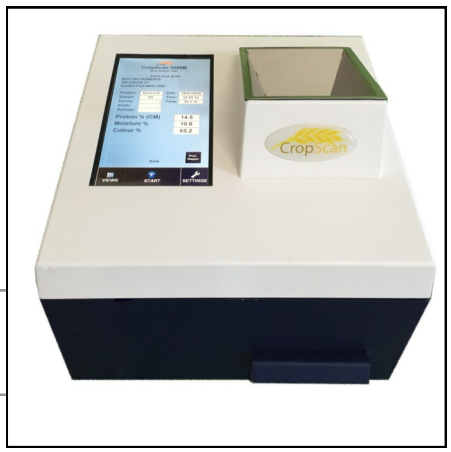
CropScan

Near Infrared Transmission Grain Analysers

CropScan 1000H
On Farm Analyser

CropScan 1000B
Whole Grain Analyser

CropScan 2000B
Near Infrared Transmission Analyser



CropScan 3000B
Grain Analysis System

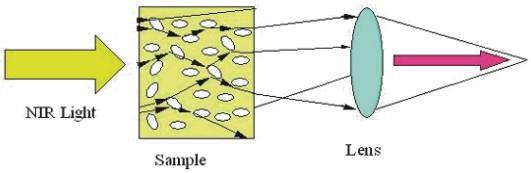
The Next Generation of NIR Analysers

Next Instruments

Near Infrared Transmission (NIT) Spectroscopy

Near Infrared Transmission Spectroscopy is the most widely used technology for measuring protein, oil and moisture in grains and oil seeds. NIT analysers offers farmers, grain buyers, grain processors, bio-fuel producers, and feed companies, a rapid means of determining the composition of their incoming materials, their process streams and the final products. NIR Technology Systems range of Whole Grain Analysers require no grinding and can be operated by anyone Our NIT analysers also offer the ability to analyse grains, powders, slurries and liquids to cover the needs of virtually all sectors of the grains industry.

Light passes through a sample of grains packed between two windows. As the light interacts with the grains or oil seeds, energy is absorbed by the N-H (protein), C-H (oil) and O-H (moisture) bonds. The more energy absorbed at the resonant frequencies for each of these compounds, the higher the concentration of the components.



The CropScan series of whole grain analysers provide farmers, grain traders and grain processors analysers that meet any requirement and budget.

CropScan 1000H On Farm Analyser:

- Transportable
- Low Cost
- Protein and Moisture in Wheat and Barley
- Oil and Moisture in Canola

CropScan 1000B Whole Grain Analyser

- NMI Certified for Protein in Wheat and Barley
- Suits an office or weighbridge
- Built-in Test Weight Module
- Weighbridge software available.

CropScan 2000 NIT Analyser

- Suits Grain Processors, Flour Mills, Stockfeed Producers, Bio-fuel Producers
- Cells for grains, powders, slurries and liquids.
- Test Weight and Screenings
- Printer

CropScan 3000B Grain Analysis System

- Integrated Grain Testing
- CropNet Data Management Software
- CropNet Web Site interface

The **CropScan** range of Near Infrared Transmission whole grain analysers are designed to provide farmers, grain traders and grain processors with cost effective instruments for measuring protein, moisture, oil and starch in grains and oil seeds.

CropScan 1000H
On Farm Analyser

The **CropScan 1000H** is a transportable instrument design for measuring protein and moisture in wheat and barley and oil and moisture in canola. The CropScan 1000H uses a pour through sampling system for fast operation and ease of use.

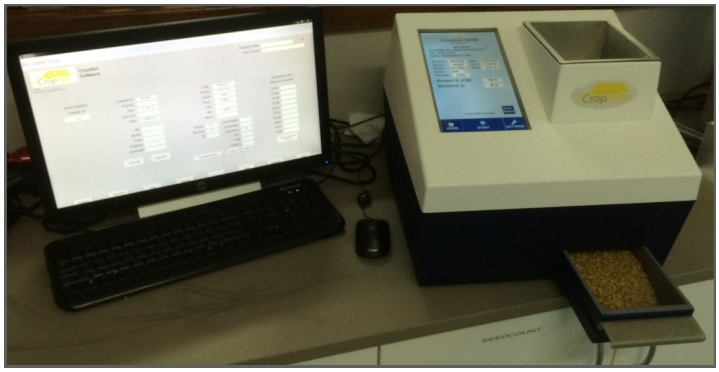
CropScan 1000B
Whole Grain Analyser

The **CropScan 1000B Whole Grain Analyser** is a benchtop analyser designed for rapid measurement of protein, moisture, starch and oil in wheat, barley, corn, soybean, canola, oats, triticale, lupins and other cereals grains and oil seeds. The CropScan 1000B offers an in built Test Weight Module for determining Hectolitre Weight and Screenings %. The CropScan 1000B uses a pour through sampling system. On board flash memory and a USB Memory Device provide a means of storing and retrieving load by load data. The CropScan Weighbridge Software provides a means of connecting to a weighbridge monitor and thereby capturing truck weights along with the grain quality measurement parameters. The CropScan 1000B is certified under the NMI M8 Pattern Approval for Protein Testing.

The **CropScan 2000 Near Infrared Transmission Analyser** is a benchtop instrument suitable for measuring grains, powders, liquids and slurries for all sectors of the grains industry, i.e. grain traders, flour mills, stockfeed manufacturers, bio-fuel producers, malsters, breweries, oilseed crushers and others. The CropScan 2000 uses a selection of sample cells to measure grains and pellets, liquids, powders and slurries. An optional balance can be connected to the CropScan 2000B to provide a means of measuring Hectolitre Weight and Screenings %. On board flash memory and a USB Memory Device provides a means of storing load by load data and then transferring the data to a PC. An optional printer can be installed for load by load tickets. The CropScan 2000B is certified under the NMI M8 Pattern Approval for protein testing.

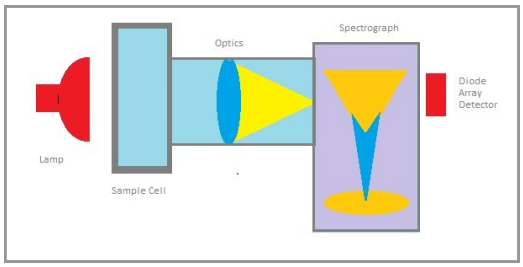
The **CropScan 3000B Whole Grain Analyser** is intended for use by bulk handlers, grain traders and larger farms for integrating all grain testing measurements into the CropNet Data Management Software. The CropScan 3000B offers an automatic pathlength selection to measure small to large seeds, including, wheat, barley, oats, sorghum, canola, corn, soybean, peas etc.

The large format Touch Screen PC takes in data from the Sievematic II Test Weight and Screenings system as well as enter variety, grade and tonnage and then generate and print a load ticket. The CropScan 3000B can be connected to the internet whereby load data can be stored and retrieved remotely.



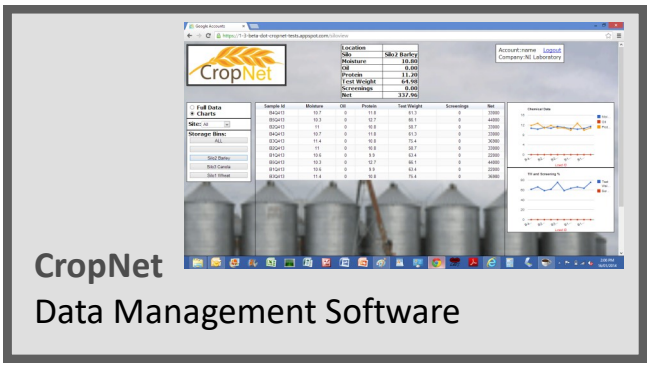
How the CropScan analysers work

The CropScan series of analysers consist of the following components;



Light from the lamp, passes through a sample of grains or oil seeds. The light bounces off the surfaces of the grains or oil seeds and propagates through the sample until it reaches the other side. The emerging light is focused into the slit of a flat field spectrograph that separates the light into its individual frequencies, across the wavelength range from 720-1100nm. The separated light is then directed onto a silicon photo diode array detector. This array detector measures the intensity of the light at each frequency to produce what is called the NIT spectrum of the sample.

Within this region of the electromagnetic spectrum, N-H (protein), C-H (fats and oils) and O-H (water) and C-O-H (carbohydrates) absorb NIR light at specific wavelengths. The NIT spectrum contains information about the concentration of these components. A calibration model, stored in the analyser's memory, converts this information to % concentration for each component.



CropNet Data Management Software is a software and hardware package designed to integrate all grain testing data into a single PC and then provide the data to a network via the internet. CropNet consists of two software packages, i.e., CropNet Weighbridge Software and CropNet Web Site interface. The CropNet Weighbridge Software collects data from the NIR analyser, the tonnage from the weighbridge, the test weight and screenings, plus information as to the storage silo, customer etc. The CropNet Web Site interface send the information to the internet where it can be retrieved and viewed on a PC, a tablet or a smart phone.

Calibrations

NIR Technology Systems has developed a range of calibrations for grains and oil seeds.

The following table shows the matrix of products vs constituents

Product	Constituent
Hard Wheat	Protein, Moisture
Soft Wheat	Protein, Moisture
Durum Wheat	Protein, Moisture
Malt Barley	Protein, Moisture, Colour
Feed Barley	Protein, Moisture
Oats	Protein, Moisture
Sorghum	Protein, Moisture
Triticale	Protein, Moisture
Corn (Maize)	Protein, Moisture, Oil, Starch
Soybean	Protein, Moisture, Oil, Fiber
Canola	Protein, Moisture, Oil
Rice	Protein, Moisture, Amylose
Field Peas, Chick Peas	Protein, Moisture
Faba Beans	Protein, Moisture
Lupins	Protein, Moisture
Lentils	Protein, Moisture
Meal	Protein, Moisture, Oil, Ash
Flour	Protein, Moisture, Starch Damage, Water Abs

Specification	CropScan 1000H	CropScan 1000B	CropScan 2000B	CropScan 3000S	CropScan 3000B
Wavelength Range	720-1100nm	720-1100nm	720-1100nm	720-1100nm	720-1100nm
Detector	38 pixel Si DA	38 pixel Si DA	38 pixel Si DA	38 pixel Si DA	38 pixel Si DA
Lamp	12VDC, 20W	12VDC, 20W	12VDC, 20W	12VDC, 20W	12VDC, 20W
Scan Rate	3.4 secs	3.4 secs	3.4 secs	3.4 secs	3.4 secs
Display	2x16 character LCD	240 x 128 character LCD or Touch Screen	240 x 128 character LCD	240 x 128 character LCD	10.4 inch Touch Screen PC
Power	12VDC using 240VAC 12VDC Car Adapter	19VDC using 110 –240VAC	19VDC using 110 –240VAC	19VDC using 110 –240VAC	12VDC using 240VAC 12VDC Car Adapter
Dimensions (cm) Weight (Kg)	24W x 34D x 26H 7kg	38W x 40D x 250H 14Kg	52W x 438D x 26H 14Kg	30W x 18D x 30H 12Kg	20W x 18D x 30H 12Kg

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