LIVEWEIGHT CHANGES IN BREEDING SOWS

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Summary

The data were derived from an intensively managed herd of sows in which the feeding policy was designed to allow limited net weight gains in sows in successive breeding cycles. The feed allowances of individual animals were adjusted periodically in accordance with visual assessment of body condition.

From a mean live weight of 132.3 ± 9.1 kg (44 sows) recorded immediately after first farrowing, the means and standard deviations of net weight increases in each of six subsequent parities (numbers of animals in brackets) were (kg):-

16.9 ± 10.8 (44), 10.2 ± 14.2 (43), 3.3 ± 14.5 (29),
9.5 ± 12.5 (27), 5.1 ± 7.5 (18), 5.7 ± 15.7 (9).

No marked associations were found between weight changes and various productive traits.

Further work is required to evaluate the use of net changes in body weight as an aid to more efficient sow feeding and to establish desirable weight increases in sows in relation to differing management practices.

I. INTRODUCTION

Recent research (reviewed by Lodge 1972) has demonstrated that, within wide limits, the level of feed or energy intake by the sow during pregnancy and lactation does not influence litter size and has only a very limited effect on the weight of the litter at birth and at weaning. The greatest effect is on the weight of the sow herself. These results have led to the concept that sows of moderate initial size that are fed only sufficient to allow limited net increases in weight insuccessive parities are more economical than those which are fed more generously. Scottish workers (Elsley (1972) have suggested that a net increase in live weight of 10-15 kg per reproductive cycle, for the first 3-4 parities, is appropriate for sows weaned 6-8 weeks after farrowing. He further suggested that the adjustment of sow feed allowances to achieve an appropriate net change in live weight per cycle can assist in ensuring that the herd as a whole and individual sows are not fed wastefully.

There is little published information concerning weight changes in commercial sows and none relating to Australian conditions. In this paper are presented data on weight changes and reproductive performance in sows in an intensively managed herd with the aim of drawing attention to the possible value of using sow weight changes as an aid in the adjustment of feed allowances.

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II. MATERIALS AND METHODS

The data were derived from the records of Large White sows in the Mt. Derrimut herd during the period 1973-1975.

The management system involved tethering the sows in individual stalls subsequent to mating. Sows were farrowed in individual pens, equipped with crates and tethers, where they remained until weaning. Most litters were weaned at 21-28 days of age, although in some cases weaning occurred between 28 and 42 days. Sows were weighed within 12 hours after farrowing and at weaning.

The general feeding policy aimed to permit limited sow weight increase in successive parities. Feed allowances for weaned and pregnant sows ranged from 1.8 to 2.7 kg/head/day of a proprietary pelleted diet (stated to contain a minimum of 15% crude -protein; estimated DE content 11.6 MJ/kg). Feed allowances were adjusted periodically on the basis of visual assessment of body condition in relation to stage of pregnancy. During the period under consideration, the recorded weights of sows were not used in determining feed allowances. During lactation, daily feed allowances were increased to maxima (approx.. ten days post-partum) varying from 5.0 to 7.0 kg according to litter size and the body condition and appetite of the sow.

III. RESULTS

The mean postpartum weight at first parity (44 sows) was 132.3 ± 9.1 kg. Net weight gains in subsequent parities are shown in Table I.

TABLE I

Net gains in postpartum weights of sows in successive parities

Parity	1-2	2-3	3-4	4-5	5-6	6-7
No. of sows	44	43	29	27	18	9
Net wt. gain (kg)	16.9	10.2	3.3	9.5	5.1	5.7
S/D (kg)	10.8	14.2	14.5	12.5	7.5	15.7

Simple correlations between the postpartum and weaning weights of 53 first-litter sows and the number of pigs born and reared were small and statistically non-significant. Similarly, interval from weaning to mating was not related to sow weight at weaning or to weight loss during lactation. Weight loss during lactation was positively correlated with the number of pigs reared ($r = .45$, $P<.01$).

In order to examine the association between net gain in sow weight and reproductive performance in the longer term, a sample was selected of 36 sows which had each produced three litters within a period of 284-321 days from first to third farrowing. The sows were divided into quartiles on the basis of total weight gains from first to third postpartum weight. The results are presented in Table 2.

TABLE 2

Mean performance (for the first three litters) of sows grouped according to total net weight gains over first three parities

Quartiles	1	2	3	4	Signif. of Difference
Sow wt.gn., 1st-3rd farrow (kg)	7.9	20.1	31.0	45.9	**
Sow wt. at 1st farrow (kg)	136.9	135.0	132.9	129.4	n.s.
No. pigs born alive/litter	8.8	9.6	10.1	8.4	n.s.
Birth weights (kg):/litter	10.4	11.8	11.5	9.5	*
/pig	1.18	1.23	1.14	1.13	n.s.
No. pigs reared/litter	8.8	9.2	9.2	7.8	n.s.
21-day wt. (kg):/litter	44.5	47.7	44.4	39.3	**
/pig	5.0	5.2	4.8	5.0	n.s.

n.s. = $P>0.05$, * = $P<0.05$, ** = $P<0.01$

In spite of the substantial differences between sow groups in weight gains, there was no indication that this influenced litter size or piglet weight at birth or at three weeks. The significant difference in litter weights between sow groups would appear to be partly a reflection of (non significant) differences in the numbers of pigs/litter at birth and at weaning. There was a tendency for sows which were heavier at first farrowing to gain less weight subsequently than lighter sows.

IV. DISCUSSION

For the two breeding cycles subsequent to the first farrowing, average net gains in sow weights were in line with those suggested by Elsley (1972) and similar to mean gains of 13.6 and 11.9 kg respectively that were given by Hillyer (1973) in an interim report of a study involving weight changes in sows on a number of farms in the East of Scotland.

In both the latter study and in the present investigation there was considerable variability in weight gains between individual sows. Although many factors, including variations inlactation length and farrowing interval, would have contributed to this situation, in the present study it appears that periodic adjustment of feed allowances on the basis of visual appraisal of body condition did not achieve a high degree of uniformity of weight gains in sows. On the other hand, live weight is not necessarily an accurate measure of body condition. For example, Adam (1972, 1973) has reported large decreases in backfat thickness in some sows for which only moderate weight losses were recorded during lactation or at weaning.

Low body condition has been reported (MacLean 1969) as a cause of delay- in post-weaning oestrus in commercial herds, the latter feature being particularly common in first-litter sows. In the present study there was no indication that either interval from weaning to mating or other performance traits in first-litter sows were related to sow weight at farrowing or weaning or to weight loss during lactation. Similarly,

within the range of weight gains recorded from first to third farrowing, those sows which gained least weight produced as many and as heavy pigs as those which gained most weight.

The food consumed by the sow represents a substantial proportion of the total food used in bacon or pork production (about 25% and 50% respectively). Since sow performance has been shown experimentally to be largely unaffected by food intake in excess of a certain minimal level, the determination of optimum feed allowances has considerable commercial significance. However, with the many variables that operate under practical conditions, no single recommendation is universally applicable. Although no comparable information has been published in Australia, recording schemes in Britain and elsewhere have revealed large differences between herds in annual rate of food consumption by sows, with evidence of over and under-feeding, both on a herd and on an individual animal basis.

The present study indicated that when feed allowances of sows were adjusted in accordance with a subjective assessment of body condition there was considerable variability in sow weight gains but that this was not associated with any marked changes in sow performance. In the light of these results the routine weighing of sows merits investigation as a possible aid in controlling sow weight changes with the aim of achieving more efficient utilisation of food. Information is also required on the effect of such management variables as lactation length and sow replacement rate on desirable weight gains in sows.

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