

Perten Instruments Application Note

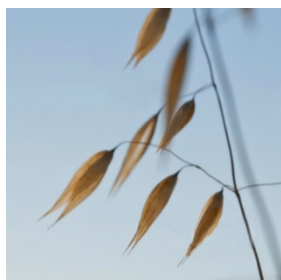
DA 7250 Analysis of Oats

Analysis of Oats using the DA 7250 Analyzer

Introduction

Whenever oats are used as a raw material it is important to have knowledge of its composition and properties. In feed milling and other processing, the raw material will affect the process efficiency as well as the quality of the final product.

The Near Infrared Reflectance (NIR) technology is highly suitable for this purpose. NIR is an indirect analytical method, where the relationship between reference values and the spectra of the samples are related using multivariate calibrations. Instead of the time consuming and labor intensive traditional wet chemistry methods, with NIR the multi component analysis is done in seconds. The latest technology and software developments allows the benefits to be even further exploited with easy to use instruments and web-based instrument networking.



DA 7250 NIR Analyzer

The DA 7250 is a Near Infrared Reflectance (NIR) instrument designed for optimal use on agricultural products. Using novel Diode Array technology, the DA 7250 is unique in its measurement speed, versatility and accuracy.



The instrument is handled by an intuitive touch screen interface and in less than 10 seconds samples are measured in flexible open dishes. Most sample types can be measured as they are without any preparation or as an alternative be grinded and measured as powder or coarse meal.

Method

More than 500 samples of oats were analyzed on multiple DA 7250 instruments. The samples were analyzed as is, with no grinding or other sample preparation. Reference analyses were performed for moisture, protein, ash, NDF, crude fiber and fat contents, expressing results on dry basis. NIR calibrations to model the relationships between spectra and wet chemistry results were developed by Perten Instruments using multivariate regression and scatter correcting spectra pre-treatments.



Results and Discussion

The DA 7250 calibration results for oats show high correlation and similar accuracy as the typical difference between two different reference labs on the same samples. Statistics for the respective parameters are presented in the table 1 and calibration graphs for moisture and protein are displayed on second page.

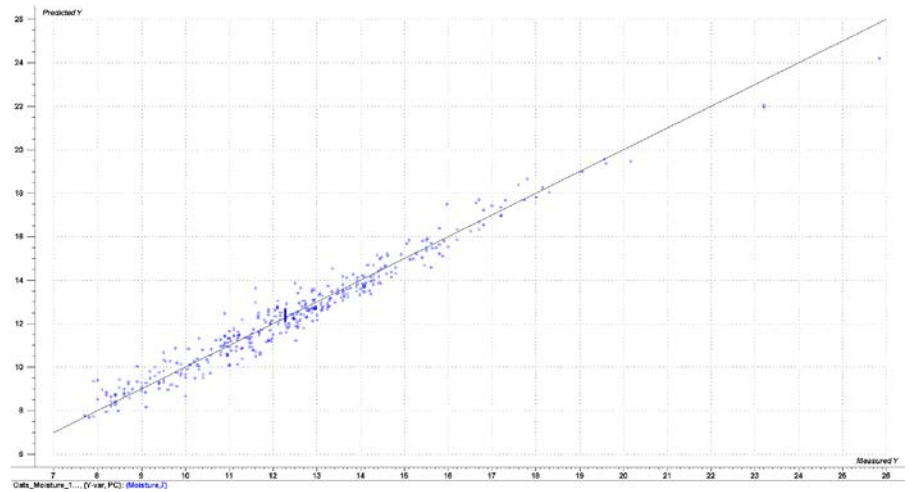
Parameter	Range %	N	R
Moisture	7.7 – 25.8	500+	0.97
Protein % dry base	8.4 – 16.5	300+	0.94
Ash % dry base	1.2 – 10.7	200+	0.79
NDF % dry base	21.4 – 36.2	<100	0.79
Crude fiber % dry base	7.9 – 21	100+	0.78
Fat % dry base	2 – 6.3	100+	0.80

Table 1

In summary it is concluded that the DA 7250 accurately can analyze moisture, protein, ash, NDF, crude fiber and fat in whole oats. Results are expressed on dry base but can also automatically be converted to be presented as is or on fixed moisture basis.

Moisture

The moisture results are very accurate across the calibration range. The DA 7250 is an excellent tool for rapid and accurate determination of moisture in oats.



Protein

The protein results are very accurate across the entire calibration range.

