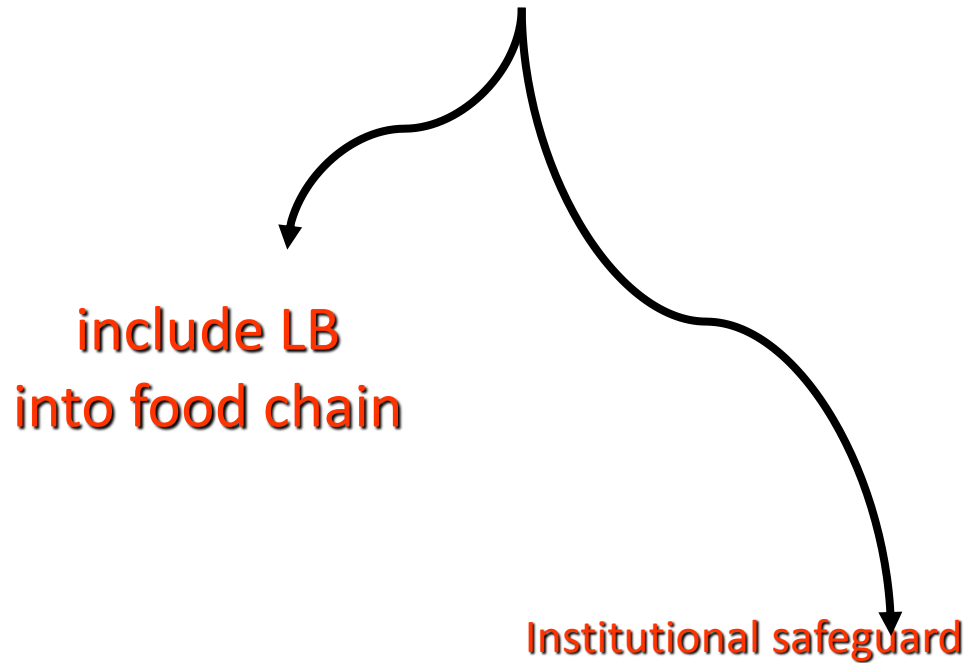


valorizzazione biodiversità avicola

Cesare Castellini

95% local breeds
(LB) are in danger
of extinction



Facts

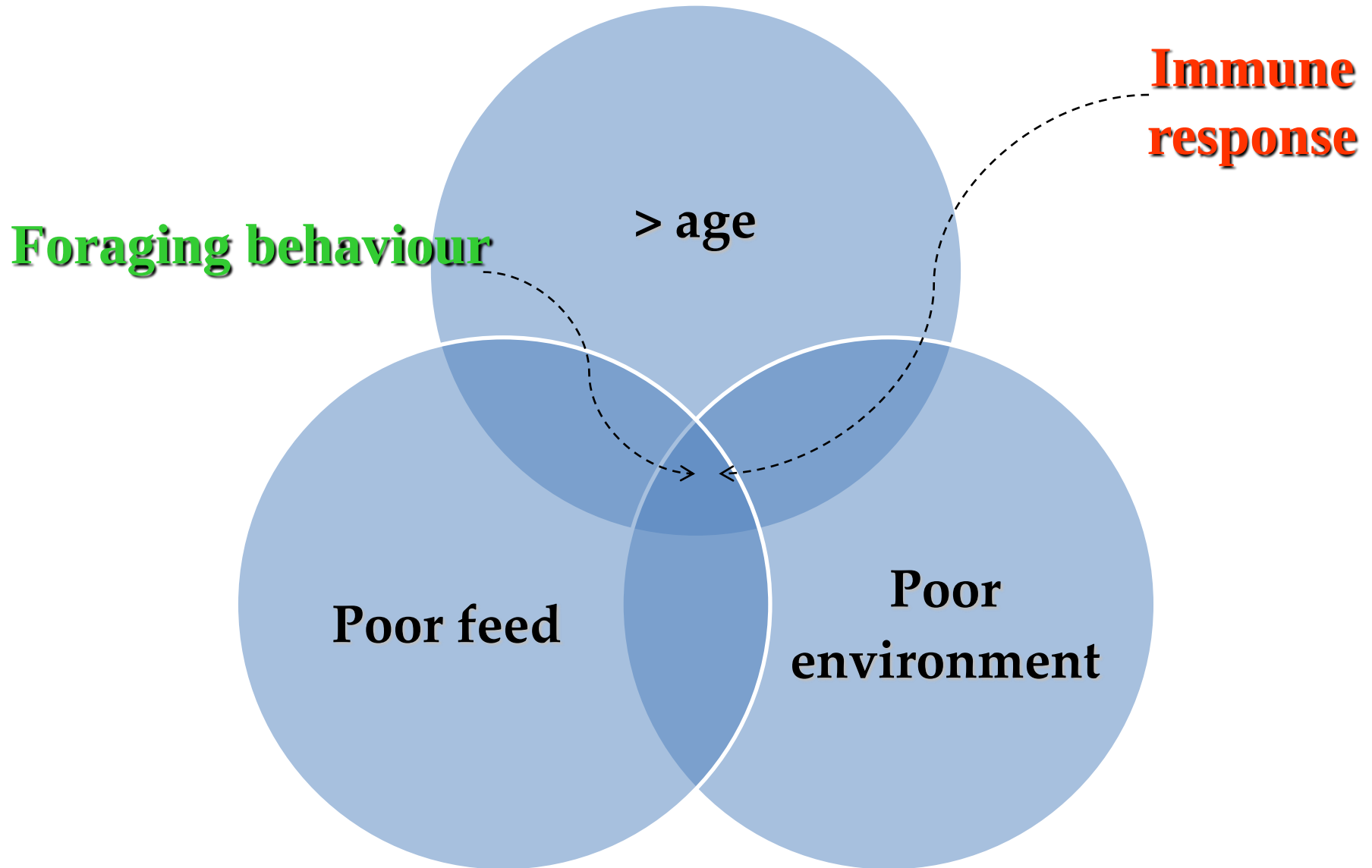
LB could be saved if **substantial** differences in behaviour, metabolism, quality will be shown

LB source of traits for specific selection purposes

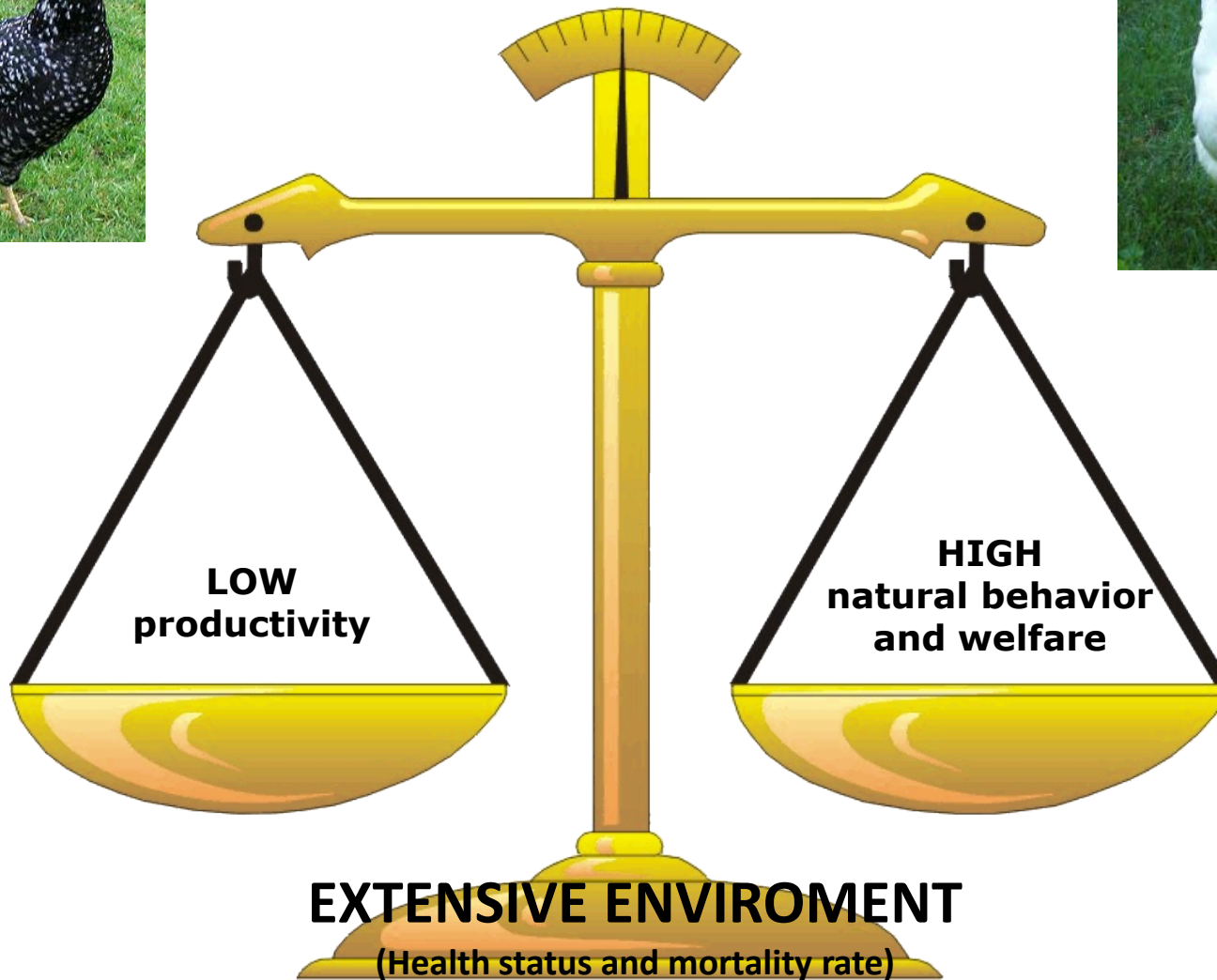
Agroforestry (chicken, olive trees, wild asparagus)



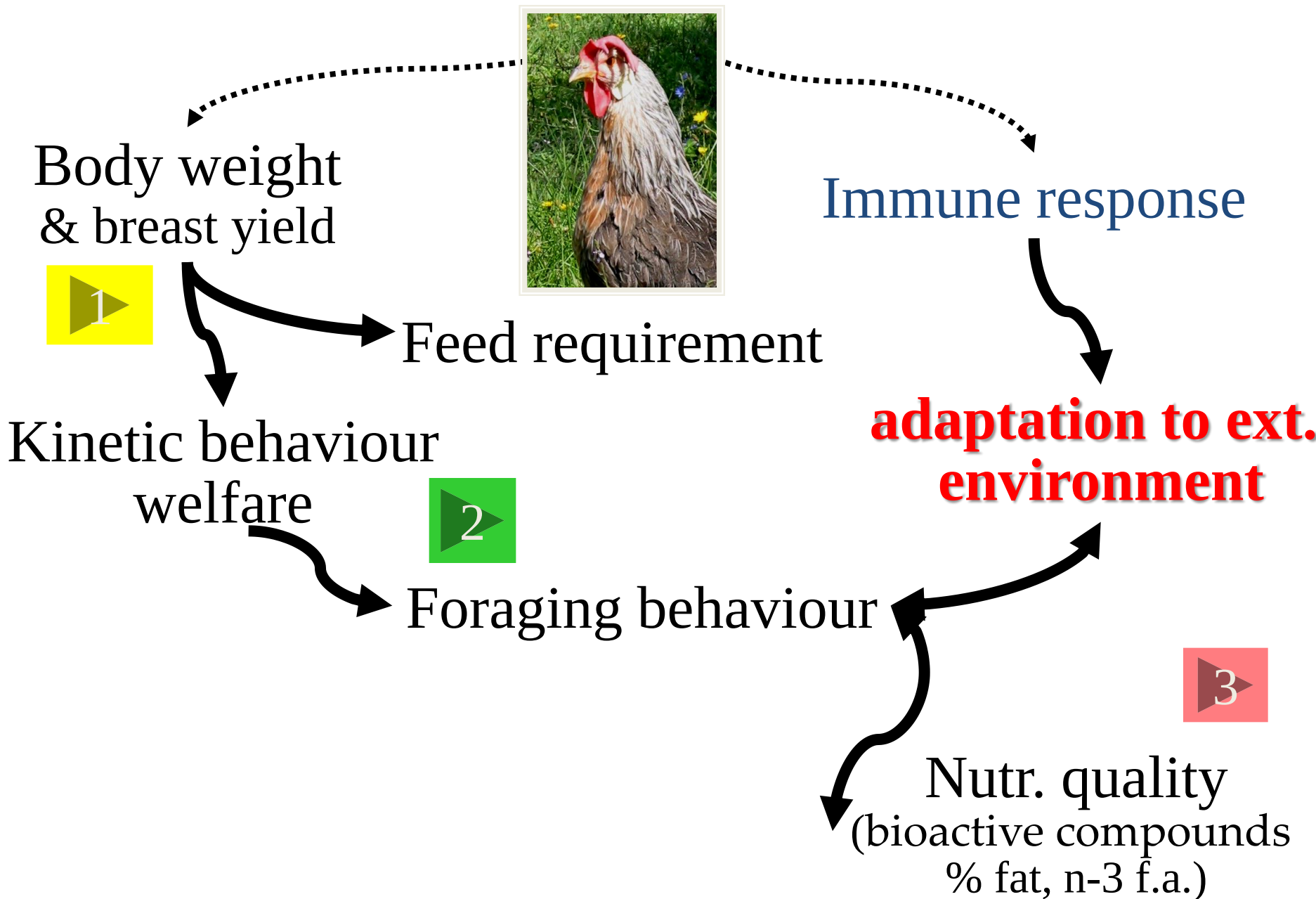
Rural poultry production



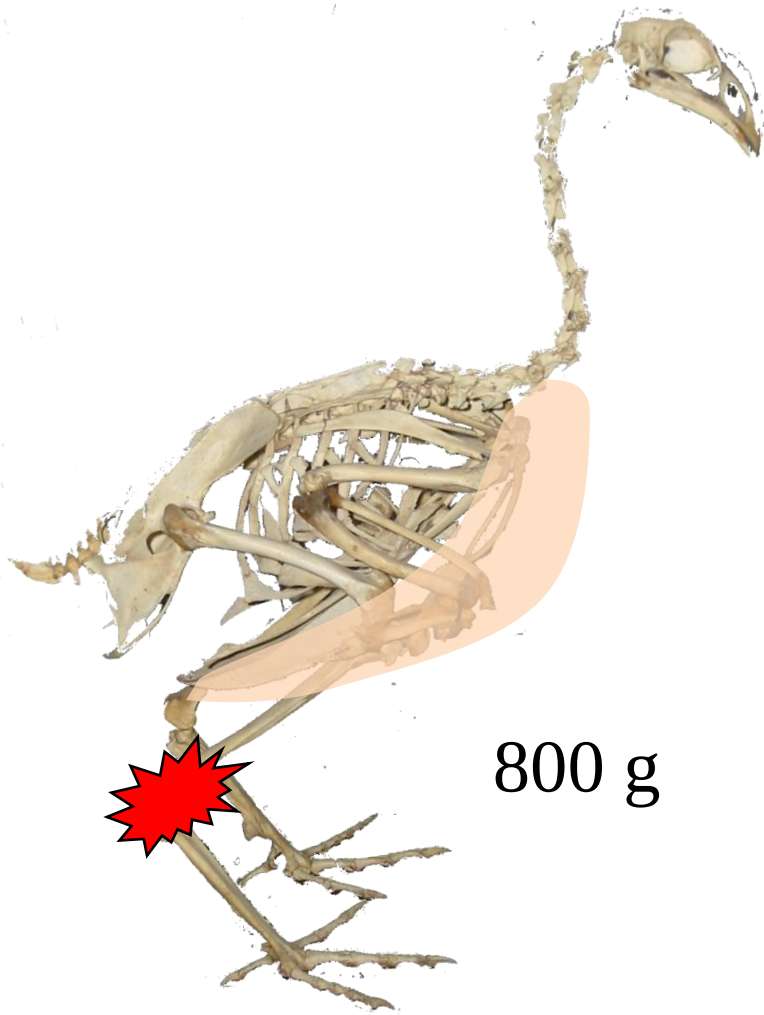
LOCAL BREEDS



Adaptation

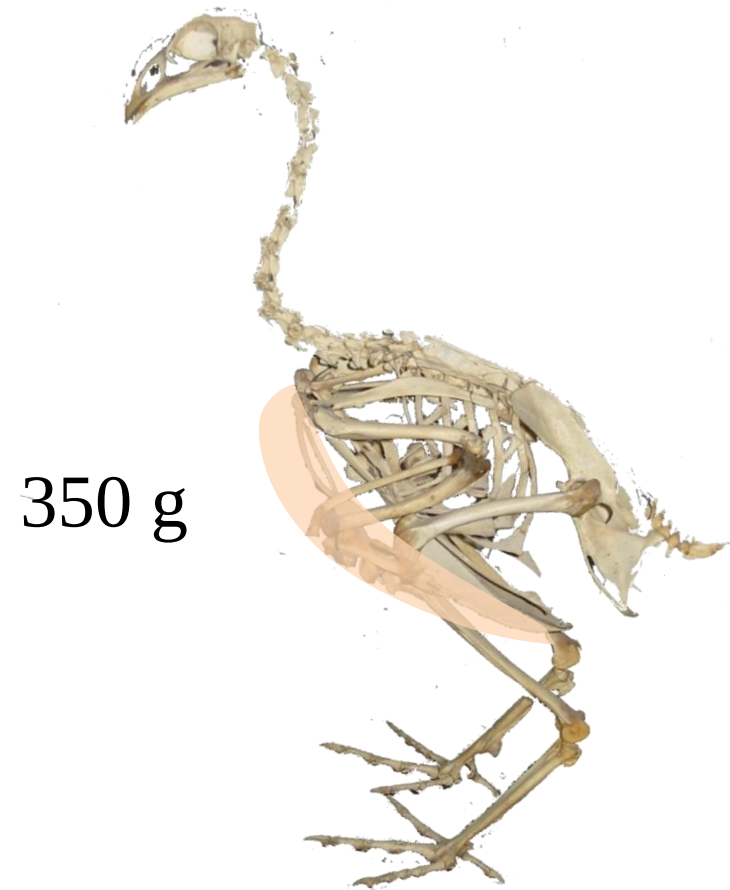


Fast-growing



800 g

Slow-growing



350 g

Bone structure

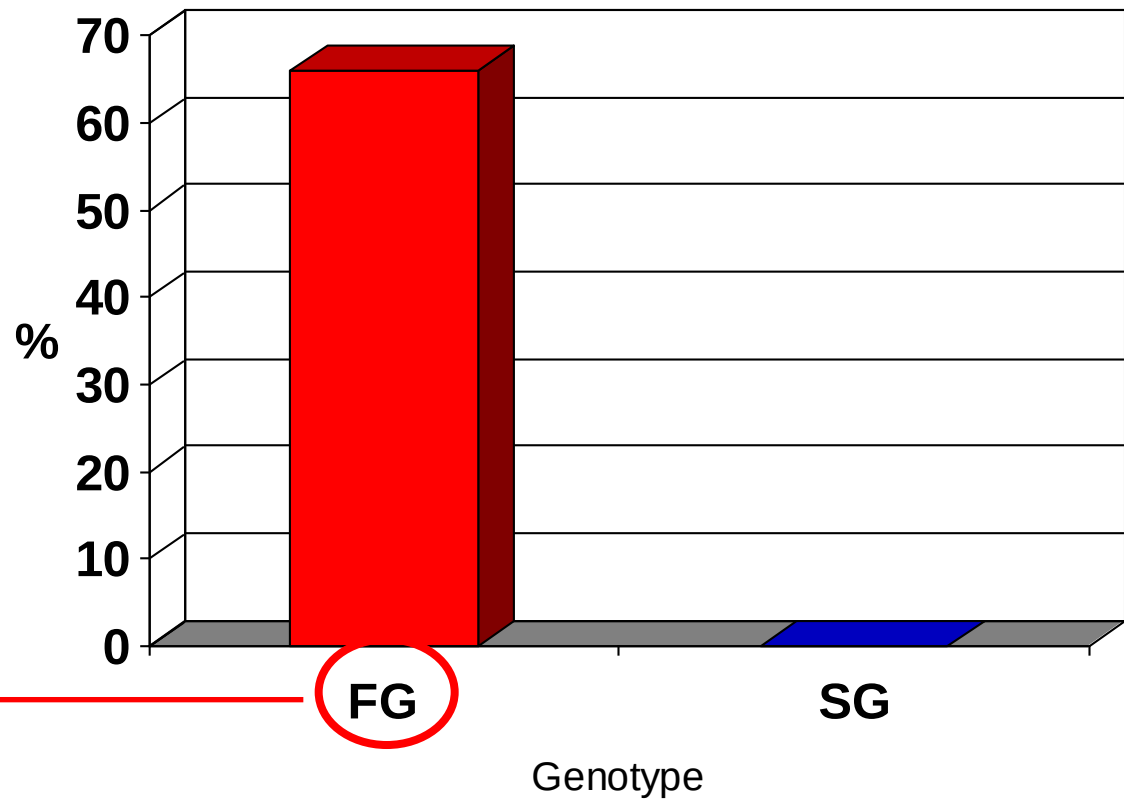
SG



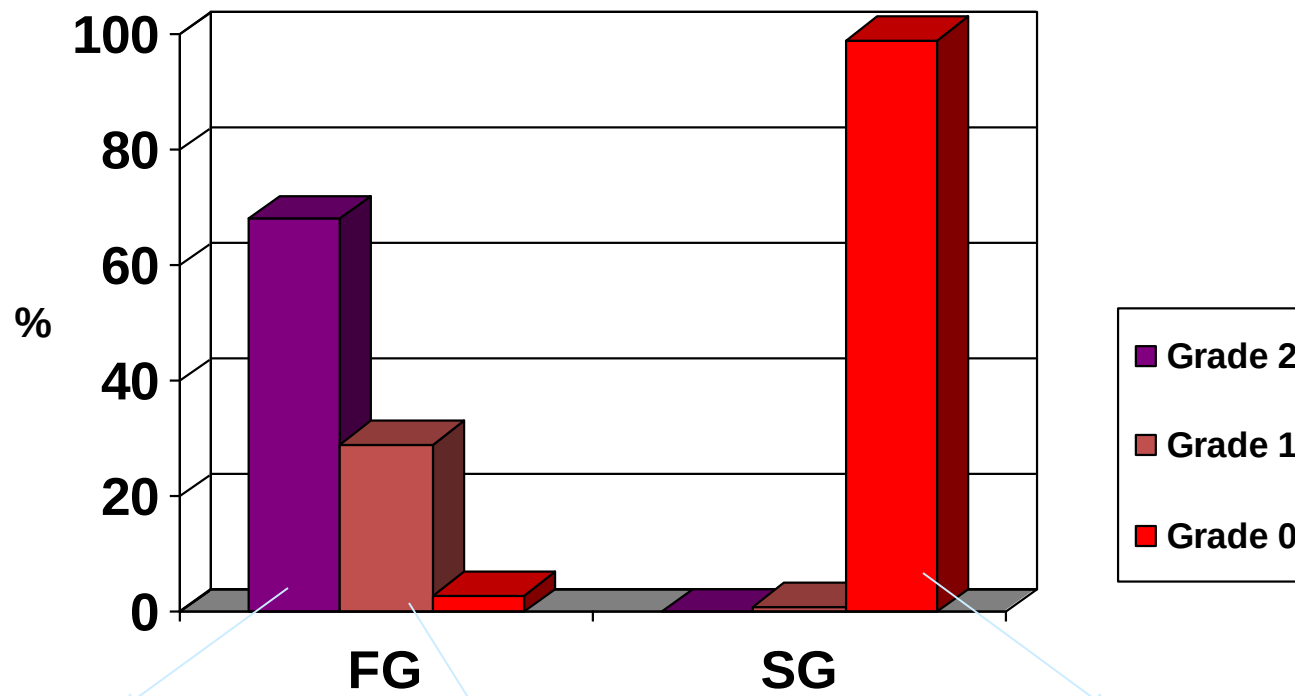
FG



Carcass lesions (*breast blister*)



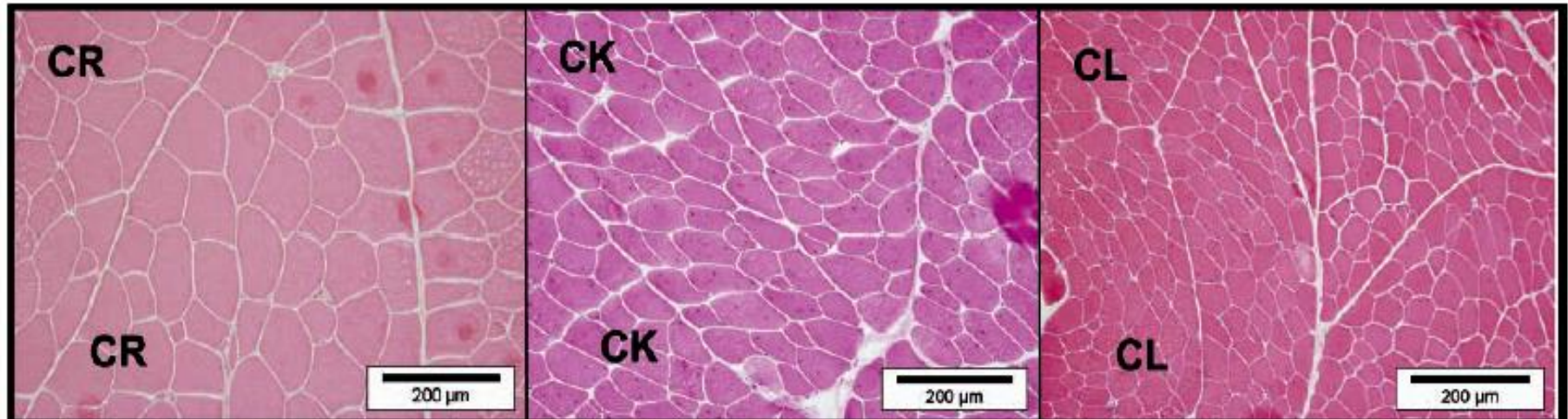
Hock burned leg



Genotype



Muscle fiber (*Branciari et al., 2010*)



Residues of α R fibers (4%)

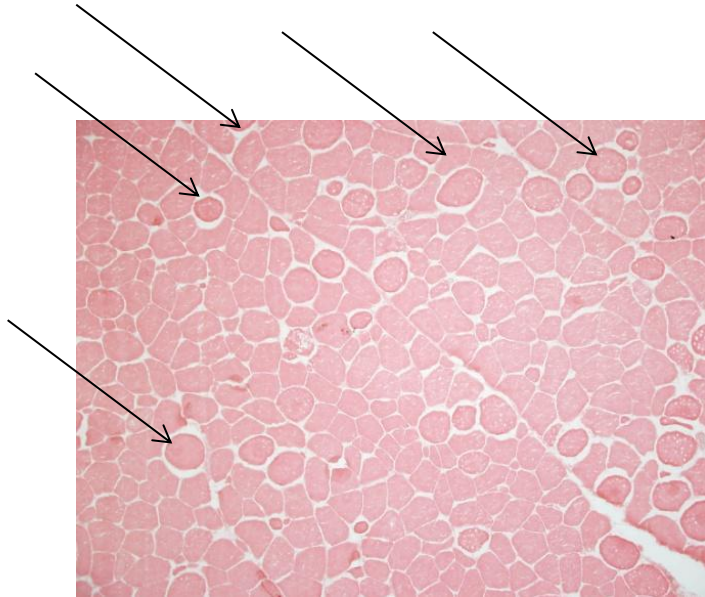
Figure 4. Comparison of pectoralis major muscle cross-sections taken from conventional (C) ,

Ross (R), Kabir (K), and Leg-

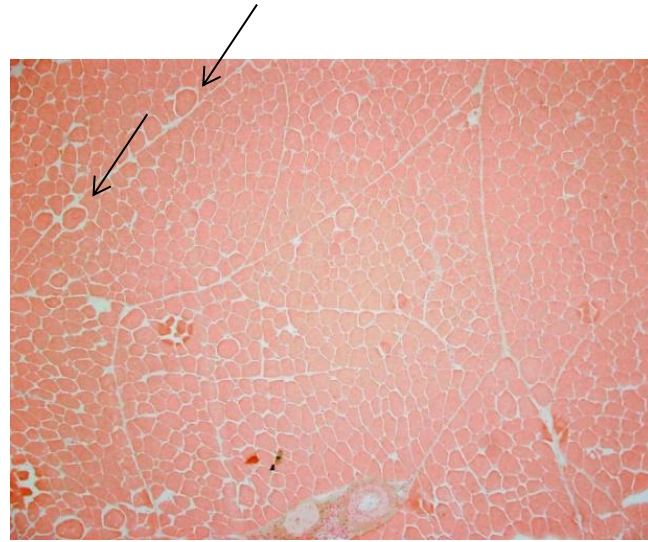
horn (L) chickens stained for hematoxylin-eosin.

Giant fiber (*Branciari et al., 2014*)

Fast-growing



Leghorn



Behaviour of different strains

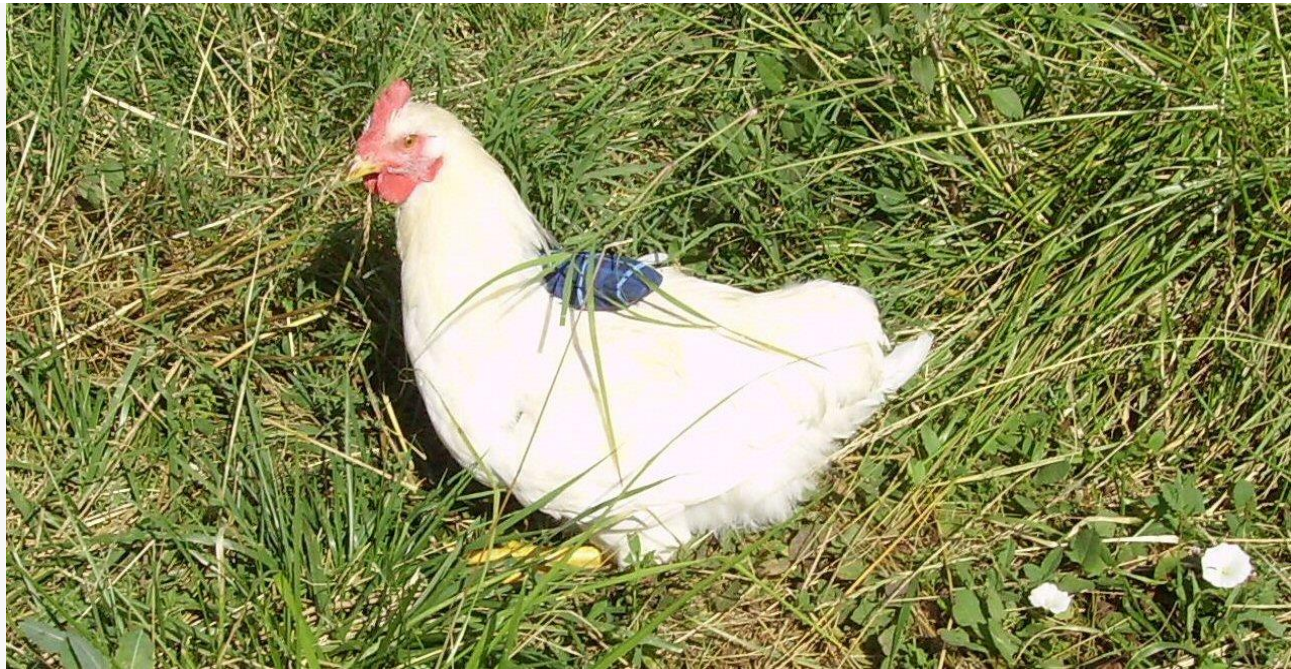
FastGrowing



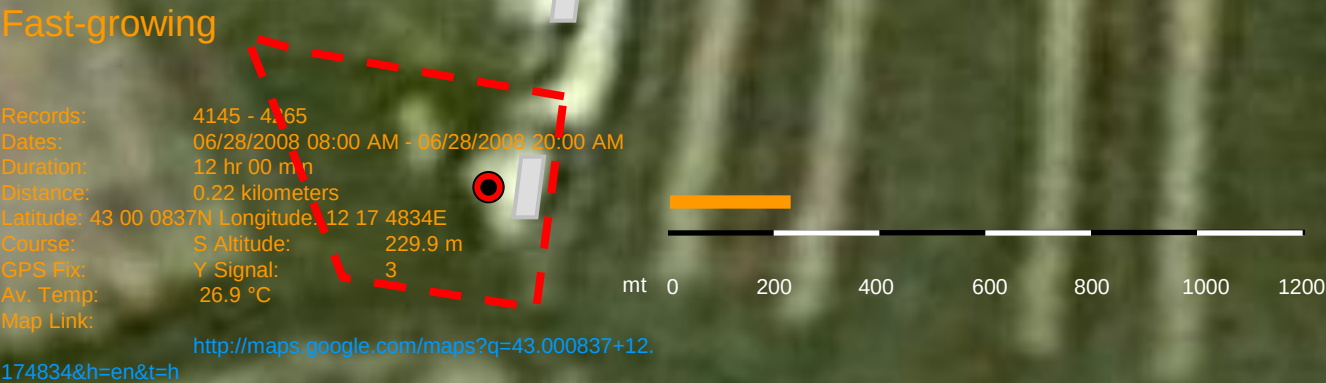
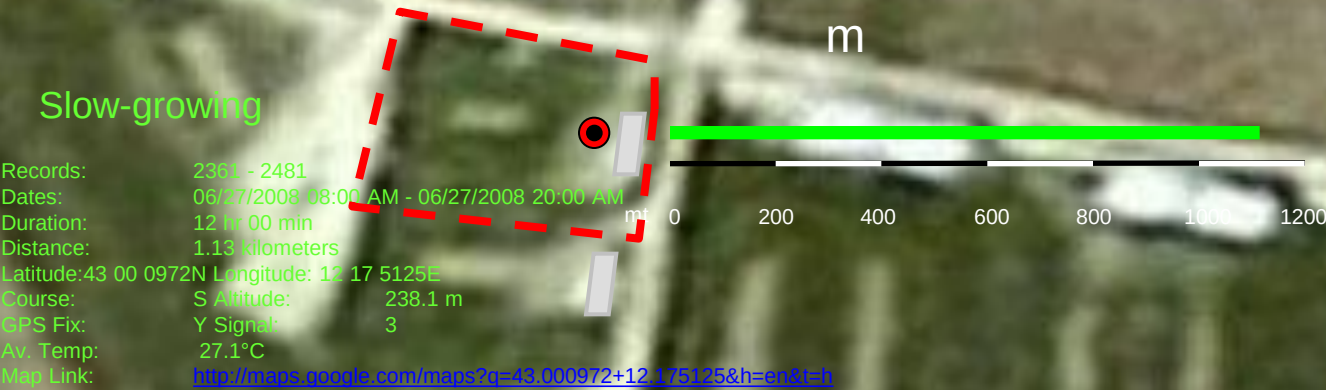
SlowGrowing



GPS monitoring - Super Trackstick[®] (ATEX Int, 234, route d'Esch, Luxembourg) equipped with USB port for quickly viewed on Google Earth's 3D model where it's possible to collect date, hour, environmental condition and coordinates of monitored birds (link: [www,trackstick,lu,htm](http://www.trackstick.lu/htm))



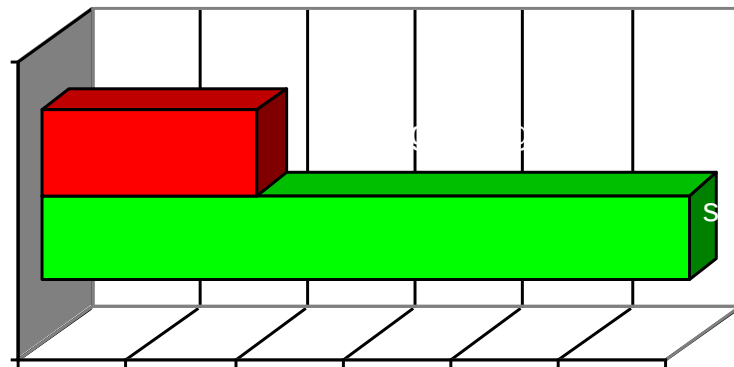
Device Name: Trackstick
 Device Type: Super Trackstick (v 4.05)
 Created By: Trackstick Manager 3.0.0



Gizzard content



Grass intake of fast & slow-growing birds

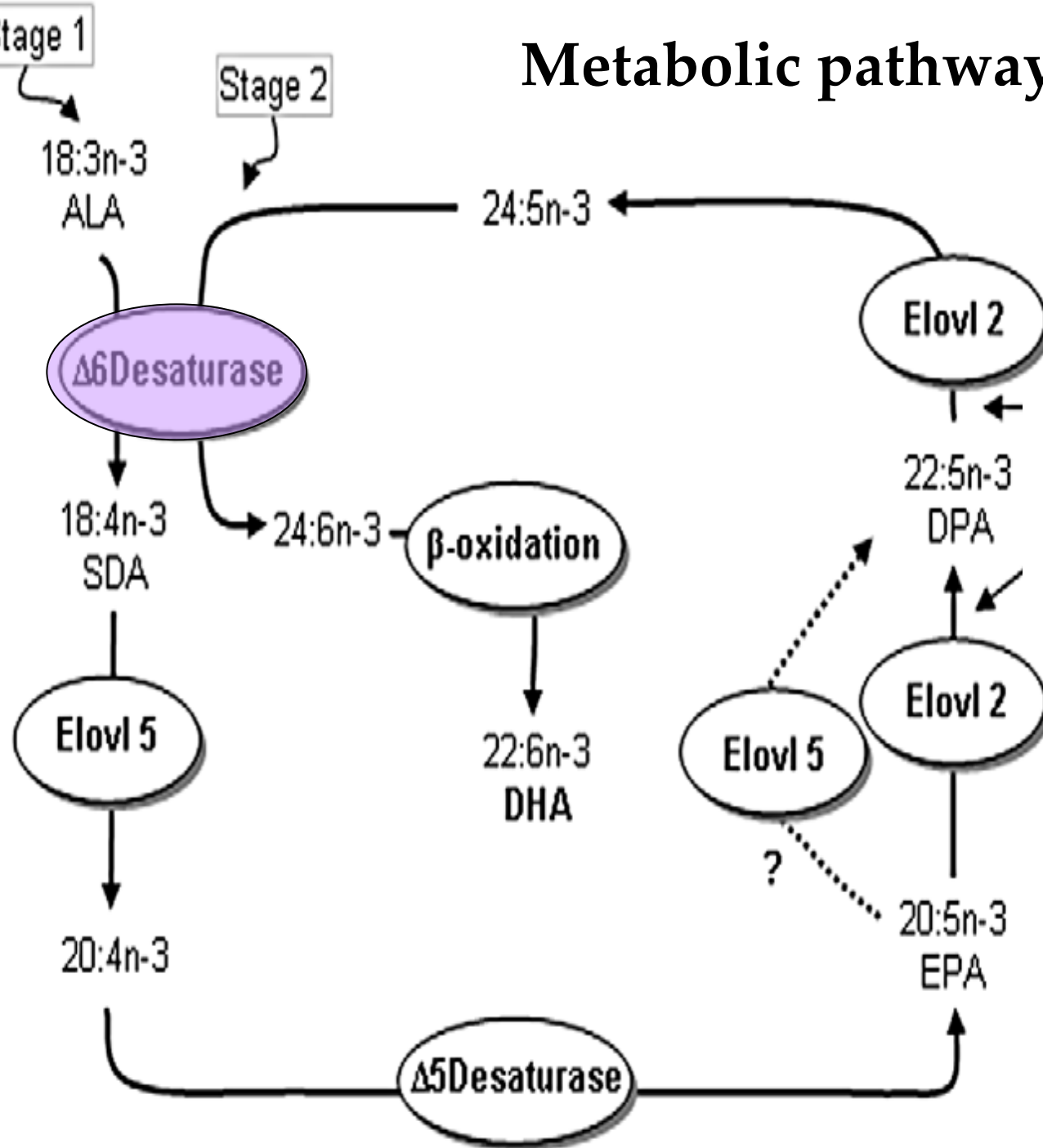


% d.m.

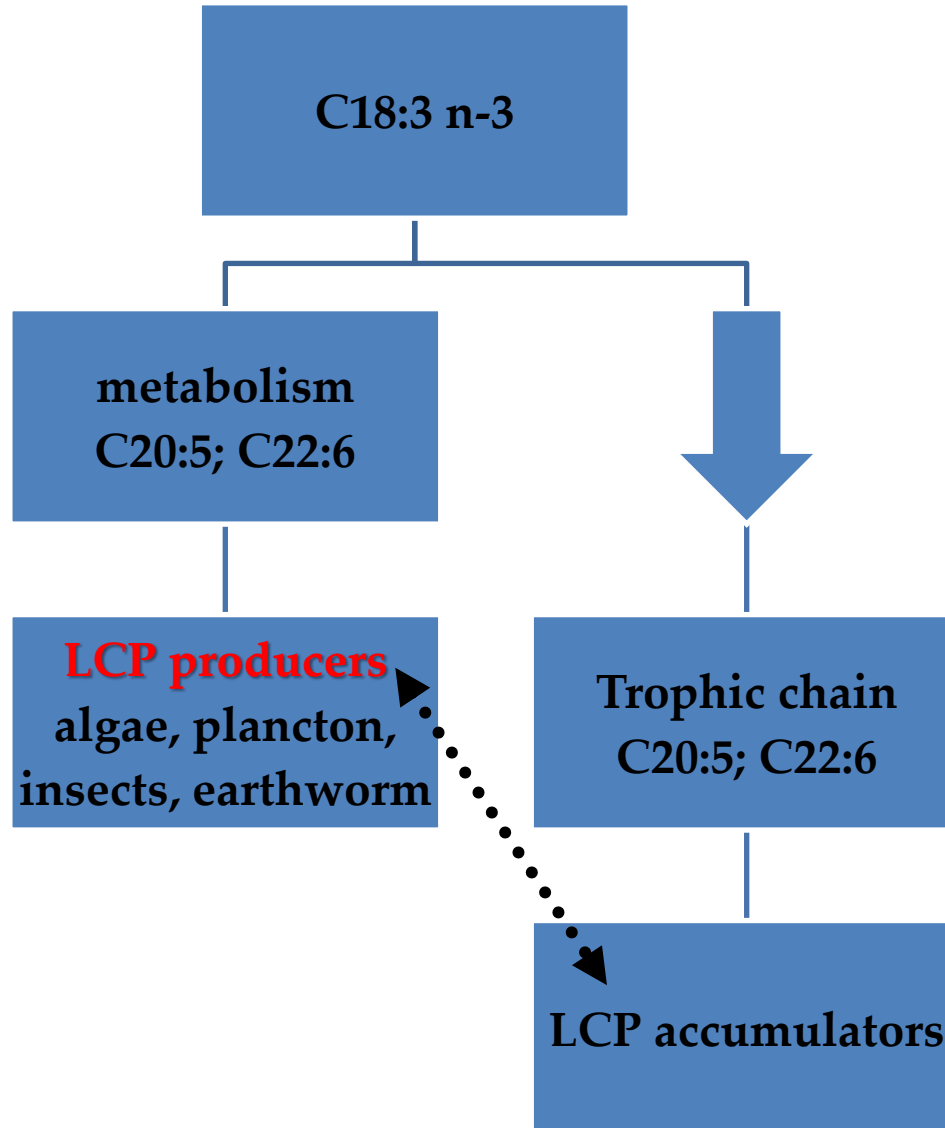
Cecum development in fast- & slow-growing strains



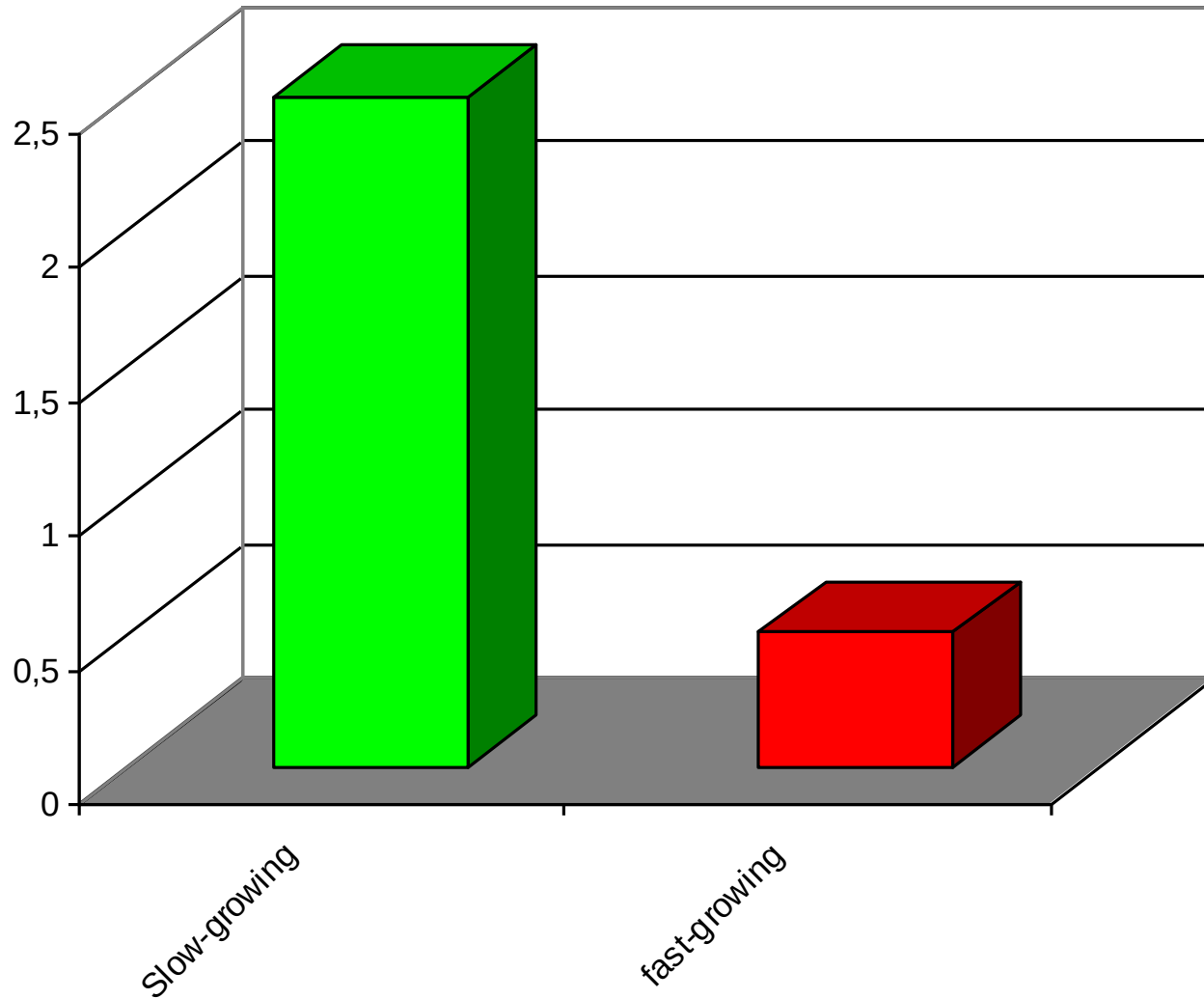
Metabolic pathway PUFA n-3



PUFA n-3 metabolism



LCP n-3 in poultry strains



n-3 terrestrial food chain

feedstuff
3% C18:3n-3
No LCP



Earthworm
10-15% LCP

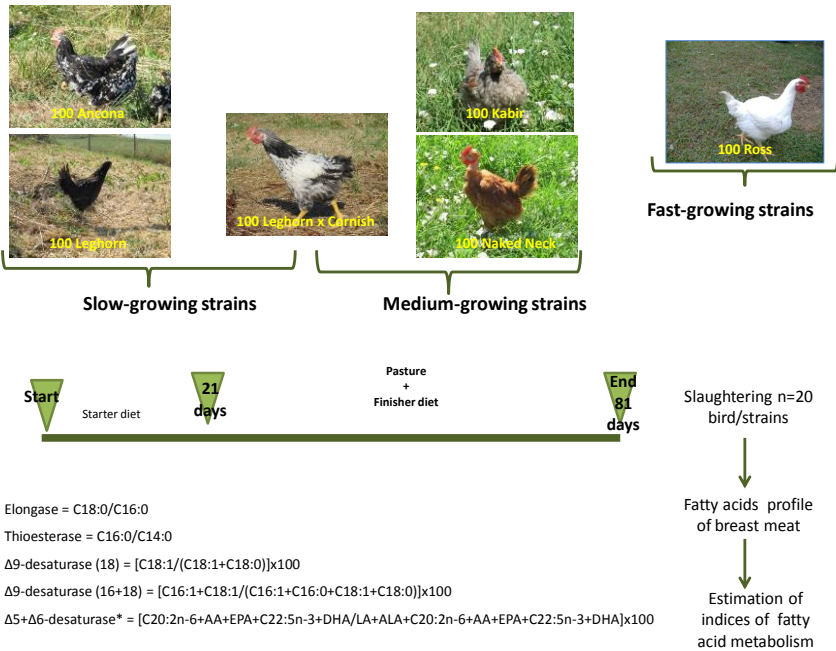


Grass
65% C18:3n-3

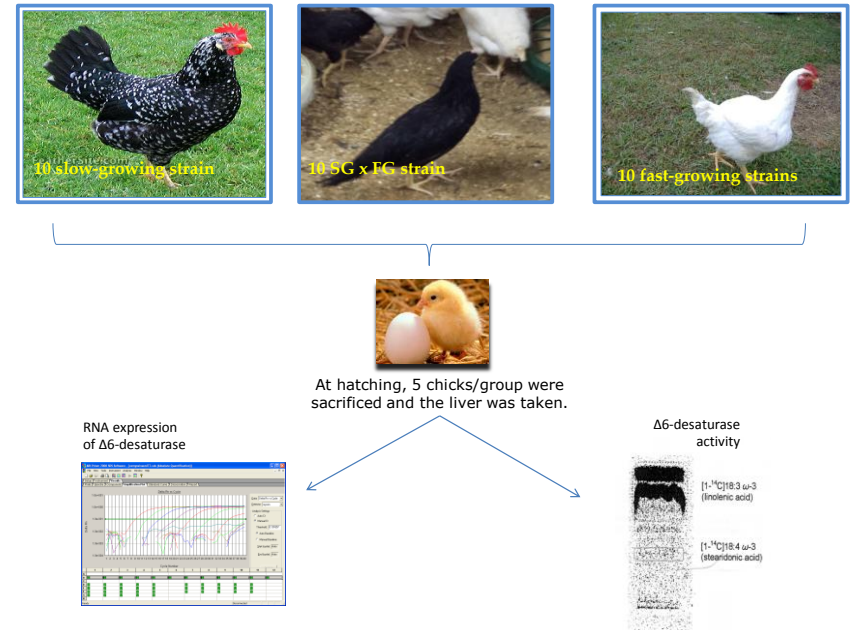
Insects
5-15%LCP

LIPID METABOLIC ACTIVITY

Indices (estimated or real) of lipid metabolism in different poultry genotype



RNA expression and $\Delta 6$ -desaturase activity (capacity to desaturate LNA to EPA and DHA) in chicken genotypes



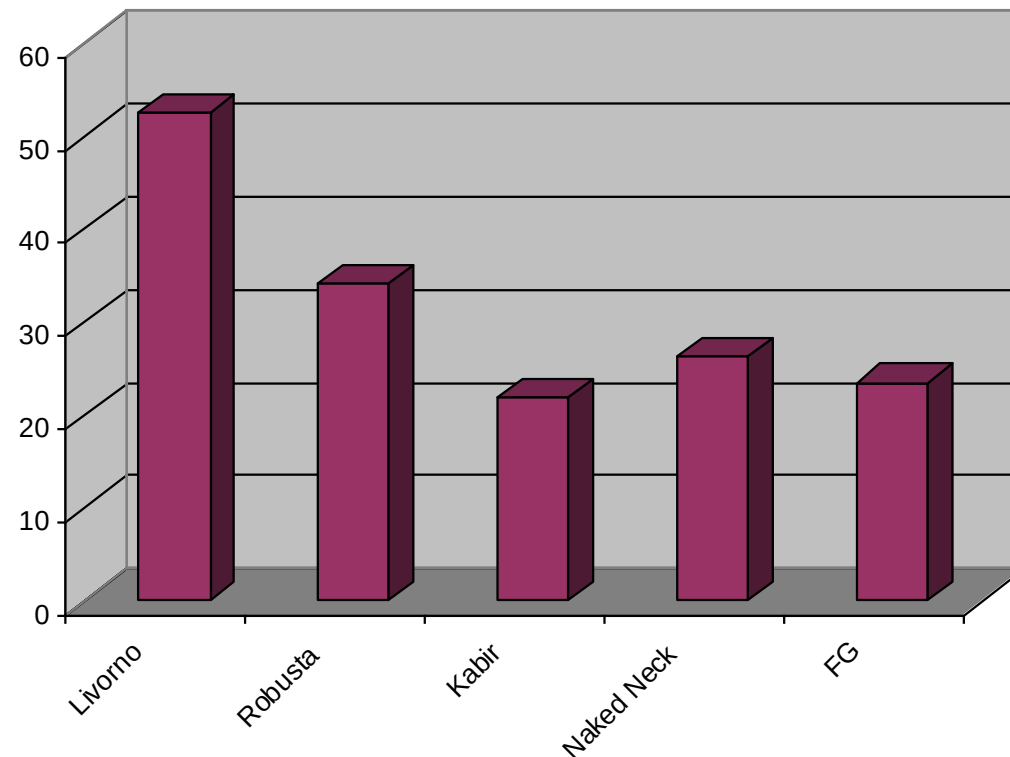
RESULTS

Fatty acid composition of meat and estimated indices of lipid metabolism in different poultry genotypes reared under organic system

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and [†]Department of Food Science, University of Teramo, v.le F. Crispi 212, 64100 Teramo, Italy*

$\Delta 5/\Delta 6$ -desaturase



GENERAL CONCLUSIONS

native breeds

SG strains shows a higher efficiency in EPA and DHA deposition respecting meat-type chickens

- ✓ are more adapted to extensive farming system whereas commercial hybrids suffer of poor environmental conditions;
- ✓ have a lower productivity however, products are markedly different from commercial ones (tocopherol, carotenes, polyphenols, PUFA, n-6/n-3 ratio);
- ✓ show a higher desaturation of essential fatty acids (n-3 and n-6) in their long chain derivate (AA, EPA and DHA). Dietary supplementation doesn't reach the same results.

High productive hybrids in extensive farming system are not consistent with the principles of sustainability