Faculty of Agriculture
Department of Poultry Production

# Title of Thesis

## Genetic study in a maternal line of rabbits under Egyptian environmental conditions

## A Thesis

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***Submitted by***

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# ABSTRACT

The aim of the present study is to evaluate the productive and reproductive performance of a synthetic maternal line of rabbits (V line), investigate some of the fixed factors associated with productivity and reproductivity under smi-intensive system of production, genetically milk production of a synthetic maternal line of rabbits (V Line) and predict of semen quality of bucks at slaughter age (63 days of age). This study included 4 productive years of rabbit flocks, including two years (2013-2014 and 2014-2015) of farm records and two years of data recording during the years 2018-2019 and 2019-2020.

A total of 77, 70 and 70 does used to estimate milk yield from kindling up to weaning at $7^{th}$, $14^{th}$ and $21^{st}$ days after parturition, respectively for more than 4 parities. Twenty males of V-line rabbits at 63 days of age were selected and collected blood samples to determined serum follicle-stimulating (FSH), luteinizing (LH) and testosterone hormones at the ages of 63 days and 5 and 6 months. Linear fixed and mixed models were used for analyzing data. A summary of results indicated that the mean growth traits in the V Line were: 521.0 g for weaning weight, 1683.0 g for weight at 9 weeks of age, and 34.39 g / day for the daily growth rate during the fattening period. The year and month of birth had a significant effect on the body weight and the daily growth rate of the "V Line" rabbit. Body weight at weaning of rabbits was significantly higher for October and November months and lower for April till September than for the other months of birth.

Rabbit reproductivity is greatly influenced by the potential factors. Many factors affect the reproductive performance such as week of mating and number born alive in pervious kindling on litter traits (litter size at birth, LSB; number born alive, NBA and litter size at weaning, LSW), but kindling conception interval and number born in the next parity affected on LSW only. Results found that the dam of doe within sire component of variance was higher than the sire of doe component of variance for most litter traits. Milk yield were 113.06, 172.87 and 211.76 g at $7^{th}$, $14^{th}$ and $21^{st}$ days of age after parturition, respectively. It is noticeable that the effect of the month did not have a significant effect on milk yield at $7^{th}$ and $21^{th}$ days of lactation period, while it was affected significantly at $14^{th}$ days of lactation period, and the month of April was the highest rate of milk yield in the months of the productive year. The effect of parity number more than $4^{th}$ on milk yield during $14^{th}$ and $21^{th}$ days was increased significantly with the advancement and decreased for other parities. The correlations among serum FSH, LH and testosterone hormonal levels and rabbit's sperm concentration and advance sperm motility were significantly affected at 63 days. But, the correlation between serum FSH and LH levels were significantly affected at 63 days on semen volume and total sperm out percentages. It was observed that the semen quality was associated with an increase in testosterone concentrations at 5 and 6 months. In summary, it can be observed that the evaluation of the V-line rabbit as a maternal line with high productive and reproductive performance and that high semen quality for males V-line rabbits can be predicted by high level of hormone FSH concentration at 63 days of age.

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