

WHAT GOOD DATA LOOKS LIKE

FloraPulse measures **stem water potential (SWP)** continuously. A healthy install shows a clear **daily rhythm** — wettest (least negative) just before dawn, most negative at midday — and the swing deepens as the tree dries down between irrigations. Give the readings **1–2 days** to settle after installing.

CHOOSE THE SITE

- Install **after leaf-out**, once hard frost has passed — never during dormancy.
- Branch or trunk **≥ 0.65 in (1.7 cm)** of healthy wood — thinner stems take the **3 mm probe (sizing guide)**.
- A **flat spot**, free of knots — avoid old or diseased wood.
- **Thick-barked forest trees:** drill through the bark to the xylem first (thick-bark video).
- Use the **same tree** you sample with the pressure chamber.

INSTALL THE PROBE

- Bore to the xylem.** With the cork borer, cut through the bark and phloem, lift out the plug, and scrape the surface clean. Coat the bare xylem with sealant — no voids.
- Seat the sleeve.** Drive it flush into the xylem: press with the c-clamp until it clicks once (large branches — tap it home with the mallet), then remove the bracket.
- Drill the bore.** Pull the foam, then drill through the sleeve with the depth-stopped bit. Clear the debris — the hole should look bright white.
- Set the sensor.** Fill the cavity with mating compound from the back (no bubbles), then fit the sensor within 1–2 min — **it cavitates in dry air**. Seat the spring and thread the cap tight.
- Seal & insulate.** Work M-1 sealant into the metal-to-bark interface, then wrap the installation **loosely** with insulation (shades it; lets condensation dry).
- Connect & calibrate.** Wire to your datalogger — analog (Wheatstone bridge) or SDI-12 — and enter the probe's calibration coefficients (matching manual below).

≈ 30 minutes per probe. You supply a cordless drill and a 2 lb mallet.

★ MOST IMPORTANT

REINSTALL EVERY SPRING

Treat the **spring reinstall as a hard annual requirement**, not an optional best-practice — it is the single most important step for accurate data season to season.

A probe left in over winter gets **walled off** by the tree's wound response. The signature is unmistakable — readings drift **too wet**, the daily swing **flattens**, and the peak **slides into late morning**. A whole season can be lost before anyone notices.

- Each spring after leaf-out, move the probe to **fresh, healthy wood** a few cm away, fit a **new sleeve**, and repeat the full install.
- Where winters drop below freezing, **remove and store** the probe first — freezing bursts it; reinstall in spring.
- Reusing a probe: **keep the sensing face wet at all times** (in a water-filled capsule) or it cavitates. To confirm it still works, **test it in the lab** before reinstalling — see the Probe Reuse manual & video below.

COMPARING WITH A PRESSURE CHAMBER

Both read **stem water potential (SWP)**. To compare, **bag a leaf in foil** for ≥ 10 min so it stops transpiring and equilibrates with the stem, then read it at **midday (12–4 pm)**. Match that against the sensor's **lowest value of the day** — the sensor's daily low arrives ~1–3 h later (≈ 2–4 pm) because of its response lag. When the tree is well-watered, the trunk reads a little wetter than the leaf. (Details in the transition guide below.)

AVOID THE COMMON MISTAKES

- ✗ Stem under 0.65 in (1.7 cm) — the wound is too large to seal
- ✗ Sleeve not driven fully flush into the xylem
- ✗ Install site not fully sealed — voids cause drift & eventual failure
- ✗ Touching the sensor face, or letting it dry in air > 1–2 min (it cavitates)
- ✗ Leaving the probe in past one season (see "Reinstall every spring")

MANUALS, VIDEOS & HELP

INSTALLING THE PROBE

- 7 mm Probe Installation Manual · PDF
- Install video — hammer · video
- Install video — c-clamp · video
- Install into thick bark · video

REUSE & SEASONAL CARE

- Probe Reuse Manual · PDF
- How to remove & reuse probes · video

YOUR DATALOGGER

- Analog Probe Manual · PDF
- SDI-12 Probe Manual · PDF
- Campbell logger programs · ZIP

INTERPRETING & VALIDATING

- Transitioning from the Pressure Chamber · PDF
- Crop database — per-crop data · web
- Troubleshooting tool · web

All manuals, videos & research in one place — florapulse.com/resources