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Extensive Livestock Production Systems in Portugal

(Oral Presentation)

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Portuguese Edapho-climatic conditions

Relief

- **Mainly low altitude areas (av. Altitude 310 m)**
 - o 72% with < 400 m and less than 12% with more than 700 m
- **Relief distribution not uniform within North and South of Tagus River**
 - o North (av. Altitude 421m with high relief; 47% soils < 700m)
 - o South (av. Altitude 169m; only 0,2% > 700m; mainly plaine)

Weather (generally classified as Mediterranean)

- North and Center Littoral - Atlantic influence;
- North/Centre Interior and South (Alentejo) - Continental influence

Temperature and humidity

- similar in all the country;
- differences mainly between the littoral and the Interior;
- low amplitude and high air humidity in the Littoral;
- high amplitude and low air humidity in the Interior



Portuguese Edapho-climatic conditions

Rainfall - higher in the North

Soils

- generally poor;
- sandy soils, sediment and eruptive rocks represents 16,7%;
- podzols and vertisols only 11% and located in sub-humid areas with excess water availability in winter and dry during summer

From the edapho-climatic characterization it is understood that the country can be divided in two great zones.

Close proximity, in terms of conditionings for the agriculture systems within the Interior North and Centre, with the South, specially during Summer

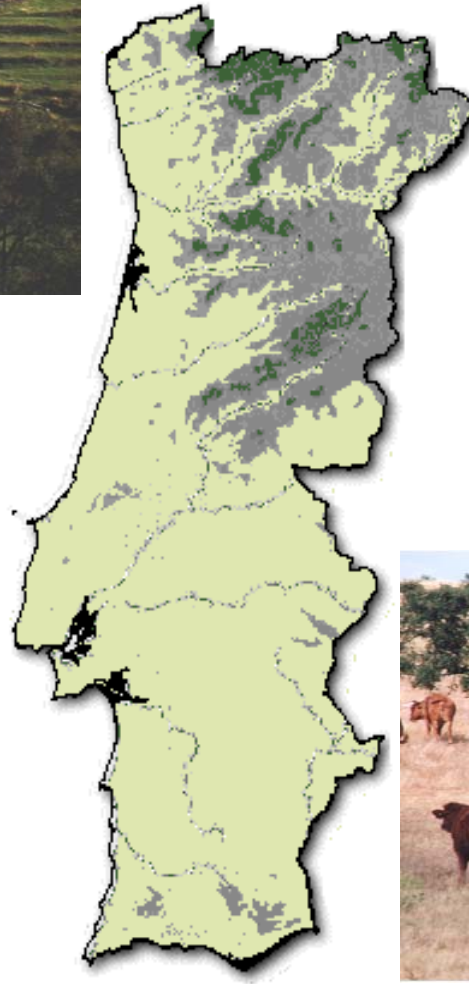
Which justifies the analysis and the presentation, where all the Alentejo region, including is littoral, is aggregated to the Parcel Interior North and Centre



Table 1 - Characteristics of the Portuguese Weather and Soils

North/Centre	Characteristics	South
Weather		
-With Continental and Atlantic influence	Mediterranic	-With Continental influence
$\leq 15^{\circ}\text{C}$	Average annual temperature	$> 15^{\circ}\text{C}$
$> 800 \text{ mm}$	Average annual rain	$< 800 \text{ mm}$
- High	Frost	- Low to medium
Soils		
<ul style="list-style-type: none"> -High relief -Medium hydric erosion - Low organic matter 	<ul style="list-style-type: none"> - Granite and schistose soils 	<ul style="list-style-type: none"> -Essentially plain - High hydric erosion - Very low organic matter

North Views

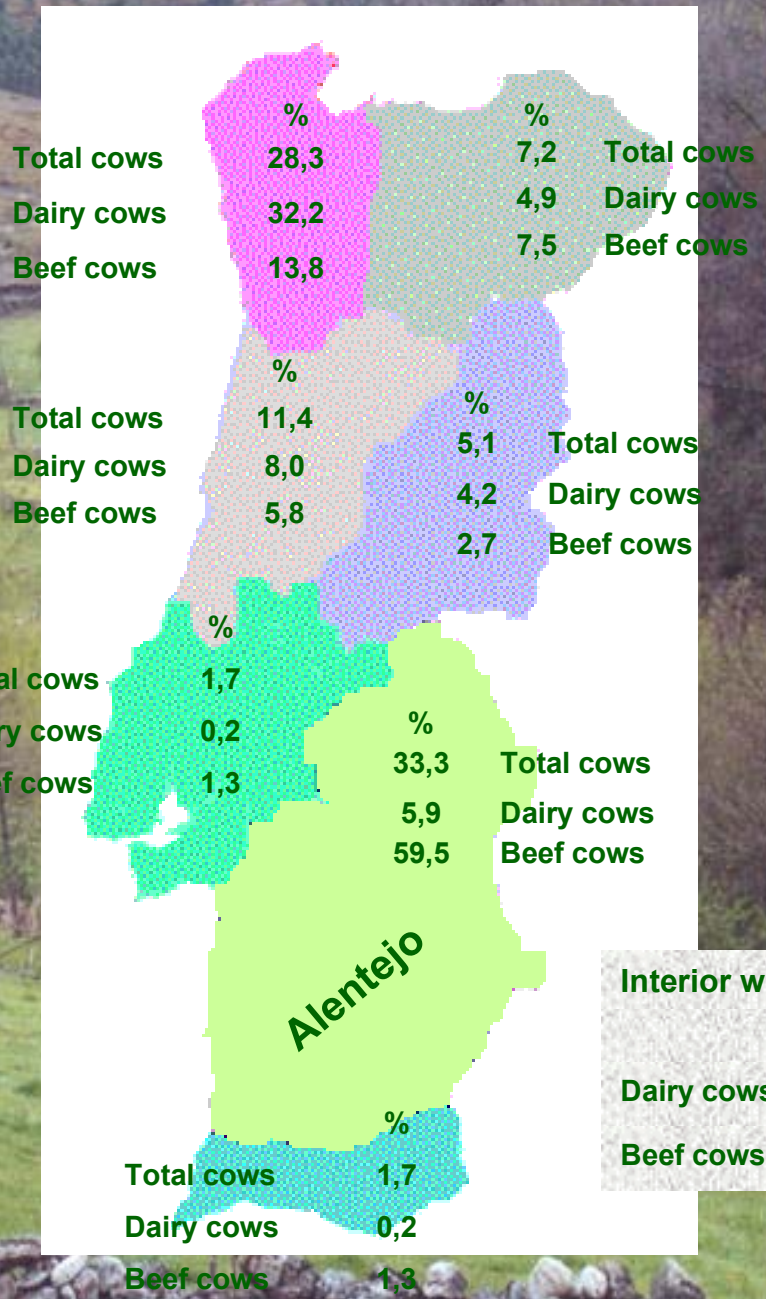


South Views



Cattle

	Animals	Animals/farm
Total	1 415 188	13,81
Continent	1 172 437	12,93
Total cows	904 255	
Dairy cows	355 731	10,78
Beef cows	341 262	8,17



Littoral without Alentejo	
	%
Dairy cows	57,0
Beef cows	24,8

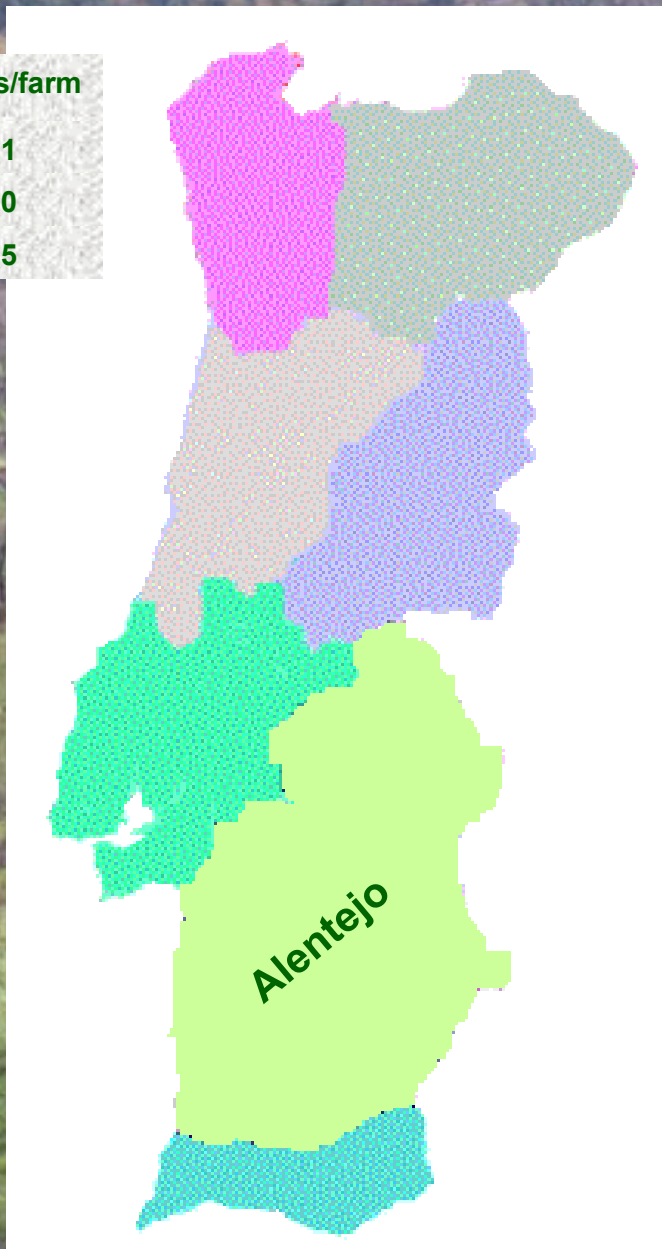
Interior with all Alentejo	
	%
Dairy cows	15,0
Beef cows	69,7



Sheep and Goats

	<u>Sheep</u>	Animals/farm
Total	2 929 765	41,1
Continent	2 917 719	42,0
Females	2 428 937	35,5

	<u>Goats</u>	Animals/farm
Total	537 241	9,8
Continent	519 018	10,6
Females	456 431	8,5



Sheep in Littoral (1)		
	Animals	%
Sheep	546 875	22,6

Sheep in Interior (2)		
	Animals	%
Sheep	871 997	77,1

Goats in Littoral (1)		
	Animals	%
Goats	181 294	39,8

Goats in Interior (2)		
	Animals	%
Goats	260 632	57,1

- Without Alentejo
- With Alentejo





Portuguese Indigenous Breeds

A significant part of extensive grazing production systems is based:

- use of animals with unique characteristics;
- different from region to region;
- good maternal aptitude;
- high rusticity;
- low growing performance;
- not very specialised in meat production (cattle) or milk and/or meat (sheep and goat);
- exceptional adaptation to the environment;
- these breeds are used as line mother (pure breed or crossbreed);





Table 2 - Indigenous Portuguese Cattle Breeds

Indigenous Breeds	Geographic Origin	Animals in Herd Book	Goal
Alentejana	South	7,430	Meat
Arouquesa	Centre North	6,118	Traction/Meat/Milk
Barrosã	Interior North	6,715	Meat/Traction
Brava	Centre South and South	9,000	Bullfighting
Cachena	North	471	Meat/Traction
Garvonesa	Litoral South	55	Meat
Marinhoa	Litoral Centre	4,426	Traction/Meat
Maronesa	Interior North	7,194	Traction/Meat
Mertolenga	South	7,370	Meat
Minhota	Litoral North	6,000	Milk/Meat/Traction
Mirandesa	Interior North	4,270	Meat/Traction
Preta	South	2,800	Meat

In the North and Center



Minhota



Cachena



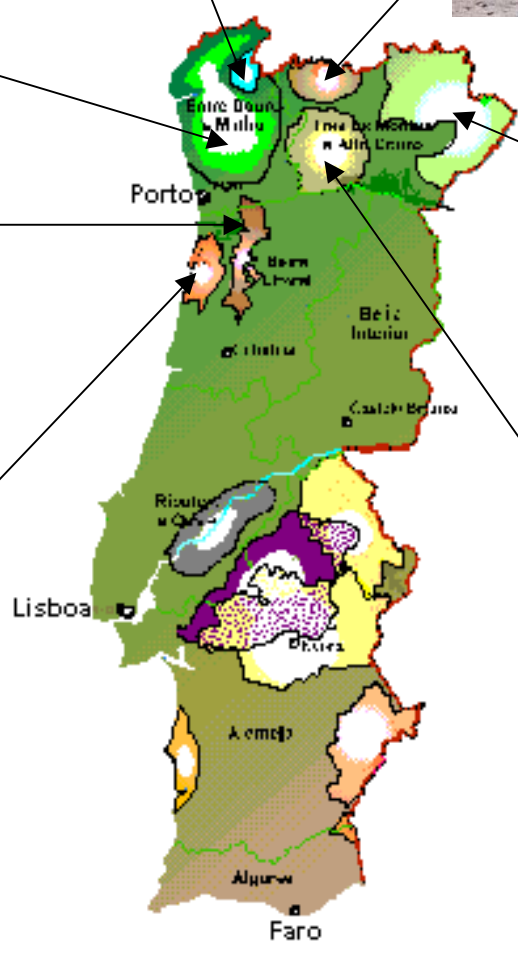
Barrosã



Arouquesa



Marinhua



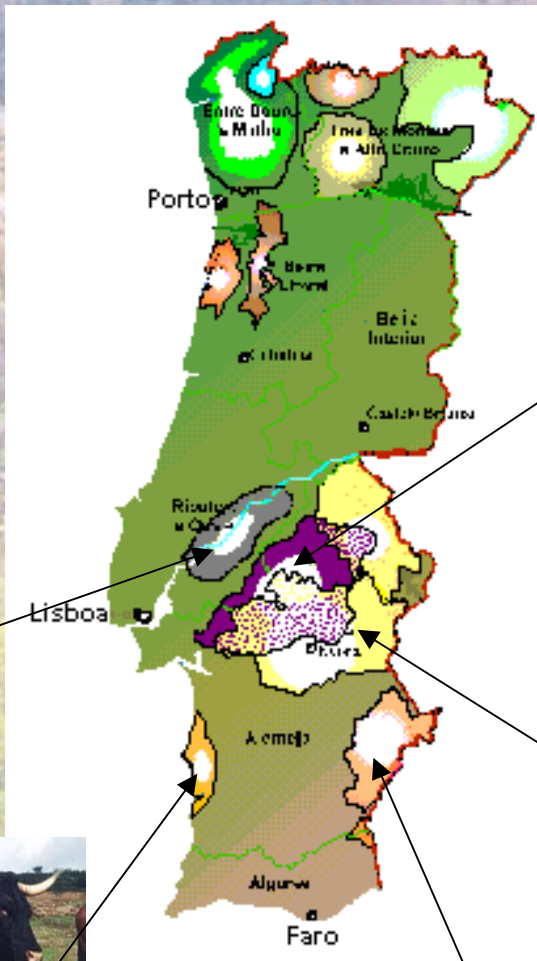
Mirandesa



Maronesa



In the South



Brava



Preta



Alentejana



Garvonesa



Mertolenga





Table 3- Indigenous Portuguese Sheep breeds

Indigenous Breeds	Geographic Origin	Animals in Herd Book	Goal
B. Entre Douro e Minho	Littoral North	-	Meat
Campaniça	South	3,014	Meat/milk/Wool
Churra Algarvia	Littoral South	5,270	Meat
Churra Badana	Interior North	2,669	Meat
Churra Galega Bragançana	Interior North	8,585	Meat
Churra Galega Mirandesa	Interior North	-	Meat/wool
Churra Terra Quente	Interior North	80,000	Milk/Meat
Merino Beira Baixa	Interior Centre	2,251	Milk/meat
Merino Branco	South	22,000	Meat/milk/wool
Merino Preto	Interior South	6,900	Meat/milk/wool
Mondegueira	Interior Centre	3,750	Milk
Saloia	South littoral Centre	4,577	Milk
B. Serra da Estrela	Centre	6,000	Milk



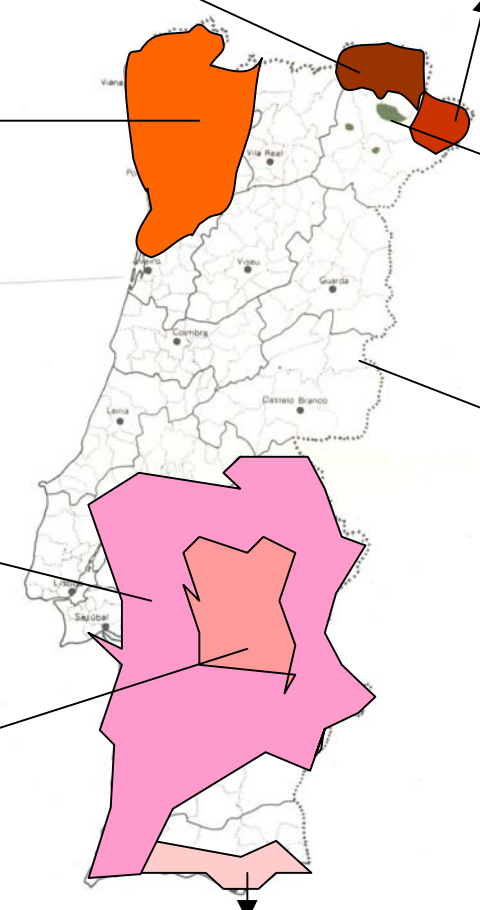
**Churra Galego
Mirandesa**



**Churra Galego
Bragançana**



**Bordaleiro Entre
Douro e Minho**



Badana



Merino Branco



**Churro Campo
extinguished**



Merino Preto

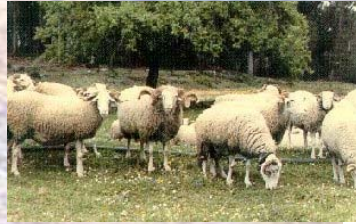
Indigenous Sheep Breeds

Meat

Meat + Milk



Churro Algarvio



Serra da Estrela



Churro da Terra Quente



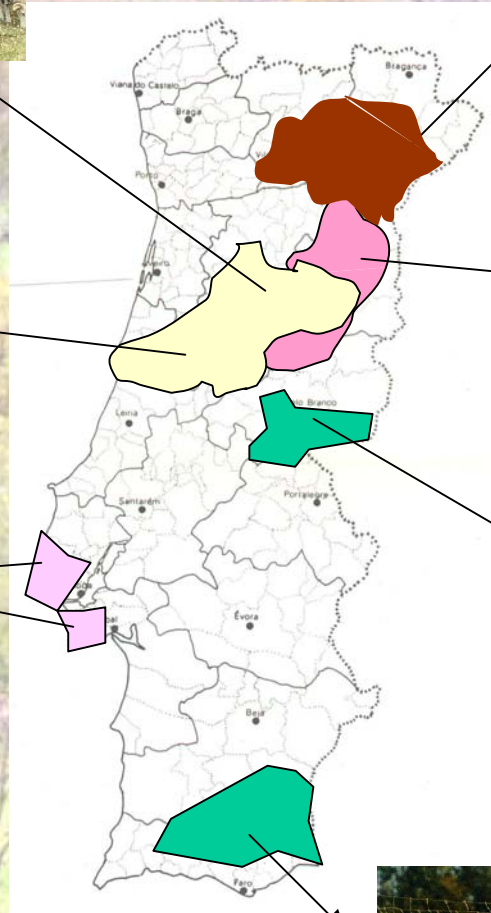
Churro Mondegueira



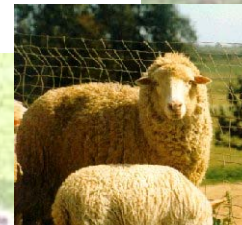
Saloia



Merino Beira Baixa



**Indigenous Sheep Breeds
Milk**



Campaniça



Table 4 - Indigenous Portuguese Goat Breeds

Indigenous Breeds	Geographic Origin	Animals in Herd Book	Goal
Algarvia	South	3,997	Milk
Bravia	Interior North	-	Meat
Charnequeira	Interior Centre and South	5,200	Milk/Meat
Serpentina	South	4,000	Meat/milk
Serrana	Centre and North	21,013	Milk

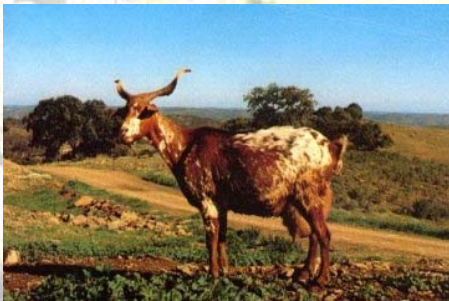


Serrana- 1 - Transmontana

2 – Jarmelista

3 – Da Serra

4 - Ribatejana



8- Algarvia

Indigenous Goat Breeds

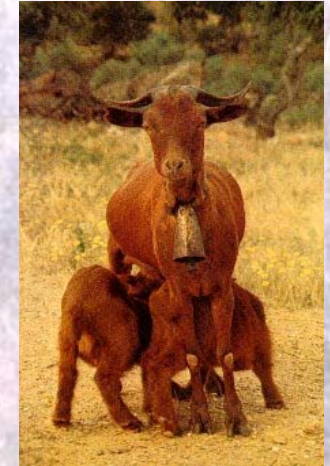
Milk – 1,2,3,4,8

Milk+Meat – 5

Meat – 6,7,9

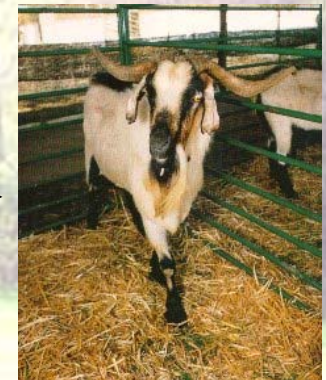


9- Bravia



Charnequeira: 5- Beiroa

6- Alentejana



7- Serpentina

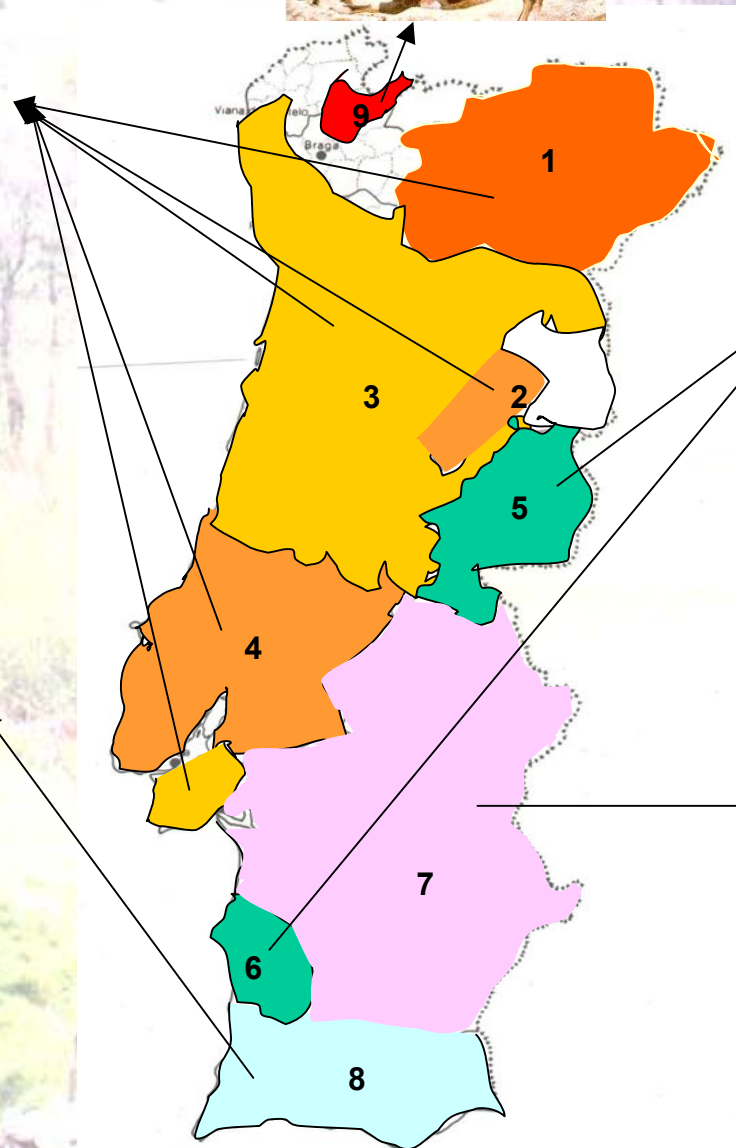




Table 5 – Indigenous Portuguese Pig Breeds

Indigenous Breeds	Geographic Origin	Animals in Herd Book	Goal
Alentejana	South Centre and South	6,500	- Meat
Bísaro	North	196	- Meat

Bísaro

North

196

- Meat

Alentejana

**South Centre
and South**

6,500

- Meat

**Indigenous
Breeds**

**Geographic
Origin**

**Animals in
Herd Book**

Goal

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Indigenous Pig Breeds





Table 6 - In Portugal we have the traditional duality in Animal Production Systems

Extensive	Production Systems	Intensive
Indigenous Breeds	Genetic Resources	Exotic Breeds Mainly crossbred
<ul style="list-style-type: none"> - Local Resources - Indigenous flora - Quality submitted to the vegetative cycle - Photosynthetic capacity 	Feed	<ul style="list-style-type: none"> - Mainly Imported - Concentrate - High energy and protein - More expensive
<ul style="list-style-type: none"> - Limited - Specific and with particularities 	Product quantity	<ul style="list-style-type: none"> - Mass supply - Standardised product
<ul style="list-style-type: none"> - Market Niches increasing tendency 	Search	<ul style="list-style-type: none"> - More generalised decreasing tendency
<ul style="list-style-type: none"> - More expensive 	Cost per unit produced	<ul style="list-style-type: none"> - Less expensive
<ul style="list-style-type: none"> - Biological response in function of local availabilities - Low stocking rate 	Animal welfare	<ul style="list-style-type: none"> - To maximise income - High stocking rate
<ul style="list-style-type: none"> - Well adapted but less efficient 	Animal - Biological adaptation	<ul style="list-style-type: none"> - Higher sensitivity - Higher production capacity
<ul style="list-style-type: none"> - Geographical location 	Location	<ul style="list-style-type: none"> - Sparse
<ul style="list-style-type: none"> - Small 	Influence in environment	<ul style="list-style-type: none"> - Potentially aggressive
<ul style="list-style-type: none"> - Limited 	Labour	<ul style="list-style-type: none"> - Specialized
<ul style="list-style-type: none"> - Possible 	Genetic resources preservation	<ul style="list-style-type: none"> - Hard



EXTENSIVE SYSTEMS

In Extensive systems :

- **diversity and quality of environment and landscape is ensured;**
- **animals in equilibrium with the environment (welfare);**
- **sustainable;**
- **based on the use of local available resources;**
- **respect the use of the soils;**
- **well adapted to the climatic conditions;**
- **one way of giving life and quality to rural landscape (avoid rural exodus)**
- **grazing system avoid soil erosion (physical desertification)**

The characteristics indicated for the extensive systems refers mainly to the ones used on the indigenous breeds. The feeding of this breeds is based on natural resources and is submitted to the conditions that influence those resources: soil, rain and temperature.



We can identify two extensive beef cattle production systems in Portugal:

These systems considers:

- the use of low capital inputs but with production costs only potentially competitive;**
- the warranty of the product quality and typicity, which are essential characteristics for the intended added value;**
- the preference and demand for the product by the consumer;**
- the defence of the environmental quality.**





Table 7 - Characteristics of the Portuguese Extensive Beef Cattle Production Systems

North/Centre	Characteristics	South
≈ 3 ha	Farming size	≈ 300 ha
3	Average size of the herd	75
Diversified and family type	Agricultural kind	Entrepreneurship
Meat/traction	Aptitude of Indigenous breeds	Meat
Mainly “Lameiros”	Grazing	Mainly “Montados”
Natural irrigation + Dry land	Pasture	Dry land
April - July	High digestibility and high production	March - May
March and October	High digestibility and low production	October and November
August, September, November - February	Null or low growth	June - September, December - February
Hay, cereal straw, turnip, ferrejos, potatoes and fruits	Supplementary feeds	Cereal straw, hay, crop residue, cereal grain and acorn
Along the year	Calving	Summer and Winter
7 months	Slaughter age	18 - 24 months

- **Lameiros** -Permanent pastures of natural grassland in the slopes of mountains with runoff irrigation and overflow.
- **Montados** – Extensive Agrosilvopastoral system with *Quercus spp.* trees, very large area of unit production with grazing surface under trees.-- **ferrejos** - barley of wheat cutted as green forage



Table 8 - Characteristics of the Portuguese Extensive Meat Sheep Production Systems based in traditional grazing in the North/Centre and South

North/Centre	Characteristics	South
-	Farming size	> 200 ha
Littoral < 50 Interior 100 - 200	Herd size	> 400
Long wool breeds	Genetic basis	Merino Breeds
< specialized for meat	Aptitude	Meat; good carcasses
All year	Mating season	One cycle of reproduction (April-May)
All year	Lambing	Sept./Oct.
1 – 2 month	Weaning age	5 month
7 kg	Carcass weight	15 kg
North- "pastoreio de percurso" "baldios". Centre- Transition	Grazing Type (characteristics)	Farms/fences; "Montado" -Under trees (<i>Quercus spp.</i>)
All year	Grazing period	All year
North – Family; Centre – family and entrepreneurship	Agricultural kind	Entrepreneurship
Yes for some breeds	PDO and PGI	Yes
After cattle, crop residues	Complementary feed	Crop residues, acorn (<i>Quercus spp.</i>)



Table 9 - Characteristics of the Portuguese Extensive Milk Sheep Production Systems based in traditional grazing in small and large farms

Small farms	Characteristics	Large Farms
< 10 ha	Farming size	> 100 ha
40 - 50	Herd size	200 - 300
Bordaleira Serra Estrela (BSE)	Genetic basis	Bordaleira Saloia (BS); Merino Beira Baixa (MBB)
Reasonable - BSE	Aptitude	Reasonable – BS No aptitude - MBB
One cycle of reproduction (April)	Mating season	One cycle of reproduction (April-May)
August/September	Lambing	September/October
3 weeks	Weaning age	1 – 2 month
7 kg	Carcass weight	7 kg for BS and MBB
"Pastoreio de Percurso" Transhumance (30%)	Grazing Type	In let lands or owned areas with shepherds few fences
All year	Grazing period	All year
Diversified and family type	Agricultural kind	Entrepreneurship
September/July	Milking	October/June
Milking parlour Standing sheep house	Infrastructure	Few milking parlour Apriscos (open air)
Cured cheese with milk of only of this breed	Production	Milk and fresh cheese (8 days); some cured cheese
Yes	PDO	Yes
Hay in winter	Complementar feed	Straw and Cereals - Autumn/winter



Table 10 - Characteristics of the Portuguese Extensive Goat Production Systems based in traditional grazing in small and large farms

Small farms	Characteristics	Large Farms
< 10 ha(Se); ≈50 ha(AI)	Farming size	> 100 ha
40 - 70	Herd size	150/250 (Ch); 100/200 (S)
Serrana (Se); Algarvia (AI)	Genetic basis	Charnequeira (Ch); Serpentina (S)
Good	Milk Aptitude	Reasonable (Ch)-No aptitude (S)
One cycle of reproduction (April)	Mating season	One cycle of reproduction (April-May)
August/September	Lambing	September/October
4/5 weeks(Se); 6/8 weeks (AI)	Weaning age	1/2 month (Ch; S) - 3/4 month (S)
6/8 Kg(Se); 7/10 Kg(AI)	Liveweight	8/10 Kg (Ch) 9/12 Kg(S);16/20 Kg(S)
"Pastoreio de Percurso" Mostly in highlands	Grazing Type	In let lands or owned areas with shepherds few fences
All year	Grazing period	All year
Diversified and family type	Agricultural kind	Entrepreneurship
September/July	Milking	September/July (Ch)
540/600 L (Se)-210 days 350/650 L (AI) -<275	Milk Yield	220/250 L (Ch) - 180 L (S) in irrigated areas
Milking parlour (bigger flocks) Standing sheep house	Infrastructure	Milking parlour Apriscos (open air)
Cured cheese or sell milk or self consumption	Production	Milk and fresh cheese- -mixed milk ewe (8 days); some cured cheese
Yes (Se)	PDO	Yes (Ch) ewe and goat milk
Hay in winter	Complementar feed	Straw and Cereals - Autumn/winter



Conclusions

Portugal has edaphoclimatic conditions typically Mediterranean with some Atlantic climatic influence in the littoral North and Centre.

In the main territory there are a low rainfall in Winter and a deficit of water in Summer with a water soil availability during only 2 – 3 months.

The forages production, is conditioned for those environmental conditions and characterized by 2 peaks of production and by high quality variations

Thus:

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Endogenous resources must be valorised.

- **Thus is only possible if we produce what others can't:**
 - **either by absence of biological diversity;**
 - **by a different genetic potential.**

Indigenous breeds are a viable alternative in LFAs:

- **contributing to the farm income;**
- **to the settlement of population;**
- **landscape diversity preservation.**

In terms of productive levels:

- **they can't compete with imported breeds;**
- **but must be protected (preserve genetic diversity).**

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- We have an old rural population and an growing abandonment of the rural areas, and in some cases a great risk of desertification exists, mainly in the interior areas of the country;
- The valorisation of the indigenous breeds can contribute for the fixation of that population and contribute for the interest of young people in the agricultural activities;

Must be guaranteed the tipicity of the final product and since it is a limited production there are conditions to revindicate the added value.





It is necessary to support the valorisation of the indigenous breeds in order to:

- defend and preserve the genetic inheritance;
- diversify the agricultural activities in order to a better use of the natural resources;
- increase farming income which promotes the fixation of the population in rural areas with low or very low population density;
- promote production systems with low or very low animals/ha, environmental friendly;
- to maintain the characteristics of the indigenous breeds and its feeding systems in order to obtain products with guaranteed quality, responsible for an added value.

