

REPRODUCTIVE EFFICIENCY OF THOROUGHBRED MARES ON DIFFERENT FORAGE REGIMENS WITH SUPPLEMENTATION OF RETINYL PALMITATE AND BETA-CAROTENE

KM Greiwe-Crandell¹, DS Kronfeld², WB Ley², JM Bowen², D Sklan³

¹*Kentucky Equine Research, Versailles, KY*

²*Virginia Polytechnic Institute and State University, Blacksburg, VA*

³*Hebrew University, Rehovot, Israel*

Reproductive efficiency in the mare is lowest among domestic livestock and may be partly dependent on vitamin A status.

Forty-five Thoroughbred mares were depleted of vitamin A for 8 months and then repleted for 20 months. Three groups of 15 mares were maintained on one of 3 diets: hay and vitamin A-free concentrate (HC); pasture, hay and vitamin A free concentrate (PHC); or pasture and hay only (PH). During the repletion phase, each forage group was divided into 3 supplement subgroups (5 mares each) that were given retinyl palmitate, β -carotene, or a placebo. Foals were weighed at birth and monthly thereafter. Reproductive rates were calculated for the years in which depletion and repletion were developing. Retained placenta and contracted tendons were observed clinically.

During depletion, pregnancy rate (%), foaling rate (%) and pregnancy loss (%) were not significantly different between diet groups, probably reflecting the gradual depletion of vitamin A. However, increased frequencies of retained placenta in mares and contracted tendons in foals were observed at the end of the depletion phase. Foals from depleted mares in the HC group had lower birth weights and slower growth rates than foals from depleted mares in the PH and PHC groups.

During the repletion phase, pregnancy loss was higher in the HC group than in the PH or PHC groups. Supplementation of retinyl palmitate resulted in higher pregnancy rate, foaling rate and pregnancy loss than β -carotene. Lack of vitamin A supplementation during pregnancy may increase the risks of retained placenta and congenital contracted tendons.

Maintaining mares long-term on a drylot may influence pregnancy loss and body weights of their foals. Mares appear to benefit from supplementation with vitamin A but not water dispersible β -carotene.