



# BACK PADDOCK NUTRIFACT

## Guidelines for Sampling Plant Tissue for Annual Cereal, Oilseed, Grain and Legume Crops

### 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.

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## 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.*



BACK PADDOCK  
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# Sampling Instructions

## Soil

**Correct sampling is absolutely critical for meaningful analysis**

### Taking the Sample

Ensure your hands and equipment are clean before commencing sampling.

Divide the area to be sampled into relatively uniform soil types, cropping and fertiliser history. One sample is required from each of these uniform areas. Consult your adviser on where to sample.

If you do not have a soil probe use a shovel or spade to dig a hole to the sample depth. Then cut a 2cm slice of soil from one side of the hole and place this soil in a plastic bucket.

Repeat this 20 times, sampling at regular intervals over the block to be sampled.

Depth of sampling

Surface samples are taken to a depth of 0-10 cm for cereals, oilseeds, grain legumes, forages and summer grains.

### Sampling – Where NOT to sample

- Unusual areas, e.g. stock camps, dam sites,
- Within 10 to 20 m of current and old fence lines, timber burns, headlands,
- Poorly drained areas, gilgais or melon holes, etc
- Areas of poor growth or excessively good growth, e.g. dung and urine patches in crops or pastures
- Areas of differing soil type, drainage patterns, and cut and fill areas
- Areas of differing fertilizer usage including in the fertilizer band, particularly in no till or row crop situations
- Sample high and low yield areas separately
- Where different soil types occur within the same paddock, sample each separately

Areas of different farming history should be sampled separately.

- For each soil or plant tissue sample in the kit you will find:
- 1 sample bag labeled with a barcode
- 1 Sample Order Form (SOF)
- 1 Prepaid Express Post satchel – addressed
- 1 Sample Information Form (SIF)

Collect samples according to the instructions below for Soil or Plant Tissue and place in the sample bag provided.

Place the filled sample bag and the completed SOF (Sample Order Form) in the satchel provided and dispatch by normal Express Post arrangements.

Complete the SIF (Sample Information Form) and FAX or post to the adviser shown.

It may be beneficial to draw and retain a rough sketch of the farm or paddock marking each sample area with the barcode number/s assigned to the samples.

Crop	Growth Stage To sample	Plant Part	Number Required
Barley	Seedling to early tillering (GS 14 -21)	Whole tops cut off 1cm above ground	40
	Early tillering to 1st node (GS 23 - 31)	Whole tops cut off 1cm above ground	25
	Emergence of head from boot (GS 50 –51)	Whole tops cut off 1 cm above ground	25
	Early tillering to 1st node ( GS21-31)	Youngest expanded blade (YEB ) plus next 2 lower blades,	40
Canola	6 leaf to rosette	Whole tops	25
	Prior to flowering	Youngest mature leaf	40
Chick Peas	Pre-flowering	Whole tops	25-40
Faba beans	Vegetative pre-flowering	Whole tops	20
	Early flowering	Recently mature leaf	75-100
Lentils	Pre-flowering	Whole tops	25-40
Lupins	Pre-flowering	Recently mature leaf	50 -75
Linseed	Immediately pre-flowering	Upper fully expanded leaves FEL stripped from stem	100s
	63 days after sowing DAS	Whole shoot cut 2 cm above ground level	30
Oats	Seedling to early tillering (GS 14 -21)	Whole tops cut off 1cm above ground	40
	Early tillering to 1st node (GS 23 - 31)	Whole tops cut off 1cm above ground	25
	Emergence of head from boot (GS 50 –51)	Whole tops cut off 1 cm above ground	25
	Early tillering to 1st node ( GS21-31)	Youngest expanded blade (YEB ) plus next 2 lower blades,	40
Peas (field peas)	Pre-flowering	Youngest mature compound leaf (leaves from 3 <sup>rd</sup> to 5 <sup>th</sup> nodes from top)	60 - 80
Sorghum	Seedlings <30cm tall	Whole plant – seedlings to 30 cm tall cut off 1cm above ground	40
	Just prior to flowering or at early flowering	3rd leaf below the head	30
Soybean	Early flowering to early pod set	Upper mature trifoliolate leaf	30-40
Sugarcane	During active growing season (November to May)	Leaf strips from third leaf from top of stalk from stalks of average height (first leaf is one that is more than half unrolled). Third leaf corresponds to top visible dewlap. Fold third leaf in half and cut and retain the folded middle 100 - 150mm section. Retain this middle 200 – 300mm section and discard the rest. Strip out and discard the midrib from this 200 – 300 mm section of leaf strip.	30 - 40
Sunflower	Early budding (R1 stage)	YFEL youngest fully expanded leaf	40
	Petals visible (R5.1 stage)	YFEL youngest fully expanded leaf	40
Wheat / Triticale	Seedling to early tillering (GS 14 -21)	Whole tops cut off 1cm above ground	40
	Early tillering to 1st node (GS 23 - 31)	Whole tops cut off 1cm above ground	25
	Flag leaf ligule just visible to boots swollen (GS 39 –45)	Whole tops cut off 1cm above ground	25
	Early tillering to 1st node ( GS21-31)	Youngest expanded blade (YEB ) plus next 2 lower blades,	40