

OBSERVATIONS ON THE SUCKING BEHAVIOUR OF PIGLETS
IN LITTERS OF VARYING SIZE

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Summary

The sucking behaviour of three litters of 6, 8 and 10 piglets was observed at 1, 2, 5 and 9 days after birth. Records were made on video tape and were examined later to determine the sucking time, teat preferences and competitive success of each piglet. The smallest litter spent less time sucking than the other litters. The amount of competition amongst piglets was higher in the larger litters, and there was also evidence of territorial behaviour in the defence of preferred teats. After nine days the teat preference order had, stabilised in two litters, but not in the slowest growing litter.

Observations on teat preferences in relation to litter size and growth rate were also made on 13 litters of pigs at 5 and 20 days after birth. The teat preference order was less stable in slower growing litters or in larger sized litters. The association of growth rate with sucking behaviour appeared to be independent of its association with litter size.

I. INTRODUCTION

Batch farrowing presents the opportunity to foster piglets from large litters to smaller litters, thereby producing more uniform growth of piglets. The normal behaviour patterns of litters of differing sizes are therefore of interest, since fostering is likely to change the behaviour patterns of both donor and recipient litters. Piglets are suckled at approximately hourly intervals, and a preference order for particular teats begins to develop during the first few sucklings (McBride 1963).

A major requirement for the development of successful fostering techniques is a knowledge of the effect of litter size upon behavioural patterns such as fighting and sucking. In experiment 1 the sucking behaviour of three litters during the first 9 days after birth was examined in detail, and in experiment 2 the stability of the teat preference order was observed at 5 and 20 days after birth.

II. MATERIALS AND METHODS

(a) Experiment 1

Video tape recording equipment was used to monitor and record sow and piglet behaviour at a remote observation point. The camera was suspended beneath the roof of a commercial type sow house approximately 4 m from the farrowing stall. The sow was prevented from lying away from the camera during suckling by a wooden barrier attached to the side of the stall. An electric strip heater was provided for the piglets in the creep area nearer to the camera.

Three sows ($\frac{1}{2}$ Large White x $\frac{1}{2}$ Berkshire) with litters of 6, 8 and 10 surviving piglets (litters 1, 2 and 3 respectively) were observed. The litters were born with 15, 10 and 12 piglets respectively, but 9 newborn piglets in litter 1 died of chilling, and four piglets were still born in litters 2 and 3. Each piglet in each litter was identified by an 8 cm number on the back and hind leg. All piglets were weighed within 12 hours of birth and at nine days of age. The sow's udder was marked to aid the identification of teats.

The behaviour of each sow and litter was recorded for three consecutive sucklings on days 1, 2, 5 and 9 after farrowing. Recordings were made while any

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piglet was active at the udder.

The video tape recordings were later examined by a single observer who determined the time spent sucking at the udder, the time spent in other activities, the location of each teat sucked, the location of teats competed for by two or more piglets, the identity of competing piglets and the outcome of competitions.

Piglets were regarded as competing when two or more piglets attempted to suck a single teat. The piglet sucking the teat when competition ceased was considered the victor.

The development of teat preferences was examined by determining for each observation the identity of teats at which each piglet spent more than 10 per cent of its individual sucking time ("preferred teats"). The most preferred teat was that teat-at which most time was spent at each observation.

(b) Experiment 2

Observations were made on 13 sows ($\frac{1}{2}$ Large White x $\frac{1}{2}$ Berkshire) and litters kept in farrowing stalls while estimations of milk yields were being made. The observations on milk yield are not discussed in this paper. Four consecutive sucklings were observed on days 5 and 20 after farrowing. The piglets were identified as in experiment 1, and the location of the teat sucked during the "quiet phase" of suckling (Barber, Braude and Mitchell 1955) was recorded for each piglet at each suckling. The piglets were weighed at birth and at 5 and 20 days of age.

The relative stability of the teat preference system in each litter at each observationday was estimated by the percentage of teat changes (PTC). This was a litter average of the number of preferred teat changes made by each piglet between the four consecutive sucklings studied relative to the total possible number of teat changes (i.e. three per piglet).

III. RESULTS

(a) Experiment 1

The litters all differed significantly in birth weight, with the differences probably reflecting the differences between the sizes of the litters at birth (Table 1). The smallest litter grew significantly faster than the middle sized litter.

The average time spent sucking and the percentage of the observation period spent sucking were significantly less in the smallest litter than the other litters (Table 2). The number of preferred teats per piglet fell to about unity by day 9 in the smallest and largest litters (Table 2) indicating that piglets in these litters were forming distinct preferences for certain teats over this period. The number of preferred teats was significantly higher in litter 2 than in the other two litters and increased with age.

The numbers of changes in the location of the most preferred teat between successive sucklings (Table 2) further suggests that the development of a stable teat order was prolonged in litter 2.

Greater competition was found in the larger litters, particularly litter 2. Most competition for teats took place in the first two days after birth. The outcome of contests was not markedly influenced by the relative birth weights or

TABLE 1

The average birth weights, live weights at 9 days of age
and growth rates for litters 1, 2 and 3

Litter Number	1	2	3	LSD (P = 0.05)
No. of piglets born	15	10	12	
No. of piglets reared	6	8	10	
Birth weight (kg)	1.20	1.66	1.41	0.17
Live weight at day 9 (kg)	3.26	3.03	3.08	0.52
Growth rate (g/day)	258	171	201	61

TABLE 2

The average time spent sucking, the number of preferred teats per piglet
and the number of competitions per piglet in litters 1, 2 and 3

	Litter number	Observation day				Litter mean	LSD between litter means (P = 0.05)
		1	2	5	9		
Time per piglet spent sucking (mins) and (in parenthesis) per- centage of observation	1	13.3 (21.1)	13.8 (11.6)	13.0 (16.4)	24.0 (27.0)	16.0 (19.0)	4.3 (5.8)
	2	30.3 (56.1)	29.3 (34.1)	15.6 (16.8)	20.0 (27.8)	23.8 (33.7)	
	3	25.3 (44.5)	25.8 (33.0)	25.5 (28.2)	13.7 (12.6)	22.6 (29.6)	
Number of preferred teats per piglet and (in parenthesis) number of changes per piglet of most preferred teat	1	2.2	1.8 (2)	1.2 (3)	1.0 (0)	1.5	0.4
	2	1.6	1.8 (5)	2.0 (4)	2.3 (6)	1.9	
	3	1.4	1.7 (6)	1.2 (6)	1.1 (1)	1.4	
Number of competitions per piglet	1	3.0	0.3	0.3	0.5	0.8	0.9
	2	4.4	3.0	0.1	0.8	2.0	
	3	3.4	2.9	0.2	0.2	1.7	

growth rates of the contestants. Thirty-four of the 73 contests observed were won by the heavier piglets (10 contests were between piglets of similar weight), while 41 of the contests were won by the faster growing piglets. By contrast 70% of contests for the most preferred teat were successful, and only 27% of contests for other teats were successful. This suggests a territorial type of behaviour in defence of the preferred teats.

(b) Experiment 2

The average litter size was 9.8 (range 7-14) piglets, and the average growth rates from birth to 5 days of age and from 5 to 20 days of age were 120 (range 16 - 260) g/day and 132 (range 88-174) g/day respectively. The average P.T.C.'s were 37.3 (range 7.3-89.3) per cent and 24.2 (range 0-72.7) per cent at 5 and 20 days of age respectively.

The average growth rates of the six larger sized litters and the seven smaller sized litters did not differ significantly at either 0 to 5 or 5 to 20 days of age

(98 and 138 g/day $\chi^2 = 0.03$; 126 and 136 g/day $\chi^2 = 0.002$ respectively), indicating little relationship between litter size and growth rate. But the average P.T.C.'s of the two groups of litters differed significantly at both 5 and 20 days of age (47.5 and 28.5% $\chi^2 = 4.9$ $P < 0.05$; 39.6 and 10.9% $\chi^2 = 17.1$ $P < 0.001$ respectively). The average P.T.C.'s for the six faster growing and the seven slower growing litters were not significantly different ($P > 0.05$) at 5 days of age (34.1 and 39.9% $\chi^2 = 0.46$) but were significantly different ($P < 0.01$) at 20 days of age (14.2 and 32.7% $\chi^2 = 7.1$). Thus the teat order was not completely stable at 20 days of age in most litters; particularly the larger litters and the slower growing litters. The comparable P.T.C.'s at 5 days of age for the litters in experiment 1 were 8.3, 31.3 and 5.0% for litters 1, 2 and 3 respectively.

IV. DISCUSSION

Although only 16 litters were observed in these experiments, there is sufficient consistency in the results to enable conclusions to be made about the behaviour of piglets during the first three weeks after birth. Litter size appeared to influence behavioural traits since in experiment 1 the competition for teats was more intense and the duration of sucking longer in the larger litters. In experiment 2, larger litters had a less stable order of teat preference than smaller litters. This influence of litter size is possibly due to the difficulty of piglets locating their preferred teats in larger litters.

The results of both experiments 1 and 2 suggest that low growth rates were associated with less stable orders of teat preference, possibly because piglets in the slower growing litters were unable to find a preferred teat which would satisfy their appetites. This association of growth rate with teat preference appeared to be independent of any association with litter size.

The apparently slower development of a stable order of teat preference by the litters in experiment 2 compared with those in experiment 1 can probably be associated with the larger average litter size and the generally lower growth rates in experiment 2, although it is possible that the handling necessary for milk yield estimations in experiment 2 may have influenced behaviour.

McBride (1963) suggests that piglets rapidly form a stable order of teat preference after birth which they maintain closely until weaning, but our observations agree with those of Wyeth and McBride (1964) that approximately 20% of piglets at three weeks of age still suck two or more teats.

The observations also suggest that there is a territorial type of behaviour in each piglet's defence of its most preferred teat against other piglets. Similar behaviour at one to two days of age has been briefly reported by Hartsock and Graves (1972).

Since the order of teat preference begins to stabilize and a territorial type of behaviour develops very soon after birth, particularly in the smaller litters which are likely to be recipient litters in fostering programs, a detailed study of the development of the order of teat preference is required, if fostering is to be achieved with minimal disruption to behavioural patterns and performance.

V. ACKNOWLEDGEMENTS

We are indebted to Mr. R.M. McVea of G.E.C. - Elliot Automation for the use of the closed circuit television and video tape equipment, and to Mr. R. Jardine, Biometrician, Department of Agriculture, for statistical advice.

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