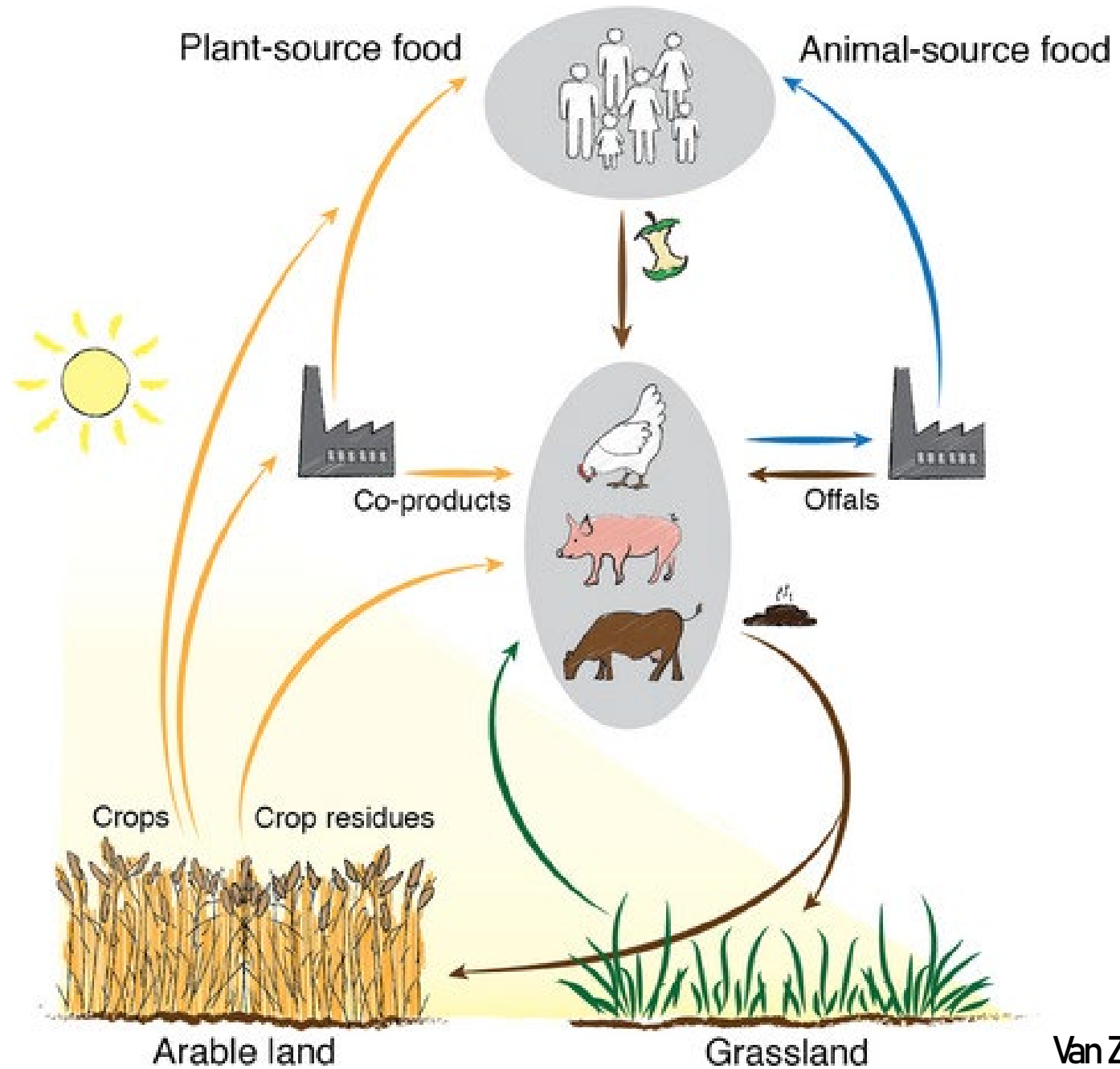




Effect of sire type and a by-product based diet on performance and carcass and meat quality

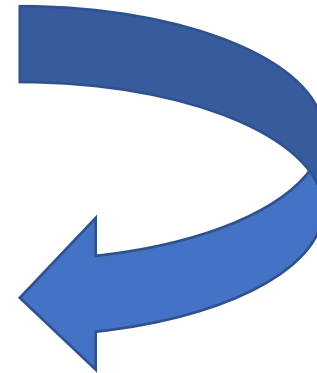
E Kowalski, M Aluwé, S Janssens, N Buys, S De Smet, S Millet
EAAP 2024

Food-Feed-Energy competition



Flemish pig

- Pigs sired by a Belgian Piétrain are known for their optimal performance on high quality feeds
- Conventional diet:
 - Starch-rich
 - Based on cereals and soy
- Future evolution towards more by-products?
 - Higher in fat and fibre



Hypothesis

Slaughter pigs differently selected for high vs low feed **intake capacity**

X

cope differently with by-product-based vs conventional **diets**



Experimental set-up



2 x 2 design: diet x **sire type**

- Different genetic capacity for daily feed intake (DFI)
- Based on estimated breeding values

	High DFI	Low DFI
Feed intake	149	82
Growth rate	188	84
Carcass quality	107	141
Feed conversion ratio	123	127



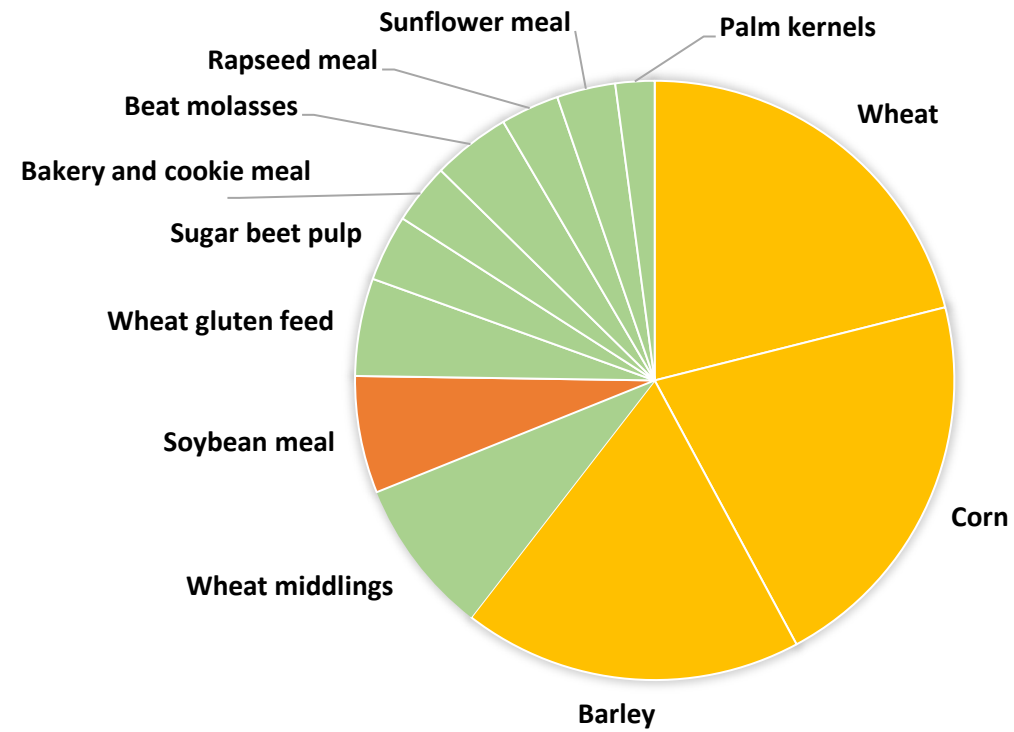
2 x 2 design: diet x sire type

	Phase 1 9-14 weeks	Phase 2 14-20 weeks		Phase 3 20 weeks-slaughter	
		Conv.	By-product	Conv.	By-product
Crude protein, (g/kg)	160	160	160	150	150
Crude fat (g/kg)	49	46	75	40	68
Crude fibre (g/kg)	40	45	60	45	60
Starch (g/kg)	353	349	246	361	265
Energy (MJ/kg)	9.6	9.4	9.4	9.3	9.3

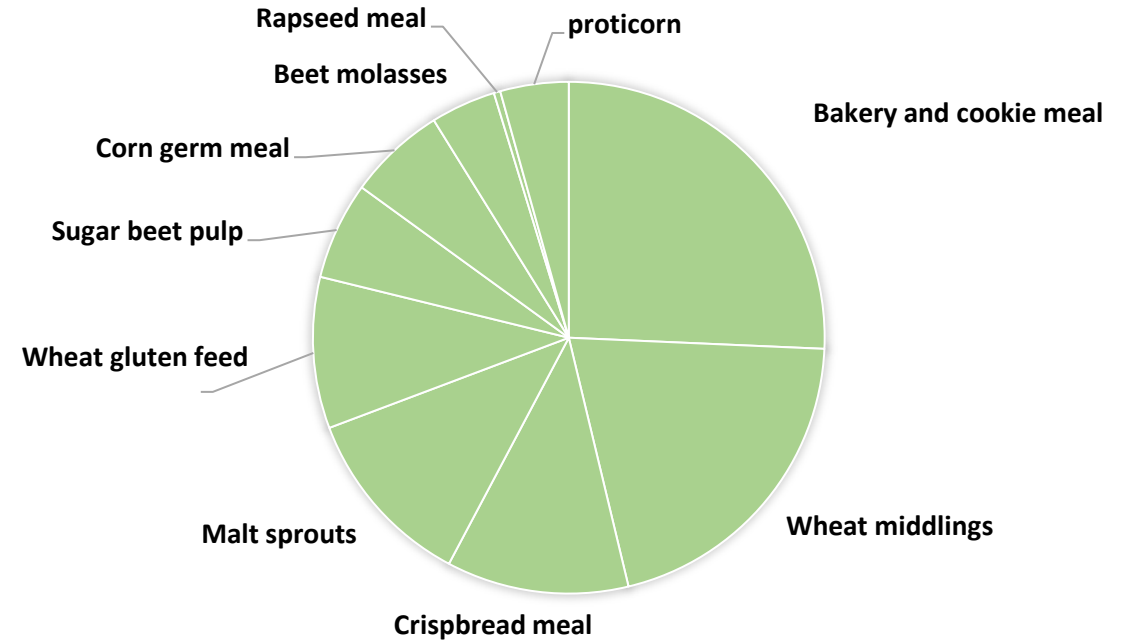


Feed composition: phase 3

CONVENTIONAL DIET



BY-PRODUCT BASED DIET



Results



**14 weeks until
slaughter**

	Conventional	By-product	Low DFI	High DFI	P-value (feed)	P-value (sire)
Growth rate (g/day)	1081	1025	963	1144	0.028	<0.001
Feed intake (g/day)	2845	2702	2548	3000	0.011	<0.001
Feed conversion ratio (g/g)	2.63	2.64	2.65	2.62	0.914	0.493

**By-product-based diet
led to lower growth
rate and feed intake,
but similar feed
conversion ratio**



14 weeks until
slaughter

Growth rate (g/day)

Feed intake (g/day)

Feed conversion
ratio (g/g)

Conventional

By-product

Low DFI

High DFI

P-value
(feed)

P-value
(sire)

1081

1025

963



1144

0.028

<0.001

2845

2702

2548



3000

0.011

<0.001

2.63

2.64

2.65

2.62

0.914

0.493

Offspring of sires
selected for low DFI
had a slightly lower
growth rate and feed
intake, but similar feed
conversion ratio

	Conventional	By-product	LowDFI	High DFI	P-value (feed)	P-value (sire)
Dressing yield (%)	79.4	78.5	79.3	78.6	0.009	<0.001
Lean meat content (%)	62.9	63.7	64.4	62.2	0.585	<0.001

Lower dressing yield
for pigs fed on high
fibre and fat diet



	Conventional	By-product	Low DFI	High DFI	P-value (feed)	P-value (sire)
Dressing yield (%)	79.4	78.5	79.3	78.6	0.009	<0.001
Lean meat content (%)	62.9	63.7	64.4	62.2	0.585	<0.001

Offspring of sires selected for low DFI had higher dressing yield and lean meat content

	Conventional	By-product	LowDFI	High DFI	P-value (feed)	P-value (sire)
Initial pH	6.55	6.56	6.55	6.56	0.961	0.887
Drip loss (%)	8.46	9.04	8.71	8.71	0.716	0.969
Intramuscular fat content (%)	217	209	201	225	0.169	0.030

Taste and meat quality
traits similar for both
feeds



	Conventional	By-product	LowDFI	High DFI	P-value (feed)	P-value (sire)
Initial pH	6.55	6.56	6.55	6.56	0.961	0.887
Drip loss (%)	8.46	9.04	8.71	8.71	0.716	0.969
Intramuscular fat content (%)	217	209	201	225	0.169	0.030



Intramuscular fat content was higher for the offspring of high DFI, but other meat quality traits and taste were similar



Lean pig genotypes differing in feed intake capacity may cope well with by-product-only based diets that are less prone to feed-food-energy competition



Sire genotype had a larger effect on performance and carcass fatness compared to diet in the present study



Thank you for your attention!

Link to full paper

