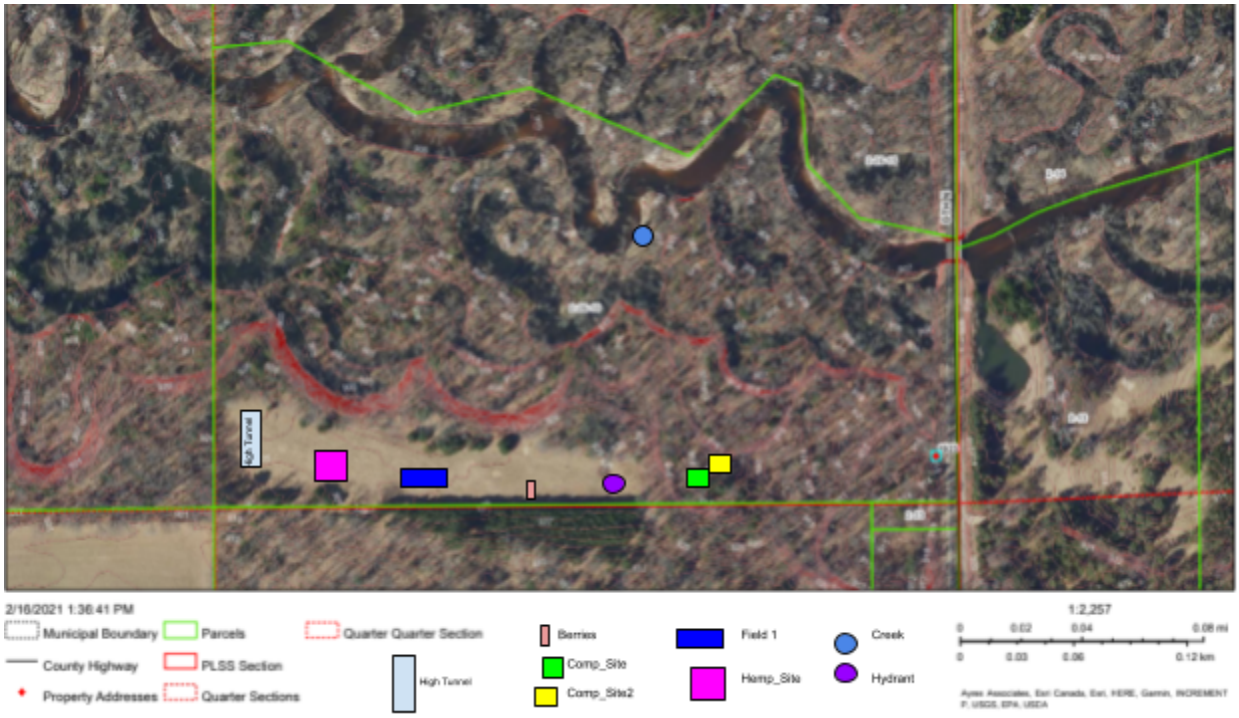
Baseline Soil & Water Quality Data

ZanBria Artisan Farms

“Water & Soil Quality Composting Design Research Initiative”



Sample Collection Sites, ZanBria Artisan Farms

ZanBria Artisan Farms
Heather Gayton
1923 County Road N
Friendship WI 53934

IDENTIFICATION
HEATHER GAYTON
ZANBRIA ARTISAN FARMS
COMPOSTING PROJECT

SOIL ANALYSIS REPORT

INFO SHEET: 1375598

LAB NUMBER *388*	SAMPLE IDENTIFICATION	ORGANIC MATTER L.O.I. percent	RATE	PHOSPHORUS P (WEAK BRAY) 1:7 ppm	RATE	P (STRONG BRAY) 1:7 ppm	RATE	OLSEN BICARBONATE P ppm	RATE	NEUTRAL AMMONIUM ACETATE (EXCHANGEABLE) POTASSIUM K ppm	RATE	MAGNESIUM Mg ppm	RATE	CALCIUM Ca ppm	RATE	SODIUM Na ppm	RATE	pH SOIL pH 1:1	BUFFER INDEX	CATION EXCHANGE CAPACITY C.E.C. meq/100g	PERCENT BASE SATURATION (COMPUTED) % K	% Mg	% Ca	% H	% Na
98086	Comp_Site	0.3	VL	42	VH	45	H			50	M	75	VH	419	M			6.0	6.9	3.3	3.9	18.9	63.5	13.7	
98087	Hemp_Site	1.3	VL	32	VH	41	H			38	L	54	M	419	M			5.7	6.9	3.3	3.0	13.6	63.5	19.9	
98088	Berries	1.4	VL	45	VH	48	H			86	VH	60	H	358	M			5.5	6.9	3.4	6.5	14.7	52.6	26.2	
98089	Field1	1.0	VL	21	M	25	M			60	M	48	M	396	H			6.0	6.9	2.9	5.3	13.8	68.3	12.6	
98090	Comp_Site2	2.4	L	58	VH	60	VH			36	L	48	M	167	VL	8		4.7	6.3	2.8	3.3	14.3	29.8	51.4	1.2
98091	HighTunnel	0.7	VL	36	VH	44	H			36	L	85	H	469	M	7		5.7	6.9	4.0	2.3	17.7	58.6	20.6	0.8

LAB NUMBER *388*	NITRATE-N (FIA) SURFACE ppm	SURFACE lbs/A	SURFACE depth (in)	SUBSOIL 1 ppm	SUBSOIL 1 lbs/A	SUBSOIL 1 depth (in)	SUBSOIL 2 ppm	SUBSOIL 2 lbs/A	SUBSOIL 2 depth (in)	Total lbs/A	SULFUR S ICAP ppm	RATE	ZINC Zn DTPA ppm	RATE	MANGANESE Mn DTPA ppm	RATE	IRON Fe DTPA ppm	RATE	COPPER Cu DTPA ppm	RATE	BORON B SOIL DTPA ppm	RATE	EXCESS LIME (ECC)	SOLUBLE SALTS 1:1 mmhos/cm	RATE
98086			0-6																						
98087			0-6																						
98088			0-6																						
98089			0-6																						
98090	1	2	0-6							2	6	VL	1.4	M	12	M	141	VH	0.5	L	0.4	VL	L	0.1	L
98091	1	2	0-6							2	4	VL	0.9	L	6	L	48	VH	0.3	VL	0.1	VL	L	0.1	L

SOIL HEALTH ASSESSMENT

ANALYTICAL LABORATORY FINDINGS

SAMPLE IDENTIFICATION	Comp_Site2
LABORATORY NUMBER	38898090

ANALYTE	UNITS	RESULTS	LOW	MEDIUM	OPTIMUM	VERY HIGH
H3A EXTRACTION						
ORTHOPHOSPHATE-P	ppm	11.0				
PHOSPHORUS	ppm	13				
POTASSIUM	ppm	19				
MAGNESIUM	ppm	21				
CALCIUM	ppm	72				
SODIUM	ppm	4				
IRON	ppm	67				
ALUMINUM	ppm	84				
WATER SOLUBLE						
NITRATE-N	ppm	1				
AMMONIACAL-N	ppm	1.9				
ORTHOPHOSPHATE-P	ppm	1.27				
CARBON	ppm	111.1				
TOTAL NITROGEN	ppm	9.3				
1 DAY CO_2C BURST		8.00				
ORGANIC CARBON	ppm	111.1				
ORGANIC NITROGEN	ppm	6.4				
ORGANIC C/N RATIO		17.4				

ADDITIONAL NITROGEN CREDIT IDENTIFIED VIA HANEY TEST: **7**

NITROGEN RECOMMENDATIONS MAY INCLUDE ADDITIONAL NITROGEN CREDITS BASED ON PREVIOUS CROPS AND NITROGEN MINERALIZATION RATES.

The above analytical results apply only to the sample(s) submitted. Samples are retained a maximum of 30 days.

SOIL HEALTH CALCULATION

2.6

0 — 25

The **H3A Soil Extractant** was developed by Haney*. This extract is designed to mimic organic acids produced by living plant root systems. These organic acids increase nutrient availability in the root zone.

The **Water Soluble Extract** provides a snapshot of nutrients that are immediately available to the plants.

The **CO_2 Burst** test is very good indicator of soil health. This test measures the amount of CO_2 naturally released from the soil due to the activity of the soil microbes through microbial respiration. This test is very dependent on the amount of carbon that is available to the soil microbes and the form that the carbon is in. As the available carbon increases in your soil the Microbial respiration will increase.

Organic Carbon is the available total water extractable organic carbon from your soil. This pool of carbon is roughly 80 times smaller than the Soil Organic Matter. The organic carbon pool reflects the energy/food source that is driving the soil microbes.

The **Organic Nitrogen** pool is replenished by fresh plant residues, manure, composts, and dying soil microbes.

The **Organic C/N ratio** is a critical component of the nutrient cycle. A soil C/N ratio above 20 generally indicates that Nitrogen will be tied up and not available to plants. The ideal range for the Organic C/N ratio will be from 8:1 to 15:1.

The **Soil Health Calculation** uses the CO_2 Burst, Organic Carbon, Organic Nitrogen, and the C/N ratio to generate the soil health number. This calculation looks at the balance of soil carbon and nitrogen and their relationship to microbial activity. This number represents the overall health of your system. Soil values will range from 0 to 25. A soil with a value below 7 would be considered low. You want to see this number increase as you make changes and adjustments. Keeping track of this number will allow you to gauge the effects of your management practices over time.

*Modifications to the New Soil Extractant H3A-1: A Multinutrient Extractant
R.L. Haney (a); E.B. Haney (b); L.R. Hossner (c); J.G. Arnold (a)

SOIL HEALTH ASSESSMENT

ANALYTICAL LABORATORY FINDINGS

SAMPLE IDENTIFICATION	HighTunnel
LABORATORY NUMBER	38898091

ANALYTE	UNITS	RESULTS	LOW	MEDIUM	OPTIMUM	VERY HIGH
H3A EXTRACTION						
ORTHOPHOSPHATE-P	ppm	4.4				
PHOSPHORUS	ppm	6				
POTASSIUM	ppm	17				
MAGNESIUM	ppm	26				
CALCIUM	ppm	174				
SODIUM	ppm	3				
IRON	ppm	17				
ALUMINUM	ppm	49				
WATER SOLUBLE						
NITRATE-N	ppm	2				
AMMONIACAL-N	ppm	1.0				
ORTHOPHOSPHATE-P	ppm	0.47				
CARBON	ppm	47.3				
TOTAL NITROGEN	ppm	4.6				
1 DAY CO_2C BURST		9.00				
ORGANIC CARBON	ppm	47.3				
ORGANIC NITROGEN	ppm	1.6				
ORGANIC C/N RATIO		29.6				

ADDITIONAL NITROGEN CREDIT IDENTIFIED VIA HANEY TEST: **4**

NITROGEN RECOMMENDATIONS MAY INCLUDE ADDITIONAL NITROGEN CREDITS BASED ON PREVIOUS CROPS AND NITROGEN MINERALIZATION RATES.

The above analytical results apply only to the sample(s) submitted. Samples are retained a maximum of 30 days.

SOIL HEALTH CALCULATION

1.5

0 — 25

The **H3A Soil Extractant** was developed by Haney*. This extract is designed to mimic organic acids produced by living plant root systems. These organic acids increase nutrient availability in the root zone.

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The **CO_2 Burst** test is very good indicator of soil health. This test measures the amount of CO_2 naturally released from the soil due to the activity of the soil microbes through microbial respiration. This test is very dependent on the amount of carbon that is available to the soil microbes and the form that the carbon is in. As the available carbon increases in your soil the Microbial respiration will increase.

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R.L. Haney (a); E.B. Haney (b); L.R. Hossner (c); J.G. Arnold (a)

Water Analysis Reports

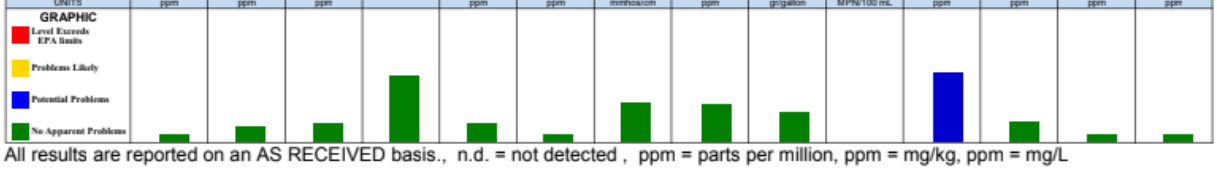
ZanBria Artisan Farms
Heather Gayton
1923 County Road N
Friendship WI 53934

Domestic Suitability
For: (62050) ZanBria Artisan Farms
W3 Domestic Suitability

Analytical Results for Creek

PARAMETER	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE	SULFATE	CONDUC-TIVITY	TOTAL DISSOLVED SOLIDS	HARDNESS	TOTAL COLIFORM	IRON	MANGANESE	CHLORIDE	FLUORIDE
METHOD	EPA 200.7 Na	EPA 200.7 Ca	EPA 200.7 Mg	SM 4500 H+B	EPA 300.0 NO_3-N	EPA 300.0 SO_4	SM 2510 B	CALC	CALC	SM 9223B	EPA 200.7 Fe	EPA 200.7 Mn	EPA 300.0 Cl	EPA 300.0 F
UNITS	ppm	ppm	ppm		ppm	ppm	mmhos/cm	ppm	gr/gallon	MPN/100 mL	ppm	ppm	ppm	ppm
LEVEL FOUND	3.81	29.8	14.0	7.81	3.8	15	0.299	194	7.7		0.22	0.025	11	n.d.
CAUTION LEVEL	100	80	30	6.5/9	10	400	0.75	500	20		0.3	0.05	200	4

PARAMETER	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE	SULFATE	CONDUC-TIVITY	TOTAL DISSOLVED SOLIDS	HARDNESS	TOTAL COLIFORM	IRON	MANGANESE	CHLORIDE	FLUORIDE
METHOD	EPA 200.7 Na	EPA 200.7 Ca	EPA 200.7 Mg	SM 4500 H+B	EPA 300.0 NO_3-N	EPA 300.0 SO_4	SM 2510 B	CALC	SM 2310B	SM 9223B	EPA 200.7 Fe	EPA 200.7 Mn	EPA 300.0 Cl	EPA 300.0 F
UNITS	ppm	ppm	ppm		ppm	ppm	mmhos/cm	ppm	gr/gallon	MPN/100 mL	ppm	ppm	ppm	ppm
GRAPHIC														

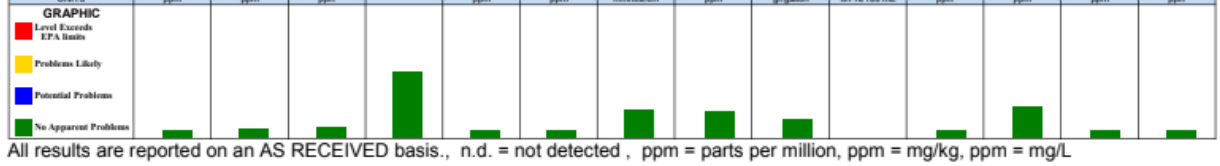


All results are reported on an AS RECEIVED basis., n.d. = not detected , ppm = parts per million, ppm = mg/kg, ppm = mg/L

Analytical Results for Hydrant

PARAMETER	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE	SULFATE	CONDUC-TIVITY	TOTAL DISSOLVED SOLIDS	HARDNESS	TOTAL COLIFORM	IRON	MANGANESE	CHLORIDE	FLUORIDE
METHOD	EPA 200.7 Na	EPA 200.7 Ca	EPA 200.7 Mg	SM 4500 H+B	EPA 300.0 NO_3-N	EPA 300.0 SO_4	SM 2510 B	CALC	CALC	SM 9223B	EPA 200.7 Fe	EPA 200.7 Mn	EPA 300.0 Cl	EPA 300.0 F
UNITS	ppm	ppm	ppm		ppm	ppm	mmhos/cm	ppm	gr/gallon	MPN/100 mL	ppm	ppm	ppm	ppm
LEVEL FOUND	9.40	18.6	7.93	7.79	n.d.	22	0.213	138	4.6		n.d.	0.040	7	n.d.
CAUTION LEVEL	100	80	30	6.5/9	10	400	0.75	500	20		0.3	0.05	200	4

PARAMETER	SODIUM	CALCIUM	MAGNESIUM	pH	NITRATE	SULFATE	CONDUC-TIVITY	TOTAL DISSOLVED SOLIDS	HARDNESS	TOTAL COLIFORM	IRON	MANGANESE	CHLORIDE	FLUORIDE
METHOD	EPA 200.7 Na	EPA 200.7 Ca	EPA 200.7 Mg	SM 4500 H+B	EPA 300.0 NO_3-N	EPA 300.0 SO_4	SM 2510 B	CALC	SM 2310B	SM 9223B	EPA 200.7 Fe	EPA 200.7 Mn	EPA 300.0 Cl	EPA 300.0 F
UNITS	ppm	ppm	ppm		ppm	ppm	mmhos/cm	ppm	gr/gallon	MPN/100 mL	ppm	ppm	ppm	ppm
GRAPHIC														



All results are reported on an AS RECEIVED basis., n.d. = not detected , ppm = parts per million, ppm = mg/kg, ppm = mg/L

Total Coliforms for “Creek” and “Hydrant”

Analysis	Level Found As Received	Units	Reporting Limit	Method	Analyst-Date	Verified-Date
Sample ID: **CREEK** Lab Number: **70042323**	Date Sampled: **2021-12-16 1500**					
E. coli (generic)	866	MPN/100mL	1	SM 9223 B	elh8-2021/12/18	hah0-2021/12/18
Total coliforms	>2419.6	MPN/100mL	1	SM 9223 B	elh8-2021/12/18	hah0-2021/12/18
Sample ID: **HYDRANT** Lab Number: **70042324**	Date Sampled: **2021-12-16 1500**					
E. coli (generic)	< 1	MPN/100mL	1	SM 9223 B	elh8-2021/12/18	hah0-2021/12/18
Total coliforms	< 1	MPN/100mL	1	SM 9223 B	elh8-2021/12/18	hah0-2021/12/18

All results are reported on an AS RECEIVED basis., MPN = most probable number