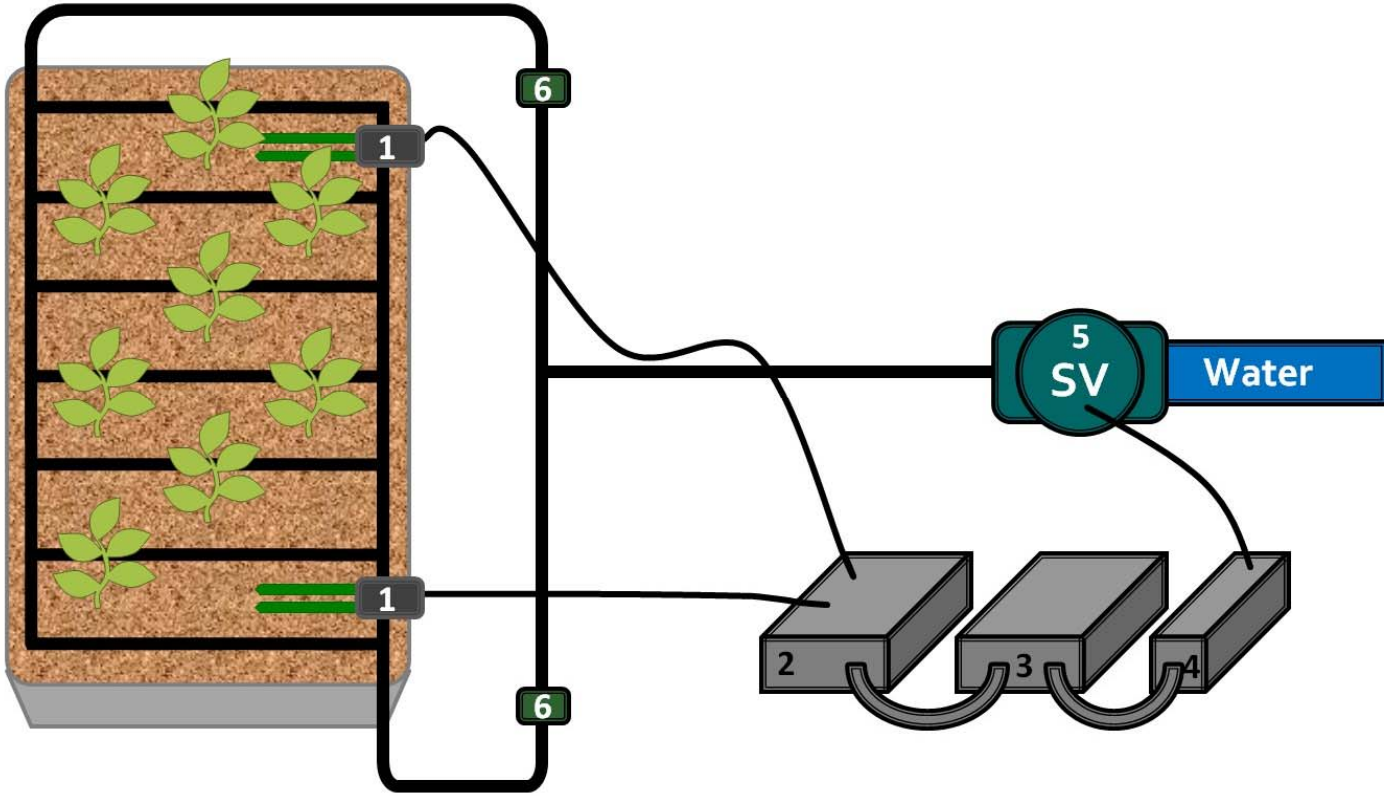

Supplemental Figure S1. Schematic diagram of the soil moisture sensor-based irrigation system. 1) capacitance soil moisture sensor, 2) multiplexer, 3) datalogger, 4) relay driver, 5) solenoid valve, 6) pressure compensated emitter. Only one tray is shown in detail although 16 trays were irrigated with the same system.

Supplemental Table S1. List of genes and sequence of the primers used for qRT-PCR

Gene source	Annotation	Forward primers 5’ 3’	Reverse primers 5’ 3’
> NCED1|Tomato gi|2769641|emb|Z97215.1| *Lycopersicon esculentum* mRNA for nine-*cis*-epoxycarotenoid dioxygenase			
PETIN084121	*NCED1*	TGGAGGCTACTGTTGAGCTTCCTT	ACCTACAAGCTTCAAGCTTGGTTT
PETIN041019	*NCED2*	GGCTTCAGTGAAACTTCCATCAAGAGTCC	GGGACGTATTTCTAAACCATCCCTCTGG
>gi|145329960|ref|NM_001084497.1| *Arabidopsis thaliana* AAO3 (Abscisic ALDEHYDE OXIDASE 3)			
PETAX039740	*AAO31*	ACCACTACTTCTGGCAGCTTCAGT	AATCCAGGCCACAGAGTGTCTTCA
PETIN023342	*AAO32*	GTGCAACAAGAGCTGCGATTAAAGC	TCTCCACATAATCCAGGCCACACT
> CYP707A1_Tomato gi|160369825|gb|EU183406.1| *Solanum lycopersicum* ABA 8'-hydroxylase (CYP707A1) mRNA, complete cds			
PETIN061494	*CYP707A1*	CAGAGAAGCTGTTGAGGATGTTGAGT	GGTCCCATTGCCAAATGGCATGAAT
PETIN048226	*CYP707A2*	TGCTTGTCCAGGAAACGAACTTGC	AGTCCACCCACTGGAACTGGAAAT
>gi|6573118|gb|AF201661.1| *Lycopersicon esculentum* phospholipase D alpha mRNA, partial cds			
PETIN026822	*PLDα*	CCTTTATCCAGAGAGCTTGGAATGC	TTTCTGCTCCAGGTAGTTCAGTCACC
>gi|92834401|dbj|DD138887.1| Uses of zinc finger transcription factor ZPT2-3 for improving desiccation-resistance of plants			
	ZPT2-3	TGTCAGCATGGGAGGAGATGAACA	TACCACCGTCATAGTGGCACCTTT
> Reference genes			
SGN-U207468	*EF1α*	CCTGGTCAAATTGGAAACGG	CAGATCGCCTGTCAATCTTGG
SGN-U207595	*CYP*	AGGCTCATCATTCCACCGTGT	TCATCTGCGAACTTAGCACCG

Table S2. Morphological and physiological changes of *Petunia* × *hybrida* 'Apple Blossom' in response to various substrate water contents at 16 d after the start of the drying treatment. Leaf relative water content (RWC) was calculated as (fresh weight – dry weight) / (turgid weight – dry weight) × 100%. CO_2-saturated assimilation rates (A_{max}) were calculated using empirical A/Ci curve analysis (Photosyn Assistant; Dundee Scientific). Mean separation was done by Fisher's protected LSD at α=0.05 (n=4).

Substrate water content ($m^3 \cdot m^{-3}$)	Leaf size (cm^2)	Shoot dry weight (g)	Leaf RWC (%)	A_{max} ($\mu mol \cdot m^{-2} \cdot s^{-1}$)
0.1	6.62 c	2.00 b	72.8 b	31.30 c
0.2	9.31 b	4.06 ab	87.8 a	36.65 bc
0.3	10.71 b	3.82 ab	88.3 a	41.96 ab
0.4	13.35 a	5.58 a	89.3 a	44.66 a