

Early Embryonic Death in Mares Grazing Endophyte Infected Fescue

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Tall fescue has been implicated as a cause of abnormal cyclicity and early embryonic death in the mare. The primary goal of this study was to determine the safety of grazing mares during early gestation on endophyte-free (E-), toxic (E+) and non-toxic (NE+; MaxQTM) endophyte-infected fescue pastures. To this end, 24 mares (light breeds; 4-17 years) were assigned to one of three treatment pastures, E- (n=8), E+ (n=8) and NE+ (n=8), from February 1 to June 15, 2002. Endometrial biopsies were performed on all mares and scores ranging from I-III were evenly distributed between the three groups. Mares were teased daily from February 1 to May 15 and examined by rectal palpation and ultrasonography when in estrus. Mares were bred on natural cycles by live cover or artificial insemination. Pregnancy examination was performed at 14, 16, 21, 35, 45, 60, 100 and 120 days post ovulation. The table below illustrates differences between treatment groups relative to vernal transition, cyclic activity and pregnancy outcome.

Observations	E+ Fescue (n = 8)	NE+ Fescue (n = 8)	E- Fescue (n = 8)
Average date of first ovulation	3/31/02	3/21/02	4/2/02
Average length of estrus (days)	9.8	7.0	8.2
Average number of days exhibiting estrus prior to first ovulation	24.5	13.6	20.5
Average number of ovulations per pregnancy	2.40	1.43	1.63
Average follicle size at ovulation	4.43	4.39	4.38
Number of pregnancies (at Day 120)	5	7	8

All E- mares became pregnant on first or second exposure and maintained pregnancies beyond Day 120 of gestation. Six NE+ mares were confirmed pregnant on their first breeding, one mare became pregnant following her second exposure, while the remaining mare was bred once but did not conceive. All seven NE+ mares maintained pregnancies beyond Day 120 of gestation. Of the eight mares on E+ fescue, four became pregnant on their first and two mares became pregnant on their second exposure, respectively. Two mares cycled one time and failed to conceive on a single exposure. Of the six E+ mares confirmed pregnant, two lost pregnancies between Day 16 and 21 post ovulation, were bred back and pregnancies were reestablished, while the third mare lost her pregnancy between Day 21 and 35 and failed to return to estrus. Thus, only five E+ mares maintained their pregnancies beyond Day 120, and three cases of early embryonic death were observed in this group. In conclusion, mares exposed to E+ (toxic fescue) resulted in early embryonic death and was associated with decreased fertility, while no detrimental effects were observed in mares exposed to NE+ (non-toxic fescue; MaxQTM).

Keywords: endophyte-infected fescue, early embryonic death