

Effects of replacing soybean with Black soldier fly (*Hermetia illucens*) in broiler meat quality

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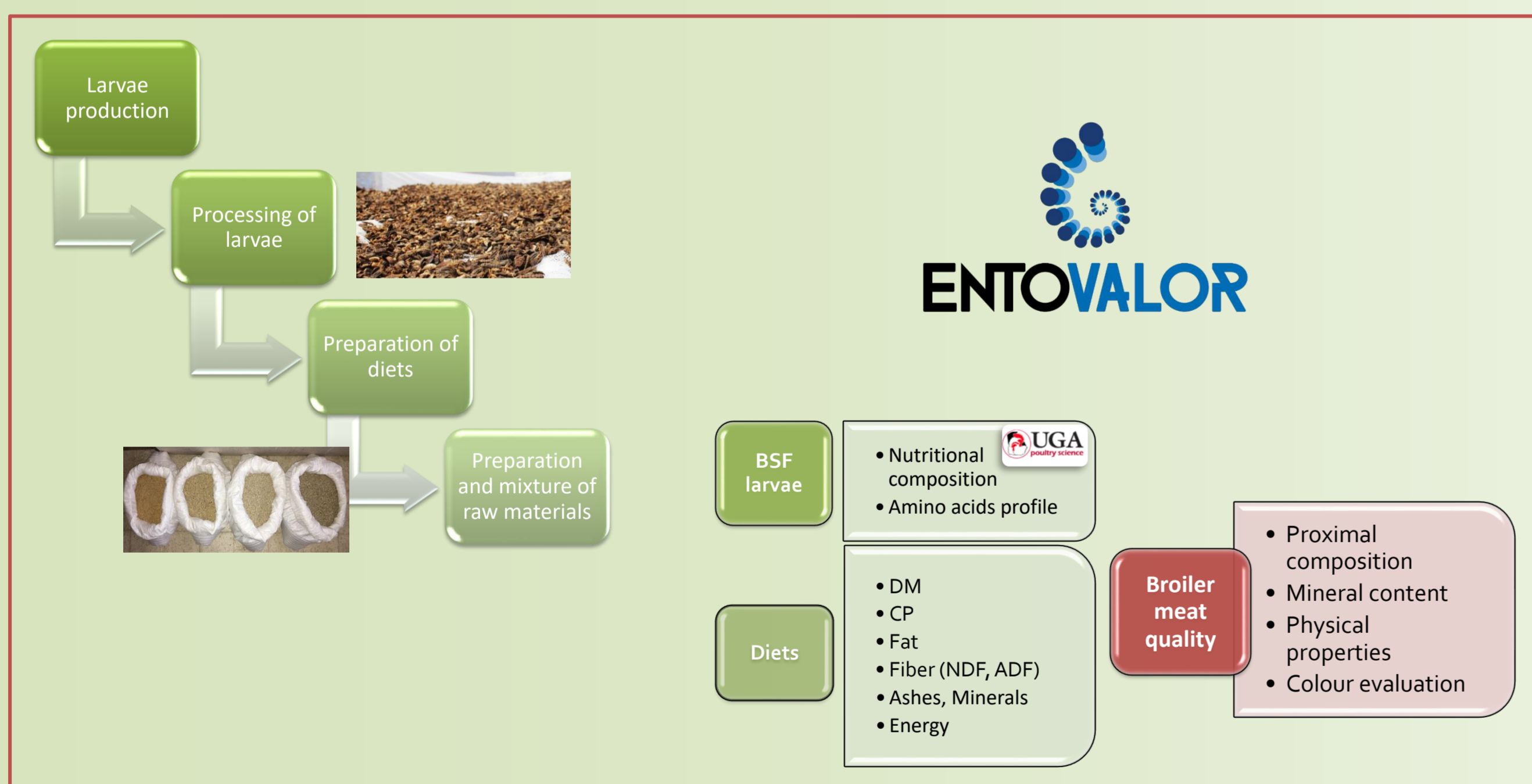
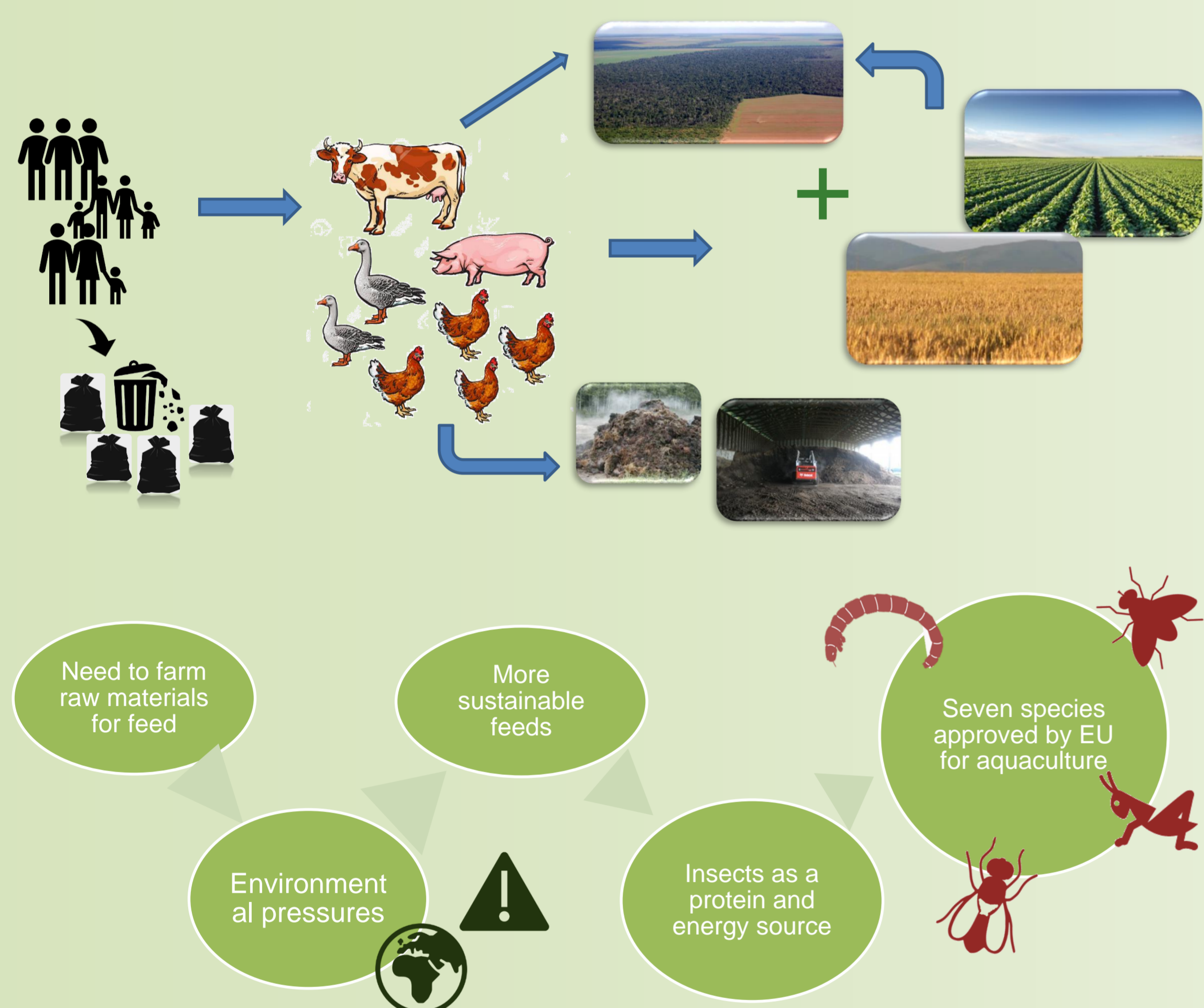
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Objectives

- Evaluate the impact on meat quality of replacing soy (soybean meal and soybean oil) with BSF larvae meal in iso-energetic and isoproteic broiler feeding programs

Background

- The worldwide increase in broiler production has a considerable environmental and economic impact, increasing the urgency to find sustainable alternative feed ingredients
- Recent studies indicate that some species of insects have great production potential and may be a source of both protein and lipids, which is the case of Black Soldier fly (BSF) (*Hermetia illucens*)
- However, it is necessary to evaluate possible factors that might alter meat quality parameters, since those are critical factors for the market success of the final product



Conclusions

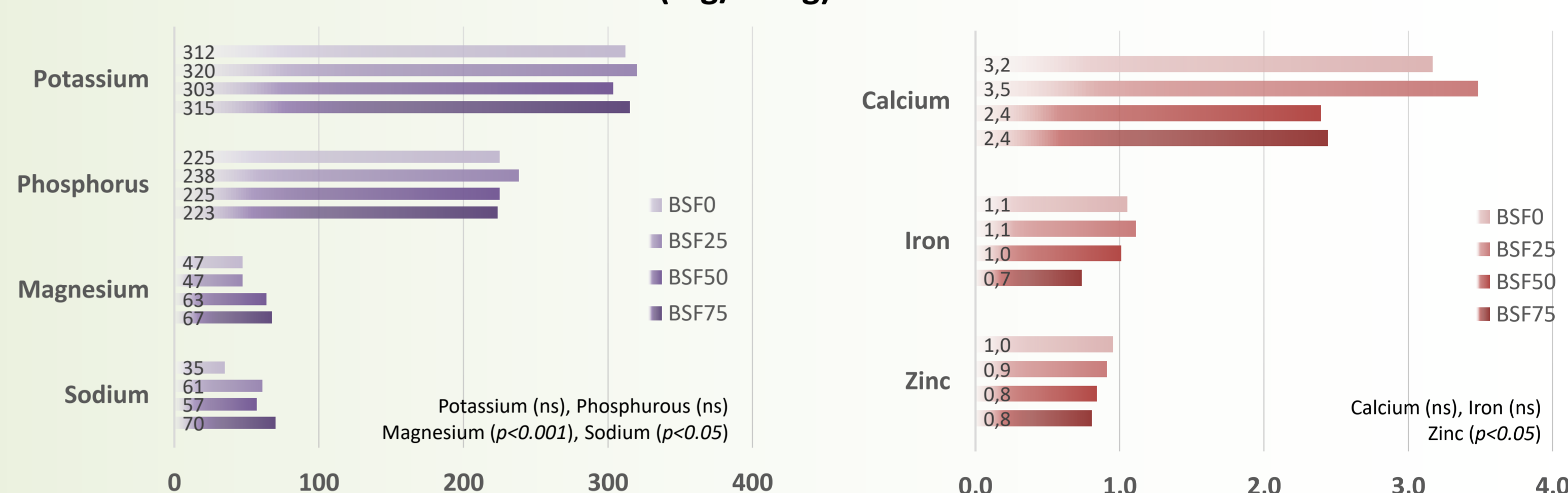
- The replacement of soybean meal and oil with BSF larvae meal had no significant influence on most relevant parameters of meat quality and nutritional composition of broiler breast meat



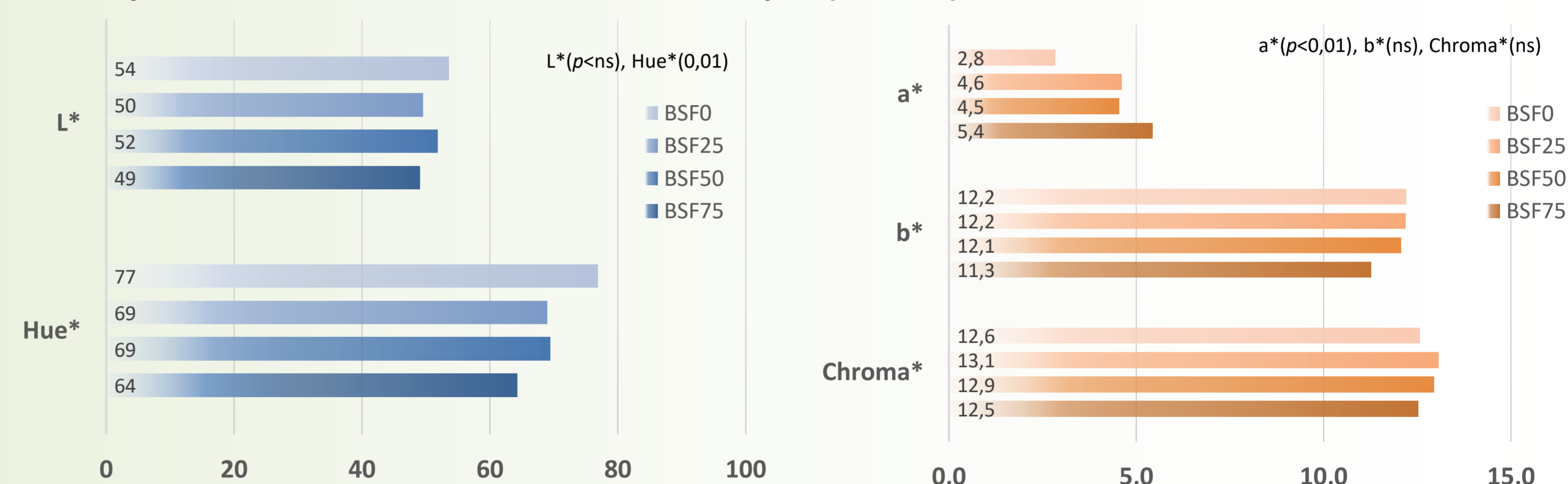
LS-means for proximal composition of broiler breast muscle

Proximal Composition g/100g meat	Variable	Experimental diets				Sig.
		BSF0	BSF25	BSF50	BSF75	
Moisture		75.26	74.65	75.31	75.05	ns
Protein		22.55	23.12	22.15	22.67	ns
Fat		1.03	1.05	1.07	1.19	ns
Ash		1.13	1.17	1.12	1.05	ns

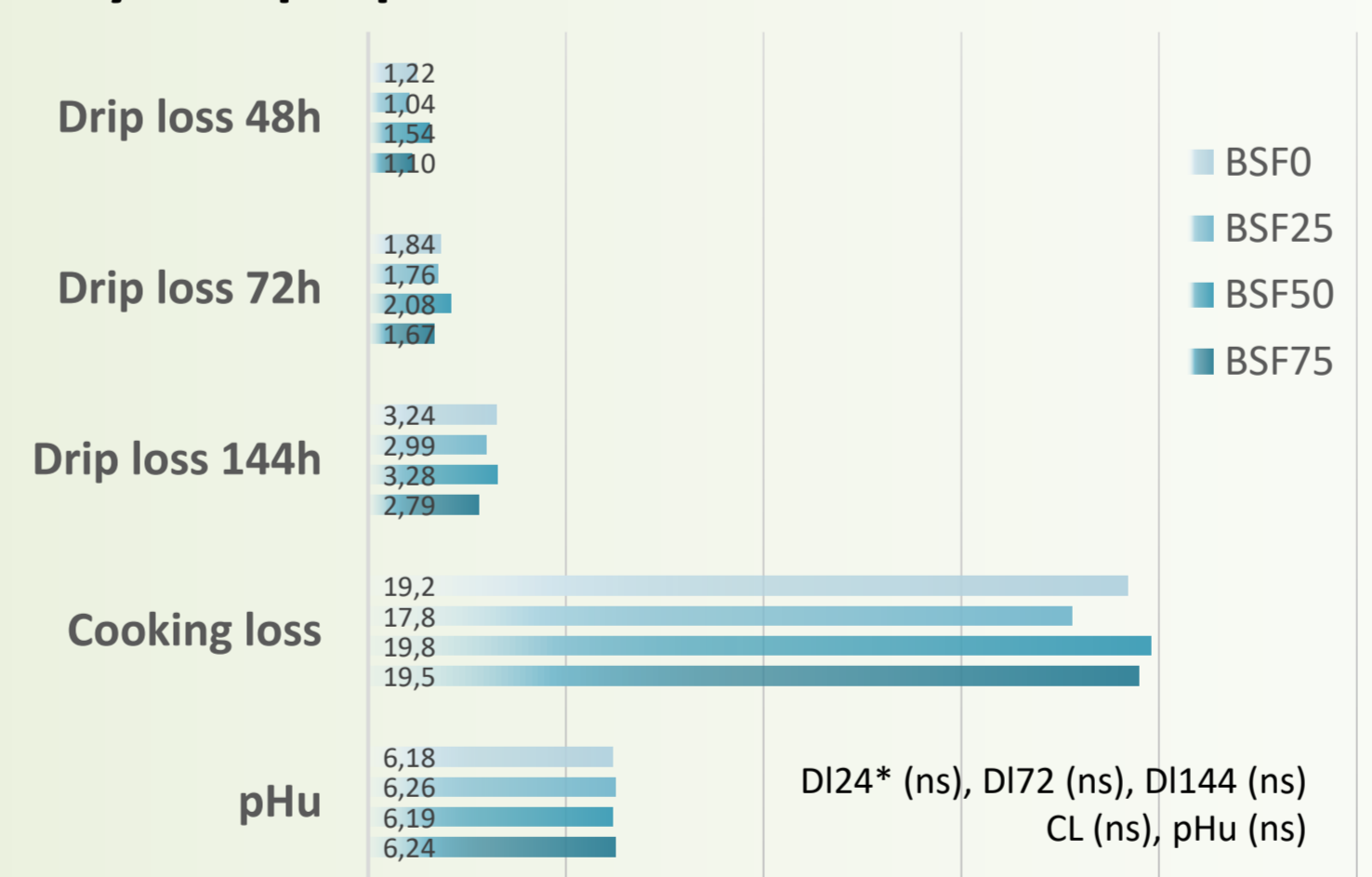
Mineral content of broiler breast muscle (mg/100 g)



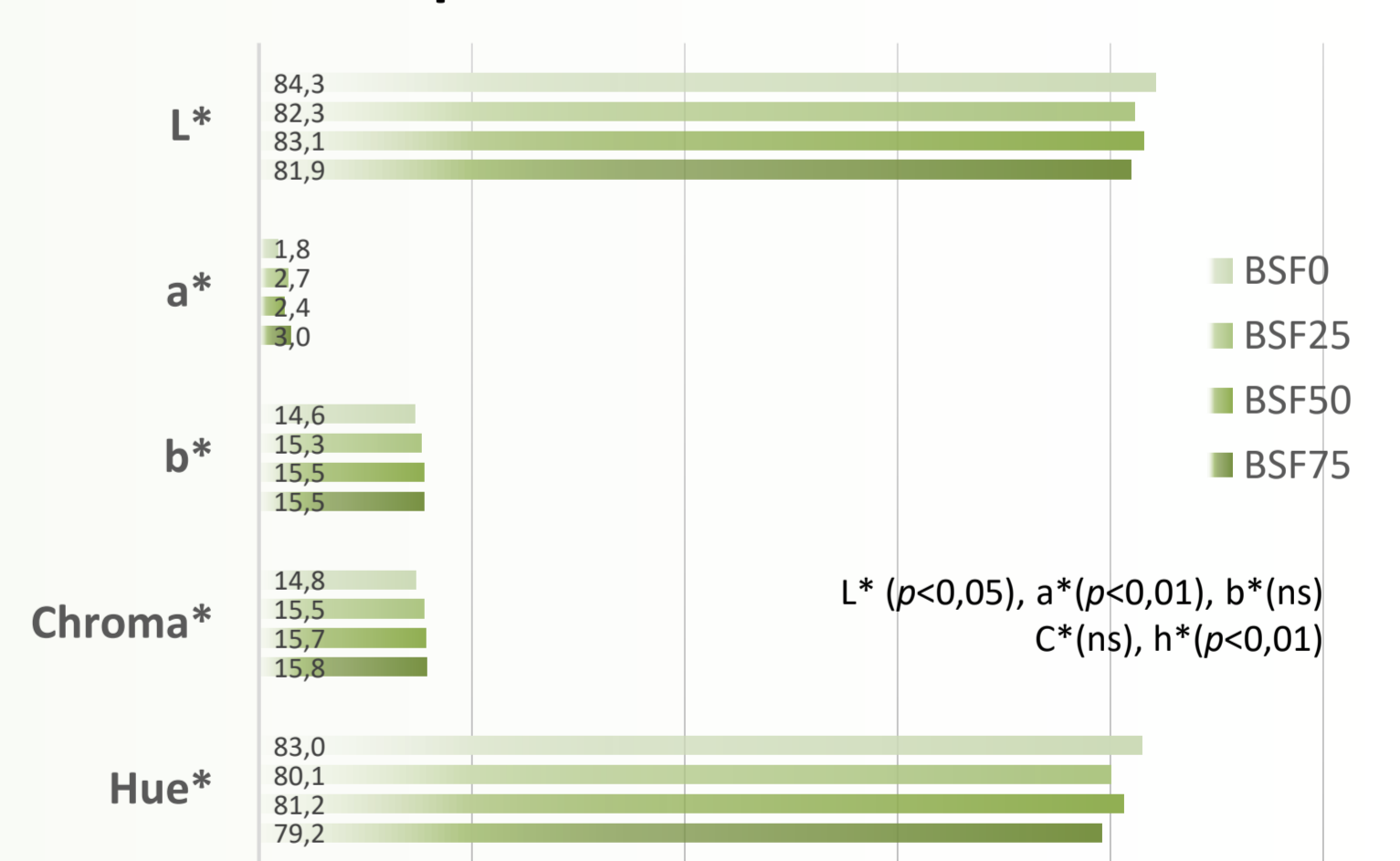
Colour parameters of broiler breast muscle 24h pm (CIE Lab)



Physical properties of broiler breast



Colour parameters of cooked breast meat



Methodology

- 24 Ross 308 broiler (1 day old), 6 in each experimental diet
- Four different treatments of a basal diet where soybean (meal and oil) were replaced by 0% (BSF0) control, 25% (BSF25), 50% (BSF50) and 75% (BSF75) of dry BSF larvae
- Animals were slaughtered at 28 days of age
- Meat quality parameters were evaluated in breast muscle - pectoral major

Diets composition with soybean meal and soybean oil replaced by dry BSF larvae

Ingredient	BSF0	BSF25	BSF50	BSF75
Corn	46.8%	48.9%	51.1%	45.5%
Wheat	10.0%	10.0%	10.0%	10.0%
Soybean meal	35.3%	27.3%	19.3%	8.5%
Soybean oil	4.1%	2.2%	0.2%	--
BSF larvae meal	0%	7.8%	15.6%	23.4%
Sunflower meal	--	--	--	4.0%
Wheat bran	--	--	--	4.5%
Minerals & Vitamins	3.1%	3.1%	3.0%	3.0%
AA Meth Lys Tre	0.7%	0.8%	0.9%	1.1%

Chemical composition of experimental diets

Parameter (g/kg DM)	BSF0	BSF25	BSF50	BSF75
Dry matter, g/kg feed	878	880	875	881
Crude protein	235	242	234	228
Fat	68	66	63	69
NDF	116	121	129	164
ADF	48	49	55	67
Ash	60	66	68	77
Calcium	8.4	12.7	12.5	14.8
Phosphorus	6.7	7.7	7.6	8.5
Sodium	1.6	1.2	1.3	1.4
Potassium	6.6	6.5	6.0	5.3
Magnesium	1.7	1.4	1.5	1.6
Crude energy, MJ/kg DM	16.8	16.9	16.6	17.6

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