LAPAROSCOPIC STUDIES IN GILTS AND SOWS

R.H. KING*, I.H. WILLIAMS* and D.M. DEELEY**

The procedure for laparoscopic examination of the reproductive tract of gilts described by Paterson and Oldham (1978) has been adapted for use with larger, older animals. Our studies also include the development of a cheap method to photograph ovaries and an evaluation of the accuracy of laparoscopy to estimate ovulation rate in gilts and first-litter sows.

In vivo studies of the morphology of the ovary are facilitated by photographs which enable precise mapping of the changes in the normal and abnormal ovary. Using an expensive flash generator, Oldham and Lindsay (1980) successfully photographed the ovaries of ewes during normal and abnormal oestrous cycles. We have taken satisfactory photographs with cheaper equipment consisting of a reflex camera (Pentax Spotmatic) attached to a laparoscope (Stortz 6.5 mm) illuminated by a conventional light source (Stortz, model 486B) fitted with a 200 watt projection bulb. Daylight colour film (Kodak Ektachrome, ASA 400) was used with the camera lens set at infinity and maximum aperture (f, 1.4). The shutter speed was varied from 1/2 to 1/15 second depending on the distance from the laparoscope lens to the ovary. Transparencies were developed into prints of about 12 cm in diameter maintaining good colour and resolution.

The accuracy of laparoscopy for determining ovulation rate was assessed by examining the ovaries of 26 pigs (21 gilts and 5 sows) between 2 and 11 days after oestrus. The pigs were slaughtered four days after laparoscopy, the reproductive tract recovered and the ovaries sectioned for counting corpora lutea. For the gilts, the number of corpora lutea per ovary ranged from 2 to 12 and there was a high correlation between the ovulation rate estimated at laparoscopy (OR_L) and that found at slaughter (OR_S) ($OR_L = 0.865\ OR, + 0.59$; $R^2 = 0.94$, $P < 0.001$, $n = 42$). In the case of the sows, although the sample was small, there was also a high correlation between counts of corpora lutea at laparoscopy and slaughter ($ORL = 0.855\ OR_S + 1.01$; $R^2 = 0.97$, $P < 0.001$, $n = 10$).

We have estimated the ovulation rate by laparoscopy in 46 sows at their first oestrus after weaning of their first litter. The ovulation rate (± SE) was 14.8 ± 0.66 which appears higher than the previous estimates in first litter sows in Australia. Penny *et al.* (1971) and Love (1979) estimated ovulation rate from abattoir samples and found the ovulation rates of first litter sows were 14.0 (n = 48) and 12.0 (n = 41) respectively.

LOVE, R.J. (1979). Vet. Rec. 104: 238.
OLDHAM, C.M. and LINDSAY, D.R. (1980). Anim. Rep. Sci. (in press).
PATERSON, A.M. and OLDHAM, C.M. (1978). Aust. Vet. J. 54: 34.
PENNY, R.H.C., EDWARDS, M.J. and MULLEY, R. (1971). Aust. Vet. J. 47: 194.

* Dept Animal Science, University of Western Australia, Nedlands, W.A. 6009.
** Dept of Agriculture, Medina Pig Research Station, Medina, W.A. 6167.