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Economic viability of lettuce (*Lactuca sativa,* L.*)* grown in hydroponic system with different optimized nutrient solutions

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Supplementary Table 1. Chemical composition of the mineral nutrient solutions

Nutrients	Nutrient Solutions			
	Ueda (1990)	Castellane and Araújo (1994)	Furlani (1995)	Bernardes (1997)
	---------- mg L^{-1} ----------			
NO_3	42.35	216.00	200.00	178.00
NH_4	5.80	20.09	15.56	18.00
P	8.08	61.28	32.70	71.37
K	77.34	425.39	310.28	269.67
Ca	21.00	159.60	168.00	201.60
Mg	5.92	24.26	24.65	49.30
S	7.80	31.98	32.50	65.00
Mn	0.64	0.54	0.64	0.49
Zn	0.01	0.26	0.20	0.05
Cu	0.01	0.06	0.07	0.03
Bo	0.52	0.49	0.36	0.50
Mo	0.02	0.05	0.11	0.01
Fe	2.23	2.23	2.23	2.23

NO_3- Nitrate; NH_4- Ammonium; P- Phosphorus; K- Potassium; Ca- Calcium; Mg- Magnesium; S- Sulfur; Mn- Manganese; Zn- Zinc; Cu- Copper; Bo- Boron; Mo- Molybdenum; Fe- Iron.

Supplementary Table 2. Chemical composition of the ingredients used to formulate the biofertilizers

Nutrients	Ingredients			
	Bovine manure	Molasses	Poultry blood	Milk
	----------%----------			
N	0.820	0.490	2.550	5.370
NO_3	0.000	0.000	0.000	0.000
P	0.270	0.080	0.047	0.680
K	1.190	2.380	0.060	1.470
Ca	1.050	0.820	0.047	1.170
Mg	0.380	0.350	0.068	0.000
S	0.045	0.350	0.000	0.000
Zn	0.004	0.034	0.035	0.011
Fe	0.380	0.000	0.000	0.001
Mn	0.016	0.000	0.000	0.000
Cu	0.001	0.002	0.000	0.002
Bo	0.000	0.000	0.000	0.000

N- Nitrogênio; NO_3- Nitrate; P- Phosphorus; K- Potassium; Ca- Calcium; Mg- Magnesium; S- Sulfur; Zn- Zinc; Fe- Iron; Mn- Manganese; Cu- Copper; Bo- Boron.

Supplementary Table 3. Quantities of the ingredients used to prepare the biofertilizers

Organic fertilizers	Biofertilizer			
	BIO1	BIO2	BIO3	BIO4
	----------kg L^{-1} of water----------			
Bovine manure	0.120	0.120	0.150	0.100
Molasses	0.018	0.018	0.020	0.020
Poultry blood	0.003	0.003	0.005	0.003
Milk	0.010	0.000	0.010	0.010

BIO1, BIO2, BIO3 and BIO4 – biofertilizers respectively used to prepare the modified nutrient solutions of Ueda (1990), Castellane and Araújo (1994), Furlani (1995), and Bernardes (1997).

Supplementary Table 4. Chemical composition of the biofertilizers

Nutrients	Biofertilizer			
	BIO1	BIO2	BIO3	BIO4
	----------mg L^{-1}----------			
N	7.284	12.800	34.787	14.144
NO_3	0.004	0.004	0.010	0.004
P	4.036	14.009	66.855	56.350
K	35.716	79.124	23.050	14.807
Ca	7.748	24.708	23.083	14.807
Mg	94.800	33.220	21.059	181.844
Zn	0.078	0.269	0.259	0.158
Fe	0.493	1.300	2.328	0.884
Mn	0.100	0.241	0.044	0.197
Cu	0.013	0.027	0.038	0.016

BIO1, BIO2, BIO3 and BIO4 – biofertilizers respectively used to prepare the modified nutrient solutions of Ueda (1990), Castellane and Araújo (1994), Furlani (1995), and Bernardes (1997). N- Nitrogênio; NO_3- Nitrate; P- Phosphorus; K- Potassium; Ca- Calcium; Mg- Magnesium; S- Sulfur; Zn- Zinc; Fe- Iron; Mn-Manganese; Cu- Copper.

Supplementary Table 5. Quantities of the biofertilizers used to prepare 360 L of stock nutrient solutions

Fertilizers	Unit	Nutrient Solutions							
		FM	BM	UM	CM	FO	BO	UO	CO
Biofertilizer	L	0.0	0.0	0.0	0.0	179.5	359.30	229.22	331.46
$(NH_4)_2SO_4$	g	18.01	27.39	7.93	16.26	0.00	3.83	0.28	0.00
$Ca(NO_3)_2.6H_2O$	g	432.00	426.91	44.47	337.97	407.62	395.62	34.02	318.41
KNO_3	g	151.30	25.8	71.41	270.56	156.19	52.25	80.21	282.03
KCl	g	84.85	173.29	0.00	53.00	55.67	106.68	0.00	19.05
$CuSO_4.5H_2O$	g	0.07	0.028	0.01	0.09	0.04	0.01	0.002	0.07
$ZnSO_4.7H_2O$	g	0.20	0.050	0.01	0.26	0.06	0.03	0.00	0.16
$MnSO_4.H_2O$	g	0.88	0.48	0.63	0.53	0.85	0.29	0.56	0.44
$MgSO_4.7H_2O$	g	41.75	133.26	15.93	58.79	10.12	64.67	0.00	15.96
Tank water	L	359.22	359.16	359.84	359.22	179.77	0.00	130.60	27.79
$(NH_4)_6Mo_7O_{24}.4H2O$	g	0.10	0.01	0.02	0.048	0.105	0.01	0.02	0.04
H_3BO_3	g	0.75	1.05	1.10	1.04	0.709	1.01	1.07	1.00
MAP	g	18.82	42.82	4.84	36.76	14.07	38.61	3.30	33.62

$(NH_4)_2SO_4$- ammonium sulfate; $Ca(NO_3)_2.6H_2O$- calcium nitrate; KNO_3- potassium nitrate; KCl- potassium chloride; $CuSO_4.5H_2O$- copper sulfate; $ZnSO_4.7H_2O$- zinc sulfate; $MnSO_4.H_2O$- manganese sulfate; $MgSO_4.7H_2O$- magnesium sulfate; $(NH_4)_6Mo_7O_{24}.4H_2O$- ammonium molybdate; H_3BO_3- boric acid; MAP- monoammonium phosphate; FM, BM, UM and CM are the mineral solutions of Furlani (1995), Bernardes (1997), Ueda (1990) and Castellane and Araújo (1994), respectively; FO, BO, UO and CO are the modified solutions of Furlani, Bernardes, Ueda, and Castellane and Araújo, respectively.

Supplementary Table 6. Volumes of water (VW) and stock solution (VSS) added in the tanks to obtain 17 L of nutrient solution and EC of 1.5 dS m^{-1} as a function of the mineral nutrient solutions of Furlani (1995) (FM), Bernardes (1997) (BM), Ueda (1990) (UM) and Castellane and Araújo (1994) (CM) and the modified nutrient solutions of Furlani (FO), Bernardes (BO), Ueda (UO) and Castellane and Araújo (CO) along the experiment

Avaliação, dias	FM		FO		BM		BO		UM		UO		CM		CO	
	VW	VSS	VW	VSS	VW	VSS	VW	VSS	VW	VSS	VW	VSS	VW	VSS	VW	VSS
	L															
1	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
2	0,73	0,18	0,70	0,21	0,75	0,26	0,69	0,22	0,58	0,43	0,55	0,46	0,61	0,20	0,78	0,23
3	0,69	0,22	0,89	0,32	0,72	0,20	0,71	0,20	0,59	0,32	0,50	0,31	0,59	0,22	0,60	0,31
4	0,85	0,19	0,81	0,40	0,61	0,30	0,74	0,17	0,74	0,29	0,39	0,50	0,73	0,13	0,74	0,18
5	0,75	0,34	1,28	0,63	0,13	0,29	1,15	0,44	2,30	0,44	0,90	0,57	1,14	0,57	1,18	0,42
6	0,22	0,42	0,18	0,41	0,69	0,63	0,69	0,37	1,03	0,22	0,32	0,87	0,92	0,38	0,97	0,36
7	0,78	0,14	0,14	0,18	0,80	0,40	1,16	0,26	0,40	0,68	0,07	1,00	0,88	0,22	0,59	0,13
8	0,87	0,44	0,81	0,40	0,90	0,51	1,00	0,10	0,54	0,27	0,11	1,00	0,77	0,34	0,97	0,22
9	1,89	0,63	0,89	0,72	0,91	1,62	1,58	0,63	1,46	0,48	1,37	0,45	1,60	0,61	1,28	0,24
10	1,82	0,51	1,00	0,98	1,30	0,72	0,93	0,44	1,58	0,11	0,33	2,09	1,55	0,35	0,92	0,81
11	0,68	0,89	1,96	0,07	0,25	2,02	0,80	0,09	0,60	0,91	0,31	2,19	0,21	1,02	1,06	0,24
12	0,33	0,84	0,26	0,63	1,50	0,26	0,42	0,45	0,75	0,12	0,43	10,62	0,21	0,89	0,33	0,76
13	1,95	0,62	1,63	0,75	2,40	0,63	0,96	0,25	1,80	0,28	0,81	2,18	2,45	0,21	0,97	0,54
14	1,66	1,38	1,51	1,12	1,70	1,84	1,96	0,57	1,54	0,69	0,92	2,68	1,60	0,93	1,49	0,93
15	1,11	1,25	1,05	0,79	1,33	1,40	0,64	0,32	1,14	0,62	0,00	2,79	1,23	0,61	1,10	0,67
16	1,98	0,61	1,23	0,25	1,41	1,21	1,14	0,38	1,43	0,23	0,92	0,74	1,37	0,65	1,22	0,48
17	2,86	0,54	2,25	1,11	2,96	0,79	1,61	0,49	2,58	0,01	0,00	6,23	3,15	0,00	2,34	1,01
18	0,59	1,69	0,28	1,14	0,58	2,65	0,86	0,64	0,64	0,78	0,70	1,16	0,47	1,01	0,53	1,19
19	2,16	2,83	2,72	1,63	2,32	2,33	1,97	0,09	2,24	1,20	0,84	3,53	2,44	1,20	2,68	1,29
20	2,13	2,72	2,27	1,67	2,82	3,14	1,52	0,69	1,83	1,71	3,27	1,42	1,53	1,90	1,92	0,86
21	1,85	2,23	1,80	1,30	1,89	2,90	1,28	0,37	2,14	1,64	0,12	16,88	2,39	2,36	2,12	1,01
22	3,82	2,61	1,62	2,87	2,17	5,89	0,77	1,25	2,83	1,02	0,00	14,04	2,85	1,40	1,64	2,28
23	0,00	6,36	1,88	3,06	1,23	4,02	0,91	1,41	3,56	1,70	3,30	6,23	0,12	5,85	1,70	2,54
24	3,51	2,28	3,03	1,22	4,31	2,56	1,37	0,55	2,83	1,33	3,16	0,98	2,99	1,46	2,67	0,67

FM, BM, UM and CM are the mineral solutions of Furlani (1995), Bernardes (1997), Ueda (1990) and Castellane and Araújo (1994), respectively; FO, BO, UO and CO are the modified solutions of Furlani, Bernardes , Ueda, and Castellane and Araújo, respectively.