

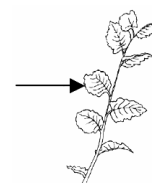
Sampling Notes

Hazelnuts grow on a wide range of soils but produce best on fertile, well-drained soils. Soil testing and leaf analysis provides information respectively on nutrient supply and nutrient status of these shallow-rooted trees.

Interpretive levels are based on literature values from US/Canada and Australia.

Leaf

Sampling Time:	February - March.
Plant Part	Leaf with petiole.
Collect From:	Mid-shoot leaves from current seasons growth.
Quantity per Sample:	2-3 representative leaves from each of 30 trees.
Recommended Tests:	Basic Plant (BP).



Comments: Leaves should be selected from trees of the same age, cultivar, management regime, and grown in the same soil type.

Soil

Sampling Time:	Prior to crop establishment and annually at any time of the year, although autumn to early winter is recommended.
Core Depth	15cm.
Collect From:	From the drip zone of the trees.
Quantity per Sample:	12-20 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 drip zone of the trees. Where the fertiliser has been banded, samples should be taken from under the drip zones which have previously received fertiliser.

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

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

Interpretation

Interpretation of the laboratory's results is possible by comparison with normal levels expected for the crop in question. The interpretation given is based on the best information available and relate specifically to the sampling instructions given.

Leaf			Soil		
Analyte	Unit	Range	Analyte	Unit	Range
Nitrogen	%	2.2 - 2.8	pH	pH	5.5 - 6.5
Phosphorus	%	0.14 - 0.60	Olsen Phosphorus	mg/L	15 - 50
Potassium	%	0.90 - 3.0	Potassium	me/100	0.50 - 1.2
Sulphur	%	0.15 - 0.30	Calcium	me/100	6.0 - 12
Calcium	%	0.70 - 2.5	Magnesium	me/100	1.0 - 3.0
Magnesium	%	0.25 - 1.0	Sodium	me/100	0.0 - 0.50
Sodium	%	0.0 - 0.10	CEC	me/100	12 - 25
Iron	mg/kg	50 - 400	Volume Weight	g/mL	0.60 - 1.0
Manganese	mg/kg	26 - 800	Available Nitrogen	kg/ha	100 - 150
Zinc	mg/kg	16 - 80			
Copper	mg/kg	3.0 - 50			
Boron	mg/kg	30 - 80			

Comments

Generally hazelnuts have a low nutrient requirement, although tree growth responses to small applications of nitrogen and potassium have been observed.

Boron deficiency may reduce fruit set.

Hazelnuts generally grow in similar climates as for apples, producing best during mild, humid summers.

Dry summer soil conditions may affect nutrient uptake due to the shallow root system (kernels may shrivel on fruiting trees). Mulching around the base of the tree may be beneficial.

References

- Weir, R.G. and Cresswell, G.C. 1995. Plant nutrient disorders 1. Temperate and subtropical fruit and nut crops. Inkata Press.
 Reuter, D. J. and Robinson, J. B. (Eds) 1997. Plant analysis. An interpretation manual. Second edition.
 Baxter, P and Jones, C. 1985. Growing fruit & nuts in New Zealand. David bateman Ltd.

Disclaimer

Normal Range levels quoted relate specifically to the sampling procedure given. The Normal Range levels and Comments provided are the most up to date levels 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.