

# SNAPLEAF PROCESS

## 1. Preparing the Spray Applicator

- Clean the spray applicator properly, triple rinse the tank, pump, spray lines, nozzles and filters to prevent cross-contamination from previously used crop protection products or dyes.
- Empty the tank completely.
- Add enough clean water to the tank for calibration purposes. A quarter tank is usually sufficient.
- Do NOT add any adjuvants or additives to the spray mixture.
- Calibrate the spray applicator with the appropriate setup to be evaluated.
- Test the calibrated water flow rate and adjust until accurate.
- Add enough clean water to the tank for a trial spray application (minimum of 200ℓ). You can calculate this volume using the following formula:  $[\text{Spray volume } (\ell/\text{ha}) / \text{trees per ha}] \times \text{number of trees to be sprayed}$ .
- In the case of row crops' 200ℓ will be sufficient.
- Start the agitators in the tank to ensure thorough mixing.
- Add UVIEW solution at a 2% concentrate (e.g. 2ℓ/100ℓ). This represents a 1x concentrate (diluted) application.
- If a 2x or 4x calibration is evaluated, the required concentrate will be 4% and 8% of UVIEW.
- To assure that the UVIEW solution has reached the spray nozzles, run the sprayer at least 20 meters downwind and away from the test site, spraying the solution for a minimum of one minute.
- The spray applicator is now ready to spray the deposition trial.

## 2. Preparing the trial site

### Tree crops

- Select a representative row in the test orchard. Mark the row clearly.
- Select 10 adjacent trees to be sprayed from both sides with the calibrated spray applicator.
- Select, at random, three of the 10 trees and mark them as data trees (except for the first and last tree, which should only be buffer trees). These selected three trees represent the three repetitions in the trial application.
- Before spray application, ensure that the target surfaces (leaves) are dry.
- Do not irrigate in this area till after spray application and subsequent sampling.

### Row crops

- Select a representative part of the field. Mark a 4m x 10m (width x length) area to be sprayed per treatment.
- Before spray application, ensure that the target surfaces (leaves) are dry.
- Do not irrigate in this area till after spray application and subsequent sampling.

## 3. Preparing containers for leaf sampling

### Tree sampling

- Leaves will be sampled from three selected data trees at random, from vertical and horizontal canopy positions (top, middle, bottom, inside, and outside canopy positions). Take a minimum of 15 to 20 leaf samples per tree.
- Evaluate them in three separate batches. Upper-leaf and under-leaf areas are evaluated as separate batches.
- This will require a leaf sample container clearly marked for each tree in the trial, i.e. six containers, each labelled to fit the batch description used in the DROPSIGHT app.

### Row crops

- Randomly sample leaves from 12 selected data plants in vertical canopy positions: Top, middle and bottom.
- This will require a leaf sample container clearly marked for each trial, labelled to fit the batch description used in the DROPSIGHT app.

## 4. Spraying the Trial

- The spray apparatus must spray actively at the calibrated parameters when entering the marked tree or field section.
- Continue spraying until you have passed the last tree or perimeter of the trial plot in the trial site.
- When spraying tree crops, spray the marked trial section from both sides in opposite directions to simulate in-field applications.

## 5. Sampling the sprayed leaves

- Ensure that the leaves are completely dry before sampling. However, do not wait for longer than 30 minutes after the leaves have dried before sampling to prevent UV degradation.
- When sampling leaves, pick/cut the leaf at the petiole, without touching the leaf blade. This might disturb the pigment on the surface which can lead to inaccurate analysis.
- Keep the sample containers out of direct sunlight and closed to prevent UV degradation during and after sampling.

### Tree crops

- From each data tree, sample a minimum of 15 to 20 leaves per data tree in all the different areas of the tree. Evaluate each batch sample from each data tree separately. Do the upper leaf surface and under leaf surface in two different batches.

### Row crops

- From a minimum of 12 to a maximum of 18 randomly selected data plants per area plot, sample leaves randomly from the top, middle and bottom of the canopy. Evaluate each batch sample separately. Do upper leaf surface and under leaf surfaces in different batches.

## 6. Using the LEAFLAB for sample photograph

- Ensure leaf surfaces are dry before handling. Arrange the leaves on a flat surface, putting a flat, heavy cover over it and leave for 1 hour to flatten the leaves for more accurate 2D surface photography.
- Ensure that the camera lens and the UV Filter lens on LEAFLAB is clean.
- Good high-speed internet connection is required for DROPSIGHT to function.
- Place and position the smartphone on the LEAFLAB lid in position as indicated.
- Move the smartphone to position the camera lens over the opening in the LEAFLAB lid.
- Place a single leaf in the middle of the red base of the LEAFLAB and close the lid.
- Switch on the UV light of the leaflab.
- Follow Snap Leaf prompts on the DROPSIGHT app.
- Name the batch reference.
- Zoom the picture to view the whole leaf with minimum background visible without any of the leaf border touching the frame of the picture.
- Take care not to touch the inside of the leaf blade to prevent smudging.
- Process the upper and lower leaf surfaces separately as two batches.
- Use the "Threshold" slide scale to adjust the sensitivity of the software if required, and recalculate until the processed image and the actual image in the LEAFLAB match. This is your quality control to create reliable data.
- Use the same phone to take pictures of all the leaves to compare results between leaves.

## 7. Processing the PDF report

- A high-speed internet connection is required.
- After processing the last leaf in the batch, choose the "Save Batch" icon.
- This will save the data to the cloud and automatically present the PDF report.
- The report can be forwarded by e-mail or WhatsApp.



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