

Standardized ileal digestible lysine requirements for 7- to 15-kg weanling pigs with high-lean genetics fed a corn-soybean meal-based diet

INTRODUCTION

- Lysine is mainly used for body protein synthesis. Therefore, the amount of dietary lysine is directly related with pig growth (Möhn et al., 2000).
- Although lysine requirement estimates exist, verification of nutrient requirements is important because they can vary due to several factors, including genotype (Kahindi et al., 2017).
- Thus, the objective of this study was to determine the standardized ileal digestible (SID) lysine requirements for 7- to 15-kg weanling pigs (TN Tempo × TN70) fed a corn-soybean meal-based diet.

MATERIALS AND METHODS

- A total of 144 weanling pigs (Initial BW = 6.51 ± 0.56 kg) were used in a 21-day of experiment.
- Pigs were allocated in a randomized complete block design to 6 dietary treatments to give 8 replicates.
- Diets contained 1.00, 1.16, 1.32, 1.48, 1.64, or 1.80% SID lysine.
- Body weight and feed disappearance were recorded weekly.
- Data were analyzed using PROC MIXED of SAS (SAS Inst. Inc., Cary, NC).
 - SID lysine concentration: fixed factor / block: random factor
- The SID Lys requirements were estimated for linear and quadratic broken-line models by NLIN procedure of SAS.
- Statistical significance was set at $P < 0.05$.

CONCLUSIONS

- The SID lysine requirements for optimal growth performance of 7- to 15-kg weanling pigs based on linear and quadratic broken-line models were 1.27 and 1.38% for average daily gain and 1.36 and 1.46% for gain to feed ratio, respectively, thus, giving an overall average value of 1.37% which is similar to the SID lysine requirement (1.35%) for 7- to 11-kg weaning pigs suggested by NRC (2012).
- Utilization of the determined lysine requirement value could help minimize nitrogen excretion into the environment and mitigate feed cost.

RESULTS

Table 1. Effect of dietary standardized ileal digestible (SID) lysine on growth performance in weanling pigs¹

Item	SID lysine, %						SEM	P-value	
	1.00	1.16	1.32	1.48	1.64	1.80		Linear	Quadratic
Body weight, kg									
d 1	6.50	6.51	6.50	6.53	6.53	6.51	0.199	0.197	0.496
d 21	13.32	14.61	15.57	15.88	15.22	15.46	0.516	< 0.001	0.001
Average daily gain, g/day									
day 1 to 21	325	386	433	443	414	417	18.5	< 0.001	0.001
Average daily feed intake, g/day									
day 1 to 21	475	505	558	540	500	527	25.9	0.235	0.072
Gain to feed ratio, g/kg									
day 1 to 21	682	770	788	824	810	812	16.1	< 0.001	0.001

¹Each least squares mean represents eight observations. The lysine provided was feed-grade L-Lysine-HCl.

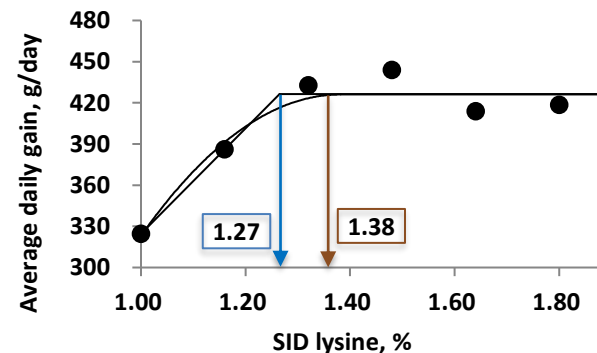


Figure 1. Standardized ileal digestible (SID) lysine requirement of 7 to 15 kg weanling pigs for average daily gain

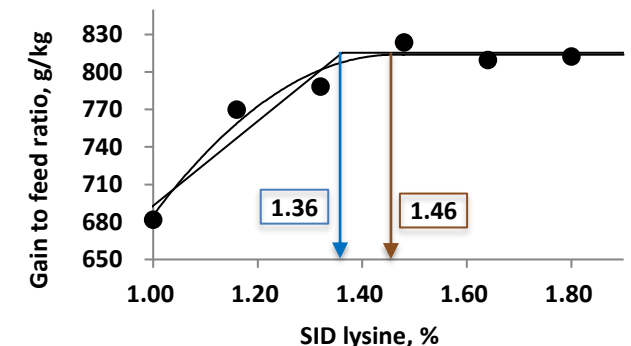


Figure 2. Standardized ileal digestible (SID) lysine requirement of 7 to 15 kg weanling pigs for gain to feed ratio