

Application Note 76: Calibration Trial on Fresh Corn for Moisture and Brix.



Introduction:

The instrument used was the NIT-38 with a 28mm sampling cell. Fresh corn was scanned from 5 different paddocks and different incoming truckloads from these paddocks. Two defrosted corn samples were also included in the set of 37 samples in total. The moisture reference method was microwave drying and brix analysis was carried out with a handheld digital refractometer. The scanned data was downloaded into NTAS software for calibration creation.

Moisture:

Figure 1 shows the calibration plot for moisture, which shows a reasonably good correlation coefficient and standard error. With more samples and a wider calibration range this may be improved further. Figure 2 was generated by predicting the same sample set against itself. Again the correlation coefficient and error were good. Figure 3 shows the true and predicted moisture values.

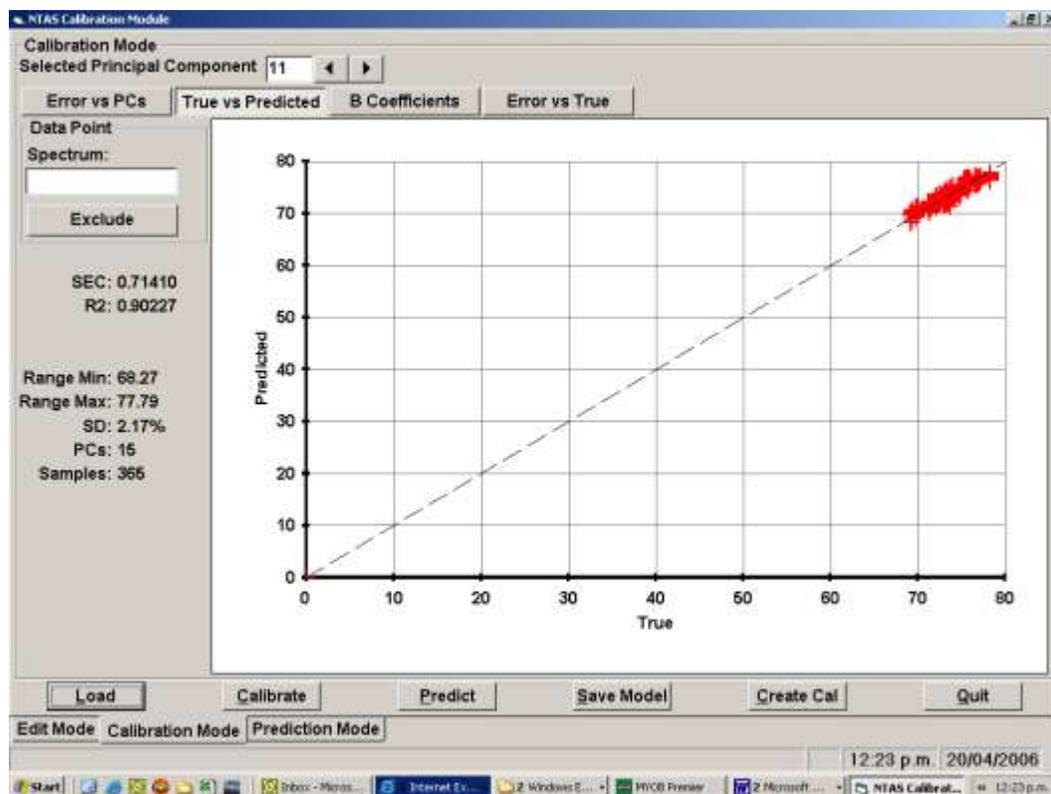


Figure 1: Moisture Calibration plot

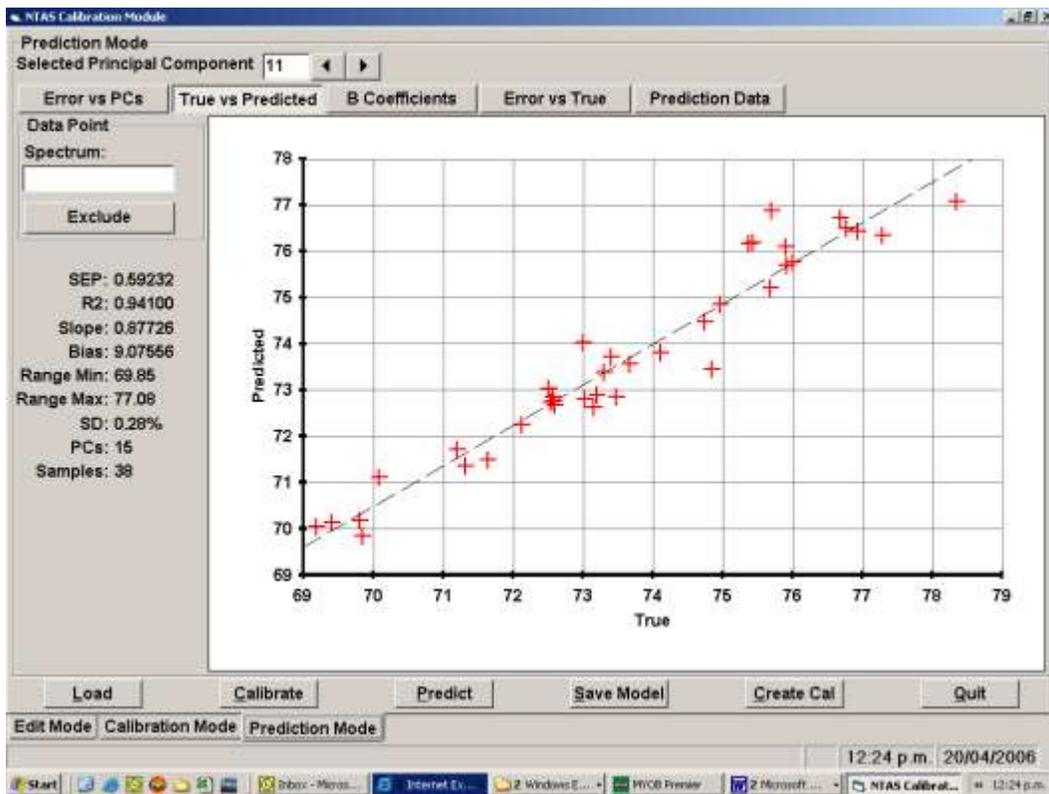


Figure 2: Moisture prediction plot

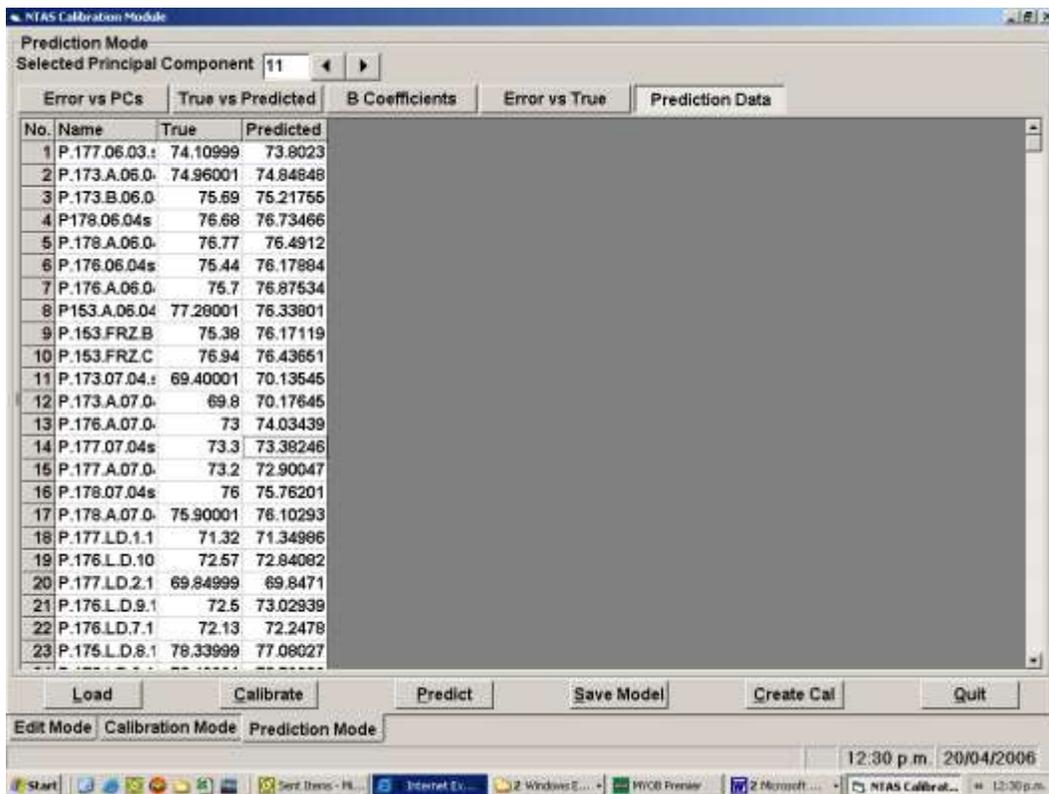


Figure 3: True versus predicted values for moisture

Brix

The Brix calibration included a few samples less as no data was available. The frozen samples from paddock 153 had given much lower brix refractometer readings, whereas the moisture reference values were in the same range as the fresh samples. The calibration plot in Figure 4 and the prediction plot (Figure 5) show a reasonably good correlations and errors.

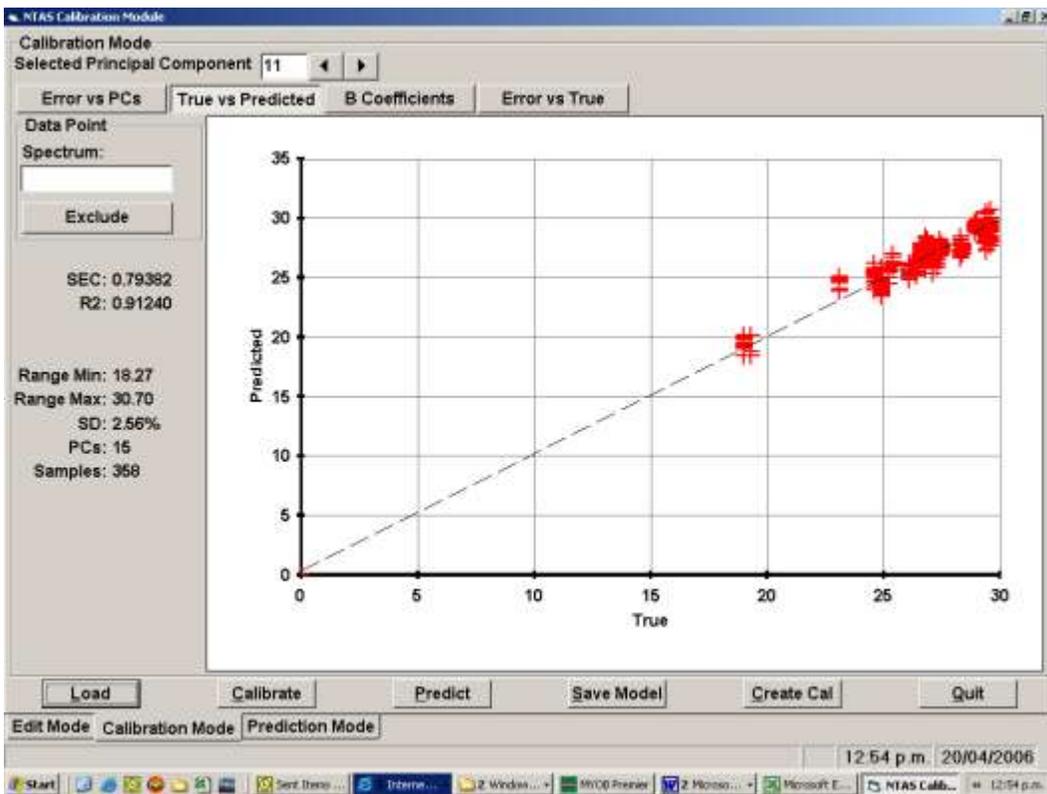


Figure 4: Calibration plot for Brix

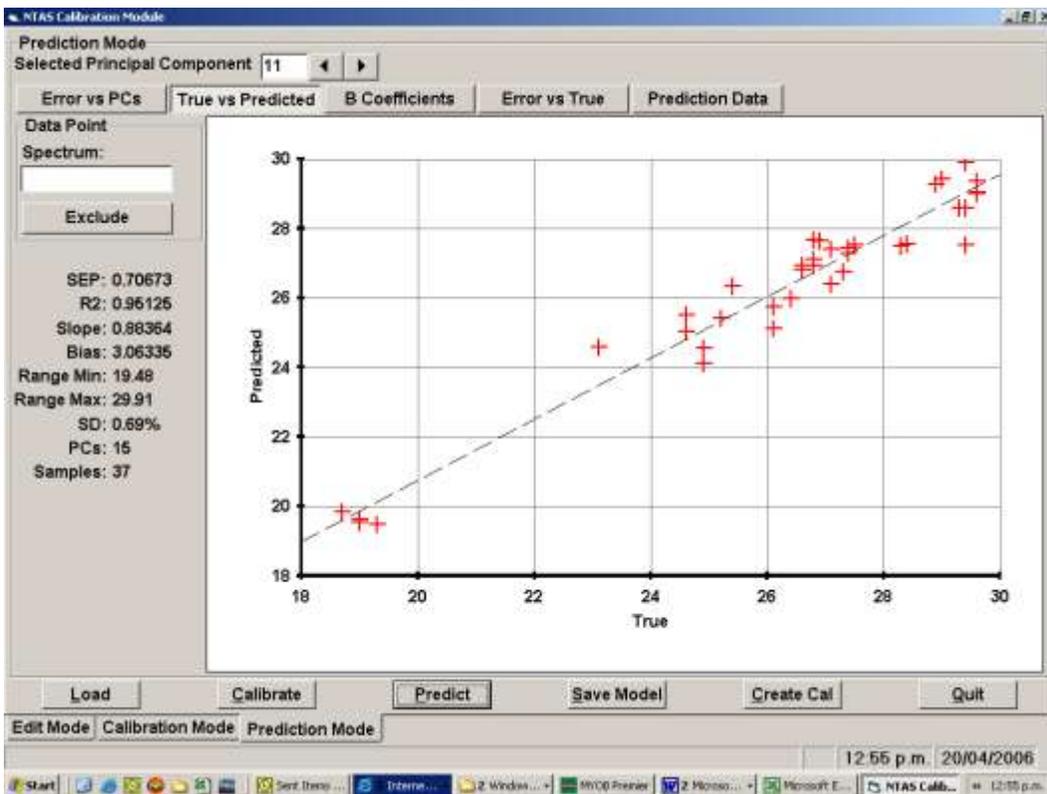


Figure 5: Prediction plot for Brix

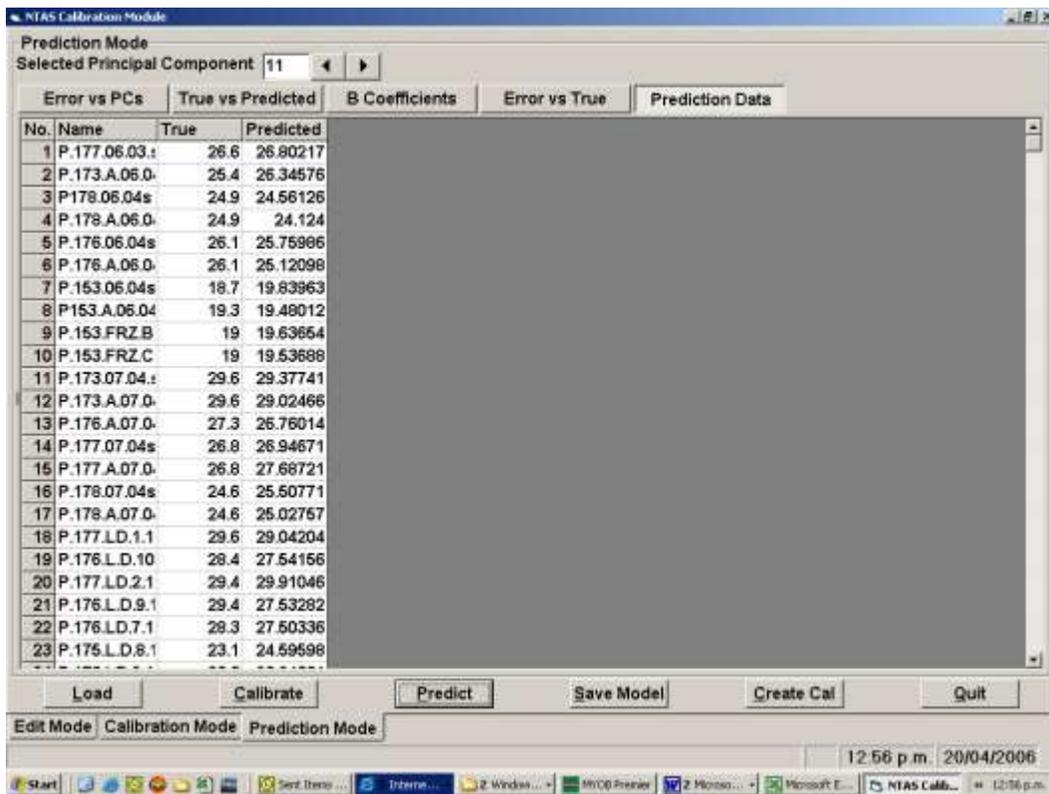


Figure 6: Prediction values for Brix

Conclusion:

This preliminary trial shows a very promising basis for developing a robust calibration for moisture and brix in fresh corn. As the generated data can already be used for calibration less the work for establishing the calibration will be reduced.