Application Note 97: Examination of Spectra for Australian Pecan Nuts.

Introduction:

The purpose of this study is to determine the ability of the Cropscan 2000B to take complete and measurable spectra of Australian Pecan Nuts. Samples of whole pecan nuts as well as shelled and crushed nuts were acquired and scanned. This study is not meant to create a calibration or to prove the method, but to demonstrate that these products can be scanned producing reproducible spectra.

Description:

Four samples, each, of whole nuts, shelled nuts and crushed nuts were taken. The whole nuts were scanned using a modified 28mm cell. The shelled nuts were scanned using the same modified cell as the whole nut. The crushed nuts were scanned in a standard 15mm cell.

10 Scans of each sample were collected between 720 and 1100nm. All samples were scanned in duplicate.

Figure 1 below shows the standard absorbance spectra for the whole nuts only.

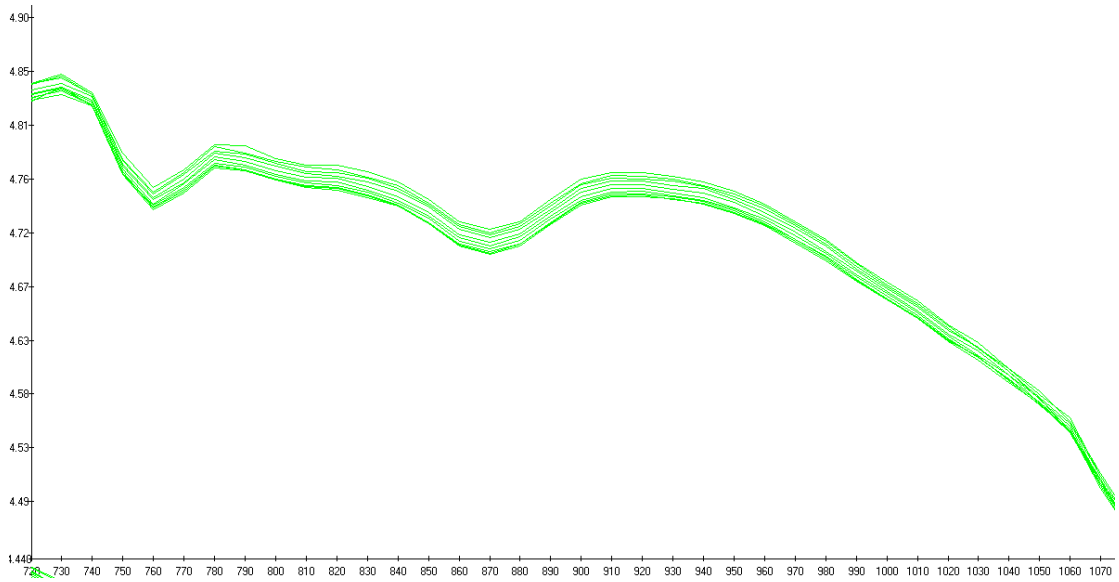

Figure 1: Absorbance Spectra for whole pecan nuts.

Figure 2 below shows the spectra for shelled nuts and crushed nuts.

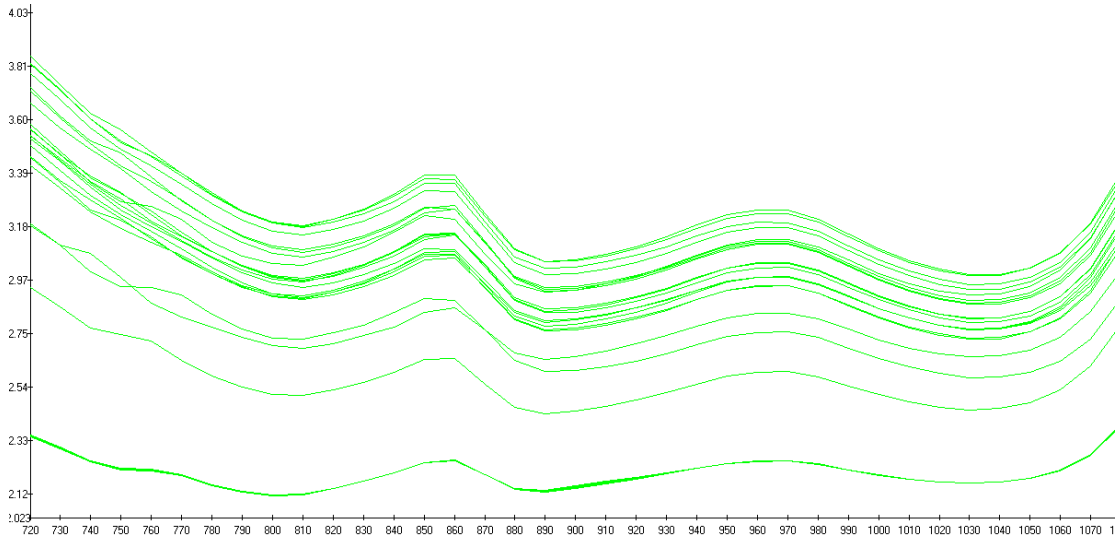

Figure 2: Absorbance Spectra for shelled pecan nuts and crushed pecan nuts.

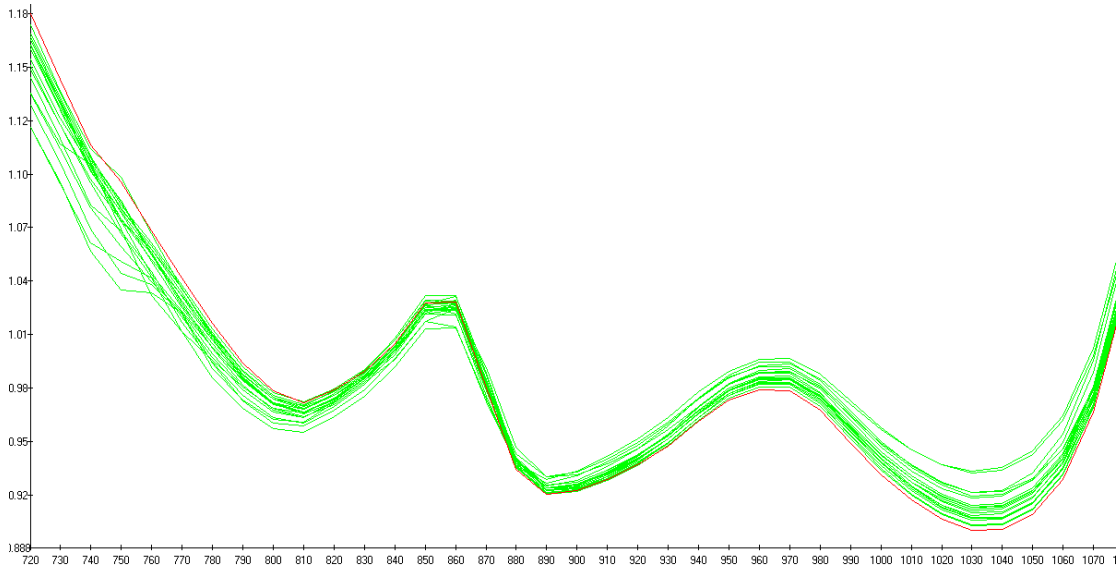

Figure 3: Normalised spectra for shelled and crushed pecan nuts.

Conclusion:

The spectra for whole nuts, whilst showing less variation than the other types of nuts, show significantly higher absorbance levels than the shelled and crushed nuts. However, it clearly shows that the whole nut spectra is readable by the Cropscan 2000B.

The spectra's for the shelled nuts and the crushed nuts are very similar, however, they have a greater variation. The greater variation is primarily due to the packing density of the crushed pecan nuts. When the spectra are normalised it can be seen that there is little variation. This clearly highlights the ability of the Cropscan 2000B to analyse pecan nuts.

It can therefore be concluded that the Cropscan 2000B is capable of analysing the absorbance spectra for whole pecan, shelled pecan nuts and crushed pecan nuts.

NIR Technology Systems
366 Edgar Street, Condell Park, NSW, 2200, Australia
Tel: 612 9771 5444, Fax: 612 9771 5255
Email: nirtech@nirtech.net, Web: www.nirtech.net