



## CROP GUIDE - Strawberry

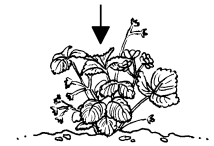
### Sampling Notes

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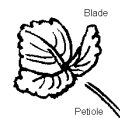
Two approaches are used for tissue testing of a strawberry crop: (i) analysing the petiole through the season, in particular to monitor the nitrogen status, and (ii) leaf blade analysis at fruiting, to evaluate the status of all plant essential nutrients.

Varieties differ in their ability to utilise nitrogen, primarily because of differences in growth habits, fruit production and foraging power of the roots for soil nitrogen. Consequently, different varieties should be sampled separately.

Blade	
<b>Sampling Time:</b>	During fruiting, preferably at first harvest.
<b>Plant Part</b>	Leaf blades (excluding petioles).
<b>Collect From:</b>	Youngest mature leaves.
<b>Quantity per Sample:</b>	30-50.
<b>Recommended Tests:</b>	Basic Plant (BP), Molybdenum (Mo), Chloride (Cl)
<b>Comments:</b>	Deficiencies are more likely to arise during fruiting, when substantial nutrient uptake is occurring. Hence the recommendation to analyse leaf blades at this time.



Petiole	
<b>Sampling Time:</b>	Through the growing season.
<b>Plant Part</b>	Petioles.
<b>Collect From:</b>	Youngest matured leaves.
<b>Quantity per Sample:</b>	50.
<b>Recommended Tests:</b>	Nitrate Nitrogen (NO <sub>3</sub> ).
<b>Comments:</b>	Petiole analysis is recommended for monitoring the status of nitrogen, which is a key nutrient in strawberry production.  It can also be useful to analyse the petioles for P, K, Mg and Cl.



Soil	
<b>Sampling Time:</b>	Prior to crop establishment.
<b>Core Depth</b>	15cm.
<b>Collect From:</b>	From the rooting zone of the plants.
<b>Quantity per Sample:</b>	12 - 20 cores.
<b>Recommended Tests:</b>	Basic Soil (BS), Sulphate Sulphur (SO <sub>4</sub> ), Available Nitrogen (AN)
<b>Comments:</b>	Separate samples should be taken from blocks that differ in age, cultivar types, vine performance, soil types, topography and fertiliser history.  If trying to diagnose a problem with crop growth and yield, samples should be collected from the rooting zones of the worst affected plants. In these circumstances, a second sample taken for comparative purposes from the rooting zones of normal plants may be useful.

## Comments

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The most likely deficiencies to occur are nitrogen, phosphorus, potassium and magnesium.

Nitrogen deficiency symptoms starts with small chlorotic older leaf blades and develops into shortened, red and brittle petioles.

Phosphorus deficiency shows as the upper surface of the leaf blades become dark green with a black metallic sheen.

The serrated tips around the upper leaf margins of older leaf blades redden with potassium deficiency. This symptom spreads inwards between the veins.

Symptoms of magnesium deficiency are interveinal chlorosis followed by necrosis.

Petiole nitrate-N levels below 500 ug/g are considered to be too low. Rates of growth and production will decrease and leaves are likely to be a light yellowish green colour.

Petiole nitrate-N levels of over 2000 ug/g are considered adequate. Up to 10,000 ug/g can be tolerated, but above 10,000 ug/g leaf growth becomes excessive, and fruit yields are reduced.

Petiole nitrate-N levels of 5,000-10,000 ug/g will occur during rapid, vegetative growth, flowering and fruit set, followed thereafter by lower levels.

Strawberries are regarded as gross feeders, requiring relatively large amounts of fertiliser.

The optimum soil pH for fine textured clay soils is towards the lower end of the optimum range. For sandy soils it is towards the upper end of the range.

The crop is known to be sensitive to chloride. Potassium sulphate fertiliser should therefore be used in preference to potassium chloride.

## References

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Fertiliser recommendation for horticultural crops. HortResearch HortNET, 1997.

Blackmore, L.C; Searle, P.L and Daly, B.K. 1987. Methods for chemical analysis of soils. NZ Soil Bureau Scientific Report 80. NZ Soil Bureau, DSIR.

Ulrich, A.; Mostafa, M.A.E. and Allen, W.W. 1980. Strawberry deficiency symptoms: A visual and plant analysis guide to fertilisation. University of California, USA.

## Disclaimer

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Normal Range levels shown as histograms in test reports relate specifically to the sampling procedure provided in this crop guide. The Normal Range levels in test reports and Comments provided in this Crop Guide are the most up to date available, but may be altered without notification. Such alterations are implemented immediately in the laboratory histogram reports. It is recommended that a consultant or crop specialist be involved with interpretations and recommendations.