An assessment by in vivo methods of grain quality for ruminants

J. P. Hogan\textsuperscript{A} and P. C. Flinn\textsuperscript{B}

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\textsuperscript{A}81 Boscombe Rd, Brookfield, Qld 4069, Australia.
\textsuperscript{B}Kelspec Services Pty Ltd, PO Box 31, Dunkeld, Vic 3294, Australia.
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Abstract

For the purpose of this review, grain quality refers to the efficiency with which a grain supports growth in cattle fed diets which contain grain as a major component. Grains are fed as concentrated sources of energy. Their quality depends on the energy content of the grain, the amount eaten, and the efficiency, both of extraction of nutrients from the diet and of conversion of nutrients to weight gain. This paper briefly describes the fermentative and digestive processes involved in releasing energy from grain and in ensuring an adequate supply of other essential nutrients to the animal. Methods are then described for measuring net energy storage, nutrient release in various sections of the tract, and storage of energy and protein both directly and indirectly in studies of growth. It is recommended that in vivo assessment of the energy content of grains for ruminants be conducted in stages. Digestibility in the whole tract should be used to rank a range of grains, then comparisons made between grains using growth studies. Discrepancies arising from these assessments should then be investigated using more detailed measurements, particularly starch digestion in the stomach and intestines.

Full Text