



Drone Productivity Calculator

Simple user guide | Version 2.0

Purpose

Compare drone spraying productivity and tender logistics for a rectangular treatment area, then identify the fastest tested operating scenario.

What the calculator does

The calculator builds an exact spray route from the field dimensions, selected pass direction, headlands, pass spacing and application settings. It then compares three tendering strategies and recommends the scenario with the lowest calculated total time.

Feature	What it provides
Three tender strategies	Fixed tender and run until empty; fixed tender with forced refill; movable tender with forced refill.
Pass-direction modelling	Passes can run along the longer or shorter field dimension.
Tender optimization	Movable-tender positions are tested in equal sections from halves through ninths. Move intervals below 100 m are excluded.
Operational timing	Spraying, turning, ferrying, refill and battery service, water retrieval, acceleration and tender relocation.
Scenario comparison	Time, productivity, sorties, ferry distance, forced returns, average tank residual, suggested fill, moves and difference from reference.
Mission report	A branded downloadable report with recommendation, activities, tender positions and sortie-by-sortie mission information.

Quick walkthrough

1. Enter treatment and flight settings

Enter field length and width, pass orientation, flight speed, effective swath, pass spacing, application rate, tank capacity, turn time and one or two headland passes.

2. Set the tender operation

Choose the starting tender position. Enter loaded and empty ferry speeds and the time required to refill and exchange batteries.

3. Describe water support and staffing

Enter tender water capacity, water-source round-trip time, whether the tender may move and whether one or two operators are available.

4. Review advanced settings

Use the defaults unless better aircraft-specific values are known. Acceleration, deceleration and payload sensitivity slightly refine the time estimate.

5. Read the recommendation

Review the recommended scenario, productivity, number of tender moves and time saved. Check Recommended sortie details and Time by activity.

6. Compare scenarios

Select Show all tested scenarios. Options are listed numerically; movable-tender variants run from the largest to the smallest tested interval.

7. Download the mission report

Use Download report to save a branded HTML report. Open it in a browser, print it, or save it as a PDF.

Understanding the results

Result	Meaning
Recommended scenario	The fastest valid scenario tested by the exact route model.
Productivity	Treated area divided by total operating time.
Forced	Number of tender-side returns made before the next full out-and-back pair could be completed.
Avg. left	Average liquid remaining at service stops, excluding the final completed sortie.
Suggested fill	Tank capacity minus average residual plus a 5 L reserve. It appears only for forced-refill scenarios.
Out-and-back pairs per forced refill	Typical whole number of completed interior out-and-back pairs before a forced service stop.
vs. ref.	Difference in total time relative to the best fixed-tender reference. Positive is slower; negative is faster.

Using the mission report

The report is intended to help communicate and stage the planned operation. It includes tender positions, ferry distances, spray distance, tank remaining and the reason for each return. Use those values to prepare the field plan and service sequence, but program the aircraft using the manufacturer-approved planning software and procedures.

Important: This calculator is a planning and teaching tool. Confirm aircraft limits, applicable regulations, pesticide label directions, weather, obstacles, terrain, battery condition, spray quality and site-specific risks before flight. The recommendation is not a substitute for operator judgement or legal requirements.

Helpful tips

- Use measured treatment dimensions whenever possible.
- Keep pass spacing at or below the effective swath width to avoid planned gaps.
- Use realistic ferry speeds and service times rather than aircraft maximums.
- Test both pass directions on rectangular fields because turn count, tender edge length and forced-refill opportunities can change.
- Treat Suggested fill as an average planning value. A final partial sortie may require less volume.
- If a movable-tender interval is shorter than 100 m, that candidate is not tested.