

## PDF - INFLUENCE OF NUTRITION AND BODY CONDITION AT FIRST MATING ON THE REPRODUCTIVE PERFORMANCE OF GILTS IN THE HUMID TROPICS - researchcub.info ABSTRACT

Two experiments were conducted at the piggery unit of the Department of Animal Science Farm, University of Nigeria, Nsukka, from July 2007 to March 2009, to determine the effect of nutrition and body condition at first mating on the reproductive performance of gilts. The first experiment evaluated the effects of feeding different combinations of protein and energy diets on age at onset of first observed oestrus, growth rate, backfat reserve and body condition score of the gilts from weaning to puberty. Fifty-four (54), eight week old weaner gilts were used for this trial.

They were randomly assigned to nine experimental treatment diets having different combinations of protein (16%, 18% and 20% crude protein) and energy (2800 kcal/kg, 3000 kcal/kg and 3200 kcal/kg) with six (6) gilts per treatment. The gilts in each treatment were housed in pairs making up three (3) replicates per treatment. Estrus detection was carried out twice daily at 0800hr and 1600hrs in the presence of mature boar beginning from the age of five months. Blood samples were collected from two pigs per treatment by humane puncture of the ear vein for haematological and biochemical analysis. In addition, two (2) gilts from each treatment were randomly selected, slaughtered and their reproductive organs excised and examined. Linear body measurements (body length, chest girth, height at withers and flank-to-flank) were also recorded. Data collected were analyzed according to factorial arrangement of treatments in a completely randomized design (CRD) whereas stepwise multiple linear regression analysis was used to generate prediction equations between body weight and linear body measurements. In experiment 2, eighteen (18) gilts with different body conditions and backfat thickness were selected and assigned to experimental treatments with six gilts per treatment. All the gilts were weighed and mated twice at the second observed estrus.

Pregnancy was confirmed by the gilt not returning to heat after 21 days of observation for signs of heat after breeding. Gilts were fed 2.1 kg of an 18% CP diet daily throughout gestation. Their feed was increased to 3.0 kg of feed daily during lactation until weaning. Gilts were monitored and their reproductive indices recorded throughout gestation and lactation. The pre-weaning performances of their piglets were also recorded until weaning at day 35. Data collected were subjected to one way analysis of variance (ANOVA) for a completely randomized design (CRD). Results of the first experiment indicated that diet containing 3000 kcal/kg or 3200 kcal/kg metabolizable energy and 18% crude protein was the optimum required for gilts to grow faster and reach the minimum threshold of age, body weight, backfat reserve and body condition necessary for early attainment of first oestrus and future reproductive processes. On the other hand, the result also showed that when pork of a moderate fatness (lean pork) is in demand, gilts should be fed diets having 2800 kcal/kg of metabolisable energy and either 16 or 18% crude protein. High coefficient of determination ( $R^2$ ) values of 0.96, 0.95, 0.93 and 0.45, respectively, were recorded between body (Y) weight and body length (BL), heart girth (HG), flank-to-flank (FF) and height-at-withers (HW) measurements. Prediction equations for body weight of the

gilts were,  $Y = 0.83 \times BL - 33.53$ ,  $Y = 1.07 \times HG - 37.86$ ,  $Y = 1.22 \times FF - 37.14$  and  $Y = 0.86 \times HW - 14.83$ . Results of the multiple linear regression showed that with effective management, farmers, researchers and prospective pig buyers can use the prediction equations for body length, heart girth and flank-to-flank measurements to easily estimate the body weight of their pigs especially, during selection, drug administration and/or determination of market weight and prices. In the second experiment, results showed that body condition of gilts at mating affected their gestation weight gain, lactation body weight losses, litter size at birth and weaning, growth rate of their piglets, pre-weaning mortality and weaning-to-estrus intervals, etc in favour of gilts with normal and fat body conditions. It was concluded that in any commercial pig industry where the management is interested in increasing sow lifetime productivity, replacement gilts should be scored for body condition

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