

## Phase-Feeding: Do Fewer Phases Compromise Growth Performance in Grow-Finish?

Mariana Menegat, Steve Dritz, Mike Tokach, Jason Woodworth, Joel DeRouchey, Bob Goodband  
Kansas State University

### Key Points

- Fewer dietary phases, i.e. from 4 to 3 or 2 phases, with lysine levels set close to the requirements does not compromise growth performance of grow-finish pigs.

### Background

Phase-feeding is the strategy of feeding multiple diets during the grow-finish period to closely meet the changing nutrient requirements of pigs<sup>1</sup>. However, in practice, the within-lot and between-lot variation in pig weight, growth rate, and feed intake represents a challenge for precise multi-phase feeding strategies<sup>2,3,4</sup>. Moreover, the manufacture, delivery, and storage logistics for multiple dietary phases are often not feasible in production systems.

### Objectives

Our objective was to evaluate in a series of commercial research trials whether simplification of phase-feeding strategies to fewer phases is possible without compromising performance and carcass characteristics of grow-finish pigs.

### Material and Methods

Four trials were conducted using 1,100 to 1,188 pigs each (PIC 359 x 1050) with 25 to 27 mixed-gender pigs per pen from approximately 27 to 127 kg body weight (BW). Different phase-feeding strategies were used in each trial with treatments based on a combination of three lysine (Lys) specifications at 96, 98, or 100% of estimated requirements<sup>5</sup> and four phase-feeding strategies with 1, 2, 3, or 4 dietary phases (Figure 1).

### Results

A single-phase feeding strategy reduced ( $P < 0.05$ ) overall growth performance, live BW, and hot carcass weight (HCW) compared to multi-phase feeding strategies with Lys specifications at 98% or 100% of estimated requirements. Multi-phase feeding strategies with 2, 3 or 4 phases led to similar ( $P > 0.05$ ) overall growth rate, live BW, and HCW of grow-finish pigs with Lys specifications at 98% or 100% of estimated requirements. In a 4-phase feeding strategy, Lys specifications at 96% of estimated requirements reduced ( $P < 0.05$ ) overall growth performance compared to feeding strategies with Lys at 100% of estimated requirements, unless Lys specifications were increased to 100% of estimated requirements in the late finishing phase. Compensatory growth was observed on pigs fed 1, 2, or 3-phase feeding strategies or feeding strategies with Lys below the requirements in the early grow-finish phase, as evidenced by improved growth performance driven by improved ( $P < 0.05$ ) feed efficiency in the period following low Lys levels. For carcass characteristics, there was no evidence ( $P > 0.10$ ) for differences in carcass yield, backfat, loin depth, or lean percentage across feeding strategies in any of the trials.

### Conclusions

Phase-feeding strategies provide performance advantages over feeding a single dietary phase throughout the grow-finish period. Simplification of feeding strategies from 4 to 3 or 2 dietary phases with Lys specifications at 98% to 100% of estimated requirements does not compromise overall growth performance and carcass characteristics of grow-finish pigs from 27 to 127 kg BW. However, phase-feeding programs with fewer dietary phases and Lys set slightly below the requirements require more accurate estimates of initial BW and feed intake to avoid severe restrictions in growth rate. Simplification of phase-feeding strategies seems to elicit compensatory growth. Thus, it seems more critical to set Lys closely to the estimated requirements in phase-feeding strategies with fewer dietary phases to allow for compensatory growth to occur.

### References

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Figure 1. Representation of number of dietary phases relative to the Lys requirement curve.

