A Living Lab to address heat stress in dairy goats: impact of a nutritional intervention on milk yield and quality

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Pathways FOR SUSTAINABLE FOOD

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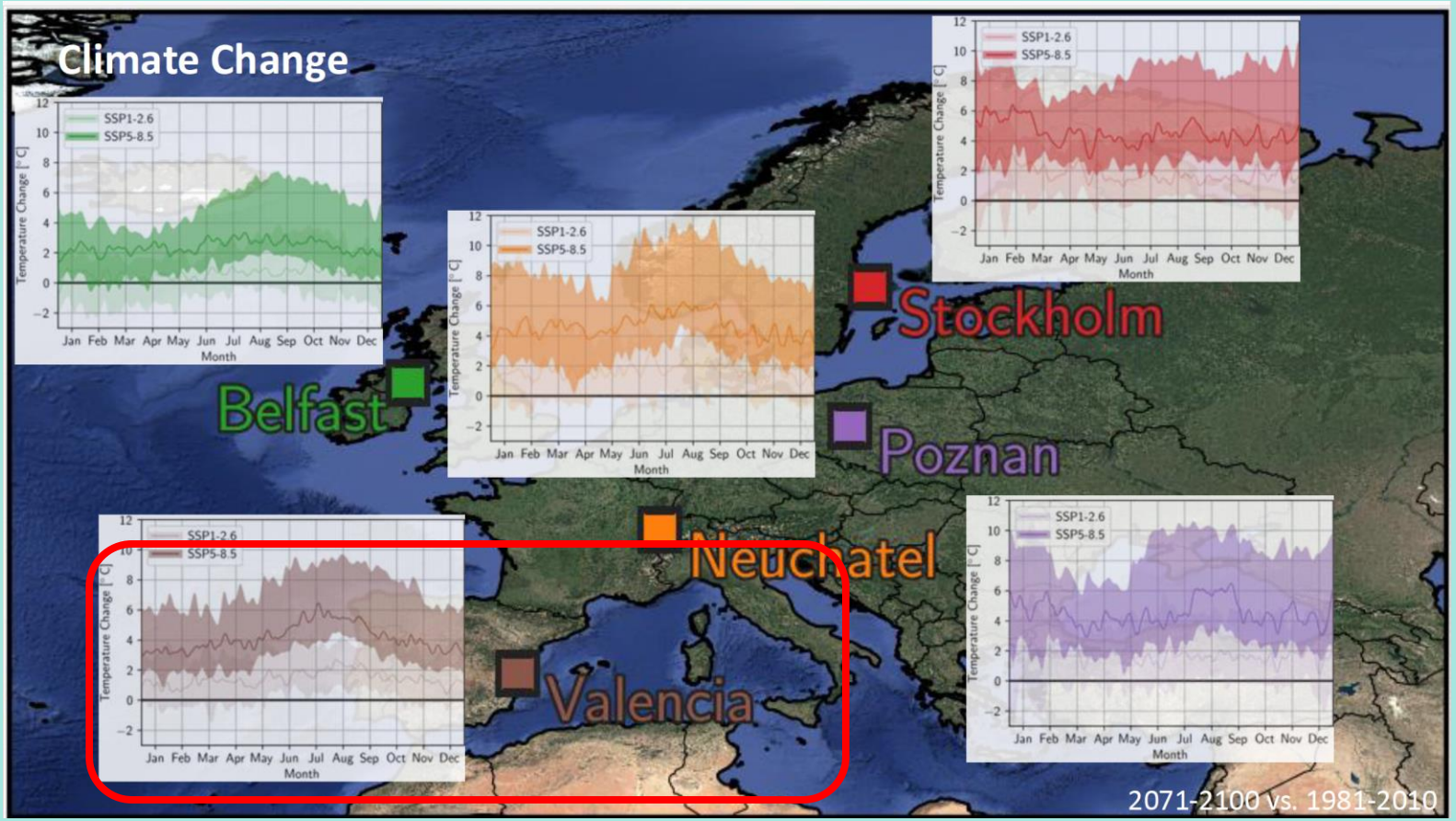
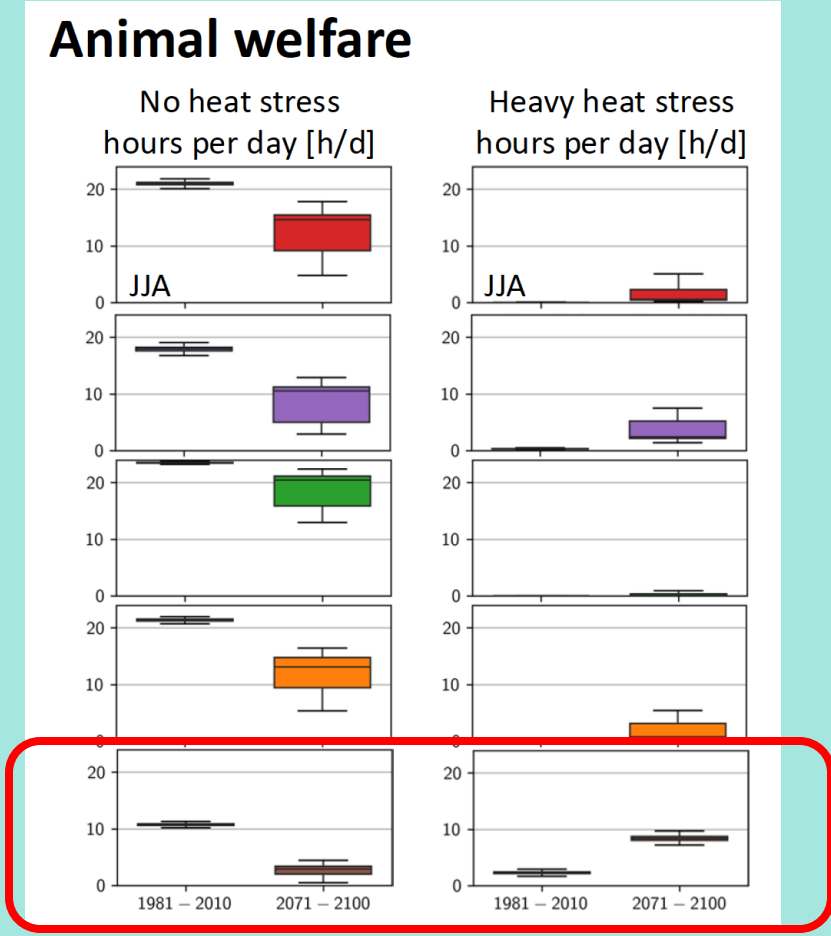
CSIC

Context: climate change





1981-2010 ---------- 2071 - 2100

Context: heat stress

dry

54 kg

↑ **27 %** 2.21 kg/d

52 kg

↑ **48 %** 3.22 kg/d

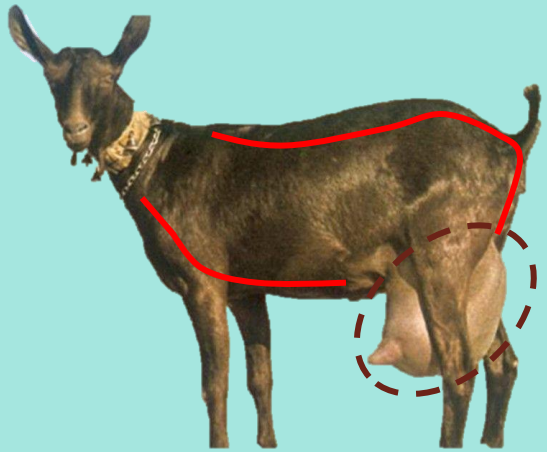
49 kg

↑ Respiration rate (CO_2)

↓ Forrage intake

↓ Saliva/buffer

↓ Rumen pH



↓ Blood Flow (24 %)

CSIC

Context: Living Lab in dairy goats

Real test bed and an experimentation environment where users and producers can co-create innovations

CSIC researchers

Farmer

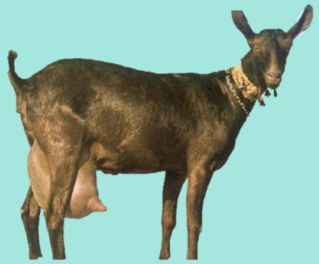
Dairy goats association

Farm staff

Nutrition company

Objective + methods: Living Lab in dairy goats

to evaluate the impact of a specific **dietary supplement** on primiparous dairy goats under heat stress conditions



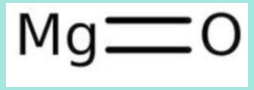
50

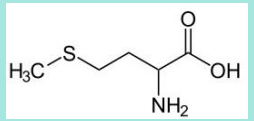
25

CONTROL

25

TREATMENT





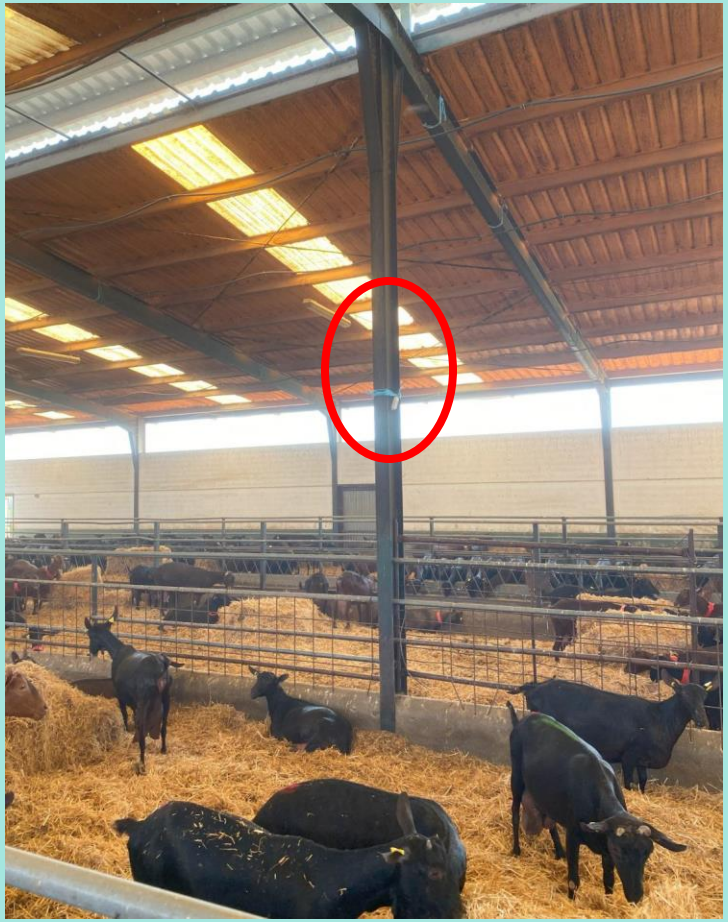
- Daily milk yield
- Milk composition
- Temperature and Humidity

- Activity collars

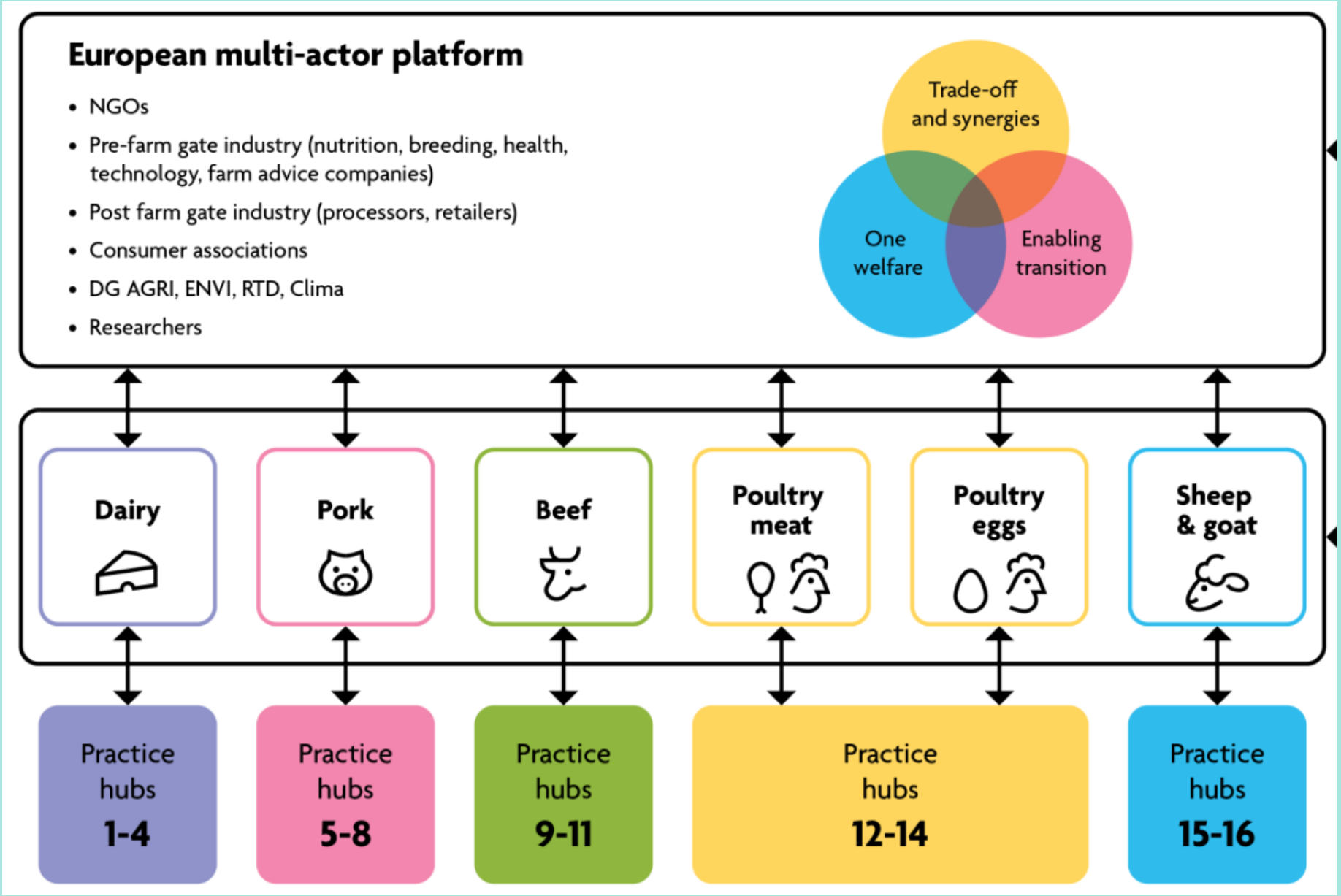
July 1st ---------- October 30th

2 years

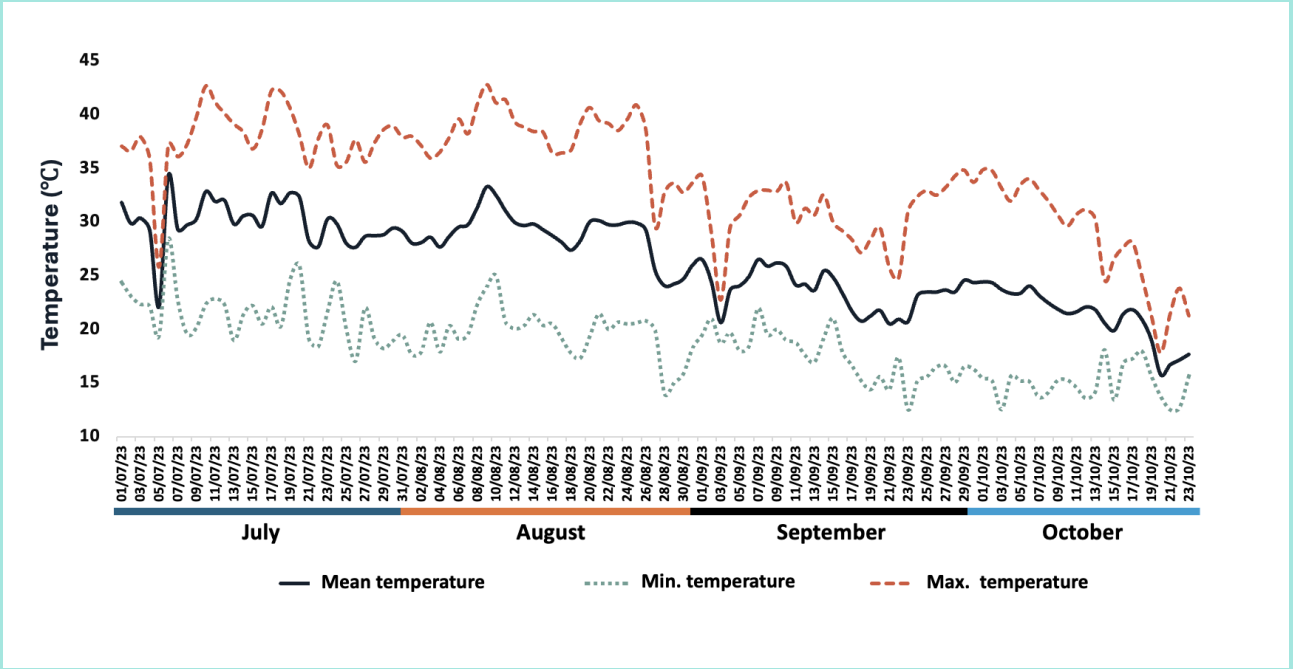
Objective + methods: Living Lab in dairy goats

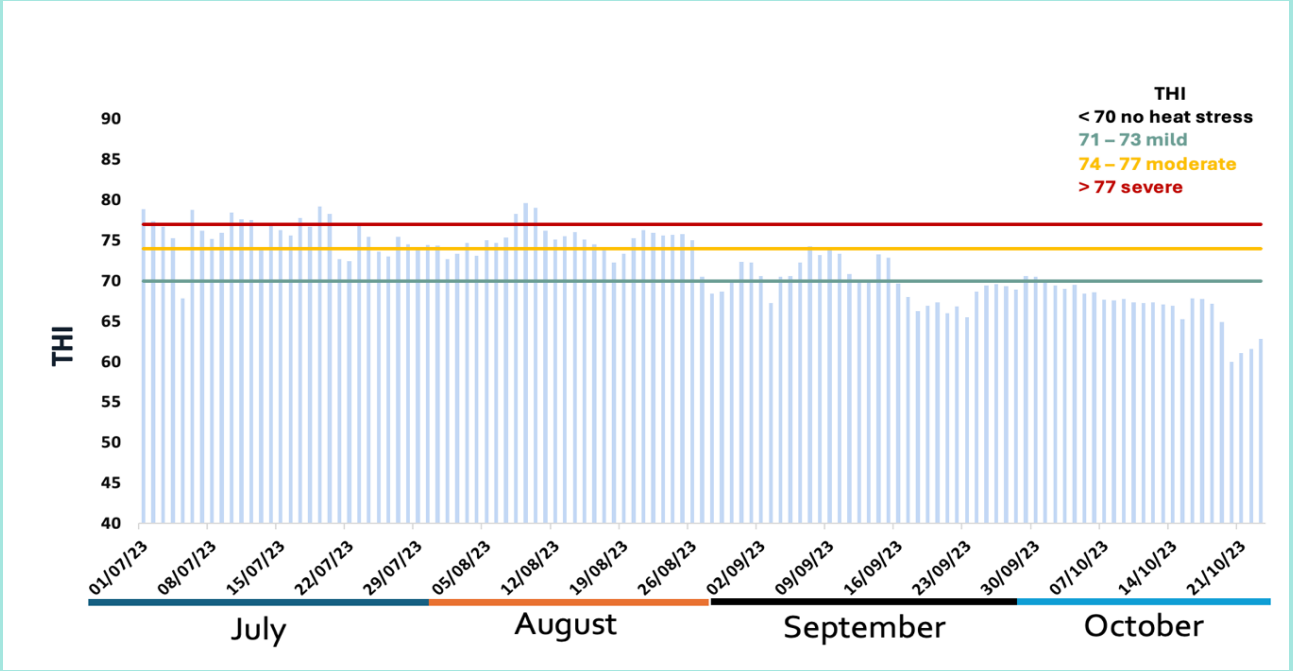


Objective + methods: Living Lab in dairy goats

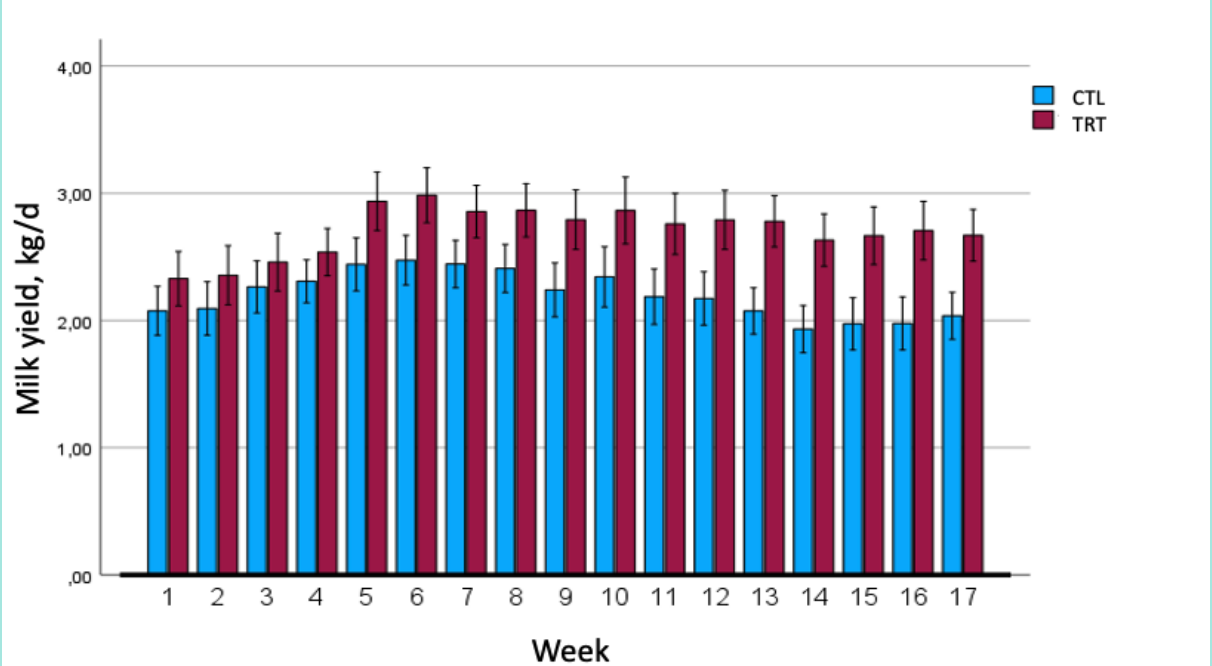

European multi-actor platform
NGOs
Pre-farm gate industry (nutrition, breeding, health, technology, farm advice companies)
Post farm gate industry (processors, retailers)
Consumer associations
DG AGRI, ENVI, RTD, Clima
Researchers
Trade-off and synergies
One welfare
Enabling transition
Dairy
Pork
Beef
Poultry meat
Poultry eggs
Sheep & goat
Practice hubs 1-4
Practice hubs 5-8
Practice hubs 9-11
Practice hubs 12-14
Practice hubs 15-16

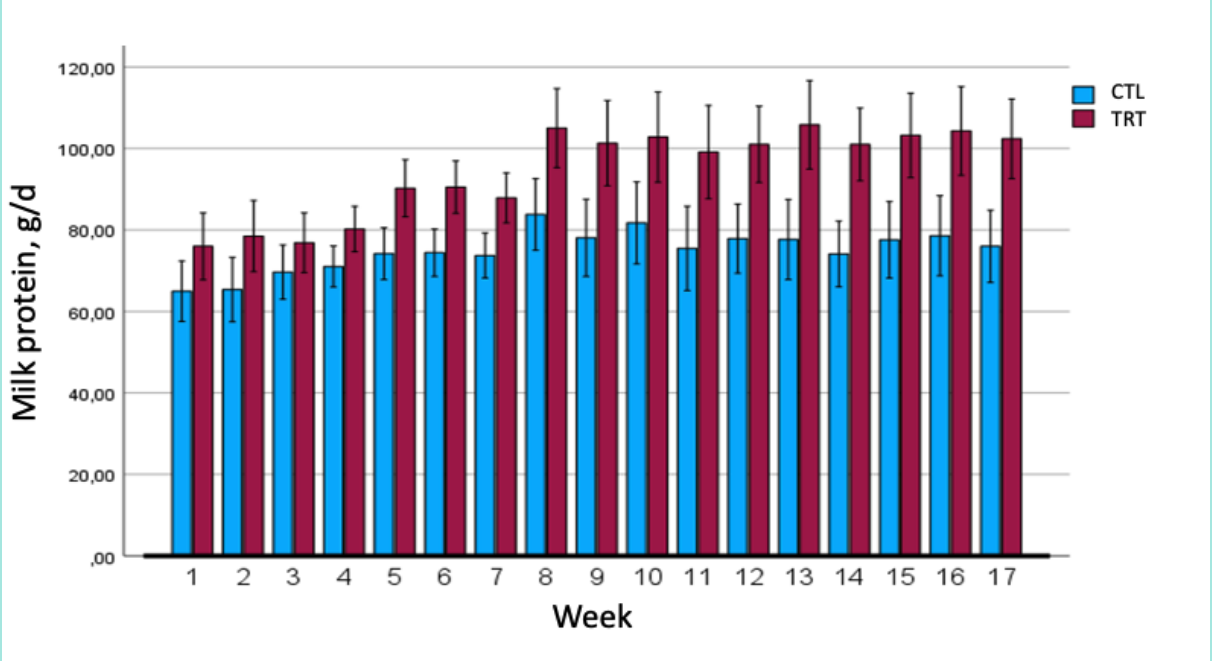
Results


Temperature (°C)
45
40
35
30
25
20
15
10
July
August
September
October
Mean temperature
Min. temperature
Max. temperature


THI
< 70 no heat stress
71 – 73 mild
74 – 77 moderate
> 77 severe
THI
90
85
80
75
70
65
60
55
50
45
40
July
August
September
October

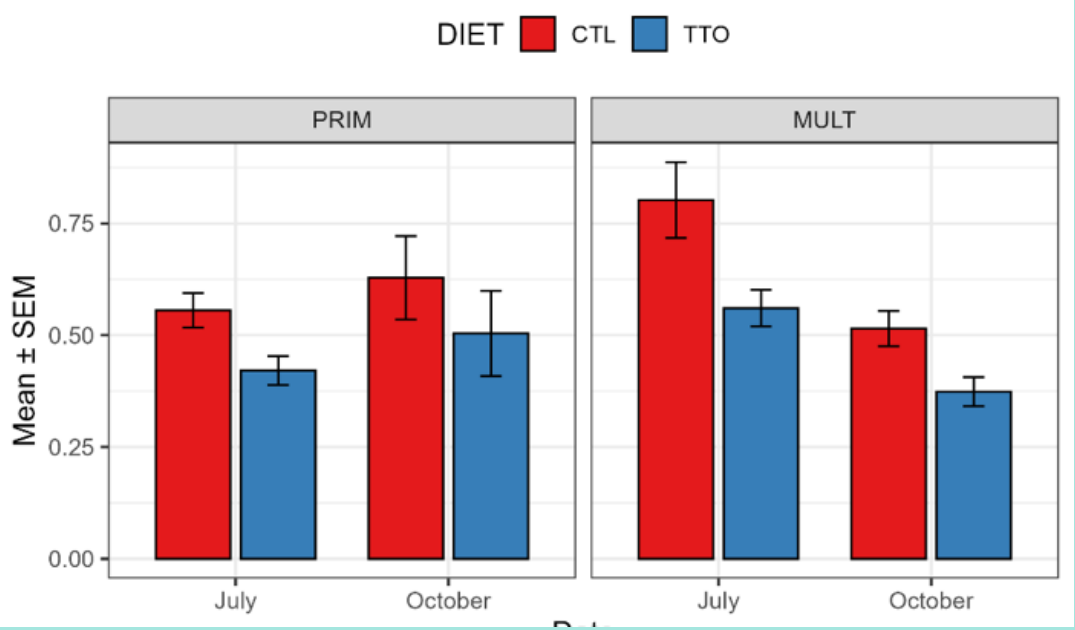
Results


Milk yield, kg/d
4,00
3,00
2,00
1,00
,00
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
Week
CTL
TRT


Milk protein, g/d
120,00
100,00
80,00
60,00
40,00
20,00
,00
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
Week
CTL
TRT

Results

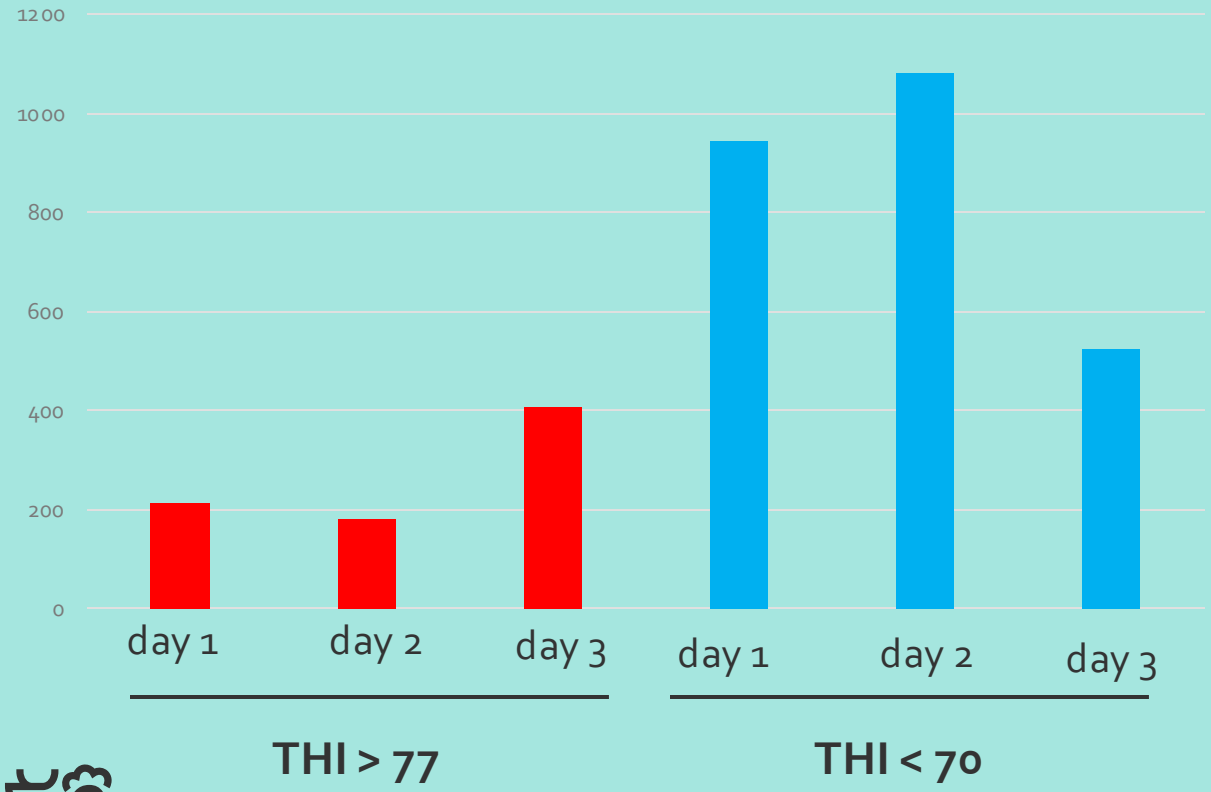
Non Esterified Fatty Acids in blood



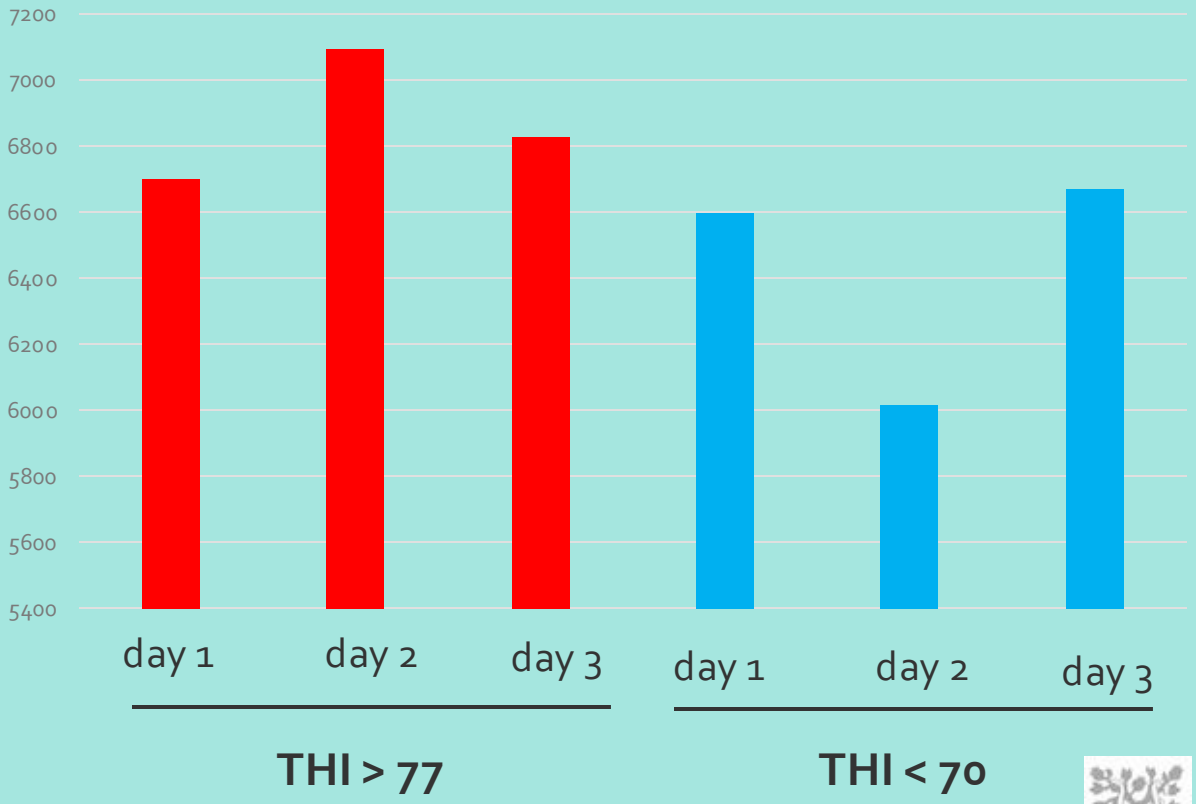
Results: animals activity

- Eating/drinking
- Resting
- Moving
- Other

EATING TIME



RESTING TIME



Conclusions

- Climate change impact on livestock
- Complexity and beauty of a Living Lab
- Long-term process
- Digital technology

Thank you!

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