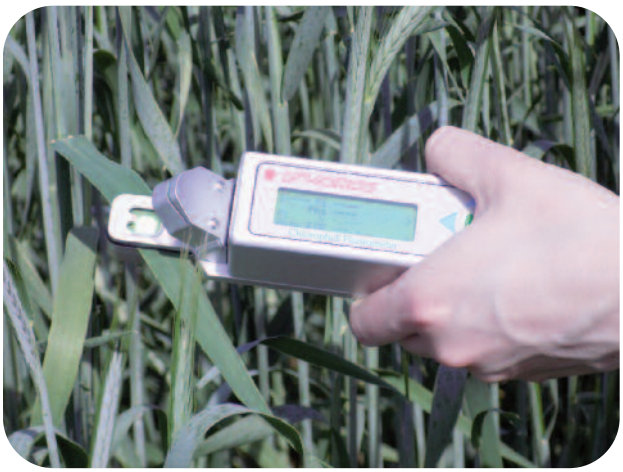
Plant Stress Kit

Compact and affordable Y(II)ETR & F_V/F_M meters



Two instruments (<0.5kg) in one case

Y(II)/ETR meter

- Y(II) and ETR corrected for absorptance
- Leaf absorptance using RGB sensors
- PAR and leaf temperature measured
- Fm' correction according to Loriaux 2013
- Long-term fluorescence monitoring mode

F_V/F_M meter

- Rapid measurement of large populations
- Lightweight dark adaption clips
- Graphic F_V/F_M trace display
- Compact, ergonomic design
- Measurements from the same known state

Measure both light adapted Quantum Yield of PSII or Y(II) and dark adapted Maximum Potential Quantum Efficiency of PS(II) or F_V/F_M.

These plant stress meters are the most advanced, compact and portable fluorometers available, based on established and proven scientific principles. Yield(II) is measured from the top of the leaf along with PAR, while the leaf temperature is measured from the base of the chamber. The F_V/F_M meter automatically adjusts modulated light intensity and detector gain for accuracy and reliability. USB lithium ion batteries allow continuous use for up to 8 hours in the field.

Technical Specification

Y(II)/ETR Meter

Measured parameters:

Y(II): Quantum Photosynthetic Yield of PS(II)

ETR: Electron transport rate

PAR: Photosynthetically active radiation

T: Leaf temperature

F_{MS} (or F_M'): Maximum fluorescence at steady state

F_S (or F): Fluorescence under steady state

Loriaux 2013 correction of ETR and F_M'

α: Leaf absorptance & transmittance

RH: Relative humidity 5% to 95% (+/-2% over the range)

Fv/Fm Meter

Measured parameters:

Fv/Fm: Maximum potential quantum efficiency of PSII

Fv/Fo: A normalised ratio that may be used to improve stress detection

Fo: Fluorescence after dark adaption

Fm: Maximum fluorescence during a saturating pulse following a period of dark adaption

Ft: Instantaneous fluorescence

Storage Capacity: 2 Gigabyte of non-volatile flash memory, supporting almost unlimited data sets

Special Algorithms: 8 point rolling 25 ms average to determine Fm' eliminating saturation pulse NPQ as an issue

Absorptance measuring standard: 2 included

Y(II) and Fv/Fm meters

Saturation pulse: 7,000umols white LED
6,000umol red LED

Modulated light: Red: 660 nm LED with 690 nm short pass filter

Actinic light source: Ambient light only
Dark adapted only

Detection method: Pulse modulation method

Detector & Filters: A PIN photodiode with a 700 ~750 nm bandpass filter

Sampling Rate: Auto-switching from 1 to 10,000 points per sec, depending on test & on phase of test

Automated routine to optimally set the modulated light intensity.
The modulated light may also be set manually
Multi-Flash Fm' correction for all light adapted protocols & quenching: May be turned off

Test Duration: About 3 seconds for fast tests and may be run for months in monitor mode

Special Algorithms: 8 point rolling 25 ms average to determine Fm and Fm' eliminating saturation pulse NPQ as an issue

Storage Capacity: 2 Gigabyte of non-volatile flash memory, supporting almost unlimited data sets
Output: USB comma delineated files may be opened in Excel
User Interface: Menu driven with arrows

Display: Graphic black and white display 132 x 32 pixels

Power Supply: 8 hour USB lithium ion battery is standard, but any USB battery can be used. Mains current may also be used. Mains plug is also supplied. Charger included

Dimensions: 23cm long with a USB cable that is 160cm long
The case is 36 x 28 x 15mm - included
Weight:
Meters w/battery & USB cable- 0.45 kg
Complete w/case & accessories- 1.5 kg

Operating temperature range: 0^{o}C to 50^{o}C

Absorptance measuring standard: 2 included