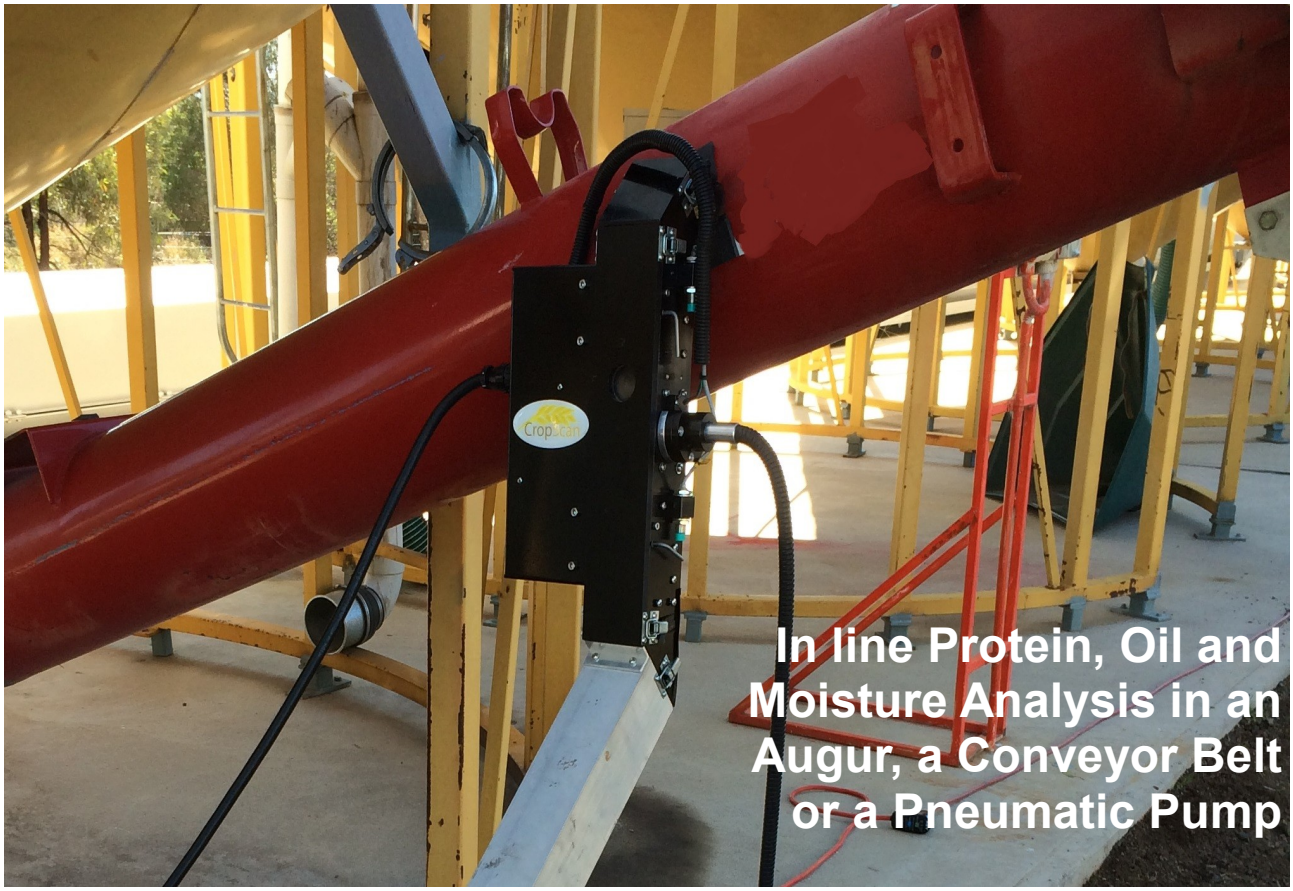
CropScan

3000S

On Silo
Whole Grain Analysers



The Next Generation of NIR Analysers

NIR Technology Systems

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 offer farmers, grain buyers, grain processors, biofuel producers, and feed companies, a rapid means of determining the composition of their crops, incoming materials, their process streams and the final products.

NIR Technology Systems' range of Whole Grain Analysers include portable on farm analysers, bench top analysers for use at a weighbridge, a laboratory analyser for grain processors, an on-line system for silos and factories and an on -combine analyser.

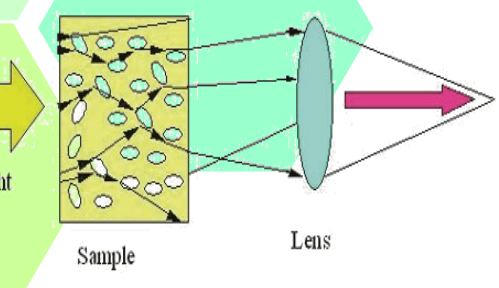
CropScan 3000S On Silo Analyser

The CropScan 3000S On Silo Analyser has been designed to measure protein and moisture in wheat and barley and oil, protein and moisture in canola, as the grains pass through an auger, a pipe or off the end of a conveyor belt .

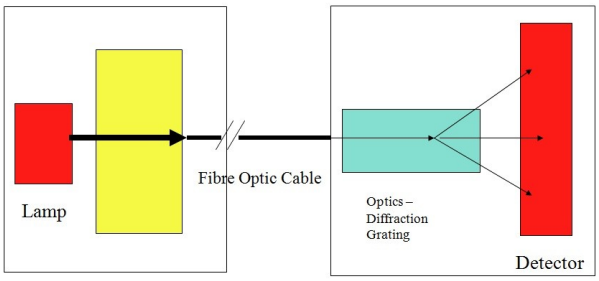
The CropScan 3000S provides a means of continuously monitoring a stream of grain or oil seeds during in loading or out loading. Data is displayed in plots and tabular forms to show the average and distribution of the protein, oil and moisture for each truck load or bin load. An accumulation of the data across the many loads taken to fill a silo can also be displayed so that a complete profile of the grain quality can be seen.

How the CropScan analysers work.

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 component, the higher the concentration of the components.

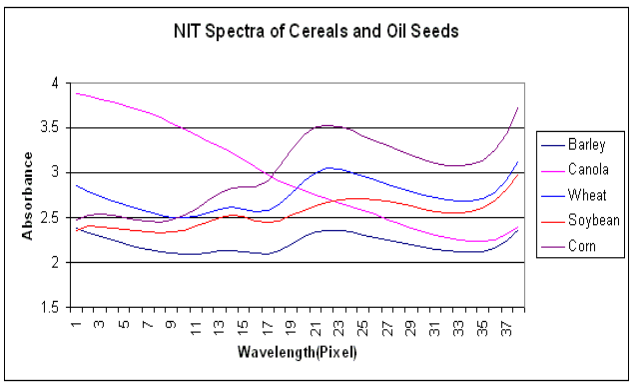


The CropScan 3000S On Silo Analysers uses a rugged Diode Array Spectrometer to measure the protein, oil and moisture in the grains.



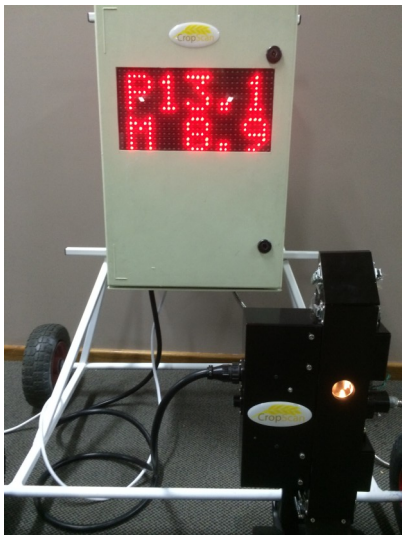
Light from the lamp, passes through a sample of grains or oil seeds trapped in the Remote Sampling Device. The light bounces off the surfaces of the grains or oil seeds and propagates through the sample until it reaches the other side. The emerging light is focused into a fibre optic cable that transmits the light back to the NIT Spectrometer that is mounted on the trolley. The light is focused onto 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), 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. The CropScan 3000S is supplied with calibrations for wheat, barley and canola. Other calibrations are available.



The **CropScan 3000S On Silo Analyser** consists of a NIT spectrometer, a Remote Sampling Device, an Environmental Cabinet with a large format LED display and a Touch Screen PC. The system is mounted on a trolley for easy transport around the yard.

Grain travelling up the auger, pipe or conveyor belt, falls into the CropScan 3000S Remote Sample Device. Flaps at the top and bottom of the device control the flow of grain in and out of the mechanism. The grain is trapped in the sample chamber where light passes through the grain and is collected in a fibre optic cable and transmitted back to the NIT spectrometer located inside the cabinet.

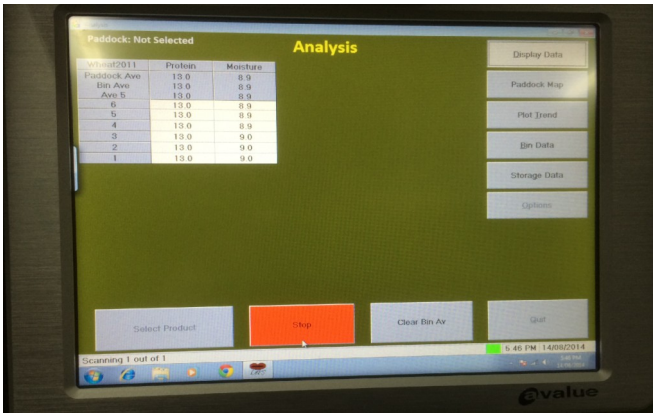


The bottom flap opens to release the grain and then closes ready for the next sample. The cycle time is approximately 7-11 seconds depending on the grain flow in the auger.

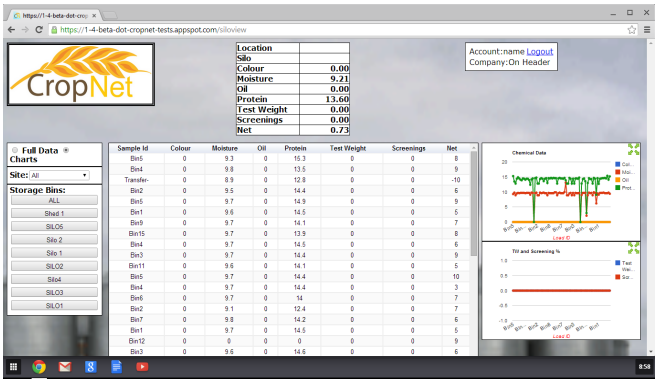
The grain is collected in a bucket where it can be kept as a load sample taken across the complete loading time. Alternatively the grain can fall back into the sampling pit.

The protein, oil and moisture are displayed on the large format LED display.

The **CropScan 3000S** is controlled and operated by a Touch Screen PC located in the cabinet. The data is displayed on the screen as a moving average and a bin average. The moving average shows the operator the protein, oil and moisture at approximately every 10 seconds as the grain flows up the auger. The bin average shows the cumulative average for protein, oil and moisture since the START button was pushed to initiate the load. The protein, moisture and oil data can be stored in the CropScan 3000S' Touch Screen PC and later exported using a USB Memory Device or even through the internet directly to a remote PC.



The data from the **CropScan 3000S** is then available from the CropNet web site.



The protein, oil and moisture data for loads placed in each silo are available along with the silo averages and the tonnage of the grain stored in each silo.

CropScan Whole Grain Analysers

The CropScan range of NIT Whole Grain Analysers includes:

- **CropScan 1000G On Farm Analyser:** A portable NIT analyser designed to measure protein and moisture or oil and moisture in grains and oil seeds.
- **CropScan 1000H On Farm and Header Analyser:** An upgraded version of the CropScan 1000G that supports the Remote Sampling Head and Touch Screen PC used in the CropScan 3000H On Combine Analyser.
- **CropScan 1000B Whole Grain Analyser:** A bench top NIT analyser designed to measure protein, oil, moisture, test weight and screenings in whole cereal grains and some oil seeds. A built in balance measures the test weight of 500ml of grain and the % screenings is calculated from the weight of grain that passes through a sieve as a percentage of the weight of the 500ml of grain.
- **CropScan 2000B NIT Analyser:** A bench top NIT analyser that measures protein, oil and moisture in whole cereal grains and oil seeds, as well as in powders such as flour and meals. The CropScan 2000B can also be used to measure liquid and slurries, such as vegetable oils, milk, yogurt, cheese, meat etc.
- **CropScan 3000B Whole Grain Analyser:** A bench top NIT analyser that measures protein, oil and moisture in whole cereal grains and oil seeds. This system includes a variable pathlength sample chamber and touch screen PC operation.
- **CropScan 3000H On Combine Analyser:** A system designed to measure protein, oil and moisture in whole cereal grains and oil seeds as the grain is stripped in a combine analyser.
- **CropScan 3000S On Silo Analyser:** An On Line Analyser designed to measure protein, oil and moisture in cereal grain and oil seeds as they pass along an auger, a conveyor belt or a pneumatic pump.

Specification	CropScan 1000G/H	CropScan 1000B	CropScan 2000B	CropScan 3000B	CropScan 3000H/S
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	240 x 128 character LCD	8 x 5 inch Touch Screen PC	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	35W x 40D x 28H 15Kg	20W x 18D x 30H 12Kg

Manufactured by:

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