



BACK PADDOCK NUTRIFACT

Guidelines for Sampling Plant Tissue for Subtropical/Tropical Tree Crops and Vines

Why Measure Nutrients In Plant Tissue?

Of the many factors affecting crop quality and yield, soil fertility is one of the most important. It is fortunate that producers can manage fertility by measuring the plant's nutritional status. Nutrient status is an unseen factor in plant growth, except when imbalances become so severe that visual symptoms appear on the plant.

The only way to know whether a crop is adequately nourished is to have the plant tissue analysed during the growing season.

What Plant Tissue Analysis Shows

Plant tissue analysis shows the nutrient status of plants at the time of sampling. This, in turn, shows whether soil nutrient supplies are adequate. In addition, plant tissue analysis will detect unseen deficiencies and may confirm visual symptoms of

deficiencies. Toxic levels also may be detected. Though usually used as a diagnostic tool for future correction of nutrient problems, plant tissue analysis from young plants will allow a corrective fertiliser application that same season.

A plant tissue analysis can pinpoint the cause, if it is nutritional. A plant analysis is of little value if the plants come from fields that are infested with weeds, insects, and disease organisms; if the plants are stressed for moisture; or if plants have some mechanical injury.

The most important use of plant analysis is as a monitoring tool for determining the adequacy of current fertiliser practices. Sampling a crop periodically during the season or once each year provides a record of its nutrient content that can be used through the growing season or from year to year. With soil test information and a plant analysis report, a producer can closely tailor fertiliser practices to specific soil-plant needs.

DOs AND DON'Ts OF PLANT TISSUE SAMPLING

DOs

- Sample the correct plant part at the specified time or growth stage.
- Use clean plastic disposable gloves to sample to avoid contamination.
- Sample tissue (e.g. entire leaves) from vigorously growing plants unless otherwise specified in the sampling strategy.
- Take sufficiently large sample quantity (adhere to guidelines for each species provided)
- When troubleshooting, take separate samples from good and poor growth areas.
- Wash samples while fresh where necessary to remove dust and foliar sprays.
- Keep samples cool, after collection.
- Refrigerate or dry if samples can't be despatched to the laboratory immediately, to arrive before the week-end.
- Generally sample in the morning while plants are actively transpiring.

DON'Ts

- Avoid spoiled, damaged, dead or dying plant tissue.
- Don't sample plants stressed by environmental conditions.
- Don't sample plants affected by disease, insects or other organisms.
- Don't sample soon after applying fertiliser to the soil or foliage.
- Avoid sample contamination from dust, fertilisers, chemical sprays as well as perspiration and sunscreen from hands.
- Avoid atypical areas of the paddock, e.g. poorly drained areas.
- Don't sample plants of different vigour, size and age.
- Don't sample from different cultivars (varieties) to make one sample.
- Don't collect samples into plastic bags as this will cause the sample to sweat and hasten its decomposition.
- Don't sample in the heat of the day, i.e. when plants are moisture stressed.
- Don't mix leaves of different ages

Reference - Standard sampling procedures and interpretation criteria are based on the guidelines provided in "Plant Analysis – An Interpretation Manual" Reuter and Robinson, CSIRO Publishing 1997.



Crop	Time Of Year or Growth Stage	Plant Part	Leaves or Petioles
Avocado	April - May	Recently matured fully expanded leaves (4 – 5 months old) from non-fruited terminals. 6-8 leaves from 10 trees of a single cultivar and across the planting.	80
Banana – Sth Qld and Nth NSW	Medium size actively growing suckers	Two strips 20cm wide from each side of midrib from the centre section of the third fully emerged leaf from 12 plants.	24
Banana – North Qld	Before bunching	Two strips 20cm wide from each side of midrib to margin from the centre section of the third fully expanded leaf.	24
Citrus – Qld	February - March	Healthy, mature leaves from middle of non-fruited terminals of previous spring flush 5-7 months old. Take leaves at shoulder height at various positions around the trees. Avoid sampling spring flush terminals that have reflushed.	200
Coffee	After flowering and before cherry is growing rapidly	Fourth pair of leaves from tip of actively fruited branches. Take 20 pairs from 20 different trees from the middle laterals, not during drought.	40
Custard Apple	late Feb or early March	Sample youngest mature leaf from non-fruited terminals in after the second major growth flush.	40
Ginger	60 - 90 days after sowing d.a.s.	Sample upper leaf blade 2-3 months after sowing. Calibrated for all nutrients except N. For N, sample 180 – 250 d.a.s.	60
Ginger	180 - 250 days after sowing	Sample third leaf blade from top of plant 180 - 250 days after sowing. Calibrated for N only.	45 - 140
Lychee	1 – 2 weeks after flower panicle initiation (May – August)	Sample most recent fully mature compound leaf behind the flower panicle are 4 to 5 cm long. Sample from each of eight branches distributed uniformly around the tree. Sample from 20 trees from a single planting and variety.	160
Macadamia	September to November just before spring flush	Mature leaves (6-7 month old) from 2nd whorl of current season's growth, from non-flushing terminals. 5 – 10 leaves each from 10 – 20 trees from a single planting and variety. Select leaves on the outside of the canopy exposed to sunshine all day long.	100
Mango – Tropics	May - July	Latest mature leaves, when tree is growing slowly prior to flowering. 5 – 10 leaves each from 10 – 20 trees from a single planting and variety.	50
Mango – Sub Tropics	August - September	Latest mature leaves just prior to flowering. 5 – 10 leaves each from 10 – 20 trees from a single planting and variety.	50
Passionfruit	July - August (cool slow growth months)	Youngest fully expanded mature leaf behind a recent flush of growth. This is generally the fourth to eighth leaf from the growing tip. Sample 20 vines, taking a leaf from 6 branches on each vine, from east or north side of vines (i.e. in full sun).	120
Pawpaw	Spring	Sample petioles from the youngest fully expanded leaves subtending the most recently opened leaves. Use entire petiole and collect 20 over a 1 ha block.	20