

## 17. PROGESTERONE CONCENTRATIONS AND CORPUS LUTEUM SIZE FROM 25 DAYS AFTER INSEMINATION IN PREGNANT AND NON-PREGNANT COWS

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On average, 25% of Holstein-Friesian (HF) cows in pasture-fed herds in Victoria experience extended periods of anovulatory anoestrus (AA) (1). Their conception rates to first insemination (1<sup>st</sup> AI) are lower than those obtained in spontaneously ovulating (cycling; CYC) herdmates when AA cows have been treated with progesterone (P4) and oestradiol benzoate (ODB) to stimulate oestrus and induce ovulation (30% v. 45%; 1). The aim is to compare plasma P4 concentrations (PPC) and corpus luteum (CL) size in HF cows from 25 to 37 days after 1<sup>st</sup>AI associated with a spontaneous ovulation or an induced ovulation involving treatment for AA, and were pregnant to that 1<sup>st</sup>AI or had an extended luteal phase and were not pregnant. Blood was sampled from each of 127 HF cows in 3 herds at 25, 30 and 37 days after their 1<sup>st</sup>AI (day 0). These cows had not been observed in oestrus after these inseminations. Their pregnancy status was diagnosed by uterine ultrasonography on days 30 and 37 when the dimensions of each CL were also recorded. A standard treatment for AA had been used with 96 of the 127 cows and meant that ovulation had been induced with injected ODB (1 mg). Eighteen of the 96 cows (18.75%) treated for AA had elevated PPC on day 25 but were not diagnosed pregnant on days 30 or 37. The average PPC for all cows increased from 5.6 ng/mL on day 25 to 6.9 ng/mL on day 30 and to 7.4 ng/mL on day 37 ( $P < 0.001$ ). Cows treated for AA had lower PPC on each of these days (5.4 v. 6.3 ng/mL,  $P < 0.01$ ; 6.5 v. 8.1 ng/mL,  $P < 0.001$ ; 7.0 v. 8.7 ng/mL,  $P < 0.001$ ). Pregnancy status did not affect average PPC in either spontaneously ovulating or AA-treated cows (5.50 vs. 5.63 ng/mL;  $p > 0.2$ ). The average diameter of the CL on day 30 was 3.12 cm compared to 3.27 cm on day 37 ( $P > 0.1$ ). These averages were not influenced by pregnancy status or whether the animal had either ovulated spontaneously or been treated for AA. The average PPC in cows treated for AA was lower than spontaneously ovulating contemporaries from day 25 to day 37 after 1<sup>st</sup>AI. These averages were not affected by pregnancy status and were not associated with differences in CL size. Nonetheless, the lower PPC in these cows may be reflected in their lower conception rates to 1<sup>st</sup>AI.

(1) Eagles, V.M. *et al.* (2001) *Proc. NZ Soc. Anim. Prod.* **61**: 1.