LeanFuel®

Performance of DNA 600 Duroc sired pigs when split sex fed commercial diets with or without a blend of phytonutrients (LeanFuel®)

K.T. Soltwedel, S.J. England, M.R. Bible, and F.B. Sandberg
Furst-McNess Company, Freeport, IL
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Abstract

The objective was to evaluate the effect of a blend of phytonutrients (LeanFuel®) on performance of pigs in late finishing in a commercial research barn. A total of 590 DNA 600 Duroc finishing pigs (Body Weight=166.9 lbs) were blocked by weight and sex and allocated across two dietary treatments with 6 replications per treatment and 21 to 26 pigs per pen. Dietary treatments were: barrow diets with and without LeanFuel® and gilt diets with and without LeanFuel®. Diets were formulated to split-sex requirements (Control) for each period and LeanFuel® diets were Control Diets + 2.5 lbs LeanFuel®. The experiment was 44-days where day 0 was 98-days post-wean. All data were analyzed using the MIXED procedure of SAS as a randomized complete block design as a 2x2 (diet x sex) factorial arrangement. Pen served as the experimental unit. Overall (day 0-44), the barrow gained more weight (P=0.0282) and consumed more feed (P<0.0001) per day when compared to the gilt. However, the gilt had a higher (P<0.0001) than the barrow. Pigs on LeanFuel® had higher Average Daily Gain (ADG) (P=0.0230) compared to Control. Also, Control had higher Feed:Gain Ratio (F:G) (P=0.0113) compared to LeanFuel®. For the diet, there was no difference (P>0.10) in Average Daily Feed Intake (ADFI). There was no diet x sex interaction (P>0.10) for ADG. There was a tendency for an interaction (P=0.0545) for ADFI, where LeanFuel®-Barrow consumed more feed compared to Control-Barrow and Control-Gilt consumed more feed compared to LeanFuel®-Gilt. There was an interaction for F:G (P=0.0028) where gilt on LeanFuel® had lower F:G compared to gilt on control whereas F:G for barrow was not different to barrow on LeanFuel®. In conclusion, LeanFuel® improved ADG and F:G, but did so differently for gilts and barrows.

Background

- LeanFuel® is a Patent Pending blend of plant extracts, vitamins and minerals. LeanFuel® is designed to support feed intake and maintain performance and health in finishing pigs.
- Trial conducted in a commercial producer's wean to finish test barn with Feed Logic feed system.
- Control Barrow and Gilt commercial diets contained 0.3 lbs narasin.

Objective

The objective of this study was to evaluate the effects of feeding LeanFuel® in commercial barrow and gilt production diets containing 0.3 lbs narasin (Skycis® by Elanco) on performance of pigs in late finishing prior to the marketing period.

Treatments

- Control-Barrow – Barrow commercial diets
  - ➢ Contained 0.3 lbs of narasin (Skycis® by Elanco)
- Control-Gilt – Gilt commercial diets
  - ➢ Contained 0.3 lbs of narasin (Skycis® by Elanco)
- LeanFuel®-Barrow – Barrows commercial diets with LeanFuel®
  - ➢ Contained 2.5 lbs LeanFuel®
- LeanFuel®-Gilt – Gilts commercial diets with LeanFuel®
  - ➢ Contained 2.5 lbs LeanFuel®

Materials & Methods

- 590 commercial DNA 600 sired pigs (initial Body Weight 166.9 lbs)
- Blocked by weight, sex and location
- Housed in a commercial wean-to-finish barn
- 44-day study
- 4 treatments (6 reps/trt)
- Feed Logic feeding system
- Diets, in meal form, met or exceeded 2012 NRC requirements

Performance

- Pens of pigs weighed on day 0, 14, 28, and 44
- Feed disappearance measured
- ADG, ADFI and Feed Conversion Rate (FCR) calculated

Statistical Analysis

- CRD
  - ➢ 2x2 factorial
    - ○ No LeanFuel® vs. 2.5 lbs LeanFuel®
    - ○ Barrows vs. Gilts
- SAS
  - ➢ PROC MIXED Procedure
- Experimental Unit = pen

Diets

Table 1: Composition Phase 1 Diets (day 0-14).

	BARROW		GILT	
Ingredient	Control	LeanFuel®	Control	LeanFuel®
Corn	1228	1227	1190	1189
DDGS	400	400	400	400
Wheat Midds	200	200	200	200
Soybean Meal	126	126	164	164
Other[1]	45.7	44.2	45.7	44.2
Narasin (Skycis® by Elanco)	0.3	0.3	0.3	0.3
LeanFuel®		2.5		2.5
TOTAL	2000	2000	2000	2000

[1]Other – limestone, salt, vitamin and trace mineral premix, L-lysine HCl, DL-methionine, L-threonine, L-tryptophan and phytase.

Table 2: Composition Phase 2 Diets (day 14-28).

	BARROW		GILT	
Ingredient	Control	LeanFuel®	Control	LeanFuel®
Corn	1277	1276	1239	1238
DDGS	400	400	400	400
Wheat Midds	200	200	200	200
Soybean Meal	78	78	116	116
Other[1]	44.7	43.2	44.7	43.2
Narasin (Skycis® by Elanco)	0.3	0.3	0.3	0.3
LeanFuel®		2.5		2.5
TOTAL	2000	2000	2000	2000

[1]Other – limestone, salt, vitamin and trace mineral premix, L-lysine HCl, DL-methionine, L-threonine, L-tryptophan and phytase.

Table 3: Composition Phase 3 Diets (day 28-44).

	BARROW		GILT	
Ingredient	Control	LeanFuel®	Control	LeanFuel®
Corn	1337	1336	1302	1301
DDGS	400	400	400	400
Wheat Midds	200	200	200	200
Soybean Meal	20	20	55	55
Other[1]	42.7	41.2	42.7	41.2
Narasin (Skycis® by Elanco)	0.3	0.3	0.3	0.3
LeanFuel®		2.5		2.5
TOTAL	2000	2000	2000	2000

[1]Other – limestone, salt, vitamin and trace mineral premix, L-lysine HCl, DL-methionine, L-threonine, L-tryptophan and phytase.

Results

Table 5: LeanFuel™ increased ADG in both barrows and gilts.

Growth Performance								
	BARROW		GILT			P-value		
Overall (day 0-44)	Control	LeanFuel®	Control	LeanFuel®	SEM	Diet	Sex	DxS
Day 0 Body Weight, lb	169.7	170.7	164.8	162	2.3	0.4500	0.0400	0.1400
ADG, lb	2.36	2.42	2.28	2.34	0.02	0.0230	0.0282	0.8177
ADFI, lb	7.72	7.93	7.02	6.97	0.08	0.2281	<0.0001	0.0545
F:G	3.27	3.28	3.09	2.98	0.001	0.0113	<0.0001	0.0028

Conclusion

- **Average Daily Gain (ADG)**
  - Barrows had a higher ADG than gilts
  - LeanFuel® increased ADG by 2.5%
- **Average Daily Feed Intake (ADFI)**
  - Barrows consumed more total feed compared to gilts.
  - LeanFuel® increased ADFI by 1.0%
- **Pigs fed LeanFuel® had an increase in growth:**
  - Barrows – tendency for an increase in feed intake
  - Gilts – improvement in F:G
- Full paper: https://doi.org/10.1093/jas/skz122.311