

Stay on track with petiole and leaf tests



By Bede O'Mara - Subtropical farming systems agronomist

Leaf and petiole sampling is a vital part of any comprehensive fertiliser program for cotton, helping growers to maintain crop yield potential at its peak.

Leaf and petiole tests are a highly efficient and accurate guide to nutrient uptake. They show if the plant has a 'hidden hunger' for any nutrients before visual symptoms appear or if the existing nutrition is adequate for crop requirements.

It is important to conduct the testing over several weeks covering three sampling times approximately 10 days apart, so that the results can be plotted to show the changes over time.

This allows you to keep track of increases in nutrient uptake and ensure the curve is consistent with recognised nutrient uptake curves for the crop stage. The peak requirement for nitrogen and potassium occurs at approximately peak boll load (1300-1500 day degrees).

To ensure adequate nitrate nitrogen availability for this period, petiole testing should be undertaken during early squaring to early boll fill (500-900 day degrees).

Leaf testing provides an early warning to highlight any macro or micro nutrients that may be lower than optimum without any apparent visual symptoms. It can start as early as five true leaves.

[Nutrient Advantage® Laboratory Services](#) offers petiole testing and leaf testing services for cotton.

Importantly, the NATA and ASPAC certified laboratory offers industry-leading rapid turnaround times. Plant tissue test results are completed within three business days of receiving the sample.

There are a range of sample delivery services available and some are faster than others. Now is an excellent time to source a courier that will give you rapid delivery of samples to our laboratory during the season.

Consistency of sample collection is essential to get the best out of both of these tests. Using well defined and identifiable sampling locations within a field is the key to detecting the trends in nutrient concentration over time.

Being consistent in sampling location (georeferenced or flagged), plant part, soil moisture, time of day and other key variables

will reduce the random variability that frequently masks the true nutrient status. This is particularly important where temporal trends need to be kept separate from spatial variability.

For petiole sampling, the sample sites must be representative of the area to be fertilised. Sample head ditch and tail drain areas separately.

Interpretation of either petiole nitrate or leaf nutrient samples can be achieved using either Nutrient Advantage Advice software, or cotton industry developed programs like [NutriLOGIC \(available from \[www.cottassist.com.au\]\(http://www.cottassist.com.au\)\)](#).

For further information, please contact Bede O'Mara on 0417 896 377 or bede.o'mara@incitecpivot.com.au.

If plant sampling bags are required, kits are available by contacting [Nutrient Advantage Laboratory Services](#) on 1800 803 453.

Tips for sampling

- Select well defined and identifiable sampling locations. GPS locate for accuracy.
- Collect the samples between dawn and 10 am (sampling in the heat of the day means heat stress may affect the results).
- Samples should be collected at similar soil moisture levels each time.
- Wear a pair of clean plastic disposable gloves to take the samples.
- Take petioles from the youngest fully expanded leaves on the plant, usually the third or fourth from the apex.
- Leaves should be collected from the third or fourth leaf down the plant from the terminal. Remove the petioles from the leaf.
- Collect 200 petioles for analysis.
- Place them straight into a paper bag (using a plastic bag will cause the sample to sweat and hasten its decomposition).
- Wash samples while fresh to remove dust or foliar sprays, where necessary.
- Keep samples cool following collection.
- Send samples to the laboratory immediately.
- If samples cannot be sent immediately, dry them in the paper bag at temperatures between 40oC and 80oC. Check that they are not cooking. The samples should not be burnt or discoloured. Do not use a microwave oven.



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