Crop Guide KB Item 3464v15

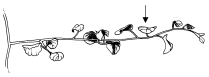
Kiwifruit/Green

Sampling Notes

Leaf analysis provides a more accurate and reliable assessment of the nutrient status of the kiwifruit plant than does soil testing. Greater emphasis, therefore, should be placed on the plant tissue results. Four sampling options are described below. Data is available for optimum levels for virtually the whole growing season, from October to April.

Leaf (1) - Early Spring

Sampling Time: October (At least 4 weeks after budbreak)
Plant Part Leaf & petiole
Collect From: Youngest mature leaf
Quantity per Sample: 2-4 leaves from each of 20 vines
Recommended Tests: Basic Plant (BP), Chloride (Cl)
Comments: Diagnosing deficiencies at this early stage may allow time to correct them for the current season's crop, whereas sampling after December is considered too late for this. These deficiencies will be more pronounced than later in the season, when the plants will have adapted to their growing conditions.

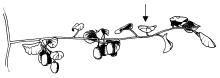


Leaf (2) - Spring (Flowering)

Sampling Time: November
Plant Part Leaf & petiole
Collect From: Youngest mature leaf
Quantity per Sample: 2-4 leaves from each of 20 vines
Recommended Tests: Basic Plant (BP), Chloride (Cl)
Comments: Diagnosing deficiencies at this early stage may allow time to correct them for the current season's crop, whereas sampling after December is considered too late for this. These deficiencies will be more pronounced than later in the season, when the plants will have adapted to their growing conditions.

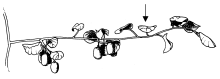
Leaf (3) - Summer (Fruit Set)

Sampling Time: December-January
Plant Part Leaf & petiole
Collect From: Second leaf past the final fruit cluster on the fruiting lateral
Quantity per Sample: 2-4 leaves from each of 20 vines
Recommended Tests: Basic Plant (BP), Chloride (Cl)
Comments: Autumn is regarded as the standard sampling time because nutrient levels will have stabilised. These mid-season samples should reflect the effectiveness of the fertiliser programme adopted, given other ideal growing conditions are met.

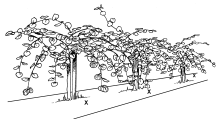


Leaf (4) - Autumn (Fruit Growth)

Sampling Time: February-May
Plant Part Leaf & petiole
Collect From: Second leaf past the final fruit cluster on the fruiting lateral
Quantity per Sample: 2-4 leaves from each of 20 vines
Recommended Tests: Basic Plant (BP), Chloride (Cl)
Comments: Autumn is regarded as the standard sampling time because nutrient levels will have stabilised. These late-season samples should reflect the effectiveness of the fertiliser programme adopted, given other ideal growing conditions are met.



Soil



Sampling Time: Prior to crop establishment and annually during autumn and early winter

Core Depth 15cm

Collect From: From the root zone of the vines

Quantity per Sample: 15 - 20 cores

Recommended Tests: Basic Soil (BS), Available Nitrogen (AN)

Comments: Separate samples should be taken from blocks that differ in age, cultivar types, tree performance, soil types, topography and fertiliser history.

Where fertiliser has been broadcast, sample from the root zone of the vines. Where fertiliser has been banded, samples should only be taken from areas under the vines which have previously received fertiliser.

If the orchard has herbicide treated strips, then it is best if these are sampled separately from the grassed areas between rows. Quite different nutrient levels may exist between these two areas.

When sampling prior to orchard establishment, a 15 - 40 cm depth sample should also be taken, primarily to check the sub-soil pH.

Comments

Potassium deficiency is widespread and probably the most serious deficiency in kiwifruit grown in New Zealand. It may be confused with drought stress or wind damage. Crop requirements for this element have been underestimated in the past.

Minor nitrogen deficiencies are difficult to detect and require early season leaf analyses.
Magnesium deficiencies are not usually observed until February, and then only in older leaves of the current season's extension growth. The later-season sample results, therefore, will probably show more clearly magnesium deficiencies than the spring samples.

Early season deficiencies may manifest as smaller and/or fewer fruit and smaller leaves, rather than reduced mineral concentrations in the leaf.

Irrigation waters high in sodium can cause problems, as kiwifruit cannot tolerate high levels of this element. The sodium levels in the leaf tissue do not increase appreciably, making diagnosis of this problem difficult from plant tissue alone. Soil tests and/or irrigation water analysis would indicate if this toxicity is likely.

Manganese deficiency has been identified on high pH soils (pH 6.8). In contrast, manganese toxicity has also been identified on low pH soils (pH 5.2). Zinc deficiencies occur rarely and must be remedied quickly before or soon after leaf emergence.

Kiwifruit has been identified as a boron sensitive crop. The effect of excessive boron is reduction of fruit yield and also premature ripening in cool storage. Irrigation water with high boron levels may induce boron toxicity.

There is an inverse relationship between the availability of nitrate and the uptake of chloride, i.e. higher nitrate levels will suppress chloride uptake.

References

Smith, G.S.; Asher, C.J. and Clark, C.J. 1985. Kiwifruit nutrition. Diagnosis of nutritional disorders. AgPress Communications Ltd, Wellington.

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.

Disclaimer

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.