# Effects of Fibre in Cereal Grains on Performance of Weaned Pigs

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## Summary

Variation in voluntary feed intake and nutrient digestibility restricts use and efficiency of use of Canadian feed ingredients. The weaned pig was used to characterize differences in voluntary feed intake and nutrient utilization in wheat and barley samples that differed in fibre content. Voluntary feed intake, average daily gain, and energy digestibility differed among wheat and barley diets, and correlated negatively with fibre for wheat diets.

### Introduction

Variation in nutritional value of feed ingredients may be related to nutrient content or voluntary feed intake. Fibre content limits digestibility and availability of nutrients, and negatively affects use of Canadian ingredients in the pork industry. An accurate assessment of feed ingredients may lead to a better utilization of nutrients, and lower formulation cost.

# **Experimental Procedures**

Four wheat and four barley diets were each fed to six pens for three weeks to determine performance of weaned pigs. Four corn diets (control + three levels of purified fibre) were used as a benchmark for variation in fibre content. Diets were formulated to 3.16 g digestible lysine/Mcal DE. Differences in digestible nutrient content were compensated for with purified energy and amino acid ingredients. feces were collected and actual DE content was measured (Figure 1). Regression analysis determined relationships between fibre content in feed and pig performance.

# **Results and Discussion**

Diets ranged from 4.2 to 7.6% in ADF and 11.7 to 21.4% in NDF with barley > wheat > corn. The DE content of diets differed (P < 0.05) and was consistently overestimated, except for wheat (Figure 1). Overall, voluntary feed intake ranged from 0.67 to

# Increased fibre enhances feed intake with barley, but decreases in wheat diets.

0.96 kg/d, ADG ranged from 0.30 to 0.57 kg/d, and feed efficiency ranged from 0.45 to 0.59. Inclusion of purified fibre in corn diets reduced ADG from 0.47 to 0.30 kg/d, and feed intake from 0.81 to 0.67 kg/d. Pig performance differed among diets and within each of the three diet categories. Performance correlated negatively with fibre for corn and wheat diets, but positively for barley diets (Figure 2). Variation in performance and energy digestibility may be related to changes in fibre content of cereals or differences between actual and formulated DE.

## Implications

Feed ingredients differ in nutritional value. Voluntary feed intake of weaned pigs fed wheat diets decreased while voluntary feed intake of pigs fed barley diets increased with increasing fibre content. A complete description of negative effects of fibre will allow development of specific treatments to improve performance.

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*Figure 2* Effect of increasing ADF content in corn, wheat and barley diets on performance of weaned pigs (different superscripts, P < 0.05).