LANDSCAPE SOUTH AUSTRALIA MURRAYLANDS AND RIVERLAND



Plant sap testing

Plant sap testing provides a snapshot of the nutrients available to a plant at a particular point in its growth cycle. It can help identify nutrient deficiencies or excesses before visual symptoms appear and support more informed fertiliser decisions.

Why use plant sap testing?

Testing the sap in plants is a little like testing blood in people. A sap test shows what nutrients are deficient or in excess and provides a snapshot in time of what is happening in the plant at a certain point in the growth cycle.

Testing can be done at various times during the growing season to track nutrient levels in the plant. This can help identify deficiencies and guide timely applications of foliar nutrients.

Sap testing can indicate problems before visual symptoms appear or before there is a yield penalty. Testing new and old leaves can also help identify where nutrient problems may be occurring. Older leaves act as a nutrient store for developing young leaves, so a deficiency in younger leaves may indicate that the nutrient is not available to them in sufficient quantities.

Plant sap testing and soil testing

Conducting sap tests alongside soil testing can provide a better understanding of plant productivity.

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A soil test may indicate that there are adequate nutrients in the soil, but a sap test can show if the plant is accessing the soil nutrients. Nutrients may not be freely available to plants because they are bound to organic matter or clay, and soil pH can also influence nutrient availability.



Collected plant samples

When to collect samples

Samples should be collected in the morning to reduce inconsistencies like spikes in electrical conductivity (EC) and nutrient levels that can sometimes occur in the afternoon.

It is important to collect samples at the same time of day each time so results can be compared over time.

Changes in weather can also affect results, so avoid collecting samples during rain or extreme heat as these conditions can give different results. Place plant samples in an insulated cooler bag to keep them cool.

How to collect samples

For a dual sample analysis, collect:

- 150-200 g of old leaves
- 150-200 g of new leaves

This allows nutrient levels in old and new leaves to be compared.

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If only a general indication of nutrition levels is required, a sample of random leaves can be collected for analysis.

When preparing samples:

- Keep samples cool in an insulated cooler bag
- Remove excess air from the bag
- Label the sample with farm name, date, crop type and growth stage



Plant samples bagged and clearly labelled

Using your results

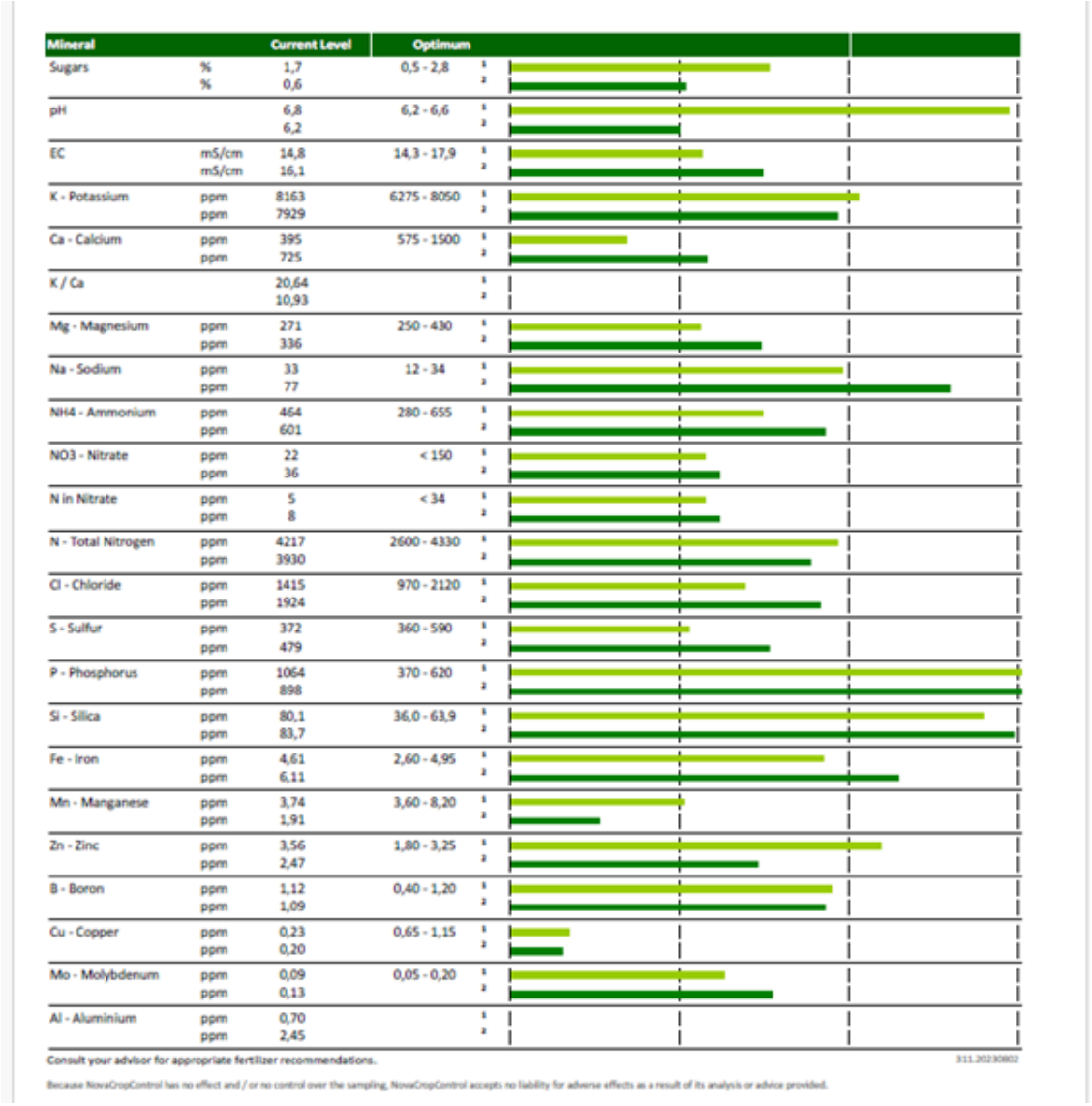
Results from a sap test can be returned within 36-72 hours, depending on the location of the laboratory. This makes sap testing a useful decision-making tool to help grow crops more efficiently.

For example, if a sap test indicates that plants are already accessing the nutrients they need, there may be no need to apply additional nitrogen or another nutrient at that time. This could save time and money, and result in better yields.

Regular sap testing over several years can also provide data to help inform soil management and indicate when extra nutrients may need to be applied to the soil.

Check with your agronomist about undertaking sap analysis and what they recommend.

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Mineral		Current Level	Optimum
Sugars	%	1,7	0,5 - 2,8
	%	0,6	
pH		6,8	6,2 - 6,6
		6,2	
EC	mS/cm	14,8	14,3 - 17,9
	mS/cm	16,1	
K - Potassium	ppm	8163	6275 - 8050
	ppm	7929	
Ca - Calcium	ppm	395	575 - 1500
	ppm	725	
K / Ca		20,64	
		10,93	
Mg - Magnesium	ppm	271	250 - 430
	ppm	336	
Na - Sodium	ppm	33	12 - 34
	ppm	77	
NH4 - Ammonium	ppm	464	280 - 655
	ppm	601	
NO3 - Nitrate	ppm	22	< 150
	ppm	36	
N in Nitrate	ppm	5	< 34
	ppm	8	
N - Total Nitrogen	ppm	4217	2600 - 4330
	ppm	3930	
Cl - Chloride	ppm	1415	970 - 2120
	ppm	1924	
S - Sulfur	ppm	372	360 - 590
	ppm	479	
P - Phosphorus	ppm	1064	370 - 620
	ppm	898	
Si - Silica	ppm	80,1	36,0 - 63,9
	ppm	83,7	
Fe - Iron	ppm	4,61	2,60 - 4,95
	ppm	6,11	
Mn - Manganese	ppm	3,74	3,60 - 8,20
	ppm	1,91	
Zn - Zinc	ppm	3,56	1,80 - 3,25
	ppm	2,47	
B - Boron	ppm	1,12	0,40 - 1,20
	ppm	1,09	
Cu - Copper	ppm	0,23	0,65 - 1,15
	ppm	0,20	
Mo - Molybdenum	ppm	0,09	0,05 - 0,20
	ppm	0,13	
Al - Aluminium	ppm	0,70	
	ppm	2,45	

Consult your advisor for appropriate fertilizer recommendations.

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Because NovaCropControl has no effect and / or no control over the sampling, NovaCropControl accepts no liability for adverse effects as a result of its analysis or advice provided.

An example of the results from a plant sap analysis

Sap analysis is offered by the following organisations:

Hybrid Ag (https://www.hybridag.com.au/) (uses a laboratory in the Netherlands)

Ag Vita (https://agvita.com.au/)

Agresol (https://agresol.com.au/)

Downunder Ag (https://downunderag.com/)

Other resources

Managing Crop Nutrition (vs. Pest Management) & Sap Analysis | John Kempf | Regen Rev 2021 (https://www.youtube.com/watch?v=g1y7MHnmoeg)

Managing Crop Nutritional Integrity Using Sap Analysis (https://www.youtube.com/watch?v=Um8YBWqKeqM)

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