

PIC® Nutrition Update

February 2016

▶▶▶▶ Tryptophan:Lysine ratio requirement for nursery and finishing pigs

Tryptophan (Trp) is an essential amino acid that has a large impact on feed intake regulation by manipulation of metabolic pathways. Pigs fed diets deficient in tryptophan show reduced performance, especially due to reduced feed intake. L-Tryptophan, in general, became economical in swine diets due to the increased availability and reduced costs of feed-grade amino acids as replacement of intact proteins (i.e., soybean meal).

Recent studies suggest requirement estimates that range from 16.5 to 23.5% Standardized Ileal Digestible (SID) Trp to Lysine (Lys) ratio⁽¹⁻⁴⁾. A recent series of nine experiments, conducted with PIC 337 × 1050 in commercial research facilities, demonstrated that the optimum Trp to Lys ratio was greater than previously thought^(5,6). For nursery and finishing pigs, Trp requirement is greater for average daily gain (ADG) compared to feed efficiency (F/G).

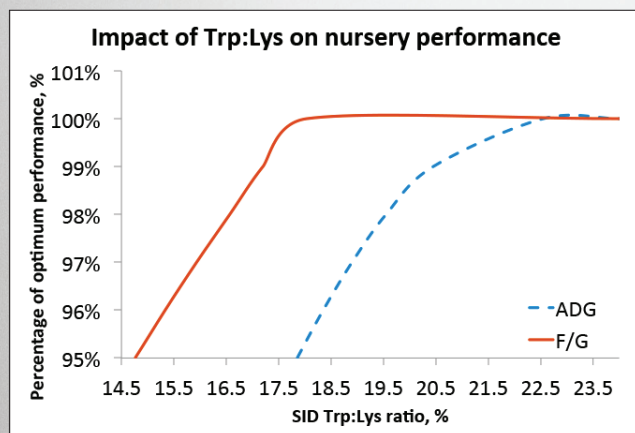


Figure 1. SID Trp:Lys ratio at different target performance levels as a percentage of optimum performance of nursery pigs.

In nursery pigs, diets formulated at 22% SID Trp:Lys are able to achieve 100% of optimum ADG and F/G (Figure 1). However, diets formulated at 19% are able to reach 98% of optimum ADG.

In turn, for finishing pigs, diets formulated at 18% SID Trp:Lys are able to reach 100% of optimum F/G and 96% of optimum ADG (Figure 2).

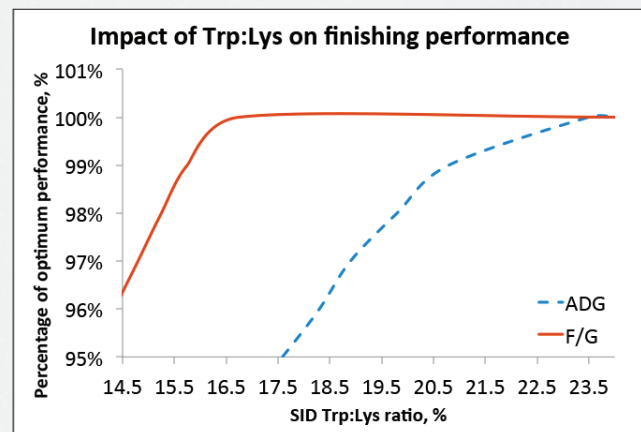


Figure 2. SID Trp:Lys ratio at different target performance levels as a percentage of optimum performance of finishing pigs.

The specific Trp:Lys level to be used will depend on the market scenario. However, economic models in multiple market scenarios suggest that there is a great reduction in the economic risk when formulating diets above 19% SID Trp:Lys for nursery and 18% SID Trp:Lys for finishing pigs. Therefore, the current recommendation is that diets should be formulated at least 19% SID Trp:Lys for nursery pigs and 18% SID Trp:Lys for finishing pigs.



Tryptophan: Lysine ratio requirement for nursery and finishing pigs (cont.)

References

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