

PHOSPHORUS REQUIREMENT OF GROWER PIGS

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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.

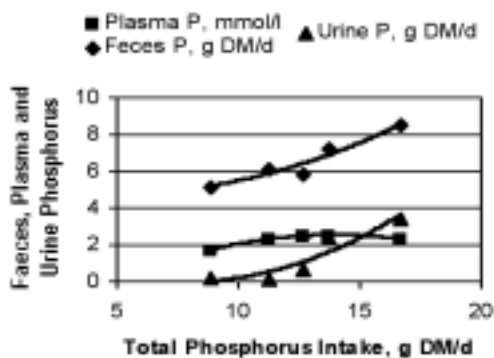


Figure 1: Phosphorus in feces, urine and plasma

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.

Acknowledgements

Strategic funding provided by SaskPork, Alberta Pork, Manitoba Pork and Saskatchewan Agriculture and Food Development Fund. The presented work was supported financially by the Alberta Agricultural Research Institute

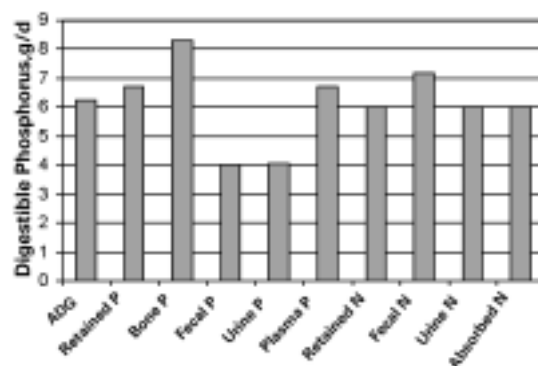


Figure 2: Digestible phosphorus requirements; b phosphorus and nitrogen metabolism

Feeding phosphorus closer to requirement results in lower costs to environment and pocket book.