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**Development and Productivity Indicators of Goat Herds on Al
Jabal al Akhdar, Northern Oman**

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Abstract

Goat husbandry is the main livestock activity in Oman's Al Jabal al Akhdar Mountains, supplying food and income to farm households. The low nutritional quality of the natural vegetation appears to limit the animals' production in the traditional systems, but outputs might differ according to herd management.

This study therefore determined key indicators for the productivity of goat herds in the traditional mountain oases systems. Progeny history interviews on $n=206$ female goats were conducted in the villages Masayrat ar Ruwajah (1070 m a.s.l.), Qasha' (1700 m) and Ash Sharayjah (1980 m) in the central Al Jabal al Akhdar mountain range in winter 2007/08. Baseline data on farm structure and activities were used to classify goat keepers into two groups, namely **(I)** farmers regularly marketing goats and **(II)** farmers keeping goats for subsistence purposes. To calculate reproductive parameters, model the goat herd development and calculate the total output per animal per year, the bio-economic herd model PRY was applied.

Herd sizes were larger for group I than for group II farmers, averaging 41.8 (SD 14.6, $n=5$) and 22.9 (SD 10.17, $n=11$) animals. Both types of farmers offered dried fish and dates to their animals, with quantities per goat and month of 0.8 (SD 0.3) and 5.7 (SD 1.5) kg dry matter (DM) in group I and 0.7 (SD 0.5) and 7.9 (SD 3.95) kg DM in group II. In group I and II, respectively, age at first parturition was 20.3 (SD 7.3) and 23.9 (SD 7.1) months, the parturition interval averaged 12.0 (SD 7.0) and 15.1 (SD 6.0) months and litter size was 1.05 (SD 0.3) and 1.1 (SD 0.5) kids per kidding. Kid mortality was 2.1 % in group I and 7.5 % in group II. The potential annual herd expansion rate at a maximum female cull age of 84 months was determined at 25 % and 21 %, the annual monetary output per animal averaged 91€ and 77€ in group I and II.

Goat management of group I farmers who sold animals was more professional and resulted in a better reproductive performance and higher productivity of goat herds compared to farmers keeping goats for subsistence purposes.

Keywords: Arabian Peninsula, bio-economic modelling, reproductive performance, goats, mountain agriculture