

Supatee Kitkha 2011: Effect of Energy Balance During Post-Service Period on Subsequent Reproductive Performance in Sows. Master of Science (Veterinary Clinical Studies), Major Field: Veterinary Clinical Studies, Interdisciplinary Graduate Program. Thesis Advisor: Associate Professor Preeyaphan Udomprasert, Ph.D. 88 pages.

The effects of negative energy balance during post-service period on blood biochemical and reproductive parameters were investigated, utilizing 120 gestating sows. Blood samples were collected at 84 days of gestation and 1 - 2 days before weaning. After weaning, sows were divided into 2 groups according to the loss of body condition score during lactation (BCS loss). Group 1 were those having BCS loss  $< 1$  (gr. 1, n = 50) and group 2 were those having BCS loss  $\geq 1$  (gr. 2, n = 20). After mating, each group was divided into 2 subgroups receiving 2.0 kg/day (gr. 1L, n = 26; gr. 2L, n = 12) and 2.7 kg/day (gr. 1H, n = 24; gr. 2H, n = 8) of daily feed intakes during the first 35 days of post-service period. Blood chemistry was performed for the concentrations of glucose, cholesterol, triglyceride, nonesterified fatty acids, blood urea nitrogen and insulin. Subsequent farrowing event of each sow was recorded. Around weaning in both gr. 1 and gr. 2 sows, the concentrations of nonesterified fatty acids, cholesterol and glucose increased ( $p < 0.05$ ) while triglyceride decreased ( $p < 0.05$ ) as compared to those at 84 days of gestation. The concentrations of insulin and blood urea nitrogen increased ( $p < 0.05$ ) for sows in gr. 1 but not in gr. 2 indicating that sows in gr. 2 may suffer from negative energy balance. A better feed intake during lactation may explain the rise of blood urea nitrogen of sows in gr. 1. BCS loss and feed levels during the first 35 days of post-service period had no influence on subsequent farrowing rate. Given that the average litter size of sows in gr. 1L an expected standard, the average litter size of sows in gr. 2L was significantly lower than the standard ( $p < 0.05$ ) while that of sows in gr. 2H was similar. The results of this study suggest that blood biochemical parameters could be utilized to indicate the status of negative energy balance in sows. The negative effect of excessive body weight loss during lactation on subsequent litter size may be counteracted by manipulating feed intake during the first 35 days of post-service period.

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Thesis Advisor's signature