

Effects of relaxing maternal growth restriction on offspring performance

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The current study investigated the effect of accelerated maternal growth on offspring growth performance and carcass traits. We hypothesized that advancing broiler breeder pubertal phase growth and relaxing the amount of growth restriction during pre-pubertal phase would increase offspring BW and decrease fat pad weight. In a randomized controlled trial, a total of 40 female broiler breeders were randomly assigned to 10 growth trajectories that were implemented using a precision feeding system. The maternal growth curves were designed with 2 levels of maternal BW (MW) in pre-pubertal phase, breeder-recommended BW target (CON) or 10% higher (HIGH). The maternal inflection point (MI) in pubertal phase was advanced by 0, 5, 10, 15, or 20% in both CON and HIGH treatments. Settable eggs were collected from hens at 35 and 42 wk of age and incubated. On average, 12 chicks per maternal treatment from each maternal age were raised to 35 d of age and fed using a precision feeding system. Analysis of covariance was conducted on all dependent variables using the MIXED procedure of SAS, with maternal MW and broiler sex as sources of variation and MI as covariate. For every week that the maternal pubertal growth inflection was advanced the hatch and processing BW were increased by 0.36 and 53 g, respectively. Fat pad weight was not affected by the maternal growth. Consistent with hypotheses, increased maternal pre-pubertal target BW and accelerating maternal pubertal growth rate increased progeny processing BW in males and tended to increase the hatch BW.

Key words: broiler breeder, carcass, feed restriction, maternal effect, multi-phasic growth