

**Synthesizing maternal and paternal lines of rabbits suitable for Saudi conditions through crossbreeding program involving Saudi Gabali and Spanish V-line rabbits. 2-Milk yield and components traits.**

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**ABSTRACT:**

Four-year crossbreeding project involving Spanish maternal line called V-line (V) and Saudi Gabali (G) rabbits was carried out to produce six genetic groups of V, G,  $\frac{1}{2}V\frac{1}{2}G$ ,  $\frac{1}{2}G\frac{1}{2}V$ ,  $\frac{3}{4}V\frac{1}{4}G$  and  $\frac{3}{4}G\frac{1}{4}V$ . Interse matings for genetic groups of  $\frac{1}{2}V\frac{1}{2}G$ ,  $\frac{1}{2}G\frac{1}{2}V$ ,  $\frac{3}{4}V\frac{1}{4}G$  and  $\frac{3}{4}G\frac{1}{4}V$  were also practiced. Milk yields (MY) at intervals of 0-7 days (MY7), 7-21 days (MY21), 21-28 days (MY28), and 0-28 days (TMY) and milk components (MC) at 14 days of lactation (fat, protein, lactose, ash, and total solids), and milk conversion ratio (kg of litter gain per kg of milk suckled, MCR) were evaluated for 2540 litters of 854 does fathered by 142 sires and mothered by 351 dams. A repeatability animal model was used to estimate linear contrasts and expectations of solutions for the effect of doe genetic groups and to derive the estimate of direct (GI) and maternal (GM) additive effects, direct heterosis (HI), maternal heterosis (HM) and direct recombination effect (RI) for different traits under the study. Heritabilities for MY traits and MCR were moderate and ranging from 0.18 to 0.27, while they were low or moderate and ranging from 0.09 to 0.28 for MC. The positive estimates of GI for MY (5.8-12.6%) and MC (4.0-17.7%) and the negative estimate for MCR (-18.3%) were significantly high and in favour of V-line does. GM were in favour of V-line dams; being 222 g, 0.67%, 0.63%, and -0.08 for MY21, total solids in milk, fat in milk, and MCR, respectively. All estimates of HI for MY and MC were positive and most of them were significant ranging from 9.7 to 22.7 % for MY traits ( $P < 0.05$ -0.001) and 3.2 to 15.8% for MC traits ( $P < 0.05$ -0.01). Similar to the trend of HI, the estimates of HM for MY and MC were positively moderate and ranging from 7.4 to 15.2 % for MY traits and 1.9 to 8.3% for MC. The moderate and negative estimate of heterosis for MCR (-19.2% for HI and -9.6% for HM) was also favourable. The ranges in percentages of reduction in direct heterosis were negligible and ranging from 2.2 to 4.4% for MY traits and MCR and -3.4 to -9.6% for MC.

**Keywords:** Crossbreeding, milk yield and components, milk conversion ratio, Animal model.