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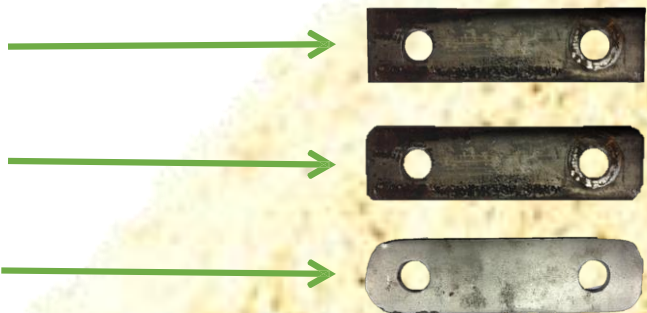
There relationship between particle size of feed ingredients and performance products in the piglet?

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INTRODUCTION

❖ Hammers of hammer mill are changed when working edges are worn but, often this is not decided according to the quality standards of feed and their possible effects on performance.

OBJECTIVE: The aim of the present work was to study the effect of different hammer status (New, half-new or Worn) on particle size distribution of diets and the performance of weaned piglets.



ANIMALS
DIETS
STATISTICS

- ❖ 240 28d-old piglets, ♂ & ♀ [Pietrain x (Landrace x Large White)].
- ❖ Individually weighed at **weaning** & allocated in groups of **10** animals.
- ❖ 8 groups distributed in 3 treatments (A, B and C)
- ❖ A pre-starter (**PS**; 0 to 14d) and a starter (**ST**; 14 to 35d) diets were formulated to contain 2.63 Mcal/kg NE, 20.2% CP, 1.37 Lys and 2.48 Mcal/kg NE, 15.1% CP, 1.20 Lys, respectively, and were offered *ad libitum*.
- ❖ Data were analyzed with ANOVA taking into account block of **BW** and **hammer status** as main factors.



RESULTS AND DISCUSSION

Table 1: Production parameters according to the realized treatments (A, B and C) respect to the type of feed (PS and ST).

		Hammer		
		A	B	C
0 - 14 d	PS	BW _{0d} (Kg)	7.8 ± 0.01	7.8 ± 0.01
		BW _{14d} (Kg)	10.1 ± 0.13	10.0 ± 0.12
		ADG (g)	167.5 ± 9.38	158.2 ± 9.38
		ADFI (g)	261.4 ± 8.79	247.2 ± 8.79
14 - 35 d	ST	FRG	1.58 ± 0.052	1.60 ± 0.052
		BW _{35d} (Kg)	18.9 ± 0.27	18.8 ± 0.27
		ADG (g)	418.2 ± 11.45	405.9 ± 11.45
		ADFI (g)	665.0 ± 12.10 a	651.3 ± 12.10 ab
0 - 35 d	PS + ST	FRG	1.59 ± 0.027	1.61 ± 0.027
		ADG (g)	317.9 ± 7.06	306.8 ± 7.06
		ADFI (g)	503.5 ± 7.24 a	489.6 ± 7.24 ab
		FRG	1.58 ± 0.022	1.60 ± 0.022

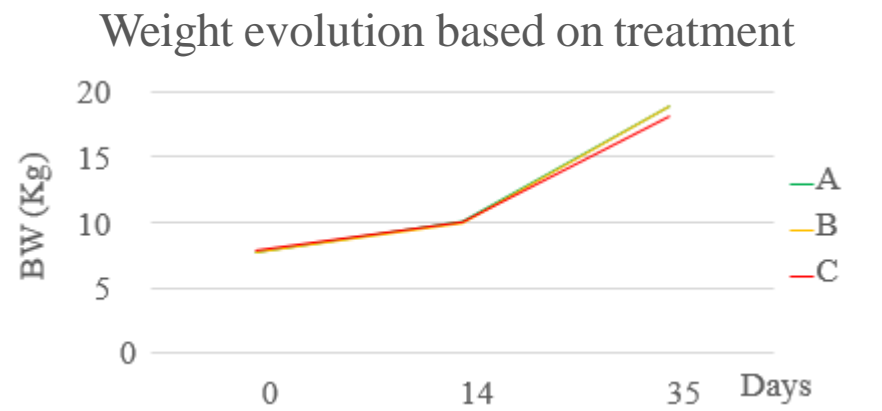
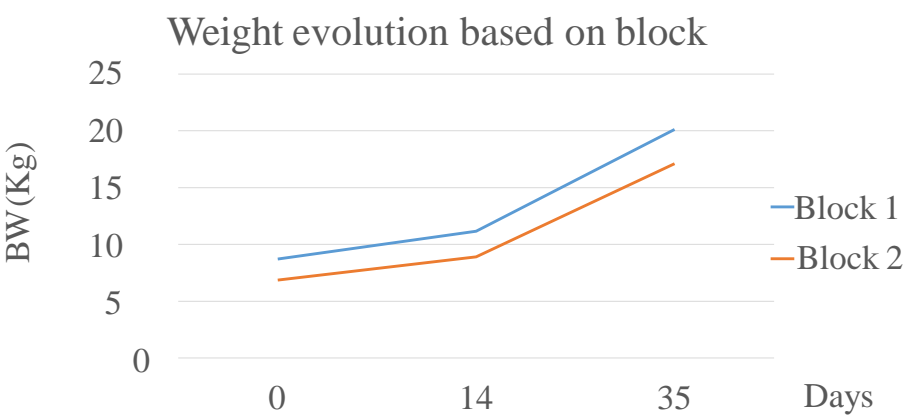


Table 2: Productive parameters according to the blocks (1 and 2) in general respect to the type of feed (PS and ST).

		Block	
		1	2
0 - 14 d	PS	BW _{0d} (Kg)	8.7 ± 0.01 a
		BW _{14d} (Kg)	11.2 ± 0.11 a
		ADG (g)	175.1 ± 7.49 a
		ADFI (g)	270.2 ± 7.02 a
14 - 35 d	ST	FRG	1.55 ± 0.041
		BW _{35d} (Kg)	20.1 ± 0.21 a
		ADG (g)	420.7 ± 9.15 a
		ADFI (g)	676.2 ± 9.66 a
0 - 35 d	PS + ST	FRG	1.61 ± 0.022
		ADG (g)	322.4 ± 5.63 a
		ADFI (g)	513.8 ± 5.78 a
		FRG	1.60 ± 0.018



❖ The PS feed not affect in granulometry.

Table 3: Granulometry (6 sieves with 7 fractions) and characterization of the ST feed.

Feed:		ST			
Hammer:		A	B	C	ES
Sieve (%)	1.6mm	1.5 a	2.2 ab	3.0 b	±0.20
	1.18mm	5.7 a	6.5 ab	8.2 b	±0.42
	1mm	5.8 a	5.9 ab	6.7 b	±0.17
	0.71mm	14.1	13.6	14.9	±0.39
	0.5mm	16.0	15.5	15.5	±0.23
	<0.5mm	57.0	56.2	51.7	±1.29
Characterization the feed	mPZ	513.7 a	524.1 ab	553.9 b	±7.62
	SGW	1.6 a	1.6 ab	1.7 b	±0.02
	N_P_g	15 998.7	16 440.6	15 663.0	±261.83
	SA	99.4 a	98.5 ab	94.4 b	±1.09

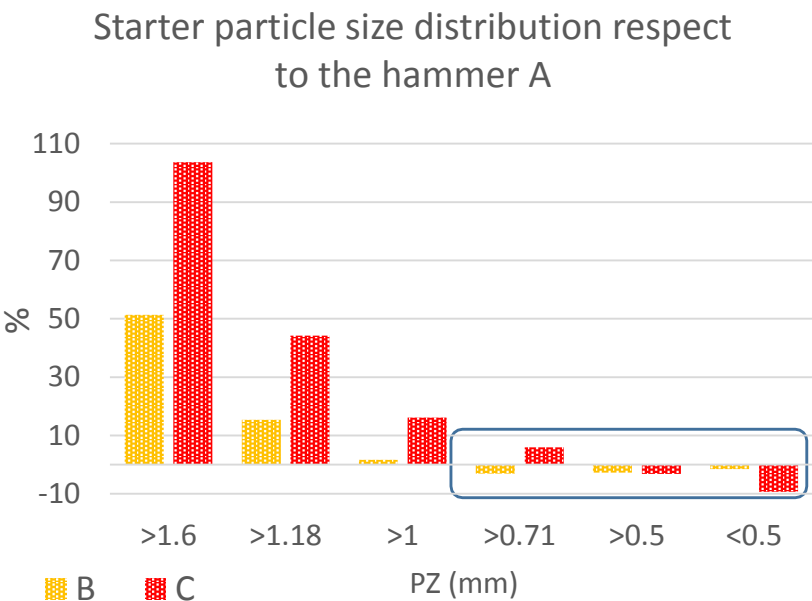


Table 4: Correlation between productive parameters with the characterization of the PS feed with the p-value.

PS	PV	GMD	CMD	IC
mPZ	-0.15	-0.22	-0.28	0.09
p-value	0.493	0.331	0.208	0.674
SGW	-0.11	-0.11	-0.19	0.04
p-value	0.623	0.624	0.384	0.845
N_P_g	0.01	-0.05	0.01	0.03
p-value	0.977	0.810	0.986	0.896
SA	0.15	0.22	0.28	-0.10
p-value	0.493	0.327	0.208	0.671

Table 5: Correlation between productive parameters with the characterization of feed S with the p-value.

ST	PV	GMD	CMD	IC
mPZ	-0.24	-0.38	-0.44	0.03
p-value	0.282	0.081 *	0.043 **	0.902
SGW	-0.24	-0.39	-0.44	0.03
p-value	0.274	0.075 *	0.040 **	0.883
N_P_g	0.12	0.18	0.23	0.03
p-value	0.599	0.423	0.301	0.879
SA	0.23	0.37	0.43	-0.02
p-value	0.294	0.089 *	0.047 **	0.922

CONCLUSION

- Hammer status affects particle size and ADFI piglets in diets in a larger extend in Starter than Pre-Starter diets.
- Hammer A showed better productive parameters and granulometry for the ST.
- The hammer C can be used to make PS.