

# Composts from Grapevine and Hazelnut By-Products: A Sustainable Peat Partial Replacement for the Growth of Micropropagated Hazelnut and Raspberry in Containers

## Supplementary Materials

Supplementary Table S1. Effects of substrates with different compost ratio (0-10-20-40%) on raspberry Himbo Top plant height during the growth season and on leaf area on DOY 196. Means followed by different letters significantly differ at p-value < 0.05. DOY = day of year. T1 = Commercial Peat (P) 90% + Compost A(CA) 10%; T2 = P 80% + CA 20%; T3 = P 60% + CA 40%; T4= Commercial Peat (P) 100%; T5 = P Commercial Peat 100% + Osmocote.

Plant height (cm)												Leaf area (cm²)		
Treatment	DOY	113		144		173		196		225		266		196
T1		8.5	a	40.2	a	85.2	a	94.8	a	115.2	a	113.7	2869.3	ab
T2		10.4	a	33.0	a	77.9	a	91.0	a	112.0	a	109.4	3488.4	a
T3		8.7	a	36.0	a	79.7	a	92.0	a	113.2	a	113.9	3462.1	a
T4		8.0	a	37.1	a	80.7	a	84.7	a	102.4	a	109.3	2251.0	b
T5		11.1	a	36.2	a	79.3	a	88.1	a	105.6	a	112.3	3115.8	ab

Supplementary Table S2. Chlorophyll (CHL), flavonoids (FLA) and anthocyanins (ANTH) index, and Nitrogen Balance Index (NBI) of raspberry Himbo Top as affected by different compost ratio (0-10-20-40%) at different times during the growing season. Means followed by the same letter do not significantly differ at p-value < 0.05. DOY = Day of Year. T1, Commercial Peat (P) 90% + Compost A(CA) 10%; T2, P 80% + CA 20%; T3, P 60% + CA 40%; T4, Commercial Peat (P) 100%; T5, P 100% + Osmocote.

Date	DOY	Treatment	CHL (-)		FLAV (-)		NBI (-)		ANTH (-)	
11th May	131	T1	21.11	ab	0.69	b	30.74	a	0.30	a
		T2	24.10	a	0.95	a	27.08	a	0.23	c
		T3	22.20	ab	0.72	b	30.61	a	0.26	bc
		T4	19.73	b	0.71	b	27.77	a	0.27	ab
		T5	19.72	b	0.72	b	27.23	a	0.283	ab
4th Jul	185	T1	17.38	ab	1.07	bc	16.33	b	0.36	a
		T2	19.92	a	0.93	bc	21.57	a	0.33	a
		T3	20.56	a	0.90	c	23.48	a	0.33	a
		T4	14.93	b	1.34	a	11.38	c	0.37	a
		T5	19.21	a	1.18	ab	16.65	b	0.34	a
25th Jul	206	T1	20.32	a	1.23	ab	17.52	ab	0.33	ab
		T2	20.86	a	1.27	ab	16.73	ab	0.37	ab
		T3	21.89	a	1.00	b	22.32	a	0.31	b
		T4	18.54	a	1.09	b	18.82	ab	0.34	ab
		T5	20.32	a	1.46	a	14.05	b	0.40	a
13th Aug	225	T1	19.97	a	1.29	a	15.94	a	0.39	a
		T2	21.23	a	1.13	a	19.60	a	0.36	a
		T3	21.35	a	1.25	a	17.43	a	0.33	a
		T4	20.63	a	1.30	a	16.76	a	0.36	a
		T5	22.43	a	1.26	a	18.40	a	0.37	a
12th Sep	255	T1	24.11	a	1.23	a	19.63	a	0.28	a
		T2	21.08	a	1.22	a	19.10	a	0.28	a
		T3	21.30	a	1.14	a	17.48	a	0.30	a

T4	24.07	a	1.27	a	16.51	a	0.31	a
T5	23.36	a	1.10	a	20.37	a	0.31	a

Supplementary Table S3. Effects of substrates with different compost ratio (0-10-20-40%) on hazelnut Tonda Gentile plant height during the growth season and on leaf area on DOY 196. Means followed by different letters significantly differ at p-value < 0.05. DOY = day of year. T1 = Commercial Peat (P) 90% + Compost B (CB) 10%; T2 = P 80% + CB 20%; T3 = P 60% + CB 40%; T4 = Commercial Peat (P) 100%; T5 = P Commercial Peat 100% + Osmocote.

Treatment DOY	Plant height (cm)												Leaf area (cm²)	
	113		144		173		196		225		266		196	
T1	11.5	a	22.3	a	36.5	ab	46.4	a	49.5	a	49.8	a	2195.8	a
T2	12.3	a	19.3	ab	28.0	c	34.1	b	35.8	b	37.0	b	1029.1	c
T3	11.7	a	16.9	b	17.0	d	23.3	c	25.8	b	26.0	b	518.4	d
T4	11.8	a	20.2	ab	29.9	bc	33.0	bc	35.4	b	35.7	b	1514.7	b
T5	11.7	a	23.1	a	39.5	a	47.4	a	49.9	a	50.2	a	1614.2	b

Supplementary Table S4. Chlorophyll (CHL), flavonoids (FLA) and anthocyanins (ANTH) index, and Nitrogen Balance Index (NBI) of hazelnut Tonda Gentile as affected by different compost ratio (0-10-20-40%) at different times during the growing season. Means followed by the same letter do not significantly differ at p-value < 0.05. DOY = Day of Year. T1, Commercial Peat (P) 90% + Compost B (CB) 10%; T2, P 80% + CB 20%; T3, P 60% + CB 40%; T4, Commercial Peat (P) 100%; T5, P 100% + Osmocote.

DOY	Treatment	CHL (-)		FLAV (-)		NBI (-)		ANTH (-)	
131	T1	13.63	a	1.09	bc	12.70	a	0.31	a
	T2	14.99	a	1.02	c	14.94	a	0.30	a
	T3	13.64	a	0.97	c	14.25	a	0.30	a
	T4	11.82	a	1.19	b	10.01	a	0.31	a
	T5	13.26	a	1.37	a	9.83	a	0.30	a
185	T1	24.06	a	0.88	b	27.75	a	0.27	c
	T2	23.97	a	0.93	b	25.85	a	0.29	c
	T3								
	T4	12.82	c	1.17	a	11.03	c	0.35	a
	T5	16.78	b	1.13	a	14.97	b	0.33	b
206	T1	23.76	a	0.97	c	24.85	a	0.29	d
	T2	22.01	a	1.08	bc	20.78	ab	0.31	cd
	T3	17.39	b	0.93	c	18.80	b	0.34	bc
	T4	9.72	c	1.36	a	7.20	d	0.40	a
	T5	15.14	b	1.25	ab	12.55	c	0.35	b
225	T1	20.02	a	1.22	b	16.50	a	0.35	b
	T2	18.18	a	1.21	b	15.21	a	0.33	b
	T3	18.55	a	1.26	b	15.07	a	0.33	b
	T4	11.19	b	1.59	a	7.07	b	0.39	a
	T5	13.44	b	1.62	a	8.51	b	0.33	b
255	T1	23.42	a	1.40	c	17.08	a	0.34	a
	T2	21.97	ab	1.57	bc	14.16	a	0.28	a
	T3	19.44	b	1.66	bc	12.48	a	0.28	a
	T4	13.52	c	1.91	ab	7.92	b	0.33	a
	T5	11.28	c	2.25	a	5.06	b	0.29	a