk and seasonal supply farms.	98
4.13 General considerations	98

APPENDICIES

1.0 Data collected off town milk and seasonal supply farms.	100
1.1 Quotas, pasture cover and cow condition score on town milk farms.	100
1.2 General data from both town milk and seasonal farms	103
2.0 Feed calculations	111
2.1 Supplements made and fed in 1987/88	111
2.2 Total feed grown.	112
2.3 Total feed fed.	113
2.4 Feed consumption	113

BIBLIOGRAPHY	116
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LIST OF TABLES

		Page No
Table 1.1	Number of farms, cows and average herd size on New Zealand town milk and seasonal supply dairy farms	1
Table 3.1	Summary statistics for town milk farms	32
Table 3.2	Summary of town milk farm quotas	38
Table 3.3	Summary of pre and post grazing herbage masses and changes in pasture cover over winter on town milk farms	42
Table 3.4	Summary of condition score changes for autumn calving cows on town milk farms	43
Table 3.5	District average daily milk production per cow by week	45
Table 3.6	Average daily production of milkfat, protein and total solids (kg/cow/day) by ten day period	49
Table 3.7	Summary of milk component production over winter (kilograms component per cow per day)	53
Table 3.8	Changes in milk composition over winter by ten day periods	58
Table 3.9	Summary of milk composition over winter	61
Table 3.10	Comparison of winter milking herds with all autumn or some spring calving cows	62
Table 3.11	Comparison of area, cow numbers and production	64
Table 3.12(a)	Comparison of supplements made and fed	66

Table 3.12(b)	Comparison of supplements bought	67
Table 3.13	Comparison of cropping regime	68
Table 3.14	Comparison of nitrogen usage, concentrate feeding and irrigation	69
Table 3.15	Comparison of stocking policy	70
Table 3.16	Comparison of feed demand, supply and utilisation	72
Table 3.17	Comparison of supplement quality	74
Table 3.18	Comparison of production and feeding on the top 5 town milk and seasonal supply farms	75
Table 4.1	Comparison of national milkfat production on seasonal supply farms in two seasons	76
Table 4.2	Comparison of the present study with observations in a Lincoln College study	77
Table 4.3	Comparison of milkfat production (kg/hectare) on Kairanga factory supply farms with the New Zealand average	78
Table 4.4	Comparison of autumn/winter pasture growth rates for 1988 with 8 year averages, measured by MAF on Manawatu "downland" sites	80
Table 4.5	Coefficients of variation for cowADM, milkfat %, protein % and total solids %	85
Table 4.6	Comparison of level of "over quota" milk production for "All Autumn" and "Some Spring" farms	90
Table 4.7	Comparison of two separate studies of town milk and seasonal supply farms in the Manawatu and South Auckland	92

LIST OF FIGURES

		Page No
Figure 1.1	Theoretical milkfat production at different stocking rates	15
Figure 1.2	Theoretical milkfat production per cow as stocking rate increases	18
Figure 1.3	Theoretical residual herbage mass as stocking rate increases	21
Figure 2.1	Location of survey farms in the Manawatu district	27
Figure 3.1	Distribution of farm size on town milk farms	33
Figure 3.2	Distribution of herd size on town milk farms	33
Figure 3.3	Distribution of stocking rate on town milk farms	34
Figure 3.4	Distribution of 1987/88 milkfat production on town milk farms	34
Figure 3.5	Distribution of milkfat production per hectare on town milk farms	35
Figure 3.6	Distribution of milkfat production per cow on town milk farms	35
Figure 3.7	Relationship between milkfat production per hectare and stocking rate on town milk farms	36
Figure 3.8	Relationship between milkfat production per hectare and total milkfat production on town milk farms	37

Figure 3.9	Relationship between milkfat production per hectare and herd size on town milk farms	37
Figure 3.10	Distribution of quota on town milk farms	39
Figure 3.11	Distribution of quota per hectare on town milk farms	39
Figure 3.12	Relationship between quota per hectare and the proportion of milk sold as "quota" milk	40
Figure 3.13	Relationship between quota per hectare and winter milking cows per hectare	41
Figure 3.14	Relationship between quota per hectare and the required daily milk production per winter milking cow to meet quota	41
Figure 3.15	Relationship between mean cow condition score and average farm cover in May	44
Figure 3.16	Relationship between mean cow conditional score and average farm cover in July	44
Figure 3.17(a)	Mean milk yield per cow per day across all farms during winter	46
Figure 3.17(b)	Mean milk yield per cow per day with maximum and minimum values shown	47
Figure 3.18	Distribution of average daily milk production per cow in winter on town milk farms	48
Figure 3.19	Mean milkfat yield per cow per day across all farms during winter	50
Figure 3.20	Mean protein yield per cow per day across all farms during winter	51

Figure 3.21	Mean yield of total solids per cow per day across all farms in winter	52
Figure 3.22	Relationship between average daily milk production per cow in winter and mean cow condition score in May	54
Figure 3.23	Relationship between average daily milk production per cow in winter and average farm cover in May	54
Figure 3.24	Relationship between average daily milk production per cow in winter and milkfat per hectare in the 1987/88 season	55
Figure 3.25	Relationship between average daily milk production per cow in winter and total milkfat produced per cow in 1987/88 season	55
Figure 3.26	Relationship between average daily milk production per cow in winter and digestibility of hay or silage fed	56
Figure 3.27	Relationship between average daily milk production per cow during winter and average fat percentage in milk	57
Figure 3.28	Relationship between average daily milk production per cow in winter and average somatic cell count in milk	57
Figure 3.29	Mean milkfat % across all farms during winter	59
Figure 3.30	Mean protein % across all farms during winter	59
Figure 3.31	Mean total solids % across all farms during winter	60
Figure 3.32	Mean somatic cell count across all farms during winter	60

Figure 3.33	Distribution of silage digestibility for all survey farms	73
Figure 3.34	Distribution of hay digestibility for all survey farms	73
Figure 4.1(a)	Milk production during May	84
Figure 4.1(b)	Maximum temperature in Palmerston North during May	84
Figure 4.1(c)	Rainfall in Palmerston North during May	84
Figure 4.2	Lactation curves for autumn and spring calving cows	91

LIST OF ABBREVIATIONS

Common abbreviations used in this thesis are as follows:

-	=	minus
*	=	multiplied by
/	=	divided by
+	=	plus
^	=	to the power of
AA	=	All Autumn calving winter milkers
cowADM = Milk production (litres per cow per day)		
DM	=	Dry matter
Ha	=	Hectare
Kg	=	Kilogram
ME	=	Metabolisable Energy
MF	=	Milkfat
MJ	=	Megajoule
OM	=	Organic matter
Prob	=	Probability
SOM CELL	=	Somatic cell
SS	=	Some spring calving winter milkers
STD DEV	=	Standard deviation