A STUDY OF THE RESULTS OF AN EMBRYO TRANSFER PROGRAMME CONDUCTED DURING TWO SEASONAL PERIODS USING FIVE IMPORTED BREEDS OF SHEEP

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ABSTRACT

The overall objective of this trial was to compare embryo transfer results from two seasonal periods (out-of-season vs in-season) in order to determine the effect of the season on the different parameters of reproductive performance such as; the incidence of oestrus, ovarian response to exogenous gonadotrophins, fertilisation rates and the number of lambs born per donor ewe programmed and flushed. Five breeds of imported sheep (Danish Texel {DT}, Finnish Texel {FT}, Gotland Pelt {GOT}, Oxford Down {OXD}, and the White Headed Marsh {WHM}) consisting of two age groups (14-16 month-old and 26-28 month-old) in a commercial embryo transfer programme (LambXL, Manawatu) were used.

A total of 553 ewes out-of-season and 234 ewes in-season were studied. Two data sets were selected from these seasonal groups;

(1) The random data set.

(2) The repeat data set, which consisted of the same donor ewes in each seasonal group.

Oestrous synchronisation was attempted with a double CIDR-G regime and a super-ovulatory treatment consisting of an initial PMSG injection (200-300IU) and a series of six descending doses of FSH-P (total dose 24-36mg). The ewes were inseminated *intra-uterine* with fresh diluted semen from a ram of the same breed on the basis of oestrous detection. Embryo recovery was attempted on day 6.5-7 after oestrous detection using a laparoscope-aided uterine flush technique. Two embryos were transferred to each synchronised recipient ewe within two hours of recovery.

The incidence of oestrus for the out-of-season and in-season groups was 93.3% and 100%, for the random data set compared to 93.9% and 100% for the repeat data set, respectively. The ovulatory response to the super-ovulatory treatments

was significantly affected by the interaction of the breed and age of the donor in the random data set, but the repeat data set ovulation rate was not significantly affected by any of the variables recorded in this study. This interaction was attributable to the GOT breed having a higher ovulation rate in the older age group relative to the younger age group which was the reverse trend exhibited by the remaining breeds. However, there was an overall tendency for the out-of-season ovulation rate to be higher than that in-season, 7.64CL vs 6.60CL for the random data set and a difference (out-of-season - in-season) of +2.86CL was recorded for the repeat data set. The embryo recovery rates were 53.4% out-of-season and 53.5% in-season for the random data set and a difference of -0.7 percentage points was recorded for the repeat data set. The fertilisation rate was not significantly affected by the season with 75.5% out-of-season and 65.7% in-season from the random data set and a difference of -4.5 percentage points was recorded for the repeat data set. The yield of good quality transferable embryos was significantly affected by the season with 78.2% out-of-season and 83.7% in-season from the random data set but the repeat data set was not significantly affected by the season with a difference of -11.0 percentage points. The embryo survival rate to birth was not significantly different for the two seasonal periods with 66.3% out-of-season and 52.4% in-season of the embryos surviving to birth for the random data set and a difference of +9.7 percentage points was recorded for the repeat data set. This resulted in an average of 1.66 lambs born per donor ewe programmed out-of-season, which was not significantly different from 1.00 lambs born in-season for the random data set compared to a difference of +0.11 lambs born per donor ewe programmed in the repeat data set.

This work clearly demonstrates the inter-dependence of several factors affecting the number of lambs born per donor ewe in an embryo transfer programme. However it is concluded that out-of-season embryo transfer is as effective as that conducted in-season, under these embryo transfer conditions.

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