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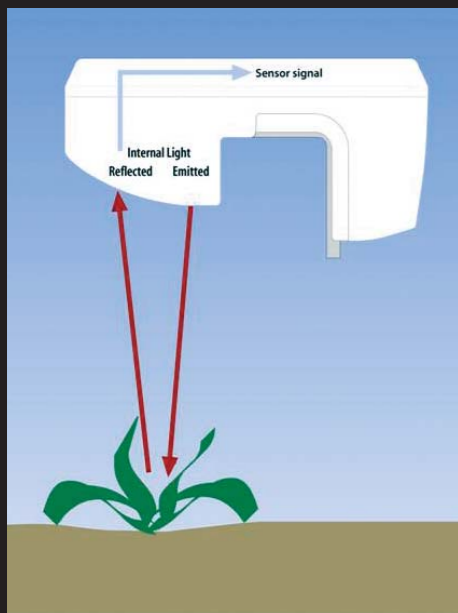
Apply the right amount of nitrogen in the right place at the right time

GreenSeeker[®]
Variable Rate Application and Mapping Systems



GreenSeeker®

Fast and precise
optical sensing



Improve your yields and increase your profit!

GreenSeeker® optical sensor technology enables you to measure, in real time, a crop's nitrogen levels, and variably apply the "prescribed" nitrogen requirements. GreenSeeker® also predicts yield potential for the crop using the agronomic vegetative index (NDVI). The nitrogen recommendation is based on in-season yield potential and the responsiveness of the crop to additional nitrogen. GreenSeeker® permits you to have better control of nitrogen use, allowing you to apply the right amount in the right place at the right time – improving your yields, decreasing your nitrogen cost and increasing your bottomline!

No longer do you have to depend on cloud-free days for satellite images, or pay the high cost of aerial images. GreenSeeker® is similar to satellite and aerial imagery zone management programs, however, **it is in real time.**

GreenSeeker® enables you to also collect data during existing farming operations such as spraying, cultivation and mowing. These images can be used to:

- Create management zones
- Identify pest and disease problems
- Evaluate drainage system efficiency
- Modify soil sampling strategies
- Monitor and modify irrigation schedules
- Determine optimum harvesting dates and make variable rate prescription maps

Numerous NDVI readings are averaged across each zone and a "prescription" is written. The controller modifies the rate for each ensuing zone. The GreenSeeker® works with most variable rate controllers and delivery systems. The sensors can be mounted on booms of various configurations on most sprayers and spreaders. The GreenSeeker® allows application of liquid UAN, UREA, and NH₃ fertilisers. The retrofit is quick and easy.

Background

Ground based sensor technology has been in development since the early nineties, and was initially developed for detection and spraying of weeds (WeedSeeker®). In 2001 NTech Industries and Oklahoma State University (OSU) signed R&D licence agreements to build nutrient applicators (GreenSeeker® systems) for cereal production.

How GreenSeeker® works

The GreenSeeker® allows on-the-go zone management of topside dress nitrogen. The sensor's light emitting diodes (LED) generate red and near infrared (NIR) light. The light generated is reflected off the crop and measured by a photodiode located at the front of the sensor head. Here's how:

1. Sensor scans the crop using LED lights.
2. Optically senses crop's health using vegetative index (NDVI).
3. Predicts yield potential.
4. Prescribes optimum zone nitrogen rate.
5. Delivers variable rate application.
6. Zone size – 0.1ha to 0.2ha (dependent on speed and controller).
7. Utilises existing controller and plumbing.
8. Can apply liquid UAN, UREA and NH₃.

Products

Handheld

Researchers, agronomists, farmers and plant breeders commonly use handheld GreenSeeker®. The handheld unit, with accessories and case, enables rapid collection of trial plot data for analysis. The microprocessor circuit board analyses the plant's reflected light. The data that is collected with the sensor can be downloaded to a personal computer in a text format that can be accessed by Microsoft Excel.

RT100 & RT102

Single and dual sensor data collection and mapping system that can be downloaded to Microsoft Excel. System can be mounted on booms of various configurations on most sprayers and spreaders.

RT200 & RT220

Data is collected using 6 sensors. Data from each sensor is combined and logged as a single reading. The system uses a ruggedized computer for data logging. Files are saved in a shape file format. Each data point becomes a "pixel" on the map and typically represents one second of travel time.

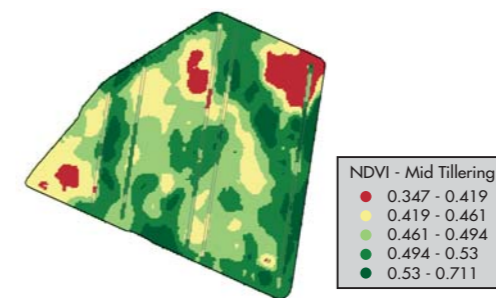
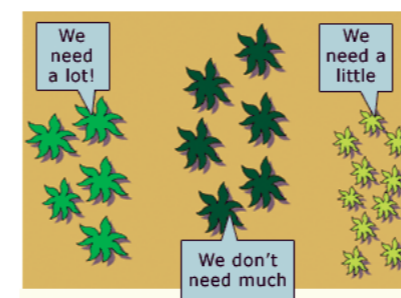
Benefits of GreenSeeker®

- Fast and precise optical sensing
- Reduce your in-crop fertiliser costs
- Only apply nitrogen to plants that need it
- Real time variable rate fertiliser application
- Collect data during existing farming operations
- Record NDVI health/vigor data mapping throughout the season
- Powerful remote sensing and agronomic research tool
- Biomass and plant canopy measurement
- Significantly reduce the impact to the environment

Features of GreenSeeker®

- Weatherproof
- Operational both day and night
- Modular system that can be added to
- Plug and play with existing rate controllers
- Capable of speeds up to 25km/hr

GreenSeeker® permits you to have better control of nitrogen use, allowing you to apply the right amount in the right place at the right time.



GreenSeeker® NDVI Map



Testimonials

"We use the GreenSeeker® on 2,500 hectares per year to assist us in making the right decisions on rates for top dressing nitrogen fertiliser. We are using two thirds of the nitrogen we used to use for the same yield and quality. The nitrogen rich strip system of measuring a crop's requirements for nitrogen has been more accurate in predicting appropriate fertiliser rates than a pre-season soil test."

"The GreenSeeker® is easy to use and has given us a great deal of useful management data in the form of crop biomass images. The nitrogen rich strip agronomy technique that has been developed to be used with the RT200 software has resulted in nitrogen fertiliser rates being dropped by around 30% with no negative impact on yield or quality."

Richard Heath, Gunnedah NSW

"Since purchasing the GreenSeeker®, we have been able to monitor development and identify areas of nitrogen deficiency in our crops. The GreenSeeker® also allows us to conduct and monitor field scale trails looking at different nutrient management strategies."

"We aren't necessarily looking to reduce our nitrogen use with the GreenSeeker®, but rather better utilise nitrogen application to increase its efficiency. We want more grain from the same amount of nitrogen applied."

James Hassall, Gilgandra NSW