



OptiPhos® Plus enhances sow technical performance when supplemented 250 or 500 FTU/kg: an overview of 4 trials

Trial description

1 Set-up

- **Location:** IMASDE (Spain), IRTA (Spain), University of Ghent (UGent, Belgium) and Wageningen University (WUR, The Netherlands).
- **Trial period:** January 2018 to June 2019
- **Set-up** (See Table 1): Using individually housed sows and cross fostering of piglets within treatment.

Table 1: Trial set up parameters at different trial locations

	IMASDE	IRTA	UGent	WUR
Trial duration	14 d before farrowing to d21 in lactation	14 d before farrowing to d28 in lactation	7 d before farrowing to d24 in lactation	Gestation and lactation to d24
Sows per treatment	16	13	10	18
Genetics	LW x Landrace dams	LW x Landrace dams and Piétrain sires	Danbred x Piétrain	Topigs GY x Dutch Landrace
Trial duration	14 days before to 21 days after farrowing	14 days before to 28 days after farrowing	7 days before to 24 days after farrowing	Gestation to 24 days in lactation
Ca (g/kg feed)*	9.5 / 7.5	7.3 / 5.3	9.5 / 7.5	8.2 / 6.0
Dig. P (g/kg feed)*	3.2 / 1.5	3.4 / 1.9	3.3 / 1.9	3.0 / 1.8
Dose (FTU/kg feed)	250 & 500	250 & 500	250 & 500	500
Creep feed to piglets	No	Yes	Yes	Yes
Time of faecal sampling	Day 16-19 of lactation	4 days last week of lactation	5 days during third week of lactation	Day 19-23 of lactation

* Value positive control / negative control

2 Treatments

- Positive control
- Negative control (positive control reduced in P and Ca, see Table 1)
- Negative control + 250 and 500 FTU/kg OptiPhos® Plus (IMASDE, IRTA, UGent)
- Negative control + 500 FTU/kg OptiPhos® Plus at (WUR)

3 Measurements

- Technical performance & animal characteristics
- Faecal sampling to determine apparent total tract digestibility parameters of dry matter, P, Ca, ash and protein

Results

Technical performance (Table 2):

- Loss of body weight and backfat thickness was not significant between treatments in any of the trials, however the average losses were less when OptiPhos® Plus was supplemented at 250 or 500 FTU/kg.
- Daily feed intake during lactation was not significantly different between treatments in all trials. Feed intake at a 250 FTU/kg dose led to reduced intake, however this intake was restored when the dose was increased to 500 FTU/kg.
- Daily piglet growth during lactation was lowest for the negative control (-10 g/d). When supplementing with OptiPhos® Plus growth was restored to similar level as the positive control.

Faecal digestibility (Table 3):

- Dry matter digestibility was significantly improved when supplementing with OptiPhos® Plus at IRTA and WUR when compared to the positive control.
- Total P digestibility was significantly improved at 250 FTU/kg for the IRTA and the UGent trials vs the negative control, whilst the 500 FTU/kg trials all demonstrated significant improvements vs the negative and positive controls.
- Ash digestibility was improved with the inclusion of OptiPhos® Plus, displaying a significant improvement in all treatments at 500 FTU/kg vs the negative control.
- Ca and protein digestibility on average improved when OptiPhos® Plus was supplemented, although the effect was not always significant.

Table 2: Overview of the technical performance parameters

		PC	NC	NC + 250 FTU	NC + 500 FTU
Body weight loss during lactation (kg)	IMASDE	32.0	36.0	27.0	29.0
	IRTA	31.0	33.0	22.0	29.0
	UGent	38.2	42.2	41.6	44.1
	WUR	45.8	36.6	ND*	41.7
	Average	36.8	37.0	30.2	36.0
Backfat loss during lactation (mm)	IMASDE	2.6	3.4	2.3	2.6
	IRTA	ND*	ND*	ND*	ND*
	UGent	2.1	2.9	2.1	2.4
	WUR	2.9	1.9	ND*	2.0
	Average	2.5	2.7	2.2	2.3
Daily feed intake lactation (kg/d)	IMASDE	4.64	4.74	4.70	4.70
	IRTA	4.46	4.83	4.75	4.79
	UGent	5.32	5.21	5.35	5.35
	WUR	6.47	6.47	ND*	6.48
	Average	5.2	5.3	4.9	5.3
Daily gain piglet (g/d)	IMASDE	213	225	228	216
	IRTA	243	210	215	228
	UGent	210	206	205	206
	WUR	261	248	268	263
	Average	232	222	229	228

*ND = not determined

Table 3: Faecal digestibility of dry matter, P, Ca, ash and protein (%)

		PC	NC	NC + 250 FTU	NC + 500 FTU
Dry matter	IMASDE	82.0	82.1	83.4	83.0
	IRTA	82.7	83.7	84.4	84.4
	UGent	ND*	ND*	ND*	ND*
	WUR	84.3 ^a	85.2 ^b	ND*	85.4 ^b
	Average	83.0	83.7	83.9	84.3
Total P	IMASDE	33.0 ^b	33.3 ^b	36.8 ^{ab}	43.7 ^a
	IRTA	43.9 ^b	36.2 ^c	46.3 ^{ab}	49.4 ^a
	UGent	24.3 ^c	25.7 ^c	36.1 ^b	45.2 ^a
	WUR	32.8 ^b	28.9 ^a	ND*	44.6 ^c
	Average	33.5	31.0	39.7	45.7
Ash	IMASDE	34.1 ^c	35.4 ^{bc}	40.6 ^{ab}	51.0 ^a
	IRTA	40.3 ^c	45.6 ^b	49.2 ^a	49.2 ^a
	UGent	ND*	ND*	ND*	ND*
	WUR	40.2 ^b	36.9 ^a	ND*	41.3 ^b
	Average	38.2	39.3	44.9	47.2
Ca	IMASDE	18	21.7	25.9	25.7
	IRTA	34.7	36.2	39	39.5
	UGent	21.6 ^c	29.4 ^b	30.7 ^b	39.2 ^a
	WUR	24.5 ^a	34.9 ^b	ND*	38.0 ^b
	Average	24.7	30.6	31.9	35.6
Protein	IMASDE	85.1	84.6	85.8	85.4
	IRTA	ND*	ND*	ND*	ND*
	UGent	79.2 ^b	82.1 ^a	80.8 ^{ab}	81.5 ^{ab}
	WUR	82.8 ^a	83.9 ^{ab}	ND*	84.2 ^b
	Average	82.4	83.5	83.3	83.7

a,b,c values in a row followed by a different letter: P < 0.05; A,C values in a row followed by a different letter: P < 0.10

*ND = 250 FTU/kg inclusion not conducted in trial at WUR, dry matter and ash digestibility not determined at Ugent and protein digestibility not measured in trial at IRTA

Conclusion

The reduction of Ca and P in lactation feeds for sows but supplemented with OptiPhos® Plus at 250 or 500 FTU/kg:

- yielded similar performance as the positive control for sows and piglets
- improved faecal digestibility for P and ash, significantly
- showed a strong trend of a positive effect on digestibility of dry matter, protein and Ca