THE INFLUENCE OF NUTRITION DURING POST-LACTATIONAL OESTRUS ON OVULATION RATE IN THE SOW AND THE ACCURACY OF CORPORA LUTEA COUNTS IN ESTIMATING OVULATIONS

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Summary. Five mature sows, given a double feed approximately 12 hr after onset of oestrus, ovulated 16.8 ± 0.95 , compared with 14.5 ± 0.86 for six controls ($P \approx 0.10$). Corpora lutea counts at laparotomy 3 to 7 days *post coitum* (*p.c.*), and at slaughter 25 days *p.c.* by visual count and by dissection of the ovaries, were 12.1 ± 0.33 , 14.0 ± 0.33 and 15.5 ± 0.33 , respectively.

An increase in ovulation rate has been reported previously in nulliparous gilts (Lodge & Hardy, 1968) following the consumption of extra feed after onset of oestrus. The same effect had been noted in sows (Heap, Lodge & Lamming, 1967) but the increase in ova in the animals given extra feed failed to be statistically significant. In that experiment, assessment of ovulation rate was by corpora lutea count at the 28th day of pregnancy but there is evidence to suggest that the number of corpora lutea may change with the time of counting (Reitmeyer & Sorensen, 1965; Longenecker, Waite & Day, 1967).

The objects of the present experiment were to investigate the effect of increasing the feed allowance at a single feed during oestrus and to determine whether the number of corpora lutea changed during the first 25 days of pregnancy in the sow.

Sixteen Large White $\times$ Landrace sows which had been on a standard level of feeding during lactation were allocated to the experiment on the weaning of their fourth litters. These sows had been operated upon for corpora lutea count at the beginning of their fourth pregnancies some 150 days previously.

All sows were given a 2.3-kg feed once a day between weaning and service. Following service, the feed allowance of the control animals was reduced to 1.8 kg while that of the experimental group was increased to 4.5 kg for a single feed, given approximately 12 hr after onset of oestrus, and then also reduced to 1.8 kg a day thereafter. The composition of the feed was as reported previously (Lodge & Hardy, 1968). Oestrus was detected by testing with a boar morning

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and afternoon from the time of weaning and each sow mated once at first acceptance of the boar.

The first count of corpora lutea was made by visual examination of the ovaries 3 to 7 days *post coitum* (*p.c.*) at laparotomy following a ventral midline incision, under halothane and oxygen anaesthesia; the second and third counts were made following slaughter and removal of the reproductive tract on the 25th day of pregnancy, both by visual examination and by dissection of the ovaries. A count of embryos was also made at this time.

The counting of ovulation points at laparotomy during the first week of pregnancy was made difficult by the presence of ovarian-fimbrial and ovarian-uterine adhesions, presumably resulting from the earlier operation at the beginning of the previous pregnancy. The numbers of corpora lutea counted at laparotomy and at slaughter, for the eleven sows which conceived at first service, are shown in Table 1.

TABLE 1
CORPORA LUTEA COUNTS FOR ELEVEN SOWS AT LAPAROTOMY 3 TO 7 DAYS P.C. AND AT SLAUGHTER 25 DAYS P.C.

Sow	At laparotomy	At slaughter	
		Visual	By dissection
1	11	13	14
2	12	12	13
3	15	16	18
4	14	14	18
5	11	11	11
6	12	15	17
7	12	15	17
8	9	14	15
9	11	15	16
10	15	17	18
11	11	12	14
Mean	12.1 $\pm$ 0.33	14.0 $\pm$ 0.33	15.5 $\pm$ 0.33
	1% L.S.D. = 1.3	0.1% L.S.D. = 1.8	

It cannot be determined from these results whether the increase in the visual corpora lutea count from laparotomy to slaughter was due to further ovulation or to more accurate counting following the removal of the ovaries. The increase in corpora lutea number by dissection of ovaries as against the visual count, indicates that estimation errors were responsible for at least some, if not all, of the difference and that counts derived by laparotomy are likely to be underestimates. Mean ovulation rates for control and experimental sows, based on counts by dissection at the 25th day, were 14.5 ± 0.86 and 16.8 ± 0.95 , respectively. This difference of 2.3 ova did not reach statistical significance ($P \approx 0.10$) but confirms the trend found in previous experiments (King & Young, 1957; Ray & McCarty, 1965; Heap *et al.*, 1967; Lodge & Hardy, 1968).

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