

Nutrition

LEAF SAMPLING & ANALYSES

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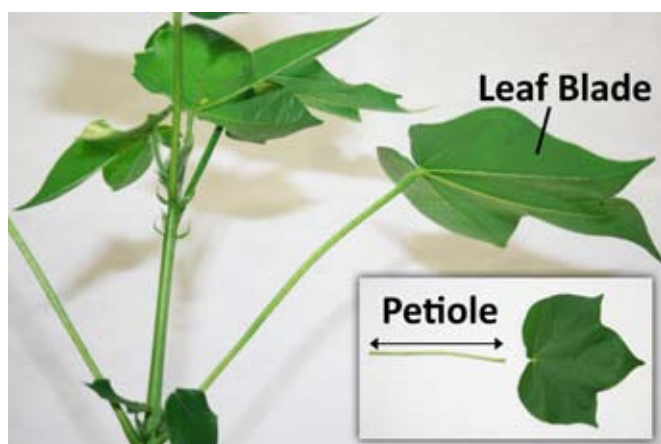
Leaf analysis provides information about the nutritional status of a crop and can be used to identify nutrient imbalances, deficiencies and toxicities.

Leaf analysis calibrations have been made for cotton. Critical concentrations of all nutrients have been identified at all stages of development, so leaves can be sampled throughout the growth of the crop.

Leaf analyses can indicate how effective the fertiliser management has been for that crop/field and, in conjunction with soil testing, help fine-tune the fertiliser program.

1. Sample

- Leaves when the crop is not stressed (e.g. between irrigations)
- youngest mature leaf, normally the 4th or 5th unfolded leaf from the top of the plant



- collect samples systematically across field
- from average sized plants
- between 30-50 leaves should supply sufficient fresh material for analysis

- where a nutritional problem is suspected, sample healthy and unhealthy leaves separately to help identify the problem
- petioles must be removed immediately from the leaf blade.

Avoid

- Stressed plants from either waterlogging or lack of water
- sampling where insects or disease problems are severe
- sampling if the crop has recently been sprayed with a pesticide or foliar fertiliser.

2. Timing

Leaves can be sampled from first mature leaf (which occurs around squaring), through to boll fill.

3. Handling and Packing

- Collect samples with clean, dry hands (or clean gloves)
- samples should be loosely packed in a paper bag and stored in a cool place (refrigerator) immediately after picking to prevent or reduce leaves from deteriorating
- transport samples to laboratory as soon as possible using a next day delivery service
- transport samples in a contaminant free container which keeps them cool
- samples not arriving the day after sampling should be dried. Best done in a convection oven, at low temperatures (less than 50 degree C) for 24 hours or until crisp. (microwave ovens are not suitable)

Avoid

- Samples being contaminated i.e. salt from sweat, sunscreen products (zinc), or transport containers containing contaminants
- plastic bags unless samples are kept cool
- samples arriving on weekends or holidays

4. Laboratory Selection

The choice of laboratory is very important in obtaining reliable, consistent results. When choosing a laboratory the following points should be considered.

- Use Australian standardised accepted laboratory methods
- involved in an accredited Proficiency Performance Program and results available
- external audited Quality Assurance program
- quality result reporting structure
- provide guidelines for sample and sampling handling
- strive for best practice.

Considerations

- Variations in methodology and the type of analytical equipment used by different laboratories can cause results to differ
- for accuracy and consistency of results and it is best to use the same service provider.

5. Interpretation

- Interpretation of leaf test results is complex and depends on a number of influencing factors, most importantly crop stage of development
- NutriLOGIC is an on-line tool that allows an independent interpretation of leaf test results. Reports from NutriLOGIC will indicate whether each major or minor nutrient is in the optimum, deficient or excess zones for the development stage of the crop. These reports can be saved or printed.

<http://cottassist.cottoncrc.org.au/NutriLOGIC/>
– part of the CottASSIST suite of tools.

