

The genetic performance of fertile eggs in Pekin duck after eleven generations of selection for the duration of fertility ⁽¹⁾

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Abstract

This study was to analysis the genetic improvement trend of fertile eggs of the Pekin ducks after 11 generations of selection for the duration of fertility and provide information for the subsequent genetic practice. At 29, 32 and 35 weeks of age, the Pekin ducks were single artificially inseminated with 0.05 mL pooled semen from 10 to 15 Muscovy drakes. After insemination, eggs were collected from d2 to 15. They were stored for 7 days each in the number to ensure egg set, and eggs were candled from the 7th day of incubation to determine the number of fertile eggs (F). The statistics showed the average estimated breeding value (EBV) of fertile eggs of the G11 was 2.57 ± 0.34 , which was 50.1% of the phenotype (5.13 ± 1.78). If compared with G10, the selection response was 0.44 eggs. The correlation coefficient between the phenotypic value and the EBV of F of G11 was 0.52 ($P < 0.001$). When F were 5 eggs, except for F6 to 7 eggs, the larger number of fertilized eggs, the higher F breeding value ($P < 0.05$). The F value of the duration of fertility had the ratio of complete persistence (RCP) to intermittent persistence (RIP), 44.1:55.9%. The average ratio of breakpoints in RIP of laying eggs, dead in shell and infertile eggs was 14:31:55. The average F breeding value of G10 was 2.62 ± 0.36 eggs, which was +0.49 eggs compared with the G10 population average. The difference gap 89.8% met the genetic improvement of G10 to G11. The averaged inbreeding coefficient of the G11 was $10.7 \pm 2.7\%$, and inbreeding coefficient increased from G10 to G11 with 9.3% to 10.7% (15.2% raised), but it was 5.6% lower than the previous generation. In summary, the genetic improvement of G11 was still steadily increasing. The F phenotype value was slightly reduced by the environmental influence. However, the inbreeding coefficient of the selection population was still stably increasing. The risk of inbreeding might take into account in the future.

Key words: Pekin duck, Fertile eggs, Genetic performance.

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