

ABSTRACT

Fertility of Cattle in the Tropics following Synchronisation with Different Protocols Associated with Timed Artificial Insemination

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Three studies were conducted which comprised of four experiments, on four dairy farms in Trinidad from September 2007 to April 2009. Animals were assigned to treatments in a completely randomised block experimental design (CRBD).

In the first study (Chapter 3) animals (N=95) were injected with GnRH on day 0, PGF_{2α} on day 7 and were randomly assigned to receive 48 hours after PGF_{2α} either GnRH (100 µg trt1: Ovsynch-G; n= 40); EB (500 µg; trt2: Ovsynch-E; n=43) and GnRH+EB (100 µg + 500 µg trt3: Ovsynch-G+E; n=12). The mean and standard error were 32.5±8.3%, 25.5±8.7%, and 38.9±15.6% percent for Ovsynch-E, Ovsynch-G and Ovsynch-G+E, respectively.

In the second study (Chapter 4) animals (N=185) were treated similarly to those in experiment 1, with CIDR inserts (n= 102) or GnRH (n=83) day 0; PGF_{2α} on day 7; EB (n=47) and GnRH (n=55) or EB (n=40) and GnRH (n= 43) on day 9, for the CIDR and GnRH-based TAI protocols, respectively. The mean and standard error pregnancy rates were 40.4±7.4%, 40.0±8.2%, 30.0±8%, and 37.2±8.2% for CIDR-EB, CIDR-GnRH, GnRH-EB and GnRH-GnRH treatments, respectively.

In the first and second experiments of the third study (Chapter 5), cows (N=40) and heifers (N=32) received a CIDR device with or without an injection of EB at CIDR insertion. All animals were given an injection of PGF_{2α} on day 7; injected with EB (cows) or GnRH (heifers) on day 9 and inseminated at 60-64 hrs after PGF_{2α}. The mean and standard error PR for heifers and cows assigned to the CIDR-GnRH and CIDR+EB-GnRH; and the CIDR+EB-EB and CIDR-EB protocols were 50±13.8% and 44.4±12.12%; and 53.3±18.8% and 49.5±10.8%, respectively.

The mean pregnancy rates were not significantly different for treatment, ovulation synchronising agent, parity and for cows and heifers assigned to any of the protocols. In conclusion, the data suggested that an injection of estradiol, which is cheaper than GnRH, can be utilised in the standard Ovsynch protocol. It was

also shown that when cows or heifers were assigned to CIDR-based protocols with either E₂ or GnRH as synchronising the agent acceptable pregnancy rates were achieved.

Keywords: Trinidad and Tobago; Fertility; Timed Artificial Insemination; CIDR insert; Gonadotrophin Releasing Hormone (GnRH); Prostaglandin; Estradiol.