

Single kernel seed sorter (BoMill TriQ) and its potential effect on processing and in vitro digestibility

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BoMill TriQ is a seed sorter that uses near infrared transmittance (NIR) to sort individual kernels of wheat, barley or durum based on crude protein (CP). This could permit the production of grain samples with a more homogenous protein content, which is important for some milling or baking applications. Currently, nutrient values are based on sample averages, ignoring variability among kernels entering the feed.

The single kernel BoMill TriQ seed sorter is unique in that it has the capacity to be used in a commercial setting while other technologies can only be used in a laboratory setting. This technology is relatively new to the industry and it is

not known how fractions will react under different processing conditions.

A project therefore was conducted to assess the BoMill TriQ ability to sort individual kernels of wheat and barley into discreet fractions based on CP and whether these fractions require different processing. The first experiment determined if fractions obtained by using NIR seed sorting technology differed in kernel physical size or color. We found that the kernel fractions obtained did have different average color, but not physical characteristics. This lack of differences could indicate that processing, such as grinding, is not likely to be affected by the physical traits.

The second experiment used five sources of wheat and barley. Each of these source were fractionated by the BoMill TriQ so the following fractions can be used for grinding (unsorted, low crude protein and high crude protein). Each of the fractions were ground using either a hammer mill or a roller mill set to produce four different particle size. An in vitro digestibility system, designed to simulate digestion in the gastro-intestinal tract, was used to estimate if the rate of digestion of the fractions differed between grind-



ers and degree of grinding. Laboratory analysis of these samples is ongoing.

Acknowledgments

These experiments, supported by ACIDF (Alberta Crop Industry Development Fund) were conducted at the Canadian Feed Resource Centre in North Battleford, Sask., the University of Saskatchewan (U of S) and at the Prairie Swine Centre in Saskatoon. The data will be of interest to those involved in both the grain and livestock industries. The BoMill TriQ seed sorter was purchased by funding awarded to Dr. Tom Scott through the Saskatchewan Ministry of Agriculture, Agriculture Development Fund, Western Economic Diversification Canada, Alberta Crop Industry Development Fund and the Canadian International Grains Institute.

Biography

Khalil Sahtout is a student doing his PhD in the Department of Animal and Poultry Science at the U of S. He has a MSc from the U of S specializing in nutritional modeling. Currently doing his PhD in beef and swine feed processing. In his project he is currently also involved in grain cleaning and sorting, feed processing, and livestock nutrition.

His first BSc was obtained from Monash University with an honors degree specializing in the purification and isolation of antimicrobial work. His second BSc degree was obtained from the U of S specialization in animal nutrition. The MSc was obtained at the U of S specialization in animal nutrition. In his current role he works with species of livestock including beef, dairy, chicken and swine. His research objectives are to improve the consistency as well as quality of the various species grown in Western Canada. ■



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