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## Rye (*Secale cereale*) in animal nutrition

Zuzana Formelova, Maria Chrenkova, Maria Polacikova and Matus Rajsiky

National Agricultural and Food Centre, Slovak Republic

The majority of livestock are fed diets based on wheat, barley and corn. Rye is rarely used in the forage industry, although it is a quality cereal (due to the high nutritional value of its proteins). Rye contains higher levels of anti-nutritional factors and soluble non-starch polysaccharides compared to wheat. Adding a suitable enzyme to the diet (for poultry and pigs) almost always helps reduce the negative effects of pentosans in rye. The objective of the study was to determine the nutritional value of rye. Their nutrient characteristics, including dry matter, crude protein, crude fat, ash and gross energy, starch content and composition and concentrations of non-starch polysaccharides, protein fractions and amino acids, were determined. Dry cows with large rumen and duodenal cannulas were used for determination of nutrient degradability (*in sacco* method) and for intestinal digestibility (mobile bag method). In the samples of rye, we determined the average content of crude protein=122 g.kg<sup>-1</sup> DM; crude fiber=24.8 g.kg<sup>-1</sup> DM; average content of albumins+globulins=39%, prolamins=24%, glutelins=17.7% and lysine=0.33 g.kg<sup>-1</sup> DM. We determined in rye=156 g.kg<sup>-1</sup> DM total non-starch polysaccharides, total pentosans=85.5 g.kg<sup>-1</sup> DM. Effective degradability of organic matter was 80.2% and crude protein was degraded in rumen to 79.8% on average. Intestinal digestibility of crude protein reached the value 66.6%. Rye represents a cereal with high energy and nutritive value and can be incorporated into feed mixtures. With feeding higher doses, the nutrition-physiological specifics of individual animal species and categories must be kept.

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### Biography

Zuzana Formelova is a Scientist in the Institute for Nutrition, Research Institute for Animal Production Nitra, National Agricultural and Food Centre. Her work is focused on the problems of utilization of nutrients, nutrient rumen degradability, intestinal digestibility of nutrients by *in vivo*, *in sacco* and *in vitro* methods. She also studies the use of genetically modified and non-traditional feeds in animal nutrition and their effects on animal health and quality of animal products. She is involved in several national projects related to feed quality, animal nutrition, metabolism and production.

formelova@vuzv.sk

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