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Tree counting with drones in citrus: why the inventory comes first

In a citrus orchard, decisions are made by block and by tree. A verifiable inventory (how many trees there are, how many are missing and which behave differently) is the base everything else rests on.

By **Trofoni team**

Ask any orchard manager how many trees a block has and you will get a number. Ask how many are missing today and the answer becomes an estimate. That is where the problem starts, and also where a drone becomes useful.

Why citrus

Uruguay has 13,294 hectares of citrus according to DIEA's estimate for 2025. The 2023 citrus survey recorded 413 farms, and eight companies of more than 400 hectares accounted for 63% of production.

It is a sector where the management unit is not the field but the block, and often the tree. Variety, rootstock, age and missing trees define what is done in each area. That is why a per-tree inventory is worth more here than in almost any other system.

What a per-tree inventory is

A high-resolution aerial image makes it possible to outline each canopy and tie it to a location. The inventory is built on that base:

- total number of trees;

- missing trees;
- area per tree;
- indices per tree;
- varieties and rootstock;
- age and production history.

The last two do not come from the image: they are data the grower already has and that the Territorial Baseline integrates. It is not an identical package for every orchard; it adjusts to each client's organization and records.

From count to field visit

The inventory is not an end in itself. Once each tree has a location and indicators, those outside the expected behaviour of comparable groups can be located. Those anomalies guide field verification.

The order matters: first we measure, then we decide what deserves attention.

The condition: field validation

An automatic count is worth what its validation is worth. The inventory and the anomalies are verified locally before being accepted. And an index that flags a different tree does not say why it is different: the field visit confirms that.

What the grower receives

- A **PDF report** with main results, maps, limitations and recommendations.
- A **web viewer** with layers, indicators and attributes by block and tree.
- A **geospatial database** ready to grow with new dates and records.

And then: time

The Baseline gains value when it incorporates time. Monitoring adds new captures and relates them to activities, inspections and results, documenting what was observed, what was done and how the orchard responded.

See the citrus service or download the brochure.

Sources

- DIEA – MGAP. Citrus area estimate 2025 and citrus survey 2023.
- Trofoni Mapping. Citrus services catalogue, 2026.
- Trofoni Mapping. Service documentation, 2026.

This article states sources, date and limits. It is not advice for a particular case.

https://trofoni.com/en/insights/tree-counting-with-drones-in-citrus