

WHY SOIL SAMPLE

The benefits of soil sampling to the farmer are:

- Establish the current nutrient status of the soil to provide the basis for future strategies.
- Indicate the ameliorants required to correct a soil's physical and chemical imbalances.
- Determine factors that may be limiting crop and pasture production.
- Identify opportunities to improve farm profitability through efficient soil fertility management.
- Develop an appropriate nutrient plan for the farm based on productivity targets.
- Determine the better fertiliser type to apply in particular situations.
- Monitor the progress of nutrient strategies and indicate any need to fine-tune inputs.
- Assists in the planning process through improved budgeting of farm financial resources.

These benefits may result in better farm management through more cost effective nutrient decisions.

WHAT YOU WILL NEED – SOIL SAMPLING EQUIPMENT

- Clean core sampler (6" or 15cm core) to collect topsoil samples
- Screw driver and clean plastic bucket to remove and collect soil from the sampler
- Small spade to remove any excessive debris
- Small hand auger for subsoils
- Sample collection bag, Submission Form, plastic pocket – all available from the Nutrient Advantage Help Desk on 1800 803 453 or your local Incitec Pivot Agent or Dealer.

COLLECTING A SOIL SAMPLE

- Establish appropriate sampling program (see Section A below).
- Ensure the submission form is fully completed and all details are accurate.
- The correct sampling and handling procedures must be followed (see Section B below).

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

A. SOIL SAMPLING STRATEGY FOR THE WHOLE FARM

- Select a particular characteristic that is applicable to the property, then group paddocks into categories. Examples of this are:

<u>Characteristic</u>	<u>Categories</u>
Soil type	Poor/good, black/red, sandy/clay.
Paddock History	Hills/flats, planting age, crop rotation, pasture type.
Management Practice	Irrigated/dryland, cultivated/direct drilled.

1. Orchard and Vineyard

- **Pre-plant** – A top soil and sub soil sample should be carried out prior to planting. The top soil sample identifies the nutrient status of the soil, while the sub soil sample provides an insight into potential problems (acidity or alkalinity, sodicity or salinity) and what measures are needed to be taken (ripping lime/gypsum to depth).
- **After planting** – Once the crop has been planted, a topsoil sample should be taken to ensure that the ameliorants and other inputs have incorporated into the soil.
- **Mature planting** – Once the crop or vine crop is producing a crop, soil or petiole sampling is used for monitoring or diagnostic purposes, often in conjunction with plant tissue testing. Soil testing should occur every 2-3 years in the same location as the previous sampling. Sampling of soil should be taken from the areas where fertilisers or ameliorants have been previously applied or where root growth proliferates.
- **Between trees-vines within the planting line** – Usually used to monitor the input of effectiveness of phosphorus, potassium, sodicity and pH status. Sampling is taken from under the vine bank or between trees.
- **Under drippers** – Nitrogen application through irrigation can acidify drip patterns. Sample just left or right of dripper. Sub soil sampling at intervals can monitor changes in acidity if desired. Normally pH and salinity testing is required.
- **Within traffic row** – Usually used for cover crop-permanent sward management but can be used also as a benchmark for nutritional status when compared to points 1 and 2 above.

2. Vegetable and row crops

- Take a topsoil sample from each class well in advance to planting/sowing.

3. For both Orchard/Vineyard and Vegetable/Row crops

- Identify where each sample has been taken (eg. Paddock/block name, row number) for future reference and sampling.
- Study your soil test results and recommendations carefully. Discuss them with your Incitec Pivot Technical Agronomist or local Incitec Pivot Agent. Be sure to review your management practices and yield goals. Apply recommendations to all paddocks or blocks within each category.

B. SAMPLING PROTOCOL

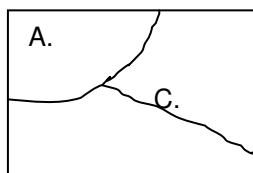
TOPSOIL – Take 30 (minimum) cores per sample to 15cm depth

SUBSOIL – Take 15 (minimum) cores per sample from 15cm depth to 50cm depth

Each sample should comprise a minimum of 400gm and a maximum of 1000gm of soil.

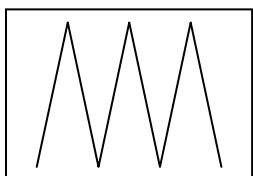
1. Select sampling sites and a sampling pattern as described in the following diagrams:

- **Zone**



This design is used for changes in soil types and trends across sampling areas (precision farming). Samples are taken from each zone and analysed separately. This design should be adopted in **all sampling strategies**, and should utilise one of the sampling methods below.

- **Zigzag**



If care is taken this provides good coverage of the sampling area, making it the ideal design for diagnostic sampling. The degree and type of bias vary with experience of operator. Generally use on areas less than 10ha.

- Using the corer/auger, take soil sample cores and remove grass and large debris.
- Place the cores into a clean bucket and break soil into small crumbs.
- Mix sample thoroughly by tipping sample back and forth between two buckets, or by mixing on a plastic sheet.
- Use a separate pre-labelled bag for each sample.
- After filling with soil, securely seal the bag with wire-tie provided and/or press seal.
- For row crops, use the zigzag pattern in the sampling zone.
- For established woody perennial crops (eg orchards, vineyards) take cores within the plant row of the block being sampled.
- Areas that should be sampled separately are:
 - Different soil types, topography or paddocks.
 - Areas that have been cropped or fertilised differently.
- Avoid unusual areas such as:
 - Very wet conditions, stock tracks, windbreaks, fertiliser dump sites or headlands.
 - Areas within 20 metres of fence lines, gates, dams, troughs or trees.
- Areas that have been fertilised or limed should not be sampled within 8 weeks of application.

GETTING THE SAMPLE TO THE LABORATORY

1. Ensure that you have 500 grams of soil per sample in each bag. Extra soil is used during preparation time at the laboratory for flushing grinders to avoid contamination.
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. These samples can be all topsoils, deep soil nitrogen tests or subsoils, or a combination of these test options.
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 Area Information 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 forms 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

Soil testing, results in better information about nutrients and soil ameliorants which leads to more effective farm management decisions being possible.

To optimise this outcome, it is important that the soil sampling strategy is carefully planned and the technique accurately implemented.

Remember, the soil 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, 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.