

Introduction:

The importance of the growing soy market cannot be underestimated. Given the rise in soy-based products, a quick and affordable means of determining the protein and fat content of these products is required. This study was undertaken to demonstrate the feasibility of measuring protein and fat in soymilk. The NIT-38 Dairy Analyser was used for the purpose of this study. A calibration for protein and fat in soymilk was developed.

Procedure:

16 samples of soymilk were placed in a standard liquid cell with a pathlength of 10mm. The samples were then scanned over the wavelength range of 720nm to 1100nm collecting 10 scans per sample. The samples were then repacked and the scanning process repeated. The spectra were uploaded into NTAS (NIR Technology Analysis Software) and Partial Least Squares Regression (PLS) was used to develop a calibration for Fat and Protein.

Results:

Figure 1, below, shows the NIT spectra, over the wavelength range of 720nm to 1100nm, for the 16 samples of soymilk concentrate.

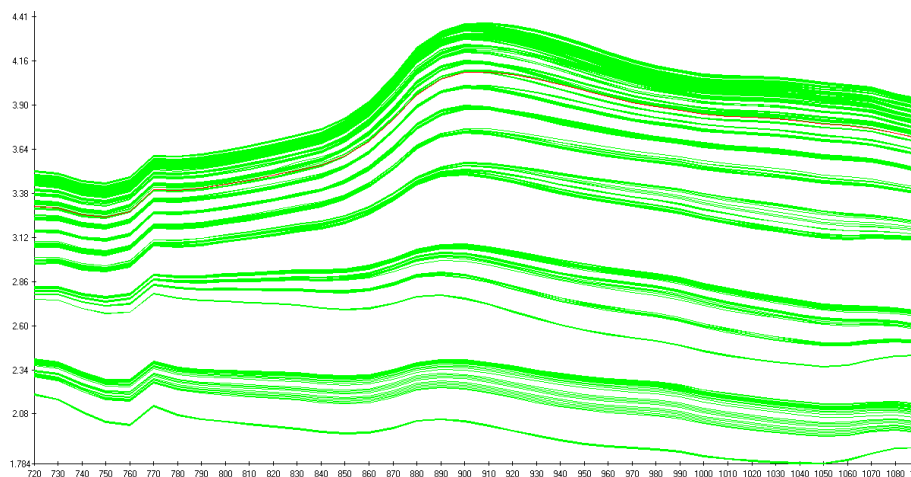


Figure 1: Plot of NIR Spectra for Soymilk concentrate.

Figure 2 shows the calibration statistics for the NIR Protein values versus the reference Protein value. The Standard Error of Prediction is 0.06% with a correlation (R^2) of 0.99.

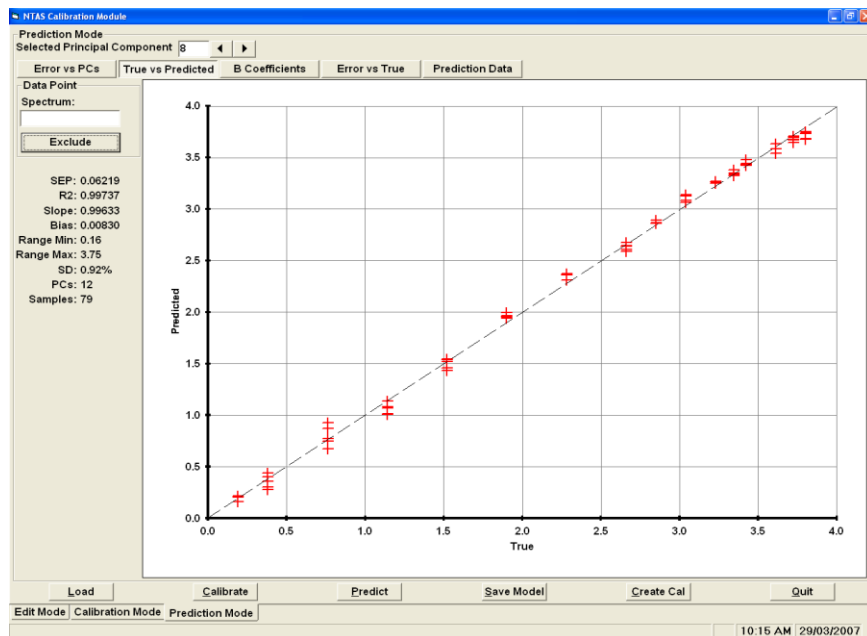


Figure 2: Plot NIR Predicted Protein value vs. Reference Protein value.

Figure 3 shows the calibration statistics for the NIR fat values versus the reference fat value. The Standard Error of Prediction is 0.04204 with a correlation (R^2) of 0.99.

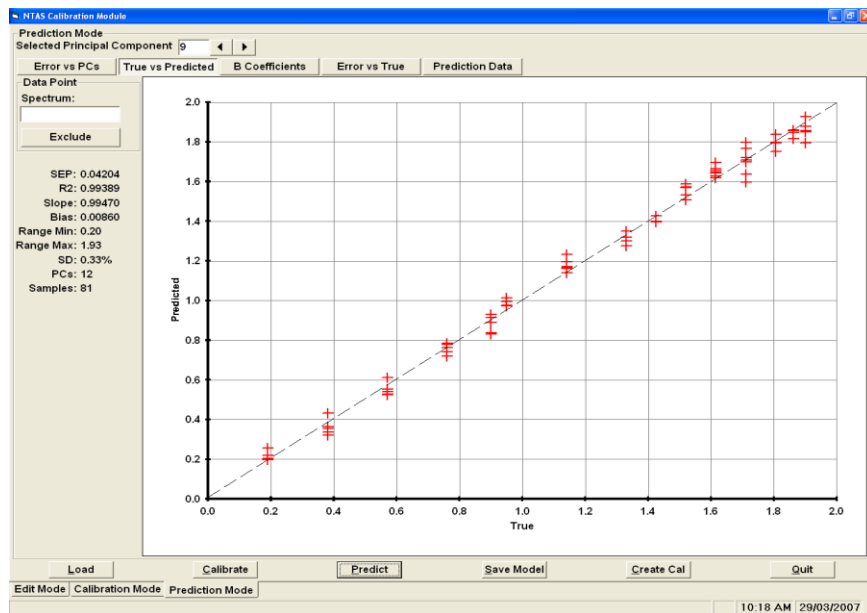


Figure 3: Plot NIR Predicted fat value vs. Reference fat values.

Conclusion:

It can be seen from the above details that the NIT-38 Dairy Analyser is capable of being used to analyse soymilk concentrate for protein and fat. Whilst the sample set is sufficient to develop a calibration for protein, it is still recommend that the sample set be increased to improve the robustness of the calibration, particularly towards the high ranges of the calibration.