

**Title** Near-infrared prediction of milling and baking parameters of wheat varieties  
**Author** Ondřej Jirsa, Marie Hrušková and Ivan Švec  
**Citation** Journal of Food Engineering, Volume 87, Issue 1, July 2008, Pages 21-25  
**Keywords** Wheat; Dough; Rheology; NIR; Spectroscopy

#### **Abstract**

In wheat and flour processing many traits have to be investigated for quality control. However, conventional methods available for technological quality assessment of wheat grain and flour are generally tedious and/or requiring expensive equipment. To overcome these drawbacks in common use, alternative methods using spectroscopy have been developed. The objective of this study was to utilize near-infrared reflectance spectroscopy (NIR) to analysis of milling and baking parameters: flour extraction, protein content, Zeleny sedimentation, deformation energy, gas volume and baking volume. Samples including Czech and international varieties were collected from a field experiments (crop years 2002–2005) and laboratory milled on Chopin CD1. Spectra were acquired on a scanning monochromator NIRSystems 6500 in the range from 400 to 2500 nm. Calibration equations were obtained both with classical and modified partial least square (PLS) regression analysis of conventional laboratory analysis values on 168 selected NIR spectra using WinISI computer software. Those were externally validated with additional samples from commercial wheats. Prediction of flour extraction, Zeleny sedimentation and protein content in particular gave a very good accuracy. The results indicate that NIRS can also determine some rheological traits (deformation energy, gas volume and specific loaf volume) at least with a screening performance.