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REVIEW ARTICLE

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A Review on the Role of Embryo Technology on the Reproductive Efficiency of Dairy Cows

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ABSTRACT

Animal biotechnologies related to reproduction have contributed too many improvements in agriculturally important traits in livestock. The objective of this paper was to review the role of embryo technology on the reproductive efficiency of dairy cows. Reproduction continues to be a critical component to maintain dairy cows economically viable. Embryo Transfer has been introduced to overcome reproductive problems, to increase the offspring from selected females and to reduce the generation intervals in farm animals. The progress achieved during the last few years in the assisted reproductive technologies field has been phenomenal. The successful Embryo transfer need be applied on a large scale, emerging biotechnologies such as MOET, IVF and Cloning provides powerful tool for rapidly changing the animal populations, genetically. This advanced reproduction technologies will definitely play an important role in the future perspective and visions for efficient reproductive performance in dairy cows.

Keywords: Dairy Cows, Reproduction and Embryo Transfer.

INTRODUCTION

An efficient reproduction in cattle herds is of great economic importance. During the past 30 years, embryo production has been a promising tool to enhance distribution of valuable genetics in different species of animals (Merton et al

2003). Embryo recovery offers many advantages to commercial animal breeding and also offers the chance to increase the overall rate of progress in genetic improvement to increase the productivity of a particular female and to

shorten the genetic improvement. Initially much attention was placed on super ovulation, non-surgical embryo recovery from donor animals that are rapidly succeeded (Greve et al 2005). Zavy et al (1994) indicated that embryonic mortality in cattle is the main source of economic loss for livestock producers. The proportion of oocytes developing to the blastocyst stage and quality of these embryos is important for embryo transfer. Putney et al (1988) reported that pregnancy rates varied slightly between seasons and those embryos should be collected from donor cattle during the cooler season.

The objective of the paper was

- To review role of embryo technology on the reproductive efficiency of dairy cows

Artificial insemination for super ovulation

Estrus was detected throughout the day. Cows should be artificially inseminated (AI) twice using frozen semen from genetically superior bull.

Ultrasonography

The ovaries and uterus of each cow should be examined during embryo recovery by transrectal ultrasonography.

Embryo recovery

Embryos were searched under stereomicroscope with approximately 10x magnification and transferred to holding media and then they were identified, evaluated and graded according to the morphological criteria of quality and viability determined based on the International Embryo Transfer Society Manual (Wright 1998). The cows with more than 5 transferable embryos were categorized as Rank A and those with less than 5 transferable embryos were categorized as Rank B. After flushing, recovered ova and embryos were separated into normal embryos,

degenerate embryos and infertile ova. The normal embryos were categorized into five stages: Stage 1: morula, Stage 2: compact morula, Stage 3: early blastocyst, Stage 4: blastocyst and Stage 5: expanding blastocyst.

Reproductive Efficiency after flushing

Following embryo recovery, cows that exhibited estrus were artificially inseminated according to a.m. and p.m. rule. The first AI conception rate, interval from embryo recovery to first estrus and conception were calculated. Days open was measured as number of days from calving to conception.

CONCLUSION

The use of reproductive technologies in lactating dairy cows is extremely well disseminated and has resulted in significant improvements in milk yield in the past 50 years. Recent developments in the understanding of reproductive physiology of dairy cows have resulted in ovulation synchronization protocols that optimize fertility after AI or ET.

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