



Effects of choice of month of treatment and parity order on bovine superovulation traits

Q. Deng^{1,2*}, Y. Gao^{1*}, C.H. Li^{1,3*}, X.F. Yu¹, J.S. Ren¹, S.J. Li⁴, C.Z. Chen¹,
B. Yuan¹, Y. Ding¹, H. Jiang¹ and J.B. Zhang^{1,5}

¹College of Animal Sciences, Jilin University, Changchun, China

²Guangdong and Shenzhen Key Laboratory of Male Reproductive Medicine and Genetics, Peking University Shenzhen Hospital, Shenzhen, China

³College of Life Science, Baicheng Normal University, Baicheng, China

⁴Hebei Tianhe Beef Cattle Farming Ltd., Shijiazhuang, China

⁵State & Local Joint Engineering Laboratory for Animal Models of Human Diseases, Changchun, China

*These authors contributed equally to this study.

Corresponding authors: J.B. Zhang / H. Jiang

E-mail: zhangjiabao515@163.com / bear_jh@sohu.com

Genet. Mol. Res. 14 (4): 15062-15072 (2015)

Received July 10, 2015

Accepted October 7, 2015

Published November 24, 2015

DOI <http://dx.doi.org/10.4238/2015.November.24.14>

ABSTRACT. In this study, the performance of 300 Changbaishan Black cattle treated for superovulation from June to September was evaluated to determine the optimal conditions and herds for bovine embryo production. Data analysis revealed that cattle treated in July and August had higher numbers of available embryos (NAE), M1 embryos (NM1), and total embryos (NTE), as well as a higher percentage of M1 embryos (PM1). The temperature and precipitation observed during July and August were greater than those seen in the other two months; strong correlations were observed between these traits and the choice of month of treatment. In addition, multiparous cattle showed a better performance, higher NTE, NAE, NM1, and PM1 values, higher percentages of available embryos, and a lower percentage of degenerated embryos. The co-efficient correlation analysis showed that the month chosen for the treatment did not affect the

superovulation traits of nulliparous cattle; however, the choice of the month affected multiparous cattle. Multiparous and nulliparous cattle exhibited many significant differences when treated in July and in August. In addition, the superovulatory traits of multiparous cattle, and not the nulliparous cattle, were strongly correlated to the choice of month of treatment. The results suggested that superovulation is more effective during a period with appropriate environmental temperature and humidity, and that multiparous cattle are more suitable for morula production.

Key words: Superovulation traits; Month of treatment; Parity order; Cattle