Chunyanuth Hoonwan 2010: Association among Growth Performance, Body Size, and Plasma Lipoprotein of Commercial Swine in Different Breed Groups. Master of Science (Agriculture), Major Field: Animal Science, Department of Animal Science. Thesis Advisor: Assistant Professor Skorn Koonawootrittriron, Ph.D. 66 pages.

One hundred and ninety six growing pigs with similar age (84 days) and weight including Large White (Y), Pietrain (P), crossbred Large White × Pietrain (YP), crossbred Landrace × Pietrain (LP), and crossbred Y × LP (YLP) were used to study factors affecting growth and body size. Pigs were arranged into 10 groups according to breed and sexes (female and castrated male). Pigs in each group were kept in $4.5 × 7.5$ m^2 pen in opened house system. Similar feed and management were provided. All pigs were measured for body weight (BW), body length (BL), shoulder width (SW), shoulder height (SH), hip width (HW), hip height (HH), backfat (BF) and lean percentage (LN). Average daily gain (ADG) of individual animals was calculated from body weights changed in the study period (84 to 178 days of age). The results revealed that breed group was important for body sizes ($P < 0.01$). Sex had influenced on SH, HH and BL ($P < 0.05$). Breed group and sex interaction had effect on body size ($P < 0.01$), excepted for SW. Breed group and age interaction had influence on SH, HH, BL and BW ($P < 0.05$). Change of BF positively associated with SW, HW, SH, HH, BL and BW, but negatively associated with LN ($P < 0.01$). Results of the study indicated that BF should be considered in the prediction model for growth and body size. Heterosis level for all traits in crossbred YP was higher than crossbred YLP. These results implied that using P as sow line and mate to Y boar would produce crossbred YP which had higher ADG and larger body size compared to crossbred YLP which were produced from crossbred LP sows. Blood samples were drawn from the 3 fastest and the 3 slowest growing pigs within each factorial group at each age. Plasma was analyzed for concentration of cholesterol (CHOL), high density lipoprotein (HDL), low density lipoprotein (LDL), and triglyceride (TRIG) by an enzymatic-colorimetric method. The statistical model considered breed group, sex, age, breed group × age, sex × age and residual. Breed group had influence on HDL, LDL and CHOL ($P < 0.01$), but not TRIG. Sex and breed group × age had influence only on HDL ($P < 0.05$). Age and sex × age had influence only on TRIG ($P < 0.05$). Phenotypic correlations among plasma concentration of CHOL, HDL, LDL and TRIG were positive. Phenotypic correlations existed between CHOL and HDL (0.63; $P < 0.01$), CHOL and LDL (0.81; $P < 0.01$), and between HDL and LDL was 0.34 ($P < 0.01$).

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