

Testing a new species before you install sensors

FloraPulse sensors are validated in a defined list of crops. In any other species the main risk is not the sensor — it is the tree. Some species respond to a wound by filling the cavity with resin, latex or gels, and if that blocks the sensor's hydraulic contact with the xylem the measurement fails. This guide describes a test that measures that risk for your species, at your site, before you put a single sensor in a tree.

WHAT ACTUALLY DECIDES WHETHER A SENSOR WORKS

The sensor reads the tree through a continuous path of hydrated mating compound running between the sensor face and the xylem. That path is the whole measurement.

- A wound response from the bark and phloem is not a problem. The sleeve and the sealant seal those surfaces off, so whatever they exude sits outside the measurement path.
- A wound response from the xylem is survivable if it is modest. Some resin or gel at the xylem face does not automatically stop the measurement.
- It fails only when exudate completely floods the installation site and blocks water exchange across that path.

So a species that bleeds heavily when you cut the bark is not automatically a species where the sensor fails. The question is narrower than that, and it is testable.

THE BLANK-SLEEVE TEST

You need sleeves, parafilm, and the standard installation tools for your species. No sensors are used, so no sensor is at risk.

1. Choose several trees that represent your site. More trees is better than more sleeves per tree.
2. Install a blank sleeve — a sleeve with no sensor in it — using the standard installation method for your species, exactly as written in your installation manual. Same tools, same depth, same sealing. If your species has bark thicker than about 10 mm, that means the thick-bark method.
3. Seal the back of the sleeve with parafilm.
4. Leave the sleeves in place for a few weeks.
5. Open a sleeve and look inside.

READING THE RESULT

- Flooded with resin, latex or gel: this is your answer, and you have lost nothing but sleeves. Do not commit sensors to this species at this site.
- A trace of exudate only: the site is probably viable. Go ahead, starting with one or two sensors.
- Nothing visible: proceed normally.

If you want to know whether the time of year matters — and for most species we do not have that answer — run the test at two points in the season and compare. That is a question we would very much like answered.

IF YOU GO AHEAD

- Start with one or two sensors and watch them for a few weeks before committing the rest.
- Work quickly from the first cut to the sealed sleeve. The less time the wound is open, the less exudate collects in the cavity.
- Coat every bit of exposed xylem with M-1 sealant before the sleeve goes in, and seal around the outside at the end. It must be M-1 — other sealants contain solvents that interfere with the measurement and worsen the wound response.

- Use two sensors per tree, at least 8 cm apart and diagonal to each other. That is what lets you tell a sensor problem from a tree problem.
- Watch weeks two to four. If a site is going to occlude, the signature is a few good days, then a flattening trace, a shrinking daily swing, and the daily minimum drifting later into the night. That is the site sealing over, not a failed sensor — remove and reinstall at least 10 cm from the old hole, which usually buys another window of good data.

A NOTE ON EXPECTATIONS

Species outside our validated list are experimental. We do not guarantee measurement performance in them, and odd readings there are usually physiology rather than a defect. What we ask in return is simple: tell us what you find. Results from new species — including the ones that do not work — go into our crop validation database and are how that list grows.

Sleeves are sold separately; contact us for a quote. Troubleshooting guides are at app.florapulse.com/troubleshoot.

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