

WP1 – Production system metrics: Assessing the systems context

Task T1.1 - **Characterising typical European cattle systems** and challenges to their resilience and efficiency

Task T1.2 - Refining regional information through **stakeholder consultation and farm assessments**

Task T1.3 - **Synopsis of challenges** to R&E in European ruminant production and the potential for R&E traits to improve future productivity and sustainability

Task T1.1 - Characterising typical European cattle systems and challenges to their resilience and efficiency



Description of Spanish beef cattle production systems to feed the analyses of FADN data led by FIBL

Cattle systems

1. Mountain Suckler



2. Intensive lowland+finishing



3. Intensive feedlot



Description of each system

1. Pyrenean Suckler
2. Intensive lowland+finishing
3. Intensive feedlot



Suckler cows (with or without beef finishing animals)			
Contact name	ISABEL CASASÚS		
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Organisation	CITA Aragón		
Please describe typical suckler/mother cattle systems in your region			
Cattle systems	Example	1	2
Descriptive system name	Alpine cows	Pyrenean Suckler	Intensive lowland+finishing
Country	Switzerland	Spain	Spain
Region name	Alps	Aragón	Aragón
Dairy, suckler or beef finishing	Suckler	Suckler	Suckler (+ finishing)
Conventional or organic	Organic	conventional	conventional
Typical breed	various	Parda de Montaña, Pirenaica	various (Parda de Montaña,
Lowland, hills, mountains	mountains	mountains	lowland
Cold, cool, temperate, warm, hot?	cool	cool	warm
Average annual temperature (°C)	6	10	13
Wet, medium, dry	medium	medium	dry
Approximate precipitation (mm/annum)	1750	1000	500
Vegetative growth (months)	6	7	10
System intensity	low	low	high
Typical beef price €/kg carcass weight	9.95	4.2	4.2
Typical land use on a farm			
Utilised agricultural area (ha)	25	70	15
Temporary grassland leys %	10%	0%	
Legume/forage crops %	10%	0%	
Intensive permanent grassland %	40%	20%	20%
Extensive permanent grassland %	40%	80%	
Forage maize %	0%	0%	80%
Arable crops %	0%	0%	
Other crops %	0%	0%	
Sum	100%	100%	100%
Communal pastures (not UAA, ha)		70	
Extensive permanent grassland %		100%	
Typical livestock numbers on system			
Suckler cows (cow & calf systems)	Number 15	70	60
	Typical bodyweight (kg) 675	600	600
Typical age at first calving	Months 30	30	30
Typical age when culled	Years 8	10	10
Primary reason for culling cows?	E.g. mobility, fertility... fertility	fertility	fertility
Growing/finishing beef animals	Number 14	38	38
	Typical slaughter age (months) 10	N/A	13
	Typical age (if sold for finishing on another farm) (months) N/A	6	N/A
Typical beef slaughter weight (kg carcass weight)	205	N/A	275
Typical beef weaning weight (kg LW, sale to fattening farm)		200	N/A
Other livestock?	0	0	
Other livestock?	0	0	
Other livestock?	0	0	

Typical land use on a farm

Typical livestock numbers on system

Typical rations (% of DM intake)

Cow summer ration (% or kg of dry matter intake)

Cow winter ration (% or kg of dry matter intake)

Calf ration (% or kg dry matter intake)

Growing cattle summer ration (% or kg of dry matter intake)

Growing cattle winter ration (% or kg of dry matter intake)

Task T1.2 - Refining regional information through stakeholder consultation and farm assessments



Direct survey to 53 farmers in mountain areas



3 valleys of the Central Pyrenees, Spain (Broto, Benasque and Baliera)

- Same farms surveyed over 30 years

1991	2004	2018
102	71	53

- Direct interviews, fully structured questionnaire



A) Evolution of suckler cattle farming systems

(1990 - 2004 – 2018)

– general aspects of **farm structure & management:**

herd composition and land use

farm management

grazing calendar

indoor feeding

reproduction

family composition and labour

– **economic performance** in a 1-year cycle

++ official statistics on population, economy and livestock farms at the municipality level
(closest data to 1990, 2004, 2018)

Analytical approach

Main changes occurring (1990 - 2004 – 2018)

Trajectories of evolution: diversity and drivers



ENCUESTA EXPLOTACIONES VACUNO

I. CARACTERÍSTICAS GENERALES DE LA EXPLOTACIÓN

CAMPAÑA _____	Nº de encuesta _____
ENCUESTADOR _____	FECHA _____
Titular de explotación _____	Estado Civil _____
Nº de cartillas ganaderas _____	
Localidad _____	Municipio _____
Teléfono de contacto _____	Edad _____
Tipo de Explotación: 1) Familiar <input type="checkbox"/> 2) Sociedad civil <input type="checkbox"/> 3) S.A.T. <input type="checkbox"/>	
4) Cooperativa <input type="checkbox"/> 5) Otra <input type="checkbox"/> Nº Socios _____	

II. SUPERFICIES Y APROVECHAMIENTOS

1. Régimen de tenencia (SAU)

Hectáreas	Total	Secano	Regadío	Coste
Total				
Propiedad				
Arrendamiento				
Otros				

2. Situación de la explotación base (SAU)

- 1) Un municipio
2) Dos municipios no has (1) _____ no has (2) _____
3) Otra _____

What & Why?

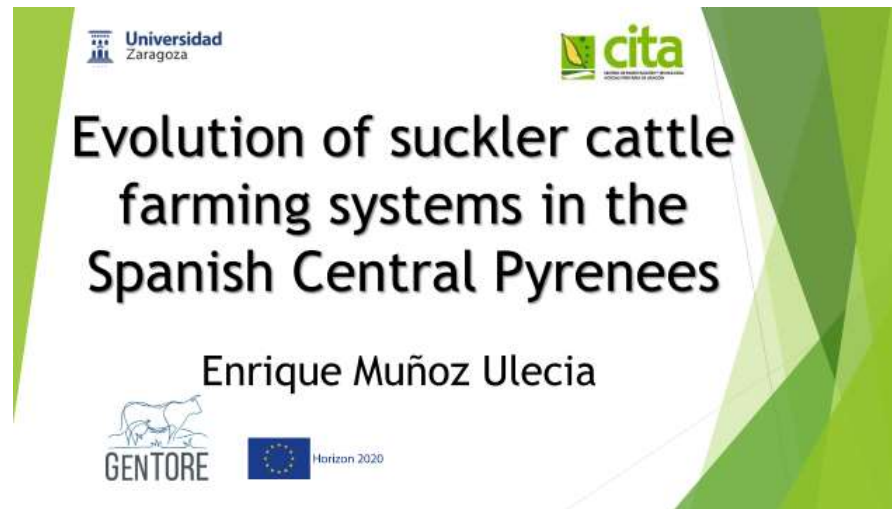
Results to be presented



- 71st Annual Meeting EAAP (virtual), December 2020

“A thirty-year analysis of trajectories of evolution of mountain cattle farming systems in the Spanish Pyrenees” **Muñoz-Ulecia, E., Bernués, A., Casasús, I., Lobón, S., Olaizola, A., Martín-Collado, D.**

- Paper under preparation
- And tomorrow at the Young Scientist Session!!



Evolution of suckler cattle farming systems in the Spanish Central Pyrenees

Enrique Muñoz Ulecia



B) Farmers' perception of traits related to DAM PRODUCTIVE EFFICIENCY



fertility

calving ease

lifetime productivity

age at first calving

cow size

docility

calf birth weight

calf weight at 90 d

calf weaning weight

carcass conformation

udder conformation

feet /leg morphology



- trait registered and sent to breeders associations?
- scored in a Likert scale (1-not important to 5-very important)
- comparisons (*Herd size, Type of marketed product, Predominant cow breed*)

(preliminary results presented at the 2019 Annual Meeting)

C) Farmers' perception on strategies to improve HERD RESILIENCE



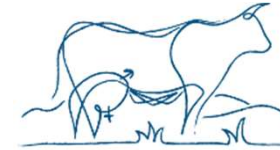
Faced with an adverse circumstance such as the following, what changes would help your farm to better cope with them?

- **Two consecutive drought years**
 - **Strong increase in commodity prices**
- scored in a Likert scale (1-not important to 5-very important)
- different strategies involving changes in

reproduction
health
feeding
general management
commercialization



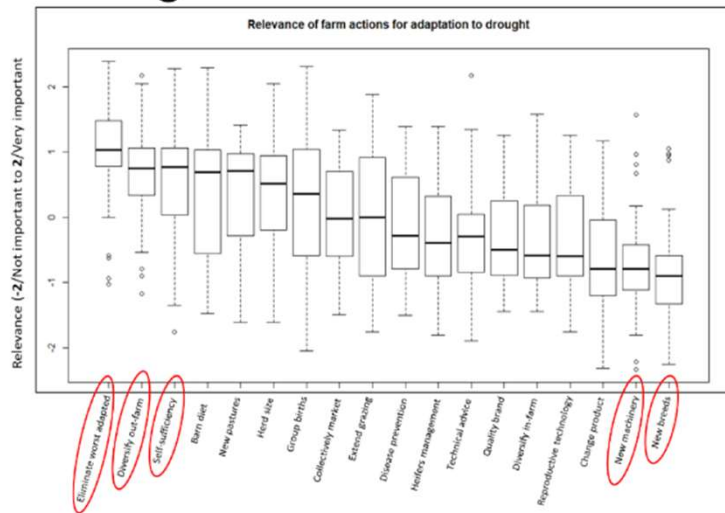
Most traits considered **important or fairly important** (mean=2.9)



	Two consecutive drought years	Strong increase in commodity prices
	Average importance (1-5)	Average importance (1-5)
Reproduction		
Group calving in specific periods	3.1	3.0
Use reproductive technology	2.3	2.3
Apply a specific heifer management program	2.5	2.4
Health		
Intensify control programs	2.7	2.7
Eliminate the worst adapted animals	4.2	4.1
Feeding		
Extend the grazing period	4.3	2.7
Use new grazable areas	4.1	3.4
Modify indoors diets	3.4	3.3
Search for feedstuff self-sufficiency	3.8	3.6
General management		
Modify herd size	3.5	3.3
Introduction of new breeds	1.8	1.7
Update facilities or equipment	1.8	1.8
Seek for technical advice	2.5	2.4
Commercialization		
Change product type	1.7	1.8
Produce under quality labels	2.6	2.5
Commercialize calves collectively	2.8	2.8
Diversify your activity within agriculture	2.2	2.3
Diversify your activity off-farm	3.7	3.8



Drought



saving costs

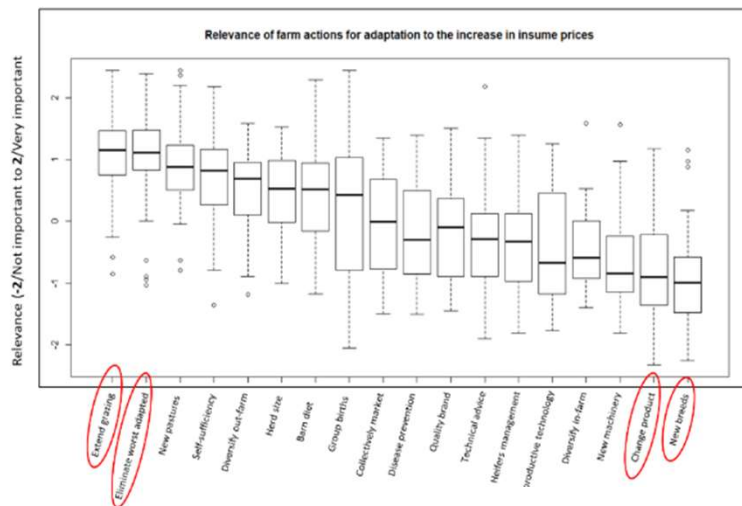
- eliminating worst-adapted animals
- seeking self-sufficiency



investment or large changes

- renewing machinery
- introducing new breeds

Increased input prices



saving costs

- extending grazing
- eliminating worst-adapted animals
- seeking for new pastures



investment or large changes

- introducing new breeds
- renewing machinery
- changing product type

... differences related to farmer's age, farm size, product type

Results presented

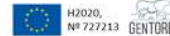
- **70th Annual Meeting EAAP, Ghent (Belgium) 2019**
"Farm resilience: a farmers' perception case study" **Muñoz-Ulecia E., Bernués, A., Casasús, I., Lobón, S., Martín Collado, D.**



Farm resilience: a farmers' perception case study

Muñoz-Ulecia, E., Bernués, A., Casasús, I., Lobón, S., Martín-Collado, D.

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- **Deliverable 1.1**
Expected challenges to the R&E of cattle farming in various European regions – stakeholder views and analysis
- **GenTORE Newsletter 3**



2.2. Spanish cattle farmer survey

Beef cattle farms have undergone major changes in size and management in the last decades, most of them as strategies to adapt to the changing socioeconomic environment. In the Spanish Central Pyrenees, as in the rest of Europe, the total number of mountain farms is decreasing. Among those remaining, there is a wide diversity in technical management and economic performance, influenced by both internal (labour availability, feed self-sufficiency, etc.) and external factors (political, socioeconomic and environmental context). There is also genetic diversity associated to the use of different breeds, usually with a strong territorial link, and to the animal types. The existing animal types are the result of selection carried out by individual farmers and under breed-specific selection programs. In beef cattle breeds, most of these programs focus on traits related to calving ease and calf growth during lactation and fattening, chosen because of their economic importance, easy measurement and adequate heritability to allow for genetic improvement via classical breeding programs. However, other traits can also play a major role on cow lifetime productivity and therefore determine long-term performance of the farms.



From now on...



Preparation of publications



Contribution to Task T1.3

Synopsis of challenges to R&E in European ruminant production and the potential for R&E traits to improve future productivity and sustainability



GenTORE @GenTORE_H2020

Genomic management Tools to Optimise Resilience and Efficiency



Muñoz-Ulecia E., Lobón, S., Martín Collado D., Bernués, A., Casasús I.