EAAP 2026 · THEATRE · SESSION 16

European resilient livestock farming systems in a continuously changing world

Intensive holm oak plantations as a climate adaptation strategy for traditional Iberian pig production.



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CONTEXT

The montanera

Finishing stage of traditional Iberian pig production.

Animals are raised in free-range conditions in the **dehesa**

Diet based on **natural resources**: acorns and grass.



THE REGULATORY STANDARD

The 46 kg requirement

Spanish legislation sets rules for the premium *“acorn” (bellota)* category.

≥ 60 d	Minimum time under **montanera** conditions
≥ 46 kg	Minimum **body-weight gain** per animal during the phase
100%	Gain from **acorns and grass only** — no concentrate feed

BOLETÍN OFICIAL DEL ESTADO

Royal Decree 4/2014 — Spanish Quality Standard for Iberian products (BOE)

THE PROBLEM

Climate change intensifies year-to-year variability

Natural acorn yield swings widely between years — and climate change is intensifying that variability.

In poor mast years, some pigs simply cannot reach the 46 kg gain on natural resources alone.

Not an animal problem — a resource problem



THE COST OF FALLING SHORT

−22% in price per kg of live weight

An animal that misses the 46 kg standard is **reclassified** from *acorn* to the lower *cebo de campo* category.

PRICE GAP

3.55 → 2.78

€/kg · acorn vs cebo de campo

PER ANIMAL

≈ 120€

lost at 155 kg live weight

AT FARM SCALE

≈ 12,000€

for 100 animals at risk

THE IDEA

A complementary acorn source

Could acorns from **intensively managed, irrigated holm oak plantations** back up the montanera in poor years — supporting at-risk animals without breaking with the traditional montanera system?



OBJECTIVE

To test whether supplementing underperforming pigs with acorns from intensive plantations lets them reach the 46 kg requirement — while keeping growth and carcass traits intact.

MATERIALS & METHODS

Experimental design

DAY 0

85 Iberian pigs

Traditional montanera

DAY 48 · 80% OF PERIOD

Pigs selected by growth performance

Selection of **20 representative animals** based on growth evolution

Acorn-supplemented · n=10

Underperforming pigs

10 kg/day plantation acorns

Montanera · n=10

On-track control pigs

Traditional montanera

DAY 63

End of finishing period

THE ACORN SOURCE

Acorns from intensive plantations

Grafted **holm oak** clones (2018)

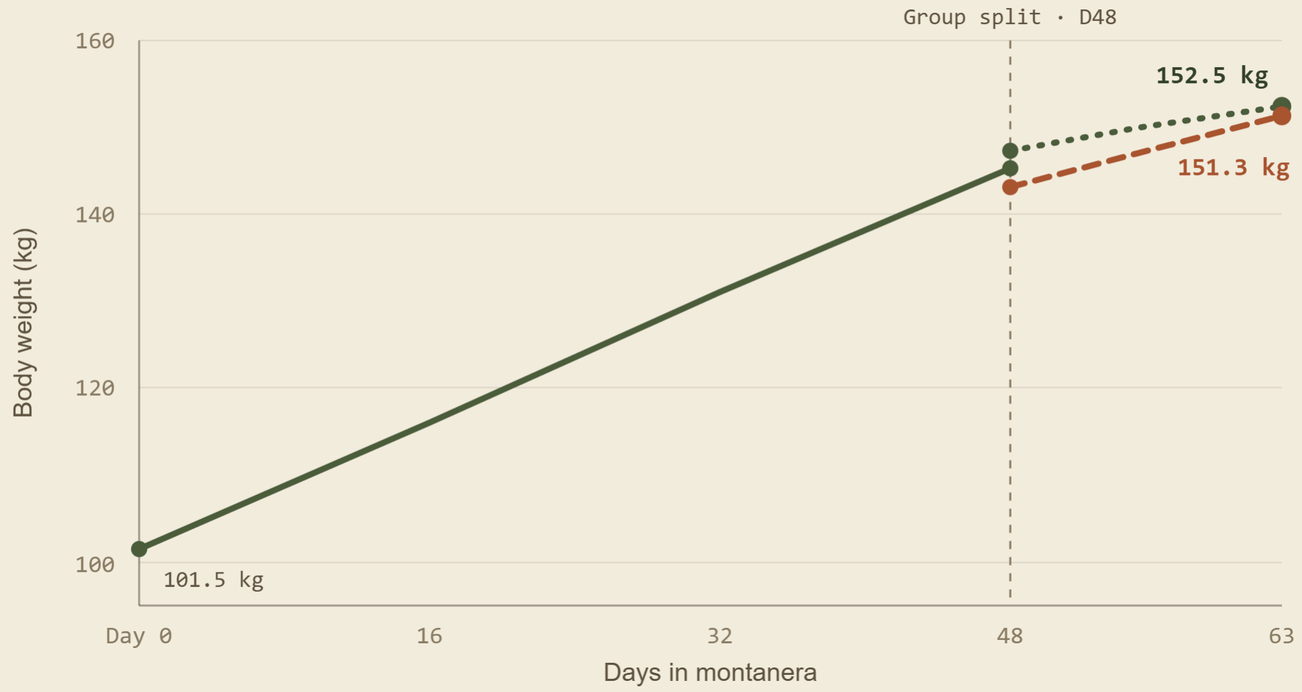
1,500 kg/ha acorn yield (2024)

Nutritional composition **comparable to natural acorns**



RESULTS · GROWTH PERFORMANCE

Body weight across the montanera



All animals · n=85
Montanera control · n=10
Acorn-supplemented · n=10

Days 0–48: *Pigs under traditional montanera.*

Day 48: *Weight evolution used to identify at-risk animals.*

Days 48–63: *Supplemented group grew faster.*

Guaranteed acorn intake *removes natural yield variability.*

RESULTS · GROWTH PERFORMANCE

Recovery in the final period

FINAL 15 DAYS · AVERAGE DAILY GAIN

0.506 vs 0.325 kg/d

Supplemented pigs grew **+55% faster** than controls once acorns were guaranteed daily (P=0.001).

FINAL PERIOD · D48 → D63

PARAMETER	MONTANERA	SUPPLEMENTED	P
Weight gain (kg)	5.2	8.1	0.001
ADG (kg/d)	0.325	0.506	0.001
Fasted weight D63 (kg)	152.5	151.3	0.625

At-risk animals caught up and met the **46 kg requirement**.

RESULTS · CARCASS & PRIME CUTS

No penalty at the carcass

AT SLAUGHTER · LEAST-SQUARES MEANS

PARAMETER	MONTANERA	SUPPLEMENTED	P
Carcass weight (kg)	122.3	120.7	0.449
Carcass yield (%)	80.2	79.8	0.446
Backfat thickness (cm)	5.53	5.20	0.235
Total prime-cut yield (%)	31.34	30.69	0.171

No significant differences in carcass characteristics.

AND THE MEAT QUALITY?

That is the other half of the story

The same animals were also studied for the **fatty-acid and antioxidant profiles** of fresh and dry-cured loin.

Presented next by my colleague **Alberto Ortiz**.

Companion talk

Acorns from intensive holm oak plantations: impact on the fatty acid and antioxidant profiles of Iberian pig meat

Presenter	A. Ortiz · CICYTEX
Session 19	From nutritional recommendation to feeding practice · Part 2
When	7 Sep 2026 · 17:15

CONCLUSIONS

What this means for producers

Acorns from intensive plantations let **at-risk pigs reach the 46 kg requirement** and avoid reclassification.

Final weight, carcass traits and prime-cut yields stayed **comparable to traditional montanera**.

A complementary **climate-adaptation strategy** for difficult years.

Now published



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Thank you

Questions welcome.

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