Table S1. Laboratory and pilot scale results for *Pediococcus pentosaceus*, *Bacillus velezensis* and *Bacillus coagulans*. *Total minerals: Mn, Ca, K Na (g/kg). Fe, Mn, Cu, Zn, P, S (mg/Kg).

	Laboratory	Control	*Pediococcus pentosaceus*				*Bacillus velezensis*				*Bacillus coagulans*		
Dose level		**Middle**	**High**	**Low**	**Test**	**Middle**	**High**	**Low**	**Test**	**Middle**	**High**	**Low**	**Test**
Mean larval weight (mg)	140.01±2.5^{a}	133.16±13.0^{a}	138.38±10.8^{a}	145.16±2.3^{a}	139.83±10.1^{a}	144.43±2.9^{a}	145.14±3.5^{a}	140.07±10.5^{a}	143.71±1.7^{a}	143.81±10.4^{a}	143.48±10.4^{a}	139.26±11.1^{a}	146.42±5.6^{a}
Mean total harvest weight (g)	47,683.01±0.0^{a}	60,709.40±4.9^{a}	56,250.80±9.3^{a}	48,486.40±5.6^{a}	48,499.60±2.4^{a}	49,774.20±7.5^{a}	49,283.40±2.2^{a}	53,856.60±5.9^{a}	51,151.00±1.3^{a}	55,291.60±7.0^{a}	52,323.20±12.6^{a}	53,242.20±6.8^{a}	47,524.80±10.5^{a}
Dry matter (%)	35.99±0.1^{bcd}	34.78±0.1^{c}	34.71±0.0^{c}	36.18±0.0^{bc}	35.72±0.1^{cd}	35.84±0.2^{cd}	36.76±0.3^{a}	36.19±0.0^{bc}	35.97±0.0^{bcd}	36.08±0.2^{bc}	36.40±0.1^{ab}	35.73±0.1^{cd}	35.58±0.1^{d}
Fat (%)	10.50±0.6^{a}	9.90±0.2^{a}	9.93±0.2^{a}	10.70±0.6^{a}	10.03±0.1^{a}	9.58±0.1^{a}	9.68±0.2^{a}	10.17±0.1^{a}	9.67±0.0^{a}	10.26±0.1^{a}	10.37±0.1^{a}	10.44±0.1^{a}	9.94±0.1^{a}
Protein (%)	14.43±0.6^{a}	13.61±0.0^{a}	14.00±0.0^{a}	15.64±0.1^{a}	13.01±0.9^{a}	13.32±2.0^{a}	13.05±1.0^{a}	14.23±0.9^{a}	13.79±0.2^{a}	14.02±1.9^{a}	14.18±2.1^{a}	12.89±1.9^{a}	12.16±1.6^{a}
Ash (%)	1.27±0.0^{ab}	1.30±0.02^{b}	1.25±0.0^{ab}	1.22±0.01^{b}	1.26±0.0^{ab}	1.24±0.0^{b}	1.25±0.0^{b}	1.28±0.0^{ab}	1.25±0.0^{b}	1.27±0.0^{ab}	1.26±0.0^{ab}	1.37±0.1^{a}	1.26±0.0^{ab}
Total amino acids (mg/g)	255.22±54.8^{a}	142.01±4.5^{a}	137.22±1.7^{a}	146.38±18.4^{a}	150.93±8.3^{a}	143.19±21.2^{a}	142.37±5.0^{a}	137.56±4.9^{a}	141.07±6.4^{a}	144.77±2.5^{a}	144.85±5.4^{a}	140.53±0.1^{a}	150.79±32.3^{a}
Essential amino acids (mg(g)													
Phenylalanine (Phe)	4.57±3.4^{a}	3.76±0.1^{b}	3.75±0.1^{b}	3.99±0.5^{b}	4.01±0.2^{b}	3.99±0.59^{b}	3.99±0.1^{b}	3.81±0.1^{b}	3.95±0.1^{b}	4.01±0.1^{b}	3.95±0.0^{b}	3.94±0.0^{b}	4.28±0.9^{b}
Leucine (Leu)	10.78±8.1^{a}	8.91±0.2^{b}	8.96±0.1^{b}	9.34±1.2^{b}	9.57±0.5^{b}	9.39±1.43^{b}	9.48±0.5^{b}	9.05±0.2^{b}	9.48±0.5^{b}	9.70±0.3^{b}	9.60±0.1^{b}	9.50±0.1^{b}	10.23±2.3^{ab}
Isoleucine (Ile)	6.78±4.9^{a}	5.78±0.3^{ab}	1.67±0.1^{c}	6.03±0.7^{ab}	5.92±0.3^{ab}	5.82±0.89^{ab}	5.82±0.0^{ab}	5.71±0.2^{b}	5.88±0.3^{ab}	5.86±0.2^{ab}	5.35±0.2^{bc}	5.57±0.5^{b}	6.22±1.4^{ab}
Methionine (Met)	1.43±1.5^{a}	0.31±0.2^{a}	0.03±0.0^{a}	0.13±0.2^{a}	0.54±0.8^{a}	0.00±0.00^{a}	0.60±0.5^{a}	0.55±0.8^{a}	0.63±0.9^{a}	0.00±0.0^{a}	0.81±0.6^{a}	1.09±0.8^{a}	0.42±0.6^{a}
Valine (Val)	10.99±8.3^{a}	9.36±0.3^{b}	9.44±0.3^{b}	9.78±1.3^{b}	10.18±0.5^{ab}	9.70±1.52^{b}	9.53±0.3^{b}	9.55±0.2^{b}	9.68±0.4^{b}	9.97±0.1^{b}	9.84±0.1^{b}	9.90±1.0^{b}	10.66±2.3^{ab}
Threonine (Thr)	6.54±4.8^{a}	6.37±0.6^{a}	5.93±0.5^{a}	6.05±0.9^{a}	6.76±0.3^{a}	6.81±1.15^{a}	6.01±0.5^{a}	6.19±0.6^{a}	6.29±0.5^{a}	6.70±0.5^{a}	7.09±0.2^{a}	6.17±0.83^{a}	6.97±1.3^{a}
Histidine (His)	6.23±4.5^{a}	4.81±0.4^{b}	5.08±0.2^{b}	5.31±0.8^{b}	5.36±0.3^{b}	5.51±1.01^{b}	4.92±0.4^{b}	5.09±0.3^{b}	5.19±0.1^{b}	5.56±0.1^{b}	4.98±0.2^{b}	5.22±0.1^{b}	5.59±1.5^{b}
Lysine (Lys)	12.18±8.7^{a}	10.39±0.9^{b}	9.68±0.2^{b}	10.25±1.3^{b}	9.83±0.1^{b}	7.97±1.2^{b}	7.30±0.2^{b}	7.31±0.1^{b}	7.30±0.3^{b}	7.87±0.0^{b}	7.83±0.0^{b}	7.78±0.1^{b}	8.05±1.8^{b}
Non-essential amino acids (mg/g)													
Proline (Pro)	12.16± 9.2^{a}	10.42± 0.2^{b}	10.37 ±0.2^{b}	10.55± 1.35^{b}	11.66 ±0.77^{ab}	10.56± 1.7^{b}	10.46 ±0.3^{b}	10.66 ±0.3^{b}	10.36± 0.4^{b}	10.91± 0.2^{b}	10.74 ±0.0^{b}	10.92± 0.0^{b}	11.55± 2.5^{ab}
Alanine (Ala)	15.35 ± 10.9^{a}	13.11±0.5^{b}	12.98± 0.3^{b}	12.83 ±1.52^{b}	13.61 ± 0.59^{b}	12.78 ±2.3^{b}	12.75 ±0.3^{b}	12.95± 0.5^{b}	12.77 ±0.9^{b}	14.23± 0.4^{b}	13.18 ±0.2^{b}	13.53± 0.7^{b}	14.10± 3.0^{b}
Glycine (Gly)	11.69±8.5^{a}	9.50 ± 0.3^{b}	9.47± 0.1^{b}	9.73± 1.23^{b}	9.99± 0.66^{b}	10.01 ±1.6^{b}	9.99 ± 0.3^{b}	9.27 ±0.5^{b}	9.46± 0.4^{b}	9.42 ±0.8^{b}	9.47± 0.0^{b}	9.28± 0.3^{b}	10.09± 2.2^{b}
Tyrosine (Tyr)	11.92± 8.5^{a}	8.74± 0.15^{b}	8.67± 0.3^{b}	9.94 ±1.56^{ab}	10.35 ± 1.21^{ab}	9.94 ±1.6^{ab}	10.26± 0.0^{ab}	9.64 ±0.5^{b}	9.83± 0.4^{ab}	9.43± 0.2^{b}	9.82± 0.5^{b}	10.09± 0.5^{ab}	10.34± 1.9^{b}
Serine (ser)	10.13± 7.5^{a}	8.64 ±0.4^{b}	8.63 ± 0.1^{b}	8.50± 1.03^{b}	9.17± 0.28^{b}	9.35±1.6^{b}	9.58± 0.8^{ab}	8.63 ±0.3^{b}	8.60± 0.2^{b}	9.15 ±0.2^{b}	8.54± 0.0^{b}	8.76 ±0.1^{b}	9.74 ±2.3^{ab}
Arginine (Arg)	9.10 ± 6.9^{a}	7.23 ±0.8^{b}	7.87 ±0.1^{b}	7.73± 0.72^{b}	8.50 ± 1.18^{b}	6.54 ±0.6^{b}	5.75± 0.1^{b}	5.52 ±0.2^{b}	5.85± 0.5^{b}	5.93 ±0.2^{b}	5.94 ±0.2^{b}	5.76 ±0.0^{b}	6.33 ±1.4^{b}
Glutamine (Glu)	23.00 ± 17.0^{a}	19.96 ±0.7^{b}	19.43 ±0.3^{b}	20.98± 2.5^{b}	20.33 ± 0.78^{b}	20.02± 2.4^{b}	20.21± 1.2^{b}	19.00 ±0.9^{b}	20.65± 0.6^{b}	20.00± 0.7^{b}	19.91± 0.8^{b}	18.54± 0.3^{b}	20.55 ±4.3^{b}
Cysteine (C-C)	0.81± 0.7^{a}	0.74± 0.2^{a}	1.03± 0.3^{a}	0.52 ±0.4^{a}	0.69 ± 0.26^{a}	0.65± 0.2^{a}	0.99 ±0.7^{a}	0.42± 0.0^{a}	0.59 ±0.5^{a}	1.53 ±0.6^{a}	2.57 ±2.8^{a}	0.43± 0.1^{a}	0.75 ±0.3^{a}
Aspargine (Asp)	18.02 ± 13.2^{a}	13.98± .05^{b}	14.21± 0.1^{b}	14.72± 2.0^{b}	14.98 ± 0.74^{b}	14.15± 1.6^{b}	14.75± 1.0^{b}	14.21± 0.5^{b}	14.57± 1.0^{b}	14.52± 0.3^{b}	15.25 ±0.8^{b}	14.05 ±0.2^{b}	14.92 ±3.3^{b}
Total minerals*													
Manganese (Mn)	5.10±0.0^{cd}	6.06±0.0^{b}	6.91±0.0^{a}	4.86±0.2^{d}	5.66±0.0^{bc}	5.23±0.0^{cd}	5.44±0.2^{c}	5.34±0.1^{cd}	5.37±0.0^{c}	5.43±0.0^{c}	5.11±0.0^{cd}	5.31±0.0^{cd}	5.59±0.0^{bc}
Copper (Cu)	6.27±0.1^{bcd}	6.74±0.1^{b}	7.54±0.1^{a}	6.36±0.1^{bcd}	6.55±0.0^{bcd}	6.15±0.1^{bcd}	6.34±0.3^{bcd}	6.27±0.2^{bcd}	5.99±0.1^{d}	6.57±0.0^{bc}	6.50±0.1^{bcd}	6.54±0.0^{bcd}	6.09±0.0^{cd}
Zinc (Zn)	53.40±0.8^{b}	56.53±0.2^{b}	64.82±0.6^{a}	52.09±0.1^{b}	55.7±0.1^{b}	52.01±0.9^{b}	55.67±2.9^{b}	52.44±0.7^{b}	53.99±0.9^{b}	54.70±0.4^{b}	54.51±0.2^{b}	54.73±0.2^{b}	55.43±0.5^{b}
Calcium (Ca)	164.41±1.5^{a}	155.19±0.5^{a}	164.47±11.1^{a}	156.85±12.5^{a}	153.46±1.0^{a}	149.23±0.0^{a}	157.45±5.1^{a}	149.60±0.9^{a}	158.61±2.0^{a}	151.31±1.5^{a}	147.75±2.0^{a}	148.18±0.2^{a}	153.05±1.0^{a}
Iron (Fe)	17.35±0.3^{abc}	17.59±0.1^{ab}	18.70±1.0^{a}	16.43±0.3^{bc}	16.56±0.4^{bc}	15.68±0.2^{c}	16.52±0.9^{bc}	15.93±0.0^{bc}	16.52±0.2^{bc}	16.53±0.3^{bc}	16.19±0.3^{bc}	15.94±0.3^{bc}	16.31±0.3^{bc}
Potassium (K)	3352.15±77.4^{a}	3229.06±18.2^{a}	3408.43±163.5^{a}	3191.42±82.5^{a}	3179.4±122.2^{a}	3141.07±9.5^{a}	3358.73±143.9^{a}	3162.47±11.5^{a}	3160.79±52.8^{a}	3205.50±46.7^{a}	3210.87±77.6^{a}	3207.58±31.0^{a}	3244.18±79.6^{a}
Magnesium (Mg)	904.84±15.9^{abc}	964.06±0.5^{ab}	996.41±45.0^{a}	872.76±32.0^{c}	908.27±2.6^{abc}	851.80±2.4^{c}	906.79±30.7^{abc}	892.10±15.8^{bc}	879.51±19.9^{c}	924.67±7.4^{abc}	907.85±18.2^{abc}	910.16±0.0^{abc}	882.36±15.7^{c}
Sodium (Na)	503.33±10.8^{a}	499.48±4.3^{a}	532.40±27.5^{a}	485.99±11.9^{a}	485.07±1.2^{a}	479.87±3.9^{a}	513.85±23.0^{a}	477.16±4.9^{a}	482.39±7.1^{a}	485.97±6.1^{a}	486.19±9.4^{a}	480.32±4.8^{a}	485.73±10.3^{a}
Phosphorous (P)	2813.79±44.9^{ab}	2891.07±7.4^{ab}	3037.71±144.6^{a}	2678.18±77.9^{b}	2762.12±10.0^{ab}	2629.83±18.9^{b}	2808.89±118.2^{ab}	2717.34±5.4^{b}	2696.59±49.3^{b}	2789.39±34.8^{ab}	2763.32±58.3^{ab}	2755.72±15.2^{ab}	2742.10±51.8^{b}
Sulphur (S)	1224.87±39.5^{a}	1185.59±7.3^{a}	1273.60±53.2^{a}	1184.35±34.3^{a}	1190.41±5.0^{a}	1188.40±2.96^{a}	1258.52±51.6^{a}	1161.47±10.4^{a}	1181.64±15.4^{a}	1223.93±3.8^{a}	1215.70±27.5^{a}	1213.35±0.0^{a}	1229.06±18.8^{a}

Pilot	Control	*Pediococcus pentosaceus*				*Bacillus velezensis*				*Bacillus coagulans*			
Dose level		**Middle**	**High**	**Low**	**Test**	**Middle**	**High**	**Low**	**Test**	**Middle**	**High**	**Low**	**Test**
Mean larval weight (mg)	146.98±3.1^{c}	134.98±6.3^{c}	152.57±1.9^{ab}	149.98±5.0^{bc}	142.01±3.0^{d}	149.76±2.9^{c}	153.80±1.2^{a}	148.00±2.5^{c}	146.63±2.4^{c}	148.81±6.4^{c}	146.61±3.4^{c}	139.71±3.4^{d}	153.46±2.4^{ab}
Mean total harvest weight (g)	196.63±56.1^{bcd}	445,805.00±64.2$_{ab}$	179,087.00±67.9^{bcd}	138,672.00±48.1^{d}	232.12±128.4^{abcd}	270,189.00±148.7^{abcd}	227,183.00±125.4^{abcd}	335,009.00±98.4^{abcd}	230.14±150.5^{abcd}	238,776.00±150.5^{cd}	487,985.00±111.3^{a}	411,887.00±232.1^{abc}	228.76±59.2^{abcd}
Dry matter (%)	34.20±0.0^{d}	33.83±0.1^{d}	34.71±0.0^{c}	34.72±0.1^{c}	33.75±0.2^{de}	33.32±0.2^{ef}	32.93±0.3^{f}	33.87±0.0^{d}	35.46±0.3^{ab}	35.67±0.1^{a}	34.89±0.1^{c}	35.17±0.1^{bc}	35.10±0.0^{bc}
Fat (%)	11.40±0.1^{abc}	11.06±0.3^{bc}	11.29±0.3^{abc}	11.98±0.3^{a}	11.58±0.2^{ab}	10.71±0.0^{c}	10.72±0.2^{c}	11.11±0.1^{bc}	10.87±0.0^{bc}	11.30±0.2^{abc}	10.70±0.2^{c}	10.85±0.3^{bc}	11.13±0.2^{bc}
Protein (%)	13.77±0.1^{a}	13.50±0.1^{a}	13.85±0.0^{a}	14.22±0.6^{a}	14.64±0.5^{a}	14.08±0.6^{a}	13.37±0.1^{a}	13.67±0.2^{a}	14.42±0.7^{a}	14.23±0.6^{a}	14.69±0.1^{a}	13.59±0.0^{a}	14.49±0.7^{a}
Ash (%)	1.26±0.0^{ab}	1.25±0.0^{ab}	1.20±0.0^{abc}	1.22±0.0^{abc}	1.25±0.0^{ab}	1.19±0.1^{abc}	1.28±0.0^{a}	1.21±0.0^{abc}	1.23±0.0^{abc}	1.20±0.0^{abc}	1.19±0.0^{abc}	1.15±0.0^{bc}	1.11±0.0^{c}
Total amino acids (mg/g)	138.95±9.5^{a}	129.31±5.7^{a}	141.90±8.4^{a}	140.43±2.1^{a}	133.34±4.5^{a}	152.10±21.7^{a}	138.15±7.1^{a}	145.44±12.0^{a}	142.68±18.0^{a}	156.32±19.0^{a}	136.94±25.81^{a}	132.85±7.4^{a}	137.50±36.58^{a}
Essentail amino acids (mg/g)													
Phenylalanine (Phe)	3.88±0.2^{a}	3.57±0.2^{a}	4.08±0.2^{a}	3.98±0.0^{a}	3.70±0.1^{a}	4.20±0.6^{a}	3.93±0.2^{a}	4.17±0.3^{a}	4.13±0.5^{a}	4.40±0.4^{a}	3.70±0.7^{a}	3.51±0.1^{a}	3.80±1.0^{a}
Leucine (Leu)	9.37±0.6^{a}	8.64±0.4^{a}	9.60±0.6^{a}	9.13±0.0^{a}	8.94±0.3^{a}	10.43±1.4^{a}	9.42±0.5^{a}	9.78±0.9^{a}	9.65±1.5^{a}	10.33±1.0^{a}	9.08±1.9^{a}	8.75±0.3^{a}	9.02±2.5^{a}
Isoleucine (Ile)	5.50±0.8^{a}	5.26±0.5^{a}	5.81±0.5^{a}	5.84±0.1^{a}	5.44±0.2^{a}	6.27±0.9^{a}	5.71±0.3^{a}	4.52±2.0^{a}	5.56±0.5^{a}	6.21±0.7^{a}	5.79±1.0^{a}	5.59±0.3^{a}	5.32±1.2^{a}
Methionine (Met)	0.56±0.8^{a}	0.50±0.7^{a}	0.67±0.9^{a}	0.23±0.3^{a}	0.00±0.0^{a}	1.27±0.5^{a}	0.43±0.6^{a}	0.47±0.7^{a}	0.00±0.0^{a}	1.20±0.8^{a}	0.45±0.6^{a}	0.38±0.5^{a}	0.58±0.8^{a}
Valine (Val)	9.64±0.6^{a}	8.86±0.5^{a}	9.87±0.6^{a}	9.49±0.1^{a}	9.17±0.3^{a}	10.79±1.5^{a}	9.96±0.5^{a}	10.33±0.8^{a}	10.06±1.4^{a}	10.88±1.2^{a}	9.38±2.0^{a}	9.14±0.6^{a}	9.63±2.6^{a}
Threonine (Thr)	7.08±0.4^{a}	6.07±0.5^{a}	6.52±0.8^{a}	6.71±0.1^{a}	6.36±0.3^{a}	6.34±0.1^{a}	6.25±0.4^{a}	6.51±0.6^{a}	6.42±0.9^{a}	6.61±0.8^{a}	6.27±1.3^{a}	6.45±0.2^{a}	5.90±1.0^{a}
Histidine (His)	5.17±0.1^{a}	5.19±0.2^{a}	5.41±0.2^{a}	5.55±0.1^{a}	4.87±0.2^{a}	5.59±0.9^{a}	5.14±0.5^{a}	5.72±0.5^{a}	5.56±0.8^{a}	6.00±0.7^{a}	5.26±1.0^{a}	4.92±0.5^{a}	5.58±1.5^{a}
Lysine (Lys)	7.02±0.5^{a}	6.63±0.4^{a}	7.12±0.3^{a}	7.57±0.0^{a}	6.89±0.2^{a}	7.84±1.1^{a}	7.43±0.5^{a}	7.63±0.3^{a}	7.87±0.9^{a}	8.49±0.8^{a}	7.51±1.6^{a}	7.48±0.2^{a}	7.66±1.9^{a}
Non-essential amino acids (mg/g)													
Proline (Pro)	10.44± 0.6^{a}	9.60± 0.5^{a}	10.54 ±0. 6^{a}	10.09± 0.2^{a}	9.90± 0.3^{a}	11.72± 1.7^{a}	10.74 ± 0.6^{a}	10.61± 0.9^{a}	10.04 ±1.4^{a}	10.98 ±1.3^{a}	10.25 ±2.1^{a}	10.04 ±0.6^{a}	10.56 ±2.9^{a}
Alanine (Ala)	13.47 ±1.1^{a}	12.01± 0.6^{a}	12.20± 0.3^{a}	11.85 ±0.6^{a}	11.73± 0.4^{a}	14.21 ±2.5^{a}	12.36± 0.6^{a}	12.22 ±1.2^{a}	11.90± 1.6^{a}	12.89 ±1.9^{a}	11.48± 2.0^{a}	11.73 ±1.0^{a}	11.01± 3.2^{a}
Glycine (Gly)	8.89 ±0.5^{a}	8.41± 0.6^{a}	9.61 ±0.3^{a}	9.14 ±0.2^{a}	8.99 0±5^{a}	9.98± 1.3^{a}	9.73 ±0.4^{a}	9.84± 0.9^{a}	9.61 ±1.4^{a}	10.62± 1.1^{a}	9.40 ±1.9^{a}	8.66± 0.4^{a}	9.12 ±2.4^{a}
Tyrosine (Tyr)	8.83± 0.8^{a}	7.81± 0.1^{a}	9.81 ±0.1^{a}	9.88 ±0.3^{a}	8.95± 0.3^{a}	9.77 ±1.9^{a}	9.88 ±0.9^{a}	11.01 ±1.8^{a}	9.93± 1.5^{a}	11.01± 1.8^{a}	8.79 ±1.6^{a}	8.64 ±0.7^{a}	9.54 ±3.1^{a}
Serine (ser)	8.37 ±0.6^{a}	8.17± 0.6^{a}	8.69 ±0.2^{a}	8.76 ±0.3^{a}	8.05 ±0.2^{a}	9.10 ±1.2^{a}	8.45 ±0.8^{a}	8.99 ±1.0^{a}	8.23 ±0.6^{a}	8.93 ±1.1^{a}	8.50± 2.0^{a}	8.14 ±0.2^{a}	9.02± 2.7^{a}
Arginine (Arg)	5.76 ±0.1^{cd}	4.87 ±0.2^{d}	5.94 ±0.7^{cd}	6.12 ±+.3 0.9^{cd}	5.42± 0.2^{cd}	8.06± 1.2^{abc}	6.50 ±0.2^{bcd}	9.10 ±0.6^{ab}	9.20 ±1.2^{ab}	9.68± 1.2^{a}	6.07 ±1.3^{cd}	5.87 ±0.3^{cd}	6.49 ±1.8^{bcd}
Glutamine (Glu)	18.95± 0.9^{a}	18.03 ±1.0^{a}	20.33 ±1.4^{a}	20.38 ±0.3^{a}	19.21± 0.8^{a}	21.04 ±3.2^{a}	20.20 ±0.7^{a}	21.12 ±1.5^{a}	20.81± 1.9^{a}	22.72 ±2.4^{a}	19.32 ±3.3^{a}	17.83± 0.7^{a}	18.89± 4.8^{a}
Cysteine (C-C)	1.59± 0.7^{a}	1.28± 0.29^{a}	0.62 ±0.5^{a}	0.82 ±0.4^{a}	2.07 ±1.2^{a}	0.76 ±0.1^{a}	0.06 ±0.1^{a}	0.00 ±0.0^{a}	0.00± 0.0^{a}	0.00 ±0.0^{a}	0.79 ±0.2^{a}	1.83± 1.1^{a}	1.10± 0.6^{a}
Aspargine (Asp)	14.44 ±0.5^{a}	14.40 ±1.4^{a}	15.07± 0.3^{a}	14.90±1.0^{a}	13.64 ±0.6^{a}	14.72± 2.2^{a}	14.55± 0.9^{a}	14.57 ±0.9^{a}	13.72 ±1.9^{a}	15.37 ±2.1^{a}	14.92 ±2.6^{a}	13.87± 0.5^{a}	14.27± 2.5^{a}
Total minerals*													
Manganese (Mn)	4.41±0.0^{ab}	4.35±0.1^{ab}	4.50±0.0^{ab}	4.23±0.1^{ab}	4.38±0.2^{ab}	4.58±0.0^{ab}	4.73±0.1^{a}	4.53±0.0^{ab}	4.13±0.2^{b}	4.60±0.0^{ab}	4.00±0.5^{b}	4.53±0.0^{ab}	4.78±0.0^{a}
Copper (Cu)	6.70±0.0^{ab}	7.20±0.2^{ab}	6.13±0.0^{b}	6.41±0.2^{b}	6.83±0.4^{ab}	7.31±0.0^{ab}	7.51±0.3^{a}	6.17±0.0^{b}	6.33±0.3^{b}	6.80±0.0^{ab}	6.02±0.9^{b}	6.92±0.0^{ab}	6.31±0.0^{b}
Zinc (Zn)	60.90±0.0^{a}	56.23±1.9^{a}	57.13±0.3^{a}	55.27±1.7^{ab}	56.60±2.3^{ab}	57.92±0.3^{a}	57.57±1.4^{a}	55.09±0.0^{ab}	57.95±3.0^{a}	56.90±0.9^{a}	47.65±6.2^{b}	57.74±0.5^{a}	57.73±0.4^{a}
Calcium (Ca)	166.89±0.8^{a}	163.01±5.6^{a}	157.02±1.0^{ab}	157.92±4.8^{ab}	156.93±6.8^{ab}	160.35±0.0^{ab}	162.50±4.3^{a}	161.83±1.2^{a}	171.18±8.1^{a}	159.27±1.7^{a}	137.27±17.7^{b}	163.86±1.4^{a}	162.58±1.4^{a}
Iron (Fe)	16.51±0.4^{abc}	17.52±0.6^{abc}	16.75±0.7^{abc}	16.09±0.8^{bc}	17.84±1.0^{abc}	17.08±0.0^{abc}	16.98±0.4^{abc}	17.33±0.3^{abc}	18.68±0.9^{a}	18.16±0.3^{ab}	14.85±1.8^{c}	17.41±0.1^{abc}	16.87±0.2^{abc}
Potassium (K)	3218.16±11.4^{ab}	3290.79±110.4^{a}	3176.53±17.6^{ab}	3181.99±95.7^{ab}	3280.82±173.7^{ab}	3301.92±8.0^{ab}	3320.42±121.4^{a}	3128.79±20.1^{ab}	3250.19±145.3^{a}	3212.53±53.7^{ab}	2818.77±359.5^{b}	3232.09±0.3^{ab}	3228.27±36.3^{ab}
Magnesium (Mg)	828.93±10.2^{ab}	844.83±25.6^{a}	732.97±3.8^{b}	752.41±25.0^{ab}	837.58±40.0^{ab}	845.79±3.3^{ab}	833.76±24.5^{ab}	802.90±6.1^{ab}	784.46±35.3^{ab}	816.14±15.6^{ab}	751.79±96.8^{ab}	851.28±7.3^{ab}	796.90±5.2^{ab}
Sodium (Na)	524.83±2.6^{ab}	529.11±18.9^{a}	520.61±0.2^{ab}	516.78±16.0^{ab}	524.08±29.7^{ab}	544.76±2.7^{a}	550.89±17.7^{a}	488.35±6.0^{ab}	525.14±25.2^{a}	519.23±5.1^{a}	447.08±55.2^{b}	499.36±0.7^{ab}	529.33±2.2^{a}
Phosphorous (P)	2703.30±20.7^{ab}	2757.86±97.0^{ab}	2515.51±0.5^{ab}	2550.27±84.7^{ab}	2740.25±138.6^{ab}	2775.71±3.2^{ab}	2777.34±89.0^{a}	2600.52±16.2^{ab}	2659.32±123.7^{ab}	2660.81±42.9^{ab}	2402.26±311.8^{b}	2766.39±13.3^{ab}	2631.29±15.6^{ab}
Sulphur (S)	1268.38±17.3^{a}	1264.36±47.6^{a}	1244.93±8.0^{ab}	1247.01±41.7^{a}	1266.31±73.3^{a}	1247.35±0.6^{ab}	1244.67±41.0^{a}	1212.08±1.6^{ab}	1293.26±66.6^{a}	1255.21±19.6^{a}	1069.79±141.0^{b}	1253.40±0.4^{ab}	1249.74±11.2^{a}