soil health SUPPORT CENTRE
measuring the heartbeat of soil life

CLIENT INFORMATION		SAMPLE INFORMATION	
Contact Person	Me Martli Slabber	**Sampled by**	Me Martli Slabber
Farm Name	Hexrivier Sitrus (Edms) Bpk	**Date Sampled**	-
Postal Address	Posbus 20, Citrusdal, 7340	**Date Received**	03-05-2021
Tel	082 448 2541	**Result Date**	10-06-2021
Email	mslabber@hexfruit.co.za	**Notes**	The thresholds in this report is set up for soil and it must be viewed critically for compost samples.
Results to	Me Martli Slabber		
Client Reference	Kompos Anaerobies	**Lab Number**	SH399

WARD Laboratories, Inc.
Ag Testing - Consulting

SOIL HEALTH & FERTILITY ASSESSMENT

NITROGEN

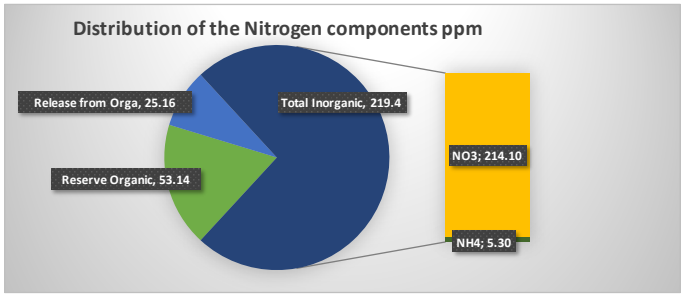
Root exudate simulated extract H3A			H2O Extract	Tot N	N released from	Tot avail N	N Kg/ha	Org / Inorg (relation)
NO3	NH4	Tot Inorg	Org N	Org + Inorg	Org component			
NITROGEN ppm								
214.10	5.3	219.4	78.3	297.7	25.2	244.6	547.8	0.36

PHOSPHOROUS

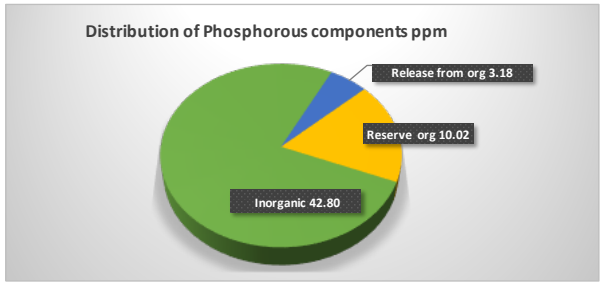
Inorganic	Organic	Tot P	P Released from	Tot Avail	Kg/ha	Org / Inorg
H3A extract			Organic component			
PHOSPHOROUS ppm						
42.8	13.2	56	3.18	46.0	52.1	0.3

POTASSIUM

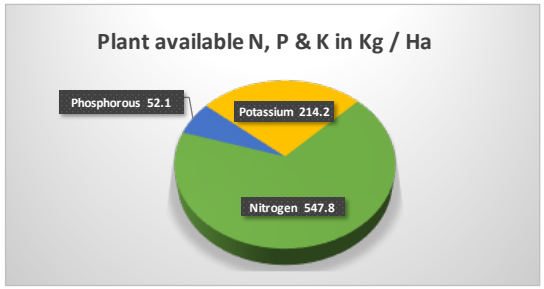
Inorganic H3A extract	Kg / ha
Potassium ppm	
192	214.2



N ppm	Available	Reserve	Total
Inorganic	219.4	0	219.4
Organic	25.16	53.14	78.30
Total	244.56	53.14	297.70



P ppm	Available	Reserve	Total
Inorganic	42.8	0.00	42.80
Organic	3.18	10.02	13.20
Total	45.98	10.02	56.00



R / Ton	Nutrient value	Total	Organic	Inorganic
11200	Nitrogen	R 6 136	R 631	R 5 504
14500	Phosphorous	R 756		R 756
11700	Potassium	R 2 506		R 537
		R 9 397	R 631	R 6 797
			Saving on inorganic N fertilizer	

BIOLOGICAL ANALYSES

Microbial Respiration CO2 - C (ppm C)	Water Extract Organic C ppm C	Water Extract Organic N ppm N	C/N	Soil Health Calculation (Index)	Comment
42.5	529	78.3	6.8	22.7	Excellent

AGGREGATE STABILITY TEST RESULT

Volumetric Aggregate stability %			2	
0 - 15 %	15 - 30 %	30 - 45 %	45 - 60%	>60%
Very low	Low	Average	Good	Excellent

OTHER NUTRIENT FACTORS

1:1 Soil pH (H_2O)		7.94
1:1 Soluble Salts	mmho / cm	ND
Excess lime rating		ND
Soil Organic Matter	%	8.7
Microbial Active C (MAC)	%	8.0
Calcium	ppm	761
Aluminium extractable	ppm	169.0
Iron extractable	ppm	41.0
Magnesium	ppm	221.0
Sulfur	ppm	13.2
Zinc	ppm	3.08
Manganese	ppm	87.0
Copper	ppm	1.13
Sodium	ppm	22.0
% P Saturation (Al / Fe)		26.7
% P Saturation (Ca)		7.4

Definitions & Explanations

Root Exudate Simulated Extract H3A	This is an extract developed by Dr Rick Haney who developed the SHT. It is a weak acid extract "mimicking" what the root exudes.
N Released from the Soil Organic Matter	Function of the microbial activity as determined by the soil respiration rate, the Water Extractable Organic Carbon (WEOC) and the Water Extractable organic Nitrogen (WEON) ratio.
Reserve Organic Nitrogen	Total WEON minus that released portion.
% Phosphorous Saturation (Al/Fe)	Amount of P divided by Al + Fe analysed. A figure below 5 would suggest the application of P fertilizer.
% Phosphorous Saturation (Ca)	Amount of P divided by Ca analysed. A figure below 5 would suggest the application of P fertilizer.

PLFA (Phospho Lipid Fatty Acid) analysis

Sample ID 1	ANAEROBIES
Sample ID 2	SH 399
Total Microbial Biomass ng/g	1403.22
Diversity Index	1.198
Bacteria %	47.41
Total Bacteria Biomass	665.22
Actinomycetes %	17.15
Actinomycetes Biomass	240.65
Gram (-) %	2.87
Gram (-) Biomass	40.27
Rhizobia %	0.00
Rhizobia Biomass	0.00
Total Fungi %	14.32
Total Fungi Biomass	201.01
Arbusular Mycorrhizal %	0.00
Arbuscular Mycorrhizal Biomass	0.00
Saprophytic %	14.32
Saprophytes Biomass	201.01
Protozoan %	0.00
Protozoa Biomass	0.00
Gram (+) Biomass	624.95
Gram (+) %	44.54
Undifferentiated %	38.27
Undifferentiated Biomass	536.99
Fungi:Bacteria	0.3022
Predator:Prey	ALL PREY
Gram(+):Gram(-)	15.5183
Sat:Unsat	4.7078
Mono:Poly	52.8578
Pre 16:1w7c:cy17:0	ALL PRE 16:1
Pre 18:1w7c:cy19:0	ALL CYCLO 19:0

Produce antibiotics, bind atmospheric nitrogen and assist with organic material decomposition

Higher levels of Rizobia reflect better levels of atmospheric nitrogen capture into the soil

High levels of Mycorrhiza represent better Phospate and other nutrient utilization

High levels of Protozoa represent good organic nitrogen cycling.

Gram negative dominant lower range indicates stress

Higher values in both these parameters indicate less stress of microbiological communities.

When ZERO levels are reported it does not necessarily mean complete absence but merely the quantum is less than the level of detection by the test

Indication of mode of soil health status within the measured parameters	Soil Health Index SHI	CO2-C Respiration ppm over 24 hours	Water Extractable Organic Carbon (WEOC) ppm	Soil Organic Matter %	Total Microbial Biomass	Total Fungal Biomass	Microbial Active Carbon MAC %	Mycorrhizae (VAM) Biomass	Water Extractable Organic N WEON ppm	Protozoa Biomass	Rhizobia Biomass	Diversity Index
Survival mode	<4.5	<35	<170	<2	<1500	<50	<30	<20	<8	<8	<20	<1
Progression mode	4.5 - 10	35 - 75	170 - 350	2 - 3.5	1500 - 4000	50 - 300	30 - 50	20 - 100	8 - 19	8- 20	20 - 80	1 -1.5
Regenerative mode	>10	>75	>350	>3.5	>4000	>300	>50	>100	>19	>20	>80	>1.5

Critical Haney & other Soil Health Data

Aggreg Stability	MAC %	Soil Org mat %	SOC %	WEOC ppm	WEON ppm	WEOC % of Tot SOC	Resp CO2 ppm	S H score
2	**8**	**8.7**	**5.06**	**529**	**78.3**	**1.0**	**43**	**23**

Evaluation Summary Biology, Nitrogen, Phosphate, H3A Mineral Extract Analyses, Key Chemical ratios, Plant Effective CEC Base Sturation & Liming recommendation.		
Element or Category	**Your reading**	**Ideal level**
Biological Analysis		
Soil Organic Matter %	8.7	more than 2.5
Soil life - Soil respiration	42.5	more than 50
% Microbially Active Carbon (MAC)	8	more than 20
Soil Health Index	22.7	more than 7
Volumetric Aggregate stability %	2.0	more than 45
Nitrogen Analysis		
WEON released & available to roots ppm	25.2	As high as possible
WEON reserve NOT RELEASED	53.1	As low as possible
Total available Nitrogen in Kg/ha	548	
Phosphate Analysis		
Total available (ppm)	46.0	10 - 20
% P Saturation Ca	7	plus 5
% P Saturation Fe / Al	27	plus 5
Haney H3A Extract Analysis		
Soil pH (Water)	7.94	5.5 - 6.5
Soluble salts mmho/cm	ND	lower than 0.65
Potassium K ppm	192	120 - 200
Calcium Ca ppm	761	Ratios important
Magnesium Mg ppm	221	Ratios important
Sulfur S ppm	13.2	more than 12
Iron Fe ppm	41	20 - 80
Zinc Zn ppm	3.08	1 - 3
Manganese Mn ppm	87	4 - 6
Copper Cu ppm	1.13	0.5 - 1.0
Key chemical ratios		
Calcium : Magnesium	2.1	more than 5
(Calcium + Magnesium)/Aluminium	9.0	more than 1.7
Mangnesium:Potassium	3.7	1 to 2
Potassium : Sodium	5.1	more than 1
Plant Effective CEC Saturation analyses		
Calcium Ca %	55.7	more than 68
Magnesium Mg %	26.5	10 to 20
Potassium K %	7.2	more than 5
Sodium %	1.4	less than 2