Application Note 14: Cropscan 2000B: Determination of Protein and Moisture in Whole Grain Maize.

Introduction:

In 2001, Cargil Grain Division requested IDI International and NIR Technology Australia to assess the possible use of the Cropscan 2000B Whole Grain Analyser in the determination of Protein and Moisture in whole maize kernels. Monsanto (USA) and the Iowa State University were requested to perform an evaluation on behalf of Cargil.

The calibration, developed in the USA, was then used to determine the predictive ability for maize samples grown under Australian conditions. The following note provides the relative statistics obtained for this process.

Description:

Approximately 25 maize samples, grown under various Australian conditions, were measured by Bunge Feedstocks for Protein (Kjeldahl) and Moisture (Oven). The samples were then scanned on the Cropscan 2000B Whole Grain analyser from 720-1100nm using the calibration developed in the USA in a 30mm pathlength cell. Five replicates were measured for each sample and the average of these were taken as the actual value.

Results:

The following table shows the calibration statistics developed from the Monsanto data, along with prediction statistics obtained from American samples.

Constituent	SED	Correlation (R^2)	No. Principal Components	SEP (USA Samples only)
Protein	0.36	0.9544	12	0.42
Moisture	0.35	0.9780	8	0.46

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