

FERILISATION RATE AND PATTERNS OF EMBRYONIC DEATH IN THE SAHIWAL FRIESIAN COWS

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Introduction

In cows, reproductive performance is a measure of the ability of the animal to become pregnant and produce viable offspring and is the most important factor influencing the economics of dairy production (Coleman et al. 1985). Factors such as environment, genetic, diseases and management may influence the reproductive processes at ovulation, fertilisation, and implantation or during gestation and parturition. Fertilisation failure and embryonic mortality are suggested to be the main causes of reproductive wastage, which will increase the calving intervals. The extent of embryo mortality in single ovulation heifers and cows can be estimated from the difference between fertilisation rate and pregnancy rates (Sreenan and Diskin, 1986). Fertilisation rate can be measured as the number of normal cleaved ova or embryos as a percentage of all ova (fertilised and unfertilised) recovered. It has been widely postulated that reproductive inefficiency of cows in the tropics was attributed to failure of heat detection, failure to inseminate at the correct time, and inefficient insemination techniques. This study was carried out: (a) To determine the fertilisation rate; (b) to determine the extents and patterns of early embryonic death; and (c) to quantify the causal factors of reproductive inefficiency.

Materials and Methods

Sixty seven Sahiwal Friesian cows were randomly selected in this study. Seven days post artificial insemination (AI), 17 cows were palpated rectally for determination of corpus lu-

teum (CL). Following palpation, horn ipsilateral to the CL was flushed with 500ml of Dulbecco-PBS medium. Recovery of embryo was done by non-surgical technique using a two-way foley catheter. The medium was filtered and embryo was searched and subsequently graded in a disposable petri dish under a stereo microscope. Blood was collected twice weekly until 40 days post AI from the remaining 50 cows for determination of herd progesterone profile. The serum progesterone level was determined by a solid phase progesterone radioimmunoassay (RIA) technique using Coat-A-Count RIA progesterone kit. Fertilisation rate was estimated based on the recovery of cleaved zygote containing two or more blastomeres. Embryo viability was determined on the basis of the recovery of a morula or blastocyst with well-formed blastocoele and inner cell mass.

Results and Discussion

Results revealed that the recovery rate in this study was 59% (10/17) and 90% (9/10) fertilised ova or embryos were obtained. This indicated that with proper heat detection (94%), the fertilisation rate of recovered embryos were 90% and fertilisation failure contributed only 10%. Results also showed that a high percentage of the reproductive failure of the Sahiwal-Friesian cows is contributed by embryonic mortality (53%), followed by fertilisation failure (9%), foetal loss at day 40-60 gestation (8%), inaccurate heat detection (6%), and anovulatory oestrus (4%).

Conclusions

This study concludes that majority of the reproductive inefficiency in the Sahiwal Friesian cows in this Malaysia is due to embryonic mortality and not fertilisation failure.

References

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