

COMPOST 'TOTALS' ANALYSIS REPORT

1 sample supplied by Hardwood Residue Solutions on the 1 August, 2019 - Lab Job No. i4364.

Analysis requested by Ray Loy.

(455 Armidale Road SOUTH GRAFTON NSW 2460)

		Product Name: Product Type: Manufacturing Site: Manufactured Date: Application: Test Applicable:	Sample 1 Cow Manure/ Woodchip Woodchip CA-PACK-019	Guideline AS4454:2012 Composted Product
Parameter	Method Reference		i4364/1	
Moisture Content (%)	**Inhouse S2 (105°C)		24	> 25
pH	Rayment & Lyons 2011 - 4A1 (1:5 Water)		6.34	> 5
Electrical Conductivity (dS/m)	Rayment & Lyons 2011 - 3A1 (1:5 Water)		11.94	< 10
Total Carbon (%)	Inhouse S4a (LECO Trumac Analyser)		37.7	..
Total Nitrogen (%)			1.87	≥ 0.8
Carbon/Nitrogen Ratio	**Calculation - Total Carbon/Total Nitrogen		20	..
Estimated Organic Matter (% OM)	**Calculation - Total Carbon x 1.7		64.0	..
Total Calcium (%)			1.93	..
Total Magnesium (%)			0.63	..
Total Potassium (%)	Rayment & Lyons 2011 - 17C1 Aqua Regia		1.92	..
Total Sodium (%)			0.28	< 1 Na
Total Sulphur (%)			0.40	..
Total Phosphorus (%)	Rayment & Lyons 2011 - 17C1 Aqua Regia		0.68	≤ 0.1 P
Total Zinc (mg/kg)			188	< 300 Zn
Total Manganese (mg/kg)			206	..
Total Iron (mg/kg)			3,209	..
Total Copper (mg/kg)	Rayment & Lyons 2011 - 17C1 Aqua Regia		38	< 150 Cu
Total Boron (mg/kg)			7	< 100 B
Total Silicon (mg/kg)			829	..
Total Aluminium (mg/kg)			1,702	..
Total Molybdenum (mg/kg)			1.34	..
Total Cobalt (mg/kg)	Rayment & Lyons 2011 - 17C1 Aqua Regia		3.91	..
Total Selenium (mg/kg)			<1	< 5 Se
Nitrogen/Sulphur Ratio	**Calculation - Total Nitrogen/Total Sulphur		4.6	..
Nitrogen/Phosphorus Ratio	**Calculation - Total Nitrogen/Total Phosphorus		2.7	..
Nitrogen/Potassium Ratio	**Calculation - Total Nitrogen/Total Potassium		1.0	..
Nitrogen Drawdown Index (NDI ₁₅₀)	AS4454:2012 Appendix O		0.09	>0.2
Total Water Holding Capacity (%)	AS3743:2003 Appendix B		47	..

Notes:

1. All analysis is dry weight – Samples reported on an oven dried basis at 105°C (testing conducted on finely ground sample dried at 40°C).
2. Methods from Rayment and Lyons, 2011. *Soil Chemical Methods - Australasia*. CSIRO Publishing: Collingwood.
9. Analysis conducted between sample arrival date and reporting date.
10. This report is not to be reproduced except in full.
12. All testing parameters have been facilitated by a NATA accredited laboratory.
13. All services undertaken by EAL are covered by the EAL Laboratory Services Terms and Conditions. These Terms and Conditions are available on the EAL website: scu.edu.au/eal, or on request.

Quality Checked: Brian Smith
 Compost & Landscape Soils Co-ordinator

COMPOST 'AVAILABLES' ANALYSIS REPORT

1 sample supplied by Hardwood Residue Solutions on the 1 August, 2019 - Lab Job No. i4364.

Analysis requested by Ray Loy.

(455 Armidale Road SOUTH GRAFTON NSW 2460)

Parameter		Method reference	i4364/1
Product Name:		Sample 1 Cow Manure/ Woodchip	
Product Type:		Woodchip	
Manufacturing Site:		..	
Manufactured Date:		..	
Application:		..	
Test Applicable:		CA-PACK-019	
Parameter		Method reference	i4364/1
Soluble Calcium (mg/kg)			2250
Soluble Magnesium (mg/kg)		**Inhouse S10 - Morgan 1	2754
Soluble Potassium (mg/kg)			12548
Soluble Phosphorus (mg/kg)			1434.5
Phosphorus (mg/kg P)		**Rayment & Lyons 2011 - 9E2 (Bray 1)	1715.1
		**Rayment & Lyons 2011 - 9B2 (Colwell)	2148
		**Inhouse S3A (Bray 2)	5256
Nitrate Nitrogen (mg/kg N)			9.8
Ammonium Nitrogen (mg/kg N)		**Inhouse S37 (KCl)	2300.0
Sulfur (mg/kg S)			1434.6
pH		Rayment & Lyons 2011 - 4A1 (1:5 Water)	6.34
Electrical Conductivity (dS/m)		Rayment & Lyons 2011 - 3A1 (1:5 Water)	11.944
Estimated Organic Matter (% OM)		**Calculation - Total Carbon x 1.7	64.0
Exchangeable Calcium (cmol./kg) (kg/ha) (mg/kg)		Rayment & Lyons 2011 - 15D3 (Ammonium Acetate)	5.53
			2480
			1107
Exchangeable Magnesium (cmol./kg) (kg/ha) (mg/kg)			8.18
			2227
			994
Exchangeable Potassium (cmol./kg) (kg/ha) (mg/kg)			4.92
			4311
			1925
Exchangeable Sodium (cmol./kg) (kg/ha) (mg/kg)			1.48
		761	
		340	
Exchangeable Aluminium (cmol./kg) (kg/ha) (mg/kg)		**Inhouse S37 (KCl)	0.03
			5.4
			2.4
Exchangeable Hydrogen (cmol./kg) (kg/ha) (mg/kg)		**Rayment & Lyons 2011 - 15G1 (Acidity Titration)	2.34
			52
			23
Effective Cation Exchange Capacity (ECEC) (cmol./kg)		**Calculation - Sum of Ca,Mg,K,Na,Al,H (cmol./kg)	22.47
Calcium (%)			24.6
Magnesium (%)			36.4
Potassium (%)		**Base Saturation Calculations - Cation cmol./kg / ECEC x 100	21.9
Sodium - ESP (%)			6.6
Aluminium (%)			0.1
Hydrogen			10.4

Product Name: Product Type: Manufacturing Site: Manufactured Date: Application: Test Applicable:		Sample 1 Cow Manure/ Woodchip Woodchip CA-PACK-019
Parameter	Method reference	i4364/1
Calcium/Magnesium Ratio	**Calculation - Calcium / Magnesium (cmol _e /kg)	0.7
Zinc (mg/kg)	Rayment & Lyons 2011 - 12A1 (DTPA)	75.0
Manganese (mg/kg)		74
Iron (mg/kg)		170
Copper (mg/kg)		1.9
Boron (mg/kg)	**Rayment & Lyons 2011 - 12C2 (Hot CaCl ₂)	2.78
Silicon (mg/kg Si)	**Inhouse S11 (Hot CaCl ₂)	114
Total Carbon (%)	Inhouse S4a (LECO Trumac Analyser)	37.67
Total Nitrogen (%)		1.87
Carbon/Nitrogen Ratio	**Calculation - Total Carbon/Total Nitrogen	20.1

Notes:

1. All results presented as a 40°C oven dried weight. Soil sieved and lightly crushed to < 2 mm.
2. Methods from Rayment and Lyons, 2011. Soil Chemical Methods - Australasia. CSIRO Publishing: Collingwood.
3. Soluble Salts included in Exchangeable Cations - NO PRE-WASH (unless requested).
4. 'Morgan 1 Extract' adapted from 'Science in Agriculture', 'Non-Toxic Farming' and Lamonte Soil Handbook.
5. Guidelines for phosphorus have been reduced for Australian soils.
6. Indicative guidelines are based on 'Albrecht' and 'Reams' concepts.
7. Total Acid Extractable Nutrients indicate a store of nutrients.
8. Contaminant Guides based on 'Residential with gardens and accessible soil including childrens daycare centres, preschools, primary schools, town houses or villas' (NSW EPA 1998).
9. Information relating to testing colour codes is available on sheet 2 - 'Understanding your test results'.
10. Conversions for 1 cmol+/kg = 230 mg/kg Sodium, 390 mg/kg Potassium, 122 mg/kg Magnesium, 200 mg/kg Calcium
11. Conversions to kg/ha = mg/kg x 2.24
12. The chloride calculation of Cl mg/L = EC x 640 is considered an estimate, and most likely an over-estimate
13. ** NATA accreditation does not cover the performance of this service.
14. Analysis conducted between sample arrival date and reporting date.
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 Compost & Landscape Soils Co-ordinator