Article Supplementary Materials

Upcycling phosphorus recovered from anaerobically digested dairy manure to support production of vegetables and flowers

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Table S1. Nutrient contents of as-is and dried fine solids, other blend ingredients, derived plant foods, and the market alternative on a dry weight basis.

	As-is Fine Solids	Dried Fine Solids[a]	Potting Mix	Dried Distiller's Grain & Whey Permeate	Biochar	Plant Food A	Plant Food A1	Plant Food A2	Plant Food B	Market Alternative
Total N (g kg^{-1})	50.2[b]	19.5[c]	5.7[b]	39.8[b]	17.8[b]	41.6[c]	41.6[c]	40.4[c]	40.1[c]	44.9[b]
Organic N (g kg^{-1})[d]	38.8[d]	17.7[e]	5.7[d]	39.7[d]	17.5[d]	40.1[e]	40.5[e]	39.7[e]	38.8[e]	NA
NH_4-N (g kg^{-1})	11.3	1.8	0.0	0.1	0.3	1.5	1.1	0.7	1.3	NA
NO_3-N (g kg^{-1})	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NA
Total P (g kg^{-1})	18.3	17.1	0.6	5.3	8.3	16.0	17.1	17.4	16.1	19.3
Neutral NH_4 Citrate P (g kg^{-1})	19.4	19.5	0.4	5.3	6.8	17.3	16.5	16.0	16.9	15.7
2% Citric Acid P (g kg^{-1})	15.3	11.9	NA	NA	NA	11.8	10.8	9.7	11.8	9.9
Olsen P (g kg^{-1})	0.8	1.8	NA	NA	NA	1.9	1.9	2.1	1.6	0.7
Water Extractable P (g kg^{-1})	1.9	3.0	NA	NA	NA	3.2	3.4	3.4	3.5	2.3
Total K (g kg^{-1})	14.7	12.9	1.2	7.6	31.0	13.3	14.5	14.9	13.8	19.4
Neutral NH_4 Citrate K (g kg^{-1})	18.6	16.9	1.5	8.4	32.5	16.9	16.2	15.8	16.1	21.4
Total C (g kg^{-1})	405	383	329	470	550	386	413	424	388	NA
Total B (g kg^{-1})	0.02	0.02	0.03	0.00	0.04	0.02	0.02	0.02	0.02	0.00
Total Ca (g kg^{-1})	32	32	25	2	35	22	22	22	22	56
Total Cu (g kg^{-1})	0.64	0.66	0.04	0.00	0.03	0.67	0.70	0.69	0.68	0.04
Total Fe (g kg^{-1})	0.83	0.83	1.85	0.22	2.50	0.82	0.79	0.78	0.80	0.25
Total Mg (g kg^{-1})	12	12	5.1	1.6	15	12	13	12	12	3.5
Total Mn (g kg^{-1})	0.22	0.22	0.11	0.01	0.28	0.23	0.24	0.23	0.24	0.07
Total Na (g kg^{-1})	5.5	5.4	0.4	1.7	7.1	5.1	5.6	5.2	5.2	1.7
Total Z (g kg^{-1})	0.35	0.35	0.08	0.06	0.14	0.29	0.32	0.32	0.32	0.28

[a] Partially dried to ~45% total solids at 60°C

[b] Total N measured by combustion analysis

[c] Total N calculated as sum of total Kjeldahl N and NO_3-N

[d] Organic N estimated as total N – (NH_4-N + NO_3-N)

[e] Organic N is estimated as total Kjeldahl N – NH_4-N

Table S2. Bioassay germination rates, survival rates, root dry biomass, shoot dry biomass and total dry biomass by amendment and application rate (mean ± 1 SD). Groups share a letter if the difference in means was not statistically significant ($P > 0.05$). $n = 6$ trays of 16 seedlings for germination and survival and $n = 24$ seedlings for root biomass, shoot biomass and total biomass.

Plant	**Amendment**	**Application Rate**	**Germination (%)**	**Survival (%)**	**Root Biomass (mg dry)**	**Shoot Biomass (mg dry)**	**Total Biomass (mg dry)**
tomato	control	0	93±5^{ab}	98±6^{a}	9±2^{d}	17±3^{d}	26±5^{d}
tomato	Market Alternative	2	84±7^{b}	89±9^{a}	51±11^{a}	139±38^{a}	190±47^{a}
tomato	Plant Food B	2	94±4^{ab}	99±3^{a}	23±6^{cd}	63±17^{cd}	86±21^{cd}
tomato	Plant Food B	4	94±0^{ab}	97±6^{a}	30±6^{bc}	90±19^{bc}	120±24^{bc}
tomato	Plant Food B	6	91±5^{ab}	100±0^{a}	38±7^{ab}	115±21^{ab}	152±27^{ab}
tomato	Plant Food B	8	97±5^{a}	96±8^{a}	37±9^{ab}	114±27^{ab}	150±35^{ab}
tomato	Plant Food B	10	96±5^{a}	93±0^{a}	37±10^{ab}	110±28^{ab}	147±38^{ab}
tomato	Plant Food B	12	91±3^{ab}	92±9^{a}	33±14^{b}	107±44^{ab}	141±57^{ab}
marigold	control	0	98±3^{a}	100±0^{a}	10±2^{c}	17±3^{d}	27±5^{d}
marigold	Market Alternative	2	96±5^{a}	80±24^{ab}	51±16^{a}	127±38^{a}	178±52^{ab}
marigold	Plant Food A	2	99±3^{a}	100±0^{a}	33±8^{b}	69±15^{cd}	102±22^{cd}
marigold	Plant Food A	4	98±3^{a}	97±3^{ab}	44±10^{ab}	99±19^{abc}	143±26^{abc}
marigold	Plant Food A	6	99±3^{a}	92±5^{ab}	38±15^{ab}	88±31^{cb}	125±45^{bc}
marigold	Plant Food A	8	97±5^{a}	82±12^{b}	46±13^{ab}	114±29^{ab}	160±40^{ab}
marigold	Plant Food A_1	6	99±3^{a}	90±7^{ab}	48±17^{a}	113±33^{a}	161±48^{ab}
marigold	Plant Food A_2	6	100±0^{a}	83±14^{ab}	52±12^{a}	121±21^{ab}	174±31^{a}

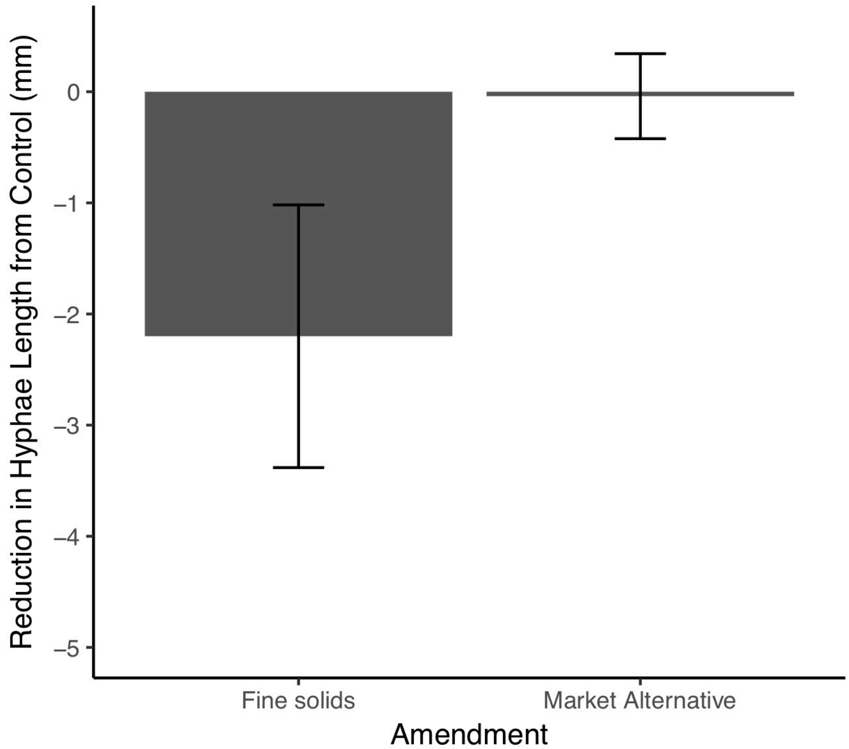

Figure S1. Disease suppression potential of as-is fine solids and the market alternative (n = 5 per amendment). Negative values represented suppressive potential.