

Water and Creep Feed Consumption by Piglets and the Effects of Solid Feed and Water Restriction on Performance in Early Life

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RINGKASAN

Anak-anak babi yang diberi bekalan air didapati mengambil sedikit jumlah (58 g sehari) semasa baharu lahir dan pengambilan makanan pepejal bermula setelah berumur dua minggu. Kenaikan berat badan selepas penceraian susu adalah lebih cepat apabila babi tersebut diberi makanan 'creep' ketika berumur sehari dan selepas berumur dua minggu jika dibandingkan dengan babi yang menerima makanan tersebut selepas 3 minggu. Penambahan kenaikan berat badan disebabkan pengambilan makanan pepejal selepas cerai menyusui.

SUMMARY

Piglets provided with water from day old were observed to consume small amounts (58 g/day); at this early age and intake of solid feed began during the second week of life. Average daily gain of pigs following weaning was significantly greater when the animals were provided with creep feed from day old and at the beginning of the second week compared to animals that were only offered creep feed commencing at three weeks of age. The increase in average daily gain was due to increased consumption of solid feed following weaning.

INTRODUCTION

There is a lack of local information on water and solid feed requirements by the pig before weaning in the tropics. Many pig farmers do not recognise the importance of providing water and solid feed to the baby pigs. Jacob and Gan (1974) surveyed management practices in commercial pig farms in Selangor and reported that only 11% of the 83 farms studied provided drinking water for their piglets and 31% of these farms did not provide creep feed during the suckling period. Hardy (1976) reported that without supplementary feed, piglets cannot achieve optimum weaning weights. This is because the sow's milk alone is insufficient to meet the nutrient demands of the growing pig (ARC 1967). The problem is further aggravated by late weaning and large litters.

The objective of this study was to demonstrate the importance of providing water and creep feed to the piglets in early life to enable them to minimise the stress of weaning and to achieve high body weight immediately following weaning.

MATERIALS AND METHODS

Twenty-seven sows (Landrace, Duroc and Landrace × Duroc) were assigned to three groups (A, B and C) each of 9 sows. In allotting animals to each group, parity of birth from each sow was considered, but breed of animal was not. The animals were bred by natural mating as they came into oestrus after weaning. Care and management of the sows during gestation, farrowing and during lactation have been described previously (Kuan and Mak, 1978). A total of 268 live pigs were obtained from the 27 sows. (92 piglets in group A, 91 in group B and 85 in group C).

Piglets in group A were provided with water and creep feed at birth; those in group B received water and creep feed at eight days old, and those in group C received water and creep feed at 15 days of age. Water was provided in specially designed stainless steel water containers with a capacity of six litres. The diameter of the container measured 7.6 cm, which allowed only the snout of the piglets to enter. Fresh water was measured out to each litter every morning. Creep feed was provided

in a shallow wooden trough with partitions to prevent total entry of the animals. Initially, creep feed was weighed out once a day; as consumption increased with age, amounts were weighed out twice daily.

The creep feed offered up to four weeks of age was a commercial pig pre-starter mash purchased from Feedmeal Malaysia Sdn. Bhd. After this age, the piglets received a mixture of 75% of the pre-starter and 25% of a pig starter mash also purchased from the same company. As indicated by the company, the pre-starter and starter mash have the following nutrient composition basis, respectively:- crude protein 21% and 18%, crude fat 2.5% and 4%, crude fiber 4% and 7%, crude ash 8% in both cases. At six weeks, the animals received the two feeds on a 50-50 basis, and at seven weeks, the piglets received only the starter mash.

The piglets remained with their respective dams in the farrowing barn from birth until they were weaned at five weeks. The piglets were then removed to the nursery barn where the study continued for a further period of two weeks. The temperature in the farrowing and nursery barns were recorded at 7.00 a.m., 12.00 noon and at 3.00 p.m. each day during the study.

Performance data for the sixth and seventh weeks were tested for significance by means of least significant (LSD) tests. However, prior to the LSD tests, analyses of variance were carried out using F-tests as tests of significance for each parameter. Irrespective of whether the F-tests showed significance, the LSD tests were subsequently carried out because the comparisons between treatments for each parameter were *a priori* planned comparisons (Sokal and Rohlf, 1969).

RESULTS

The temperature recorded during the course of this study ranged from 22.2°C to 33.3°C with the mean temperature being 29.4°C.

Table 1 shows the comprehensive results of pig performance in this study. Piglets in group A which were provided with water and creep feed at birth did not consume any solid feed, although they drank a reasonable quantity of water (58 g/day). By the second week, these piglets were consuming small amounts of solid feed. Similarly, piglets in group B also began nibbling at the creep feed during the second week when they were first introduced to creep feeding. Piglings in group C which were only given solid feed at three weeks of age, consumed less than half the

amount of solid feed during the week when compared to piglets in groups A and B. At weaning (fifth week), piglets in group C were still eating much less solid feed than piglets in groups A and B. This difference in feed intake became greater following weaning. In the sixth week feed intake between piglets in groups A and B was statistically significant when compared to group C. The same was true in the seventh week.

With regard to water consumption there was no statistical difference between the three groups. However, animals in group C which were provided with water only at the third week were observed to lick the floor for water when they were bathed twice daily.

With reference to daily gains at weaning (fifth week) it is noted that the values from piglets in groups A and C were similar. This indicates that daily gains at weaning might possibly be influenced by factors other than supplementary creep feeding. Daily gains following weaning for both the sixth and seventh week in the present study were significantly different between groups A and B when compared with group C.

Feed conversion ratio was studied only for the sixth and seventh week. This was because we have no means to determine the amount of milk consumed by the piglets prior to weaning. No statistical difference was obtained between the three groups with regard to this parameter.

DISCUSSION

The results of this study show the importance of providing water and creep feed to the pig in early life. It is particularly important that a fresh supply of water is available to the animals at all times in order to encourage them to eat. Crampton and Lloyd (1954), have shown that water restriction in growing rats resulted in reduction in solid food intake. In pigs the water requirement is usually expressed as a ratio to feed intake. Mount *et al.* (1971), reported that in growing pigs weighing between 21 to 73 kg, the mean water: feed ratio was from 2.1 and 2.7 at temperatures between 7 and 22°C and between 2.8 and 5.0 at 30 and 33°C. The mean water to feed ratio in our study was from 1.7 to 2.4 during the sixth and seventh week periods. This low water: feed ratio may have been due to the animals being able to drink some water when the animals and pens were washed daily.

The main objective of introducing creep feed to piglets is to supplement the sows' milk and to accustom the animals to solid feed as soon as

TABLE 1

Mean values \pm standard error of mean of daily feed intake, water intake, gain and feed to gain ratio.

Week		1	2	3	4	5	6	7
	Groups*							
No. of pigs	A	92	92	91	90	89	89	89
	B	91	92	91	90	90	90	90
	C	85	85	84	84	84	84	84
Feed (g/day)	A	0	4.9 \pm 1.7	16.7 \pm 2.3	56.7 \pm 9.4	70.7 \pm 7.7	284.8 \pm 15.6 ^A	480.7 \pm 18.3 ^E
	B	0	7.9 \pm 3.3	16.0 \pm 5.9	26.3 \pm 7.8	73.3 \pm 8.8	257.3 \pm 20.8 ^A	473.5 \pm 28.6 ^E
	C	0	0	7.0 \pm 2.3	24.2 \pm 8.8	41.8 \pm 6.8	212.4 \pm 13.3 ^B	399.0 \pm 13.2 ^F
Water (g/day)	A	58.1 \pm 7.3	116.6 \pm 15.0	152.8 \pm 17.7	176.8 \pm 19.3	246.9 \pm 28.1	475.2 \pm 12.9	866.0 \pm 32.8
	B	0	126.7 \pm 12.7	157.7 \pm 24.8	231.6 \pm 35.6	306.1 \pm 13.8	544.9 \pm 34.6	858.8 \pm 51.0
	C	0	0	162.8 \pm 24.5	222.2 \pm 39.0	311.6 \pm 35.0	476.1 \pm 24.7	789.3 \pm 30.4
Gain (g/day)	A	140.8 \pm 14.8	134.2 \pm 14.3	151.7 \pm 13.8	148.0 \pm 10.1	232.7 \pm 20.9	185.6 \pm 13.4 ^C	240.8 \pm 13.4 ^G
	B	119.6 \pm 15.6	145.1 \pm 10.1	147.8 \pm 6.8	137.1 \pm 13.4	176.2 \pm 21.8	163.5 \pm 15.0 ^C	236.2 \pm 11.3 ^G
	C	129.1 \pm 12.1	138.7 \pm 10.4	138.8 \pm 12.6	147.3 \pm 14.2	222.2 \pm 24.1	137.2 \pm 12.6 ^D	189.6 \pm 10.5 ^H
Feed conversion ratio	A	-	-	-	-	-	1.55 \pm 0.06	2.03 \pm 0.09
	B	-	-	-	-	-	1.58 \pm 0.04	2.00 \pm 0.07
	C	-	-	-	-	-	1.60 \pm 0.08	2.13 \pm 0.06

*Each group has 9 litters

Group A - provided with water and creep feed at day old

Group B - provided with water and creep feed at 8 days old

Group C - provided with water and creep feed at 15 days old.

A, B, C, D, E, F, G, H Values having different superscripts in the same column are significantly different ($P < 0.05$).

possible in order to minimise the usual adverse effects on performance following weaning. Kornegay *et al.* (1974) reported that pigs exhibited a period of slow growth, which persisted for as long as 14 days following weaning. The cause of this growth depression was directly attributed to inadequate feed intake during this period. Leibbrandt *et al.* (1975) also observed that the performance of pigs following weaning depended primarily on feed intake. The results of the present study concur with the findings of the above mentioned workers.

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