

CCM-200_{plus} Chlorophyll Content Meter



Applications

- Non-Destructive Chlorophyll Measurement
- Monitor Effects of Environmental Stress
- Evaluate and Determine Nutrient Performance and Requirements
- Nitrogen and Fertilizer Management

Features

- Large memory, up to 160,000 measurements
- Lightweight, Hand-Held Design Optimized for Field Work
- Display Chlorophyll Content Index and Calculated Averages Graphically
- Built-in Data-Logging
- USB Output
- GPS data Input, NMEA 0183 Compatible

The New CCM-200 *plus* Chlorophyll Content Meter provides fast accurate, chlorophyll readings on the intact leaves of plants and crops. No more grinding or destructive assay which allows researchers and agronomists to gather and evaluate mission critical data faster than ever before. Especially useful for improving **Nitrogen** and **Fertilizer** management programs with corn and wheat, the CCM-200 *plus* can be used on a wide variety of both C₃ and C₄ plants.

The CCM-200 *plus* is designed to be the most repeatable portable chlorophyll content meter available. It incorporates a larger measuring area for signal averaging over a larger sample area. This approach provides a more reliable reading that takes into account small structure variations that can affect repeatability and reliability when compared to smaller area sampling. Accuracy of measurement is determined by correlation with chemical tests. Results have shown, that the CCM-200 is as accurate as any chlorophyll meter on the market and may be even more accurate on samples with very high chlorophyll content.

The CCM-200 *plus* has the largest on-board memory of any chlorophyll meter, storing over 94,000 measurements internally, even with GPS data included. Users can record months of measurements without having to worry about limited memory and there is plenty of room for GPS data, most commonly used to relate location information, with each measurement. Data transfer is quick and easy through its universal USB 1.1 interface. Employing a new MEDICAL grade strict tolerance LED source insures repeatability and consistent meter to meter readings.

CCM-200^{plus} Chlorophyll Content Meter

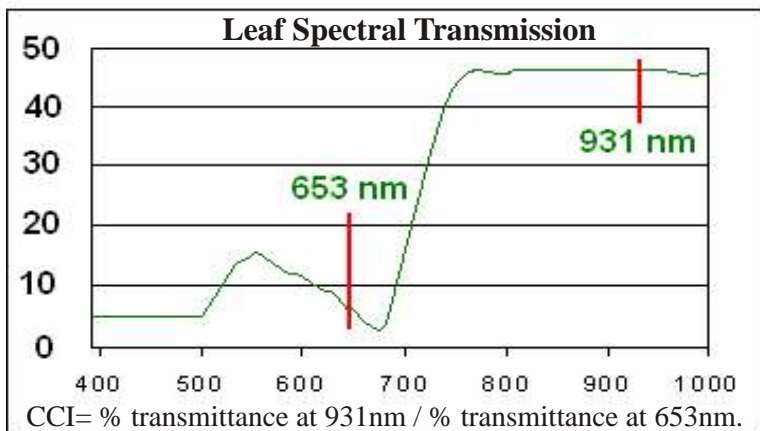
Nitrogen Status

Agriculture

Crop Production

Changes in chlorophyll content can occur as a result of nutrient deficiencies, exposure to environmental stress, exposure to herbicides, and differences in light environment during growth (shading). Chlorophyll content can be used to manage nutrient optimization programs that both improve crop yield and help protect the environment. Testing for herbicide damage can indicate the need for a change in herbicide selection or application methods; in order to maintain good weed control while having minimum impact on crop health.

Laboratory methods for determination of chlorophyll content are both costly and time consuming. Typically a sample must be detached, ground up in a solvent, then assayed in a spectrophotometer. A sample can be measured only once precluding the monitoring of trends in chlorophyll content over time. The CCM-200 *plus* provides non-destructive, rapid and repeatable measurements. In addition, the new averaging protocols are ideal for Nitrogen management.



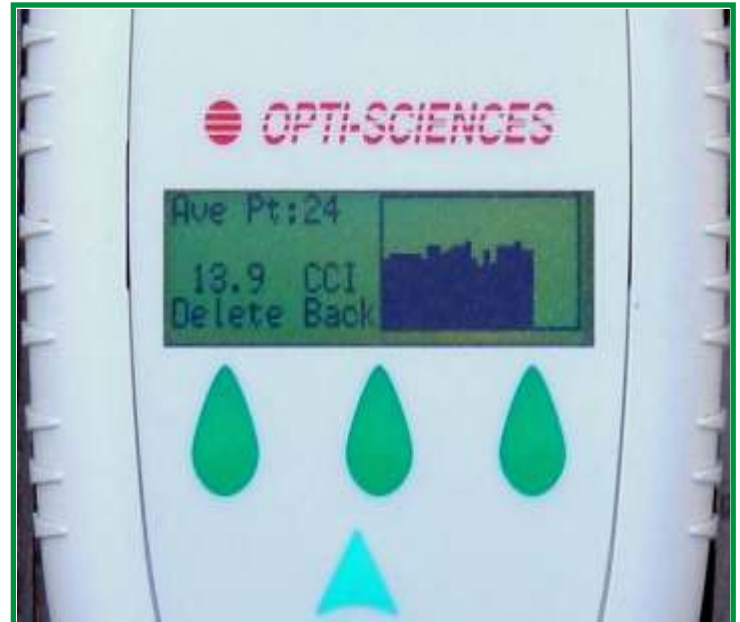
The CCM-200 *plus* accounts for both chlorophyll transmittance and leaf thickness.

OPTI-SCIENCES

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Technical Specifications

Measured Parameters: Optical absorbance in two different wavebands: 653nm (Chlorophyll) & 931nm (Near Infra-Red).

Measurement Area: 3/8" diameter circle, (.71 mm²)

Resolution: .1 CCI unit

Repeatability: +/- 1%

Source: Custom 2 wavelength LED module

Detector: Silicon photodiode with integral amplifier for absorbance measurement, power monitoring, and temperature compensation.

Storage Capacity: 8 Mbyte of memory for up to 160,000 data measurements, or 94,000 with added GPS data entries.

Data Modes: (3) Single point, 30 point average, and a statistical 30 point protocol that throws out data beyond a 2 sigma standard deviation.

User Interface: 128 x 32 pixel graphic display, keys for control and data manipulation, beep signal for status and warnings.

I/O: USB 1.1 & RS-232; NMEA 0183 compliant for GPS data input.

Temperature Range: 0-50 Deg C

Temperature Drift: Temperature compensated source and detector circuitry for minimum drift over full range.

Power Source: 9V Alkaline Battery

Auto Off Interval: 4 minutes (no key press or download)

Size: 152(L)x82(W)x25(D)mm

Weight (with battery): 162g