



Tainio Biologicals Product Data Spectrum NFB/Wheat

Results/Findings

During this Wheat Strip Trial, it was observed that adding beneficial biology resulted in modifications to expected/predictable soil functional capacity, based upon PGPM functions. Utilizing genetic analysis from Biome Makers, the genes/functions of the soil microbes showed promising benefits. The resilience index showed an average of a 46% improvement. Increased nutritional changes were also apparent: potassium solubilization at 29% increase, magnesium transport at 21%, calcium transport at 16%, inorganic P solubilization at 15%, and extracellular polysaccharide production at 13%.

June



August



Yield:

Treatment	Prescription APP: with 120lbs Nitrogen	Split Application: 80lbs Nitrogen (Fall) 40lbs Nitrogen (Spring)	Tainio: Spectrum NFB with 50lbs Nitrogen
Jefe	116.7	128	131.3
Trident	122.7	122.6	117.4
Shine	137.7	133.8	131.1
Nitrogen Usage	154	120	~50
Fertility	Fall: 120-20-0-20 Top Dressed on 4/4/2023 34-0-0-0	2/3 Fall and 1/3 Spring Fall: 80-13-0-1.3 Spring: 40-8-0-8 Top Dressed: 4/4/2023	75 gm Spectrum NFB, 12.5 oz Pepzyme G, 1 gal Pacific Gro, 25 lbs URAN 32, 2 lb BenVireo, 2 qt Molasses 10 lbs Phos, 8 oz Boron, 16 oz Zinc, 32 oz Puric, 16 oz Pronatural Ca

N Applications:

At 154lbs, 67.5% reduction in nitrogen usage. At 120lbs, 58.33% reduction in nitrogen usage.

Leaf Extract Analysis

Utilizing Leaf Extract/Sap analysis from Apical Crop Science, nutrient values inside the plant can be assessed. From this data we can see improved nutritional status in: N, K, Mg, Ca, Mn, Co, P, Si, I, B, Mb, Se. The total nitrogen levels in the leaf extract show an average of 4,570.94 in the biologically treated vs 3,878.20 in the control with approximately 1/3rd the nitrogen applied.

Control

PRIMARY	NEW	OLD	AVG
Total N (ppm)	2,768.88	4,987.51	3,878.20
MAJOR CATIONS (PPM)	NEW	OLD	AVG
NH4-Ammonium	293.82	216.68	255.25
K-Potassium	10,564.59	7,478.86	9,021.73
SEC CATIONS (PPM)	NEW	OLD	AVG
Mg-Magnesium	286.33	241.41	263.87
Ca-Calcium	1,132.00	1,507.01	1,319.51
MINOR CATIONS (PPM)	NEW	OLD	AVG
Fe-Iron	4.55	2.18	3.37
Mn-Manganese	9.87	26.08	17.98
Co-Cobalt	0.50	0.48	0.49

Treated

PRIMARY	NEW	OLD	AVG	IMPROVED BY
Total N (ppm)	3,555.01	5,586.86	4,570.94	17.9%
MAJOR CATIONS (PPM)	NEW	OLD	AVG	IMPROVED BY
NH4-Ammonium	299.67	228.82	264.25	3.5%
K-Potassium	12,228.75	9,249.16	10,738.96	19.03%
SEC CATIONS (PPM)	NEW	OLD	AVG	IMPROVED BY
Mg-Magnesium	341.59	251.64	296.62	12.4%
Ca-Calcium	1,402.81	1,770.29	1,586.55	20.2%
MINOR CATIONS (PPM)	NEW	OLD	AVG	IMPROVED BY
Fe-Iron	4.11	7.73	5.92	54.9%
Mn-Manganese	16.98	28.32	22.65	26%
Co-Cobalt	0.68	0.68	0.68	38.8%

MAJOR ANIOMES (PPM)	NEW	OLD	AVG
NO3-Nitrate	57.90	740.50	399.20
P-Phosphorous	381.72	122.87	252.30
SEC ANIONS (PPM)	NEW	OLD	AVG
Si-Silicon	40.19	27.07	33.63
MINOR ANIONS (PPM)	NEW	OLD	AVG
I-Iodine	12.47	0.00	6.24
B-Boron	0.00	0.16	0.08
Mo-Molybdenum	0.68	0.76	0.72
Se-Selenium	0.52	0.77	0.65

MAJOR ANIOMES (PPM)	NEW	OLD	AVG	IMPROVED BY
NO3-Nitrate	27.34	153.37	90.36	126.2%
P-Phosphorous	433.54	143.64	288.59	14.4%
SEC ANIONS (PPM)	NEW	OLD	AVG	IMPROVED BY
Si-Silicon	46.88	42.36	44.62	32.7%
MINOR ANIONS (PPM)	NEW	OLD	AVG	IMPROVED BY
I-Iodine	15.55	5.59	10.57	69.4%
B-Boron	0.16	0.17	0.17	112.5%
Mo-Molybdenum	0.95	0.96	0.96	33.3%
Se-Selenium	1.42	0.59	1.01	55.4%

Microbial Boxplot from Biome Makers

	Control	Treated	Improved by
Resilience Index	19	65	46%
Potassium Mobilization	52	80	28%
Magnesium Transport	20	41	21%
Calcium Transport	38	54	16%
Inorganic P Solubilization	52	66	14%
Extracellular Polysaccharides	67	80	13%