



OptiPhos® Plus improves Ca, P and protein digestion in pig fatteners already at 250 FTU/kg

Trial description

1 Set-up

- **Location:** IMASDE, Spain.
- **Trial period:** July – December 2018
- **Animals:** A total of 378 crossbreed (crossbred; ♀ Largewhite x Landrace x ♂ Duroc) pigs from three consecutive batches of pigs, divided in 42 pens of 9 pigs. Pig average weight at start was 31.7 ± 5.1 kg.
- **Feeds** (two phase feeding, pelleted feeds; Table 1)
 - Grower (day 80 – 116 of life):
 - o Positive control: 6.7 g/kg Ca, 5.5 g/kg total P, 2.6 g/kg dig. P
 - o Negative control: 5.5 g/kg Ca, 3.9 g/kg total P, 1.3 g/kg dig. P
 - Finisher (116-169 days of life):
 - o Positive control: 6.5 g/kg Ca, 5.2 g/kg total P, 2.3 g/kg dig. P
 - o Negative control: 5.3 g/kg Ca, 3.9 g/kg total P, 1.2 g/kg dig. P

2 Treatments

- Positive control
- Negative control
- Negative control + OptiPhos® Plus at 250 FTU/kg

3 Measurements

- **Performance:** after each feeding phase, body weight (individually), feed intake and FCR (per pen) was measured.
- **Total tract digestibility:** faeces were collected during 4 consecutive days (from day 135 to 138 of life) and frozen immediately. Samples were dried, and analysed for Ca, P, protein and marker in order to calculate their digestibility.

Results

- Feeding the P deficient feeds reduced final body weight and increased FCR significantly. However adding OptiPhos® Plus at 250 FTU/kg brought the technical performance back to the positive control (Table 2).
- OptiPhos® Plus increased dry matter, organic matter, ash, crude protein, P and Ca digestibility significantly versus the positive control. Compared to the negative control, OptiPhos® Plus increased crude protein, ash, Ca and P digestibility significantly.
- Based on the dig. P, Ca and protein value measured, and considering the feed intake and the levels of these nutrients in the feed, it can be calculated that 250 FTU/kg OptiPhos® Plus equals 0.78 g/kg dig. P, 0.45 g/kg dig. Ca and 7.4 g/kg dig. protein.

Table 1. Feed composition and analysis

Ingredient	Grower		Finisher	
	Positive control	Negative control	Positive control	Negative control
Barley	40.0	40.0	40.0	40.0
Corn	31.9	33.1	33.3	34.5
Rapeseed meal	5.0	5.0	8.5	8.5
Soybean meal	17.5	17.3	12.9	12.7
Animal fat	2.6	2.3	2.7	2.4
CaCO ₃	0.83	0.85	0.83	0.79
MCP	0.75	0.04	0.59	0.00
Others *	1.37	1.38	1.16	1.16
Nutrient				
Dry matter	88.7	88.6	88.7	88.6
Crude protein	17.0	17.0	16.0	16.0
Ash	4.5	4.0	4.3	3.8
SID Lysine	0.92	0.92	0.80	0.80
Ca	0.67	0.55	0.65	0.53
Total P	0.55	0.39	0.52	0.39
Dig. P	0.26	0.13	0.23	0.12
NE (kCal/kg)	2400	2400	2400	2400

*including salt, synthetic amino acids and micromineral/vitamin premix

Table 2: Effect of OptiPhos® Plus on final body weight and feed conversion

	Pos. control	Neg. control	Neg control + OptiPhos® Plus
Body weight (kg)			
Day 80	32	32	32
Day 116	57 ^a	54 ^b	57 ^a
Day 136	112 ^a	102 ^b	109 ^a
Feed conversion			
Day 80-116	2.40 ^a	2.75 ^b	2.48 ^{ab}
Day 116-169	2.75	2.92	2.73
Day 80-169	2.63 ^a	2.85 ^b	2.64 ^a

a,b: values in a row followed by a different superscript are sign. diff. (P < 0.05)

Table 3: Effect of OptiPhos® Plus at 250 FTU/kg on dry matter, organic matter, crude protein, ash, total Ca and total P digestibility

	Pos. control	Neg. control	Neg. Control + OptiPhos® Plus
Dry matter	78.6 ^b	80.0 ^a	81.1 ^a
Organic matter	81.5 ^b	82.6 ^{ab}	83.4 ^a
Crude protein	70.7 ^b	71.9 ^b	76.5 ^a
Ash	30.9 ^b	32.2 ^b	39.4 ^a
Total calcium	26.4 ^b	29.9 ^b	38.3 ^a
Total phosphorus	30.9 ^b	18.7 ^c	38.6 ^a

a,c: values in a row followed by a different superscript are sign. diff. (P < 0.05)

Conclusion

Inclusion of OptiPhos® Plus at 250 FTU/kg to a P deficient diet

- Brought performance back to the positive control.
- Significantly improved the digestibility of P, Ca and protein to a level of 0.78, 0.45 and 7.4 g per kg of feed respectively.