Introduction:

This note outlines the development procedure of a rice calibration using the Cropscan 2000B Whole Grain Analyser for Protein, Moisture and Amylose. The results are presented in terms of the predictive ability of the instrument on an independent sample set.
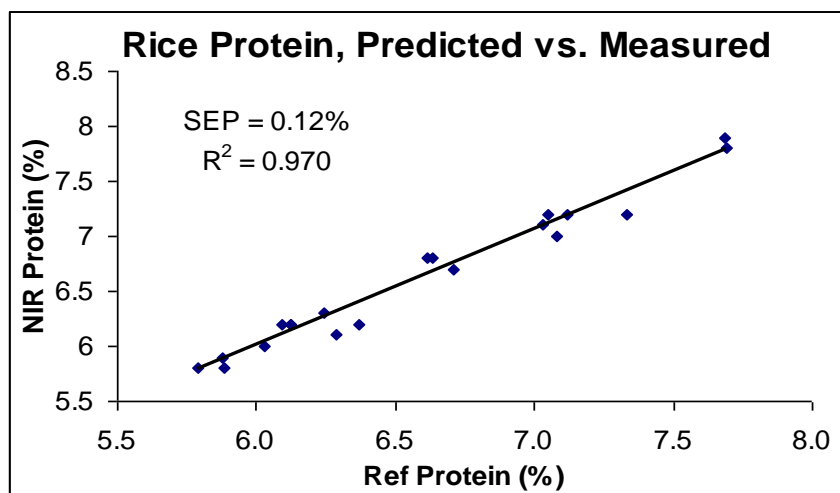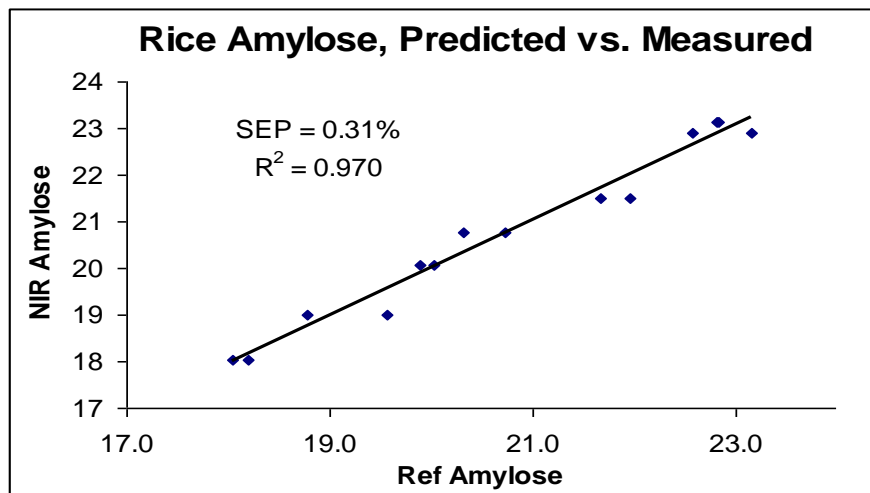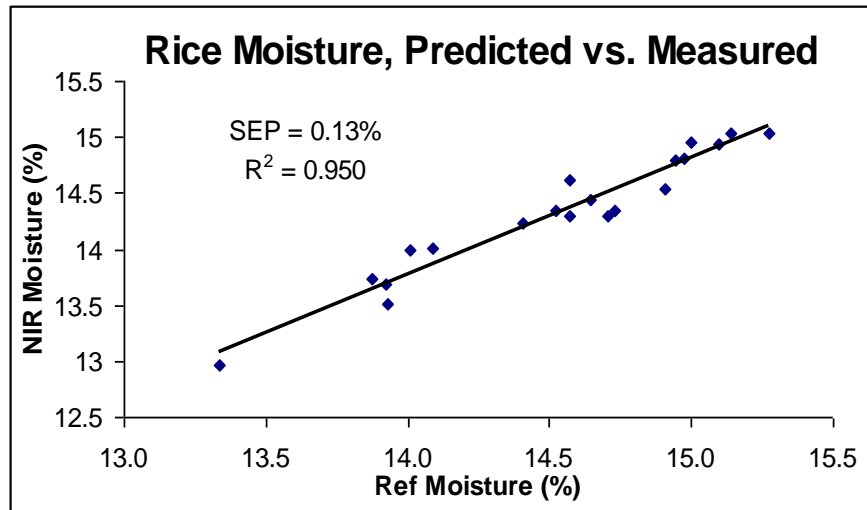
Procedure:

The Cropscan 2000B Whole Grain Analyser was calibrated on a set of Japanese rice samples, with accurate laboratory data for Protein, Moisture and Amylose content. The samples were scanned in the wavelength region 720-1100nm using a 18mm pathlength cell. Samples were sub-scanned 5 times and the average of these 5 scans were taken as the result.

Results:

The following figures show the predictive ability of the calibration for Protein, Moisture and Amylose for 20 rice samples grown in Japan.

Rice Protein, Predicted vs. Measured

SEP = 0.12%

$R^2 = 0.970$

NIR Protein (%) vs Ref Protein (%)

Rice Moisture, Predicted vs. Measured

SEP = 0.13%

$R^2 = 0.950$

NIR Moisture (%)

Ref Moisture (%)

Rice Amylose, Predicted vs. Measured

SEP = 0.31%

$R^2 = 0.970$

NIR Amylose

Ref Amylose

Conclusion:

The above results show that the Cropscan 2000B Whole Grain Analyser can be calibrated to measure the quality of rice to a high level of accuracy. This is mainly due to the consistent nature of the packing of rice samples and the ability of pass a high level of energy through the sample, therefore reducing the noise associated with the measurements.