Transhumant Sheep and Goat Farming Sector in the Region of Sterea Ellada-Greece

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Abstract

Transhumance connects highlands and lowlands creating that way a farming system with important social, cultural, economic, landscape and environmental effects. Despite the continuous reduction of the number of transhumant herds in Greece the later years, this farming system still preserves a considerable position in country’s animal husbandry. Aim of this paper is the study of management practices and the nomination of productivity indicators of the transhumant reared animals in the region of Sterea Ellada. The necessary data were collected through a specially conducted questionnaire from totally 140 transhumant herders. The results reveal average herd size of 364.40, with herd sizes that exceeds one thousand, especially for goat herds, and residence on mountainous, semi-mountainous areas for at least 5 months. The main source of income is the trade of milk, but it should be noted that a small proportion of the herders process milk and trade only feta and/or other traditional kinds of cheese complementary of meat trade. In addition average traded milk production and prolificacy reveal the influence of more intense farming practices, such as crossbreeding and/or rational feed and the continuous effort of the producers and correspond to consecutive increase of the needs of the market.

Keywords: farming system, management, sheep and transhumance

1. Introduction

Transhumance is characterized by the seasonal movement of livestock and people between lowlands and uplands and according to [1], is an evolitional form of nomadism. The movement takes place in order the reared animals to take advantage of the better vegetation on mountainous and semi-mountainous areas. As farming system is complex due to its economical, ecological, social and cultural dimensions. In Greece transhumance is dynamic and still active in all regions with a strong traditional character due to its linkage with certain ethnic groups [2]. Purpose of this paper is to study the transhumant farming sector in the region of Sterea Ellada, to investigate management practices and to evaluate the productivity indicators of the reared sheep and goat.

2. Materials and methods

The data were collected from a sample of 140 transhumant herders of Sterea Ellada, through a specially conducted questionnaire. The questions included afforded the managerial choices of the herders during the productive annual cycle of the reared animals.

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The data collected subsequently were analyzed through descriptive statistic methods.

3. Results and discussion

3.1. Size and breed of herds
From the sample of the 140 surveyed producers the majority, 76 producers (54.28%) breed only sheep, 20 only goats while the rest 44 (31.43%) keep sheep and goats as well. The average herd size comes up to 308.46 for sheep, to 445.16 for mixed (perceive sheep and goat) herds and the largest average herd size is met to goat herds, and comes up to 529.60 (Table 1).

![Table 1. Synthesis of the sample (N)](image)

As far as the breed of the reared animals is concerned and as can be seen in table 2, the majority of the transhumant goat producers perceive rustic mountainous types of breeds, 67.18%, such as the native Greek breed, Euboias, Skopelou and Karystou breeds. On the other hand the majority of transhumant sheep, 50% of the herds, belongs to cross breeds choice that reflects the effort of the producers to improve productivity of their flocks and at the same time be more competitive and respond to the needs of the market. The genetic improvement is being made by crossbreeding and introduction of males, bucks or rams that belong to dairy breeds such as Chios, Lacaune, Assaf or Awassi at the reproductive procedure. The superior genetic males for the majority of the producers do not replace but supplement the existent on the reproductive procedure.

![Table 2. Types of breeds of transhumant sheep and goats farms N](image)

It should be noted that Simos et al. [3] also reported that the 15% of the goat herds in the mountainous areas of Metsovo- Greece, perceive foreign animals or cross-breeds, while the majority, 85%, the native Greek breed, that is better adapted to the environmental conditions of the area. That reference compared to our results makes obvious the continuous effort of the producers to improve the performance of their herds.

3.2. Movement of the flocks
The movement of the transhumant herds to the mountainous and semi-mountainous areas occurs for the 67.14% of the producers on May. There is also a few of producers (21) that move their herds on uplands on June, usually on their effort to utilize more efficiently the milking performance of their animals. The return to lowlands for 112 herders takes time until 31st of October so that the interval of persistence on mountains comes up to 5 months (Table 3).

Ispikoudis also [2], mentioned that the transhumant sheep and goat moves to upland nearby the day of saint George (23 of April) and returns to lowlands by the day of saint Dimitrios (26th of October) reference that conforms with our results implying the same time the traditional character of the system.

The majority 62.14% of the herders choose road transport, to move their animals, while the rest 37.86% perceive the traditional way of movement, by feet, following old transhumant routes to mountainous areas such as Agra, Parnassus and Theothoriana. The average distance between mountainous and lowlands comes up to 105.13
km. It should be noted that in Sterea Ellada long distance movements occur as well, with maximum distances to come up to more than 400 km. In Greece generally this type of long distance movement of transhumant herds is met also in Thessaly with average distance to be more than 174.20 km [4].

### Table 3. Movement to upland and lowlands

<table>
<thead>
<tr>
<th></th>
<th>Until 31 April</th>
<th>1-31 of May</th>
<th>1-31 of June</th>
</tr>
</thead>
<tbody>
<tr>
<td>To uplands</td>
<td>25</td>
<td>94</td>
<td>21</td>
</tr>
<tr>
<td>To lowlands</td>
<td>112</td>
<td>20</td>
<td>8</td>
</tr>
</tbody>
</table>

3.3. Reproduction

Bucks and rams are kept separately from the females and are introduced in the herd on spring. Particularly 91.67% of herds for sheep and 75.01% for goats introduce rams and bucks on May that coincides with the movement of the flocks on the mountainous areas. The sudden introduction of males contributes to induce ovulation to reproductive quiescent females—for instance out of season or lactating but it also advances the first cycle in young ewes and does [4]. Subsequently kidding/lambing takes time for the majority of the herds on October that also coincides with the return of the herds to lowlands. The total of the sample follows non selective natural mating for the reproduction of their animals. There is also a small proportion (5.71%) that implies estrous synchronization to few ewes and does, and specifically those that failed to fertilized during mating period.

### Table 4. Entrance age (months) in reproduction

<table>
<thead>
<tr>
<th>Age</th>
<th>Ewes (%)</th>
<th>Does (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>9-12</td>
<td>50.83</td>
<td>54.68</td>
</tr>
<tr>
<td>12-15</td>
<td>32.50</td>
<td>31.25</td>
</tr>
<tr>
<td>15-18</td>
<td>13.33</td>
<td>9.37</td>
</tr>
<tr>
<td>&gt;18</td>
<td>3.34</td>
<td>4.70</td>
</tr>
</tbody>
</table>

The weaning of the offspring and for both lambs and kids occurs in the age of two months for the 67.50% of the sheep and 57.82% of the goats. Generally the reproduction schedule for the majority of transhumant sheep and goat farms is designed, as can be noted, so that the offspring are born and weaned in time to meet the increased market demand during Christmas and Easter holidays, when Greek consumers demand whole lamb and kid carcasses.

The admittance of females in reproductive activity comes up to 9 to 12 months for the 50.83% of young ewes and 54.68% of young does. It should be noted that there is a noticeable number 16.67% and 14.07% of ewes and does respectively that their first mating occurs in the age of more than 15 months. As young bucks and rams are concerned their entrance in reproduction takes time at the age of twelve months for the 72.50% of rams and 78.12% of ewes.

3.4. Productivity

The average commercial milk production (after weaning) during the resistance of the animals on winter domiciles comes up to 87.73 (kg) for sheep and much lower to 60.74 for goats. It should be noted that for both kinds of ruminants we met high scores of milk production to 248.40 (kg) for sheep and 232.20 (kg) for goats that reflected either the genetic improvement of the animals or the improved management practices such as the improvement of the feeding procedures (Table 5). During the resistance of animals on summer domiciles the average commercial milk production comes to 60.74 kg and 28.87 kg for sheep and goats respectively. It should be noted that the average trade milk scores were calculated based on the trade amount of milk and the exact number of animals that were on their milking period that time. The average index of multiple for ewes and does amounts to 1.33 for sheep and 1.21 for goats and does not differs much from the expected performance of rustic breeds.

Hadjigeorgiou and Zervas [6] reported 1.26 lambs per ewe and 89.40 kg milk production per year under extensive breeding conditions in Crete-Greece while other researchers [7, 8] mentioned that average milk yield, independent the applying
farming system, comes up to 98 kg per ewe and 117 kg per goat. Simos et al [3] on the other hand reported milk production of 90-100 Kg/goat for Saanen and the native Greek breed in Ioannina-Metsovo under extensive breeding system and 339 kg/goat in Attica. It is obvious compared to our results that the performance of the animals, depends mainly on the farming practices and secondly by the genetic background of the reared animals and if it this background allowed to be performed.

<table>
<thead>
<tr>
<th>Traits</th>
<th>Sheep</th>
<th>Goat</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Winter</td>
<td>Summer</td>
</tr>
<tr>
<td>Mean trade milk yield (kg)</td>
<td>87.73</td>
<td>39.88</td>
</tr>
<tr>
<td>SD</td>
<td>46.68</td>
<td>30.85</td>
</tr>
<tr>
<td>Max trade milk yield (kg)</td>
<td>248.40</td>
<td>134.40</td>
</tr>
<tr>
<td>Min trade milk yield (kg)</td>
<td>15.20</td>
<td>9.00</td>
</tr>
<tr>
<td>Prolificacy or index of multiple</td>
<td>1.33</td>
<td>1.21</td>
</tr>
</tbody>
</table>

The majority of the producers apply milking by hands when a small proportion 8.57% uses milking machine. The main causes for this management choice are the cost of the improvement and the lower productivity of the animals that does not encourage producers to apply it.

4. Conclusions

Concluding the results reveal the effort of the producers to be more competitive and correspond to the demands of the market. This is being mainly reflected through the genetic improvement of the transhumant herds and the limited though, adaption of more intense management practices such as estrous synchronization and mechanization of milking procedure.

Acknowledgements

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References