



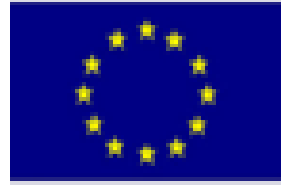
Strategie innovative per favorire il benessere e la qualità di polli in estensivo: arricchimenti ambientali e tipo genetico

Introduzione alla prova sperimentale

Prof. Cesare Castellini - Dott.ssa Simona Mattioli

Programme H2020-EU.3.2.1.1.: Increasing production efficiency and coping with climate change, while ensuring sustainability and resilience

SFS-08-2018: Improving Animal Welfare



PPILOW: Poultry and Pig Low-input and Organic production systems' Welfare

September 2019 – August 2024

PPILOW aims to co-create, through a multi-actor approach, innovations to improve the welfare of poultry and pigs in organic and low-input farming systems

<https://cordis.europa.eu/project/rcn/222524/factsheet/en>



<https://www.youtube.com/watch?v=RtC50evYU60>



<https://www.youtube.com/watch?v=nejpvjRW4pw>



<https://www.facebook.com/PPILOW>



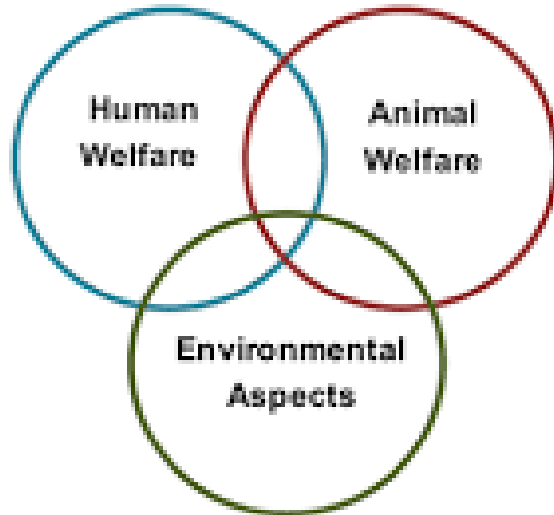
<https://twitter.com/PPILOWH2020>

Partners of the PPILOW project



2000

2020



Human
Welfare

Animal
Welfare



Environmental
Aspects



PPILOW

POULTRY AND PIG LOW-INPUT AND ORGANIC PRODUCTION SYSTEMS' WELFARE



THE PROJECT

The PPILOW project aims to co-construct through a multi-actor approach solutions to improve the welfare of poultry and pigs reared in organic and low-input outdoor farming systems.

Objectives

- **Identify** barriers to welfare of organic and low-input outdoor-reared poultry and pig, by taking an inventory of farming practices considering stakeholders' and citizens' expectations and priorities.
- **Co-create**, with end-users, **innovative breeding, rearing strategies and techniques** for improving the welfare of animals by avoiding mutilations (such as piglet castration or beak trimming in poultry), the elimination of one day-old layer male chicks, favouring positive behaviours, and improving health and robustness in pigs and poultry.
- **Build, test, share and adopt self-assessment tools** that allow trained farmers and technicians to monitor the animal welfare on-farm in order to identify critical periods and to ensure corrective welfare management practices by production actors.
- **Test** experimentally and on-farm the potential of the innovations identified through the participatory involvement of practitioners, technicians and scientists.
- **Realize multi-criteria analyses** of the most promising breeding and rearing strategies to evaluate their economic, social and environmental impacts and sustainability according to the 'One Welfare' concept.
- Ensure the dissemination of the project results both in order to sensitize the **final consumer** and in order to influence the **political institutions** for an improvement of sustainable animal welfare.

Our experimental station

In the experimental trial are tested **four genotypes** of chickens for their ability to explore outdoor in interaction with enrichment (negative control -no enrichment, annual crop) and season. A synthetic index will be built with a focus on **exploratory behavior, physiological and immune parameters, performance and meat quality** in order to evaluate the sustainability of the various combinations of production.

The trial will be performed in Agricultural Education Foundation (FIA) structures.

LABEL-ROUGE TYPE



SLOW-GROWING CHICKEN

LOHMANN DUAL



DUAL-PURPOSE CHICKEN

NAKED NECK



SLOW-GROWING CHICKEN

CROSS BREED



SLOW-GROWING CROSSBREED

Eight pens will be used, with a shelter and an external space of about 1 ha/cad. Two different enrichment will be tested: spontaneous pasture and sorghum.

SPONTANEOUS PASTURE



SORGHUM



The Team



The project was feasible thanks to the project partner professors representing the University of Perugia: Cesare Castellini, Alessandro dal Bosco and Lucia Rocchi.

Also collaborated: Fondazione Per L'Istruzione Agraria, Simona Mattioli (Biologist, PhD), Giuditta Meloni (Research Assistant), Alice Cartoni Mancinelli (Research Assistant), Elisa Cotozzolo (PhD student), Claudia Ciarelli (Research Assistant) and Mr. Giovanni Migni, Mr. Osvaldo Mandoloni, Ms. Cinzia Boldrini (Animal Handling).

The Project Partners



Gentoipi (n=100 both sexes)

1. LOHMANN DUAL – LD Dual Purpose SG strain



2. Naked neck x RED j Hubbard – NN

SG mainly used in French free-range system



3. RED J57 Hubbard – RJ

SG mainly used in Italian free-range system



4. Robusta maculata X Sasso (RMs)

Local crossbreed



Arricchimenti ambientali

Starter (22%CP; 12,5 Mj/kg DM)

Grower (18% CP; 12,9Mj/kg DM)

0-18 d

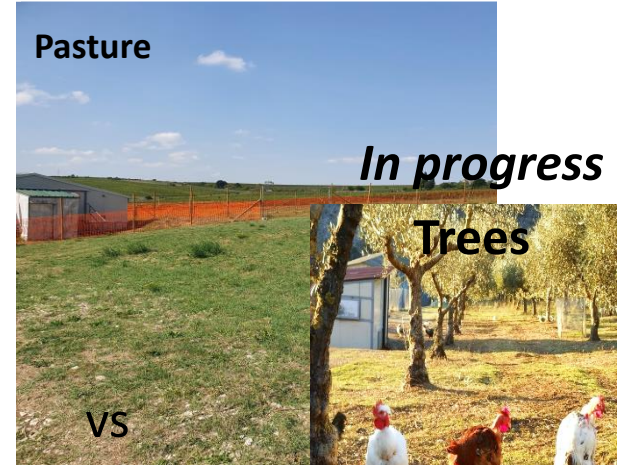
19-35d

outdoor

36-81/110d



Pasture



In progress

Trees

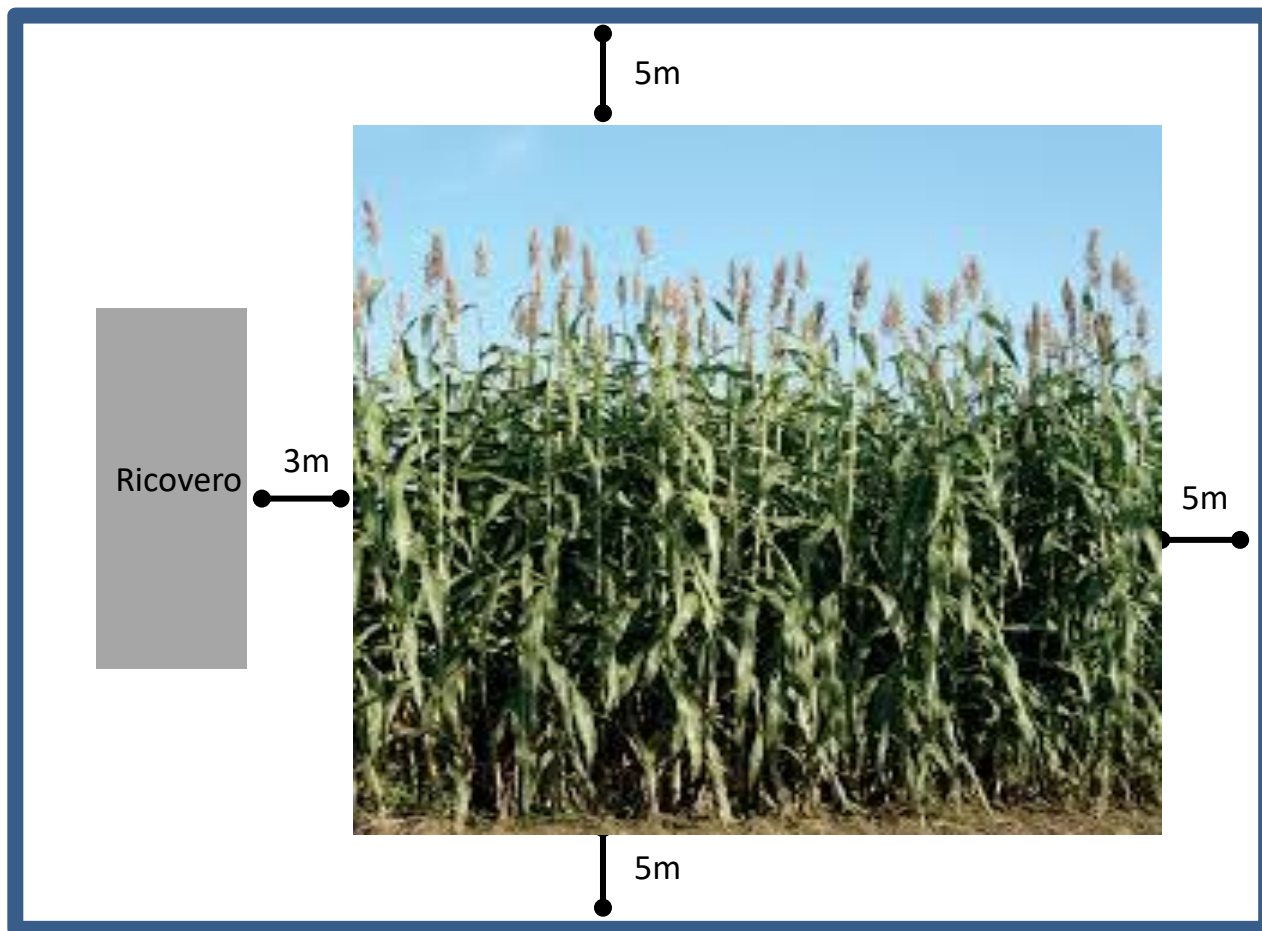


VS

Sorghum



Parchetti seminati



Stazione sperimentale



Considerazioni generali



Strategie innovative per favorire il benessere e la qualità di polli in estensivo: arricchimenti ambientali e tipo genetico

	Miglior risposta			
	CB	LD	NN	CB
Comportamento	x	x		
Performance			x	x
Qualità della carcassa			x	x
Qualità tecnologica	x		x	x
Qualità nutrizionale	x		x	x
Stato ossidativo carne	x	x		
Benessere (immunità)	x	x		
Stress (stato ossidativo)	x	x		x
Stato fisiologico				x

Adattabilità ERS

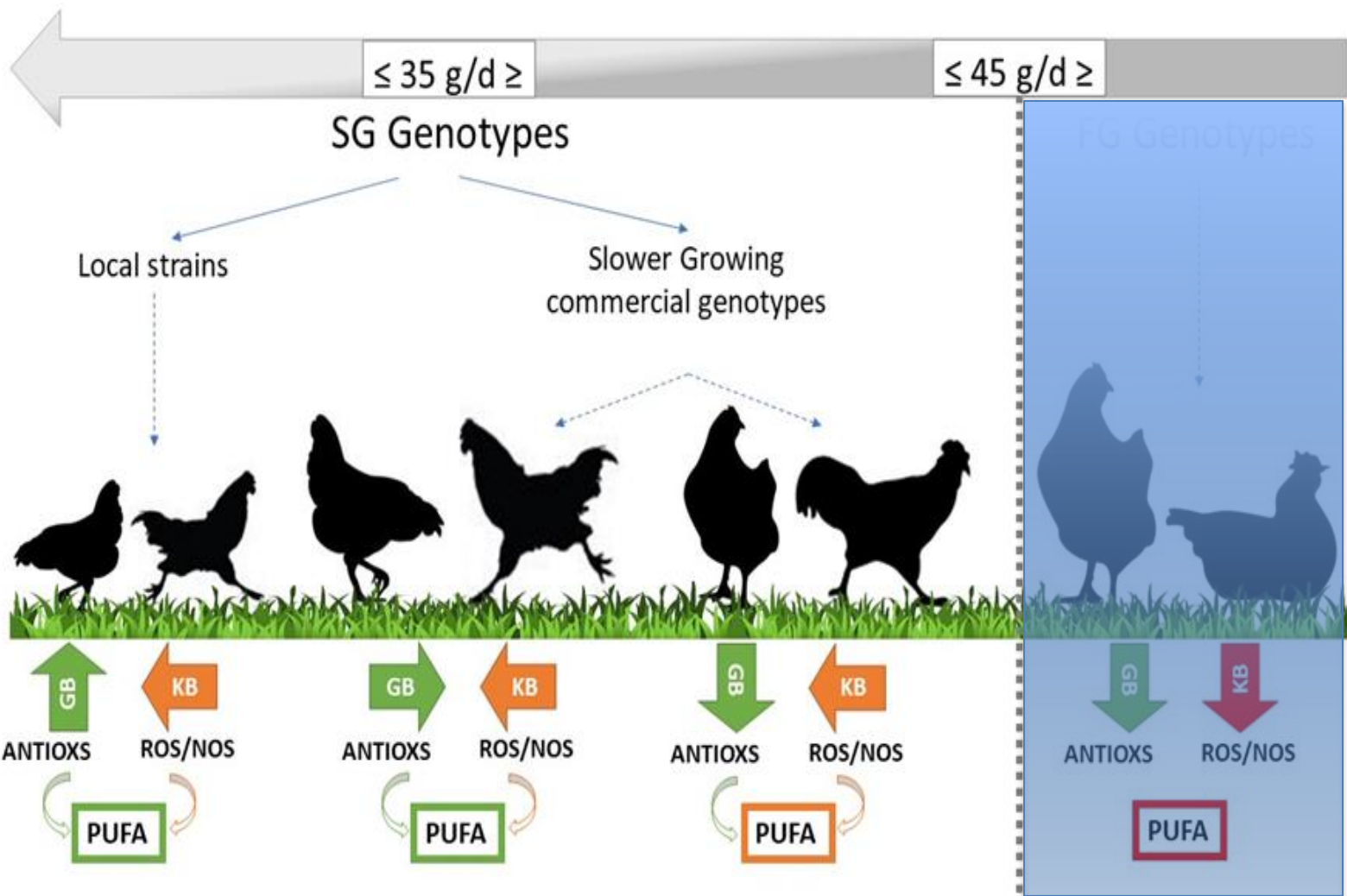
1. Comportamento

2a. Risposta immune
2b Termotolleranza

3. Qualità
prodotti

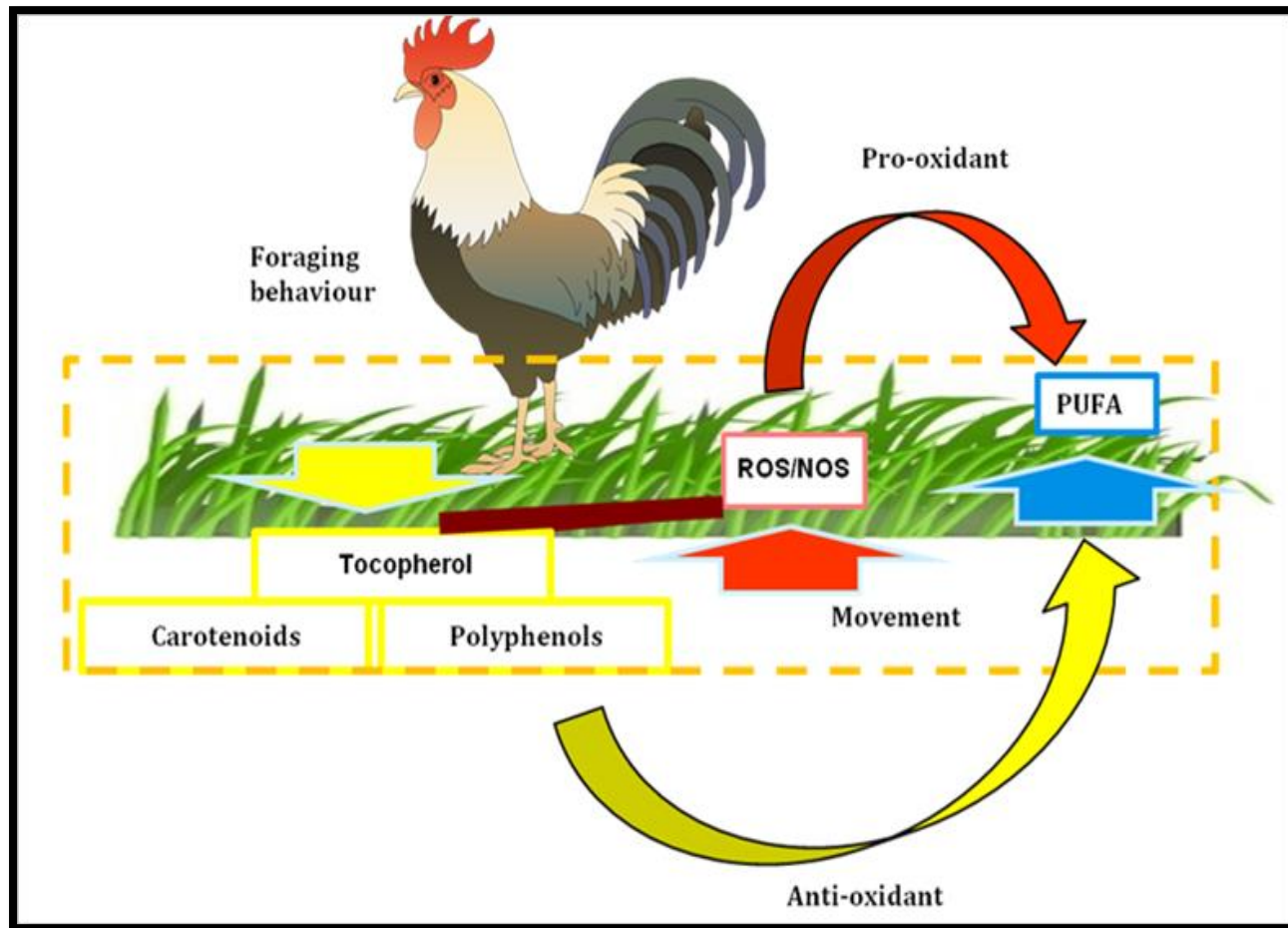
4. Produttività

impatto



DAL BOSCO ET AL. 2021. EXTENSIVE REARING SYSTEMS IN POULTRY PRODUCTION: THE RIGHT CHICKEN FOR THE RIGHT FARMING SYSTEM. A REVIEW OF TWENTY YEARS OF SCIENTIFIC RESEARCH IN PERUGIA UNIVERSITY, ITALY. ANIMALS, 11, 1281.

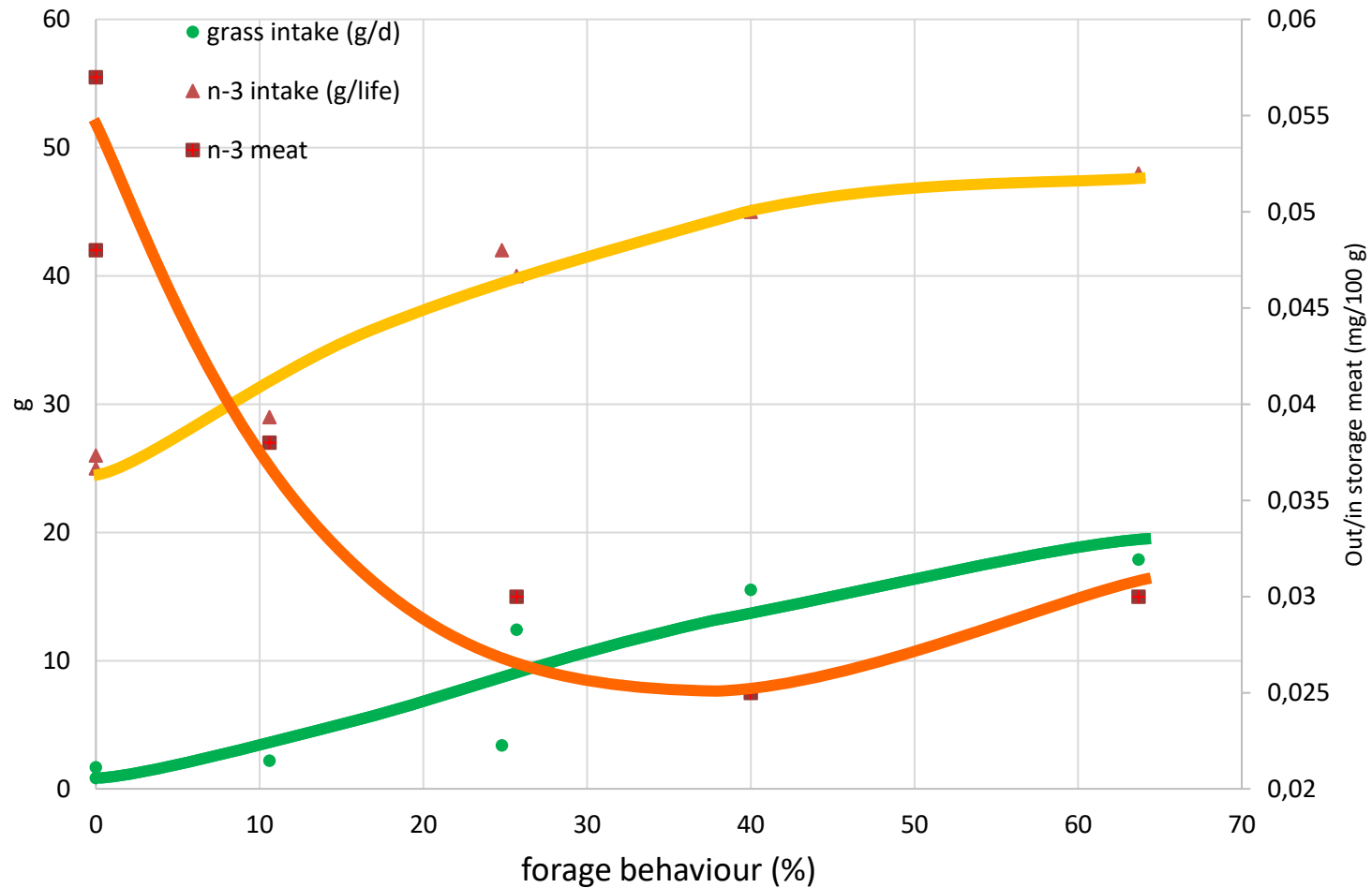
Kinetic activity and metabolism (Cartoni-Mancinelli et al., 2019)



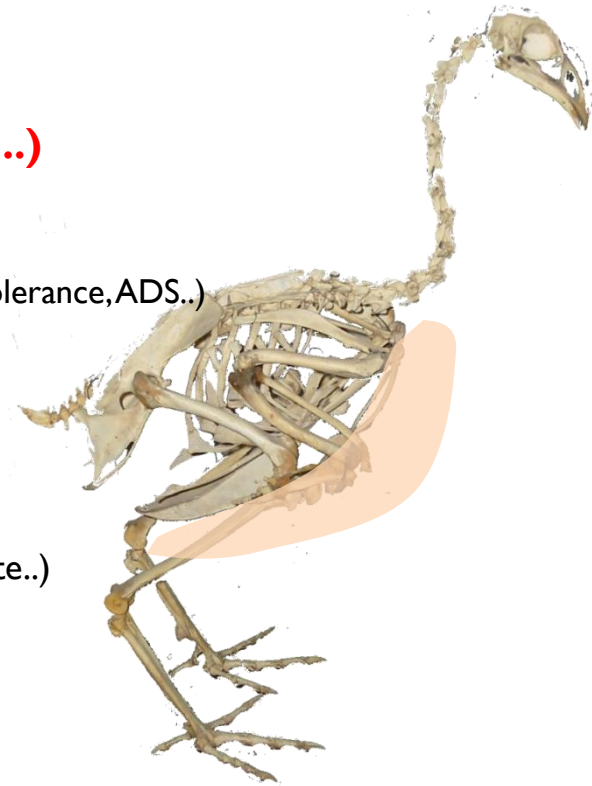
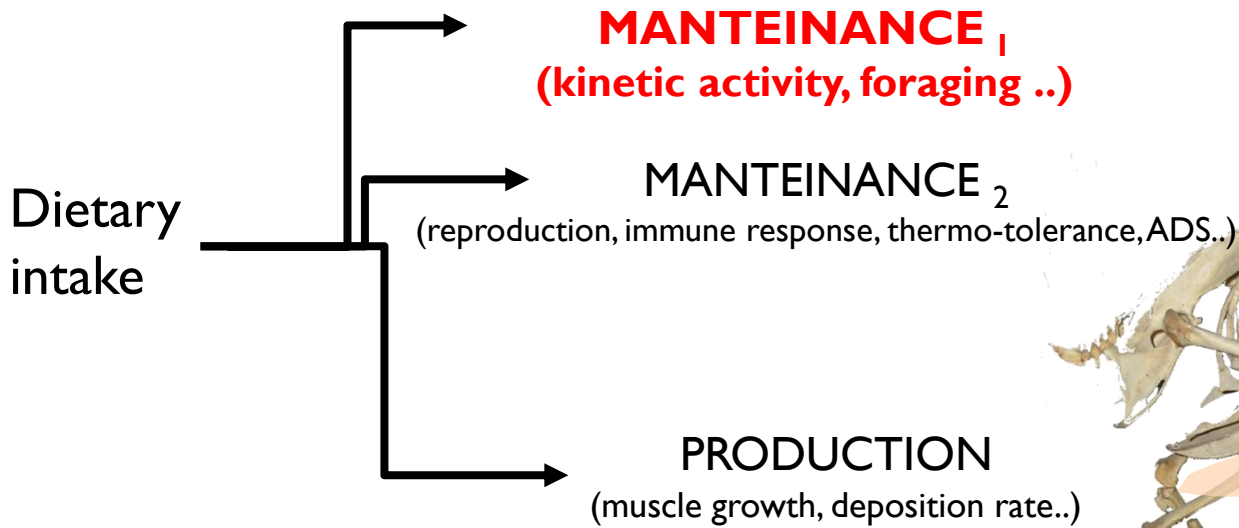
n-3 LCP (%) in poultry strains



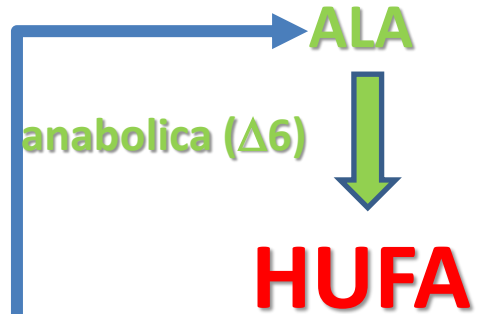
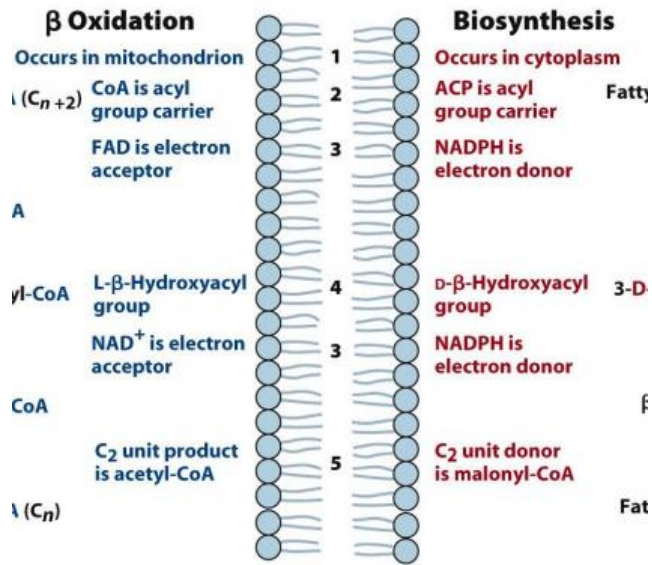
Forage behavior, grass and n-3 intake and meat storage efficiency



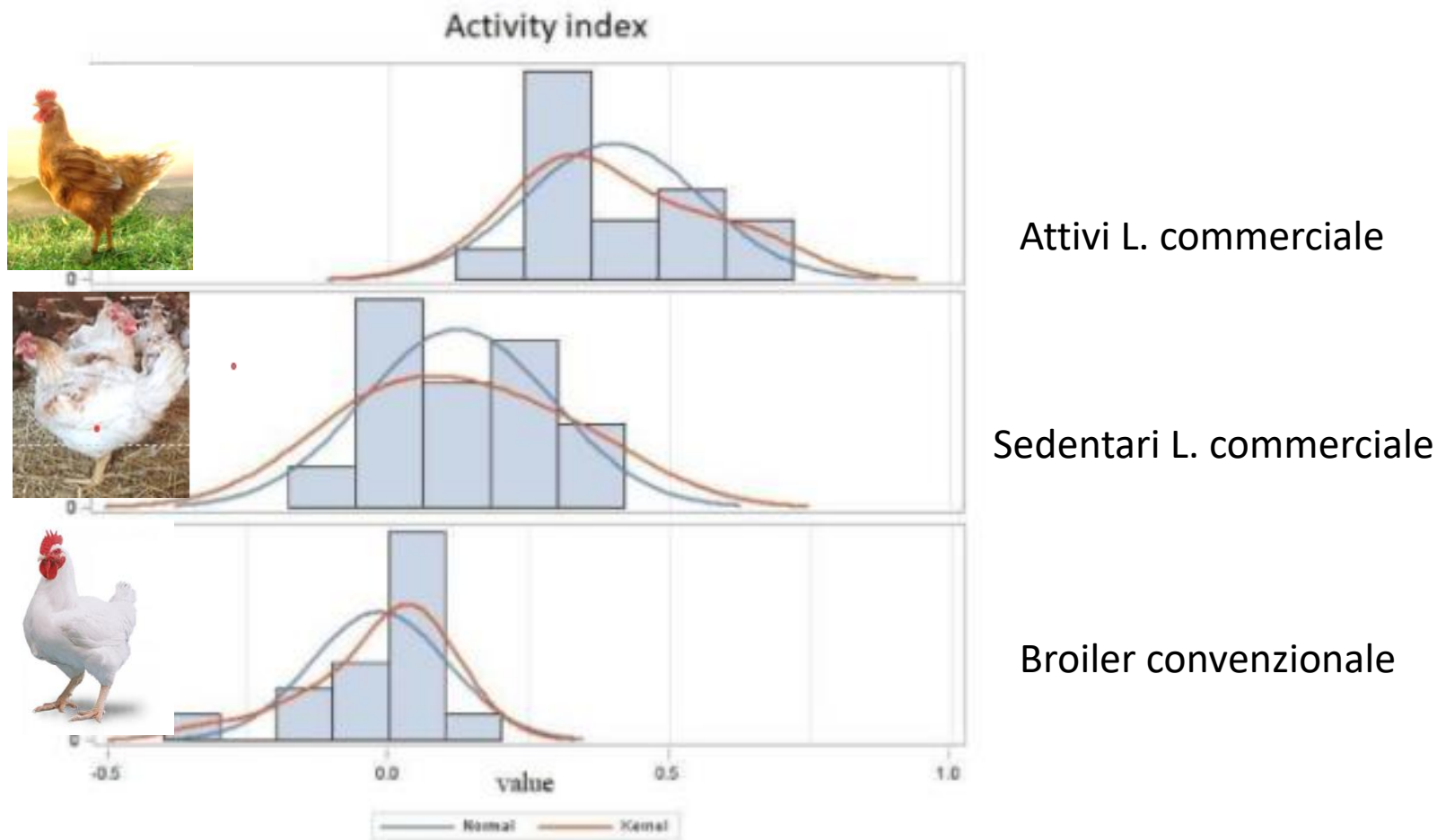
RESOURCE ALLOCATION



n-3



dieta



Failla S, Buttazzoni L, Meo Zilio D, Contò M, Renzi G, Castellini C, Guarino Amato M 2021. An index to measure the activity attitude of broilers in extensive system, Poultry Science, <https://doi.org/10.1016/j.psj.2021.101279>

Diete SG

ATTUALE

**Poca conoscenza
fabbisogni**

**Focus su Energia,
Proteine (performance)**

**Eventualmente grassi
(qualità)**

FUTURA

**Diversa attività
metabolica & cinetica**

➤ **Attenzione profili
antiox.**

➤ **+ amidi per
risparmiare grassi
buoni?**