

Genotype-Environment Interaction in Relation to Heat Tolerance in Chickens 2. Variation in Juvenile Growth of Warm Regions' Oriented Breeds

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Abstract :

This study aimed to assess the variation in growth patterns of the warm region breeds in response to the intermittent prolonged heat stress conditions. Three warm region breeds (Fayoumi, Sinai Bedouin and White Baladi) and a commercial broiler strain were brooded for 8 wks in two thermal (heating and nonheating) treatments. The target ambient temperature in the heating treatment was 35°C from hatch to 4 wks of age (early prolonged heating period), declined to 24-25°C during the 5th and 6th wks (heat termination period), then raised to 35°C during the 7th and 8th weeks (re-heating period). The optimum brooding temperatures were provided in the non-heating treatment. The effect of heat on growth was breed-dependent. All heated chicks practiced a compensatory growth during the heat termination period. Early prolonged heat exposure did not provide broiler and Sinai Bedouin chicks with a heat reference to challenge the late reheating. Reference to heat tolerance was rather limited to the age, body size and duration of heat exposure. Fayoumi and White Baladi chicks were not mostly influenced by heat all over the experimental period. The sex differences in Growth Rate (GR) in heated and non-heated birds were similar, thus the variation in GR between both sexes in heating conditions were due to normal sex variation. No significant differences were found between the variance estimates in GR of heated and non-heated broiler chicks, evincing lack of the genetic background for heat tolerance. The variance estimates in GR of heated Sinai Bedouin and Fayoumi males and females were significantly larger than those of the non-heated correspondents, evincing the existence of a genetic background for heat tolerance. The results indicate the feasibility of exploiting the genetic potential of the warm regions' oriented breeds in appropriate breeding programs.

Key Word :

Growth, heat tolerance, warm regions' oriented breeds

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