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Schothorst Feed Research

Evaluation of the nutritional value of poultry by-products in the diet of growing pigs

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Increased demand of protein by 2050

- Increase meat production x2

FAO report, 2009

The EU-27 is largely dependent on imports of certain plant proteins

- Total plant proteins: 59%
  - SBM: 95%
  - Rapeseed meal: 14%
  - Legumes and oil seeds (no crushing): 0%

EU, 2017

Consequences for the Climate?

Circularity?

How to meet increasing demand for protein?

- Increase productivity (tons/ha) of current crops
- Increase animal's protein utilisation
- New protein sources:
  - Insects
  - Algae
  - Leaf proteins
- Others: Processed Animal Proteins (PAPs)?

PAPs: Processed Animal Proteins

- Use of PAPs in farm animal diets is not allowed in the EU since BSE (>20 years ago).

- Not updated Table values- different composition and quality due to:
  - New process technologies (e.g. drying; prevents nutrient damage)
  - Species-specific origin

Objective

Determine the nutritional composition and the ileal and total tract digestibility value of five poultry by-products (PAPs) in growing pigs

Materials and methods

- 48 growing-pigs; iBW= 45.4 kg
- 6 experimental groups – 8 replicates/ treatment

		Test product
1	Basal diet	--
2	Basal diet	PMBM- high ash
3	Basal diet	PMBM- medium ash
4	Basal diet	PMBM- low ash
5	Basal diet	Feather meal – hydrolysed
6	Basal diet	Poultry Blood meal

PMBM: poultry meat and bone meal

- Period 1: 0-21d; Ca and P digestibility
- Period 2: 21-35d; CP, AA digestibility, NE

Difference method

Materials and methods

Study setup:

Period 1:

- PAPs at lower inclusion rate (4-15%), adjusted for Ca, P
  (tP = 1.50 g/kg; Ca/P ratio 1.25)
- Faecal collection d18 – 21

Period 2:

- PAPs at higher inclusion rate (11.5-15%), based on CP
- Faecal collection d31-35
- Ileum content collection: d35

Statistical analyses:

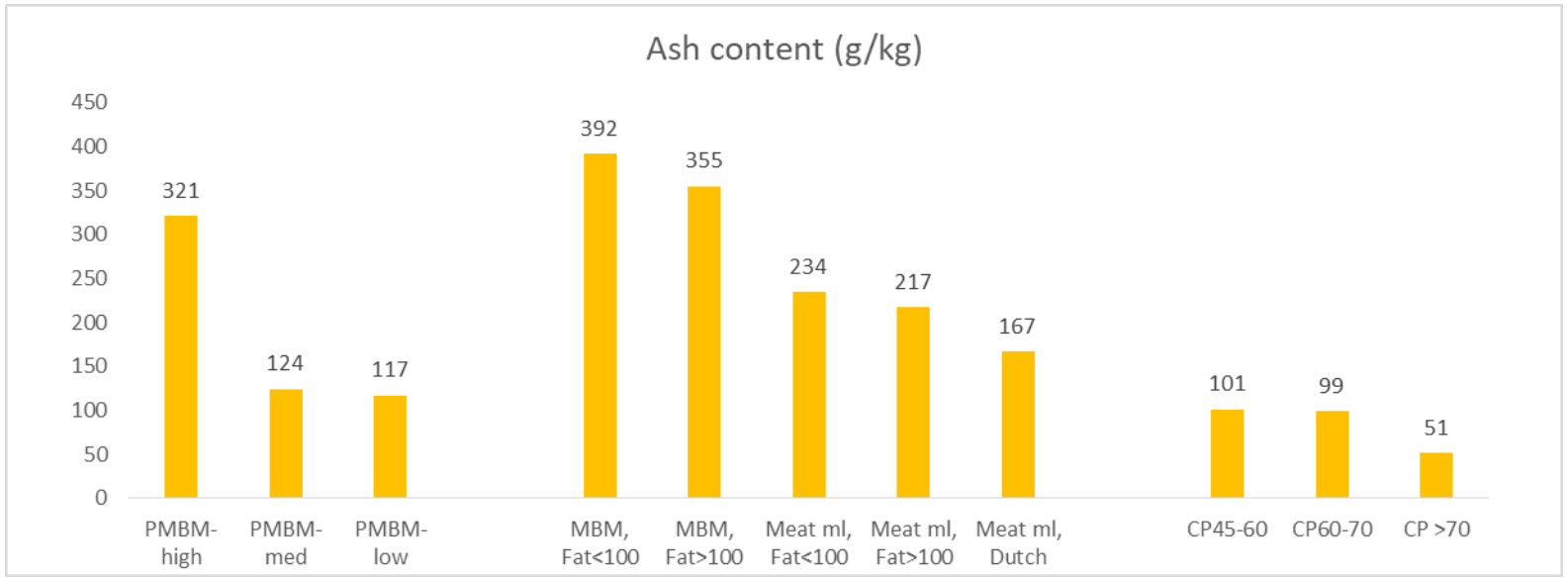
- One-way ANOVA – GenStat 19th Ed.

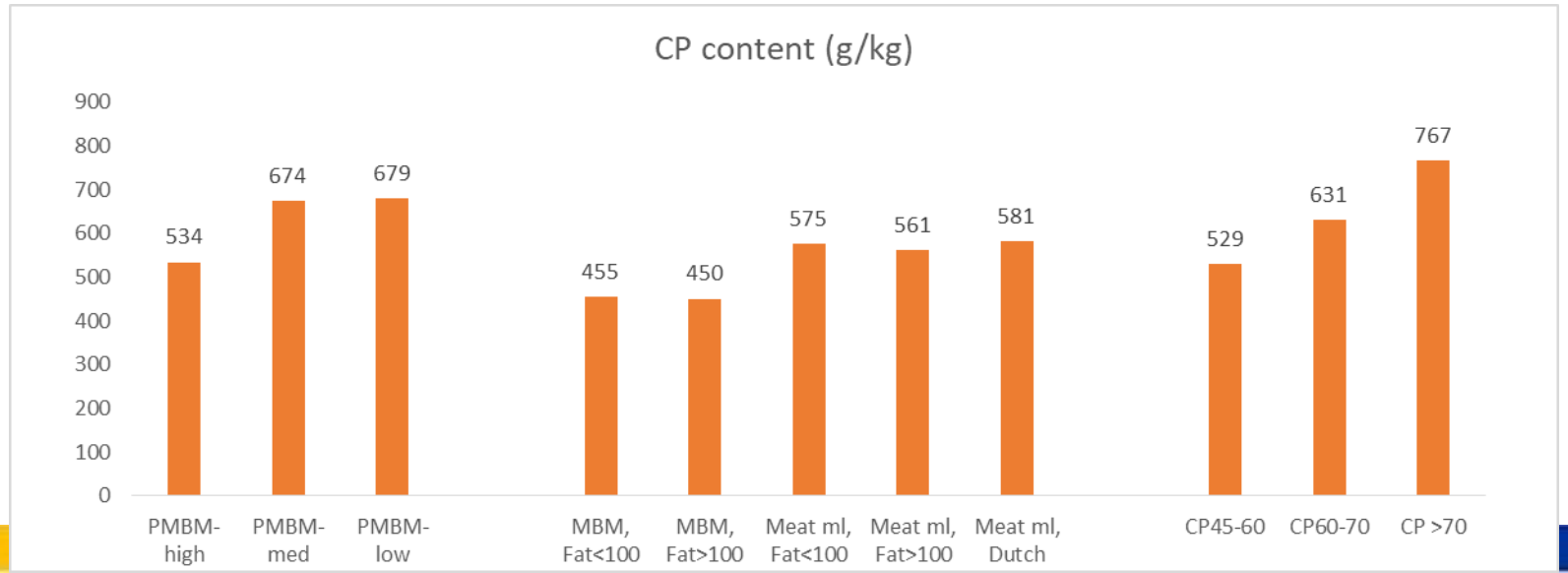
RESULTS

Analysed PAPs contents

%	ash	P	CP	Fat
PMBM-High ash	32	5.7	53.4	9.60
PMBM-Medium ash	12	2.4	67.4	11.6
PMBM-Low ash	12	2.2	67.9	11.9
Feather meal	1.3	0.2	88.6	6.69
Blood meal	2.5	0.6	93.4	0.61

PMBM composition vs. Table values (CVB, INRA)

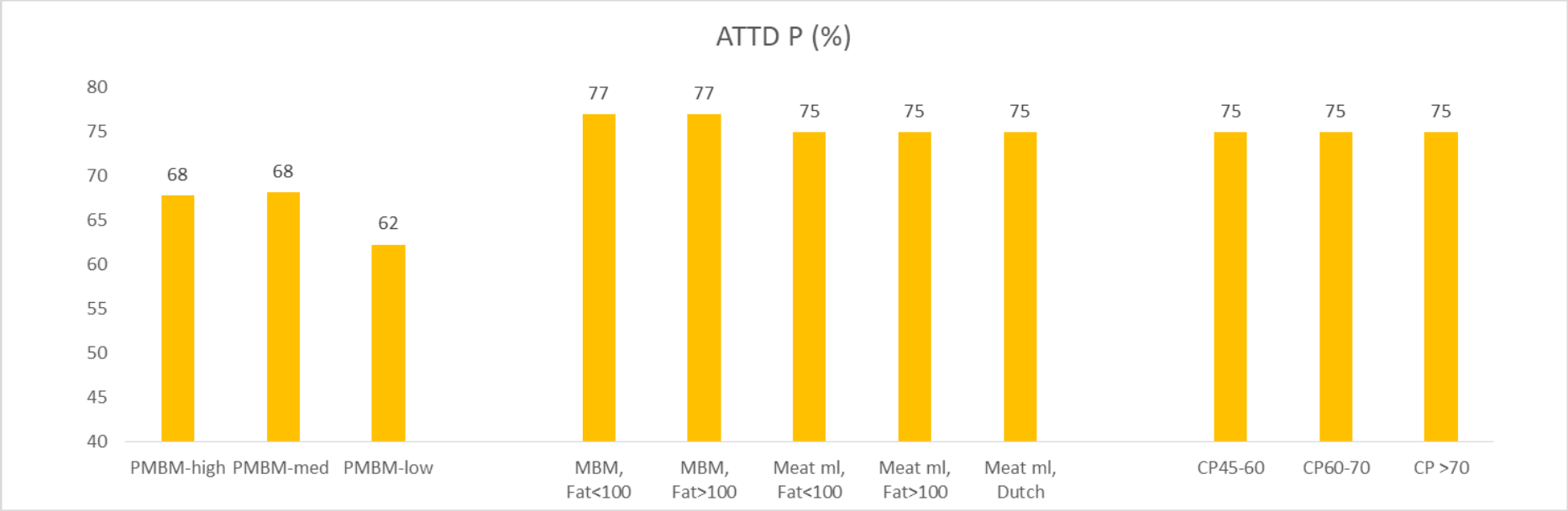




Digestibility-Period 1

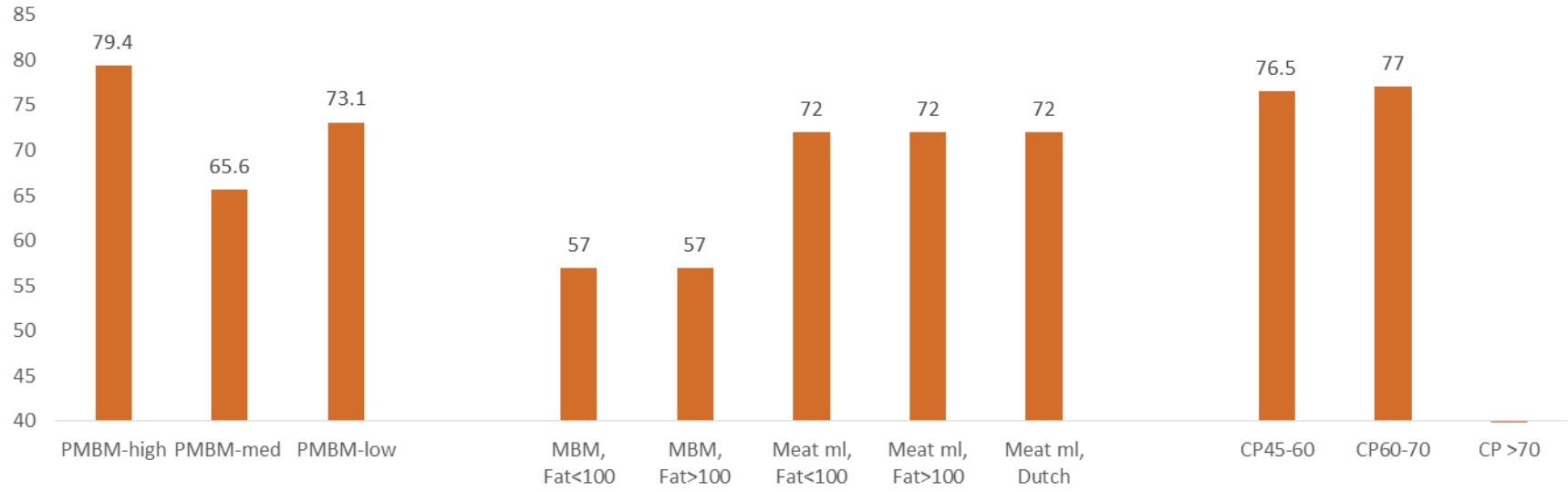
%	ATTD Ash		ATTD Ca	ATTD P		
PMBM-High	71.3	b	56.5	65.9		
PMBM-Med	84.9	b	60.9	68.2		
PMBM-Low	78.4	b	57.1	62.3		
Feather Meal	41.8	a	n.d.	n.d.		
Blood Meal	71.1	b	n.d.	n.d.		
SEM	7.79		2.98	3.82		
P-value	**0.007**		0.55	0.56		

PMBM ATTD P vs. Table values (CVB, INRA)



Digestibility-Period 2- ileum

%	AID CP	
PMBM-High	79.4	cd
PMBM-Med	65.6	ab
PMBM-Low	73.1	bc
Feather Meal	60.8	a
Blood Meal	84.4	d
SEM	3.39	
P-value	**<0.001**	

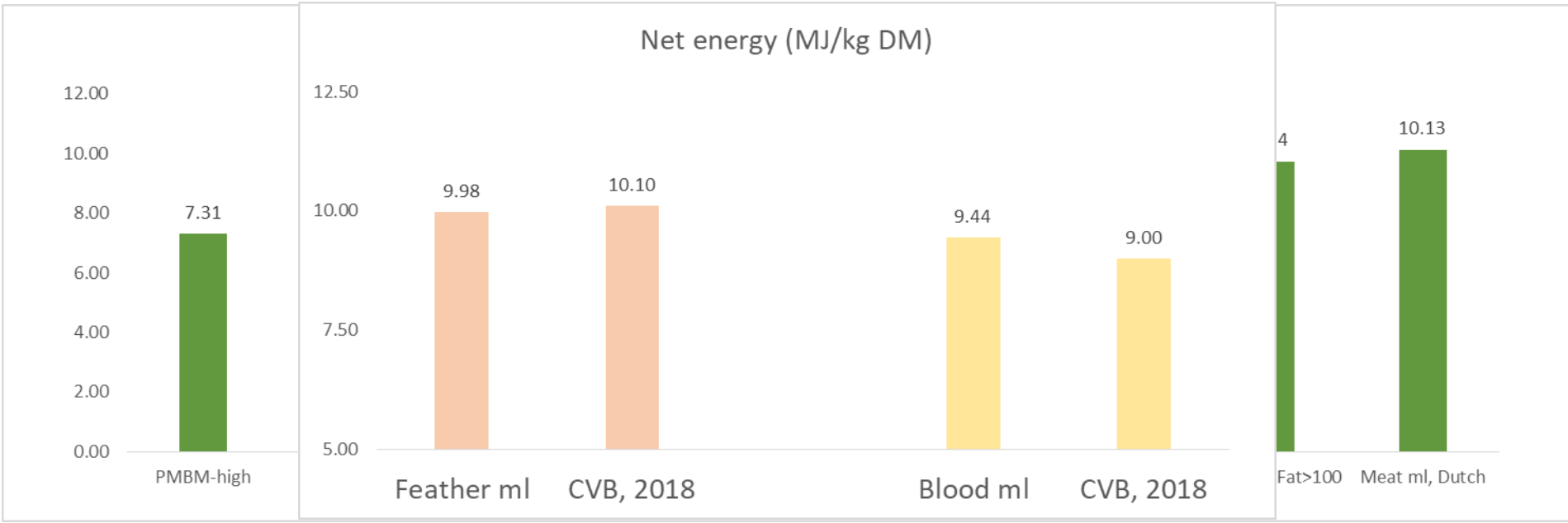


Digestibility-Period 2 – total tract

%	ATTD OM		ATTD CP		ATTD Fat	
PMBM-High	74.9		82.9	b	52.7	a
PMBM-Med	83.3		84.6	b	83.3	b
PMBM-Low	81.7		83.1	b	81.1	b
Feather Meal	73.6		75.3	a	65.0	a
Blood Meal	79.5		82.9	b	n.d.	
SEM	2.63		1.59		4.35	
P-value	*0.058*		**0.003**		**<0.001**	

Digestibility-Period 2 – Calculated Net Energy values

	NE_{2015}
	MJ/kg DM
PMBM-High	7.31
PMBM-Med	10.94
PMBM-Low	10.85
Feather Meal	9.98
Blood Meal	9.44



Conclusions

Table values for PAPs need to be updated for its use in growing pig diets.

Both nutrient composition and digestibility Table values of PAPs need to be updated.

Acknowledgements

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Thank you for your attention

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