

PRODUCTION AND PROFIT FROM BEEF ENTERPRISES ON TWELVE
DAIRY FARMS IN WEST AND SOUTH GIPPSLAND

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Summary

Gross margin returns per hectare (GMH) were recorded over a 12 month period in 1971/72 on 12 dairy farms in south and west Gippsland, Victoria, where beef was produced as a sideline enterprise.

The GMH of both butterfat and beef production was linear over the common range of dairy and beef stocking rates which ranged from 1.2 to 3 dairy cow equivalents per ha; However, the coefficient of butterfat GMH was far steeper than that of beef GMH at current prices of butterfat and beef. The relevant equations were:

butterfat GMH in \$ = $-61.2 + 163$ (dairy cow equivalents/ha).
while beef GMH in \$ = $9.27 + 50.15$ (dairy cow equivalents/ha).

Beef was considered to be a profitable sideline enterprise at all rates of stocking when constraints existed against further increase in numbers of dairy cows in the milking herd.

I. INTRODUCTION

Dairy farms supply a large proportion of Victoria's total beef and veal production and there is potential for further increases (Carraill *et al.* 1971). Lindner (1969) showed that a beef sideline was profitable on dairy farms where butterfat production was 3285 kg per annum. However, in south and west Gippsland the annual production of butterfat per farm is 9955 kg and a different relationship may exist between the profitability of beef sidelines on dairy farms at this much higher level of production.

Cronin (1970) and Trethewie (1971) studied beef production on Victorian dairy farms and calculated that butterfat production was more profitable at 75 cents per kg or 77 cents per kg respectively. These studies used assumed prices and did not include performance data for the beef enterprise.

II. MATERIALS AND METHODS

The survey was conducted over a 12 month period from June 30, 1971 to July 1, 1972 on 12 dairy farms of which three, four and five farms were located in the Warragul, Leongatha, and Yanakie-Yarram districts of Gippsland, respectively. On all farms there was a constraint of one type or another against further increases in the numbers of cows in the milking herd above the present numbers. Accordingly, the farmers had developed a beef enterprise as a means of utilizing land and labour resources that were not fully occupied by dairying. The farms of the survey were selected because they were engaged in butterfat and beef production: they do not represent a random selection of farms in the district.

Records of butterfat production on the farms were taken from the factory payments. The liveweight production of the beef enterprise was measured as the total liveweight gain of the calves minus the birth weights of calves reared but not born on the beef area. The rates of stocking for each enterprise were calculated by averaging the numbers of dairy and beef animals at the beginning of the study on June 30, 1971 and at the end of the study on July 1, 1972. All stock were converted to dairy cow equivalents (DCE) using the tables of Anon (1966).

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All income, including change in value of livestock inventories of each enterprise were recorded. Income for the dairy enterprise also included the value of any transfers to the beef enterprise. Variable costs which included an allowance for marketing costs and animal and pasture husbandry were recorded for each of the enterprises.

Gross margin (GMH) which was defined as income minus variable costs per ha was used as the measure of profit for each enterprise. A general assumption was made that beef production used land and resources which could not be used for dairy production.

III. RESULTS

Information on liveweight of the beef animals was available from only seven farms (see appendix). In all other instances the information refers to all farms. The regression of beef liveweight on stocking rate was calculated after exclusion of the results from farm 7 as the beef stocking rate on this farm was very much higher than on the other farms.

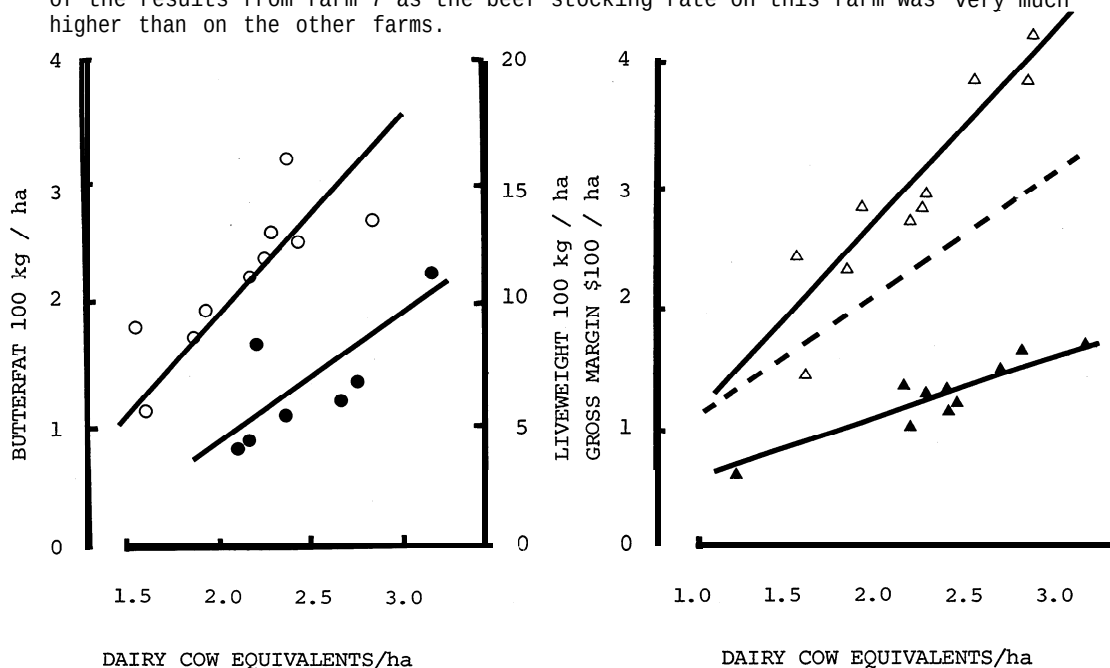


Fig. 1. Liveweight, butterfat and gross margins of dairy and beef enterprises.

Production

○—○ dairy regression
 $y = -129.8 + 158.0x$
 ●—● beef regression
 $y = -656.0 + 542x$

Gross margin

△—△ dairy regression
 $y = -61.2 + 163x$
 ▲—▲ beef regression
 $y = 9.27 + 50.15x$
 --- dairy regression with 1973/74
 butterfat price of 110.5 cents/kg

As stocking rate increased production per ha of both butterfat ($r^2 = 0.64$, $P < 0.01$) and beef liveweight ($r^2 = 0.61$, $P < 0.05$) significantly increased (Figure 1).

Results of GMH for the beef and dairy enterprises are shown in Figure 1 and again beef data from farm 7 was not included in the analysis. As stocking rate

increased the GMH of both butterfat ($r^2 = 0.71$, $P < 0.01$) and beef ($r^2 = 0.71$, $P < 0.01$) enterprises significantly increased.

IV. DISCUSSION

Despite the variations in locality, soil type, breed of animal and type of enterprise conducted on the farms in the survey there was a strong relationship between production, both for dairy and beef, and stocking rate up to and beyond levels equivalent to three dairy cows per ha. Relationships between production and stocking rate have previously been observed in dairy cows at stocking rates ranging from 0.7 to 1.6 cows per hectare (Cozens and White (1970) and in yearling steers at stocking rates ranging from 0.7 to 2.7 per hectare (Hamilton and Bath 1970) and again in yearling steers at stocking rates ranging from 2.2 to 3.8 per hectare (Vivian 1970).

In our survey GMH increased linearly with rate of stocking and did not reach an obvious optimum as occurred in the studies of Hamilton and Bath (1970) and Vivian (1970). Although our results are confounded in that production at different stocking rates is affected by the variation in farms surveyed, it is probable also that dairy beef animals with their lower initial value relative to beef animals would have an optimal GMH at a higher rate of stocking than traditional beef enterprises.

In this survey the price paid for butterfat was 144 cents per kg and for beef varied between 25 and 34 cents per kg liveweight (Appendix 1). The results indicate that the GMH for butterfat and beef production would have been approximately equal had butterfat been paid at the rate of 66 cents per kg instead of 144 cents kg. This figure does not differ greatly from the 75 cents per kg suggested by Cronin (1970) and Trethewie (1971). It is most unlikely from our figures that there will be any major change from dairy to beef in the area of our survey because butterfat in 1971/72 realised 144 cents per kg and in 1973/74 may realise 110.5 cents per kg. The GMH values of butterfat at 110.5 cents are shown as a dotted line on Figure 1. When GMH was calculated on 110.5 cents per kg of butterfat rather than 144 cents per kg the effect of variation between farmers in their variable costs became more important; overall lower proportions of total variance were accounted for by regressions of GMH on rate of stocking using lower prices for butterfat.

In this discussion no account has been taken of a variable price for beef as beef prices have been relatively stable over the past three years and all forecasts for the future indicate that demand for beef will remain high.

We conclude that in this high producing district a beef sideline can be incorporated profitably with production of butterfat where there are constraints against further increase in butterfat production. On some farms increase in the stocking rate in an already established beef sideline will increase farm income still further. However, those beef enterprises which are land intensive are also labour intensive and the full potential for this expansion may be limited finally by a shortage of labour.

V. ACKNOWLEDGEMENTS

We wish to thank the farmers who participated in the survey for their willing co-operation.

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VII. APPENDIX I

	Farm No & area (ha)	Beef area (%)	Cattle Mean weight (kg)	Beef sold Returns (cents/kg)	Beef** variable costs (\$)	Dairy** variable costs (\$)	Total* butterfat (kg)	General description of type of beef enterprise
1.	78.5	22	180.1	25.4	2,190	4,210	15,414	11 cows suckling 42 vealers (sold) 33 yearlings reared (not sold)
2.	134.0	9	249.4	26.4	2,220	8,170	33,815	19 cows suckling 41 vealers (sold) 25 store calves (sold)
3.	109.3	18			1,230	5,550	19,726	20 cows suckling 33 vealers (sold) 20 steer calves were reared (not sold)
4.	121.5	33	265.2	30.9	4,390	2,220	14,715	68 cows suckling 75 calves; 63 were sold and 12 were retained
5.	108.5	74	520.4	33.2	20,060	4,590	7,434	138 bullocks of Hereford, Hereford x Jersey, and Hereford x Friesian breeds (sold)
			197.7	34.3				36 cows suckling 68 calves (34 sold)
6.	182.2	33	-	-	4,900	4,960	20,884	80 cows suckling 120 calves of which 43 vealers and 24 store calves were sold
7.	39.3	7	127.7	32.2	2,190	2,490	9,706	68 calves bucket reared and sold as stores
8.	89.1	23	362.0	26.5	580	4,060	13,536	43 crossbred steers were sold at 18 months of age and 44 store calves were retained
9.	68.4	30	275.7	26.4	1,760	3,580	11,745	27 vealers, 26 store yearlings and 6 heifers were sold while 28 cows and 43 calves were retained
10.	97.2	62	226.2	29.4	2,650	2,530	12,076	132 cows suckling 192 calves of which 117 sold as vealers
11.	224.7	55	-	-	1,150	3,160	11,196	138 cows suckling 129 calves of which 86 were sold as vealers
12.			384.6	28.7	1,240	-		19 crossbred steers sold at 18-20 months of age

* Price for butterfat was 140 cents per kg in 1970/71.

** Variable costs items considered : veterinary, calf rearing, hay fed, milking shed expenses, fertilizer, artificial insemination, herd test costs, concentrate feed, replacement stock, cartage and commission. There were no interest charges.