Document Title: Description, AN, Measurement of leaf water potential using WP4		Part # and Rev. 13386	
		Release Date: 1-12-07	
Rev.	Description	Revision By	Date

Production Filename: 13386 (In Product Library)

Path to Working Files: DecaDoc\Application Notes\Master

Dimensions: 8.5 inch wide, 11 inch tall

Material: Paper, 92 Bright White or better, 75g/m² or heavier

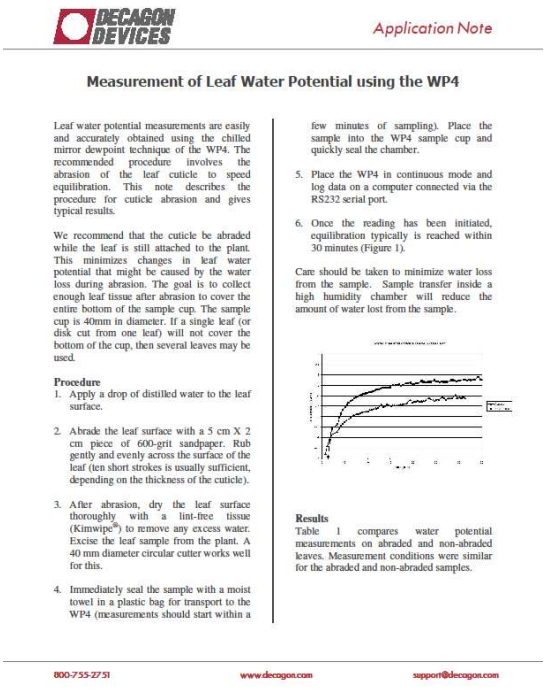
Colors: Color Print on White

Printer: HP Color LaserJet 8550-PS

Finish: None

Adhesive: None

Special Notes: Illustrations are Ref Only ** Not to Scale ** (Page 1 of 2)



DECAGON DEVICES Application Note

Measurement of Leaf Water Potential using the WP4

Leaf water potential measurements are easily and accurately obtained using the chilled mirror dewpoint technique of the WP4. The recommended procedure involves the abrasion of the leaf cuticle to speed equilibration. This note describes the procedure for cuticle abrasion and gives typical results.

We recommend that the cuticle be abraded while the leaf is still attached to the plant. This minimizes changes in leaf water potential that might be caused by the water loss during abrasion. The goal is to collect enough leaf tissue after abrasion to cover the entire bottom of the sample cup. The sample cup is 40mm in diameter. If a single leaf (or disk cut from one leaf) will not cover the bottom of the cup, then several leaves may be used.

Procedure

1. Apply a drop of distilled water to the leaf surface.
2. Abrade the leaf surface with a 5 cm X 2 cm piece of 600-grit sandpaper. Rub gently and evenly across the surface of the leaf (ten short strokes is usually sufficient, depending on the thickness of the cuticle).
3. After abrasion, dry the leaf surface thoroughly with a lint-free tissue (Kimwipe®) to remove any excess water. Excise the leaf sample from the plant. A 40 mm diameter circular cutter works well for this.
4. Immediately seal the sample with a moist towel in a plastic bag for transport to the WP4 (measurements should start within a few minutes of sampling). Place the sample into the WP4 sample cup and quickly seal the chamber.
5. Place the WP4 in continuous mode and log data on a computer connected via the RS232 serial port.
6. Once the reading has been initiated, equilibration typically is reached within 30 minutes (Figure 1).

Care should be taken to minimize water loss from the sample. Sample transfer inside a high humidity chamber will reduce the amount of water lost from the sample.

Results

Table 1 compares water potential measurements on abraded and non-abraded leaves. Measurement conditions were similar for the abraded and non-abraded samples.

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