

Chemical and physical characteristics of grains related to variability in energy and amino acid availability in pigs: a review

Robert J. van Barneveld

Barneveld Nutrition Pty Ltd/BECAN Consulting Group, Level 1, Suite 11, Plaza Chambers, 3-15 Dennis Street, Springwood QLD 4127
email: rob@barneveld.com.au

Abstract

To optimise pig production, there is a need to define the variation in the available energy and amino acid content of feed grains and to understand those factors that influence nutritive value. Differences of up to 3.7 MJ/kg dry matter (DM) in digestible energy (DE) content were observed following a review of data for more than 70 cultivars of wheat. Similarly, analysis of data for more than 125 cultivars of barley revealed a range in DE estimates from 11.7 to 16.0 MJ/kg DM. Differences of this magnitude are economically significant to pig producers. Cultivar has a minimal effect on the availability of energy and amino acids in cereals, although this variation is larger in legumes, particularly lupins. The cultural conditions and agronomic practices (e.g. fertiliser rate) have a greater influence on amino acid and energy availability than the growing region or the growing year. Many factors are shown to influence the availability of energy and amino acids in feed grains, including protein source and type, starch characteristics, fat source and type, non-starch polysaccharide components, and anti-nutritional factors. Although all of these factors can influence the nutritive value of a feed grain for pigs in some way, the availability of energy and amino acids will ultimately depend on the particular combination of these components in a grain and how they behave in the presence of nutrients from other feed ingredients. For this reason, an understanding of the factors that influence the nutritive value of feed grains is more likely to eventuate when multiple regressions of grain components are made against the availability of energy and amino acids.

Full Text

<http://www.publish.csiro.au/nid/40/paper/AR98160.htm>