

Nitrogen Soil Testing Factsheet

Soil samples should be taken to 0-15cm or 0-30cm (preferred).

Samples should be on a transect that is representative of the field being sampled.

At least 10 samples should be taken and thoroughly mixed before being sub-sampled and sent to the laboratory/tested.

Mineral N – the fraction of soil nitrogen the plant can access immediately.

- 2 components – nitrate and ammonium
- Should be tested **close to the time of decision making**.
- Samples must be **kept cool** before testing.
- 2 test methods:
 - Mineral nitrogen: Reports nitrate and ammonium as **mg N/kg**. Laboratory test.
 - Nitrate Quick Test: Reports nitrate only as **mg NO₃-/L**. Can be tested yourself.

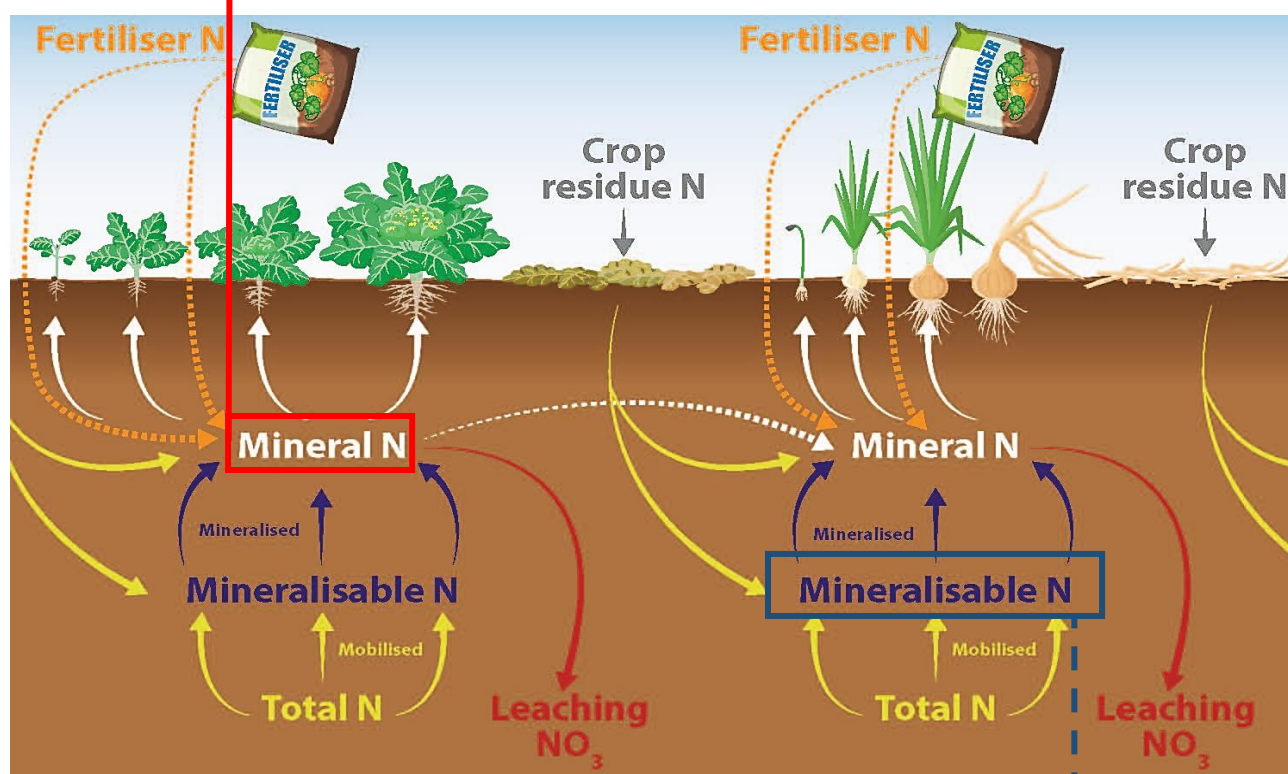


Diagram developed by Plant & Food Research.

Mineralisable N – the amount of mineral nitrogen that could be released during the breakdown of soil organic matter.

- Several names are used by the labs – request Hot Water Nitrogen or Potentially Mineralisable Nitrogen.
- Results reflect the amount of mineral nitrogen released by the soil over a standard period of time – the SVS tool scales this to match your crop growing days and local climate.
- Enter the **Potentially Mineralisable Nitrogen** result as **mg N/kg** into the SVS Tool.
- **Can be tested for alongside annual or bi-annual standard soil tests.**
- Does not typically change rapidly (excluding land use change – e.g., long term pasture to cropping).

The SVS tool converts all raw test results into kg N/ha and puts them into context for making nitrogen optimisation decisions.

Laboratory soil test request form and result example – Hill labs



Client

Name

ANALYSIS REQUEST

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Hamilton 3240 New Zealand

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www.hill-labs.co.nz

Primary Contact

SOIL SAMPLE DETAILS

Recommended Profiles are outlined below, and on the reverse of this sheet.

Please indicate your requested tests with a ✓

Sample Identification	Sample Depth (mm)	Dairy (D), Drystock (DS) OR Crop Type (Specify)	Soil Code*	Rec. Profile	Basic Soil BS	Sulphur Profile S	Ammonium Capacity ASC	Resin P RP	Organic Profile OrgSP	Organic Matter OM	Pot Avail Nitrogen AN	Min N HWEON	Boron B	Trace Metals EDTA	Mehlich 3 M3	Soil Health Profile SHealthP	See Over Page	Lab#
																	Other	
Sample 1												✓					Min N	

* Soil Code: Ash (A), Pumice (Pu), Peat (Pt), Sedimentary (Sed) – applies for pasture only, Glasshouse (GH)

Recommended Soil Profiles: (see Crop Guides)

Pasture (Basic Soil + S Profile), Arable Crops (Basic Soil + S Profile + Potentially Available N), Vegetables (Basic Soil + S Profile + Pot Available N), Avocado (Basic Soil + M3), Kiwifruit (Basic Soil + Pot Available N)

Mineralisable N – the amount of mineral nitrogen that could be released during the breakdown of soil organic matter.

Mineral N – the fraction of soil nitrogen the plant can access immediately.

Analysis	Level Found	Medium Range*	Low	Medium	High
pH	pH Units	5.7	5.4 - 5.8		
Olsen Phosphorus	mg/L	23	30 - 60		
Potassium	me/100g	0.30	0.50 - 1.00		
Calcium	me/100g	7.9	4.0 - 10.0		
Magnesium	me/100g	0.60	1.00 - 3.00		
Sodium	me/100g	0.09	0.00 - 0.50		
CEC	me/100g	16	12 - 25		
Total Base Saturation	%	57	35 - 75		
Volume Weight	g/mL	1.00	0.60 - 1.00		
Boron	mg/kg	0.6	1.0 - 2.0		
Ammonium-N*	mg/kg	11			
Nitrate-N*	mg/kg	7			
Mineral N (sum)*	mg/kg	18			
Organic Matter*	%	4.4	7.0 - 17.0		
Total Carbon*	%	2.6			
Hot Water Extractable Organic Nitrogen*	mg/kg	152			
Potentially Mineralisable Nitrogen*	mg/kg	149			
Dry Matter*	%	78.3			
Moisture*	%	21.7			
Sample temperature on arrival*	°C	8			
Soil Sample Depth*†	mm	0-300			
Soil Type*†		Sedimentary			

Labs use a mix of terminologies and report results differently.

If in doubt about which test to request or which result to input into the SVS Tool please contact the laboratory or Andrew Barber.

A beta version of the SVS Tool is now available: www.svstool.co.nz

Feedback to andrew@agrilink.co.nz

Laboratory soil test request form and result example - ARL

ARL Soil Analysis Request Form

Initials: _____ Surname: _____ Customer Number (if applicable): _____
 Company/Farm name: _____ Farm Location: _____
 Postal Address: _____
 Phone: _____ Email: _____
 Mobile: _____ Please tick if you would like email notification of when your results are available through My Ravensdown

Results to: Client Consultant Merchant
 Charge to: Client Consultant Purchase Order Number: _____
 Consultant/Merchant address: _____

Sample information (please note all fields outlined <input type="checkbox"/> must be filled out)	1	2	3	4
Bag Number				
Sample Name				
Crop (e.g. Pasture, Maize, Apple)				
Soil Group (sedimentary, ash, pumice, peat)				
Sample depth (cm)				
Soil Order (required for PMN Modelling)				
Block area (area the soil sample represents in hectares)				
Block slope (Tick one box per sample)	Flat (0-7°) <input type="checkbox"/> Rolling (8-15°) <input type="checkbox"/> Easy (16-25°) <input type="checkbox"/> Steep (>26°) <input type="checkbox"/>	Flat (0-7°) <input type="checkbox"/> Rolling (8-15°) <input type="checkbox"/> Easy (16-25°) <input type="checkbox"/> Steep (>26°) <input type="checkbox"/>	Flat (0-7°) <input type="checkbox"/> Rolling (8-15°) <input type="checkbox"/> Easy (16-25°) <input type="checkbox"/> Steep (>26°) <input type="checkbox"/>	Flat (0-7°) <input type="checkbox"/> Rolling (8-15°) <input type="checkbox"/> Easy (16-25°) <input type="checkbox"/> Steep (>26°) <input type="checkbox"/>

Tests required - please select appropriate soil analysis required				
Basic Soil Analysis (pH, Olsen P, K, Mg, Ca, Na, CEC, % Base Sat, Lab bulk density) \$64	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pasture Soil Analysis – Recommended for pastoral soil incl. lucerne (Basic + Sulphate Sulphur + Organic Sulphur) \$85	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Potentially Mineralisable Nitrogen (PMN) \$49	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mineral N (Deep Nitrogen Test) Analysis (Ammoniacal-N, Nitrate-N, Moisture) \$50 <i>Samples must be received fresh <10°C</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Mineral N – the fraction of soil nitrogen the plant can access immediately.

Mineralisable N – the amount of mineral nitrogen that could be released during the breakdown of soil organic matter.



Analytical Research Laboratories

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 PO Box 989 Email: arl@arlab.co.nz
 Napier 4140 Website: www.arlab.co.nz

Customer: _____

Samples: _____

SOIL ANALYSIS

Lab Number	Sample Name	Core Length (cm)	pH	Olsen Sol. P (ug/mL)	Calcium (QTU)	Magnesium (QTU)	Potassium (QTU)	Sodium (QTU)
		15	6.6	121	15	23	15	9
		15	6.2	103	13	21	15	7
		30	5.6	5	7	20	6	14
		30	5.3	6	6	19	6	14

Lab Number	Sample Name	Core Length (cm)	Organic Matter (% w/w)	Total Nitrogen (% w/w)	Total Carbon (% w/w)	Carbon/Nitrogen Ratio
		15	1.5	0.17	0.9	5.0
		15	1.3	0.17	0.8	4.4

Lab Number	Sample Name	Core Length (cm)	Temperature on Receipt (°C)	Potentially mineralisable N (mg/kg)	Potentially mineralisable N (kg/ha)	Nitrate-Nitrogen (mg/kg DM)	NH Nitrogen (mg/kg DM)	Mineral Nitrogen (mg/kg DM)
		15	>10	26	37	3.6	<1	3.6
		15	>10	16	23	9.3	<1	9.4
		30	<10	4	11	6.0	<1	6.8
		30	<10	1	3	15.4	<1	15.4

Laboratory soil test request form and result example - Eurofins



SOIL SUBMISSION FORM

Order ID (office use only):

Business Name/Consultant Name: _____ Purchase Order Number: _____

Name/Property Name: _____

Postal Address: _____

Phone: _____ Email: _____

Invoicing To: Consultant Client Report To: Consultant Client

Copy of Results to Third Party: _____ Sampling Date: / / No. of Samples: _____

Shipping Date: / / No. of Courier Bags: _____

SOIL SAMPLE TYPE – please fill in the columns below

Land Use: P = Pastoral, C = Cropping, H = Horticulture, V = Viticulture Soil Group: S = Sedimentary, PU = Pumice, V = Volcanic, PT = Peat, Other (list) = Farm Type: D = Dairy, S/B = Sheep & Beef, G = Goats, H = Horses, DE = Deer, Other (list) =

Core Depth: 75 mm, 100 mm, 150 mm

Sample Name (to match sample bag):	Core Depth	Land Use	Farm Type	Soil Group	Test Selection – please tick (see over for detailed information):													Other Tests – List Code:
					Basic Soil	Basic Soil (CEC)	RPR Profile	ASC	EOS	AI	Resin P	Total N & C	PMN	HWN & HWC	AvailN			
-----														<input checked="" type="checkbox"/>				Min N

Please ensure that all Contact Details, Sample and Test section fields are completed. Each bag submitted is considered one sample unless specified.

Comments/Instructions: _____

Declaration: I agree that the details on this submission form are correct and agree to abide by the Eurofins Food Analytics NZ Limited General Terms and Conditions of Sale. Signature: _____

Eurofins Food Analytics NZ Limited – Agro Testing

Courier Address: 35 O'Rorke Road, Penrose, Auckland Phone: 09 579 2669 / 0800 387 63467 Email: asmnz@eurofins.com Web: www.eurofins.co.nz

Mineralisable N – the amount of mineral nitrogen that could be released during the breakdown of soil organic matter.

Mineral N – the fraction of soil nitrogen the plant can access immediately.



Agri Testing ANALYTICAL REPORT

REPORT CODE	REPORT DATE	17/03/2022
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Contact for your orders: _____ **Order code:** _____

Sample Name: _____

Analysis Start Date & Time: _____ **Analysis Ending Date:** _____

Depth (mm): _____ **Soil Type:** _____

Sample Code: _____ **Land Use:** _____

SOIL TEST RESULTS	Units	Results	Soil Range	Soil Fertility Desired
NU015 pH	pH units	6.3	6-6.5	
♦NU009 Effective Cation Exchange Capacity	cmol+/kg	23	12-25	
NU362 Total Nitrogen	%	0.18	0.3-0.5	
♦NU355 Total Carbon	%	2.0	4-10	
♦NU259 Organic Matter	%	3.5	7-17	
♦NU065 Carbon to Nitrogen Ratio	Number	11	10-15	
♦NU284 Potentially Available Nitrogen	kg N/ha	28	100-150	
♦NU027 AMN to Total Nitrogen Ratio	%	1	2-4	
♦NUE76 Ammoniacal Nitrogen	mg N/kg	13		
♦NUE77 Nitrate Nitrogen	mg N/kg	10		
♦NU220 Mineral Nitrogen	mg N/kg	23		
♦NU227 Moisture Content	%	17		
♦NU04X Hot Water Nitrogen	mg/kg	35	100-200	
♦NU0EN Hot Water Soluble Inorganic Nitrogen	mg/kg	19		
♦NU0FP Hot Water Soluble Organic Nitrogen	mg/kg	17		
♦NU388 volume weight	g/ml	1.10		

OR Potentially Mineralisable Nitrogen