Breed, Heterotic, Maternal and Direct Additive Effects on Pre and Post-Weaning Body Weight and Body Dimensions in New Zealand and Chinchilla Strains of Rabbit

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Abstract.

Data on growth and linear body measurements of rabbits which consisted of two pure strains (New Zealand White, NZW and Chinchilla, CH) as well as their reciprocal crosses were compared. The aim of the experiment was to evaluate the crossbreeding effects (i.e direct, maternal and heterotic effects) for growth and linear body dimensions as well as body weight (BW) at weeks 3,5 and 7 and daily gain (DG) at 0-21, 21-35 and 35-49 days respectively. Results revealed that there were significant ($p<0.05$) differences among the genotypes for BW at week 3, 5, 7 and DG. Linear contrast showed that breed differences ($p<0.01$) exist among the strains in favour of NZW. Direct heterotic effect was positively significant ($p<0.01$) only for NTS with a percentage of 5.16. Direct additive effect was significant ($p<0.01$) and positive only for LE with a percentage of 10.26 while maternal additive effect was observed to be insignificant ($p>0.01$) for all the traits except IBW with a percentage of 21.66. Breed also showed significance ($p<0.01$) for all body weight changes except for DG_{35-49}. Direct additive effects was generally positive in favour of NZW but showed significant ($p<0.05$) difference only for BW_5 (11.63 %) and DG_{0-21} (20.72 %). Maternal additive effect was significant ($p<0.01$) for BW_5 (8.95 %) and BW_7 (20.36 %) while negative heterotic effect ($p<0.05$) was observed for BW_5 (-23.26 %) and BW_7 (-18.01 %) respectively. It was concluded that breed differences exist between the two strains studied and this difference is mostly in favour of NZW strain.

Key words: Breed, direct heterotic, maternal additive, direct additive effects, NZW, CH.

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