Analysis of Moisture, Protein, Fat and Ash in Wet Petfood using the DA 7250

Introduction

When producing petfood it is critical to maintain product quality at the same time as production costs are controlled. This requires rapid and accurate analysis of key quality parameters such as moisture, protein and fat.

The Near Infrared Reflectance (NIR) technique is particularly suited for measurement of these parameters, but in the past instrument limitations have not permitted users to reap the full benefits of NIR. Sample preparation requirements such as blending with a food processor or being required to use special cups made analyses laborious, time consuming and error-prone.

DA 7250 NIR Analyzer

The DA 7250 is a proven full-spectrum NIR instrument designed for use in the petfood industry. Using novel diode array technology it performs a multi-component analysis in only 6 seconds with no sample grinding or sample preparation required.

During this time a large number of full spectra are collected and averaged. As the sample is analyzed in an open dish, the problems associated with sample cups are avoided and operator influence on results is minimal.

Experimental

More than 1500 samples of wet petfood from a number of different manufactureres were analyzed in multiple DA 7250 instruments.

Calibrations were developed by Perten Instruments using Partial Least Squares (PLS) regression. SNV and Savitsky-Golay first derivate were used as a data pre-treatment to improve the calibration models.

Results and discussion

The DA 7250 results are very accurate when compared to the results from the reference methods. Statistics for the respective parameters are presented in the table below and graphs are displayed on page 2.

Parameter	Range	Samples	R
Moisture	66.7-84.5%	1490+	0.905
Protein	3.9-16.0%	1510+	0.896
Fat	1.6-15.8%	1470+	0.949
Ash	0.9-3.7%	570+	0.686

The differences between the DA 7250 and the reference method are of the same magnitude as typical differences between two different reference labs. The DA 7250 is more precise than the reference methods meaning that replicate analyses are much more repeatable and representative.

In summary it is concluded that the DA 7250 can analyze wet petfood for the aforementioned constituents.

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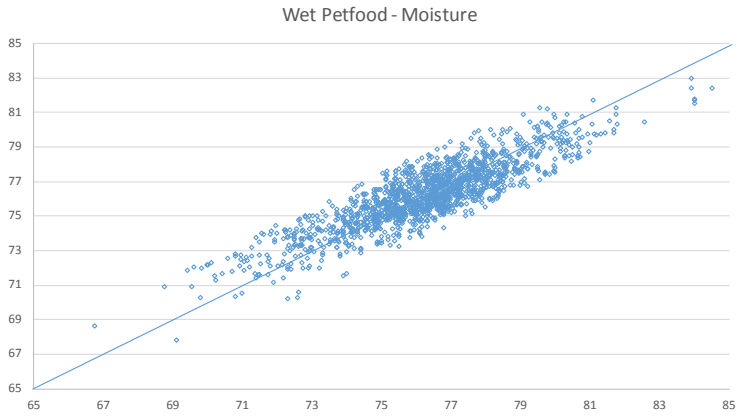
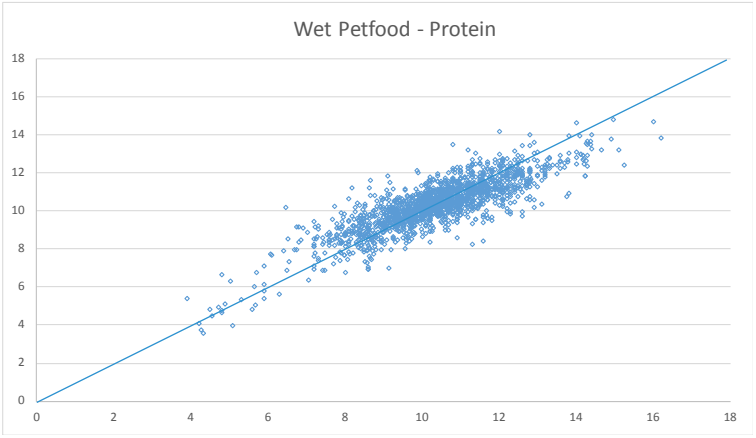
Moisture

The samples covered a range from 66-85% moisture. The performance is very good, making the DA 7250 a very useful tool in quality control of wet petfoods.



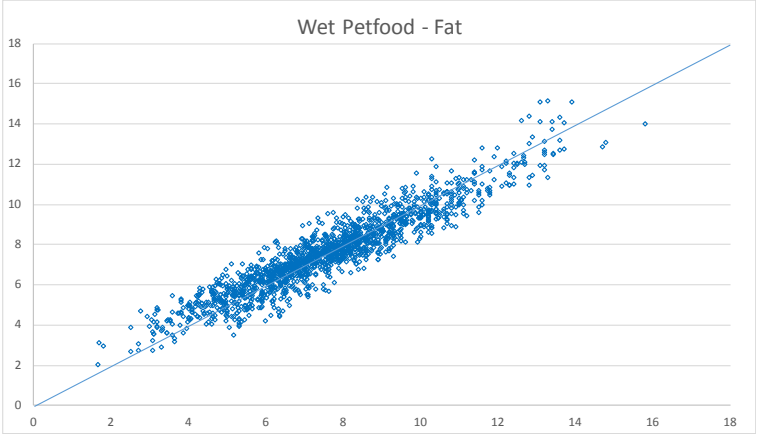
Protein

The protein content must be kept within relatively tight limits to keep the balance between costs and quality. The accuracy of the DA 7250 makes it possible to quickly make adjustments if necessary.



Fat

Fat can be measured across a very wide range, and the DA 7250 gives accurate readings regardless of fat level in the petfoods.



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