

Managing your soil

Taking soil tests



STRAWBERRY
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Soil sampling and testing is usually done prior to planting your strawberry crop, however, specific in-crop testing can be useful, such as testing for available nitrate and ammonium.

Why test?

Your purpose for testing your soil must be clear:

- Are you doing predictive testing to check your soil fertility and make a more informed decision on your nutrient requirements?
- Do you want to monitor and assess the suitability of your management practices and make adjustments to your existing fertiliser programs?
- Are you looking for a diagnostic test to help determine the reason for poor growth?

In summary, there are several reasons why you would test your soil:

1. To check general fertility indicators that influence nutrient availability and uptake such as organic matter, pH, electrical conductivity (EC) and cation exchange capacity (CEC)
2. To determine the level and ratios of nutrients in the root zone
3. To determine priorities for intervention if low or excess levels have been found
4. To prepare a nutrient budget and management plan based on the yield target and predicted crop removal
5. To monitor changes and trends in soil properties and nutrient levels over time so that management inputs can be adjusted
6. To identify specific problems related to observations of poor growth

Asking the question of why you are testing and what for, will help to determine the timing of sampling, where to sample, sampling depth(s) and the type of analyses you will need.

For intensive crops like strawberries annual soil testing is recommended at a minimum. In some instances more frequent testing could be beneficial to check the levels of mobile nutrients that can leach such as nitrogen (N). Plant testing should be used as an additional monitoring tool to soil testing to ensure nutrient uptake meets expectations.

Random, representative sampling

Look at the soils in the block you intend to sample. Submit a separate soil sample from each distinct soil zone in a paddock or block, if they are to be treated differently (e.g. by soil type or texture: clay, loam or sand).

Alternatively, only sample the predominate soil type or texture if you cannot treat areas differently. Two or more individual samples are needed from blocks with large areas that have been managed differently in the past (e.g. if two or more blocks have been combined), as this historical use may affect your fertiliser and management requirements significantly. For very large blocks, a representative sampling area of 1-2 hectares may be selected for sampling.

To obtain representative samples, do not sample from unusual sites such as:

- Gateways and headlands
- Close to dams
- Drainage lines
- Old fertiliser stockpiles

Soil cores should be collected along a fixed diagonal transect or zig zag path as illustrated in Figure 1. A map and plan of the soil sampling area is essential for interpreting results and any subsequent testing trends. Ideally keep waypoints via GPS or landscape markers of your sampling area and sampling points, the transect or zig zag pattern used for future reference.

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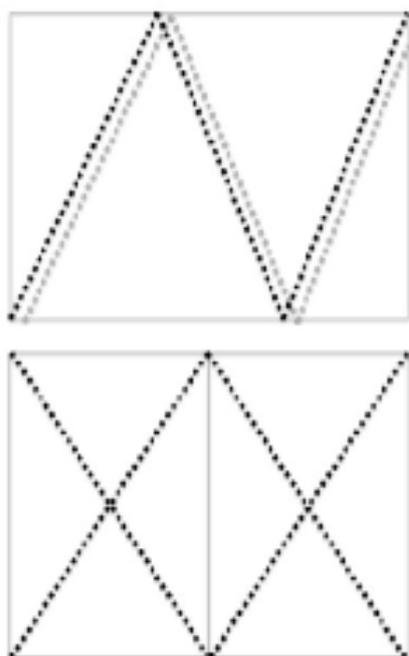


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A couple of important points on sampling include:

- Use the same path (not the same points) the next time you sample.
- Always sample at the same time of year. This allows for re-testing and better monitoring of fertility trends than random sampling.
- Never sample straight after an application of fertiliser or soil amendments, unless you want to check how they may affect your soil fertility and nutrient levels.
- Avoid collecting surface material such as leaf litter or coarse, un-decomposed organic matter.

The sampling depth should give information about the main root-zone. Take two samples, one in the topsoil (0-15 cm) and one in the subsoil (15-30 cm) if the soil has not been tilled before sampling so that nutrient stratification can be detected. Alternatively, one sample in the 0-30 cm depth usually covers the main root-zone for strawberries and provides a good summary of soil fertility and potentially available nutrients in that zone. Deep soil N or N-check (available N) sampling can be done at either (i) 0-30 cm, (ii) 0-30 and 30-60 cm or (iii) 0-60 cm. If trends are important, sampling depths used previously should be maintained unless these were not representative of the root-zone.



Soil subsample collection patterns

TOOLS REQUIRED FOR SAMPLING

- Soil corer or spade
- Clean bucket(s)
- New plastic bags or sample containers (off the shelf or supplied by the lab)
- Labels and marker pens to identify the sample before or after it is collected and to make notes
- Record sheet or sample information labels to record sample details (such as site, depth, etc.). The format and type of information to provide is often prescribed by the lab.
- Notebook to record observations about the paddock, such as soil condition, weeds.
- Optional extras may include:
 - » GPS to help determine the sampling path
 - » Camera to take photos of soil profile, structure, colour of the paddock
 - » A helping hand

A soil sample for lab analysis is made up of a set of separate sub-samples

For each sample to be sent to the lab, thoroughly mix a minimum of 20 soil cores (sub-samples) in one bucket. The more cores taken, the more reliable the test result. You may use a spade instead of a core sampler. However, a core sampler gives better results.

Fill a container or bag with 500 g of the well-mixed sample from the 20 or so cores in a sampling bucket. Make sure samples are clearly labelled and labels correspond with the record sheet accompanying them to the lab.

Once the samples have been collected they should be kept cold (fridge) and sent as soon as possible to the laboratory for analysis.

References

Blaesing D (2017) "Soil testing and interpretation for vegetable crops", RMCG and AHR

Soil Wealth (2016) "Taking Soil Samples", RMCG and AHR

Ullio L (2010) "Strawberry fertiliser guide", primefacts fact sheet, NSW Government