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## Exploring the low input dairy goat farms in Greece

Goats have been milked since time immemorial in Greece. They comprise genetically diverse populations that take advantage of semi-mountainous or mountainous regions, where they are traditionally fed on natural pastures and scrublands under varied climatic conditions. Such systems are characterized by limited human intervention. Considering their role in rural development of Greece, goats represent an appropriate model of low input farming systems.

### Outline of dairy goat production in Greece

Historically, dairy goats in Greece have played a vital role in maintaining rural tradition, sustaining development in line with environmental protection and diversifying farm activities towards marketing special dairy products. The Greek national flock is ranked as the largest national dairy goat flock in the E.U., counting more than 3.5 million female dairy goats.

Annual goat milk production is about 420,000 tons, representing about 22% of the total milk production in the country and rendering Greece the leading country within the E.U., in respect to goat milk output and production of value-added quality products. The total number of goat flocks exceeds 120,000 and are mainly grazing in communally owned land. The dominant system is semi-extensive where the kidding season coincides with the emergence of grazing resources. The goats have to be able to go through phases of extreme underfeeding during late summer months, using their body reserves accumulated during phases of grazing abundance. The latter is more evident in the transhumance system, which remains an essential activity in mountainous areas of the country. Moreover, recently a growing number

of flocks are raised under the semi-intensive system. Both in mainland Greece and the islands the topography and climatic conditions are characterized by extreme irregularity of annual rainfall, sparse vegetation over poor and rocky soil and scarcity of arable land. Management of dairy goat farms is dictated by the availability of natural vegetation and most farms have low financial returns. Across different systems milk production is the key objective and after a suckling period of approximately two months, the milk is sold and processed into popular dairy products with feta (70% sheep and 30% goat milk) being the most renowned. For the purpose of SOLID a total of 103 flocks were visited and assessed using a purpose built questionnaire that enabled a detailed exploration of their characteristics. →



**Table 1. Average characteristics of dairy goat farms in Greece (n=103)**

| Assessed Parameter                       | Mean |
|--|------|
| <b>Animals/flock and management:</b>     |      |
| Adult goats                              | 364  |
| Bucks                                    | 26   |
| Yearlings                                | 74   |
| Annual replacement rate                  | 0.13 |
| Prolificacy (kids per goat)              | 1.50 |
| Milking goats                            | 317  |
| Machine milking installed in farms       | 0.31 |
| Number of milkings per day               | 2.07 |
| Milk yield/goat (lt/year)                | 207  |
| Age of kids at weaning age (days)        | 82   |
| Age of yearlings at mating (months)      | 9.2  |
| Goats body weight (kg)                   | 48   |
| Bucks body weight (kg)                   | 68   |
| Kids carcass weight (kg)                 | 9.6  |
| Milk price (€/lt)                        | 0.58 |
| Meat price (kids) (€/kg)                 | 5.40 |
| Meat price (adult animals) (€/kg)        | 2.50 |
| <b>Land use/farm (hectares):</b>         |      |
| Cultivated land                          | 28   |
| Cultivated land per livestock unit       | 0.37 |
| Irrigated land                           | 2.46 |
| Non-irrigated land                       | 25   |
| Cultivated land for grazing              | 11.7 |
| <b>Duration of grazing (hours):</b>      |      |
| Spring                                   | 8.2  |
| Summer                                   | 10.7 |
| Autumn                                   | 8.6  |
| Winter                                   | 4.5  |
| <b>Walking distance for grazing (km)</b> |      |
| Spring                                   | 7.3  |
| Summer                                   | 9.3  |
| Autumn                                   | 7.1  |
| Winter                                   | 4.0  |
| <b>Feedstuffs per farm/year (tons)</b>   |      |
| Roughages                                | 37   |
| Concentrates                             | 78   |
| Straw                                    | 7    |
| <b>Personnel</b>                         |      |
| Number of workers                        | 1    |
| Number of family members                 | 1.3  |
| Total labour units                       | 2.9  |
| Livestock units per worker               | 22   |

**Activities in WP1 and WP2**

In WP1 a structured direct questionnaire was designed for in depth interviews with farmers to obtain a general description of farm characteristics and overall management practices. A total of 103 farms involving 37,484 animals, were visited. Table 1 presents some of the results obtained. A cluster analysis revealed that flocks shared common characteristics but were also different in terms of land availability and use as well as production traits. The majority of flocks (80/103) raised less than 500 animals each, whereas 5/103 had over 1200 animals. Based on WP1 outcomes, our work in WP2 focused on a small number of farms that were representative of raising three different goat breeds, two indigenous (Skopelos and Elliniki aiga) and a foreign well adapted breed (Damascus).


*Damascus Goats*




*Sampling*

In WP2 our resource population comprised about 900 dairy goats from the above three breeds. Over the last two years phenotypic and genotypic differences were studied. Milk yield, milk quality, incidence of mastitis (based on milk somatic cell counts and microbiological analyses), body tissue changes and fertility status have been recorded for each individual goat monthly. Moreover health and welfare parameters were also assessed and monthly faecal samples were collected for egg counts and coprocultures. A large database is now available including information of about 9,000 milk yield records and about 8,600 records of milk quality (fat, protein, lactose, SNF, cells and TVC). Moreover, about 1,000 milk samples from individual goats have been cultured for pathogens such as CNS, *Staphylococcus aureus*, *Streptococci* spp, *Listeria* and coliforms. Also, parasitological examinations have been performed including coprocultures for the identification of nematode genera. Data regarding the fertility status as well as the farm records are also available. The completion of field work is expected at mid October 2013. The genetic analyses for candidate genes which are believed to be linked with the phenotypic traits described above are in progression. The collection of this data has been quite a challenging and time consuming

task and required personnel with high-level expertise. However, the outcomes so far provide valuable information that will enable the dairy goat sector in Greece to capitalize on these findings and meet the challenges of these changing times in agriculture. The response of existing goat farmers as well as policy makers and other stakeholders in different dissemination activities justifies that the work is definitely cost-effective.



*Goats eating salt in the mountains*

