

INTAQT Final conference
11th September 2026
Hamburg, Germany

INTAQT One Quality

Introduction

intaqt
one quality

Bruno Martin and Cécile Berri
INRAE



Context

- Livestock is a strategic sector for the European Union: 40% of the agricultural added value – 4 million farms – 7 million jobs
- Cattle (milk and meat) and poultry meat provide more than 60 % of animal sourced proteins consumed in Europe



Growing societal expectations are driving demand for more sustainable and ethical farming practices, with increasing attention to animal welfare, environmental impact, and product quality.



Coexistence a continuum of production systems ranging from: pasture-based to indoor fed cattle farms, outdoor slow-growing to indoor fast-growing broilers





1. The INTAQT project

Objectives and methodology



01. Objective of the INTAQT project

Understand the relationships between farming practices and product quality across three production sectors - **beef**, **dairy**, and **poultry** - and to provide stakeholders with efficient tools to support the management of both farm sustainability and product quality and authenticity.

- 21 partners (11 academics, 3 industries, 7 SMEs)
- 10 countries involved
- 2021 → 2026



"One Quality" concept

→ **Intrinsic quality** characteristics directly related to the **products**: health, nutritional value, sensory characteristics, processing properties

→ **Extrinsic quality** characteristics related to livestock systems: environmental, societal and economical **sustainability**

02. Approach and methodology

1



Multi-stakeholder groups (national, European) → **livestock systems, quality criteria, innovative practices, feedback on results**

2

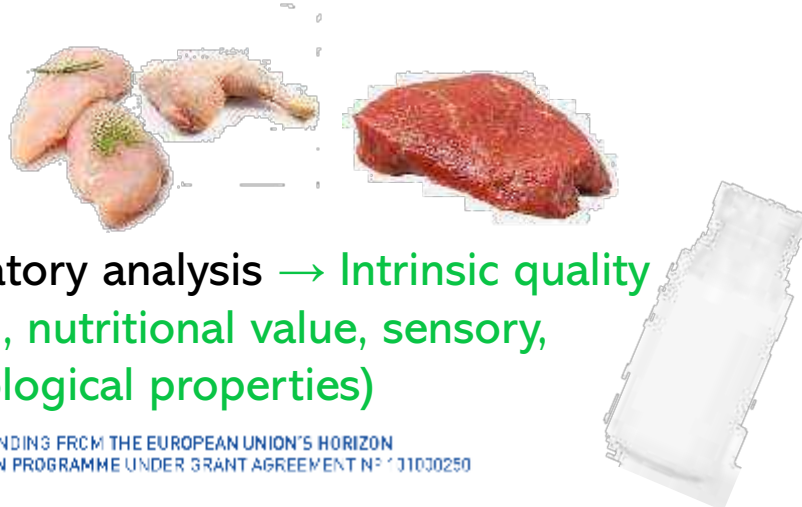


Livestock survey → **Practices, animal welfare, environmental impacts and services;**
Products sampling; Living lab

3



Laboratory analysis → **Intrinsic quality (health, nutritional value, sensory, technological properties)**



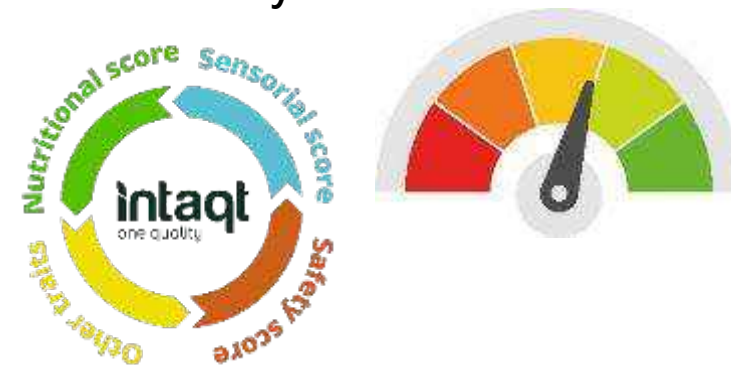
4



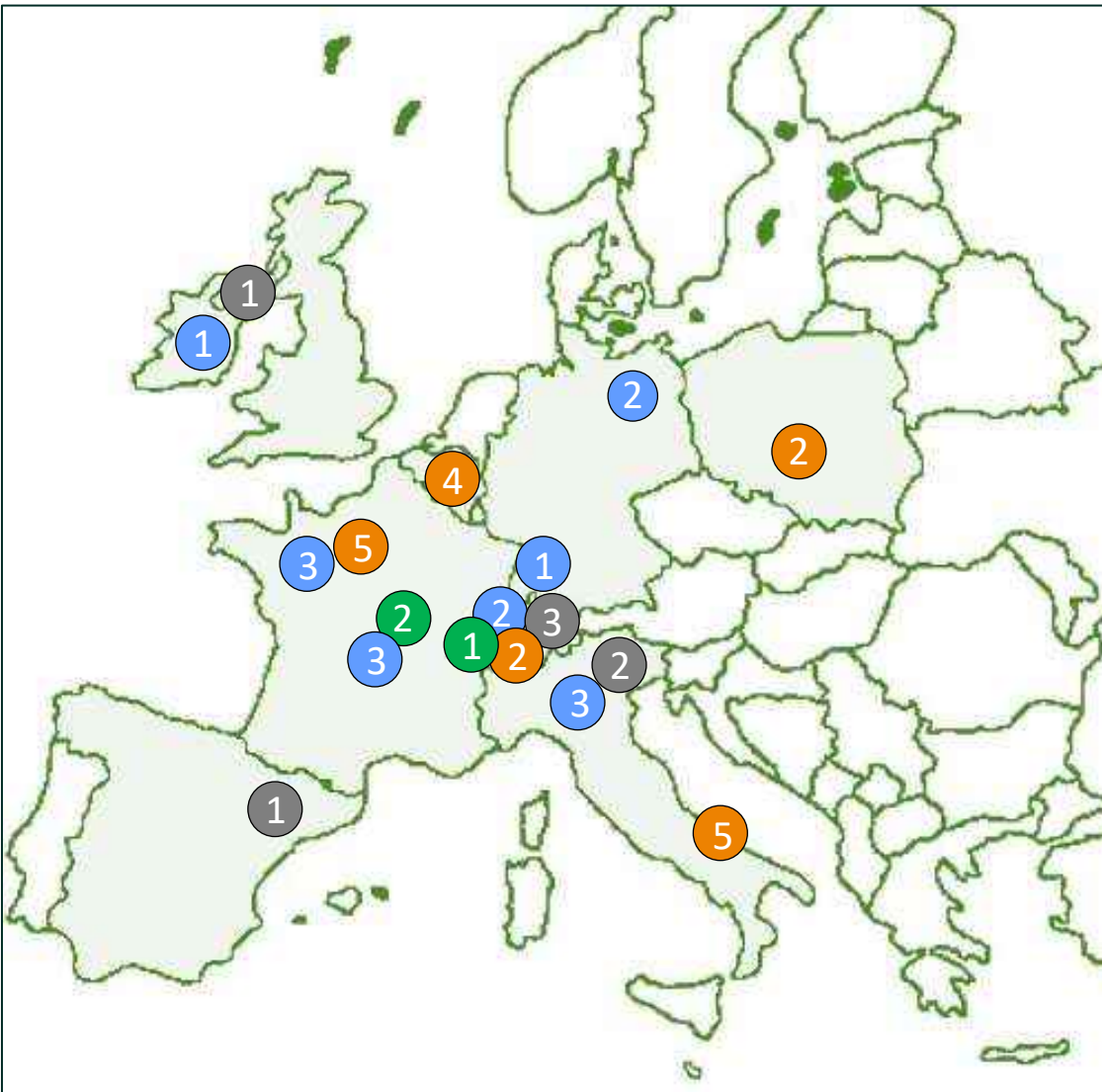
Modelling the impact of farming practices on product quality to develop authentication and predictive tools.

5

Multi-criteria assessment of intrinsic product quality and analysis of synergies and trade-offs between quality and sustainability.



03. Farm network

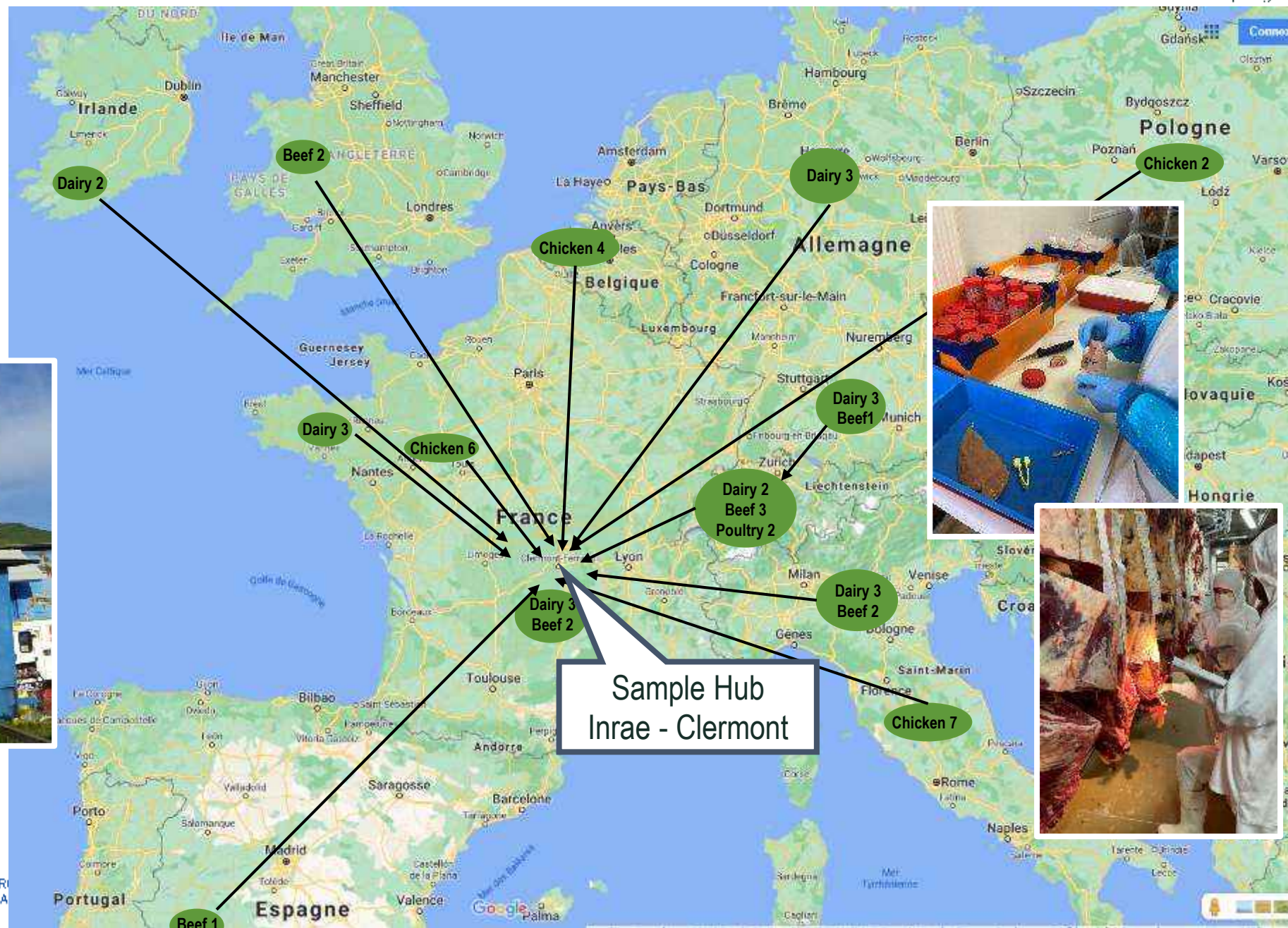


We cover a wide range of farming systems, but this does not reflect the representativeness of production in each country.



04. Sample shipments

From the sampling regions to the sample hub at INRAE Clermont-Ferrand



05. Quality traits studied



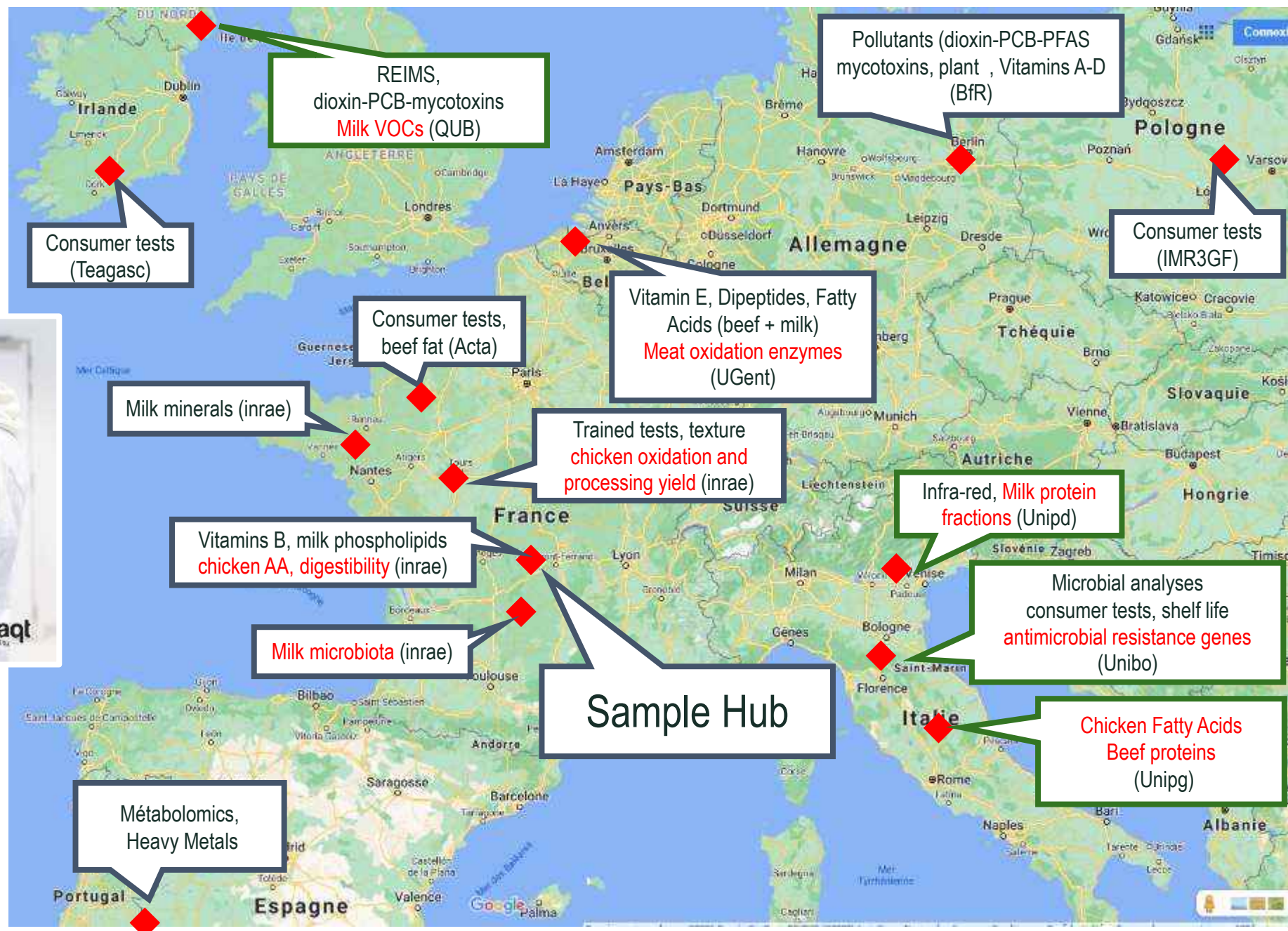
Consultation of stakeholders (dairy, beef and poultry sectors):

- Importance of the **technological quality**
- Primacy given to **extrinsic quality** (animal welfare, environment and socio-economy)

06. Lab network



Analyses planned initially,
Analyses added after stakeholders' consultations

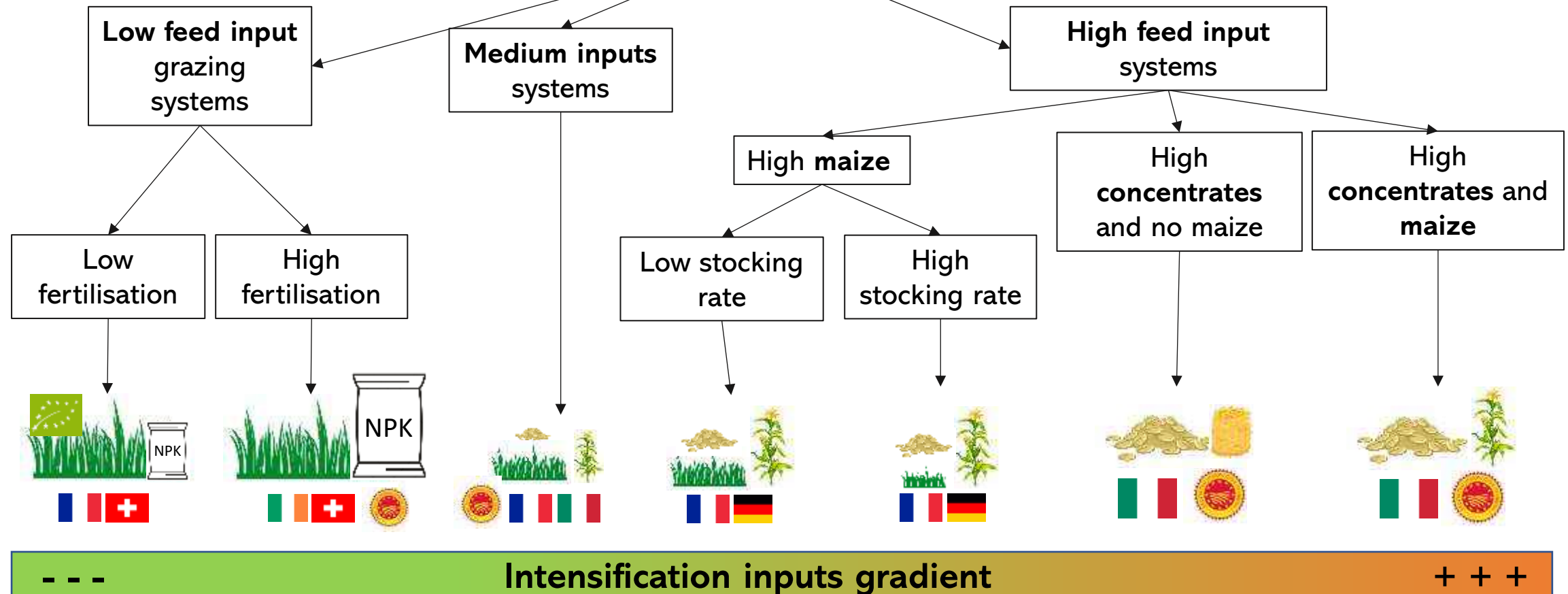




2. Farm typologies

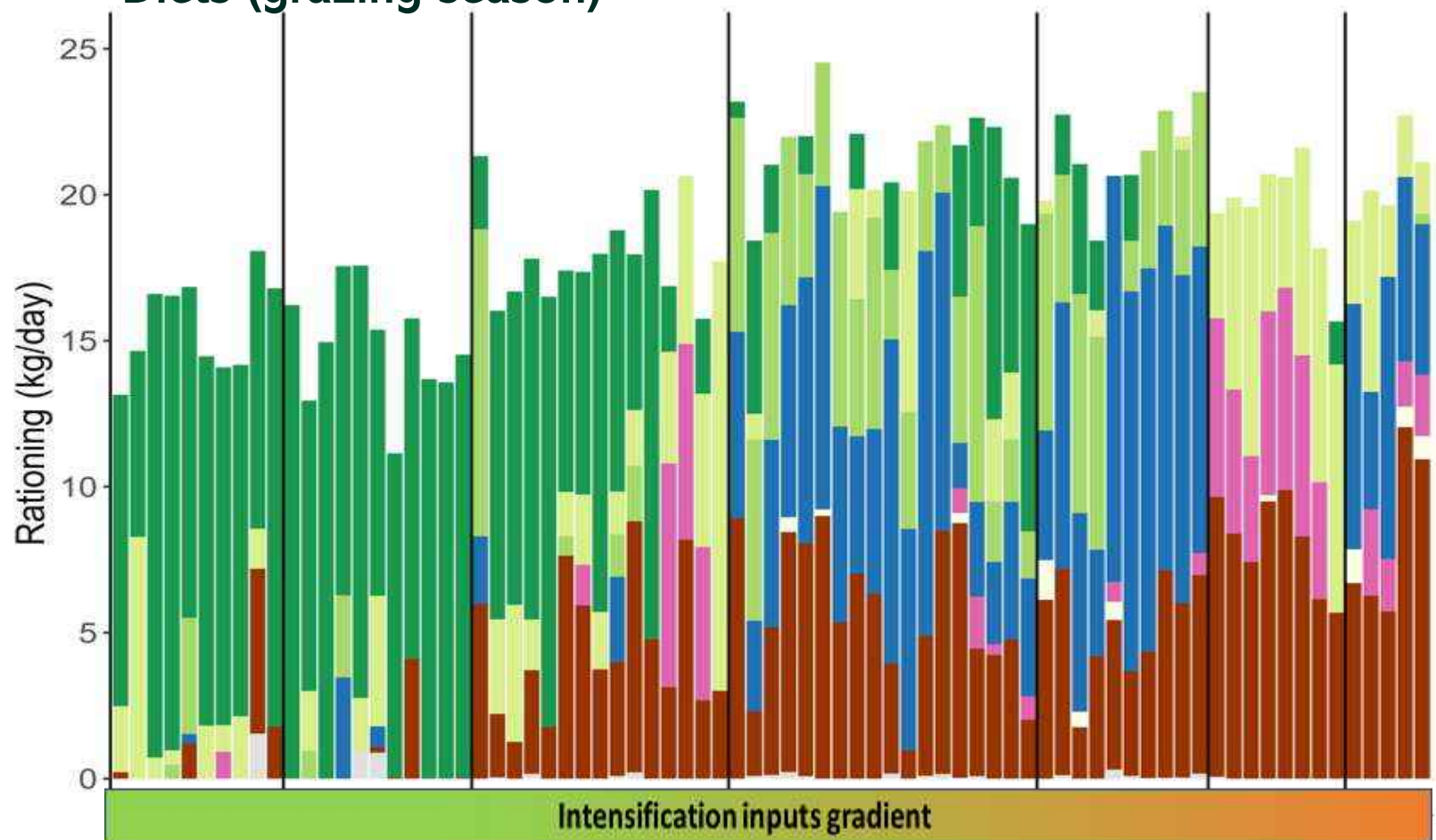


07. Dairy farms - Typology

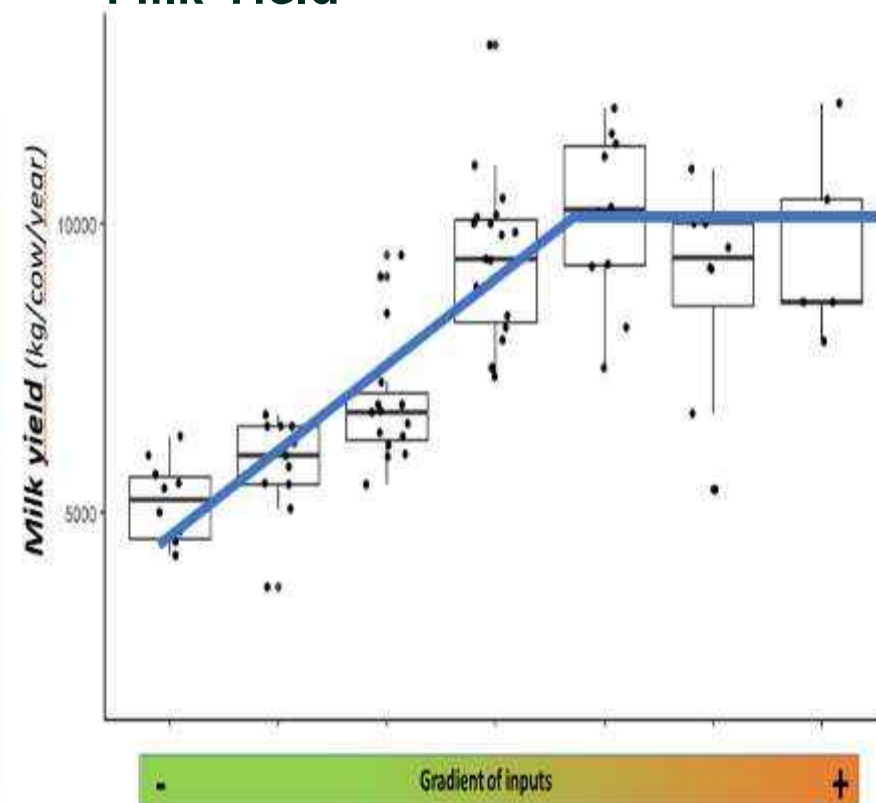


08. Diets and milk yield

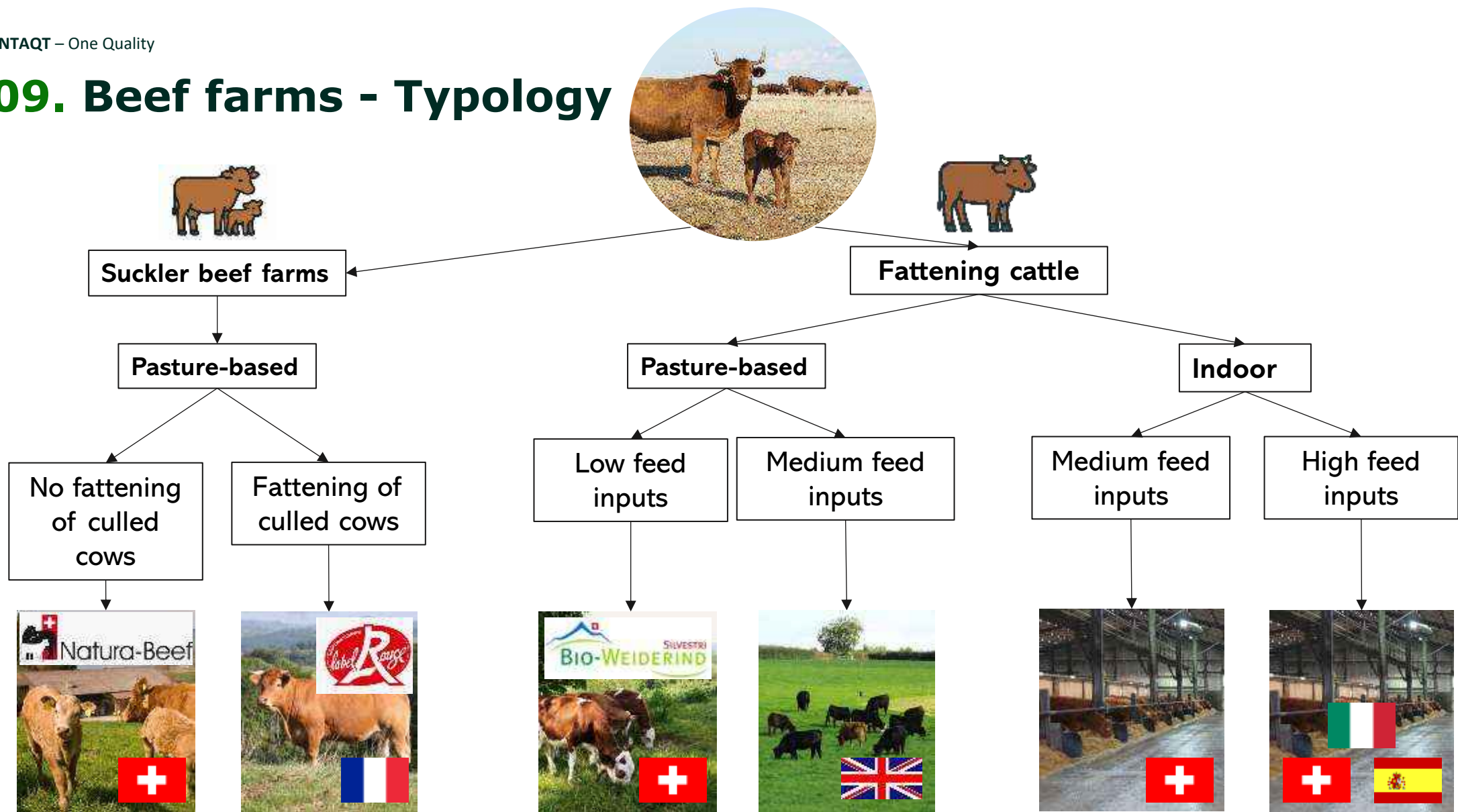
Diets (grazing season)



Milk Yield

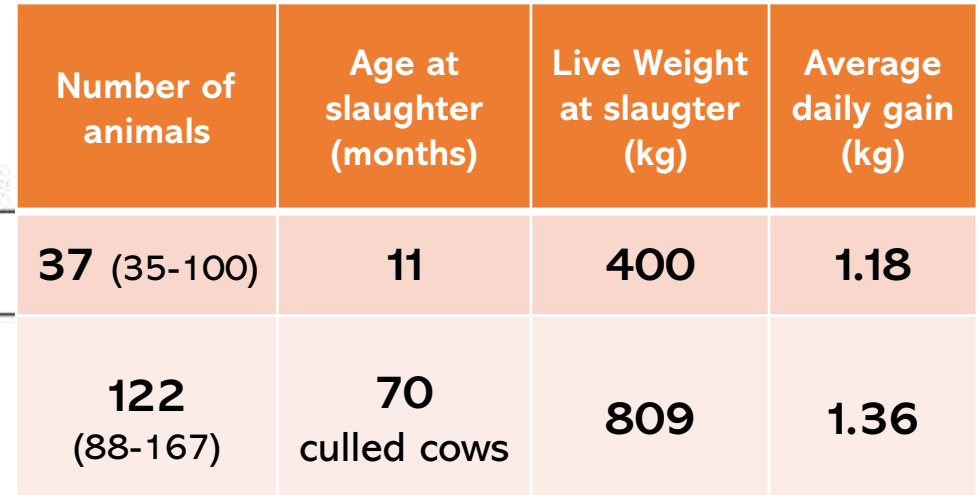


09. Beef farms - Typology



Intensification inputs gradient





- Grazed grass
- Grass hay
- Grass silage
- Lucerne hay
- Maize silage
- Straw
- Concentrates
- Supplements

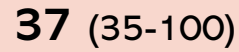
10. Beef farm characteristics

Number of animals

Age at slaughter (months)

**Live Weight
at slaughter
(kg)**

**Average
daily gain
(kg)**



11

400

1.18

122
(88-167)

70
culled cows

809

1.36

32 (25-41)

6 → 23

585

0.76

240
(152-998)

12 → 28

700

0.68

240
(108-265)

9 → 15

545

1.23

1,031
(155-2,335)

6 → 14

550

1.33

- Grazed grass
- Grass hay
- Grass silage
- Lucerne hay
- Maize silage
- Straw
- Concentrates
- Supplements

11. Chicken farm - Typology

Management
Genetics
Slaughter weight

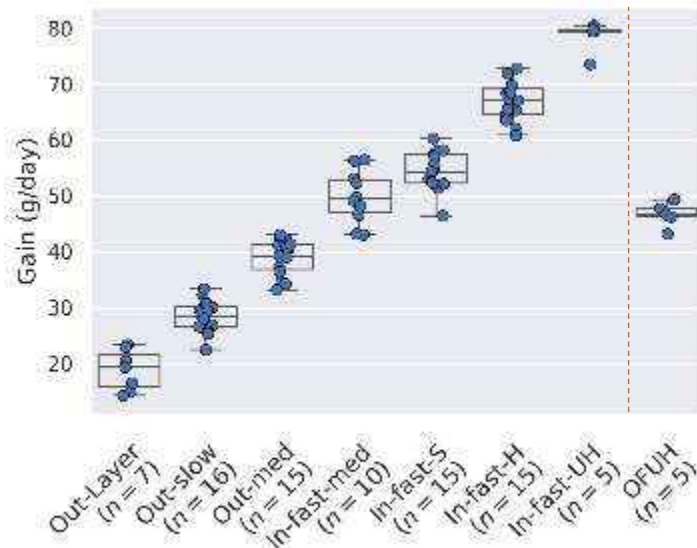


12. Chicken farm characteristics

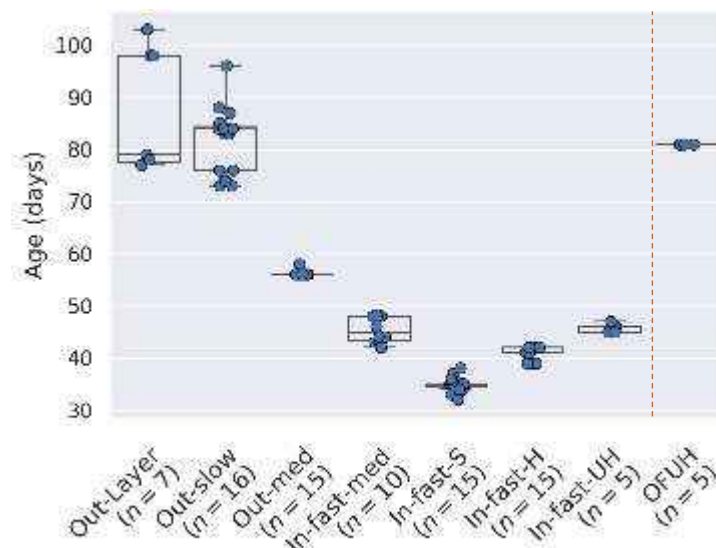
90 farms from 18 systems classified in 8 categories

Typology	Indoor/outdoor	Slaughter age, day	Slaughter weight, kg	Genotype
Out-layer	Outdoor	87.1	1.66	Lohmann Brown, ÖTZ Coffee
Out-slow	Outdoor	82.1	2.31	Sasso XL451, Brown Nick, Hubbard S757N
Out-med	Outdoor	56.1	2.19	Hubbard JA757, JA957, RedJA57
In-fast-med	Indoor	45.4	2.27	Ranger Classic, Redbro
In-fast-S	Indoor	34.9	1.9	Ross 308
In-fast-H	Indoor	41.1	2.75	Ross 308
In-fast-UH	Indoor	45.8	3.60	Ross 308
Out-fast-UH	Outdoor	81.0	3.78	Ross 308

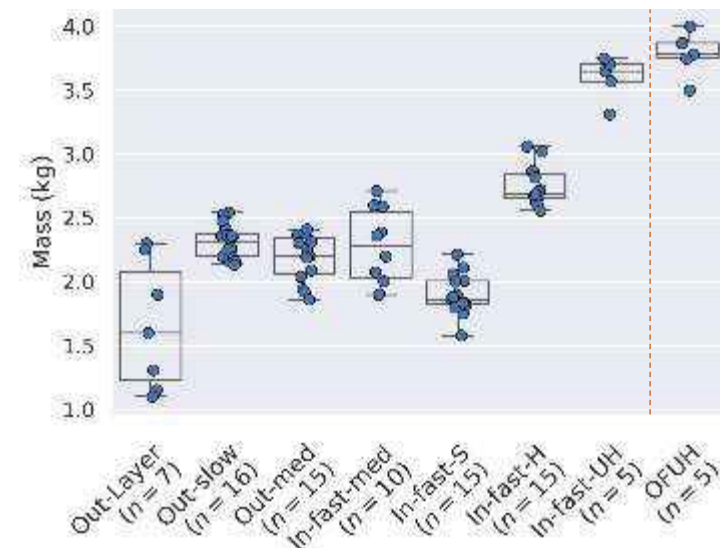
Average daily gain



Age at slaughter



Weight at slaughter



Combining Sustainable Farming with High-Quality and Authentic Chicken and Cattle Products

Insights from the
INTAQT Project

CCH – Congress Center, Hamburg | Room Y3

11 September 2026

09:30 - 15:30 CET



THIS PROJECT HAS RECEIVED FUNDING FROM THE EUROPEAN UNION'S HORIZON 2020 RESEARCH AND INNOVATION PROGRAMME UNDER GRANT AGREEMENT N° 10100259

PROGRAMME

09:30 | Welcome Coffee

10:00 | Introduction
Bruno Martin & Cécile Berri

10:20 | Involvement of Stakeholders
Florence Bédoin

10:30 | Nutritional value
Stefaan De Smet

10:50 | Sensory Features
Massimiliano Petracci

11:10 | Health and Safety quality
Fenja Klevenhusen

11:30 | Multicriteria scoring tool & WebApp demo
Lucille Rey-Cadilhac, Leo Darrigade and Yann Guyot

12:00 | Discussion

12:30 | Lunch

13:30 | Living Labs
Enrico Sturaro & Rennie Eppenstein

13:50 | Authentication and prediction Tools
Carmen Manuelian & Massimo De Marchi

14:10 | Environmental impacts and feed-food competition
Marco Berton & Eléa Caumette

14:30 | Is multiperformance achievable?
Eléa Caumette & Cécile Berri

14:50 | Discussion

15:15 | Wrap Up & Conclusions
Bruno Martin, Cécile Berri & Dina Lopes

Registrations
are open



<https://forms.office.com/s/8ay5v2aTNo>

1



Multi-stakeholder groups (national, European) → livestock systems, quality criteria, innovative practices, feedback on results

3



Laboratory analysis → Intrinsic quality (health, nutritional value, sensory, technological properties)

PROGRAMME

09:30 | Welcome Coffee

10:00 | Introduction
Bruno Martin & Cécile Berri

10:20 | Involvement of Stakeholders
Florence Bédoin

10:30 | Nutritional value
Stefaan De Smet

10:50 | Sensory Features
Massimiliano Petracci

11:10 | Health and Safety quality
Fenja Klevenhusen

11:30 | Multicriteria scoring tool & WebApp demo
Lucille Rey-Cadilhac, Leo Darrigade and Yann Guyot

12:00 | Discussion

12:30 | Lunch

13:30 | Living Labs
Enrico Sturaro & Rennie Eppenstein

13:50 | Authentication and prediction Tools
Carmen Manuelian & Massimo De Marchi

14:10 | Environmental impacts and feed-food competition
Marco Berton & Eléa Caumette

14:30 | Is multiperformance achievable?
Eléa Caumette & Cécile Berri

14:50 | Discussion

15:15 | Wrap Up & Conclusions
Bruno Martin, Cécile Berri & Dina Lopes

Registrations
are open



<https://forms.office.com/s/keysya1Nn>



4



Modelling the impact of farming practices on product quality to develop authentication and predictive tools.

5

Multi-criteria assessment of intrinsic product quality and analysis of synergies and trade-offs between quality and sustainability.



PROGRAMME

09:30 | Welcome Coffee

10:00 | Introduction
Bruno Martin & Cécile Berri

10:20 | Involvement of Stakeholders
Florence Bédoin

10:30 | Nutritional value
Stefaan De Smet

10:50 | Sensory Features
Massimiliano Petracci

11:10 | Health and Safety quality
Fenja Klevenhusen

11:30 | Multicriteria scoring tool & WebApp demo
Lucille Rey-Cadilhac, Leo Darrigade and Yann Guyot

12:00 | Discussion

12:30 | Lunch

13:30 | Living Labs
Enrico Sturaro & Rennie Eppenstein

13:50 | Authentication and prediction Tools
Carmen Manuellián & Massimo De Marchi

14:10 | Environmental impacts and feed-food competition
Marco Berton & Eléa Caumette

14:30 | Is multiperformance achievable?
Eléa Caumette & Cécile Berri

14:50 | Discussion

15:15 | Wrap Up & Conclusions
Bruno Martin, Cécile Berri & Dina Lopes

Registrations
are open



<https://forms.office.com/s/kevsy3a1No>



PROGRAMME

09:30 | Welcome Coffee

10:00 | Introduction
Bruno Martin & Cécile Berri

10:20 | Involvement of Stakeholders
Florence Bédoin

10:30 | Nutritional value
Stefaan De Smet

10:50 | Sensory Features
Massimiliano Petracci

11:10 | Health and Safety quality
Fenja Klevenhusen

11:30 | Multicriteria scoring tool
& WebApp demo
Lucille Rey-Cadilhac, Leo Darrigade
and Yann Guyot

12:00 | Discussion

12:30 | Lunch

13:30 | Living Labs
Enrico Sturaro & Rennie Eppenstein

13:50 | Authentication and prediction Tools
Carmen Manuelli & Massimo De Marchi

14:10 | Environmental impacts and
feed-food competition
Marco Berton & Eléa Caumette

14:30 | Is multiperformance achievable?
Eléa Caumette & Cécile Berri

14:50 | Discussion

15:15 | Wrap Up & Conclusions
Bruno Martin, Cécile Berri & Dina Lopes

Registrations
are open



<https://forms.office.com/e/keevy4119>

2



Livestock survey → Practices,
animal welfare, environmental
impacts and services;
Products sampling; Living lab

5

Multi-criteria assessment of intrinsic
product quality and analysis of synergies
and trade-offs between quality and
sustainability.



INTAQT Final conference
11th September 2026
Hamburg, Germany

INTAQT One Quality

Involvement of stakeholders

intaqt
one quality

Florence BEDOIN, Cécile LAITHIER , Christèle COUZY
IDELE



Intentions : the « multi-actor approach »

“Proposals should fall under the concept of 'multi-actor approach', representing in particular farmers, the food industry and consumers.”

We have chosen to play the game fully and placed stakeholders' consultations at the heart of the project

Principles

Co-creation: Innovation is built *with* end-users, not just *for* them.

Demand-Driven: Project targets real problems and practical needs faced in daily farming and industry rather than theoretical gaps only.

Assumptions

Higher Uptake: Solutions developed collectively are easier to apply and adopt in real-world farming and industry.

Broader impact: Organisations involved in co-creation will themselves disseminate relevant results.



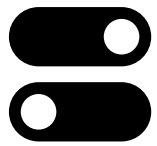
Organisation and ressources mobilised



Time for organising and facilitating the groups + linking with the research-WPs

71 Person Months for WP1 in a project of 770 PMs

(Probably more time spent than financed)



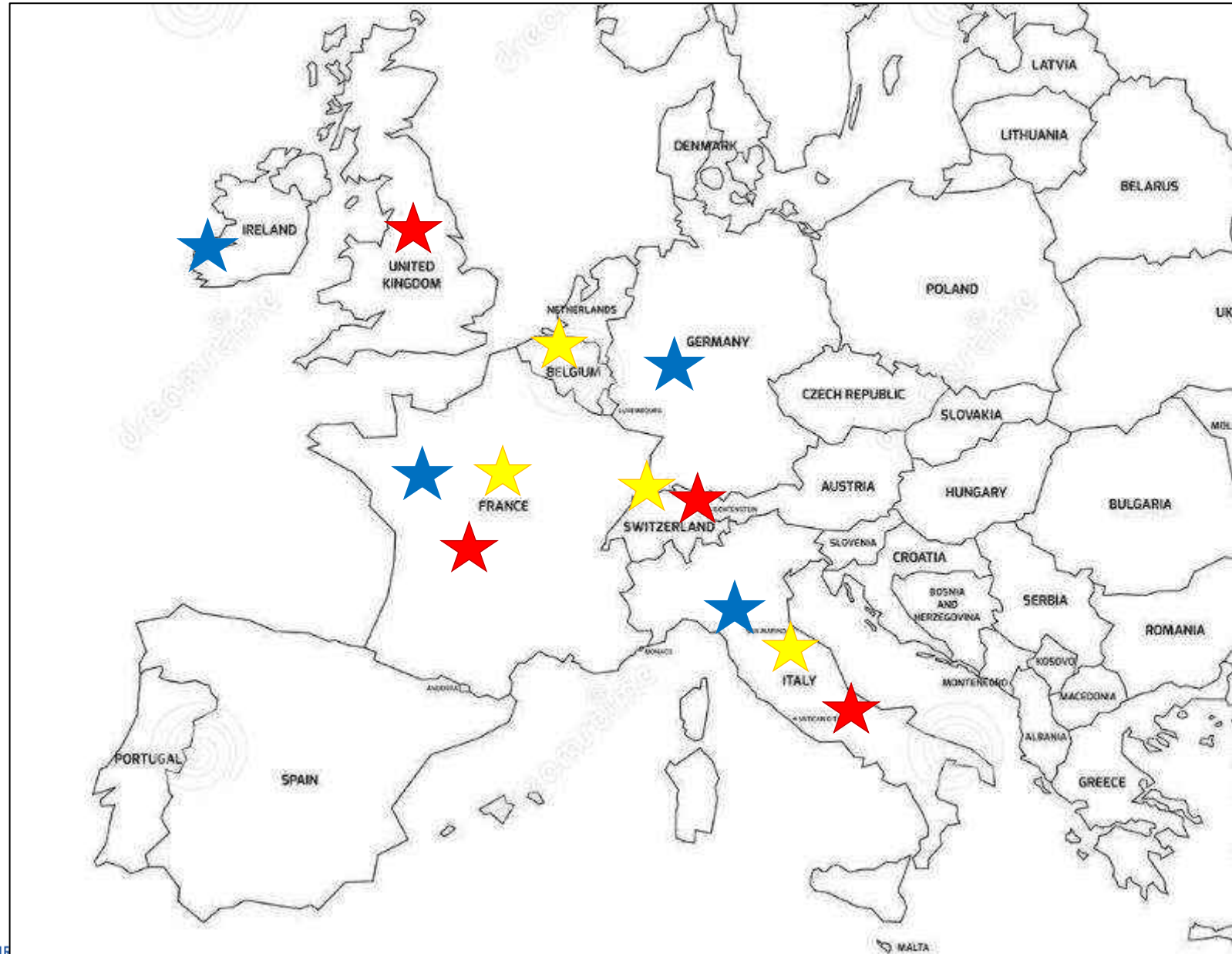
At proposal writing, part of the project budget was not allocated and some of **experiments were decided and financed after** the first stakeholders' consultations + choice of farming systems



The sampling and experiments could not start directly at the beginning of the project

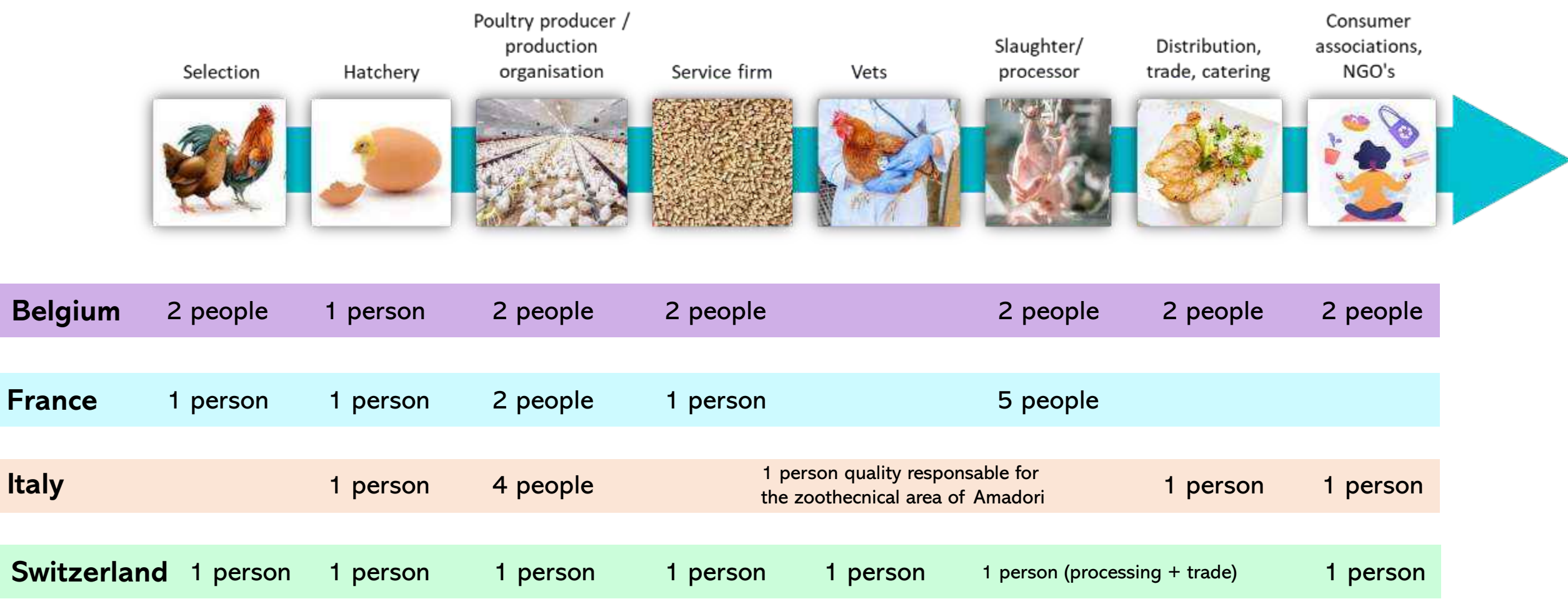
(Clear expectations at EU level were ready about 11 months after the project start)

intaqt
one quality



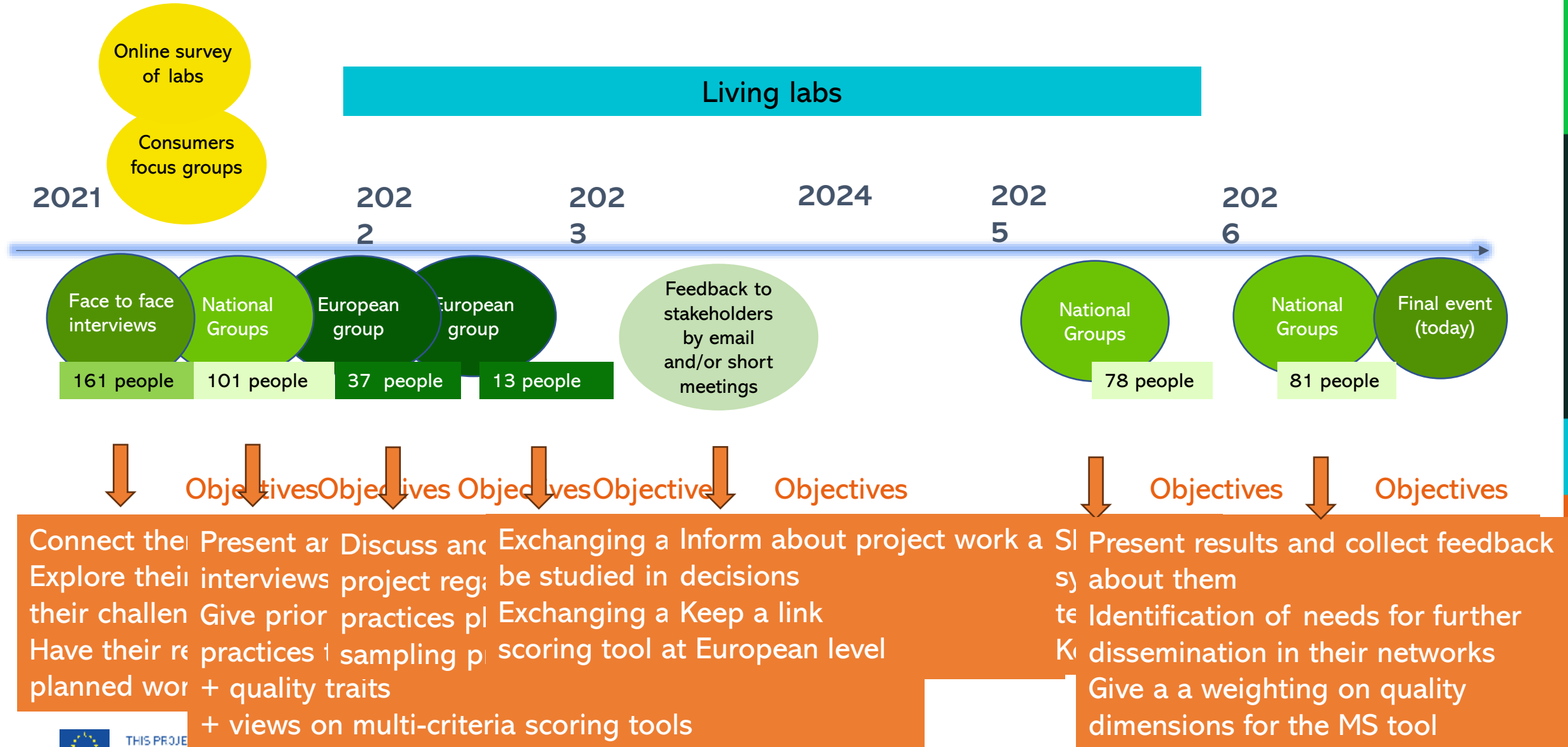
Who was present during the national groups?

Here the example of the poultry sector during the first year



Aiming for diversity
Actors invited from mainstream sector + from specific productions like PDO or organic

Events timeline : objectives and participation



Choice of farming systems to study

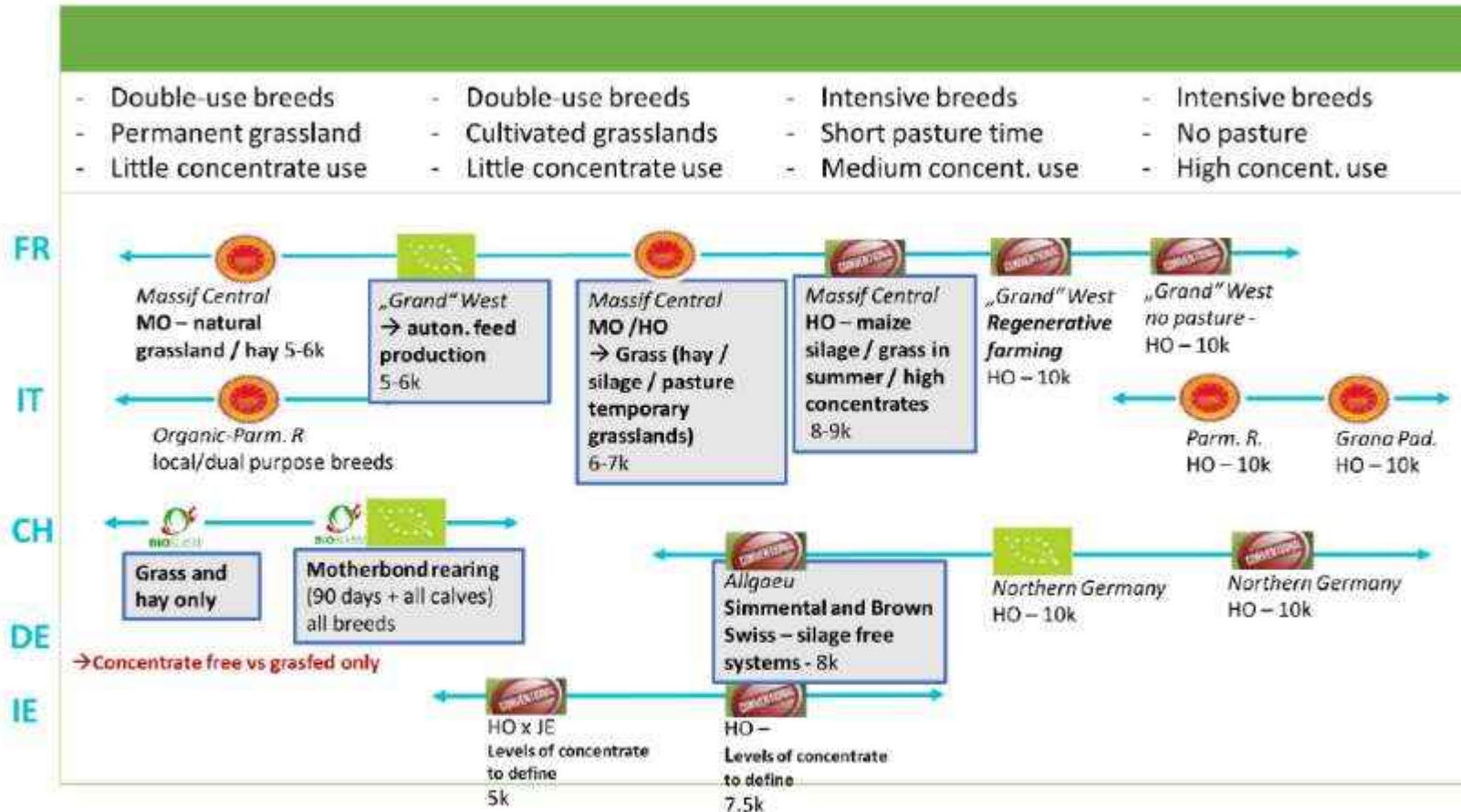


Figure 7: Main dairy husbandry systems proposed to study in INTAQT – the systems outlined in the grey boxes come from the discussions with the stakeholders (NB: 8k = 8 000 liters per cow)

Expectations from stakeholders on quality criteria to add

Technological aspects



Raw milk

- Total fat and protein content ✓
- Somatic cell count ✓
- bacterial count ✓
- Cryospcopy, lipolysis, ✓
- Inhibitors ✓
- Colour ✓
- Packaging (/sustainability, , environmental aspects, taste)
- Humidity content ✓



- Technological and spoilage flora : total bacteria count,  *Pseudomonas*, *E. Coli*, lactic bacteria (vacuum package)

Beyond the scope of this project : large subject, difficult to assess and costly to analyse



- Shelf life (related to spoilage  flora)
- Oxidation in connection with meat discolouration 
- Processing efficiency and processing ability 
- Product presentation: scratches, stains, colours, exudates 

Beyond the scope of this project : too difficult to assess in our set-up

Outcomes – from the point of view of researchers

- It was not so difficult!
- It gives good opportunities for project results dissemination
- New ideas came up → opportunity to make more publications
- It facilitates the sampling
- Opportunities for further networking

From qualitative interviews run with WP leads and project coordinators in 2023

What did we learn about the process?

Participation

- People generally agreed to participate to individual interviews -> a good way to start
- Turn-over : A « group » for the project but rather a collection of individual companies with shifting representative attending the meetings in most cases

Time

- Research timeframe vs industry timeframe can be a tension
- Important to keep a link during the sampling / analysis even if few results available

Diversity of stakeholders

- Important to be aware of diversity /mainstream vs niche sectors
- Difficult to involve consumer / society representatives
- Do stakeholders talk for themselves or are they « representatives »?
- Do we keep the diversity of point of views or make an « average », reach a consensus?

Feedback from stakeholders about results and process

- Mainly positive feedbacks on the process and on the results
- Some suggestions and precisions to bring on specific points
- Identification of specific points for further work and communication

(Dairy - France) Nutritional quality -> would like a written synthesis to be used by the national dairy federation

(Poultry - Belgium) The results of the water/protein ratio were very interesting -> idea to use them in consultations with government bodies regarding the legislation on this matter.

(Beef - Italy) The age and origin of the animal was reported to be an interesting point of further discussion and analysis, with respect to the consumers' expectation.

TO BE CONTINUED...

Thank you for your attention

Florence Bedoin - IDELE

E-mail: florence.Bedoin@idele.fr



INTAQT Final conference
11th September 2026
Hamburg, Germany

INTAQT One Quality

**Nutritional value of chicken and
cattle products**

intaqt
one quality

Stefaan De Smet, UGENT



Samples and analyses

Experimental unit = farm !



	Summer and winter	Loin	Breast and thigh
Proximate composition	Fat, protein, lactose, casein	Dry matter, fat, protein	Dry matter, fat, protein
Fatty acid composition	64 Fatty acids	33 Fatty acids	11 Fatty acids
Minerals and trace elements	Ca, P, Mg, Na, K, S Cu, Fe, Mn, Zn, I	Fe, Se, Zn	Fe, Se, Zn
Vitamins	B1, B2, B6, B12 E	B2, B3, B5, B6, B9, B12, A, D, E	B2, B3, B5, B6, B9, B12 A, D, E
Bioactive compounds	Phospholipids, protein fractions and variants	Carnosine, anserine	Carnosine, anserine
		Heme iron, collagen	Heme iron, collagen
			Amino acid composition and digestibility

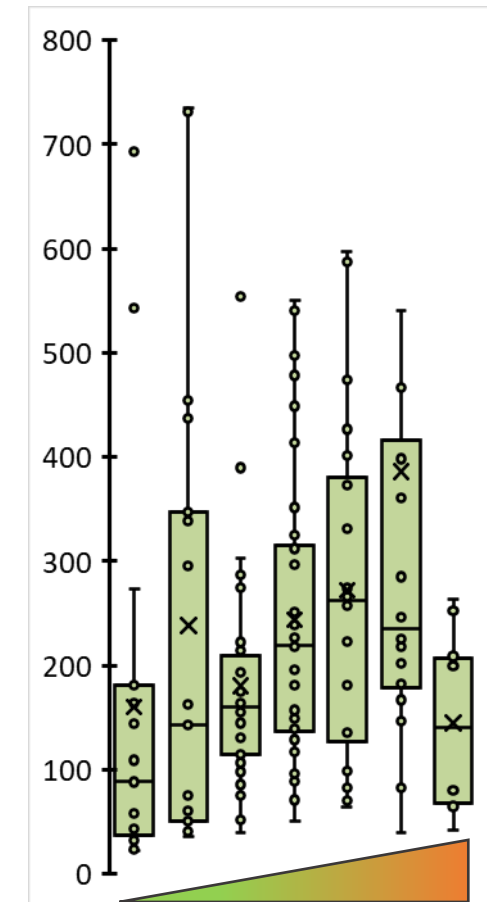


General findings



- Large variability for most traits. To be considered in food composition tables.
- Significant differences between breast and thigh chicken meat for most traits.
- Significant differences between summer and winter milk for several traits.
- Significant differences between farming systems for several traits; however, a clear pattern according to the level of intensification emerged for only some traits, indicating that the variability in nutritional quality is determined by specific farming practices.

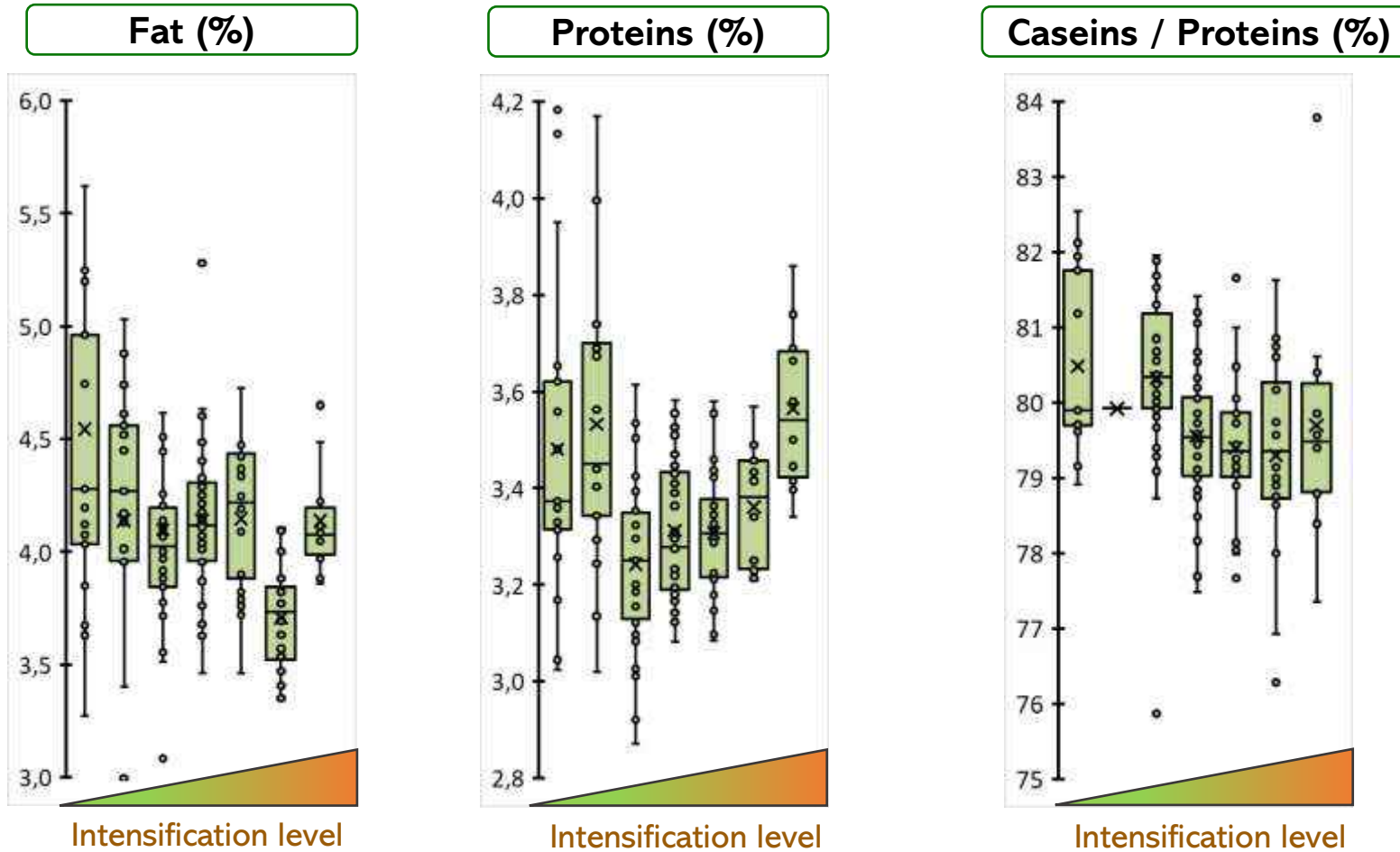
Iodine in milk ($\mu\text{g/L}$)



Intensification level



Proximate composition - milk

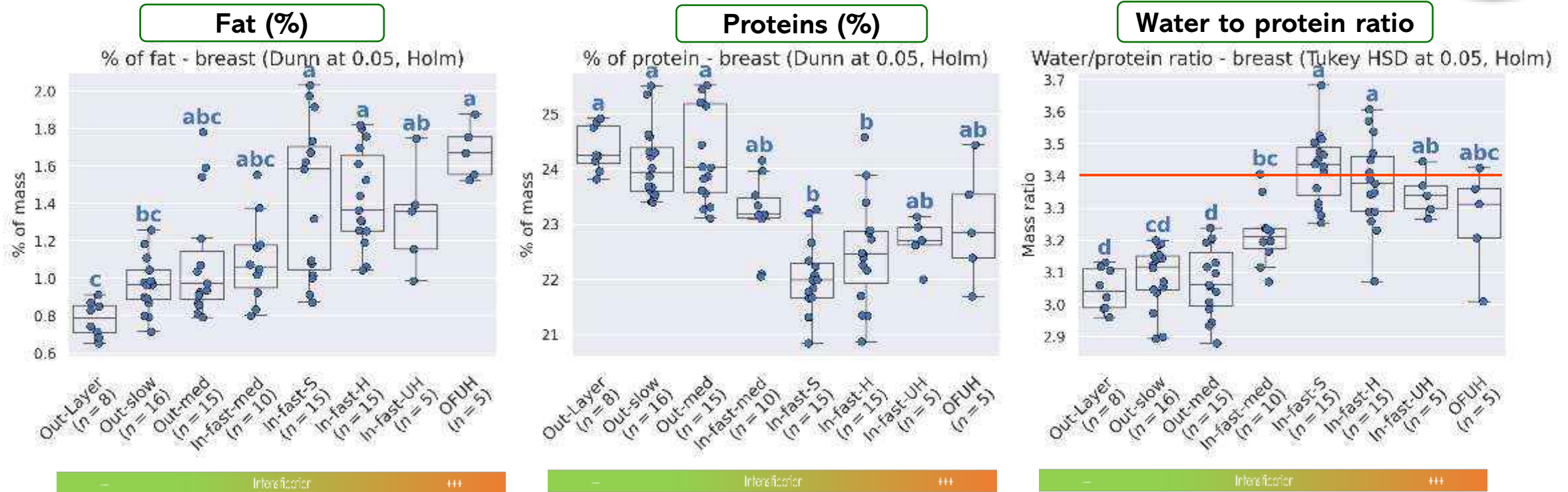


**Relatively small
differences in
protein fractions
and phospholipids**

Menoury et al. (2026).
This EAAP Meeting, poster
46.2.



Proximate composition – chicken breast



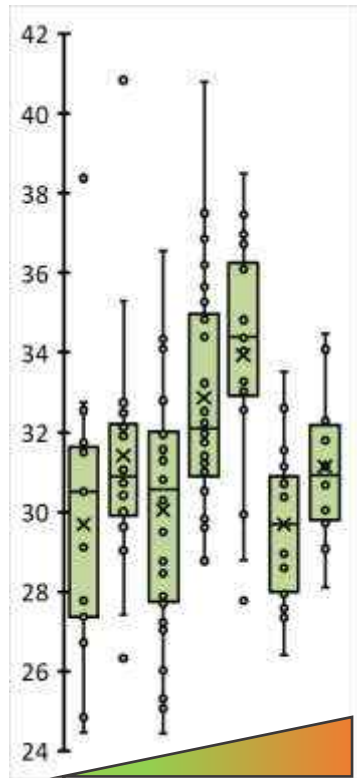
Fast growing strains:

- Lower protein and higher fat content
- Higher risk of exceeding the water/protein regulatory limit of 3.4 (also true for the thigh; limit 4.05)



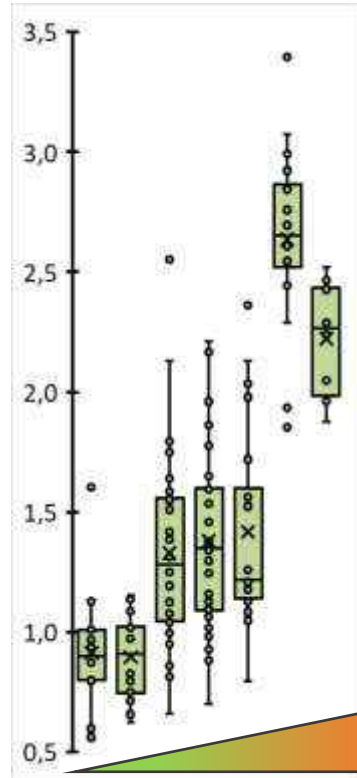
Fatty acid profile - milk

C16:0 (% FA)



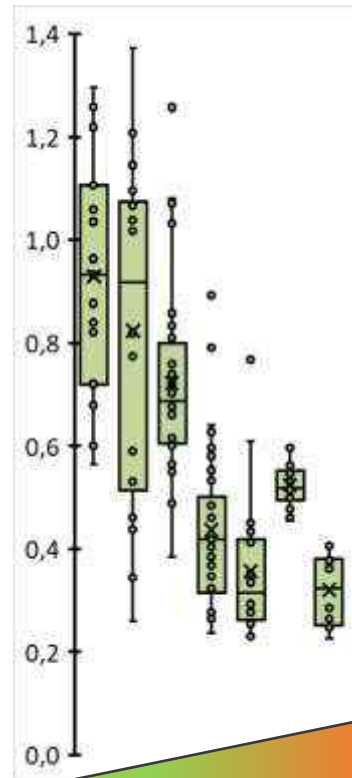
Intensification level

C18:2n-6 (% FA)



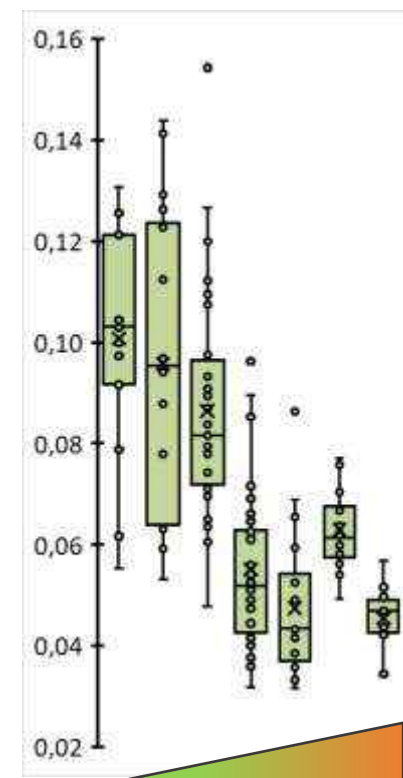
Intensification level

C18:3n-3 (% FA)



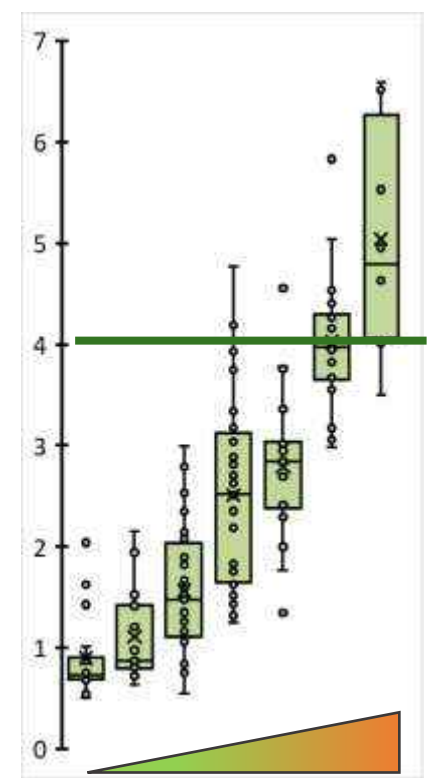
Intensification level

EPA + DHA (% FA)



Intensification level

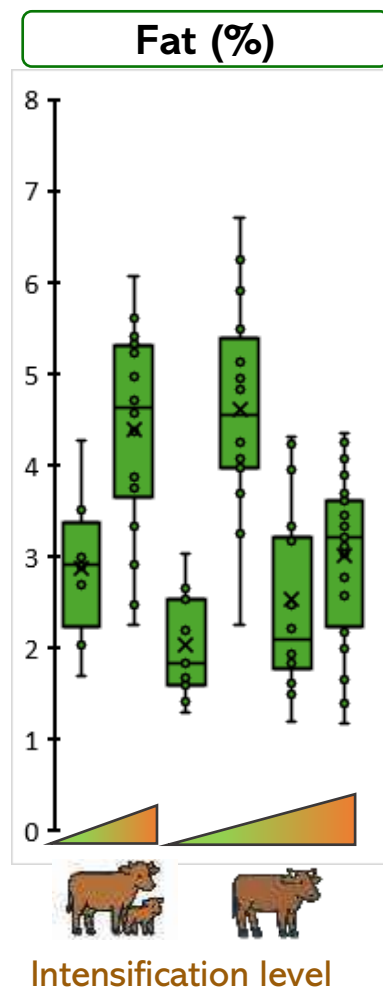
n-6/n-3 PUFA



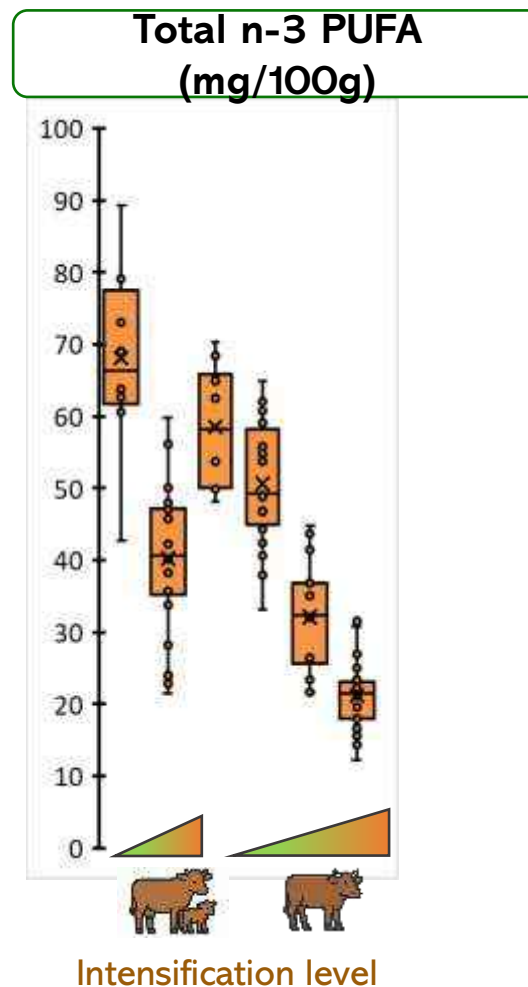
Intensification level

~ proportion of (preserved) grass in the diet

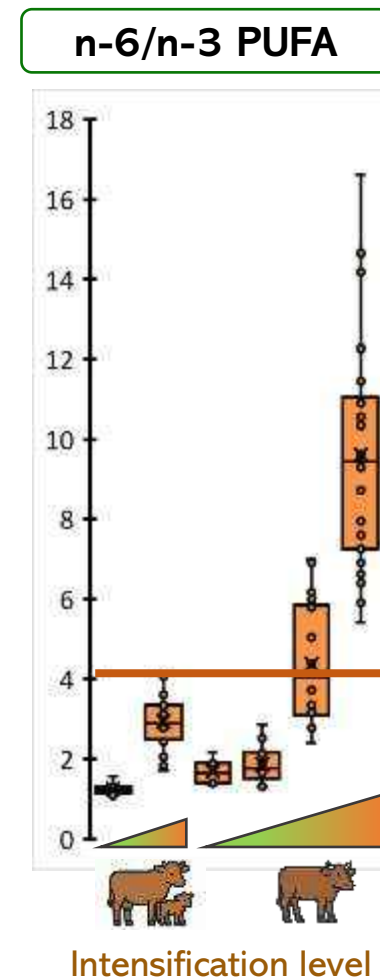
Fat content and fatty acid profile – beef



~ breed, slaughter weight,
fattening regime



~ proportion of (preserved)
grass in the diet

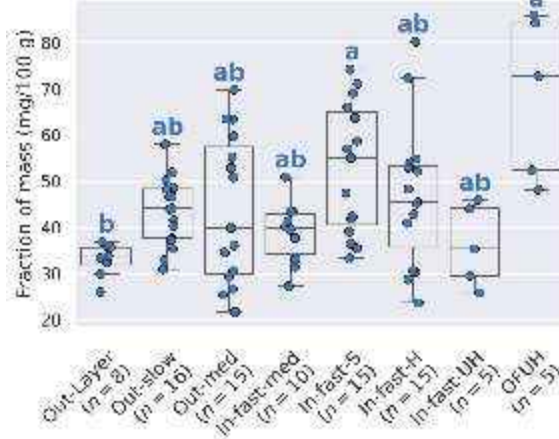


Fatty acid profile – chicken



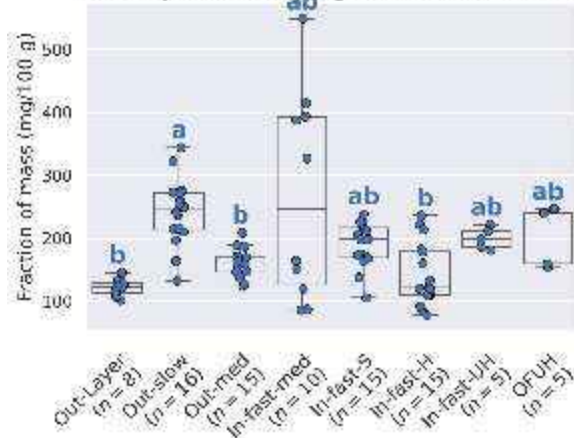
Total n-3 PUFA (mg/100g)

Total fatty acids n-3 - breast (Dunn at 0.05, Holm)



breast

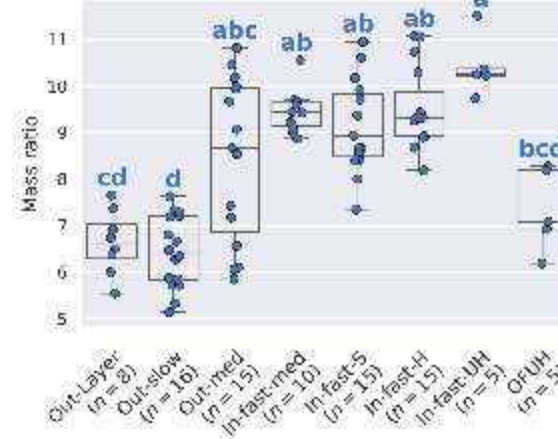
Total fatty acids n-3 - thigh (Dunn at 0.05, Holm)



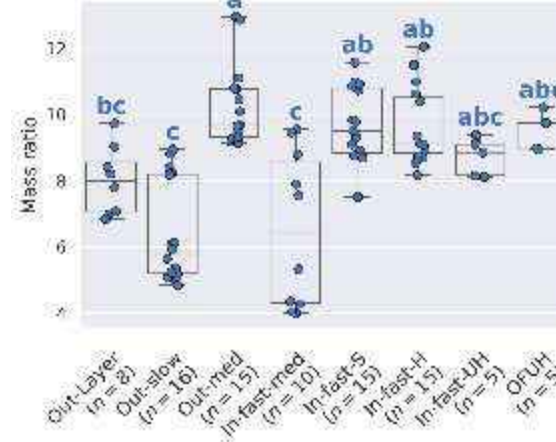
thigh

n-6/n-3 PUFA

Ratio fatty acids n-6/n-3 - breast (Dunn at 0.05, Holm)



Ratio fatty acids n-6/n-3 - thigh (Dunn at 0.05, Holm)



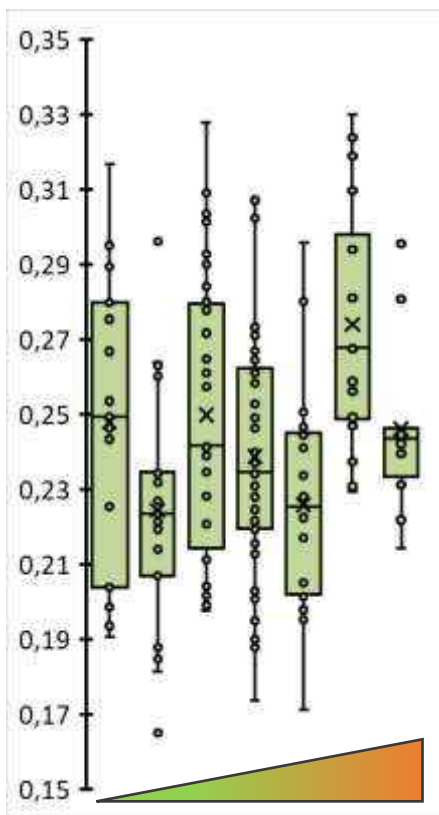
Chicken meat good source of n-3 PUFA despite unfavorable n-6/n-3 ratio

Vitamins - milk

Buitenhuis et al. (2026).
Influence of genetics and rumen microbiome
on bovine milk vitamin B2 and B12.
This EAAP Meeting, poster 45.12

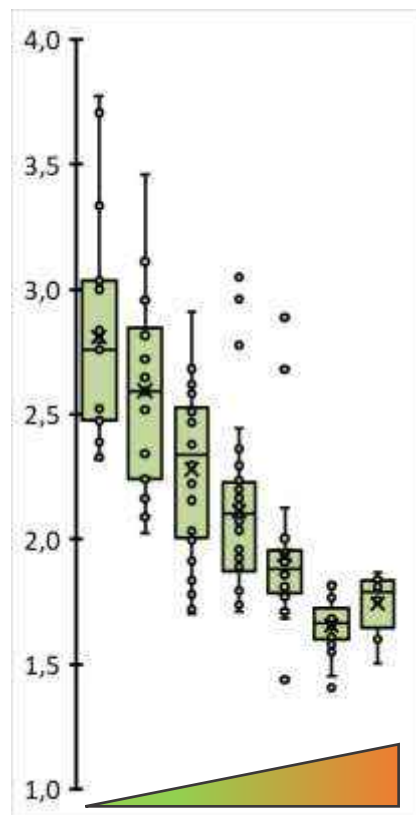


Vitamin B1 (mg/L)



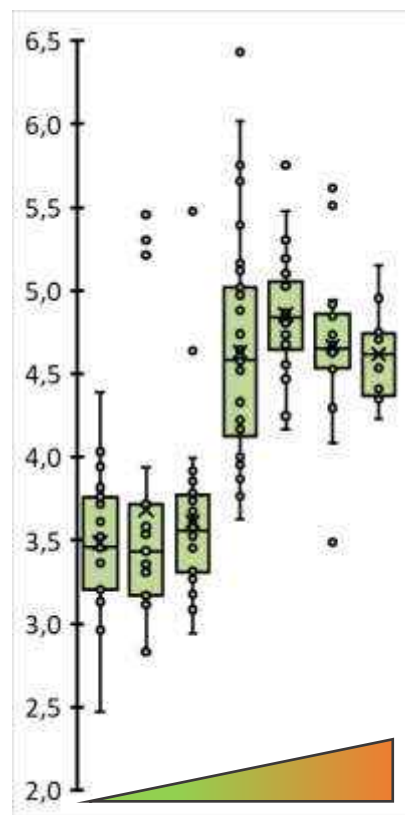
Intensification level

Vitamin B2 (mg/L)



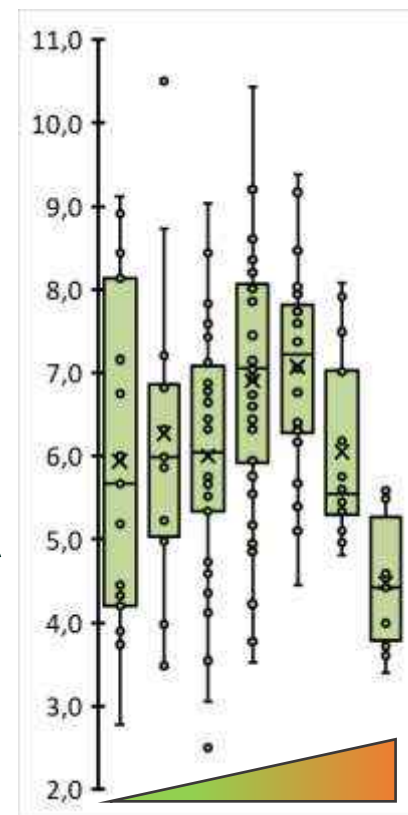
Intensification level

Vitamin B5 (mg/L)



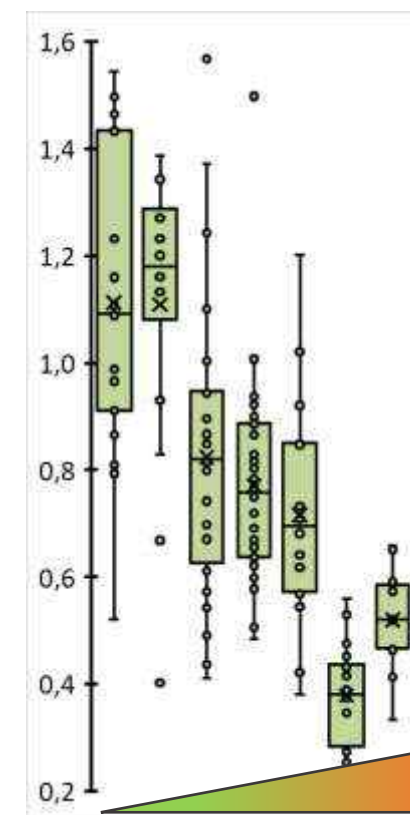
Intensification level

Vitamin B12 (µg/L)



Intensification level

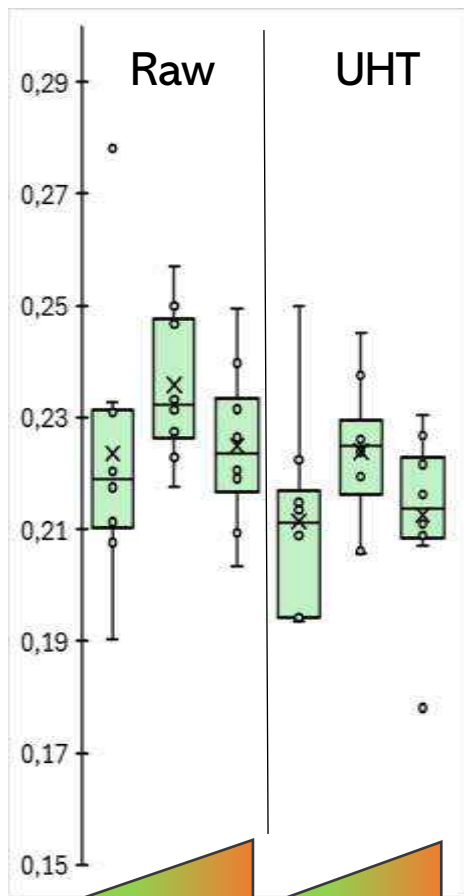
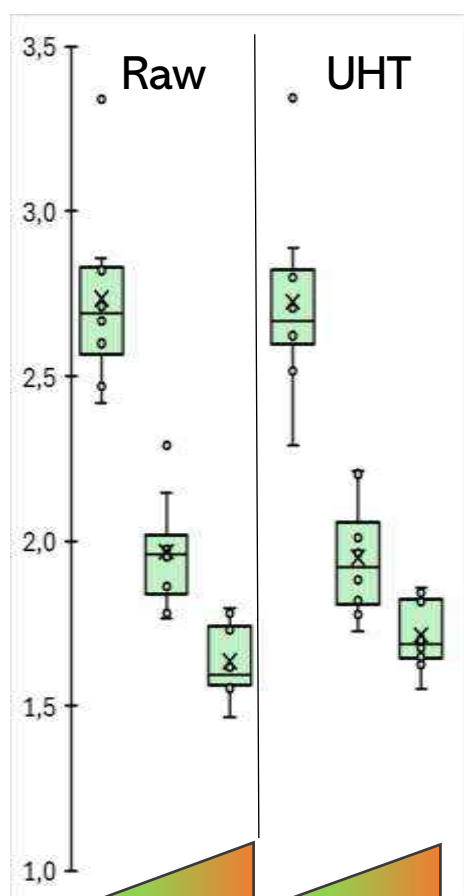
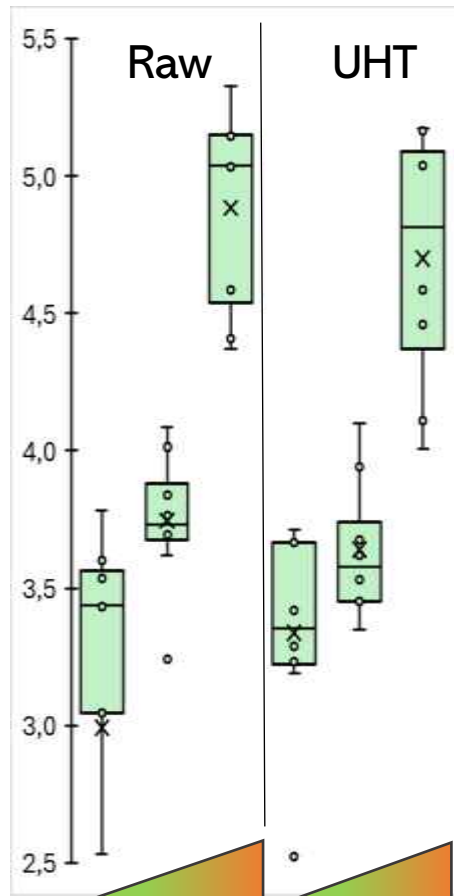
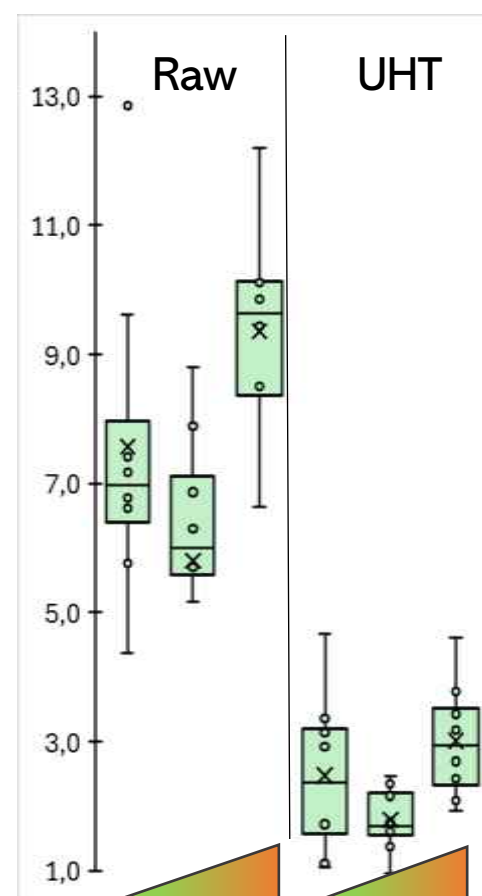
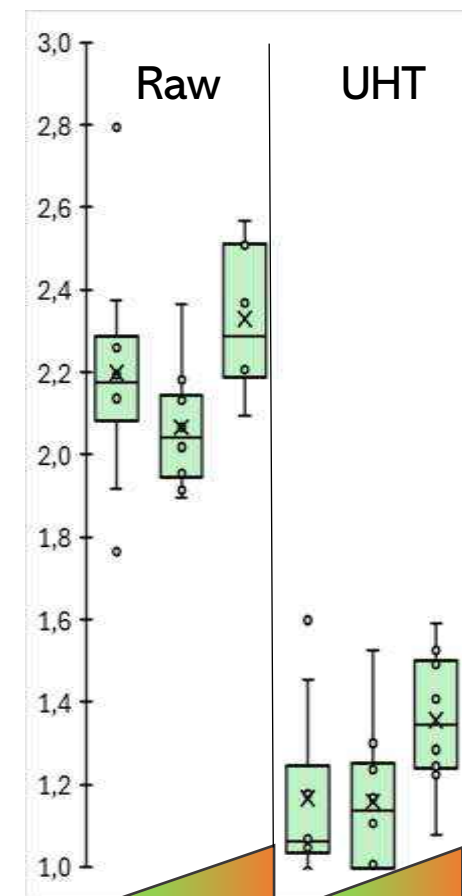
Vitamin E (mg/L)



Intensification level

A portion of milk (200 mL)
provides ~ 30% of AI (4 µg/d)

Vitamins – Raw versus UHT milk

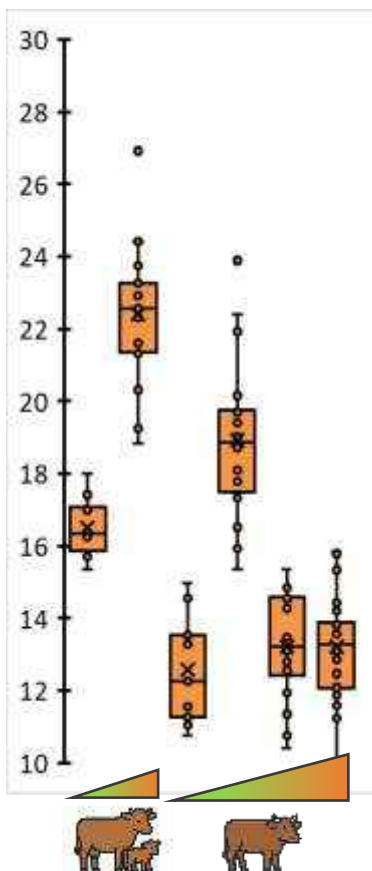
Vitamin B1 (mg/L)**Vitamin B2 (mg/L)****Vitamin B5 (mg/L)****Vitamin B12 (µg/L)****Vitamin B6 (mmol/L)**

Processing may dilute
micronutrient content.



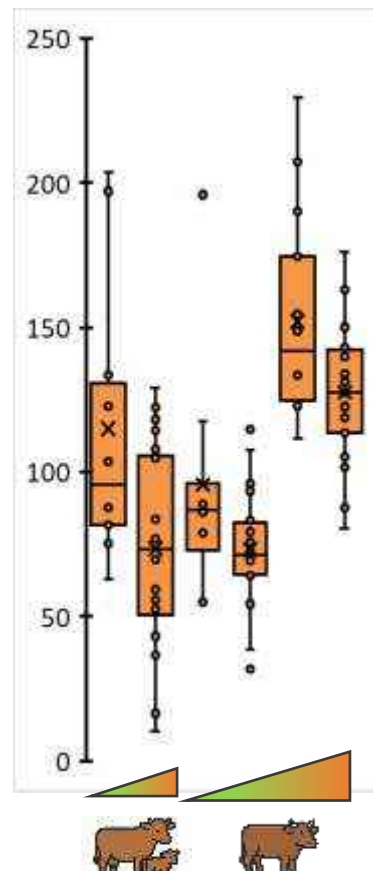
Vitamins and minerals - beef

Heme iron (mg/kg)



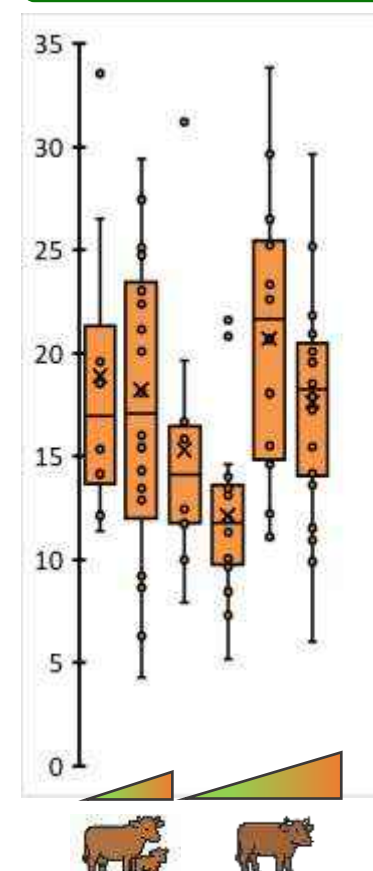
~ slaughter weight

Selenium (µg/kg)



~ Se in premix and soil

Vit B12 (µg/kg)



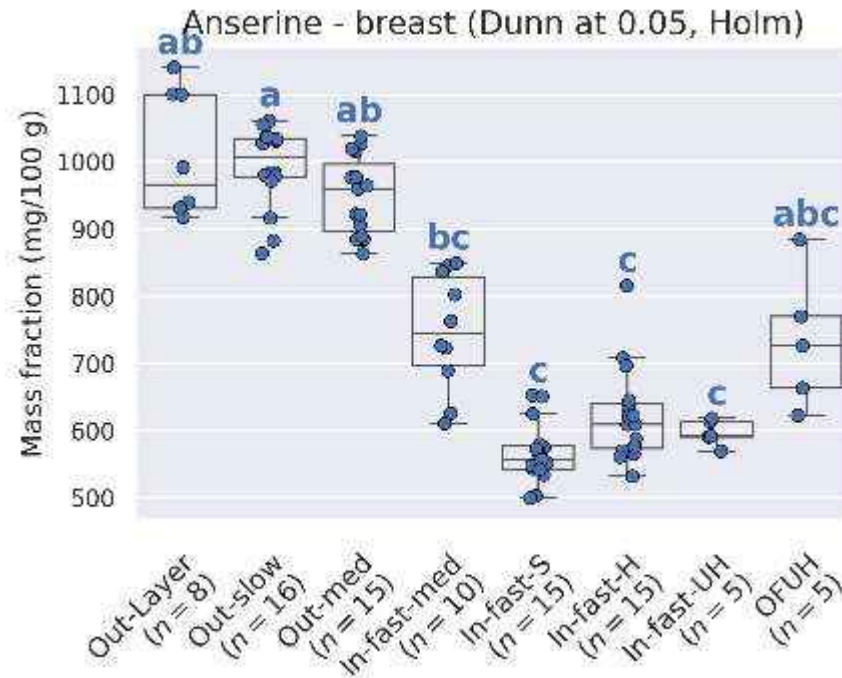
One steak of 150 g provides % of AI or AR for adult:

- ~ 35% for Fe
- ~ 25% for Se
- ~ 60% for vit B12

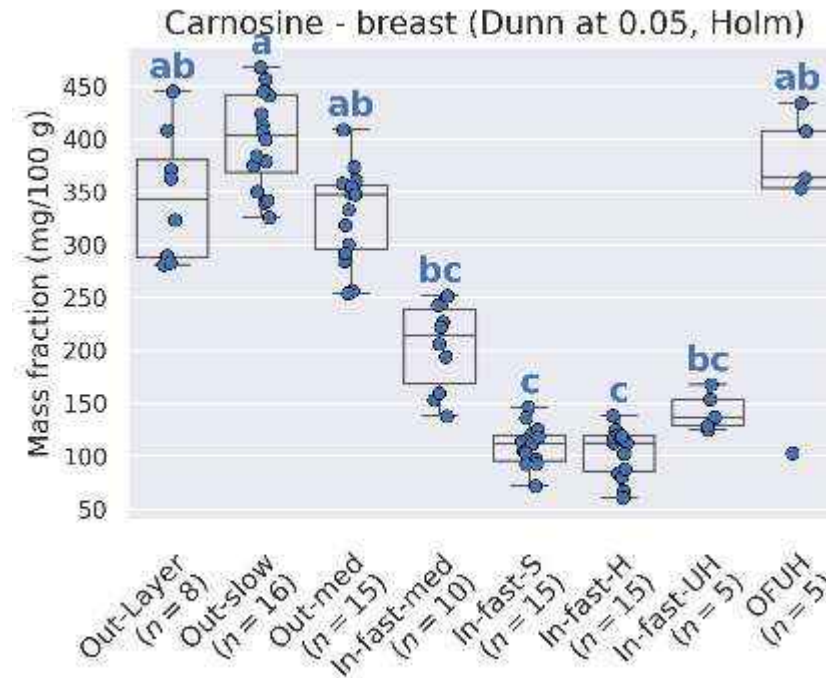
Bioactive compounds – chicken breast



Anserine (mg/100g)



Carnosine (mg/100g)



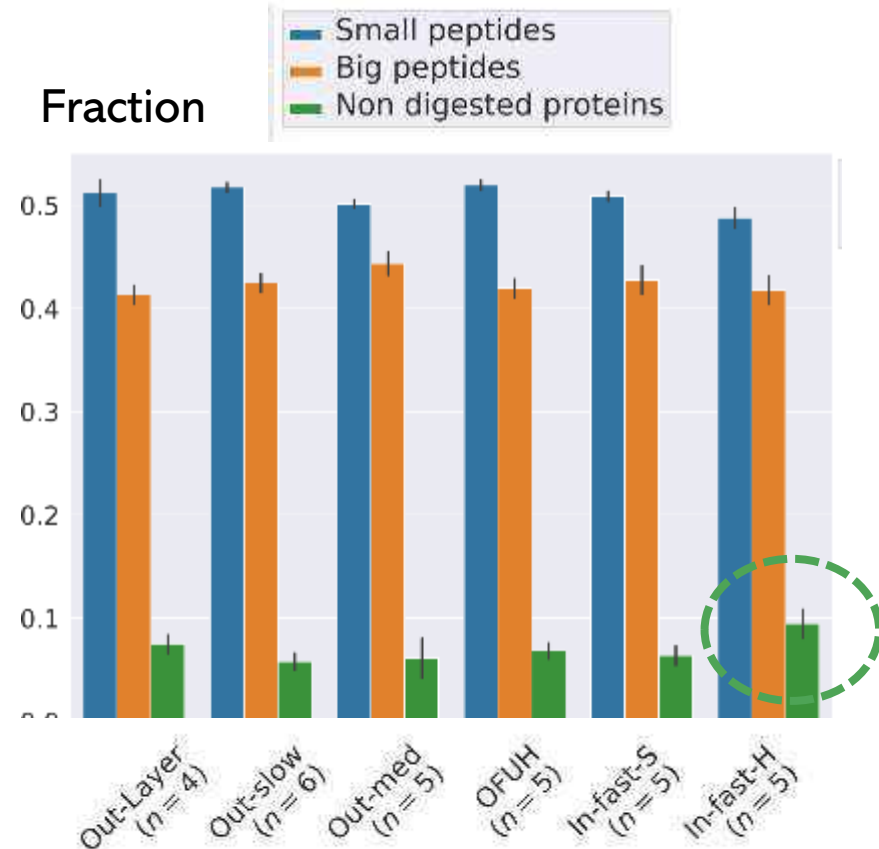
Histidine-containing dipeptides:

- Multiple functions: antioxidant role and muscle buffering capacity
- Significantly lower in fast-growing strains
- Similar trend in thigh but differences are smaller



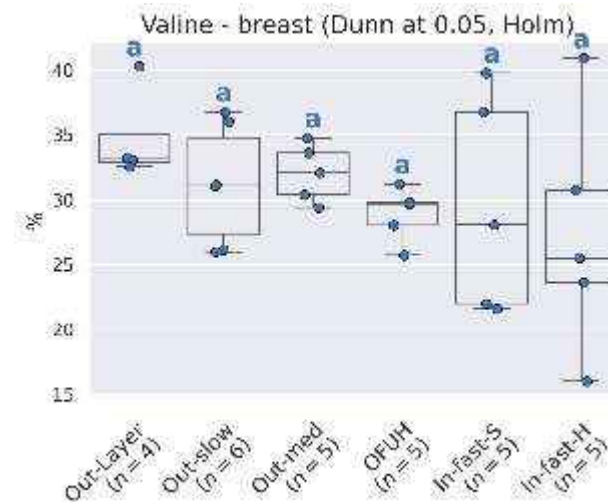
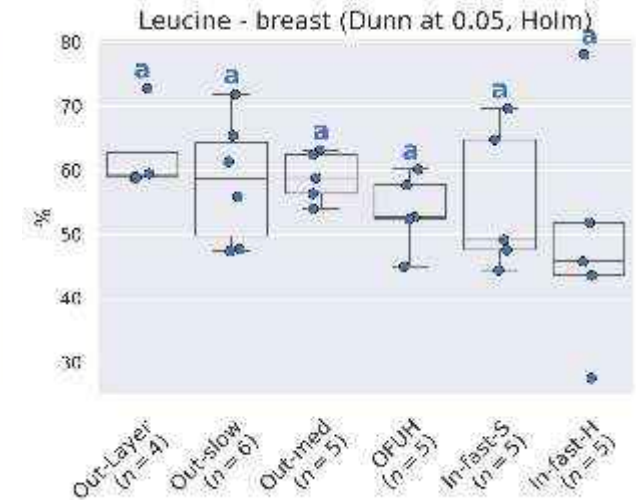
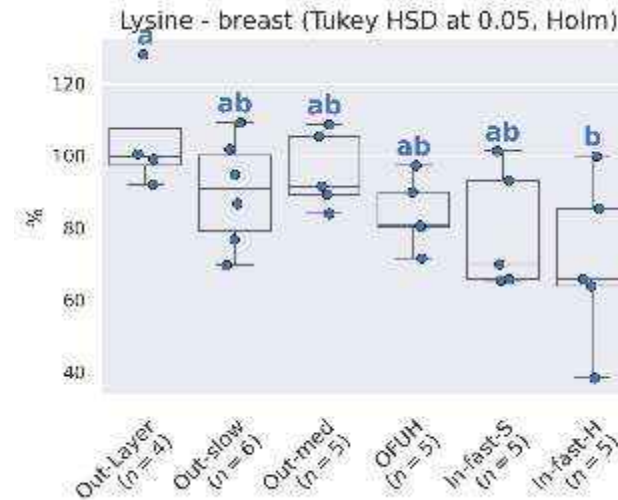
Protein quality and digestibility – chicken

In vitro digestibility



- High digestibility of poultry meat >90%.
- Higher content of non-digested protein in fast-growing heavy weight chicken.

In vitro Digestible Indispensable Amino Acid Score



- Sum of essential AA did not differ between systems.
- Trend for lower content of several essential AA.



Conclusions

- Variability in nutritional quality primarily associated with
 - feeding regimen in milk and beef and with age at slaughter in beef
 - the use of fast-growing vs. slow-growing strains in chicken
- Positive or neutral effect of extensification on nutritional quality, dependent on trait and product
- The lack of a clear pattern according to intensification for several traits suggests that strategies to improve nutritional value of animal source foods should focus on product-dependent specific farming practices
 - Modelling work ongoing
 - Future research should consider additional farming practices and information
- Differences in nutritional value might be relevant for human nutrition

Thank you for your attention

Stefaan De Smet, UGENT

E-mail: stefaan.desmet@ugent.be

