

*Supplementary Material*

# Physicochemical Properties of Cattail (*Typha*) Bioproducts as Substitutes for Commercial Horticultural Growing Media

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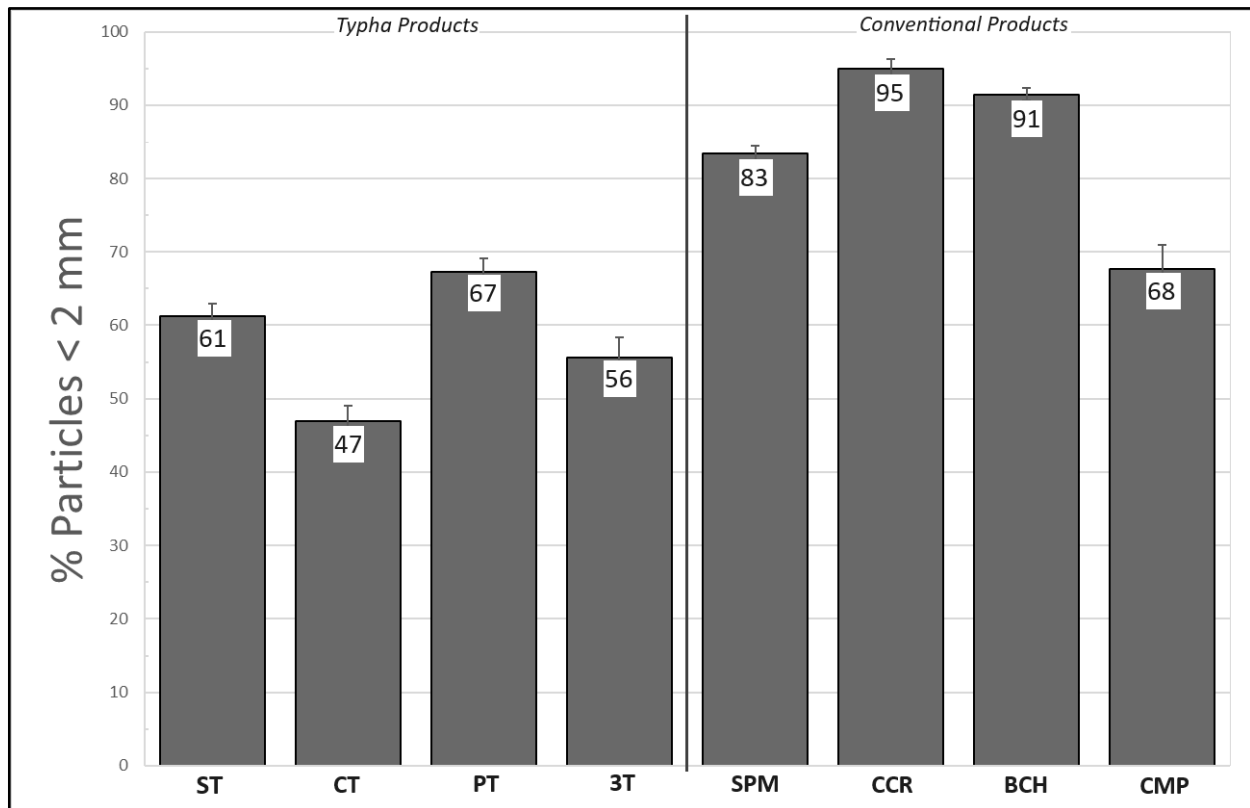
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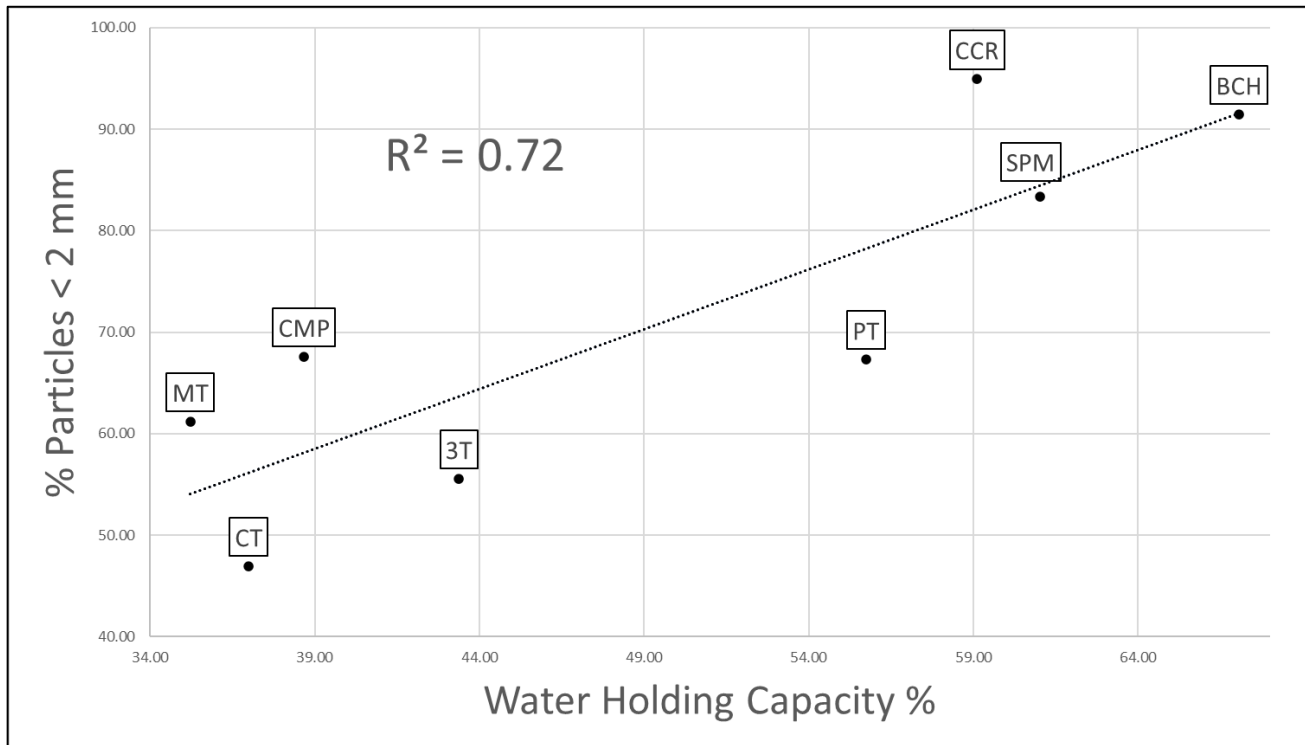
The following supporting material is included: **Table S1:** Key to Media Tested; **Figure S1:** Media Particle Size Distribution Graph; **Figure S2:** Linear Regression of Water Holding Capacity and Percent Mass of Particles <2 mm; **Table S2:** Complete pH Data; **Table S3:** Complete Conductivity Data; **Table S4:** Complete Nitrogen Drawdown Index Data; **Table S5:** Complete Water Holding Capacity Data; **Table S6:** Complete Particle Size Distribution Data; **Table S7:** Complete Dry Bulk Density Data

**Table S1: Key to Media Tested**

<b>Code</b>	<b>Medium</b>	<b>Type</b>	<b>Description</b>
<b>ST</b>	Shredded Typha	Raw organic material	Shredded <i>T. domingensis</i>
<b>CT</b>	Composted Typha	Compost	Shredded <i>T. domingensis</i> amended with blood meal and composted for 68 days
<b>PT</b>	Pyrolyzed Typha	Biochar	Shredded <i>T. domingensis</i> pyrolyzed in a steel tube at approximately 986 C
<b>3T</b>	Typha Blend	Blend	A blend of equal volumes ST, PT, & CT
<b>SPM</b>	Peat Moss	Raw organic material	Schultz® Canadian Sphagnum Peat Moss
<b>CCR</b>	Coco Coir	Raw organic material	SPONGEASE™ Coco Coir
<b>BCH</b>	Biochar	Biochar	Wakefield™ Biochar
<b>CMP</b>	Compost	Compost	Old Potters™ Organic Compost

**Figure S1: Media Particle Size Distribution Graph**

Note: Figure S1 displays the average percentage  $\pm$  standard deviation of the mass of each medium composed particles smaller than 2 mm,  $n=3$ .

**Figure S2: Linear Regression of Water Holding Capacity and Percent Mass of Particles <2 mm**

**Table S2: Complete pH Data**

Medium	Raw Data		Results	
	Pot #	pH	Avg. pH	StdDev
ST	A	5.26	5.27	0.02
	B	5.25		
	C	5.29		
CT	D	7.23	7.28	0.15
	E	7.16		
	F	7.45		
PT	G	9.39	9.34	0.06
	H	9.37		
	I	9.27		
3T	J	7.37	7.43	0.05
	K	7.47		
	L	7.45		
SPM	M	4.4	4.45	0.04
	N	4.47		
	O	4.47		
CCR	P	5.65	5.78	0.14
	Q	5.93		
	R	5.76		
BCH	S	8.55	8.57	0.03
	T	8.61		
	U	8.55		
CMP	V	8.59	8.57	0.02
	W	8.57		
	X	8.55		

**Table S3: Complete Conductivity Data**

Medium	Raw Data		Results	
	Pot #	EC (dS/M)	Avg. EC (dS/M)	StdDev
ST	A	8.0	7.9	0.1
	B	7.8		
	C	8.0		
CT	D	4.2	4.6	0.4
	E	5.0		
	F	4.6		
PT	G	31.7	29.1	2.3
	H	27.3		
	I	28.3		
3T	J	11.6	13.3	1.5
	K	14.3		
	L	14.1		
SPM	M	0.2	0.2	0.0
	N	0.2		
	O	0.2		
CCR	P	1.7	1.6	0.1
	Q	1.6		
	R	1.5		
BCH	S	0.9	1.1	0.2
	T	1.0		
	U	1.2		
CMP	V	2.9	2.9	0.0
	W	3.0		
	X	2.9		

**Table S4: Complete Nitrogen Drawdown Index Data**

Medium	Raw Data						Results
	Pot #	NO3-N (mg/L)	Avg. NO3-N (mg/L)	Pot #	NO3-N (mg/L)	Avg. NO3-N (mg/L)	NDI
ST	A1	31.3	30.9	A2	9.0	10.8	0.35
	A3	28.3		A4	10.9		
	A5	33.2		A6	12.5		
CT	B1	37.5	36.3	B2	34.1	34.5	0.95
	B3	36.4		B4	35.9		
	B5	35.0		B6	33.4		
PT	C1	41.5	40.6	C2	23.1	23.2	0.57
	C3	38.8		C4	23.5		
	C5	41.4		C6	23.0		
3T	D1	30.7	31.2	D2	8.1	8.3	0.26
	D3	31.0		D4	8.4		
	D5	32.0		D6	8.3		
SPM	E1	43.7	43.6	E2	40.3	41.0	0.94
	E3	45.1		E4	42.0		
	E5	42.1		E6	40.6		
CCR	F1	21.0	23.0	F2	14.7	15.8	0.69
	F3	24.1		F4	18.4		
	F5	23.8		F6	14.3		
BCH	G1	33.4	34.4	G2	31.1	30.4	0.88
	G3	35.2		G4	29.5		
	G5	34.6		G6	30.6		
CMP	H1	39.8	39.8	H2	41.1	41.2	1.04
	H3	39.5		H4	40.9		
	H5	40.2		H6	41.7		

**Table S5: Complete Water Holding Capacity Data**

Medium	Raw Data						Results	
	Pot #	Fill Vol. (mL)	Full, wet (g)	Full, dry (g)	water (g)	WHC %	Avg. WHC %	StdDev
ST	A	350	176.4	41	135.4	38.7	35.2	4.0
	B	350	166.6	40.3	126.3	36.1		
	C	350	146.2	38.1	108.1	30.9		
CT	D	350	178.7	60.4	118.3	33.8	37.0	3.0
	E	350	208.9	69.5	139.4	39.8		
	F	350	194.9	64.2	130.7	37.3		
PT	G	350	261.3	47.8	213.5	61.0	55.7	4.9
	H	350	238.9	46.7	192.2	54.9		
	I	350	224.7	45.1	179.6	51.3		
3T	J	350	181.8	50.1	131.7	37.6	43.4	6.5
	K	350	200.8	53.6	147.2	42.1		
	L	350	234	57.4	176.6	50.5		
SPM	M	350	255.7	46.8	208.9	59.7	61.0	2.1
	N	350	271.6	49.7	221.9	63.4		
	O	350	257.9	47.9	210	60.0		
CCR	P	350	252.4	48.8	203.6	58.2	59.1	1.2
	Q	350	254.1	48.7	205.4	58.7		
	R	350	261.9	50.2	211.7	60.5		
BCH	S	350	389.7	146.4	243.3	69.5	67.1	3.0
	T	350	371	147.9	223.1	63.7		
	U	350	393.1	155.3	237.8	67.9		
CMP	V	350	297.6	162.3	135.3	38.7	38.7	1.8
	W	350	315.1	173.4	141.7	40.5		
	X	350	286.5	157.4	129.1	36.9		



**Table S6: Complete Particle Size Distribution Data**

Medium	Raw Data						Results	
	Empty Weights (g)		Weights after Sieving (g)		Particle mass (g)		Avg. % < 2mm	StdDev
	Tray	2 mm sieve	Tray	2 mm sieve	< 2.0	> 2.0 mm		
ST	356.2	430.6	416.0	470.8	59.8	40.2	61.2	1.7
	356.2	430.6	419.3	467.5	63.1	36.9		
	356.2	430.6	416.9	469.9	60.7	39.3		
CT	356.2	430.6	402.9	483.9	46.7	53.3	46.9	2.1
	356.2	430.6	401.2	485.6	45.0	55.0		
	356.2	430.6	405.4	481.4	49.2	50.8		
PT	356.2	430.6	421.7	465.1	65.5	34.5	67.3	1.8
	356.2	430.6	425.3	461.5	69.1	30.9		
	356.2	430.6	423.6	463.2	67.4	32.6		
3T	356.2	430.6	411.5	475.3	55.3	44.7	55.6	2.8
	356.2	430.6	409.2	477.6	53.0	47.0		
	356.2	430.6	414.7	472.1	58.5	41.5		
SPM	356.2	430.6	439.7	447.1	83.5	16.5	83.3	1.1
	356.2	430.6	438.4	448.4	82.2	17.8		
	356.2	430.6	440.6	446.3	84.4	15.7		
CCR	356.2	430.6	451.4	435.4	95.2	4.8	95.0	1.3
	356.2	430.6	449.7	437.1	93.5	6.5		
	356.2	430.6	452.4	434.5	96.1	3.9		
BCH	356.2	430.6	446.8	440.0	90.6	9.4	91.5	0.8
	356.2	430.6	448.4	438.5	92.2	7.9		
	356.2	430.6	447.9	438.9	91.7	8.3		
CMP	356.2	430.6	422.9	463.9	66.7	33.3	67.6	3.3
	356.2	430.6	427.4	459.4	71.2	28.8		
	356.2	430.6	421.1	465.8	64.9	35.2		

**Table S7: Complete Dry Bulk Density Data**

Medium	Raw Data				Results	
	Beaker #	Media Volume (L)	Media Mass (g)	DBD (g/L)	Avg. DBD (g/L)	StdDev
ST	CK	0.25	9.2	36.8	37.9	1.9
	CG	0.25	10.0	40.0		
	BZ	0.25	9.2	36.8		
CT	AY	0.25	21.7	86.8	88.7	4.3
	CF	0.25	21.4	85.7		
	AQ	0.25	23.4	93.6		
PT	DJ	0.25	16.5	66.1	66.5	1.5
	59	0.25	17.1	68.2		
	CV	0.25	16.3	65.4		
3T	CO	0.25	15.4	61.4	58.1	3.4
	CZ	0.25	13.7	54.6		
	CE	0.25	14.6	58.2		
SPM	BP	0.25	16.2	64.6	66.4	2.0
	AS	0.25	16.5	66.1		
	BW	0.25	17.1	68.6		
CCR	CX	0.25	17.8	71.1	68.8	2.0
	AV	0.25	16.8	67.1		
	BT	0.25	17.1	68.2		
BCH	BQ	0.25	75.7	302.9	301.4	1.9
	BY	0.25	74.8	299.3		
	BF	0.25	75.5	302.1		
CMP	AZ	0.25	95.9	383.6	387.6	5.8
	CS	0.25	96.3	385.0		
	AD	0.25	98.6	394.3		