

WHY SAMPLE?

Plant tissue analysis is normally used for the following reason:

- Diagnostic – to determine the reason for poor growth – or trouble shooting.
- Monitoring – to assess the suitability of current fertiliser management practises.

WHAT YOU WILL NEED

- Paper Sample collection bag,
- Submission Form,
- Plastic pocket
- Freight Bag

All materials above are available from the Nutrient Advantage Help Desk on 1800 803 453 or your local Incitec Pivot Agent or Dealer.

COLLECTING A SOIL SAMPLE

Plant tissue sampling has some crucial elements such as timing, growth stage, plant part and the number of leaves required for testing and sampling varies between crop types. Please see the Plant Sampling Fact Sheet for more information. Listed below are sampling instructions for some major crops only.

- Establish appropriate sampling program (see Sampling protocol below).
- Ensure the submission form is fully completed and all details are accurate.

The report and recommendation are only as good as the sample taken and information supplied.

SAMPLING PROTOCOL

For Diagnostic Samples;

- ◆ Samples are taken from areas displaying poor or irregular growth.
- ◆ Select an area which is representative of the poor growth area
- ◆ Ensure any soil samples taken to aid in interpretation are also taken from the same area
- ◆ Additional plant samples should also be taken from an area displaying good growth for comparison of growth factors. Make sure samples are of the same variety and growth stage as the poor area.
- ◆ Additional Samples should be taken for areas showing varying symptoms of poor growth

For monitoring samples:

- ◆ Samples should be taken from an area which is representative of the whole area.

What and when to sample

- ◆ Part of plant - Generally, sample fully-expanded, recently-matured whole leaves including the blade (lamina), midrib and the extended petiole (leaf stalk), unless otherwise specified. If petioles are being sampled, ensure the leaf blades are detached at the time of sampling, not afterwards
- ◆ Timing is a very important key to the effective use of plant tissue analysis, especially when used in monitoring situations. Ensure samples are taken at the correct growth stage or time of year.
- ◆ The time of day can also affect the levels of some elements in the plant. This is particularly true for nitrate nitrogen, especially where conducting tissue such as petioles (leaf stalks) are analysed, less so where the plant tissue is analysed for the total amount of the nutrients present (e.g. N). Plant tissue samples should be collected prior to 10.00 am wherever possible to ensure representative nitrate concentrations are measured.
- ◆ Plant tissue should be collected from a number of plants or trees to provide a representative sample.
- ◆ The laboratory needs at least 30 g of oven dry plant material for analysis. The number of leaves or weight of fresh (green) material to provide this amount, after drying, is shown below or in detail in Plant Sampling Fact Sheet.
- ◆ Plant tissue should be despatched to the laboratory in a paper bag. Plastic bags are unsuitable as they will cause the sample to sweat

Sampling Don'ts

- Avoid soiled, damaged, dead or dying plant tissue.
- Do not sample plants stressed by environmental conditions, e.g. drought, flood, extreme cold or heat wave conditions.
- Do not sample plants affected by disease, insects or other organisms.
- Do not sample soon after, e.g. within 2 months, of applying fertiliser to the soil or foliage.
- Avoid sample contamination from dust, fertilisers, chemical sprays and perspiration from hands (so wash hands before sampling).
- Avoid atypical areas of the paddock, e.g. poorly drained areas.
- Do not sample plants of different vigour, size and age.
- Do not 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 leaf ages.
- Don't cook samples when drying

Sampling Dos

- Sample the correct plant part at the specified time or growth stage.
- Use clean plastic disposable gloves to sample, where perspiration may contaminate the sample or where there is likelihood of cross contamination between sampling sites e.g. due to different spraying practices.
- Sample early in the day.
Sample tissue (e.g. entire leaves) from vigorously growing plants unless otherwise specified.
- Take sufficiently large sample size (number of leaves), i.e. adequately fill the paper bag provided.
- When trouble shooting, take separate samples from good and poor growth areas for comparison.
- Wash samples while fresh where necessary to remove dust and foliar sprays.
- Keep samples cool, e.g. in an esky, after collection.
- Refrigerate or dry if samples can not be despatched to the laboratory immediately, to arrive before the week-end.
- Fill out the field information/order form as completely as possible.

Listed below are some major crops and the growth stage, plant parts and number of leaves to collect

Major Crop Type	Specific Crop Type	Growth Stage	Plant Part	Number
Tree Crops	Pome and Stone Fruit	Late January to mid February	Mid-shoot leaves from current seasons extension growth	4 leaves from each of 25 trees
	Citrus	When leaves are 5-7 months old	Mid-shoot leaves from non-fruiting extension growth. Take leaves at shoulder height. Avoid terminals which have made a subsequent growth flush	200 leaves
	Vines	When 75% of vines are flowering	Petiole of base leaf opposite a bunch cluster on terminal shoots	200 petioles
Vegetables	Broccoli Cabbage Lettuce	Head	Wrapper leaf	25 to 50 leaves
	Potato	Early flowering	Mid-stem leaf including petiole	25 to 50 leaves
	Onion	Mid-growth	Youngest fully developed leaf	100 leaves
	Carrot	Mid-growth	Leaflets of youngest fully developed leaf excluding petiole	200 leaves
	Tomato	Flowering at 2nd node	Youngest fully developed leaf, excluding petiole	50 to 100 leaves
Broadacre Crops	Cereals	Early to Late Tillering	YEB (Youngest fully developed leaf)	100 leaves
	Rice	Mid tillering	YEB (Youngest fully developed leaf)	100 leaves
	Lupins	Early vegetative and before flowering	YOL (Youngest fully developed leaf)	100 leaves
	Faba beans	Early vegetative and before flowering	YOL (Youngest fully developed leaf)	50 -100 leaves
	Field peas	Early vegetative and before flowering	YOL (Youngest fully developed leaf)	100 leaves
	Oilseeds	Early vegetative and before flowering	YOL (Youngest fully developed leaf)	100 leaves
Pasture	Lucerne	Vegetative stage and before flowering	Top 10-15 cm of new growth	30 - 50 shoots
	Medics, clovers	Vegetative stage and before flowering	Fresh, functioning green leaves and petioles	50 shoots

GETTING THE SAMPLE TO THE LABORATORY

1. Ensure that you have number of leave or a minimum of 30 grams of oven dry material per sample in each paper bag.
2. Fill out the appropriate Submission Form making sure to supply the correct customer account number.
3. Fill out ONE Form for a maximum of three samples taken from the **same paddock** or with the same histories.
4. Ensure a test code is clearly indicated using the current Nutrient Advantage Price List.
5. Double check that the barcode numbers on the completed Submission Form match the barcode numbers on the sample bags (remember to keep one for your records).
6. Remember that you must supply accurate information so that correct interpretation and recommendation of test results can be made.
7. Place all Forms in the clear press seal plastic pocket provided. Place the submission form and any tissue and soil samples into a Freight satchel and seal and deliver to:

**Attn Sample preparation
Nutrient Advantage Laboratory
8 South Rd
Werribee Victoria
Australia 3030**

SUMMARY

Remember, the tissue analysis results and recommendations are only as good as the original sampling technique and the level of detailed information supplied for the interpretation by the laboratory.

For more information about Nutrient Advantage please contact the Nutrient Advantage Help Desk on 1800 803 453.

Submission forms, tissue and soil bags, freight bags and other materials required for sampling are available from the Nutrient Advantage Help Desk or from your local Incitec Pivot Agent. Submission Forms and current Nutrient Advantage product information are available on our website.

www.incitecpivotfertilisers.com.au.