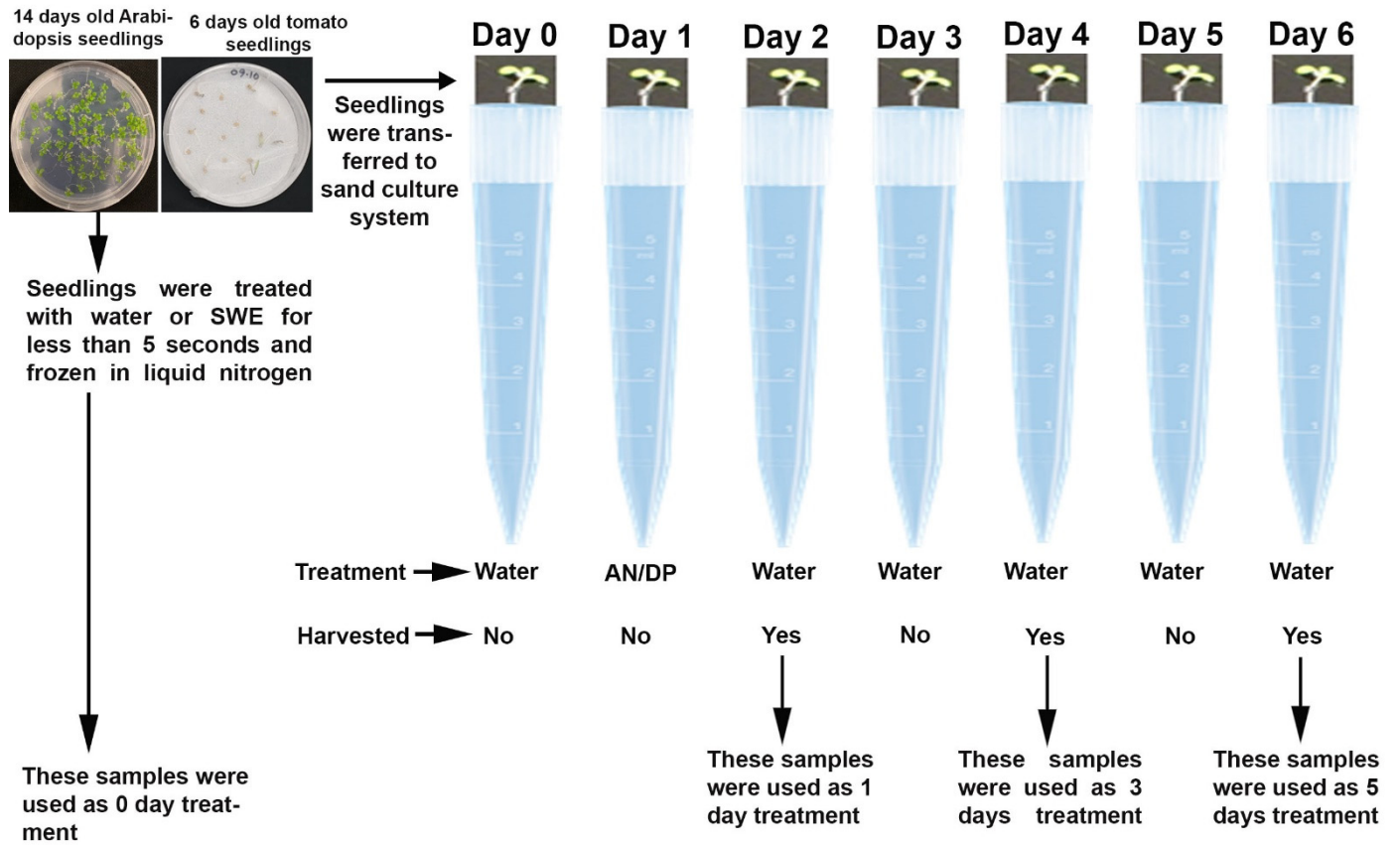


Supplementary Figure S1: Experimental outline of investigation of responses at priming phase in *Arabidopsis thaliana* and *Solanum lycopersicum* following a single SWE application.



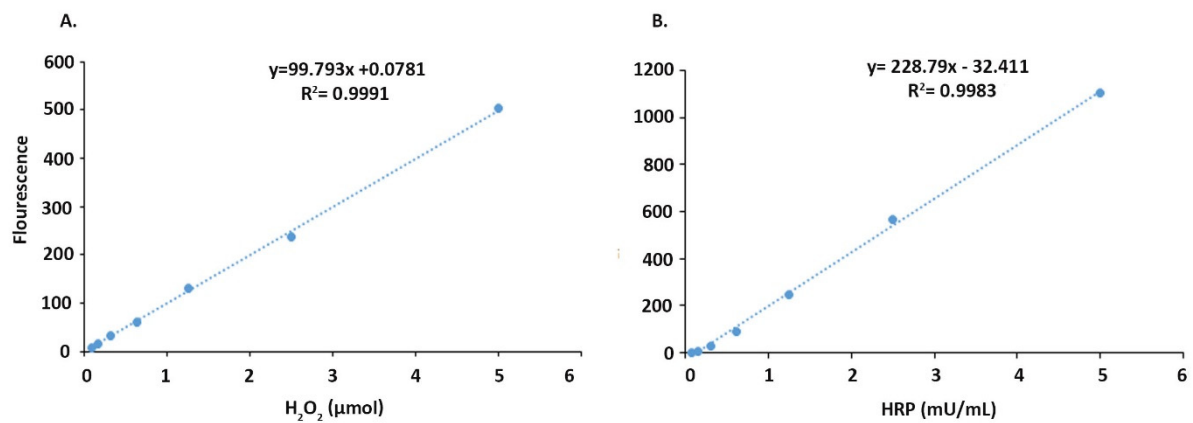
Supplementary Table S1. Primer pair sequences used in this study

Arabidopsis thaliana			
Gene id (s)	Sequence	Product length (bp)	Primer source
ACT2 for	ACCTTGCTGGACGTGACCTT	88	This study
ACT2 rev	ATTTCCTGCTCTGCTGTTGT		
ACT8 for	AACCAGCTCCTCCATCGAAA	130	
ACT8 rev	GATCCCTGCAGCTTCCATTC		
MYB75 for	TTCCTGCACCGGTTTAGCCC	122	
MYB75 rev	TTGGTGTGCATAGATTCTTCCTGA		
PR1 for	CGTAAGGCCACCAGAGTGT	131	
PR1 rev	TCACAACCAGGCACGAGGAG		
NPR1 for	TACCAGTGAGACGGTCAGGC	136	
NPR1 rev	TGTGTCGTCCACTGTTTAGTTGC		
PR5 for	AGCGGCATTGCTGTTATGGC	134	
PR5 rev	CGGGAAGCACCTGGAGTCAA		

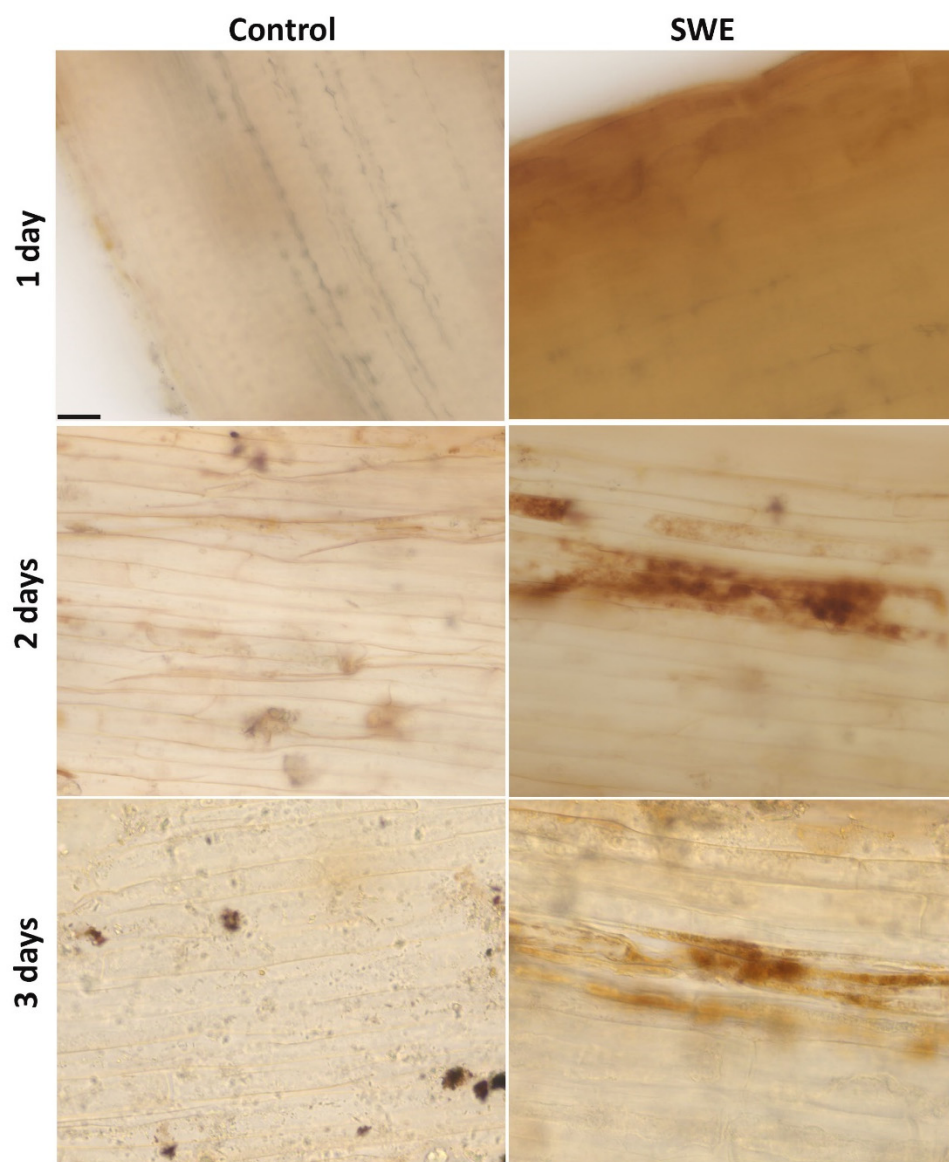
<i>PCC1</i> for	GTACACAAGTCCGCCACCAA	93	
<i>PCC1</i> rev	ACGCCCTTGGAGTTTGTCTC		
<i>ACD6</i> for	CTTCTCGTGGTAGCGGCTCT	122	
<i>ACD6</i> rev	GGGTAGTGGCCAAAGTTGC		
<i>AED1</i> for	ATTATGCTTTGCGTATGTCTCAATTGG	261	[22]
<i>AED1</i> rev	GGACTCCACACGTGCTTGATCG		
<i>GRXC9</i> for	TCTCAAGGACCGCCGGATTC	129	This study
<i>GRXC9</i> rev	ACGGCGAGAGAGTTTCGGATG		
<i>EDS16</i> for	TTGGCAGGGAGACTTACGAAGG	91	
<i>EDS16</i> rev	AATTCGAAGAAATGAAGAGCTTGGA		
<i>RBOHD</i> for	AAGCGGGATAGTCGTCGGTG	77	
<i>RBOHD</i> rev	CCGCGGCAATTAACGTGGA		
<i>GSTF8</i> for	GCAGGAGTGCGACAGAAACC	145	
<i>GSTF8</i> rev	ACCGACAACATGAACAGTGGC		
<i>SAG21</i> for	AGCGGTGGAAGAAGTGGAGC	140	
<i>SAG21</i> rev	GCGTCAATCTCGTTGGAACCG		
<i>TPX2</i> for	TGGGTCTGGAGAATACACGC	138	
<i>TPX2</i> rev	TCGCCACCAGATTCAACATTGG		
<i>Solanum lycopersicum</i>			
<i>SINPR1</i> for	TGTGGGAAAGATAGCAGCACG	140	[31]
<i>SINPR1</i> rev	GTCCACACAAACACACACATC		
<i>SIEF1α</i> for	GATTGGTGGTATTGGAAGTGC	137	[59]
<i>SIEF1α</i> rev	AGCTTCGTGGTGCATCTC		
<i>SLActin7</i> for	GATACCTGCAGCTTCCATACC	110	[60]
<i>SLActin7</i> rev	GCTTTGCCGCATGCCATTCT		
<i>SIPR5</i> for	TGGGCCGGGAAAATGTCATCC	150	This study
<i>SIPR5</i> rev	GTAGGACCACATGGACCTTGAGTG		

Table S2. Experimental outline of investigation of responses at post-challenge primed state in *Arabidopsis thaliana* following 2 SWE applications and inoculated with *Phytophthora cinnamomi* (*Pc*).

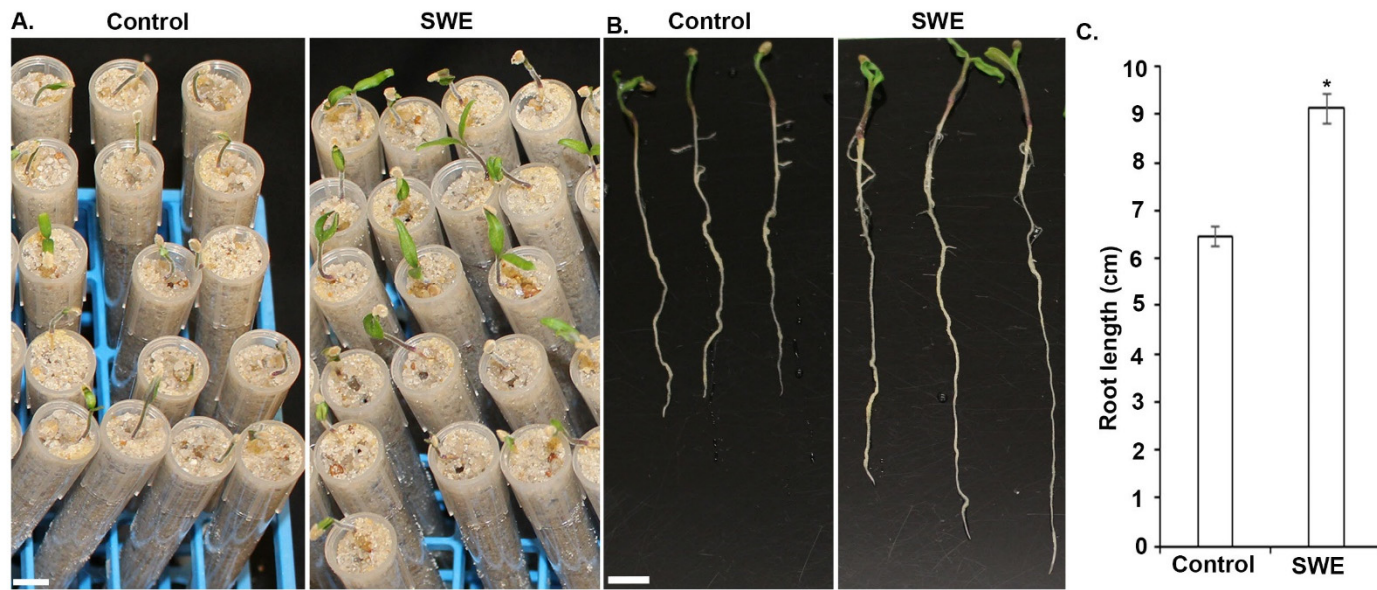
Treatment	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9
dH ₂ O Control	2 mL	700 µL	700 µL	700 µL	700 µL	700 µL	700 µL	‘3 days post-priming’ Inoculation with <i>Pc</i> and harvesting	700 µL	‘5 days post-priming’ Inoculation with <i>Pc</i> and harvesting
Diluted SWE	dH ₂ O 2 mL	dH ₂ O 700µL	SWE 700 µL	dH ₂ O 700µL	SWE 700 µL	dH ₂ O 700µL	dH ₂ O 700µL	‘3 days post-priming’ Inoculation with <i>Pc</i> and harvesting	dH ₂ O 700µL	‘5 days post-priming’ Inoculation with <i>Pc</i> and harvesting



Supplementary Figure S2. Linear regression of various concentrations of H₂O₂ and horseradish peroxidase (HRP). To detect H₂O₂ and HRP, the indicated amount of H₂O₂ (A) and HRP (B) were added in reactions containing 50 μmol Amplex Red reagent and 50 mM sodium phosphate buffer, pH 7.4. Then the reactions was incubated for 30 minutes at room temperature in the dark. Fluorescent was then measured with a fluorescent microplate reader using excitation at 530 nm and fluorescent emission at 590.



Supplementary Figure S3. Hydrogen peroxide (H₂O₂) detection in tomato roots grown in the sand culture system with application of SWE (1:400 dilution) or water as the control. Images were collected at 1, 2 and 3 days after SWE treatment. Scale bar = 20 μ m. Images are representative of three independent biological replicates each with at least 12 roots.



Supplementary Figure S4. The effect of seaweed extract (SWE) application on plant vigor and root growth. A. Tomato seedlings growing in sand at five days after SWE treatment or water as a control. B. Tomato plants after harvesting from sand at five days after SWE treatment or water as a control Scale bar = 1 cm C. Root length (determined using ImageJ software) for tomato seedlings at five days after treatment with SWE or water control. * denotes significant difference ($p < 0.05$) between treated and control plants. Data shown are the mean of three independent biological replicates (each replicate consisted of 10 plants) and bars represent the standard error of the mean