Extensification of Beef and Sheep Production on Grassland

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PORTUGUESE BEEF AND SHEEP PRODUCTION SYSTEMS

Alves¹, Virgilio. C. and Teixeira², Alfredo.
¹Universidade de Trás-os-Montes e Alto Douro Apartado 202
5001 Vila Real (Codex) PORTUGAL
²Instituto Politécnico de Bragança Escola Superior Agrária
Apartado 172, 5300 Bragança Portugal

SUMMARY

The total area of Portugal is 8.9 m ha of which 3.8 m ha are arable. Of the latter, 0.81 m ha is permanent grassland and 0.41 m ha is temporary forages and pastures. Total number of farms is 445,000 of which 77% are less than 5 ha in size. Only 2% of farms are greater than 50 ha. The total population is 9.4 m of which 49% is employed. Of those employed, 11% work in agriculture. This has fallen from 17% in 1990. Total cattle is 1.3 m including 0.36 m dairy cows and 0.25 m beef cows. Since 1990 the number of dairy cows has fallen but the number of beef cows has not increased. Dairy cows are practically all Friesian but beef cows are predominantly native breeds. Beef production systems are very variable with very small herd sizes. It is usually a secondary enterprise to vegetables or crops. Many calves are sold for slaughter at weaning at 6-8 months of age and 200 kg liveweight. Total number of sheep is about 3.4 m. The main purpose of sheep farming is milk production. There are 3 main systems of production 1) intensive - reared on grass and finished on concentrates, 2) upland - lambs produced entirely off grass and conserved forages and 3) hill production with some scavenging on cereal stubbles. Mean carcass weight is 10 kg and Portugal has a deficit of lamb meat. There are a total of about 0.6 m goats.

INTRODUCTION

In Portugal, there are several agrarian regions (Figure 1). Three of them have markedly different ecological conditions - atlantic, mediterranean and continental. Others, result from the interaction of two or three of these ecological conditions.

These ecological conditions made up of the interactions of climate, soils, geographic and demographic factors together with social circumstances endow the country with some favourable conditions for ruminant production, mainly cattle production in the North and Center, and sheep and goat production in the South.

Coastal line North (Entre Douro e Minho: E.D M e Beira Litoral: B. Litoral) is a region of atlantic ecological influence, and so, has regular temperatures, small pluviometric variation and high atmospheric humidity throughout the year. The soils normally have a high capacity for the production of forages and grasses. The demographic concentration is very marked, with a land structure of very small landowners (Table 1). The smaller lowland areas are used for subsistence vegetable and fodder cropping.
TABLE 1. Distribution of farms according to size and geographic area (ha arable land)

<table>
<thead>
<tr>
<th>Geographic Area</th>
<th>Total Farms</th>
<th>Total Arable Land</th>
<th>&gt;0-&lt;1 Arable Farms</th>
<th>&gt;0-&lt;1 Arable Land</th>
<th>1-&lt;5 Arable Farms</th>
<th>1-&lt;5 Arable Land</th>
<th>5-&lt;20 Arable Farms</th>
<th>5-&lt;20 Arable Land</th>
<th>20-&lt;50 Arable Farms</th>
<th>20-&lt;50 Arable Land</th>
<th>250+ Arable Farms</th>
<th>250+ Arable Land</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continente</td>
<td>444875</td>
<td>3821317</td>
<td>90452</td>
<td>55312</td>
<td>253328</td>
<td>569805</td>
<td>78149</td>
<td>720364</td>
<td>13659</td>
<td>413313</td>
<td>9287</td>
<td></td>
</tr>
<tr>
<td>E. D e M</td>
<td>86881</td>
<td>257683</td>
<td>20236</td>
<td>12012</td>
<td>57058</td>
<td>121823</td>
<td>9016</td>
<td>73439</td>
<td>437</td>
<td>12105</td>
<td>134</td>
<td></td>
</tr>
<tr>
<td>T-os-Mont.</td>
<td>75.256</td>
<td>493229</td>
<td>10701</td>
<td>6362</td>
<td>37192</td>
<td>92856</td>
<td>2307</td>
<td>222065</td>
<td>3963</td>
<td>117572</td>
<td>602</td>
<td></td>
</tr>
<tr>
<td>B. Litoral</td>
<td>97345</td>
<td>220532</td>
<td>27207</td>
<td>16516</td>
<td>62822</td>
<td>129367</td>
<td>6862</td>
<td>54973</td>
<td>395</td>
<td>11051</td>
<td>59</td>
<td></td>
</tr>
<tr>
<td>B. Interior</td>
<td>49516</td>
<td>443744</td>
<td>4716</td>
<td>3279</td>
<td>29621</td>
<td>68565</td>
<td>11718</td>
<td>112891</td>
<td>3223</td>
<td>66156</td>
<td>1176</td>
<td></td>
</tr>
<tr>
<td>Rib.e Oeste</td>
<td>78120</td>
<td>498886</td>
<td>19499</td>
<td>12221</td>
<td>42308</td>
<td>98041</td>
<td>13340</td>
<td>116470</td>
<td>1941</td>
<td>57595</td>
<td>1032</td>
<td></td>
</tr>
<tr>
<td>Alentejo</td>
<td>37007</td>
<td>1766577</td>
<td>4543</td>
<td>2731</td>
<td>13974</td>
<td>34132</td>
<td>8080</td>
<td>91603</td>
<td>3771</td>
<td>121054</td>
<td>5911</td>
<td></td>
</tr>
<tr>
<td>Algarve</td>
<td>20381</td>
<td>140566</td>
<td>3550</td>
<td>2191</td>
<td>103510</td>
<td>25021</td>
<td>5256</td>
<td>49114</td>
<td>929</td>
<td>27780</td>
<td>283</td>
<td></td>
</tr>
</tbody>
</table>

Fonte: Inquérito à estrutura das explorações Agrícolas 1993

Interior North (Trás-os-Montes e Alto Douro: Tr M.A.D. e Beira Interior B. Interior) is mountainous with altitude above 700 meters. Here, the atlantic influence disappears and gives way to mountain ecology, with irregular temperatures, rainfall and atmospheric humidity throughout the year. The soils are very heterogeneous, but normally have a high agricultural capacity in the valleys and in some of the summits and slopes (favourable for permanent meadows and pastures). The soils are poorer on most of the summits and slopes of the mountains. Land exploration can be divided into two categories. In the valley, lands are private and are divided into small farms (landowners); in the hills, lands are communal (common grazing).

The agricultural system can be considered a "subsistence sub-category of crops and livestock production". A two year rotation of potatoe-rye uses the arable farm land. The "lameiros", that is, improved pastures, together with large areas of common land support livestock, particular cattle, but also sheep and goats in mixed grazing.

Northeast, is a region with a great diversity of environmental conditions, due in particular to the great differences in relief, altitude and rainfall. There are two main sub-regions, as follows:

- "Terra quente" "hot land" is of typical mediterranean ecology with cereal production, olive plantations, vegetables crops, and sheep production.
- "Terra fria de planalto" «cold tableland» is influenced by continental ecology (cold winters, summers warm and dry and marked variations in temperature). Here the main commercial crop is wheat, together with pasture meadows for grazing and hay.

Coming down to the south and inland, the atlantic influence becomes weaker and the Mediterranean ecological influence increases, (except in a zone in the center of the country, region of the Valley of Tejo river), slowing down forage production, in absolute terms and altering its distribution throughout the year. The farms are fairly large and have a wide range of soil types. This has enabled the development
of many different patterns of land use with a preponderance of mixed farming systems, where the commercial crop is wheat and livestock systems are sheep and cattle for meat.

The total area of Portugal is 8,878,952 ha. Only 3,821,317 ha are arable from which 808,586 ha are in permanent grassland and 409,662 ha are temporary forages and pastures (Table 2). Further, 783,522 ha of grass and green crops are grown in rotation with agricultural crops (e.g. cereals, potato and leguminous cakes).

In 1994 Portugal had 9,350,400 million people. The evolution of the population and labour force is shown in Table 3. In the last 10-15 years, since accession to the European Union (EU) in 1980, some elements of Portuguese agriculture have undergone marked intensification, but, at the same time, depopulation of the more difficult rural regions took place (Table 4).

**TABLE 2 Number of farms and arable land by farm size**

<table>
<thead>
<tr>
<th>Farm size (ha)</th>
<th>No. farms</th>
<th>Arable land (ha)</th>
<th>Temporary forages and pastures (ha)</th>
<th>Permanent grassland (ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>444,875</td>
<td>3,821,317</td>
<td>409,662</td>
<td>808,586</td>
</tr>
<tr>
<td>&gt;0-&lt;1</td>
<td>90,452</td>
<td>55,312</td>
<td>2,379</td>
<td>1,033</td>
</tr>
<tr>
<td>1 - &lt;5</td>
<td>253,328</td>
<td>569,805</td>
<td>55,905</td>
<td>34,828</td>
</tr>
<tr>
<td>5 - &lt;20</td>
<td>78,149</td>
<td>720,564</td>
<td>100,905</td>
<td>84,023</td>
</tr>
<tr>
<td>20-&lt;50</td>
<td>13,659</td>
<td>413,313</td>
<td>55,011</td>
<td>65,333</td>
</tr>
<tr>
<td>&gt;50</td>
<td>9,287</td>
<td>2,062,323</td>
<td>195,462</td>
<td>623,369</td>
</tr>
</tbody>
</table>

**TABLE 3. Population and labour force ('000)**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Population</td>
<td>9,808.20</td>
<td>9,815.30</td>
<td>9,345.50</td>
<td>9,350.50</td>
<td>9,350.40</td>
</tr>
<tr>
<td>Total at work</td>
<td>4,756.20</td>
<td>4,864.70</td>
<td>4,527.60</td>
<td>4,503.50</td>
<td>4,563.70</td>
</tr>
<tr>
<td>At work (%)</td>
<td>48.49</td>
<td>49.56</td>
<td>48.45</td>
<td>48.16</td>
<td>48.81</td>
</tr>
<tr>
<td>At work in Agricultural - Total</td>
<td>763.20</td>
<td>771.30</td>
<td>472.80</td>
<td>465.80</td>
<td>476.20</td>
</tr>
<tr>
<td>At work in Agricultural - %</td>
<td>16.98</td>
<td>16.66</td>
<td>10.89</td>
<td>10.95</td>
<td>11.20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Geographic areas</th>
<th>Total Area (ha)</th>
<th>Total population 1991</th>
<th>Total population 1993</th>
<th>Change 1991-93 %</th>
<th>Dens. Pop. 1993 (hab/Km²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portugal (Cont)</td>
<td>8,878,952</td>
<td>9,371,448</td>
<td>9,393,040</td>
<td>0.23</td>
<td>105.79</td>
</tr>
<tr>
<td>Entre Douro e Minho</td>
<td>899,631</td>
<td>2,998,999</td>
<td>3,075,510</td>
<td>1.28</td>
<td>337.64</td>
</tr>
<tr>
<td>Trás-os-Montes</td>
<td>1,228,203</td>
<td>473,940</td>
<td>465,830</td>
<td>-1.71</td>
<td>37.93</td>
</tr>
<tr>
<td>Beira Litoral</td>
<td>1,170,847</td>
<td>1,324,061</td>
<td>1,324,840</td>
<td>0.06</td>
<td>113.15</td>
</tr>
<tr>
<td>Beira Interior</td>
<td>1,195,722</td>
<td>397,480</td>
<td>388,970</td>
<td>-2.14</td>
<td>32.53</td>
</tr>
<tr>
<td>Ribatejo e Oeste</td>
<td>1,192,703</td>
<td>3,292,118</td>
<td>3,299,050</td>
<td>0.21</td>
<td>276.60</td>
</tr>
<tr>
<td>Alentejo</td>
<td>2,692,997</td>
<td>543,442</td>
<td>532,990</td>
<td>-1.92</td>
<td>19.79</td>
</tr>
<tr>
<td>Algarve</td>
<td>498,849</td>
<td>341,408</td>
<td>343,850</td>
<td>0.72</td>
<td>68.93</td>
</tr>
</tbody>
</table>

The numbers of cattle, sheep and goats kept in Portugal are shown in Table 5. In the last 5 years, there have been changes in the numbers of livestock although not all in the same direction. Thus, the number of dairy cows increased (25%) and the number of beef cows decreased. The changes in sheep numbers are not significant (there was a small increase) and the goat number declined significantly from 1992 to 1994.

### TABLE 5. Numbers ('000) of livestock (1985-1994)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cattle</td>
<td>1,260</td>
<td>1,375</td>
<td>1,417</td>
<td>1,345</td>
<td>1,322</td>
<td>1,262</td>
</tr>
<tr>
<td>Dairy cows</td>
<td>280</td>
<td>403</td>
<td>404</td>
<td>381</td>
<td>375</td>
<td>356</td>
</tr>
<tr>
<td>Beef Cows</td>
<td>287</td>
<td>265</td>
<td>279</td>
<td>235</td>
<td>240</td>
<td>250</td>
</tr>
<tr>
<td>Total Sheep</td>
<td>3,360</td>
<td>3,380</td>
<td>3,348</td>
<td>3,305</td>
<td>3,416</td>
<td></td>
</tr>
<tr>
<td>Ewes</td>
<td>2,227</td>
<td>2,260</td>
<td>2,253</td>
<td>2,222</td>
<td>2,289</td>
<td></td>
</tr>
<tr>
<td>Total goats</td>
<td>857</td>
<td>862</td>
<td>858</td>
<td>836</td>
<td>419</td>
<td></td>
</tr>
<tr>
<td>Adults</td>
<td>616</td>
<td>622</td>
<td>619</td>
<td>605</td>
<td>593</td>
<td></td>
</tr>
</tbody>
</table>

*estimated

**BEFORE PRODUCTION**

In Portugal, suckler herds were always important relative to dairy herds. The evolution that took place in the past decades (Table 6) until the early 1990 resulted in

- an increase in the number of dairy cows
- a decline in native breeds.
Evolution of number of cattle ('000)

<table>
<thead>
<tr>
<th>Year</th>
<th>Dairy Cows</th>
<th>Beef Cows</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>172</td>
<td></td>
<td>1,060</td>
</tr>
<tr>
<td>1975</td>
<td>200</td>
<td></td>
<td>1,165</td>
</tr>
<tr>
<td>1979</td>
<td>226</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1981</td>
<td>270</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1985</td>
<td>280</td>
<td>287</td>
<td>1,375</td>
</tr>
<tr>
<td>1990</td>
<td>403</td>
<td>265</td>
<td>1,375</td>
</tr>
<tr>
<td>1991</td>
<td>404</td>
<td>279</td>
<td>1,417</td>
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<tr>
<td>1992</td>
<td>381</td>
<td>235</td>
<td>1,345</td>
</tr>
<tr>
<td>1993</td>
<td>375</td>
<td>240</td>
<td>1,322</td>
</tr>
<tr>
<td>1994</td>
<td>356</td>
<td>250</td>
<td>1,262</td>
</tr>
</tbody>
</table>

The Portuguese suckling herds can be divided in different categories:

- In the North there are very small herds of suckler cows of native breeds (in North litoral region one can find GALEGA, MINHOTA and MARINHOA breeds, in the interior North, the BARROSÃ, IARONESA and AROUQUESA breeds occur and, in the Northeast, the MIRANDESA breed is found).
- Beef cattle production is an additional component of the family farm enterprise.

The production system is very complex due, in particular, to interactions between economic and social circumstances. The farm is divided into several plots of land, some of them used for two crops in the ear, mostly for subsistence vegetables and green forages. The remaining plots are used as permanent temporary pastures under a two-year rotation of potato and rye. The units have only a small number of cows (2-5), kept by the family semi-intensively. Grazing takes place in daytime and, at night, feeding cow-sheds is based on hay or green forages. Breeding takes place throughout the year.

The method of breeding is hand mating where the bull is kept in a service center, which is the private property of one farmer, and whenever a cow is observed in heat she is turned in with the bull, and removed immediately after a single service.

Heifers are mated when they are mature enough to withstand the stress of parturition and lactation. The average age at the first calving is about 30 months. Estimates of calving interval range from 11 to 13 months.

The productive life of cows varies from 10 to 14 years, during which they produce 9 to 12 calves. Fertility rate (number of cows bred that do not come back in heat within 200 days after mating) is 85%.

Weaned calves, sold for slaughter at 6 to 8 months of age at a live weight of 200 kg, are the main source of income for the farm but draught is also a very important product.

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In the South, large herds of native (BRAVA, ALENTEJANA and MERTOLENGA) and exotic breeds and crossbred animals occur. Production is "typically" based on extensive farming.

The animals are kept outside throughout the year. Feeding is based on natural pastures and cereal straw. Occasionally, for a short period and when a severe feed deficiency occurs, cereal grains are fed. The breeding season varies according to seasonal local feed availability.

The method of breeding is pasture mating where the bull is allowed to run with the herd throughout the breeding season. Heifers are mated at the next breeding season after they are mature enough. The average age at first calving is about 36 months. Estimates of calving interval range from 12 to 14 months.

The productive life of cows varies from 8 to 10 years, during which they produce 5 to 7 calves. Fertility rate (the ratio of calves born to females of breeding age in the herd) is 75%. The beginning of the breeding season is February. The weaned calves are sold at 6 to 8 months of age and at a live weight of 180 - 200 kg to be fattened in others regions.

INDIGENOUS CATTLE BREEDS
Cattle breeding has ancient traditions in Portugal. The great diversity of cattle breeds in the country is typical mainly for the Northern areas. This is due to the different breeding conditions in the particular regions of the country regardless of its relatively small size.

Native cows:
- suckling cows ('000)
  Alentejana ....................... 20
  Mertolenga ..................... 20

- suckling and draught cows ('000)
  Mirandesa ...................... 40
  Maronesa ....................... 10
  Barrosa ......................... 30
  Galega .......................... 7
  Arouquesa ....................... 15
  Marinhoa .......................  5

- Lide (brava ou Ribatejana) .............. 7

Exotic cows:
- dairy cows (The dairy population is Friesian) ........................................... ± 350
- beef cows (suckler herds) Sallers, Limousin and crossbreds ....................... ± 80
for assessing the trends in small ruminant production in extensive areas of Portugal, it is necessary
understand the constraints imposed by the structure of sheep farming, by the priority for milk
production and the traditional consumer preferences for lamb meat.

There are many different local breeds (14) and sheep production is more important in the highlands of
North and in the center of the interior of Portugal. Crossbreeding is widely practised, to increase meat
production potential. The local breeds have an early onset of seasonal oestrus and, under natural
conditions, lambing begins in October. In general the potential lambing period extends from October to
May and many farms have a much extended breeding season.

PRODUCTION SYSTEMS

asically there are 3 production systems in Portugal:

System 1 - Intensive management, lambs produced off grass, and conserved forages and finished
on concentrates

System 2 - Upland farming (400 - 600 m), producing lambs off grass and some conserved forages

System 3 - This is the most common system. It involves hill sheep farming (above 800 m) in
extensive areas of hill grazing, harsh weather and a wide variation in feed supply. The
ewes receive no supplementary feeding stuffs. The tillage farmers use the sheep as
scavengers on stubbles and weeds in cereal lands after summer harvest. During summer
grazing is practiced under very arid conditions. In the autumn the flocks graze in oak
forest areas. The lambs all remain with their mother during the grazing period. In this
system the dog is very important against predators like wolves.

EVOLUTION AND PRODUCTION

In 1990 there was 2,227,000 ewes and a total of 3,360,000 sheep (INE, 1990). In 1995 the numbers
reached 3,416,000 head. According to IMAIAA (1995) Portugal's accession to the EU resulted in a
progressive increase in the national sheep flock, undoubtedly due to the premia payments as the
Community has a deficit of this type of meat. Alentejo is the main region of production with 51.5% of
the total output. Next comes the center and northern regions with 19.8% and 12.7%, respectively. Here,
sheep are kept mainly for the milk production. With 314.2 t exported and 9747.6 t imported, Portugal
is not self-sufficient in lamb meat. One of the greatest differences between EU sheep production systems
is carcass weight. The Mediterranean areas of the EU produce the lightest carcasses in Europe (Table 7).

Another difference is the age at slaughter. In Mediterranean Europe generally, lambs are slaughtered at
from 1 to 4 months old.

In terms of milk production, Portugal produces 87,906,000 litres of milk (INE, 1990), and the greater
part is transformed into 14,651 t of cheese.
TABLE 7. Carcass weight in the Mediterranean area of the European Community

<table>
<thead>
<tr>
<th>Country</th>
<th>Carcass weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greece</td>
<td>10.7</td>
</tr>
<tr>
<td>Spain</td>
<td>11.4</td>
</tr>
<tr>
<td>Portugal</td>
<td>10.0</td>
</tr>
<tr>
<td>Italy</td>
<td>8.6</td>
</tr>
</tbody>
</table>

COMMERCIAL CATEGORIES OF CARCASSES

For commercial purposes, lamb carcasses can be classified in the different countries of the Mediterranean region of the EU, according to weight, age, breed, diet type, conformation, fatness.

The following commercial categories are available to Portuguese consumers:
- **Borrego de conastra** - Lambs from milk producing ewes, 1 to 1.5 months old, 4 to 5 kg carcass weight
- **Borrego corrente** - Lambs 5 to 6 months old, with carcass weight not exceeding 10 kg
- **Ovino adulto** - Adult animals of variable age and carcass weight

CONSUMPTION CHARACTERISTICS

In Portugal, consumption tends to be mainly of young lamb carcasses, fresh or chilled, of light weight, rose color, tender and without fat.

The greater part of lamb consumption in Portugal is suckled lambs, weaned as early as possible to provide a long milking period. The usual weaning age is from 5 to 7 weeks at a liveweight less than 15 kg and a carcass weight (including head, kidney and kidney knob and channel fat) of 6 to 10 kg. This kind of lamb is favoured during the Christmas and Easter periods when there is high demand.

Farm prices are variable and depend on the local method of marketing, the relative supply of lambs and the demand at time of marketing.

CONCLUSIONS

Sheep production in Portugal is mainly light carcasses of 7-12 kg. This results from a combination of the systems of production and consumer preferences. The reasons for this are:
- most of the lambs are from extensive systems in which the main feeds for the lambs are milk and Mediterranean pastures
- the lambs, being from dairy breeds, cannot compete with milk production, which is the most important objective of the system
- the traditional requirement of the home market is for carcasses with a relatively low level of fat as consumers do not like fat carcasses
preference is influenced more by fat class than by conformation, so carcass conformation is less important than fatness. The meals are prepared according to a classical cuisine in which the traditional cooking methods are grilling or roasting the carcass whole.

REFERENCES


Figure 1- Portugal

- Porto
- Minho
- Beira Litoral
- Beira Interior
- Trás-os-Montes
- Ribatejo e Oeste
- Alentejo
- Algarve
- Lisboa
- Entre Douro e Minho
TRENDS IN SMALL RUMINANT PRODUCTION IN EXTENSIVELY MANAGED AREAS OF NORTH EAST PORTUGAL

A. Teixeira,
Escola Superior Agraria de Braganca,
Apartado 172, 5300 Braganca-Portugal

SUMMARY

Sheep and goats are species naturally adapted to the optimal use of the poor and marginal regions. At present, the tendency to rethink the systems of agrarian exploitation, is gaining in importance, especially in highly populated European Union countries with strong environmental policies, where they try to link use of the soil to appropriate environmental practices. Today we are aware that the sheep and goat production systems, organized in small production units are a fundamental part of the development of mountain areas. On this basis the actions which should be taken are presented.

INTRODUCTION

Throughout the history of humanity, animal husbandry has not always had the same characteristics, but was always intertwined with the vast variability in socio economic conditions and its importance comes from its place among man's sources of food supply. On the other hand, the domestication of animals has always be visualised within a reference framework, where it articulates together with the practice of sedentary agriculture.

The species that, from the archaeological data, are recognised today as fundamental in the first stages of domestication are ewes and goats, together with dogs, which in their wild state, had a very limited distribution. According to the existing data, breeding ewes and goats seems to have been the first step away from an economy that belonged exclusively to hunters and collectors. Thus, from a historical point of view, throughout the last ten million years, the evolution of sheep and goat production, in the Mediterranean area, was closely linked to the evolution of man.

The mountain shepherd, who was forced to move around looking for pastures and who was used to the military regulations and the use of weapons to guide and to defend the flock, made use of these characteristics to dominate the farmers and to make a living out of his work (Sergio, 1974). According to him the nature of the shepherds within the geographic environment of the mountains may be the explanation for the Lusitano character. At this time, the whole of western part of Iberian Meseta was occupied by the shepherds' tribes.

In this context, sheep and goats are species naturally adapted to the optimal use of the poor and marginal regions.
The economic development, the urbanisation of rural communities and the displacement of the rural population to the large cities, led to an intensification of the production systems, originating thus a great influence over the production systems of the small ruminants.

At present, the tendency to rethink the system of agrarian exploitation, has increased in importance, especially in highly populated EU countries with a strong environmental policy, where they try to link the use of the soil to appropriate environmental practices. The agrarian sector is forced to recognise this tendency and to adjust the systems of soil use.

According to several authors, two fundamental aspects should be considered:
1. Society has acquired a knowledge and awareness of the importance of the environment in the quality of life
2. There is increasing determination by the civil administrators of agricultural policies to control agricultural over production in the European Union (EU)

In an environmental context, this complements agricultural policy and determines the appropriate level of intensification agrarian systems and ensures adequate treatment of the landscape.

MOUNTAIN REGIONS
The mountain regions, particularly the Mediterranean ones have always been undergoing change. In the past they were regarded as regions where modern methods of animal production could not be practiced. In this context, its environmental and socio economic location, prevented the introduction of new methods without the preliminary analysis and preparation of the possibilities. This was one of the main reasons which led to the complete abandonment of the mountain's population, leading to the human desertion of those areas.

Today sheep and goat production systems, organised in small production systems, are a fundamental part of the development of these areas, especially in the following ways:
- economic: large areas with a low productivity potential can be exploited
- social and cultural: this type of production was and still is a traditional activity
- ecological and environment: the interaction between the forest and the populations of small ruminants which control the vegetation cover is essential to fire prevention and necessary to the landscape maintenance.

In any case, the successful use of grazing animals for the landscape maintenance, depends on factors such as the type of animal, the expected pasture yield and management of the pasture. The economic viability of sheep and goat production and its positive contribution to nature conservation is nowadays accepted by several sectors.
Nevertheless, it is necessary to examine some problems which may prevent viability, e.g. competition in the European sheep meat market, with a tendency towards lower prices difficulties in generating an income which ensures the survival of a family difficult social conditions which lead to the abandonment of the shepherds profession problems of linking of the sheep and goat production with good landscape and other agricultural practices

CTIONS NECESSARY

The group of actions to be taken regarding small ruminant production cannot be an individual task, but must obey a wide and integrated programme of defined aims and priorities. Given this, the following group of future actions are suggested:

resolution of animal management problems, with special emphasis on sanitary and prophylactic control of the main diseases measures of social and economic assistance for the exploitation of the more abandoned regions maintenance of the landscape as a service to society, so society should compensate those who carry it out an increase in the pasture areas of the mountain and in the areas used formerly for cereal crops organisation of mixed systems of forest and animal grazing dialogue between the civil administration and the rural community as a vital way of fighting adversity intensive cooperation between the agricultural and environmental administrative services as a pre-requisite to finding solutions to the problems of animal environment interactions effective promotion of the interests of the sheep and goat production, through the organisation of associations of selected animal breeders and commercial producers a study of the situations where the local breed could be viably used, through the generation of models and simulation of situations which allow decision making on the future the definition of the strategies for conservation of the local breeds consideration of alternative situations (lowlands, upland and hill farming), according to the species and the systems, the exploitation of the pure breeds and the use of crossbreds developing field scale experiments, with the participation of breeders associations, to test and validate at field level the data obtained from scientific research definition of improvement strategies, suitable to the modalities of the production systems, for the characteristics linked to fertility, adaptability, viability, maternal aptitude, and general production definition of the type of sheep and goat produced, taking into account the weight, stage of maturity and the consumers requirements qualitative characterisation of the sheep and goat products as a way of defining its origin and the demarcation of production areas.

REFERENCES
