Selection for improving long part-record egg production in Dokki-4 chickens.

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ABSTRACT

Three generations of a selection experiment were performed on 4043 chicks of three lines of Dokki-4 chickens which established for selection for high egg number ($SLEN_{52}$), heavier egg weight ($SLEW_{52}$) until 52 weeks of age and random bred control (CL) line. Results of the present study were summarized as follows: Generation and line significantly affected two selection criteria (EN_{52} and EW_{52}) and studied productive traits (egg mass of the first ten eggs: EM_{10},egg number: EN_{12}, egg weight: EW_{12}, egg mass: EM_{12} during first 12 weeks of lay and clutch size during first 52 weeks of age: CS_{52}).The estimates of h^2 for EM_{10}, EN_{12}, EM_{12} and CS_{52} were moderate. EN_{52} has high positively genetic correlations (rg's) with EN_{12}, $EM_{12}$and CS_{52}. Negative rg's and phenotypic correlations (rp's) were found between EW_{52} and each of EN_{12}, EM_{12} and CS_{52} ranging from low to moderate. However, EW_{52} had positively moderate to high rg's and rp's with both EM_{10} and EW_{12}.The realized heritability (Rh^2) for $EN_{52}$was higher in magnitude than its direct h^2 ($0.43 > 0.25$) however, the Rh^2 for EW_{52} was lower than its corresponding direct h^2 ($0.13 < 0.23$). The realized and expected selection responses were +15.47 and +9.11 eggs over two generations of selection for improving EN_{52} in $SLEN_{52}$ line and the realized and expected selection response for increasing EW_{52}were +0.53 and +0.92g over two generations of selection in $SLEW_{52}$ line. Selection for increasing EN_{52} and EW_{52} improved each of EM, CS_{52}, fertility and hatchability%. The realized genetic gains either as direct or correlated responses in most studied productive traits tend to be highly improved in the $SLEN_{52}$ than that obtained for the $SLEW_{52}$ line. Therefore, selection program should continue to improve both EN_{52} and EW_{52} across more generations.

key words: Selection , long part-record, egg production , Dokki-4 and chickens**.**