

GENETIC EVALUATION OF LITTER TRAITS OF A NEW SYNTHETIC MATERNAL LINE OF RABBITS UNDER SELECTION PROGRAM IN EGYPT

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An experiment to evaluate a new synthetic maternal line of rabbits (APRI), recently formed in Egypt, compared to V line for litter traits has been carried out. Data on 1400 and 1906 litters were evaluated from APRI and V lines, respectively. Selection criterion was litter weaning weight in both lines. The selection method was based on BLUP estimations under multi-trait repeatability animal model. V line was significantly superior to APRI line in most litter weight and litter size traits in earlier ages, while the reverse was generally observed in later ages as well as all litter survival traits. Environmental trends showed more stability of APRI line against environmental changes. Heritability estimates were generally low and comparable in both lines with ranges of 0.075 to 0.108 for litter weight, 0.034 to 0.117 for litter size and 0.005 to 0.094 for litter survival. Low to moderate estimates of repeatability were observed for all studied traits. Ranges of values were 0.138 to 0.309 for litter weight, 0.088 to 0.342 for litter size and 0.006 to 0.217 for litter survival traits. Estimates of genetic correlations ranged from 0.738 to 0.925 for litter weight, 0.501 to 0.980 for litter size and -0.019 to 0.893 for litter survival traits. Genetic correlations among litter weaning weight and litter size traits were relatively high (> 0.76). Corresponding litter survival traits ranged from 0.044 to 0.733. Non-additive plus permanent environmental effects correlations were mostly lower than genetic correlations and ranged from 0.471 to 0.905 for litter weight, 0.384 to 0.953 for litter size and -0.318 to 0.811 for litter survival traits. Correlations of non-additive plus permanent environmental effects ranged from 0.044 to 0.651 among litter weaning weight and litter size traits and from -0.248 to 0.870 among litter weaning weight and litter survival traits. The direct selection response for litter weaning weight was significant and valued 102.650 and 97.368 gram (34.217 and 32.456 gram per generation) in APRI and V lines, respectively. Correlated response was found to be significant ($P < 0.05$) for other litter weight and litter size traits, while it was mostly negative and insignificant for litter survival traits in both lines. These results indicate that the current selection program was effective to achieve genetic improvement in litter traits.