

A STUDY OF SUCKLING OF CALVES IN PAIRS FOR VEALER PRODUCTION

K. J. ROWAN* and P. F. WALL†

Summary

Weight gains of vealers reared under single suckling, partial double suckling and double suckling systems have been examined.

The growth rates of natural and foster calves were similar while coupled together, but natural calves gained weight faster than their foster mates when they were uncoupled at 74 days. Weaning of the foster calf at 166 days resulted in improved weight gains of the remaining natural calf.

Total bodyweight gain of calves reared per cow over the 229 day investigational period was 446, 371 and 262 kg for double suckling, partial double suckling and single suckling groups respectively.

Cow weight gains and the interval from calving to conception were not influenced by the number of calves reared.

I. INTRODUCTION

In recent years, there has been increasing interest in the production of beef from calves less than one-year old. It is necessary to have a rapid uninterrupted rate of growth to produce such animals with the required degree of finish at the desired liveweight. A dairy cow rearing her calf on good pasture or crop will produce a suitable calf, but such a system does not utilise fully the milk production potential of the cow.

Greater milk production in dual purpose breeds permitted successful fattening of two and sometimes three calves, but Aberdeen-Angus cows were able to rear only their own calves because of low milk yields (Witt 1960; Hunt 1960). Witt (1960) found multiple suckling to be more profitable than single suckling. Fletcher, Arbuckle and Onley (1963) found that, when double suckling (suckling in pairs) was employed, the natural calf gained weight faster than the foster calf.

This paper reports the results of a study conducted on a commercial farm in which the performance of individual calves suckled on their own dam is compared with that of calves suckled in pairs.

II. MATERIALS AND METHODS

A group of Hereford — Australian Illawarra Shorthorn (A.I.S.) crossbred calves were fostered on A.I.S. cows rearing their own crossbred calves. This was

* Department of Primary Industries, Roma, Queensland.

† Department of Primary Industries, Pittsworth, Queensland.

Present address—11 Edward Street, Pittsworth, Queensland.

accomplished by removal of the calf from its dam for a period of approximately 8 h. The cow's calf and the calf to be fostered were linked together by a 35 cm chain with swivel connections to two neck bands. The pair was then given access to the cow and kept under observation until the cow allowed the foster calf to suckle without reacting.

Thirteen mature A.I.S. cows suckling male natural and foster calves were selected at random from this group, as well as 9 cows rearing only their own male calf.

All cows calved during March in relatively poor condition. The diet during the initial two months of lactation was green forage sorghum supplemented with grain and lucerne hay. Winter cereal crop (oats) was grazed for the remainder of the lactation.

Neck bands linking natural and foster calves were removed 74 days (mean) after birth. When calves were 166 days of age (mean), a number of cows and calves were removed for sale so that subsequent observations involved 18 cows suckling six pairs of natural and foster calves, six natural calves previously suckled with foster animals and six natural calves suckled singly throughout.

Birth weights for all calves were estimated for purposes of calculation of gain at 34.02 kg (75 lb). Bodyweight measured 18 h after removal from feed and water was recorded at a mean of 45, 74, 110, 132, 166 and 229 days after birth for all calves reared on the double suckling system, but was recorded for single suckling calves only on the 166th and 229th day. Bodyweights of all cows were taken at 166 and 229 days.

Uterine palpation per rectum was performed at regular intervals to detect the presence or absence of a foetus.

III. RESULTS

The bodyweight gain of the natural and foster calves were similar until 74 days when the neck chain was removed. After this time, the natural calf gained weight faster than its foster mate ($P < 0.05$). The performance of the natural calves double suckled was inferior to that of the natural calves which were single suckled (Table 1).

After the foster calves were weaned at 166 days, the rate of gain of the natural calves remaining on the cows was similar to that of the natural calves single suckled since birth for the period from 166 to 229 days. The former group had a significantly greater rate of gain ($P < 0.05$) than that of the group of natural calves which remained as one of a double suckling pair (Table 2).

Differences in total bodyweight gains of calves reared per cow were significant ($P < 0.01$). Cows double suckled over the entire period produced 446 kg of calf, the cows double suckled for the first 166 days produced 371 kg of calf and the cows single suckled produced 262 kg of calf. For the period from 166 to 229 days, there was no significant difference in the bodyweight gain of the cows double suckled to 229 days (22.6 kg) and that of the cows suckled to 166 days only (24.6 kg) and that of cows single suckled (24.5 kg).

The mean interval from calving to conception was 84.7 days for cows suckling two calves and 74.5 days for cows suckling one calf. This difference was not significant.

TABLE 1

Natural and foster calf bodyweight gain from birth to 166 days of age

Attribute	Treatment			S.E. of Mean
	Naturals Double Suckled	Fosters Double Suckled	Naturals Single Suckled	
No. of calves per group	13	13	9	
Mean bodyweight gain— (kg/head/day)				
†0 — 45 days	0.88	0.90	—	± 0.086
45 — 74 days	1.08	1.17	—	± 0.048
74 — 110 days	1.21 ^c	0.86 ^c	—	± 0.042
110 — 132 days	0.72 ^a	0.56 ^a	—	± 0.053
132 — 166 days	0.87 ^c	0.67 ^c	—	± 0.038
†0 — 166 days	0.96 ^{ac}	0.84 ^{ab}	1.10 ^{bc}	(± 0.033 ± 0.040‡)

Means in the same line with the same notation are significantly different.

a = $P < 0.05$ b, c = $P < 0.01$

† Birth weight was not obtained; for purposes of calculation, it was estimated at 34.02 kg (75 lb).

‡ Of 9 animals. Other values are for mean of 13.

IV. DISCUSSION

It is apparent that the cows did not continue to accept completely the foster calves after removal of neck chains so that the system of fostering was only partly successful.

While the performance of the natural calf double suckled was inferior to that of the natural calf single suckled, the weaning of the foster calf allowed the remaining calf to gain at a rate similar to that of the natural calf single suckled. This would indicate that the level of milk production is an important factor in influencing weight gains even at this stage of lactation, although Gifford (1953), Neville (1962) and Melton *et al.* (1967) found that the correlation between average daily

TABLE 2

Effect of weaning on the rate of gain of natural calves from 166 to 229 days of age

Attribute	Treatment			S.E. of Mean
	Double Suckling	Partial Double Suckling	Single Suckling	
No. of calves/group	6	6	6	
Mean bodyweight (kg) 166 days	191.0	192.7	215.4	± 10.3
Mean bodyweight (kg) 229 days	260.8	276.5	296.2	± 10.98
Rate of gain (kg/head/day)	1.11 ^a	1.33 ^a	1.29	± 0.063

Means in the same line with the same notation are significantly different.

a = $P < 0.05$

milk production in cows and average daily gain in calves was highest during early lactation and diminished as lactation progressed.

Average daily calf weight gains in this study were superior to those obtained in Hereford calves by Alexander, Beattie and Sutherland (1964) and slightly in excess of those recorded for dual purpose breeds by Hunt (1960) and Witt (1960) where multiple suckling together with supplementation of calves with concentrates was employed.

In this study, total bodyweight gain of calves reared per cow clearly indicates the superiority of the double suckling technique and is supported by the observations of Fletcher, Arbuckle and Onley (1963). However, as the performance of calves is largely -determined by the dam's milk production (Neville 1962; Alexander, Beattie and Sutherland 1964; Christian, Hauser and Chapman 1965; Melton *et al.* 1967), the double suckling technique could result in an unfinished product if conditions were sub-optimal.

Bodyweight changes of cows were not affected by double suckling and this, together with the similar interval from calving to conception, would indicate that double suckling did not exert added stress.

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