

HETEROTIC COMPONENTS IN EWE REPRODUCTIVE PERFORMANCE OF MERINO CROSSES WITH SUB-TROPICAL EGYPTIAN SHEEP

Componentes heteróticos en los rendimientos reproductores de la oveja en cruces de merino con las razas egipcias subtropicales

Composants hétérotiques dans les performances reproductives de la brebis en croisements de Merinos × races égyptiennes sub-tropicales

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A crossbreeding experiment was carried out by Ministry of Agriculture using imported German Mutton Merino (M) on both Ossimi (O) and Barki (B) sub-tropical, fat-tailed sheep. The plan was to grade the local sheep up to 3/4 M-1/4 local, and to interbreed these cross in an attempt to produce medium wool types of sheep. Number of ewe records available for the analysis were 6959 out of 2168 ewes from the 3 purebreds, their first cross and backcrosses to Merino.

Definition of genetic components involved in performance of different crossbreeding groups, provides the ability to relate performance of successive generations of pure- and cross-breds. It also permit the prediction of the extent they are going to influence performance of the following generations. DICKERSON (1969) presented full models of genetic components involved in different crossbred generations. The present work emphasized on the main heterotic components, viz. non-maternal or individual heterosis (H_I) and maternal heterosis (H_M).

Because of the lack of F_I reciprocal ewes, H_I was estimated as deviation of the available F_I and mid-purebred parents.. Therefore the estimates include any differences in maternal influence of Merino and local dams on reproductivity of crossbred ewes. On the assumption that these differences are not expected to be high, the resulted figures are considered as valid estimates for non maternal heterosis. Maternal heterosis was estimated, according to ABOUL-NAGA and GALAL (1973), as the differences between the backcrosses and averages of Merino and halfbred ewes in both crosses.

Estimates in Table 1, show high values for the non-maternal heterosis and it looks of large contribution to the performance of halfbred ewes. While estimates for H_M are fairly small and are not likely to be of real contribution to the

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TABLE 1

ESTIMATES OF INDIVIDUAL (H_I) AND MATERNAL (H_M) HETEROSIS IN MERINO CROSSES WITH OSSIMI AND BARKI FOR DIFFERENT REPRODUCTIVE TRAITS

Heterotic Effect	E_{CI}	L_{BI}	L_{WJ}	E_{MP}	L_{WP}	Kg_{BP}
H_I (M-O)...	0.19 ± 0.02	0.23 ± 0.03	0.27 ± 0.03	- 0.01 ± 0.02	0.10 ± 0.03	0.55 ± 0.70
H_M (M-O)...	0.02 ± 0.02	0.02 ± 0.03	0.01 ± 0.03	0.00 ± 0.02	0.01 ± 0.03	- 0.01 ± 0.83
H_I (M-B)...	0.13 ± 0.02	0.16 ± 0.03	0.16 ± 0.03	- 0.01 ± 0.02	0.04 ± 0.03	0.60 ± 0.82
H_M (M-B)...	0.01 ± 0.02	0.02 ± 0.03	0.04 ± 0.03	- 0.03 ± 0.03	0.01 ± 0.04	- 0.19 ± 1.04

performance of backcross ewes. Estimates for H_I were larger for number of ewes conceived/ewe joined (E_{CI}), number of lambs born/ewe joined (L_{BI}) and number of lambs weaned/ewe joined (L_{WJ}). It was low for fertility/ewe lambled especially in multiple births/ewe produced (E_{MP}) and kg lamb born/ewe produced (kg_{BP}). Multiple births was the lowest trait to show any heterotic effect. On the other hand, it was interest to found that the highest contribution of H_I in both crosses, was in number of lambs weaned/ewe joined, the final ewe reproductivity.

The present findings and estimates for H_I and H_M are in agreement with those reported by CLARKE (1971) in Border Leicester-Romney crosses. He computed the non-maternal heterosis in similar way as in the present work while he estimated H_M as 2 (F_2F_3). Meanwhile, MCGURIK (1967) reported higher estimates for individual heterosis in number of lambs born and weaned/ewes joined, and more detectably in multiple births/ewe lambled. His estimates for conception rate agreed with the present ones. However, he mentioned that his figures for purebred Border Leicester ewes were relatively low.

SUMMARY

Non-maternal or individual heterosis (H_I) and maternal heterosis (H_M) were estimated for different reproductive components of Merino crosses with Ossimi and Barki local Egyptian sheep. H_I were found to contribute largely to the performance of crossbred ewes. While estimates for H_M were fairly small and are not likely to be of real contribution to the performance of backcross ewes. Estimates for H_I were larger for fertility/ewe joined (viz. number of ewes conceived, number of lambs born and number of lambs weaned), while multiple births/ewe produced was the lowest trait to show any heterotic components.

RESUMEN

La heterosis no materna o individual (H_I) y la materna (H_M) se han calculado para diferentes componentes de la reproducción de cruce de merino × las razas locales egipcias Ossimi y Barki. Se ha encontrado que la H_I contribuye ampliamente a la producción de las ovejas cruzadas, mientras contribuye ampliamente a la producción de las ovejas cruzadas, mientras que la influencia de la H_M se

encontró ser francamente pequeña, sin contribución real al rendimiento de las ovejas en cruce retrógrado. Las valoraciones para H_I fueron mayores para la fertilidad (número de concepciones, de corderos nacidos y destetados); las ovejas con nacimientos múltiples fueron el menor índice que demostrara las influencias de la heterosis.

RESUME

L'hétérose non maternelle ou individuelle (H_I) et la maternelle (H_M) ont été calculées pour des composants différents de la reproduction de croisements de mérinos \times races locales égyptiennes Ossimi et Barki. On a découvert que H_I contribue largement à la production de brebis croisées, tandis que l'influence de H_M apparut franchement basse, sans avoir une contribution réelle au rendement des brebis en croisement rétrograde. Les valorations pour H_I furent plus élevées quant à la fertilité (numéro de conceptions, d'agneaux nés et sevrés); les brebis à accouchements multiples furent le moindre indice qui démontrât les influences de l'hétérose.

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