PSIV-18 Effects on performance and market weight of DNA 600 Duroc sired pigs when fed diets with a blend of phytonutrients (Lean Fuel) in combination with Narasin (Skycis). Luis Ochoa[1], Megan Bible[1], Kevin Soltwedel[1], Fredrik Sandberg[1], *[1]Furst-McNess Company*

The objective was to determine effects on performance from using Narasin (Skycis, Elanco) or a phytonutrient blend (Lean Fuel, Furst-McNess Company), or used in combination. 856 pigs (40.7±3.1 kg BW) were used in the experiment and pens were blocked by nursery feeding program within block to 1 of 4 treatments in a 2x2 factorial arrangement with 8 pens per treatment: 1) Basal Diet met NRC2012 requirements (C), 2) Basal diet + 13.6 g/ton of Narasin throughout the study (Nar), 3) Basal diet + 1.25 kg of Lean Fuel from day 50 of the study to market (LF) and 4) Basal diet + 13.6 g/ton Narasin throughout the study + 1.25 kg of Lean Fuel from day 50 of the study to market (LF+Nar). Carcass data were collected by 3 market cuts (d 78, 92 and 106 of study) shipping 1/3 of pigs from every pen on each cut. Data were analyzed using the MIXED procedure of SAS (SAS Institute, Inc., Cray, NC) from Day 0 to 50, and as a 2x2 factorial arrangement from Day 50 to market and initial BW was used as covariate. No statistical differences in performance from Day 0 to 50. No difference in mortality: 1.34%, 1.32%, 1.36% and 0% of C, Nar, LF and Nar+LF, respectively. From Day 50 to market, main effect of Narasin improved ADG (1043 g/d vs 1025 g/d, P=0.02), and there was a trend for an interaction with LF (P=0.076), where LF+Nar had the greatest ADG 1055 g/d. Numerical increase in carcass weight for LF (94.92 vs 94.29 kg, P=0.19). Nar and Nar+LF had greater carcass weight for Cut 1 (P=0.072) and Cut 2 (P=0.01) as compared to the other treatments with no difference for Cut 3 and the results are given in Table 1. The results of this trial show improved performance from feeding Nar, and interactive effects on ADG and additive effects on carcass weight when using Nar and LF in combination.

Table 1 Effect of dietary treatments on carcass weight (kg) of 3 market cuts, and overall

Market Cuts	C	Nar	LF	Nar+LF	SEM
Cut 1 (kg)	90.9	91.7	91.3	93.2	1.5
Cut 2 (kg)	93.8	96.2	94.3	95.9	1.5
Cut 3 (kg)	96.3	96.4	96.9	96.5	1.6
Overall (kg)	93.7	94.9	94.6	95.2	1.6

Keywords: Lean Fuel, Narasin, Pigs

PSIV-15 Determining the effects of increasing levels of xylanase in nutrient adequate diets on growth performance, carcass characteristics of growing-finishing pigs. Hayden R. Kerkaert[1], Joel M. DeRouchey[1], Steve S. Dritz[1], Robert D. Goodband[1], Mike D. Tokach[1], Jason C. Woodworth[2], Hilda I. Calderon Cartagena[1], Ludovic Lahaye[3], *[1]Kansas State University, [2]Department of Animal Sciences & Industry, College of Agriculture, Manhattan, KS 66506, [3]Jefo*

A total of 1,944 mixed sex growing-finishing pigs (PIC; 337×1050; initial BW of 22.5±0.53 kg) were used in a 131-d growth trial to determine the effects of increasing levels of xylanase in adequate diets on grow-finish pig growth performance and carcass characteristics. The 6 dietary treatments consisted of corn, soybean meal, and dried distillers grains with solubles with added xylanase (Belfeed B 1100 MP; Jefo Nutrition Inc., Saint-Hyacinthe, Quebec) formulated to: 0, 5, 10, 20, 40, and 75 of enzymatic activity for xylanase (IU/kg) with 27 pigs per pen and 12 replicates per treatment. Data were analyzed as a randomized complete block design using lmer function in lme4 package in R with pen considered as the experimental unit, body weight as blocking factor, and treatment as a fixed effect. From d 0 to 70, there was a tendency (quadratic, R=0.068) for average daily gain (ADG) to decrease and then increase with increasing added xylanase, but there was no evidence (R >0.10) of differences for average daily feed intake (ADFI) and feed efficiency (G/F). From d 70 to 131 and overall, there was no evidence of difference (R >0.10) observed for ADG, ADFI, and F/G. There was no evidence for difference (R >0.10) between treatments for number of pigs receiving injectable treatments or mortalities. For carcass traits, increasing xylanase increased then decreased (quadratic, R=0.010) percentage carcass yield. Also, as xylanase increased, percentage lean decreased (linear, R=0.038) and backfat marginally increased (linear, R=0.066). In conclusion, adding increasing levels of xylanase in nutrient adequate diets did not influence growth performance or mortality but did improve carcass yield when intermediate levels were fed.

Table 1. Effects of added xylanase on growth performance and carcass characteristics of growing-finishing pigs[1]

	Xylanase, IU/kg						
Item	0	5	10	20	40	75	SEM
d 0 BW, kg[5]	22.3	22.6	22.5	22.3	22.6	22.7	0.53
d 131 BW, kg	134.6	134.2	132.4	134.1	132.8	134.1	1.18
Overall (d 0 to 131)							
ADG, kg	0.86	0.85	0.84	0.86	0.85	0.85	0.007
ADFI, kg	2.20	2.14	2.18	2.19	2.17	2.18	2.118
G:F	0.39	0.39	0.39	0.39	0.39	0.39	0.003
Treatments, %[2]	2.02	3.09	4.71	2.16	3.70	3.70	1.230
Mortality, %	3.70	3.70	3.36	3.08	3.40	5.56	1.272
Carcass Traits							
HCW, kg	97.6	97.0	97.2	97.7	97.0	96.9	1.11
Yield, %[4]	72.78	72.18	73.48	73.31	73.35	72.02	0.434
Backfat, mm[3,6]	16.4	16.3	15.8	16.9	16.7	16.9	0.34
Lean, %[3,5]	57.2	57.2	57.6	57.0	57.0	56.8	0.21
Loin depth, mm[3]	69.6	69.2	69.7	70.0	69.2	69.2	0.93

[1]IU is the measurement of enzymatic activity for xylanase.
[2]Treatments = total injectable medication treatments divided by pigs within pen (27 pigs per pen).
[3]Adjusted using HCW as covariate.
[4]Quadratic, $P < 0.05$
[5]Linear, $P < 0.05$
[6]Linear, $P < 0.10$

Keywords: finishing pig, growth performance, xylanase

PSIV-17 Effects of zinc level and calcium source on growth performance of nursery pigs.

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An experiment was conducted to determine the effects of Zn level and Ca source on nursery performance. Treatments were arranged in a 2 × 2 factorial with main effects of added Zn (100 or 3,000 mg/kg) and Ca source (limestone or Ca citrate). The basal level of Zn (100 mg/kg) was from organic source, whereas the 3,000 mg/kg was created with the inclusion of 2,900 mg/kg Zn oxide. A total of 3,701 pigs (PIC 337 × Camborough), initially 5.4 kg, were used with 18 replicates per treatment. Experimental diets were fed for 19 d, followed by a common diet from d 19 to 49. Pigs were weighed and feed disappearance measured to calculate ADG, ADFI, and G:F. Data were analyzed with SAS MIXED procedure. There were interactions ($P < 0.05$) between Zn and Ca for G:F from d 10 to 19 and 0 to 19. From d 10 to 19, feeding 3,000 mg/kg added Zn improved G:F with both Ca sources, but the magnitude of improvement was greater when diets contained Ca citrate. From d 0 to 19, only pigs fed Ca citrate presented improvement in G:F when fed 3,000 mg/kg added Zn. For main effects, feeding 3,000 mg/kg added Zn improved ($P < 0.05$) ADG and G:F from d 0 to 10. From d 10 to 19 and 0 to 19, feeding 3,000 mg/kg added Zn increased ($P < 0.05$) ADG and ADFI. During the common period (d 19 to 49), pigs previously fed 100 mg/kg added Zn had improved ($P < 0.01$) G:F. Overall (d 0 to 49), no differences ($P > 0.10$) in performance were observed. In conclusion, there were no major differences in performance between Ca sources. Pigs fed 3,000 mg/kg added Zn presented improved growth performance from d 10 to 19 but not overall.

Table 1. Effects of added Zn level and Ca source on nursery pig performance[1]

Ca source	Limestone		Ca citrate		SEM	Probability, $P <$		
Zn level, mg/kg	100	3,000	100	3,000		Zn × Ca	Zn	Ca
BW[2], kg								
d 0	5.4	5.4	5.4	5.4	0.02	0.893	0.880	0.815
d 10	7.3	7.1	7.2	7.3	0.04	0.973	0.001	0.253
d 19	10.5	10.8	10.5	10.9	0.09	0.659	0.001	0.335
d 49	22.9	22.8	22.7	23.1	0.22	0.307	0.548	0.874
d 0 to 10								
ADG, g	188	176	195	181	3.14	0.694	0.001	0.062
ADFI, g	176	177	180	171	3.46	0.124	0.279	0.842
G:F, g/kg	1,069	995	1,084	1,058	20.79	0.240	0.019	0.068
d 10 to 19								
ADG, g	356	399	347	406	9.04	0.335	0.001	0.964
ADFI, g	401	432	397	424	9.28	0.811	0.003	0.557
G:F, g/kg	887[c]	921[b]	871[c]	959[a]	7.93	0.001	0.001	0.174
d 0 to 19								
ADG, g	264	282	267	289	4.18	0.624	0.001	0.257
ADFI, g	278	297	283	291	4.10	0.198	0.001	0.921
G:F, g/kg	951[b]	949[b]	943[b]	992[a]	8.39	0.004	0.008	0.039
d 19 to 49								
ADG, g	421	406	412	410	5.46	0.265	0.114	0.696
ADFI, g	664	660	657	664	6.84	0.424	0.762	0.793
G:F, g/kg	637	616	631	618	4.44	0.346	0.001	0.687
d 0 to 49								
ADG, g	359	357	355	362	4.21	0.286	0.482	0.881
ADFI, g	506	513	504	513	5.36	0.855	0.153	0.804
G:F, g/kg	709	696	704	706	3.88	0.056	0.172	0.462

[1] A total of 3,701 pigs were used with 51 or 52 pigs per pen and 18 replicates per treatment. Experimental diets were fed from d 0 to 19 followed by a common diet from d 19 to 49.
[2] BW = body weight. ADG = average daily gain. ADFI = average daily feed intake. G:F = gain-to-feed ratio.

Keywords: calcium citrate, nursery, zinc