

## Milk Production of Caprine Genotypes in Arid Land of Southern Tunisia

Amor Gaddour and Sghaier Najari

Laboratory of Livestock and Wildlife, Arid Land Institute, Medenine, Tunisia

**Abstract:** The local goat, Alpine, Damascus, Murciana and crossed groups was used to study the genotypes productive behaviour under Tunisian oases conditions. The aim is to evaluate the possibilities of local goat productivity improvement by cross breeding in intensive mode and also, to choose the better improving breed and the propice crossing level. The dairy production with this generation is, about 248 kg for the Alpine one, of 181 kg for Damascus and 190 kg for Murciana, is only 137 kg by lactation for the local breed.

**Key words:** Local goat, cross breeding, milk production, Tunisia, Arid land, caprine

### INTRODUCTION

The Tunisian local goat population shows a large morphological and productive variability with a particular adaptation capacity to difficult natural conditions (Najari *et al.*, 2007b, c; Gaddour *et al.*, 2008a, d). In the Tunisian Arid regions, local goat is essentially raised in pastoral and agropastoral modes and is often considered able to reproduce during all the years, as well as for other caprine rustic populations (Najari *et al.*, 2007a, d; Gaddour *et al.*, 2007d). The confirmed local goat low productivity in pastoral system can be attributed to natural and technical resources scarcity (Najari *et al.*, 2007a; Gaddour *et al.*, 2008c, d). The extensive breeding mode can be considered as a factor reducing goat productivity. In some cases, the local goat population genetic capacities represent a serious restriction to improve goat production, especially for milk (Gaddour *et al.*, 2008a, b).

Based on a large data base issued from 16 years animal survey of pure breeds and crossed genotypes performances, several studies was realised to evaluate genotypes productivities (Najari *et al.*, 2007b; Gaddour *et al.*, 2007a-d).

### MATERIALS AND METHODS

**Data base:** The collected data correspond to the years of controls since 1980, a total of: 1923 cards of lactation of the goats gathering for each goat, dairy control data.

This considerable quantity of information was elaborated in order to estimate the following performances: dairy performances are for each goat: total milk production, average daily milk production and milking period.

**Statistical analysis:** After the variance analysis an SNK mean comparison test ( $\alpha = 5\%$ ) was applied to identify homogeneous statistical groups for each variable and variation factors. Statistical analysis was done by SPSS program (SPSS, 1998).

### RESULTS AND DISCUSSION

Dairy performances means comparison by genotype: The performances of dairy production of the various studied genetic groups and the SNK test ( $\alpha = 5\%$ ) are presented in Fig. 1 and 2.

Among the pure breeds, the Alpine goat presents the best performances of mean dairy with a total production of 244 kg during a period of >132 days, followed by Damascus with a total production of 177 kg during 145 days. The Alpine breed is known with its high dairy performances.

The Murciana breed registered the weaker performances since, its total production is about 187 kg. Also, Murciana breed is characterized by its long period of lactation with 156 days. The local goat has the weakest performances, with a total production of 133 kg during approximately 175 days.

Compared with their dairy performances in their relative original cradles, all ameliorative breeds register low than the half of their milk production under Tunisian oasian conditions and adaptative capacities remains necessary to realize high milk production (Najari, 2005).

Concerning the crossing genotypes, the crossed Alpine confirm the superiority of their performances as compared to the other groups. Also, their dairy productions increase with the degree of substitution through crossbreeding. Indeed, the production by lactation of A1 (A × Lo) and A2 (A × Lo) were 164 and

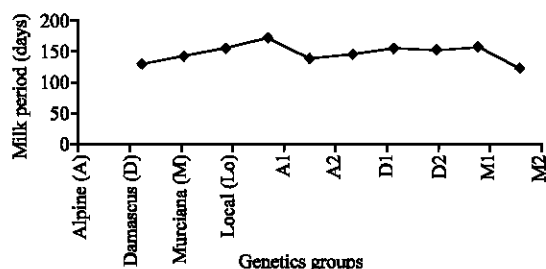


Fig. 1: Milking period (days) for local goat, pure breeds and crossed genotypes. A1, A2: crossed Alpine × local. D1, D2: crossed Damascus × local. M1, M2: crossed Murciana × local

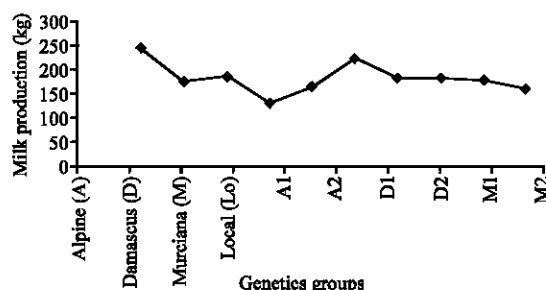


Fig. 2: Total milk production (kg) for local goat, pure breeds and crossed genotypes. A1, A2: crossed Alpine × local. D1, D2: crossed Damascus × local. M1, M2: crossed Murciana × local

226 kg, respectively with reference to the some results. So, a heterosis effect not appears in this study for dairy characters, the performances of the crossed genotypes are all lower than those of the paternal pure breeds.

### CONCLUSION

The Alpine race was distinguished both as pure and as crossed by the best performances in dairy production. However, the comparison of performances of production remains insufficient to conclude about the bio economic interest of the choice from the ameliorative breed.

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