Summary

Over-supplementation of diets with phosphorus (P) to maximize pig performance results in excess P in manure, which could have an impact on environment if not managed properly. A better understanding of P needs might enable diet formulation closer to requirements, and thereby reduce the amount of P in manure. The digestible P requirement of grower pigs was 6.2 g/d at a protein deposition range of 153 to 180 g/d. The daily requirement of P might be different for pigs with protein deposition outside this range.

Introduction

Nutrient management is becoming important with the increased density of the pork industry. Excess P in feeds ends up in manure and could impact the environment if not managed properly. Reducing the amount of P in manure requires knowledge of P requirements. Five levels of dietary P (0.4 to 0.84%) were used to determine P requirements of grower pigs.

Experimental Procedures

Average daily gain and feed efficiency were monitored for five weeks. Amounts of P in feed, feces, urine, and blood plasma were determined in a metabolism study. Regression analysis was used to develop relations between P intake and performance and metabolism variables to determine P requirements.

Results and Discussion

Increased amount of P in feeds resulted in increased P intake, ADG, feed intake and feed efficiency, but also in increased amount of P excreted in urine and faeces (Figure 1). The ADG and feed efficiency ranged from 0.73 to 0.91 kg/d and 0.41 to 0.47, respectively, at a protein deposition rate of 153 to 180 g/d. The digestible P requirement was 6.2 g/d based on ADG, but higher based on bone phosphorus (Figure 2). The P requirement was higher than reported in NRC (1998), perhaps due to a high protein deposition rate.

Implications

Reducing the amount of P in feeds can reduce the amount of P in manure. This strategy involves feeding of P closer to requirements, and eliminates the cost of excess P added to feeds, and thus, increases the net income. An improvement in P utilization is economically beneficial to pork producers, and is also important for sustainable swine production.

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