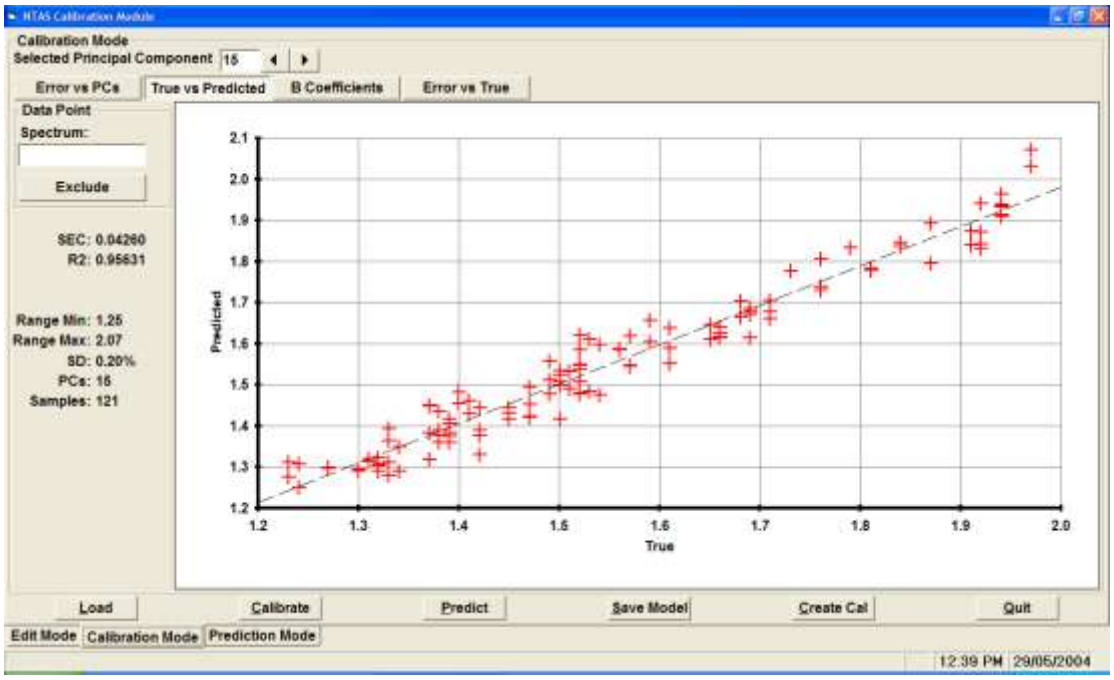
Application Note 35: Scottish Barley Calibration Study

Introduction:
The measurement of Barley for Nitrogen and Moisture is not a new application. This study was conducted to establish that the Cropscan 2000B could be calibrated for Nitrogen and Moisture in Scottish Barley used for malting purposes.

Description:
121 samples of barley grains were scanned on two Cropscan 2000B Whole Grain Analysers. Each sample was scanned using a 15mm pathlength grain cell, collecting 9 scans and repeating the process by repacking a fresh portion of the sample. The spectra were uploaded into NTAS (NIR Technology Australia Software) and Partial Least Squares Regression (PLS) was used to develop calibrations for Nitrogen, Moisture and Protein.

Results:

The plots below show the calibration statistics for Cropscan 2000B Serial Number 175.

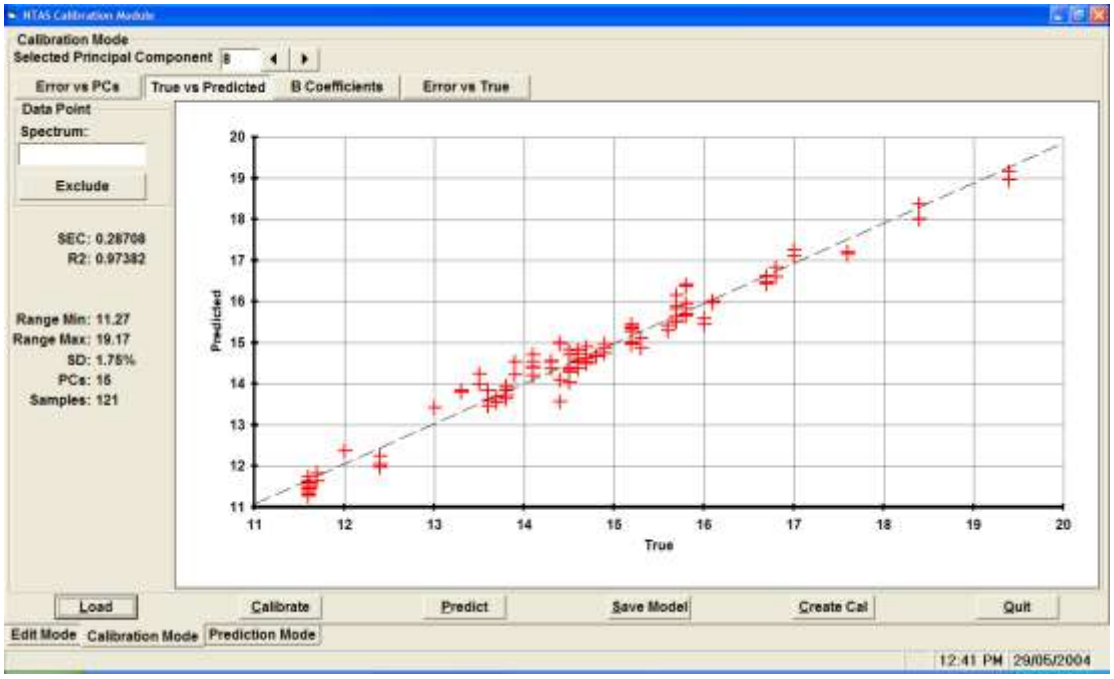


Plot NIR Predicted Nitrogen vs Ref Nitrogen

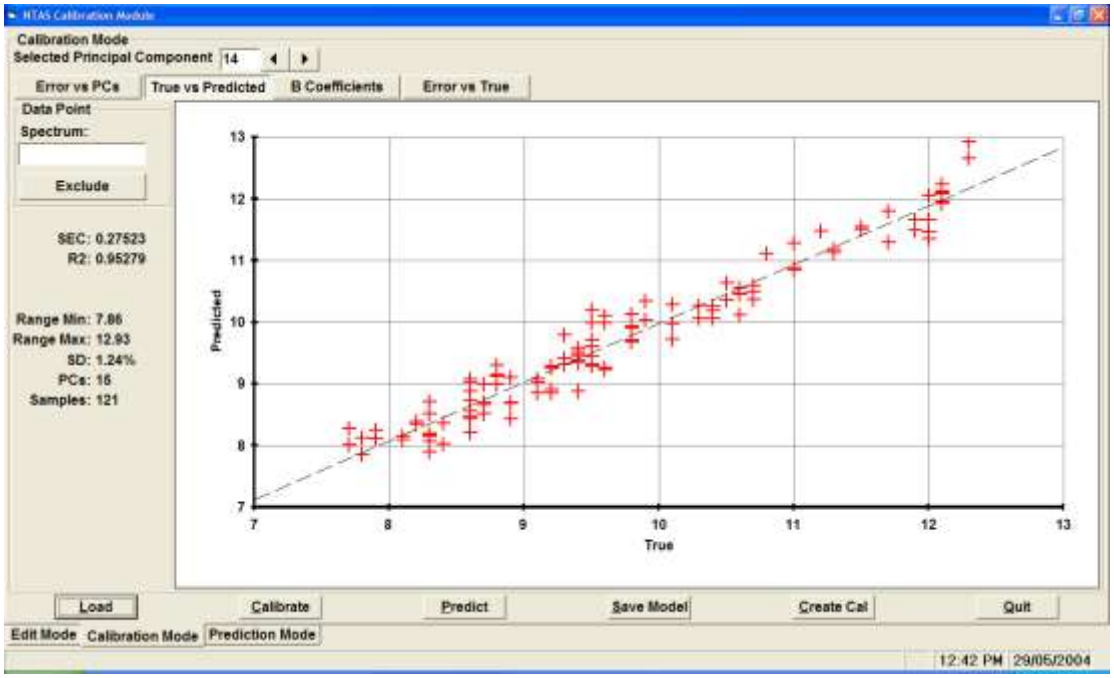
The Nitrogen and Protein data are the same except for the use of a conversion factor of 6.25. The correlation of 0.958 and SEC(Standard Error of Calibration) = 0.042 (N) and 0.27 (P), are considered to be acceptable. The number of B coefficients, ie, 14, is possibly high, however it similar models have been used for wheat and barley in other countries.

The calibration model for Moisture shows a correlation of 0.974 and SEC = 0.29%. This is considered to be acceptable.

Unfortunately there are no prediction samples available as yet. It is recommended that this calibration model be loaded into the instrument and more samples scanned so that a true prediction set can be obtained.



Plot NIR Predicted Moisture vs Ref Moisture



Plot NIR Predicted Protein vs Ref Protein

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