GENETIC AND PHENOTYPIC PARAMETERS FOR FLEECE, SORT AND SKIRTINGS WOOL WEIGHTS OF AWASSI SHEEP

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SUMMARY

Data on fleece (FW), sort (SW) and skirting (KW) wool weights together with percentages of sort (PSW) and skirting (PKW) wool taken from 254 ewes at their second shearing were used for estimating heritability, and genetic and phenotypic carrelations. Variance components were estimated by Restricted Maximum Likelihood method (REML) through a mixed model techinque. Effects due to age of dam year and season of birth were not significant. Heritabilities of the traits were 0.32, 0.28, 0.22, 0.30 and 0.22 respectively. Genetic correlations of (KW) with (SW), (FW), (PKW), (PSW); of (SW) with (FW), (PKW), (PSW); of (FW) with (PKW), (PSW) and the correlation of (PKW) with (PSW) were - 0.14, - 0.81, 0.52, - 0.34; 0.90, - 0.78, 0.57; - 0.12, 0.17; and-0.99 respectively. The phenotypic correlations correspondingly were 0.05, 0.33, 0.99, - 0.72; 0.89, - 0.20, 0.16; 0.26, -0.28 and - 0.99 respectively.

INTRODUTION

Skirtings valued less than the rest fleece because of its inferior and lower yielding wool, having a weaker staple and fibre strength, often being burry, dirty, irregular and contained more suint and vegetable matter, all of which cause the producer and the manufacturer much concern about the price, the standards of supply and the damage occurs to the wool fibre through processing. The object of skirting is to obtain a sort wool as even and uniform in length and quality as possible. Reducing skirtings through breeding and selection could result in a high degree of uniformity with less inferior wool. The objective of this study is to estimate the heritability of the fleece (FW), sort (SW), skirting (KW) wool weights and percentages of sort (PSW) and skirting (PKW) wool, and to calculate the genetic and phenotypic correlations between them.

MATERIAL AND METHODS

The data set contained information on (FW), (SW), (KW), (PSW) and (PKW) taken at the second shearing from 254 ewes daughters of 13 rams, maintained at the Sheep Farm, College of Agriculture, Mosul. The operation of skirting was performed for each clip after shearing, provided that inferior wool is removed, avoiding over-skirting and keeping the fleece parts as bulky and uniform as possible (Belschner, 1968). Variance components were estimated by Restricted Maximum Likelihood (REML) method described by Patterson and Thompson (1971) assuming a mixed model included fixed effects due to age of dam, year and season of birth and regression on body weight at shearing, together with random effects due to sire and residual error. Paternal half - sib method was used for estimating heritability. Genetic and phenotypic correlations between each pair of traits were computed.

RESULTS

The overall mean (Kg) for (FW), (SW), (KW), (PSW) and (PKW) were 2.086 ± 0.080, 1.590± 0.660, 0.480± 0.0441, 23.011± 1.180% and 76.442± 1.230% respectively. Non of the traits was significantely affected by the fixed effects included in the model. Pateral half-sib heritabilities for (FW), (SW), (KW), (PSW) and (PKW) were 0.32, 0.28, 0.22, 0.30 and 0.22 respectively. The genetic correlations between (KW) and each (FW), (SW), (PSW) were negative and in the range of (-0.14 to - 0.81) (Table1). Sort weight appeared to be genetically and highly positively correlated with (FW) and (PSW). A genetic correlation of - 0.99 was found betweeen (PKW) and (PSW). The phenotypic correlation between (KW) and (SW)and (PSW) were 0.05 and-0.72 respectively, but higher (0.33) with (FW). While the phenotypic correlations between (SW) and (FW), (PSW) were 0.89 and 0.20. Negative phenotypic correlations were estimated between (SW) and (PKW) and (PKW) with (PSW); the values being - 0.20 and - 0.99 respectively.

Table 1 * Heritabilities, genetic and phenotypic correlations for the studied traits.

	KW	SW	FW	PKW	PSW
KW	0.22	-0.14	-0.81	0.52	-0.34
SW	0.05	0.28	0.90	-0.78	0.57
FW	0.33	0.89	0.32	-0.12	0.17
PKW	0.99	-0.20	0.27	0.22	-0.99
PSW	- 0.72	0.16	-0.28	-0.99	0.30

* Heritabilites (on), genetie (above) and phenotypic (below) diagonal.

DISCUSSION

The average fleece weight (2.08kg) obtained in the present study is similar to the average (1.96kg) reported by Sabbagh et al. (1986) on the same breed. Lower (PSW), but higher (PKW) were found by Walkley et al (1987) on Australian Merino (0.67 and 0.33%). The non - significant effect of age of dam and year of birth on (FW) is in agreement with findings of Walkley et al. (1987) and Warmington (1986). Heritability estimates were moderate and indicate that selection would be efficient. No previous estimates on (KW), (SW), (PKW) and (PSW) have been reported on Awassi sheep. Similar estimates (0.30, 0.32, 30 and 0.29) for (FW) have been reported by walkley et al. (1987). Hossamo and Owen (1983), Pan et al. (1981) and Baker et al. (1979) on Merino, 2 - year old Awassi ewes, Tsigai and Romney sheep respectively.

The net genetic progress, when selection carried out for more than one trait will depend to a certain extent on the correlation between them
The negative correlation between (KW) and (SW), (PSW) indicate that selection for increasing (SW) could result in a reduction of (KW). The high negative genetic correlation between (PKW) and (PSW) supported the previous conclusion. Selection for increasing (SW) will also result in a fleece of less inferior wool. In general the direction and magnitude of the genetic correlation between pairs of the studied traits confirmed the ability of improving wool yield. Some of the phenotypic correlations were lower than their respective genetic correlations as well as in different trend. This may well be attributed to environmental effects. The phenotypic correlation between (KW) and (PKW). (PSW), between (SW) and (FW), and between (PKW) and (PSW) are all in the desired direction and could serve the selection process.

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