UNIVERSIDAD DE EXTREMADURA

Departamento de Producción Animal y Ciencia de los Alimentos

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GOBIERNO DE EXTREMADURA

Economic and grazing resources analysis of extensive livestock farming systems (dehesas) in Spain

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Structure of the presentation

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  - The dehesa ecosystem
  - Extremadura Region
  - Livestock systems
- **Materials and methods**
  - Study area
  - Sample selection
  - Calculation and evaluation of grazing resources
- **Results**
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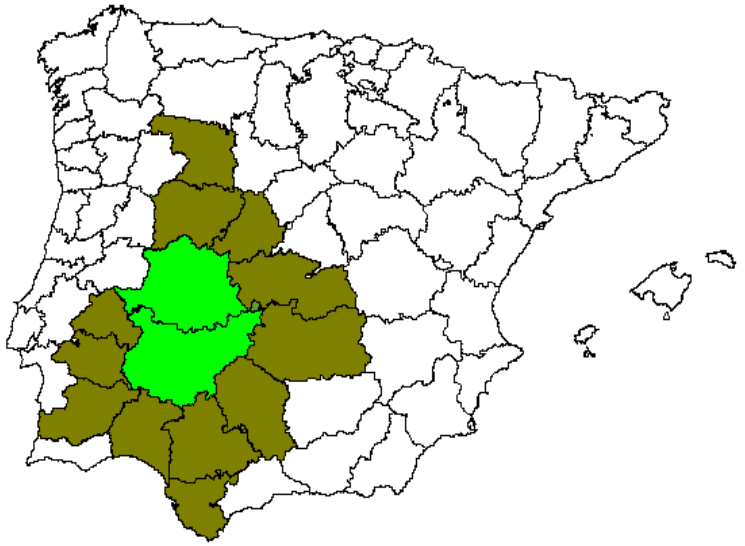
  - Economic valuation

The dehesa system

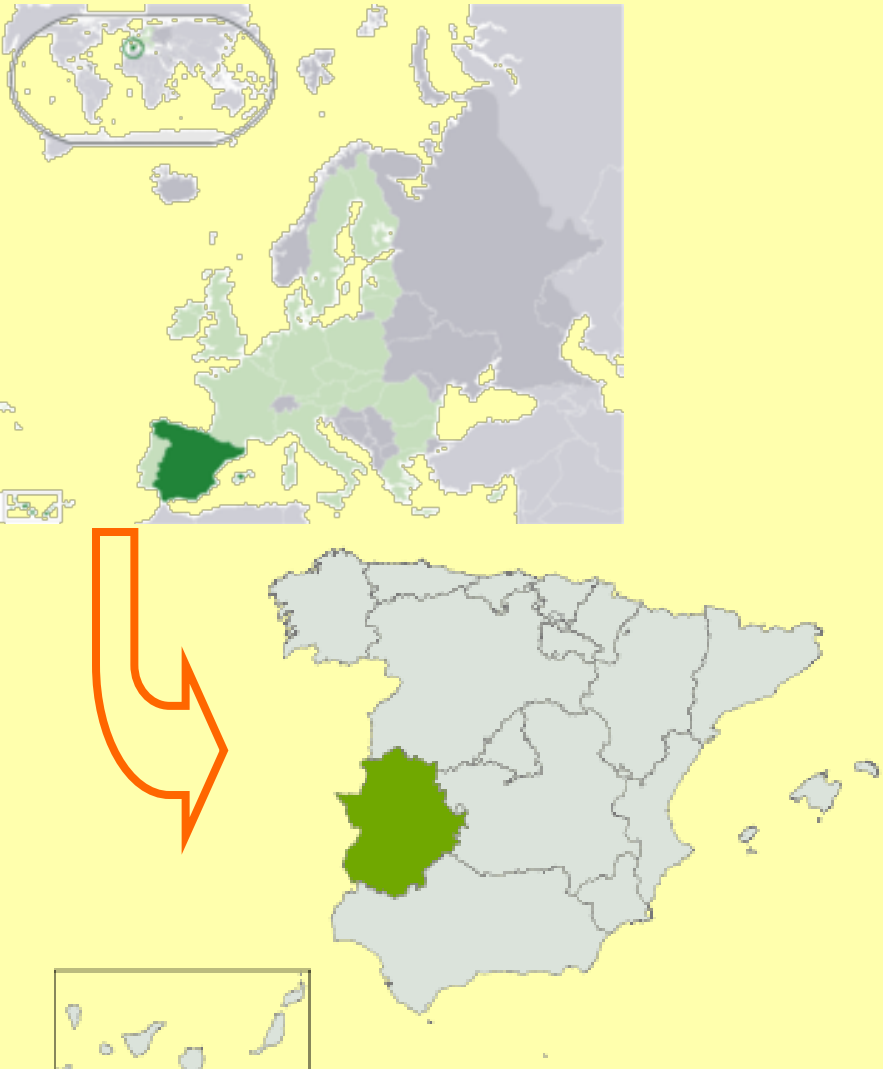
Typical agro-forestry system of the Iberian Peninsula

- Pasture is combined with Quercus spp trees
- Soil acid, shallow sandy loams of low fertility
- The climate: continental Mediterranean
  - -Temperature: 16-17°C
  - -Rainfall: 300 and 800 mm
- Livestock species
- Other Uses: cork and hunting
- Area:
  - Spain reaches a total of approximately 5.8 million hectares
  - 0.5 million hectares are located in southern Portugal



Other provinces with dehesa
Extremadura

Extremadura Region



- **Surface:**
  41,634 km² (8,2%)
- **Population**
  1,095,894 (2,6%)
- **Density**
  26.03 inhab./km²

Livestock systems

Extensive LFS

- High operation size
- Meat production oriented
- The products are high quality, but seasonal
- Deficient in commercialization
- Contribute to environmental protection
- No other alternatives other than livestock production exist in the area

The importance of these livestock farming systems

1. Contribution to the regional economy
2. Guarantee the maintenance of this complex and particularly sensitive ecosystem.

Livestock systems: Cattle herds

- **Authoctonous breeds suckling cows:**
  - **Retinta**
  - **Morucha**
  - **Avileña-Negra Ibérica**
  - **Lidia**
- **Breeding: Dec-July**
- **Suplementation period: Sept-March**
- **Product sold: weaned calf 180 days-200kg**

Livestock systems: Cattle herds

Livestock systems: Sheep herds

- **Breeds:**
  - **Merino**
  - **Entrefina**
- **Breeding:**
  - **1 lambing per year**
  - **2 lambing/3 years**
  - **No lambing during summer**
- **Some of them are dairy sheep herds: low milk yield**
- **Lamb sold after fattening: 22-28 kg**

  80 days old

Livestock systems: Goat herds

- **Breeds**
  - Verata
  - Serrana
- **Breeding: Spring**
- **Milk yield**
  - 235 l/goat
  - 230 days
- **Weaned kids: 9kg**

Livestock systems: Pig herds

- Breeds: Iberian
- Breeding phase:
- Outdoors or indoors
- 2 farrowing
  - Dec
  - June
- Sows and boars: fed with cereals

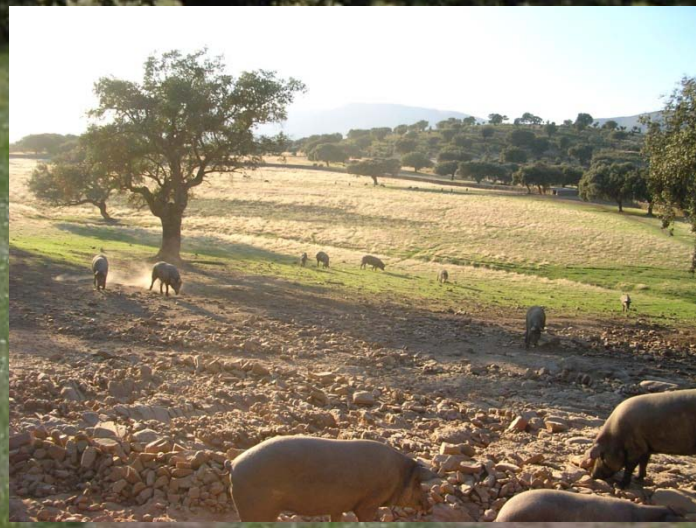
Livestock systems: Pig herds

- **Fattening period:**
- **1st Stage “”cria”:**

  Birth-23kg
- **2nd stage “recria”:**

  23kg-100kg
- **3rd stage (Fattening)**

  100-160kg
  - **“Montanera”: Animals fattened with accorn for 2.5-3 months and Slaughtered with 16-20 months old**
  - **“Recebo” : accorns+cereals**
  - **“Cebo”: cereals**



Pig products: Iberian dry-cured ham

- **The curing process takes from 12 months to 36 months**

Purpose of this grazing valuation

- **Which amount of environmental resources cover the food needs of livestock in extensive farming systems such as dehesas?**
- **Current situation: significant increases in the cost of feedstuffs.**
- **Main utility of answering this question to adapt Livestock densities to available grazing resources in the farms in other to reduce supplementary feed costs and overstocking risks**

The main question is….

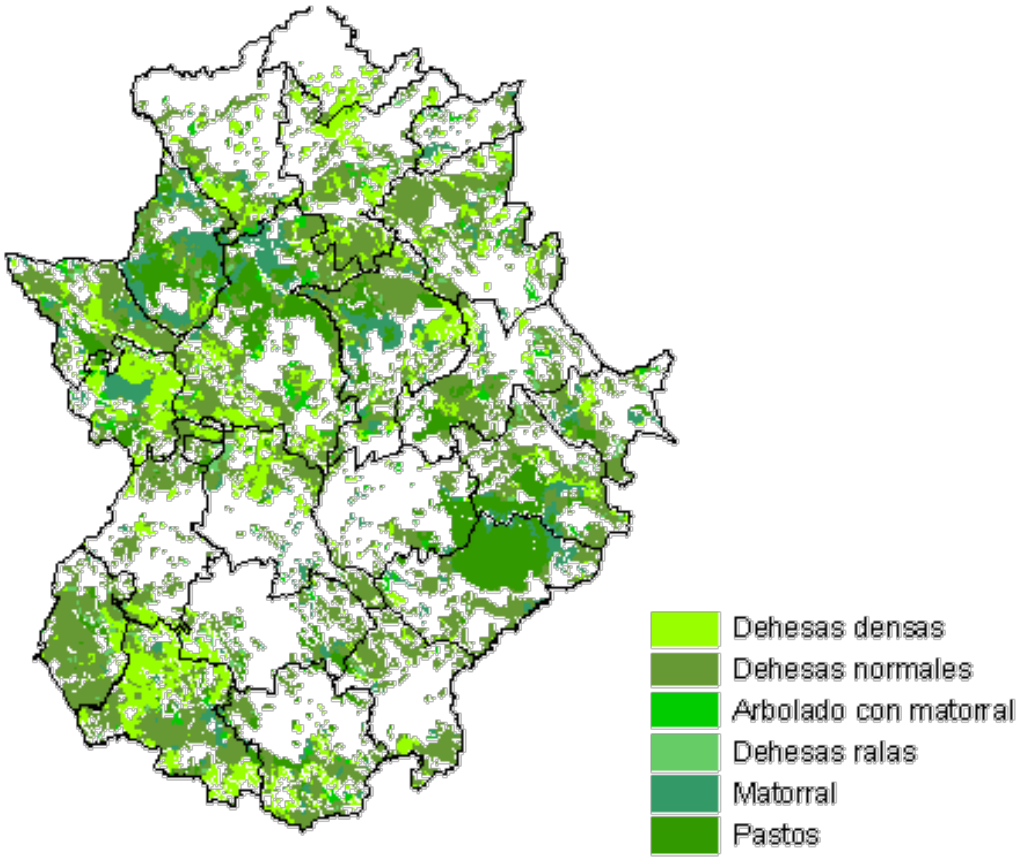
How much of livestock requirements are covered by grazing???

- Livestock requirements of all the animals in the farms (cattle, sheep, pigs..)
- Which percentage of these Requirements are covered by grazing
- Livestock density
- How much cost these grazing resources?

- Field work

Materials and Methods

Study area



- Region of Extremadura
- 2.2 million ha
- More than 50% of the utilized agricultural area is considered to be dehesa.

Sample selection

- The data used were obtained from survey questionnaires conducted in 2004 and 2005 with dehesa farm owners or managers in the Region of Extremadura (SW Spain).
- The surveys were conducted on site
- 69 holders of dehesa farms larger than 100 ha.
- Questionnaires
  - Farm land uses
  - Number and types of animals
  - Feedstuffs

Calculation and evaluation of grazing resources

The total requirements of species i (NTGi) are determined by the total number of animals of class j (Nj, animals of the same age, and sex), the correction factor for the breed (Fcr), and the animals' annual energy requirements according to their class (UG):

- $NTGi = \sum j\ Nj \times Fcr \times UG$

- **Thus, a farm's total requirements (NT) will be given by the requirements of its cattle (UGv), plus its sheep (UGov), plus its pigs (UGp), etc.:**
  - $NT = \sum i\ NTGi$
  - $NT = \sum i\ UGv + UGov + UGp\ \ ...$

Calculation and evaluation of grazing resources

- The **requirements covered by grazing** (NTp) are obtained as the difference between **the total requirements of the livestock** (NT) and the **feedstuffs supplied** (NTs).

- The grazing resources are:
  - *NTp = NT - NTs*

- (coefficients and values assigned to the principal raw materials used in animal feed in Martín et al. 1986).

Economic valuation

- **The valuation of the resources was established according to the local market values of rent of pasture,forestry crops, and acorn for forage feeding, and taking into account the specific characteristics of each farm.**
- **Indicators calculated:**
  - **Cost of grazing feed units (€/FU Forage units)**
  - **Cost of feedstuff unit (€/FU)**
  - **Cost of grazing €/ha**
  - **Cost of feedstuff €/ha**
  - **% Cost grazing resources/ cost total feed**

Results

Farm Types

The analysis of the farms are presented according 4 different types taking in account their technical and economics characteristics (full description of the typology construction process is developed in Gaspar et al. 2007).

DEHESA FARM: Overall sample

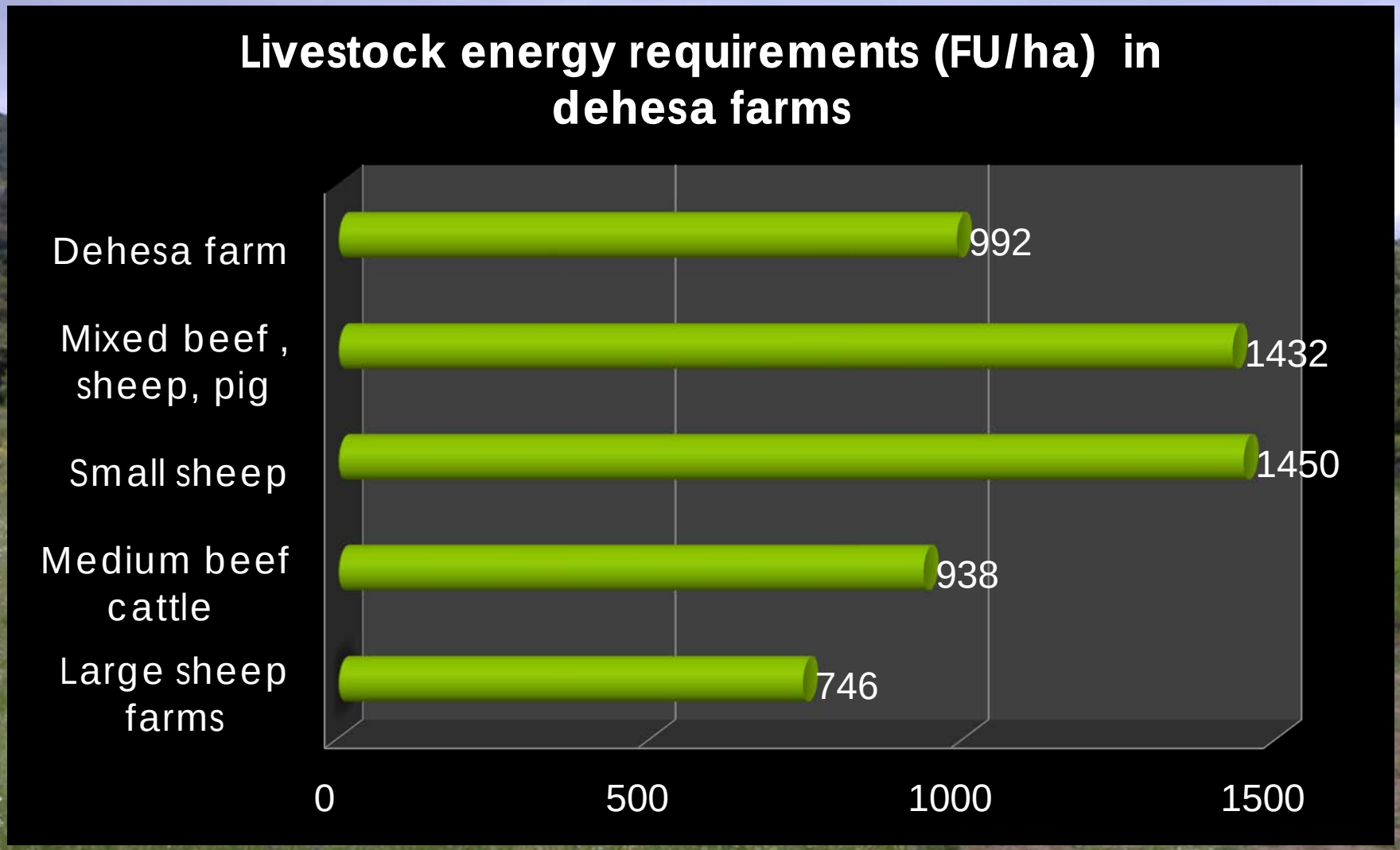
TYPE 1: Large sheep farms

TYPE 2: Medium-sized beef cattle production

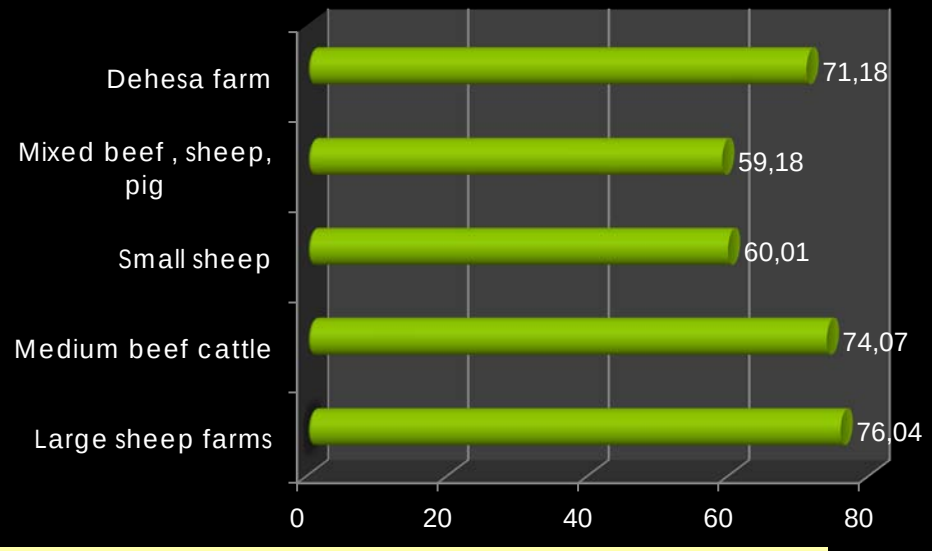
TYPE 3: Small-scale sheep farms

TYPE 4: Mixed beef cattle, sheep, and Iberian pig farms

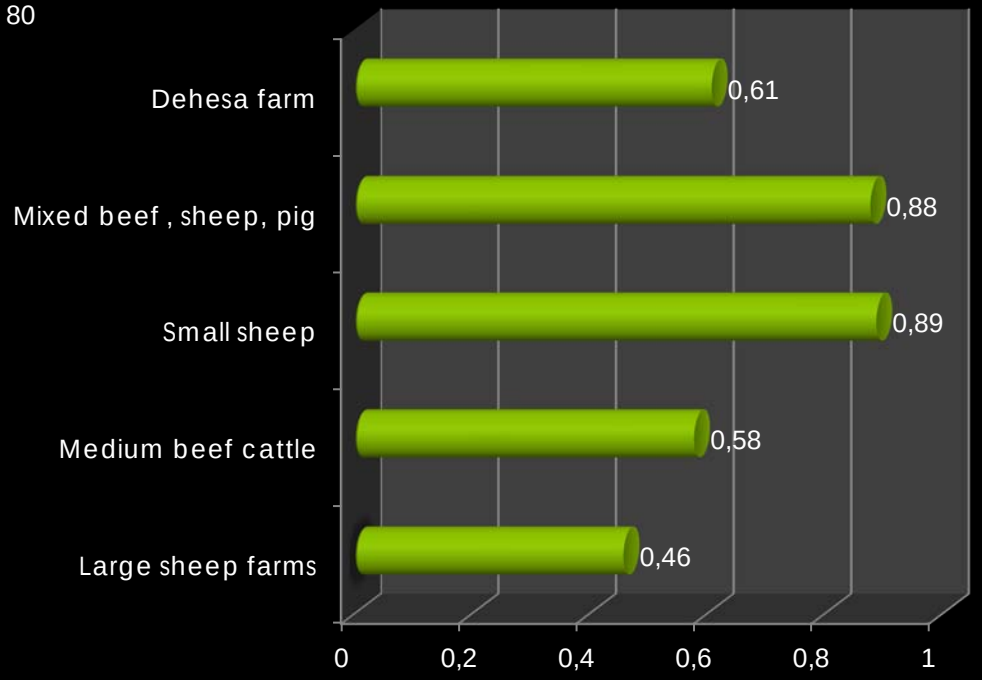
Energy requirements of livestock and grazing resource use



% Requirements covered by grazing acaccordding to farm type

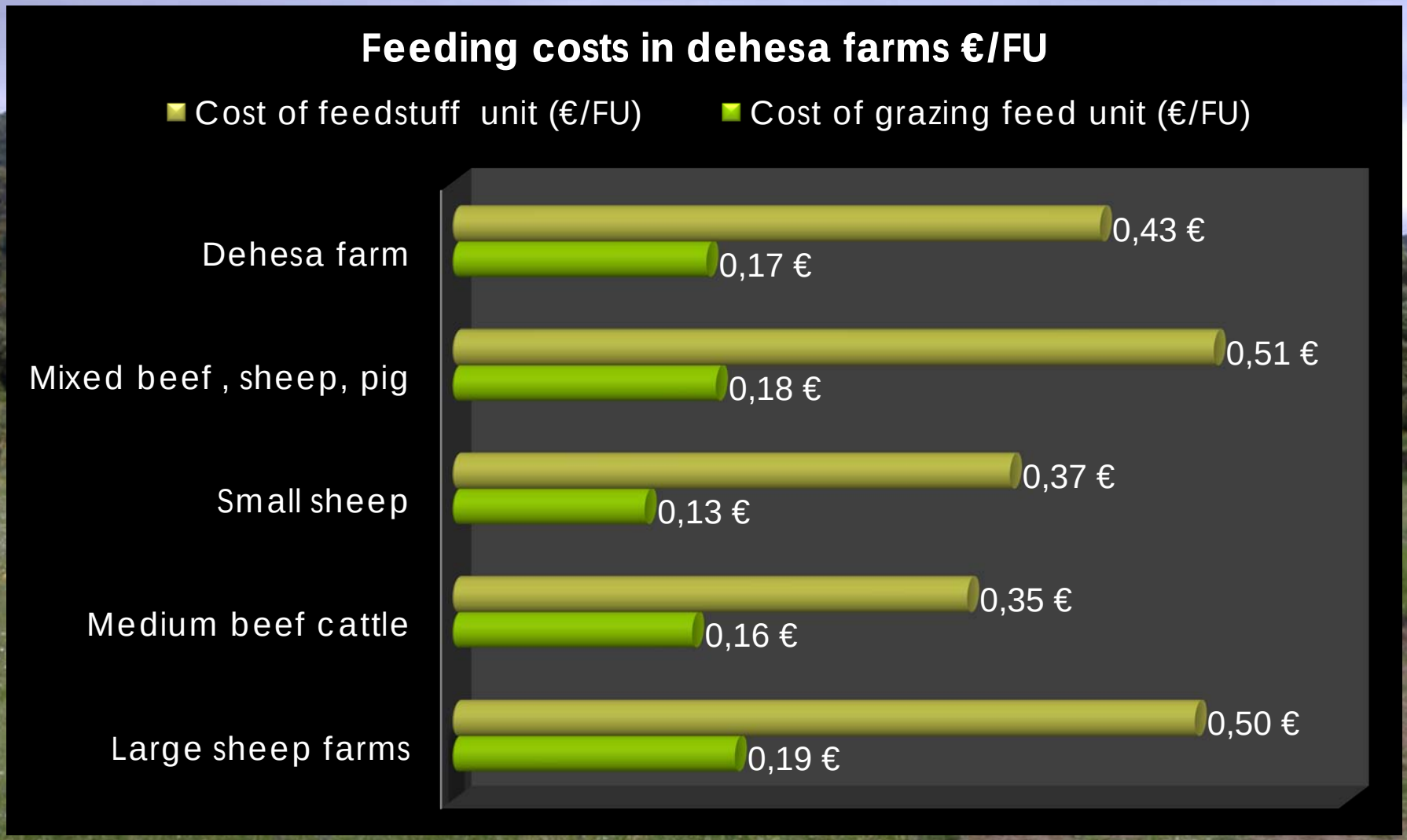


Livestock density (LU/ha)



Energy requirements of livestock and grazing resource use

Economic value of grazing resources and feedstuffs



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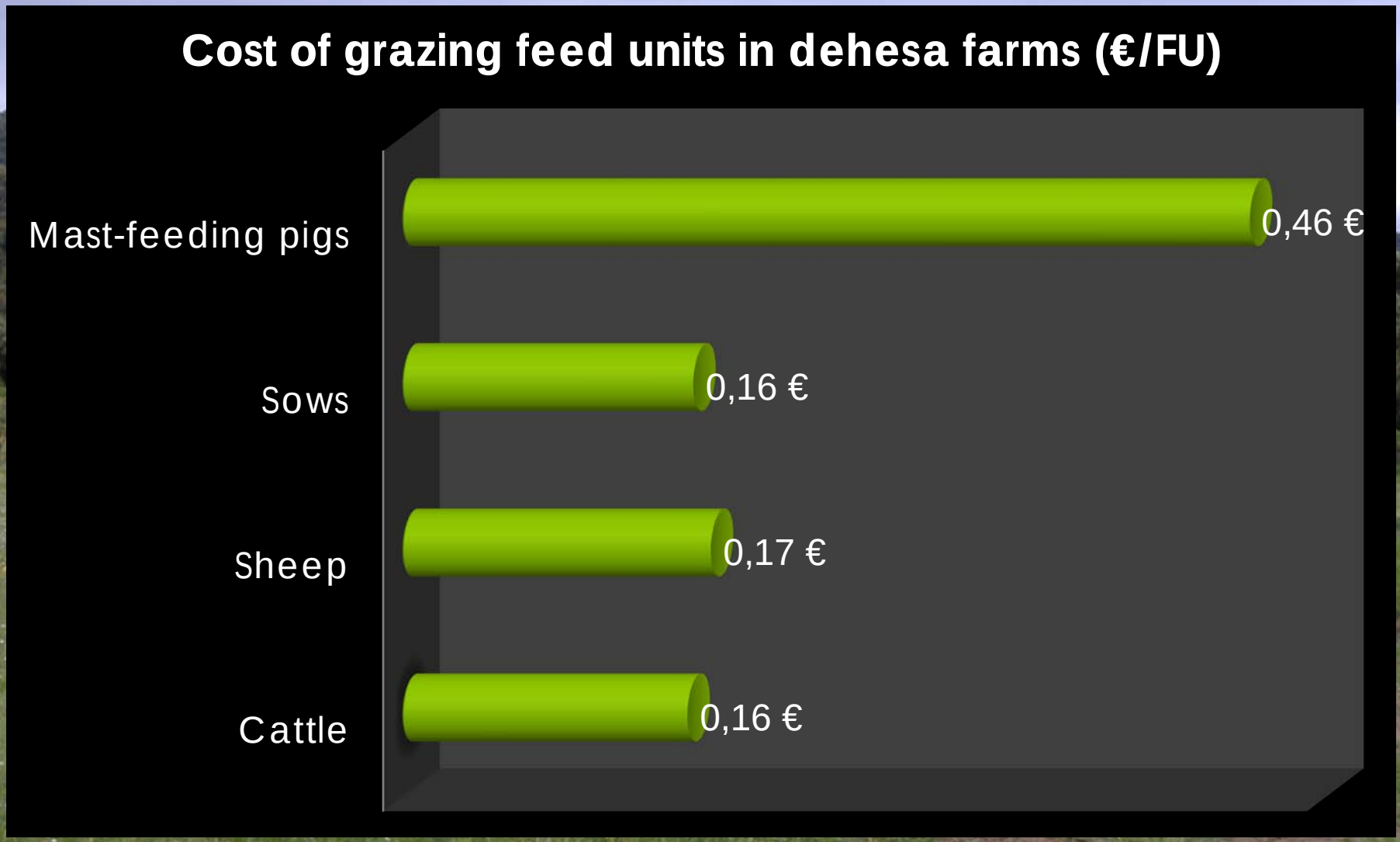
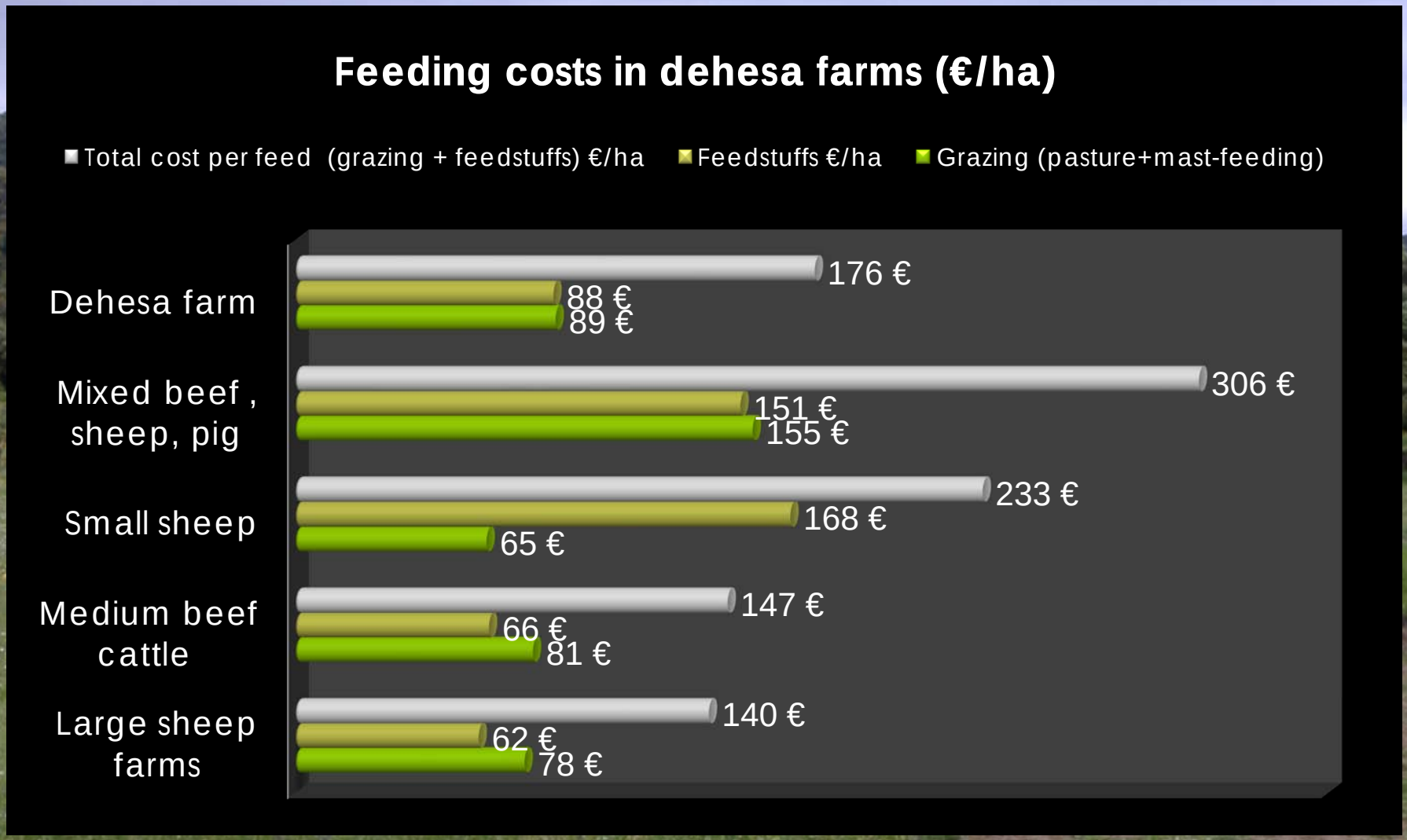


Economic value of grazing resources and feedstuffs



Conclusions

- In dehesa systems grazing resources cover a major part of the livestock's requirements especially in beef cattle farms.
- The use of grazing resources is conditioned by the size of the holding and livestock density
- The use of the pasture as feed for the livestock is the principal economic utilities in these systems,
- Reduced livestock feed costs compared with more intensive systems.
- The greatest costs are in acorn feeding of Iberian pig

Thanks for your attention

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