

Economics

Environment

Farm Management





02/03/2021 to 08/04/2021

Techna Research & Development Facility

Euronutrition

Experimental
research station
Saint Symphorien



The station is member of the Ethics Committee of Pays de Loire.

This trial is in accordance with the recommendations of the Internal Structure of Animal Welfare.

Protocol

- Objectives

- Compare different broiler formulas with alternatives to raw materials from imported soya.
- The alternative formulas are compared to a standard formula with imported soybean meal.

- Groups

1	2	3	4	5
CONTROL	HP-SFM	HP-RSM	SFM+RSM	FABA BEAN
46%	46%	37%	46% // 37%	32%
Imported soybean meal	HP-sunflower seed meal (Sunpro Bunge) No Soya	HP-rapeseed meal (Cargill Montoir) No Soya	HP-sunflower seed meal + HP-rapeseed meal No Soya	Extruded mix: 80% faba bean kernel + 20% soybean France (Inevo Xpro32 Valorex)

- Experimental design

- Building J6 (32 pens)
- 5 groups x 6 or 7 pens of 40 broilers Ross 308 male
- Allocation according to the average weight of the pen at D0

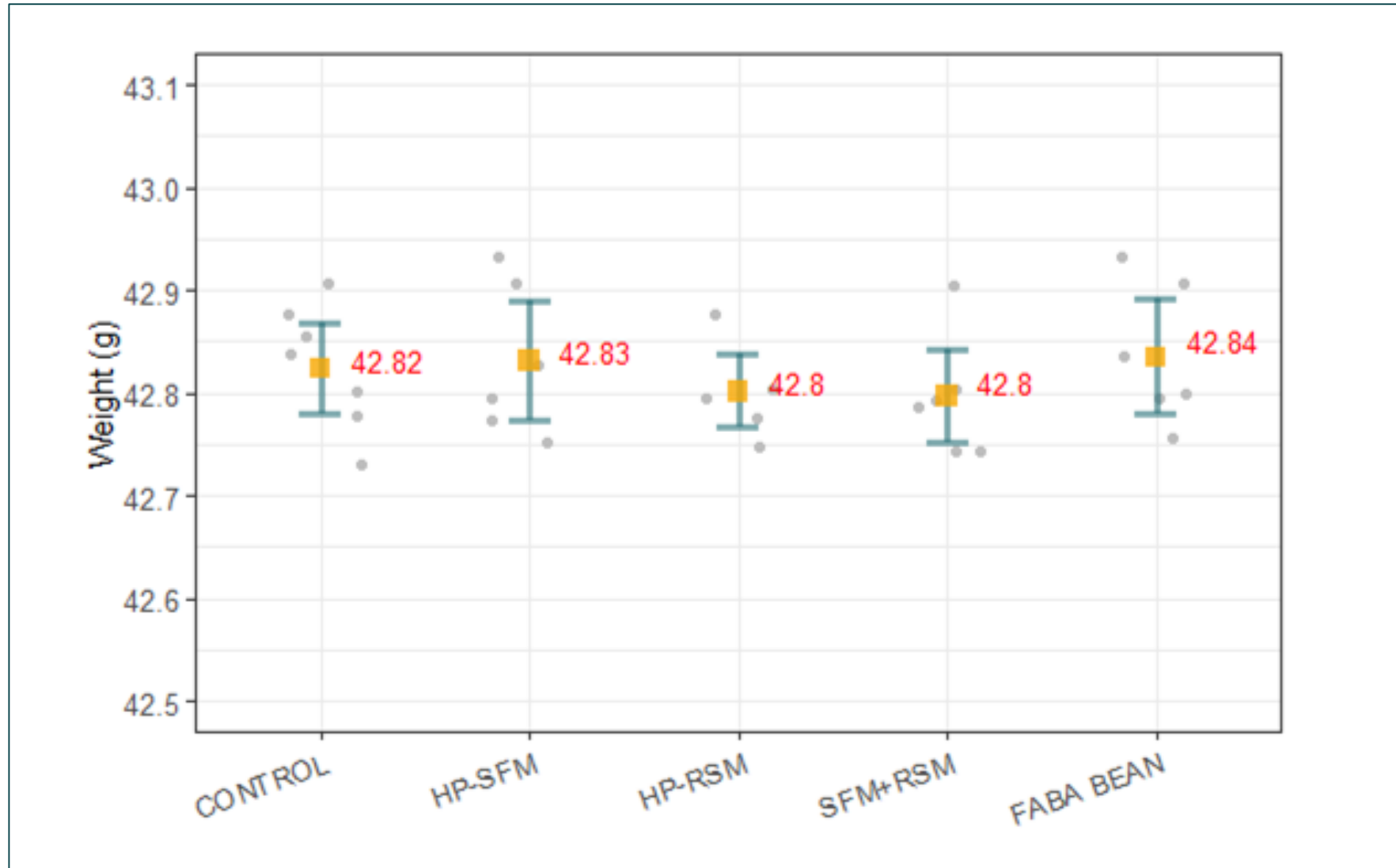
Formulas (table TECHNA)

Period		0-10 j					10-21 j					21-35 j				
Group		1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
ME poultry	kcal/	2907	2895	2885	2891	2875	3025	3014	3005	3010	2997	3108	3100	3091	3098	3091
ME chicken	kg	2701	2736	2725	2730	2686	2809	2837	2817	2829	2797	2898	2912	2895	2909	2881
Crude Fat	%	3.03	3.33	4.31	3.99	4.06	4.26	5.01	6.31	5.67	4.27	4.80	5.97	7.43	6.56	5.29
Crude Protein Val	%	22.0	22.0	22.0	22.0	21.9	20.6	20.5	20.5	20.6	20.5	18.5	18.5	18.5	18.5	18.5
Dig Lys	%	1.16	1.17	1.17	1.17	1.17	1.07	1.07	1.07	1.07	1.07	0.97	0.97	0.97	0.97	0.97
Dig M+C/Lys		0.79	0.76	0.79	0.78	0.76	0.79	0.77	0.80	0.78	0.77	0.79	0.77	0.80	0.78	0.77
Dig Thr/Lys		0.65	0.66	0.65	0.66	0.65	0.65	0.66	0.65	0.66	0.65	0.66	0.66	0.65	0.66	0.65
Dig Ile/Lys		0.70	0.70	0.68	0.69	0.69	0.72	0.70	0.68	0.69	0.69	0.69	0.70	0.68	0.69	0.69
Dig ArgV/Lys		1.09	1.08	1.06	1.06	1.08	1.09	1.08	1.07	1.06	1.08	1.07	1.10	1.07	1.06	1.10
Dig ValV/Lys		0.78	0.79	0.76	0.77	0.79	0.78	0.79	0.76	0.77	0.79	0.78	0.79	0.75	0.77	0.80
Ca	%	1.00	1.00	1.02	1.00	1.00	0.90	0.89	0.91	0.90	0.90	0.78	0.78	0.78	0.78	0.78
Av Phos	%	0.44	0.43	0.41	0.42	0.43	0.39	0.38	0.37	0.38	0.38	0.36	0.35	0.34	0.35	0.35
Na	%	0.15	0.15	0.16	0.15	0.15	0.14	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Cl	%	0.27	0.27	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.27	0.28	0.28	0.28	0.28
Corn Val	%	25.0	25.0	25.0	25.0	20.0	25.0	25.0	25.0	25.0	20.0	25.0	25.0	25.0	25.0	20.0
Wheat Val	%	33.8	34.5	27.1	30.9	19.6	37.6	36.6	28.7	33.8	29.0	42.7	40.7	33.1	38.0	32.3
Wheat bran	%					2.8										
Corn gluten feed	%		2.0	3.7	2.4	4.0		2.0	2.5	2.0	2.9					
Soyabean meal	%	27.0					25.1					19.4				
Rape seed meal	%	2.1				5.0	2.0				7.1	2.0				3.0
Sunflower seed meal	%	2.0				5.0										
Corn distillers	%	2.0	2.0	2.0	2.0	5.0	2.0	3.0	3.6	2.0	5.0	2.0	2.0	2.0	2.0	8.0
HP-SFM	%		25.4		14.0			22.1		14.0			20.6		13.0	
HP-RSM	%			29.0	14.0				26.9	11.6				26.7	10.1	
Inevo Xpro32	%					29.0					27.5					27.5
Rapeseed oil	%	1.0	1.3	1.8	1.8	0.4	1.6	2.0	2.5	2.4	0.4	1.8	2.4	3.4	3.0	1.0
Palm oil	%						0.7	1.0	1.3	1.2	0.4	1.0	1.6	1.7	1.5	0.5

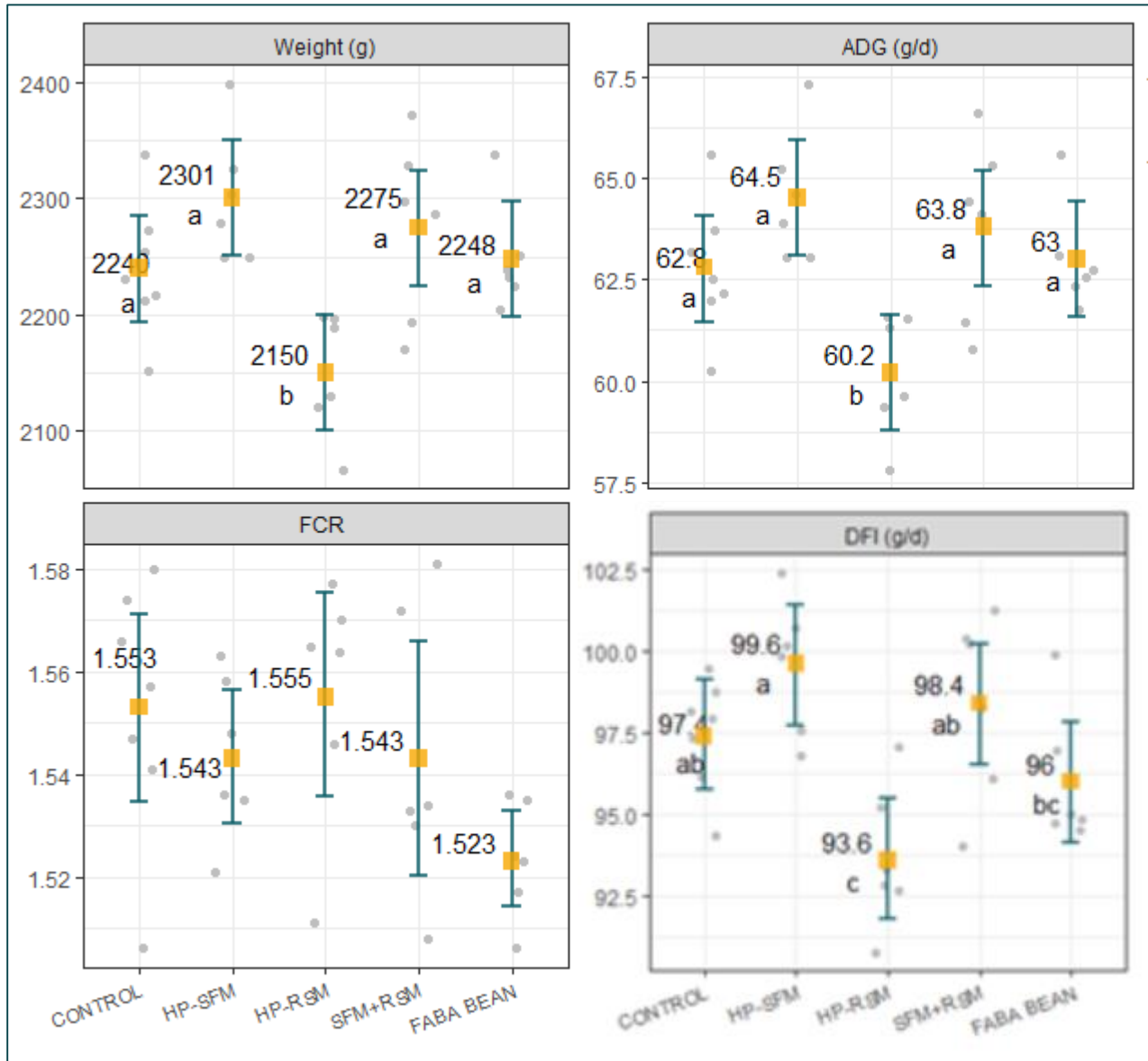
Price fev 21 (€/t)		318.6	297.8	344.1	316.7	350.7	317.9	302.2	342.5	315.1	339.7	310.0	296.1	331.1	306.8	328.8
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With anticox = Monensin, xylanase = Aextra XB, phytase = Hiphos

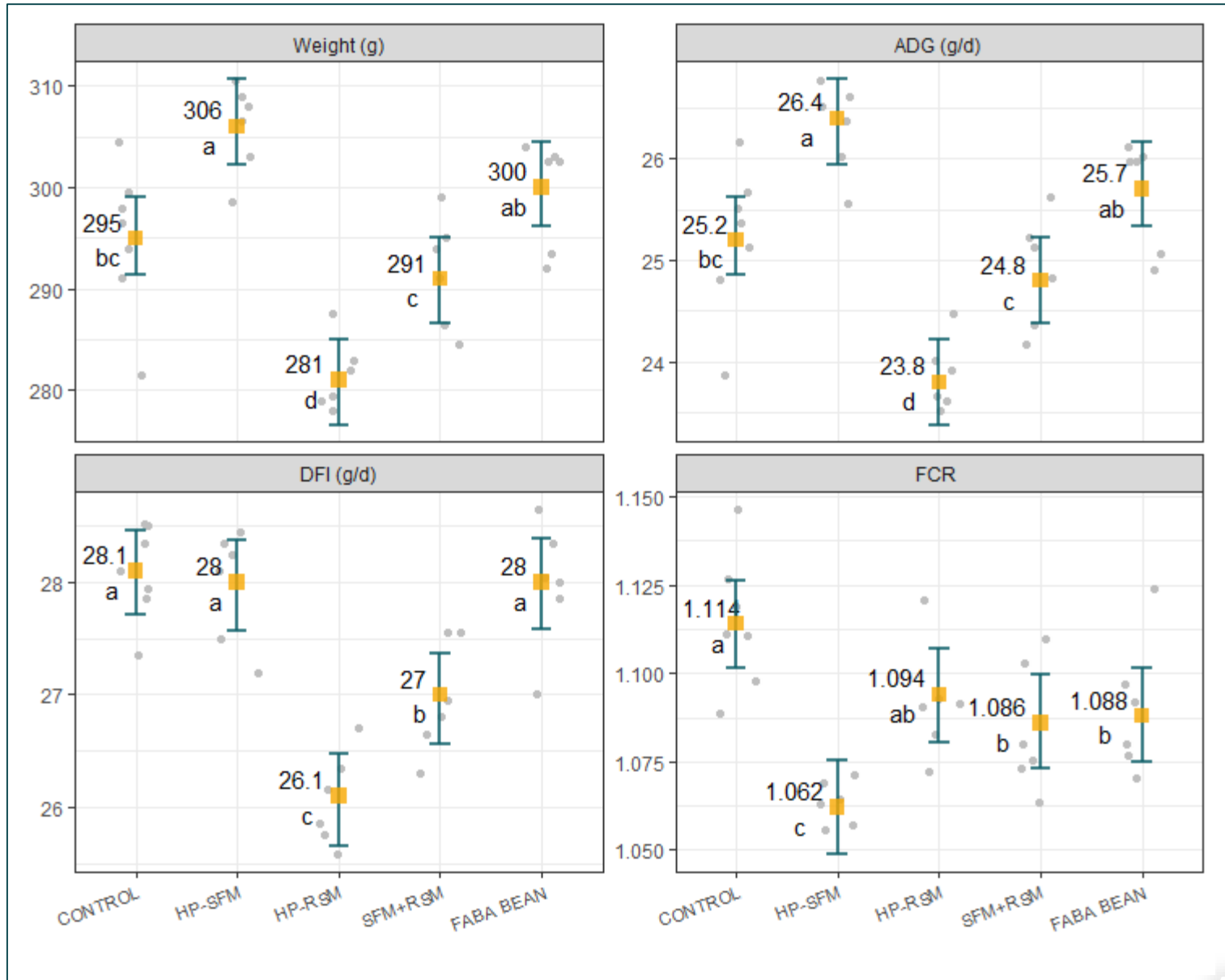
Allocation – Weight day old chick



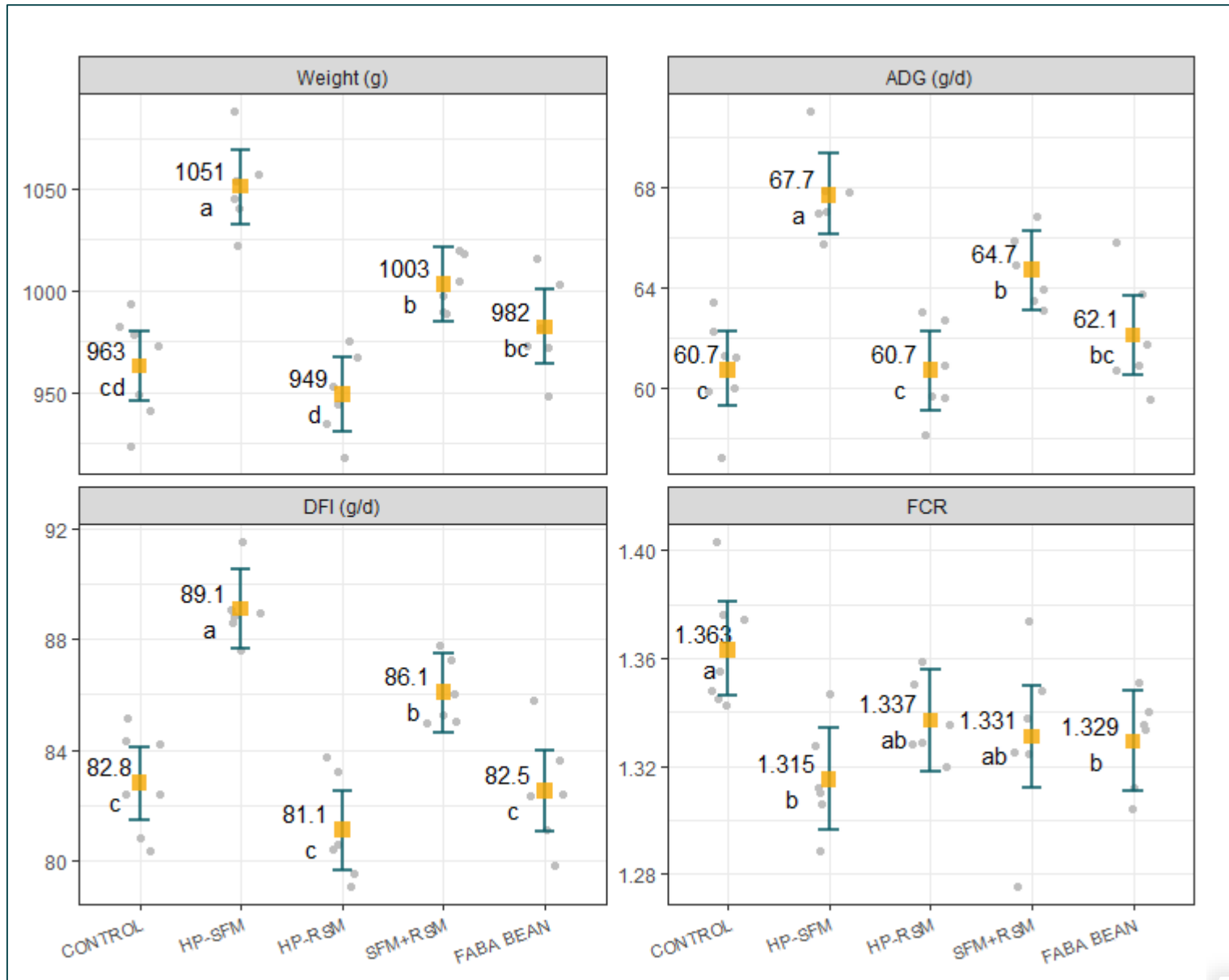
Results per pen: 0 to 35 days



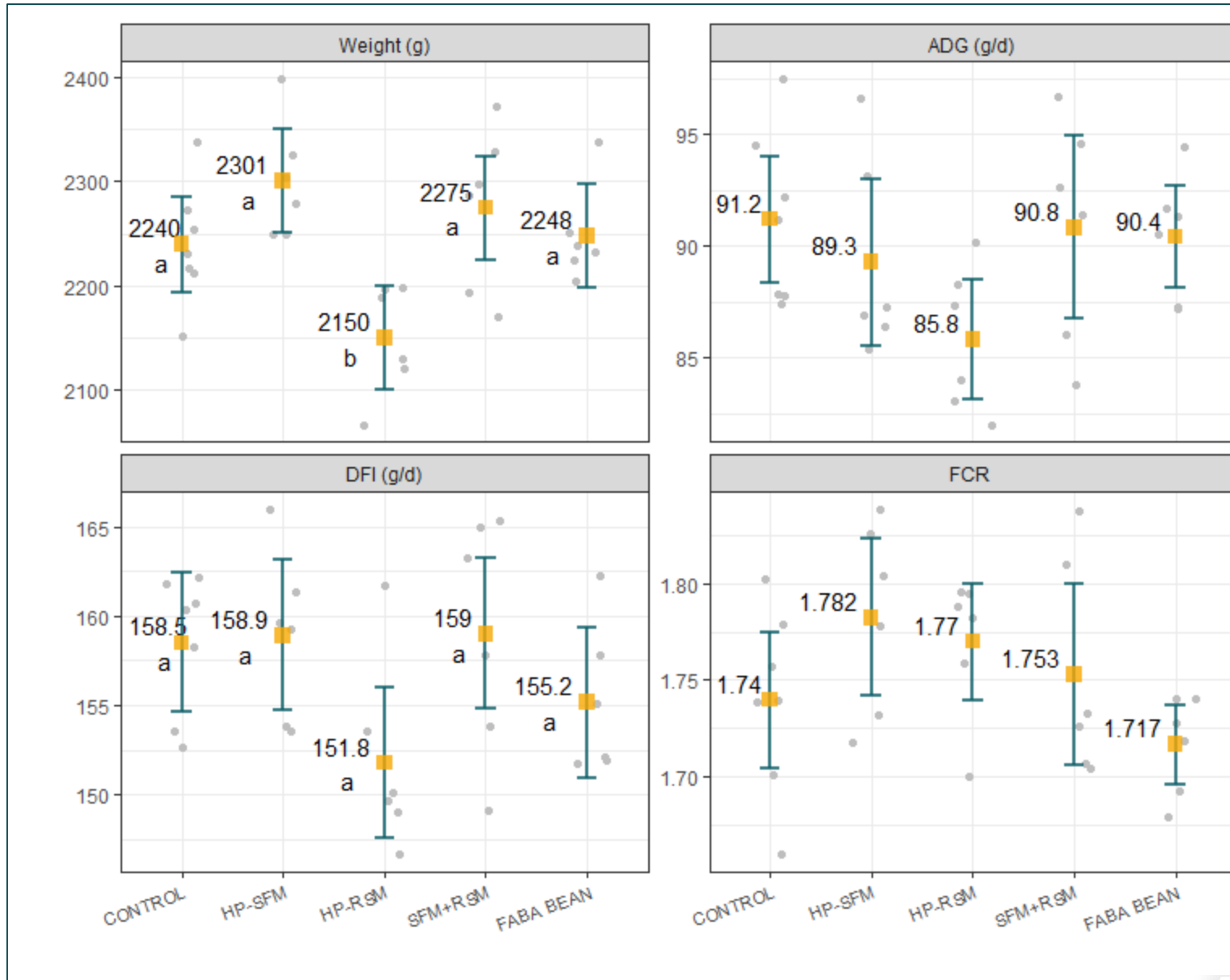
Results per pen: 0 to 10 days



Results per pen: 10 to 21 days

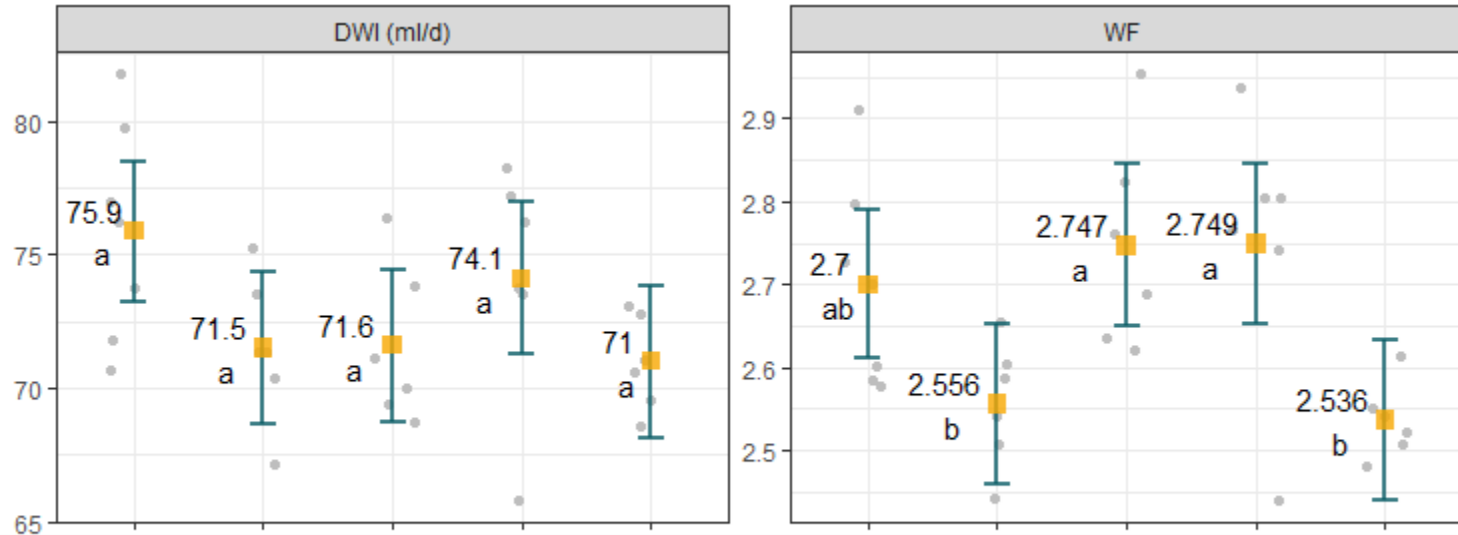


Results per pen: 21 to 35 days

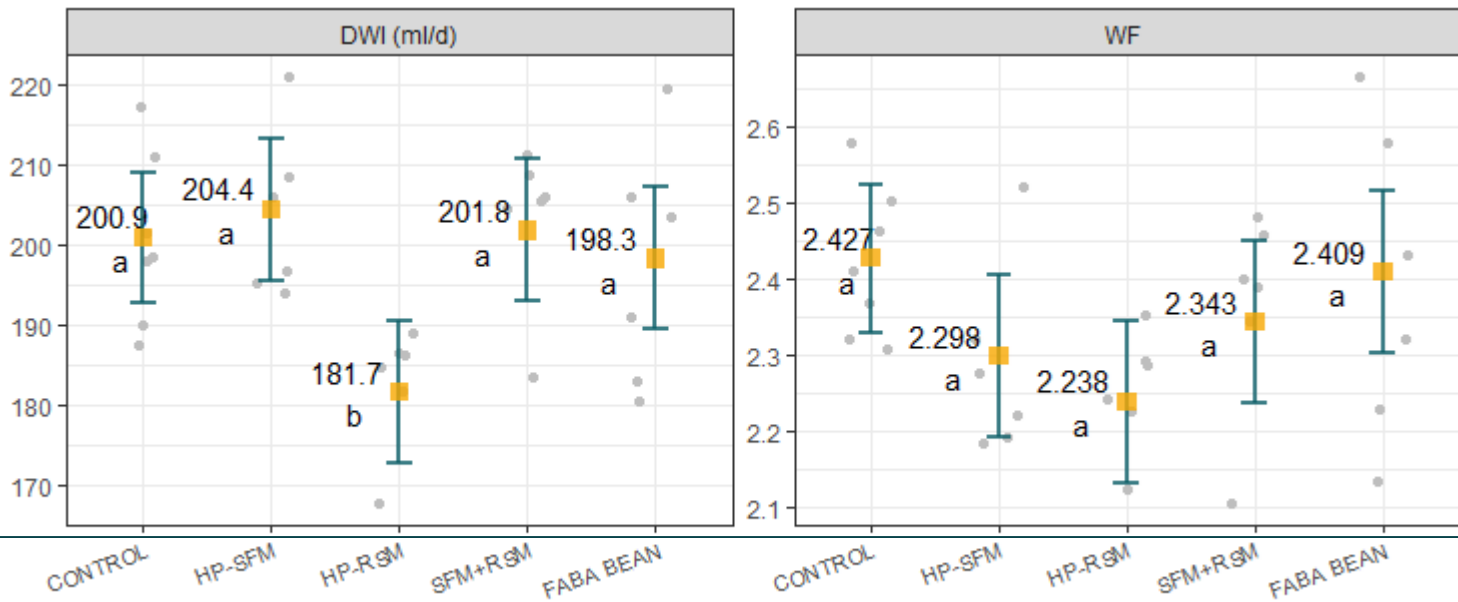


Water consumption per pen: 0-10 / 10-21 days

0-10 days

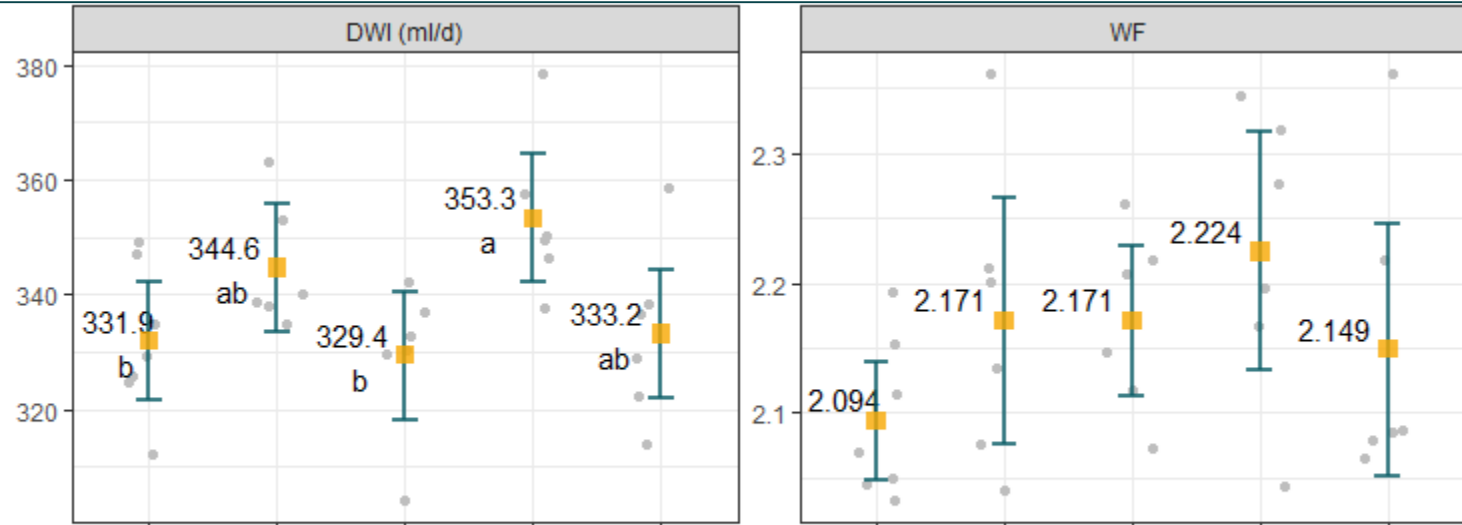


10-21 days

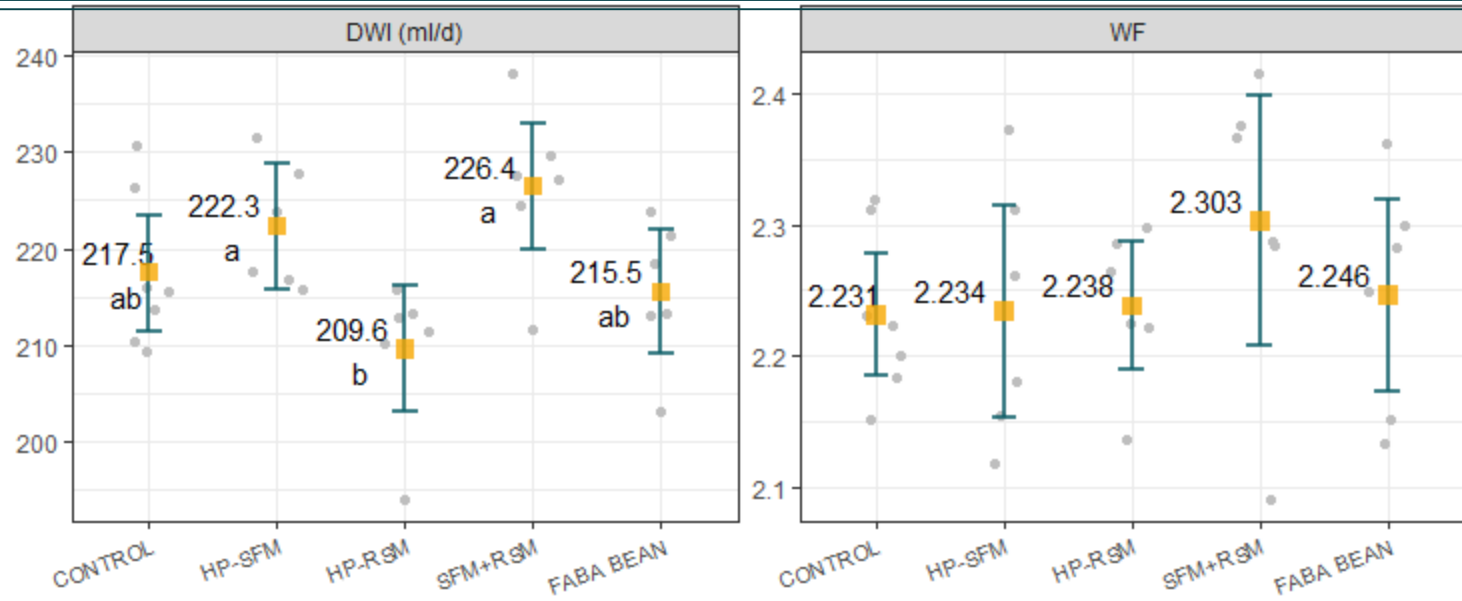


Water consumption per pen: 21-35 / 0-35 days

21-35 days



0-35 days



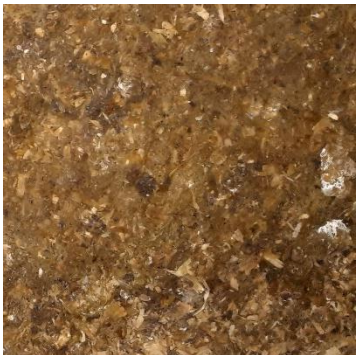
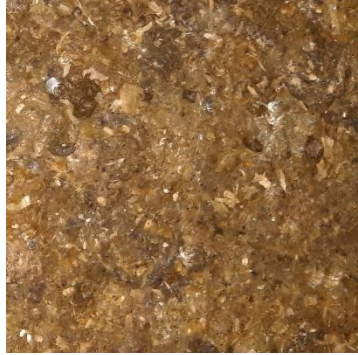
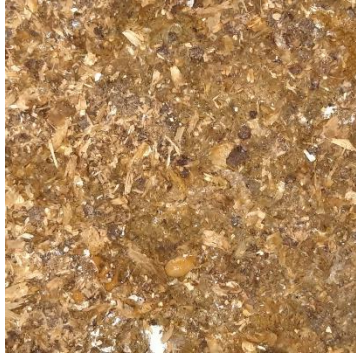
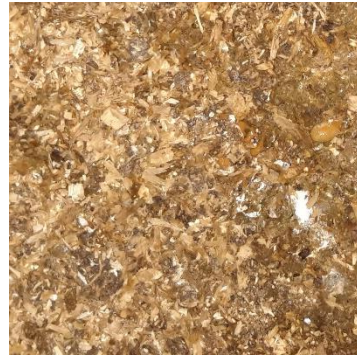

Mortality

	1	2	3	4	5	Total
	CONTROL	HP-SFM	HP-RSM	SFM+RSM	FABA BEAN	
Nb at D0	280	240	240	240	280	1 280
Global mortality	4	7	9	4	6	30
(p= 0.410)	1.4%	2.9%	3.8%	1.7%	2.1%	2.3%

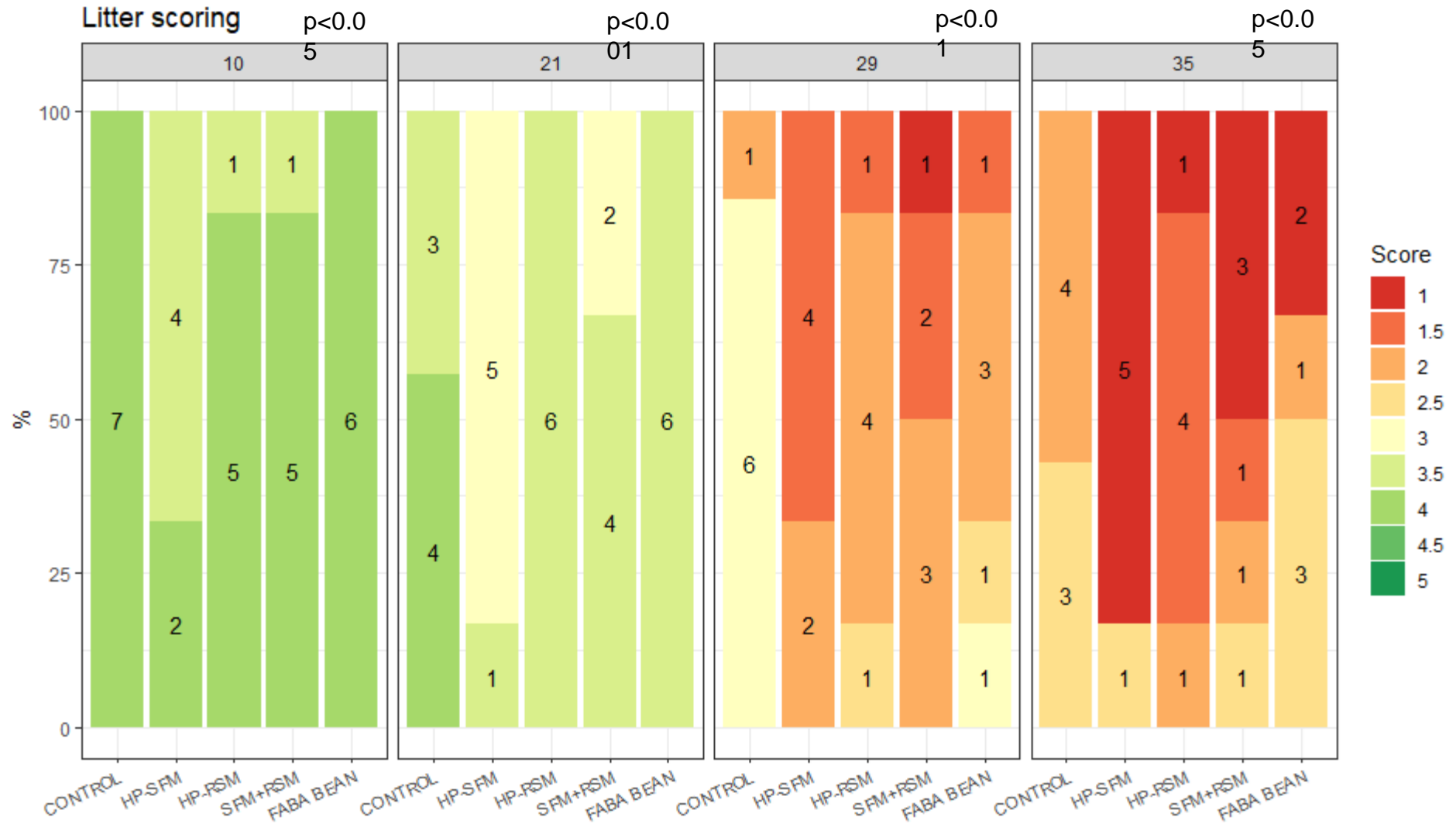
Causes of mortality/elimination (nb)						
Anorexia			2			2
lameness		2				2
Cardiac	2	4	5	3	6	20
Enterococcus	1		1	1		3
Gumboro			1			1
Accidental	1					1
Infirm (beak)		1				1
	4	7	9	4	6	30

Litter quality

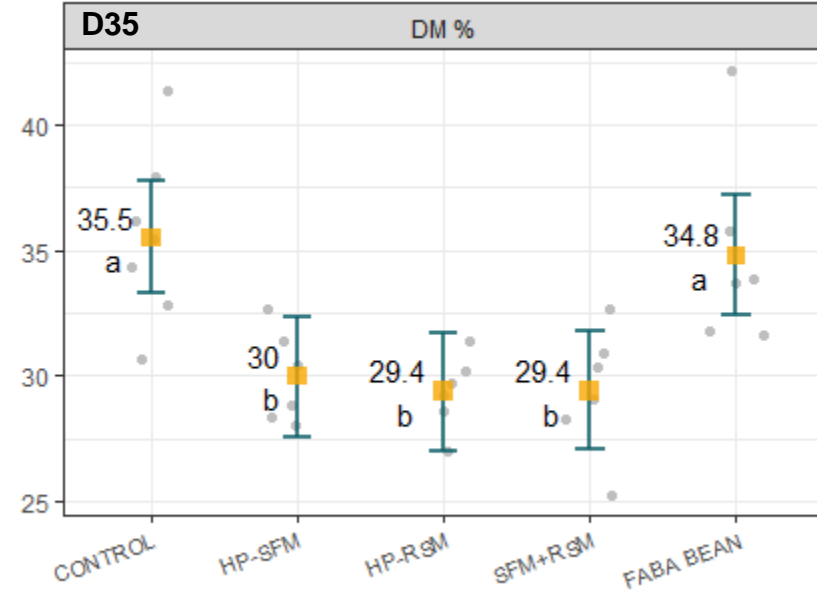
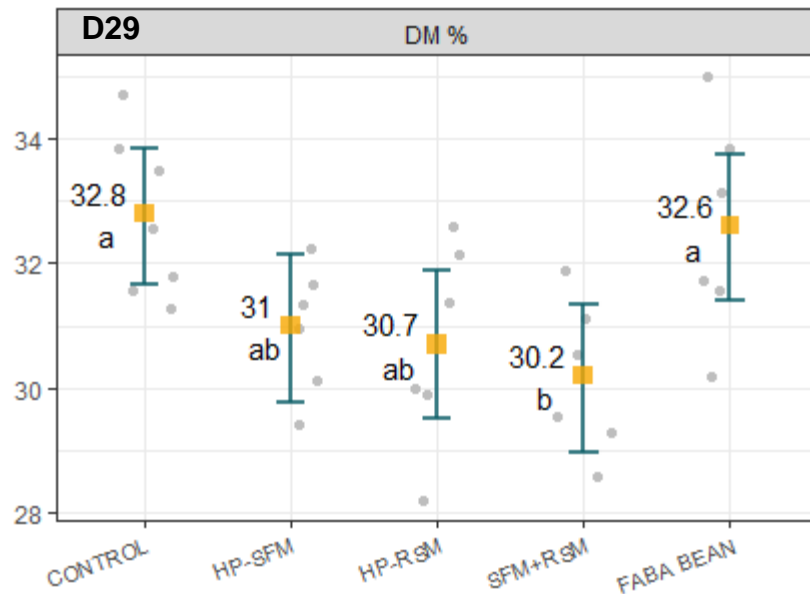
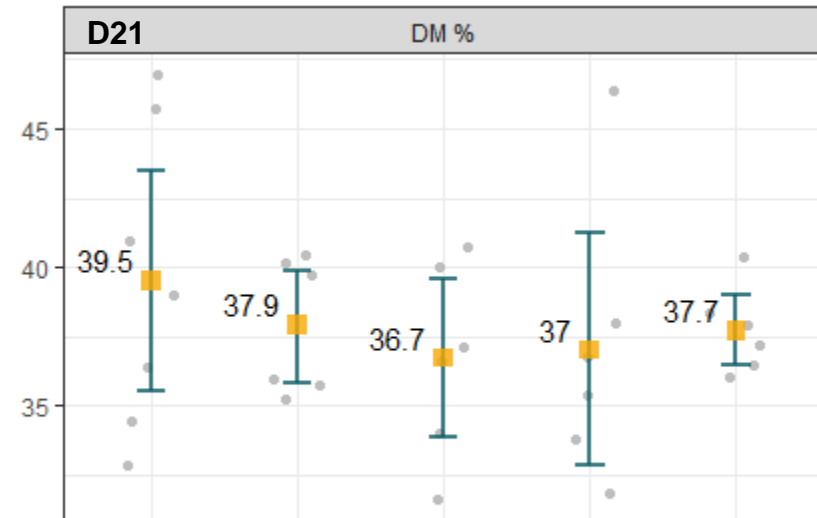
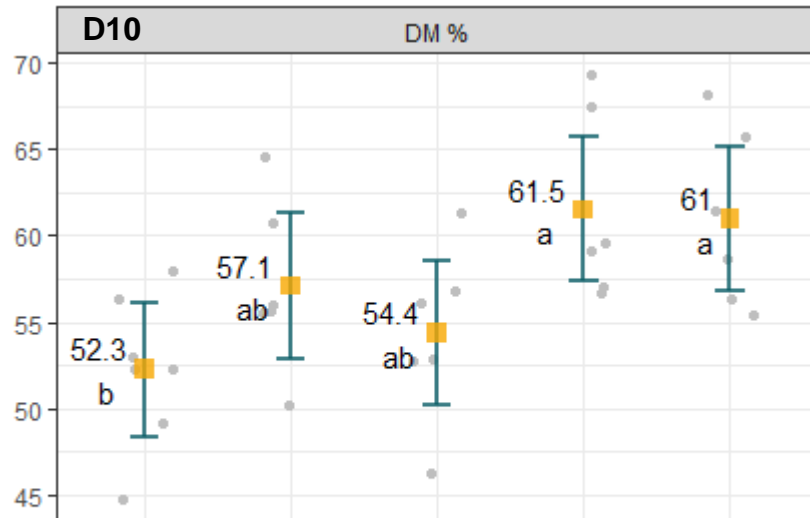
- Scoring grid: litter

1	2	3	4	5
Totally crusted or very fattish	Crusted but access to friable litter by digging	Crumbly but crusty in some places	Normally dry	Very dry
				

Litter quality: scoring








Litter quality: dry matter



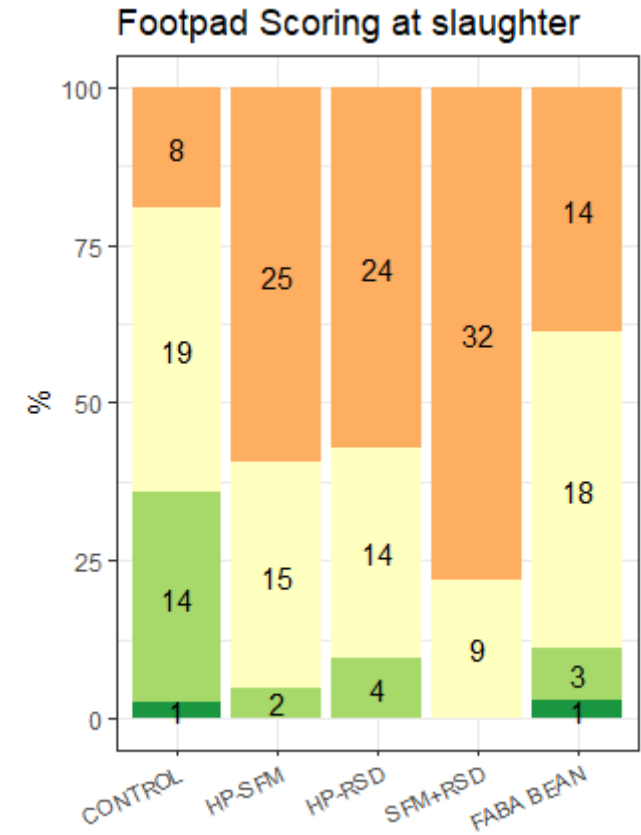
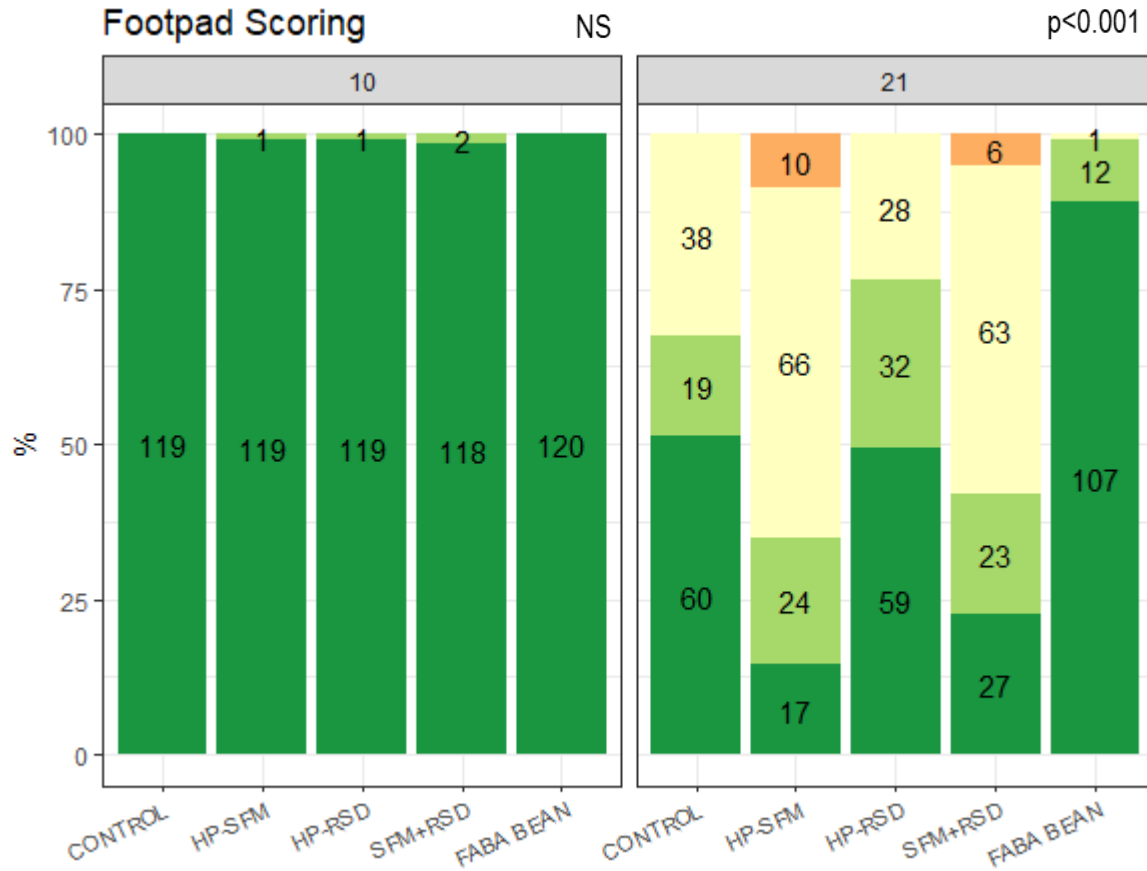
Welfare scoring

- Scoring grid: footpad dermatitis

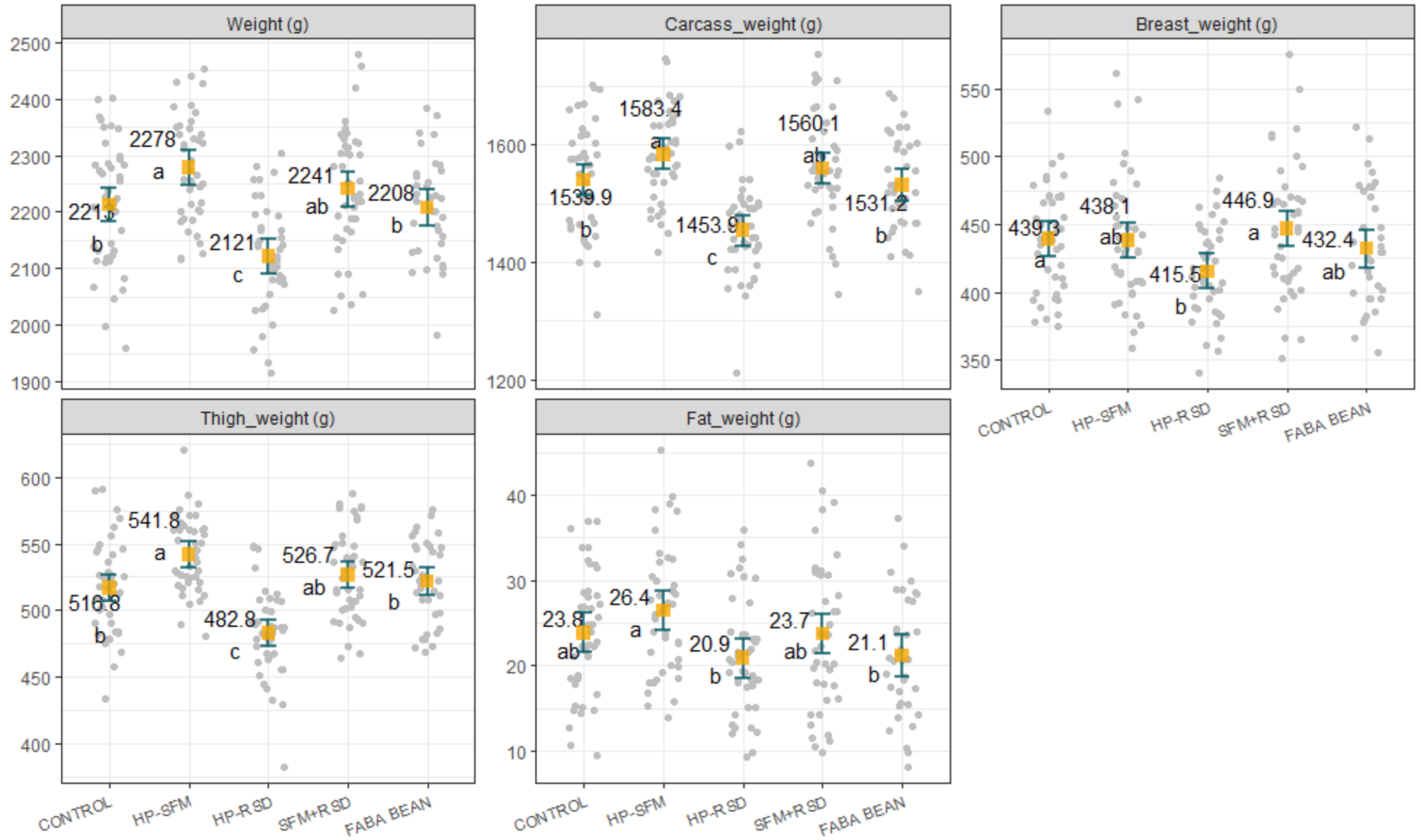
0	1	2	3	4
No lesions	Minimal lesions. A few brown scales on a small area.	Shallow lesions with area < 50%	Deep lesions or shallow lesions with area > 50%.	Severe lesions with area > 50%. Puffy fingers
				

Welfare Quality®, 2009

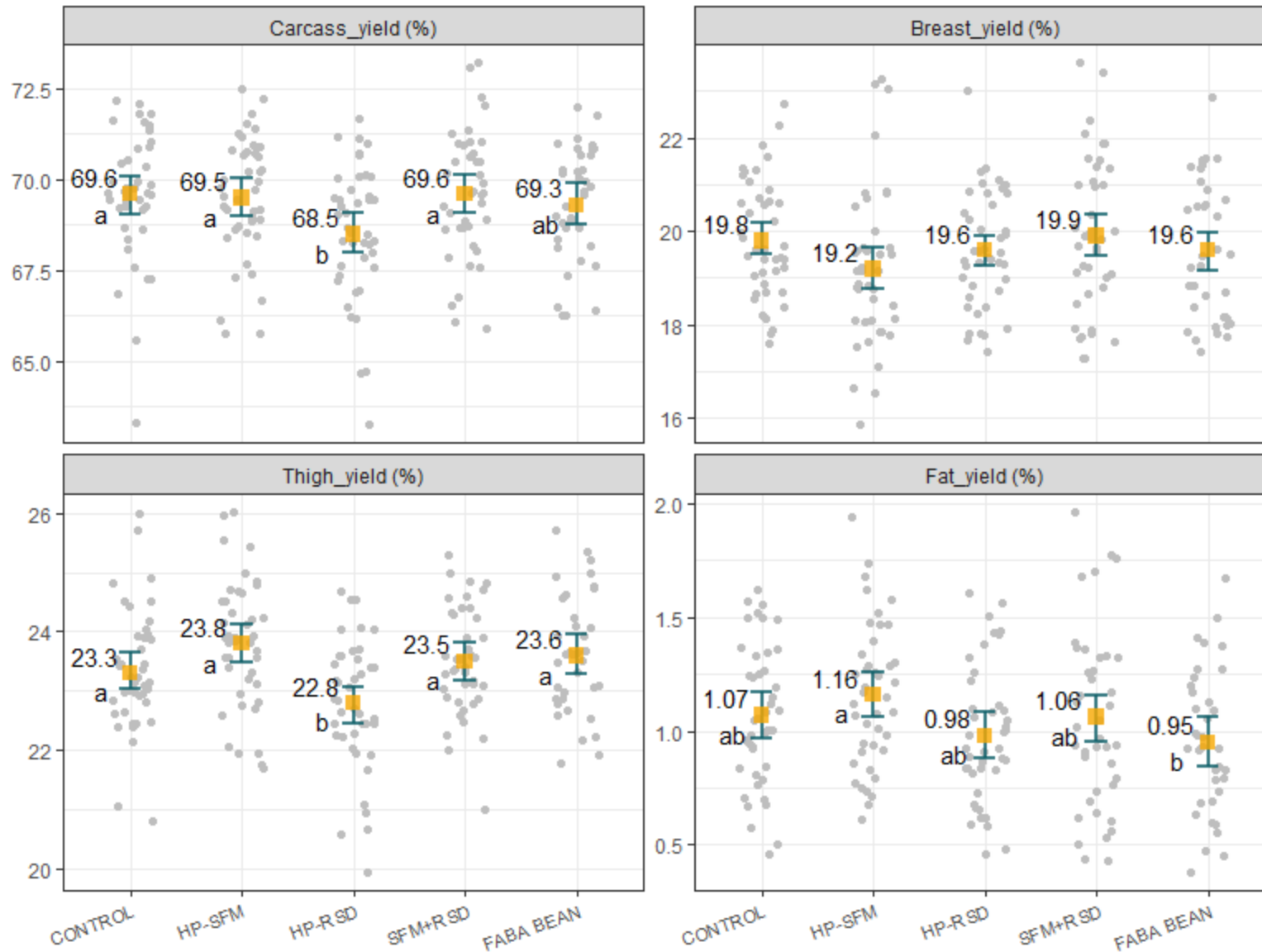
Welfare scoring



Slaughter results: weights



Slaughter results: yield

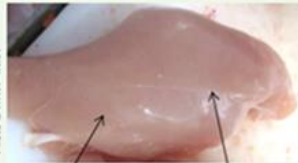


Slaughter results : carcass defect

- Scoring grid: carcass defect

White Stripping

0 NORMAL



Pectoralis major (filet) Sillon fin

- Filet : coloration uniforme du muscle
- Muscle **souple** au toucher

1 MODÉRÉ



Stries blanches



Sillon et filet plus épais

- Filet normal (gauche) filet avec début de white striping (droite)
- Stries blanches parallèles aux fibres musculaires
- Coloration : aspect plus blanc

2 SÉVÈRE

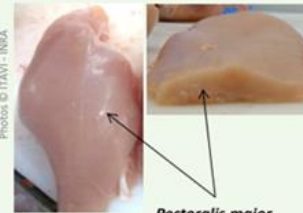


Sillon épais Stries blanches

- Filet : aspect **gras**, luisant
- Stries blanches **épaisses**
- Sillon **épais**

Wooden Breast

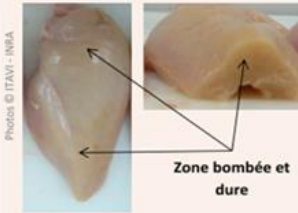
0 NORMAL



Pectoralis major (filet)

- Filet : coloration uniforme du muscle
- Muscle **tendre et souple** au toucher

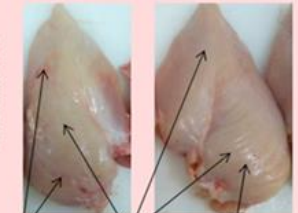
1 MODÉRÉ



Zone bombée et dure

- Coloration **plus pâle**
- Muscle **bombé, dur** au toucher
- Muscle plus **volumineux**

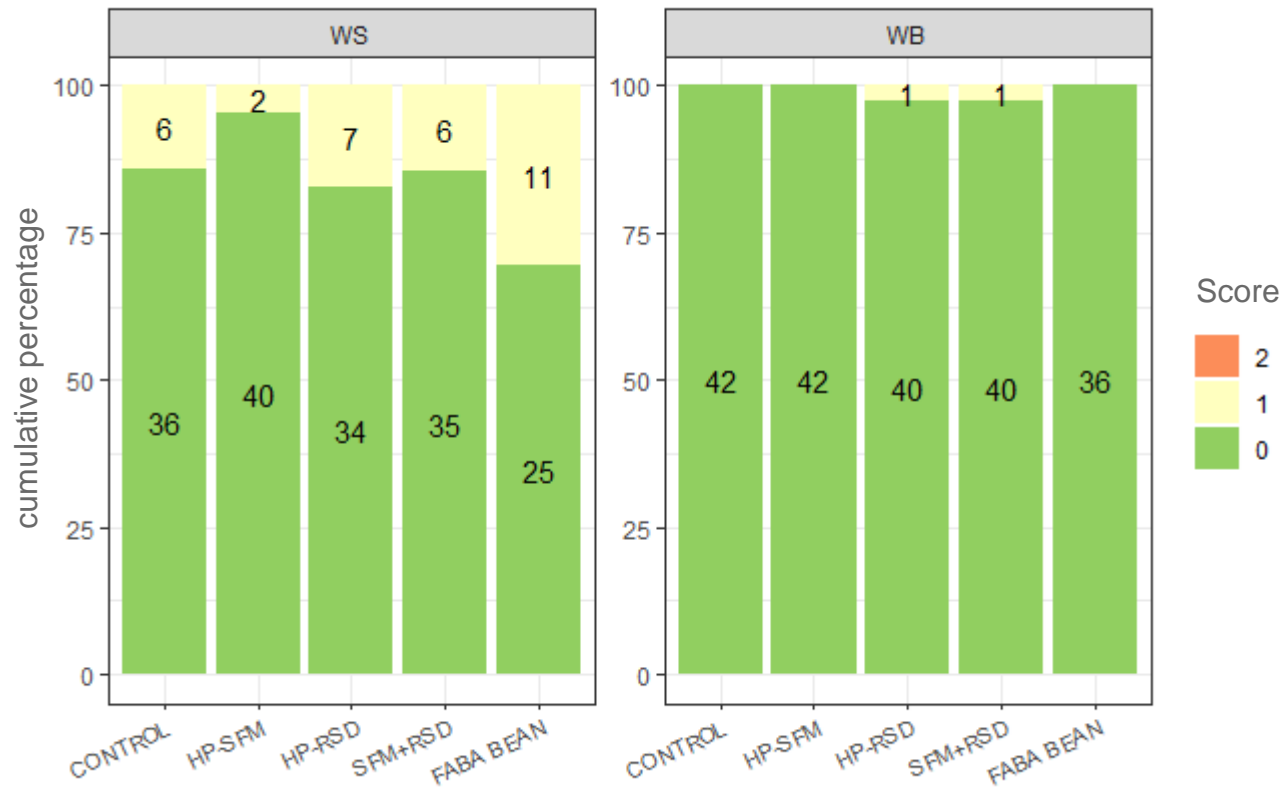
2 SÉVÈRE



Pétéchies Zone bombée et dure Ondulations

- Coloration **blanche, très pâle**
- Muscle **plus volumineux, bombé, dur** au toucher
- Apparition d'**ondulations**
- Présence de **pétéchies** dans les cas extrêmes

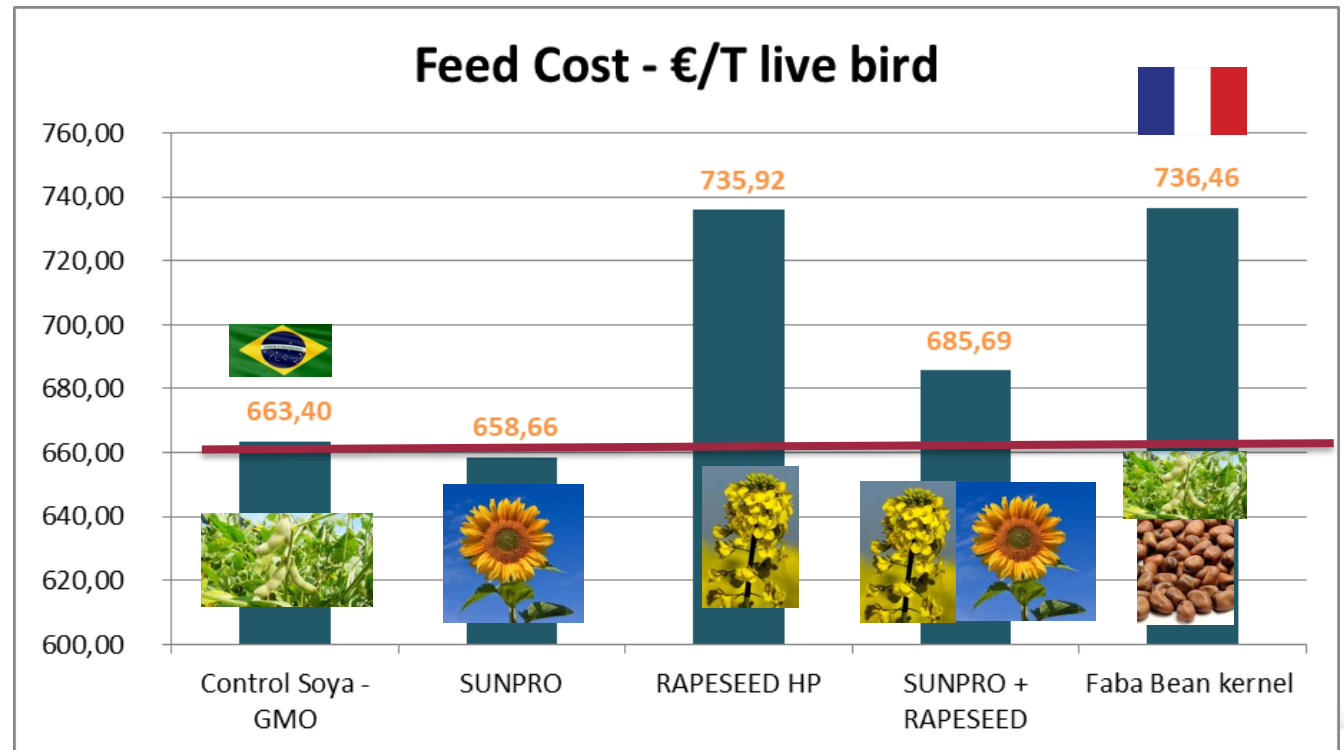
Slaughter results: carcass defect



Economic

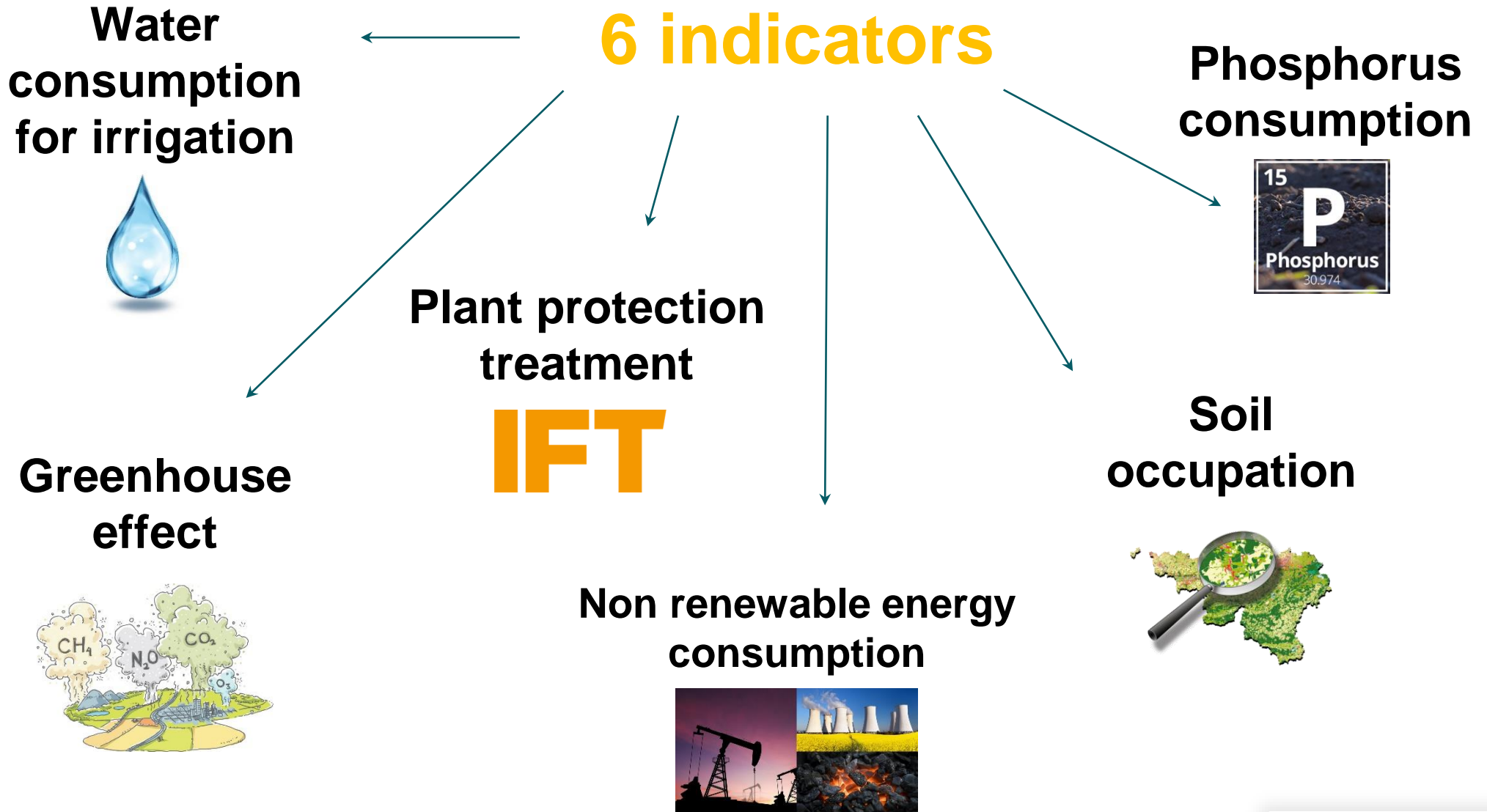
Feeding cost €/T of live bird

	Feed price in average	FCR for 1,9 kgs	Feeding cost - €/ T of live bird
Control Soya - GMO	427,03	1,55	663,40
SUNPRO	429,60	1,53	658,66
RAPESEED HP	468,18	1,57	735,92
SUNPRO + RAPESEED	446,04	1,54	685,69
Faba Bean kernel	483,71	1,52	736,46

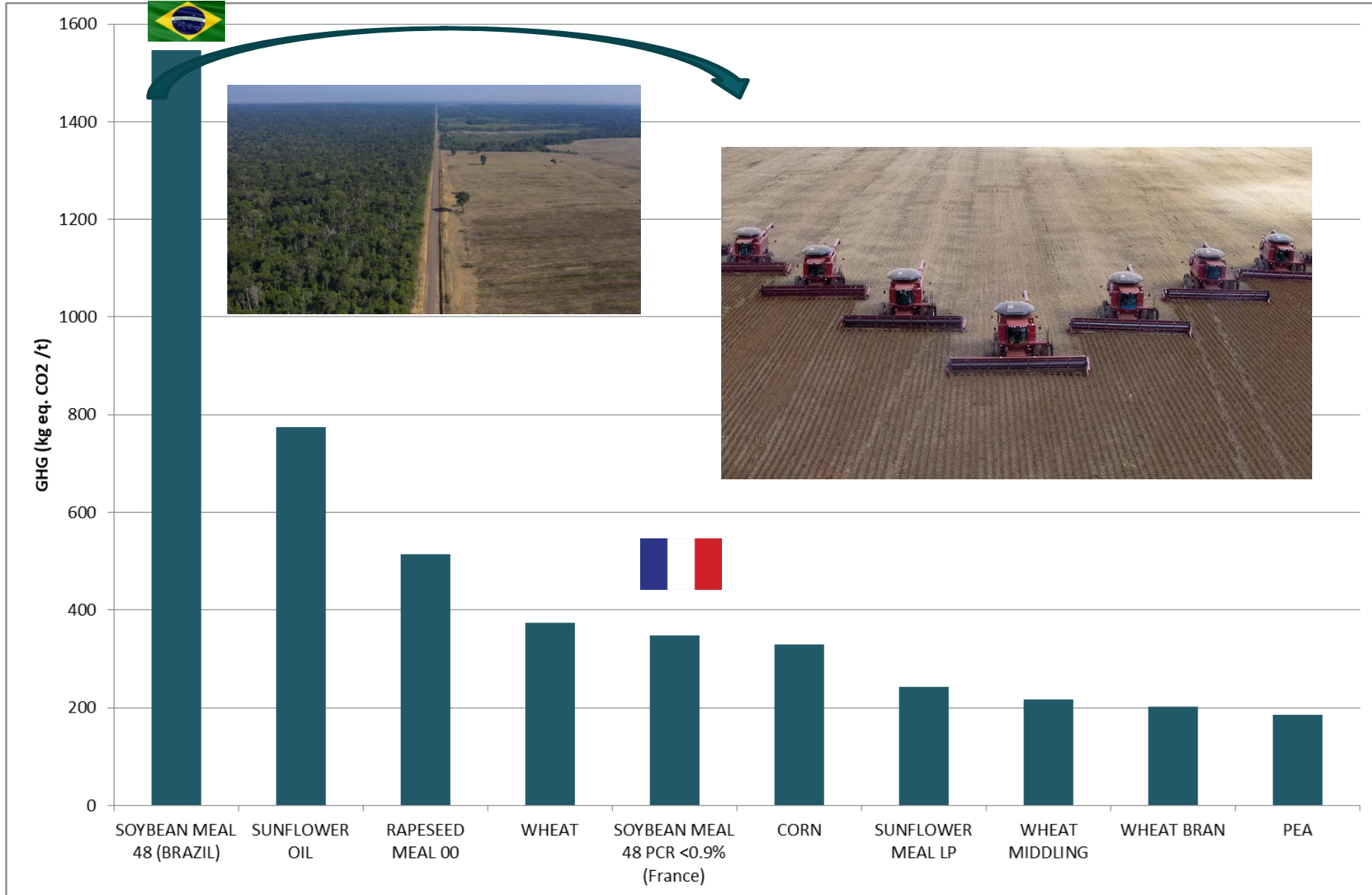


Environmental impact

6 indicators to measure environmental impact

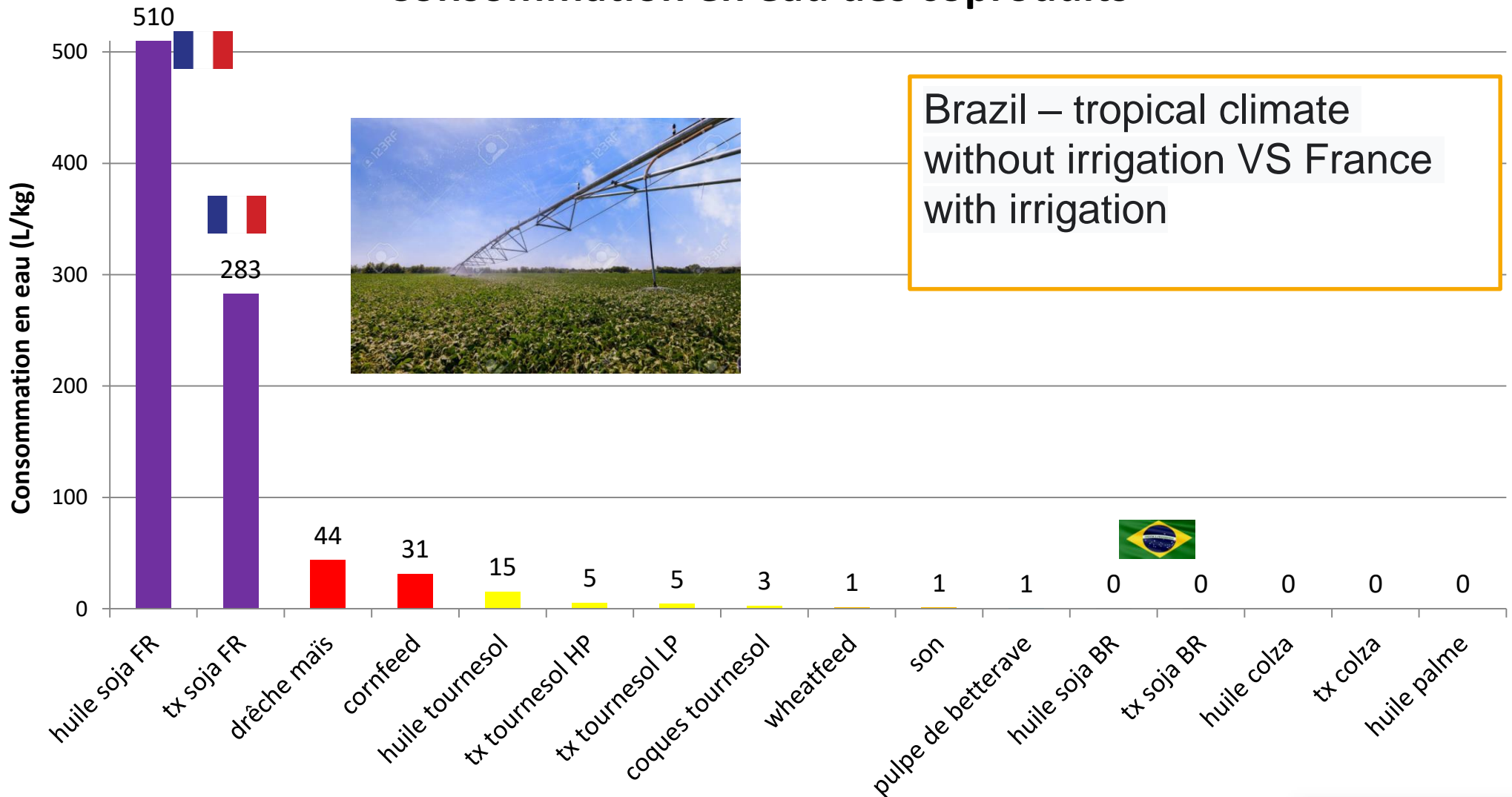


Green House Effect Results









































Water Consumption for irrigation

Consommation en eau des coproduits



Overall Environmental impact

	<i>Greenhouse effects – kgs of CO2 / kg of feed</i>	<i>Plant protection treatment</i>	<i>Water consumption for irrigation</i>	<i>Phosphorus consumption</i>	<i>Soil occupation</i>	<i>Non renewable energy consumption</i>
Soya - Brasil  	 100%	 100%	 100%	 100%	 100%	 100%
SUNPRO 	 64%	 84%	 111%	 71%	 90%	 88%
RAPESEED HP 	 76%	 95%	 109%	 68%	 87%	 103%
SUNPRO + RAPESEED  	 68%	 88%	 108%	 69%	 88%	 94%
INEVO XPRO - FAVA  	 60%	 83%	 179%	 67%	 116%	 60%

Conclusion

Conclusion

- **Farm Management performance**
 - Alternative solutions to imported soybeans make it possible to maintain almost similar levels of performance
 - On the Rapeseed diet, we observe a drop in food consumption from the starting => not advisable during this period
 - The 50% Sunpro/50% Rapeseed alternative can be interesting for critical phases, start-up for example
 - Secondary soya alternatives degrade the litter more than soya diets, therefore the animal welfare and pododermatitis notes
- **Economic performance**
 - The Sunpro solution is as economical as the Soya Import solution
 - Investment in the alternative Sunpro formula is compensated by an improvement in performance
 - The other solutions are less competitive than the Soya import
- **Environmental performance**
 - Depending on the solution chosen, the impacts on the environmental criteria may be less impacted
 - On the GHG criteria, the alternative solutions are less impactful than T.Soja BR

Thank you

