

## SUPPLEMENTARY DATA

FIG. S1. Soluble carbohydrate (glucose, fructose, sucrose and trehalose) content of (A) above-ground and (B) below-ground tissues of *Rorippa amphibia*, *R. sylvestris* and their hybrid in air controls and submerged plants after 7, 14 and 20 d of treatment ( $n = 6$ ; error bars indicate s.e.).

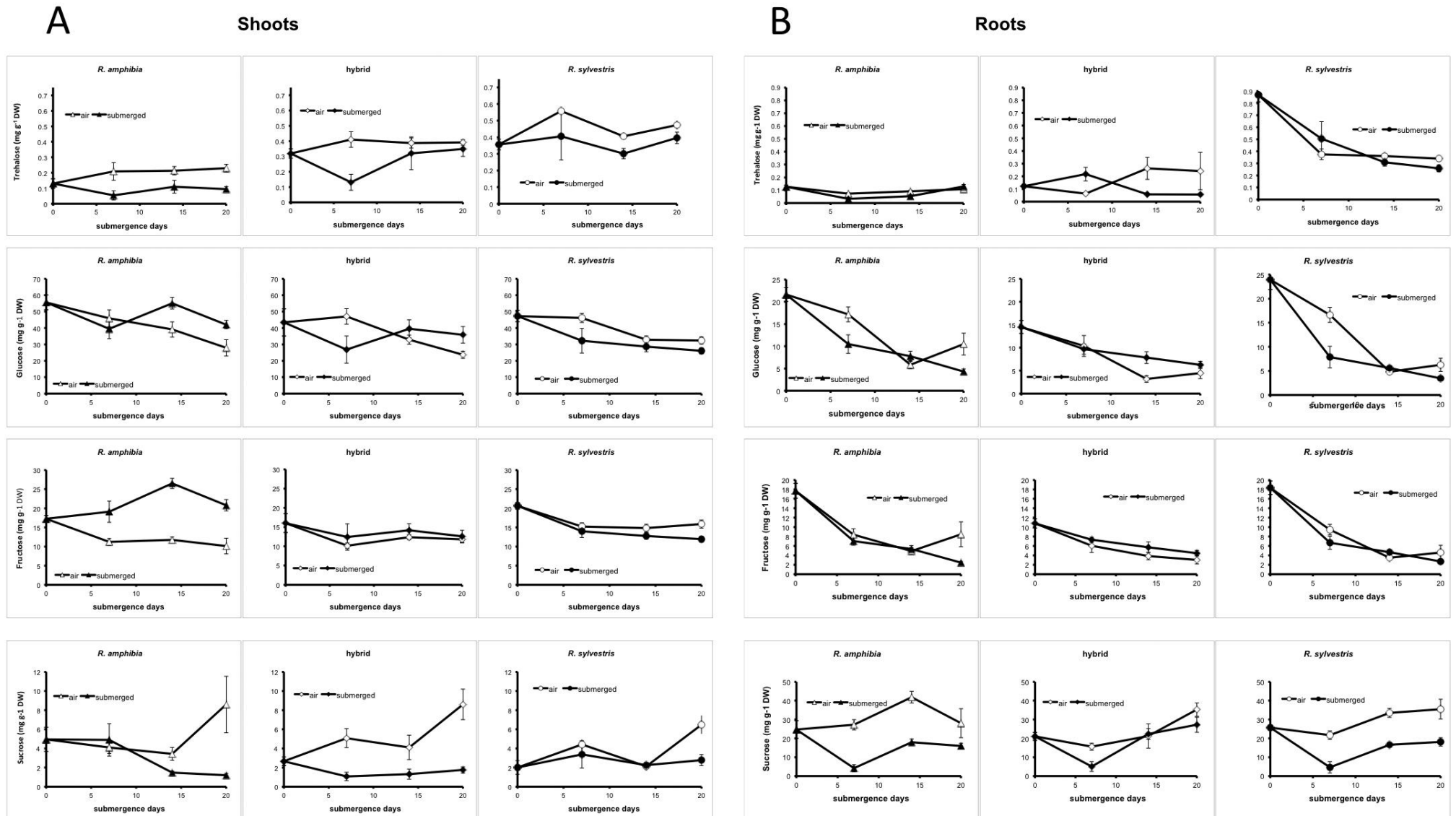


FIG. S2. Soluble carbohydrate (glucose, fructose, sucrose and trehalose) content of (A) above-ground and (B) below-ground tissues at the start and after 37 d of complete submergence followed by controlled air contact for 21 and 42 d for *Rorippa amphibia*, *R. sylvestris* and their hybrid ( $n = 9$ ).

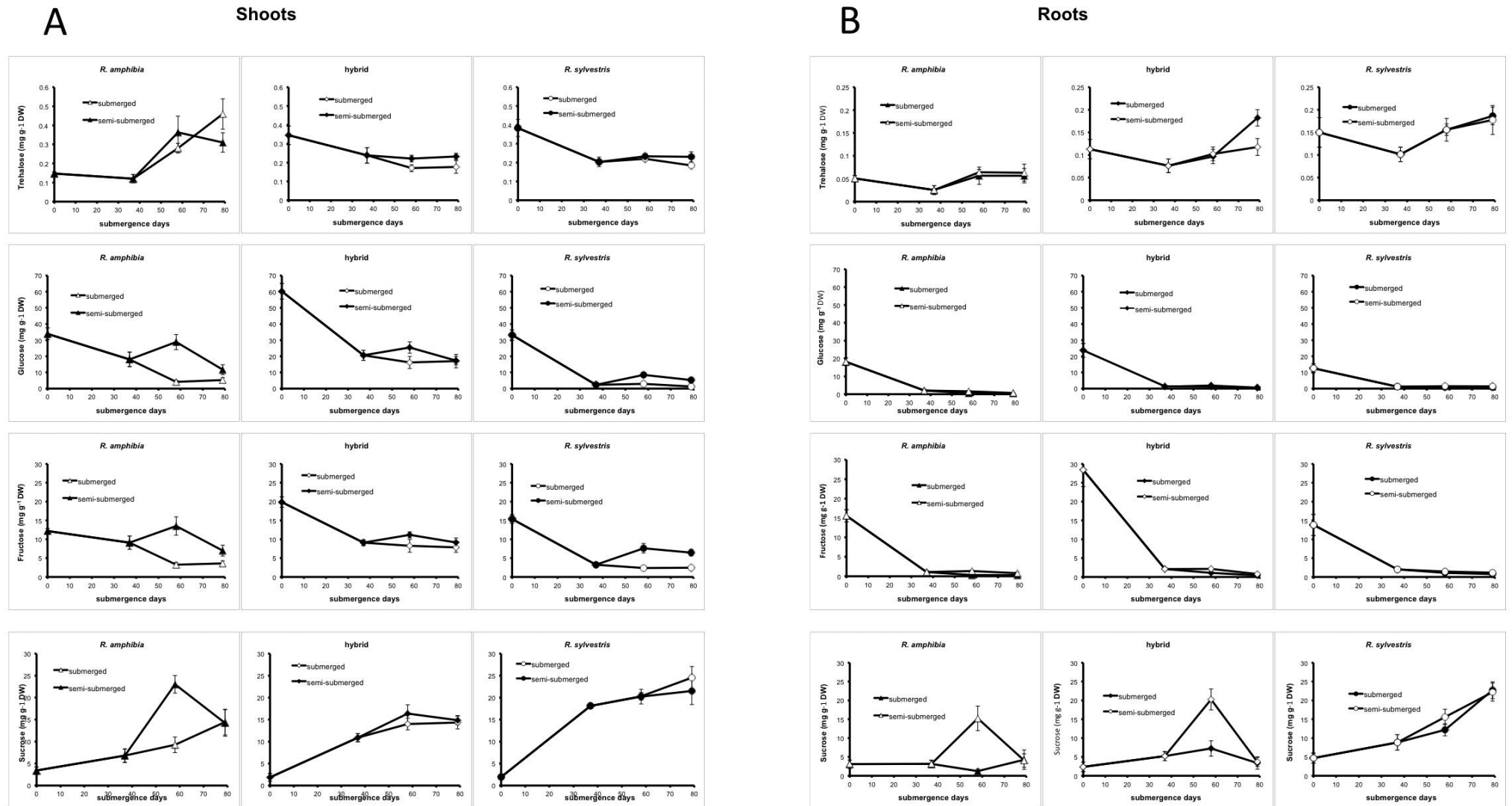


FIG. S3. Correlation of *ADH1* and *SUS1* expression in *Rorippa amphibia*, *R. sylvestris* and the hybrid roots after 3 d of complete submergence followed by 2, 26 and 74 h of complete and semi-submergence.

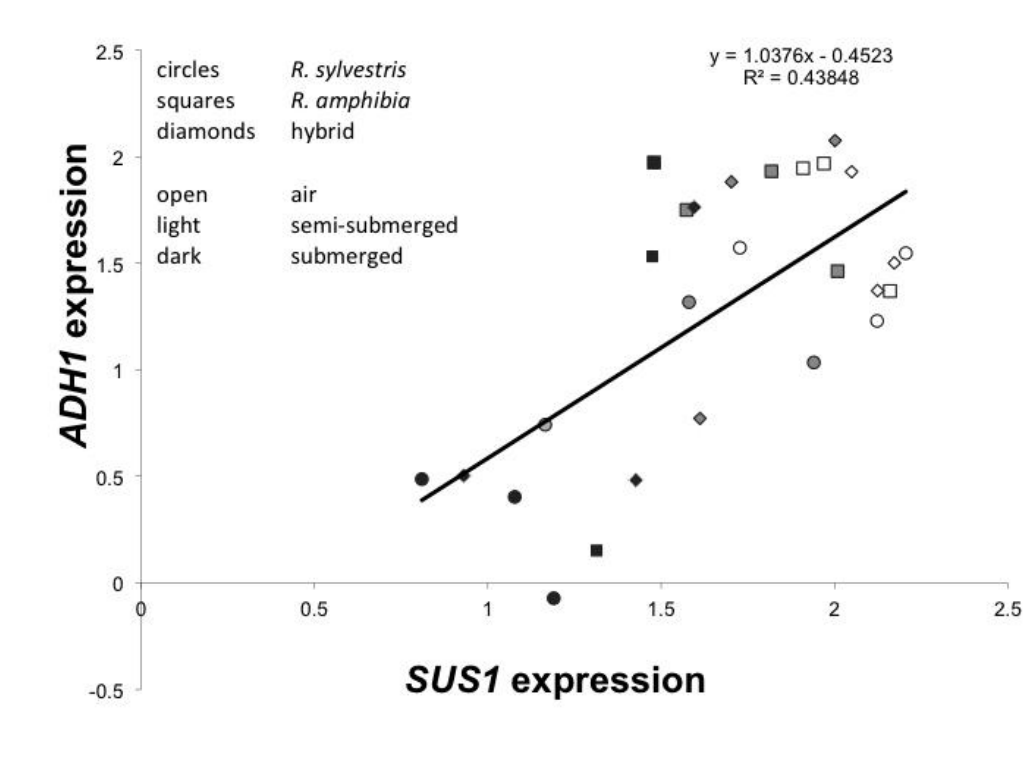


FIG. S4. Dilution and melting curves calculated from RT-qPCR for *ADH1* and *SUS1*.

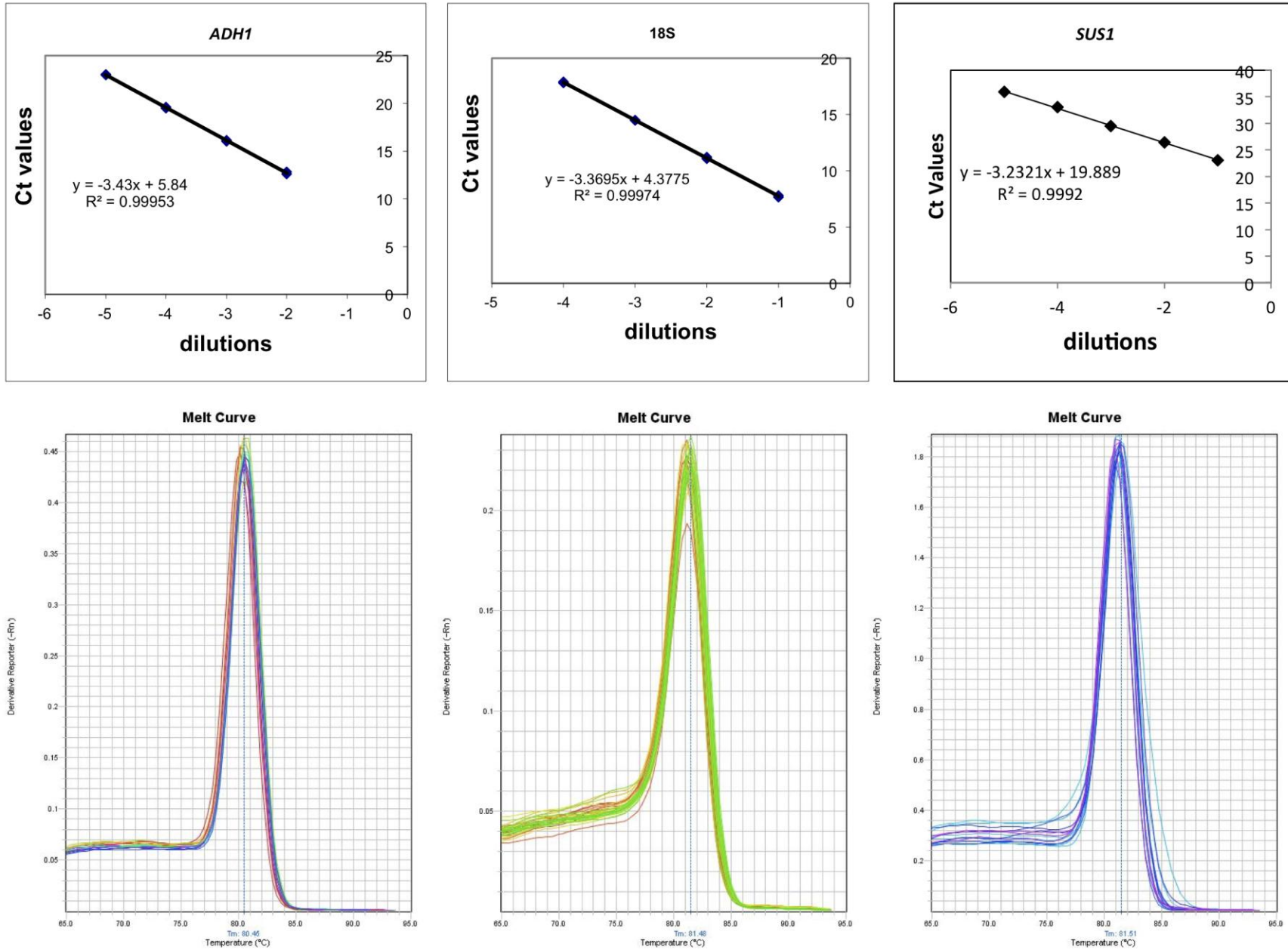
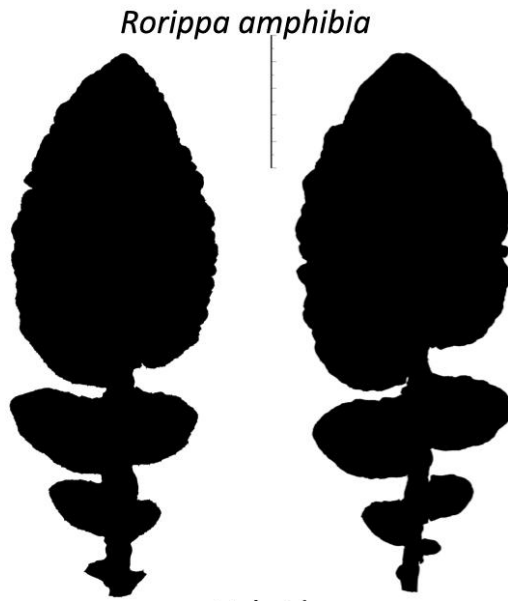
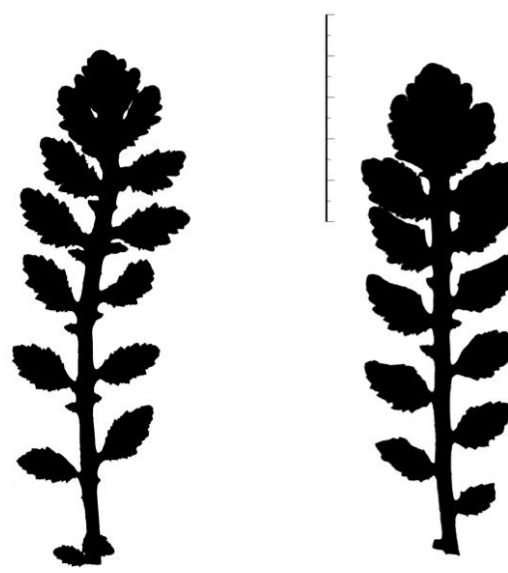


FIG. S5. Leaf scans of the second youngest leaves and pictures of adult *Rorippa amphibia*, *R. sylvestris* and the hybrid plants.



Hybrid



*Rorippa sylvestris*

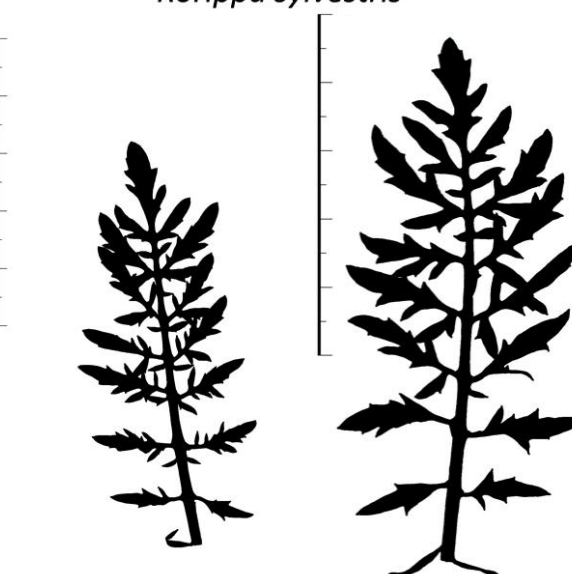




FIG. S6. *ADH* gene alignments for *Arabidopsis thaliana* and *Rorippa*.

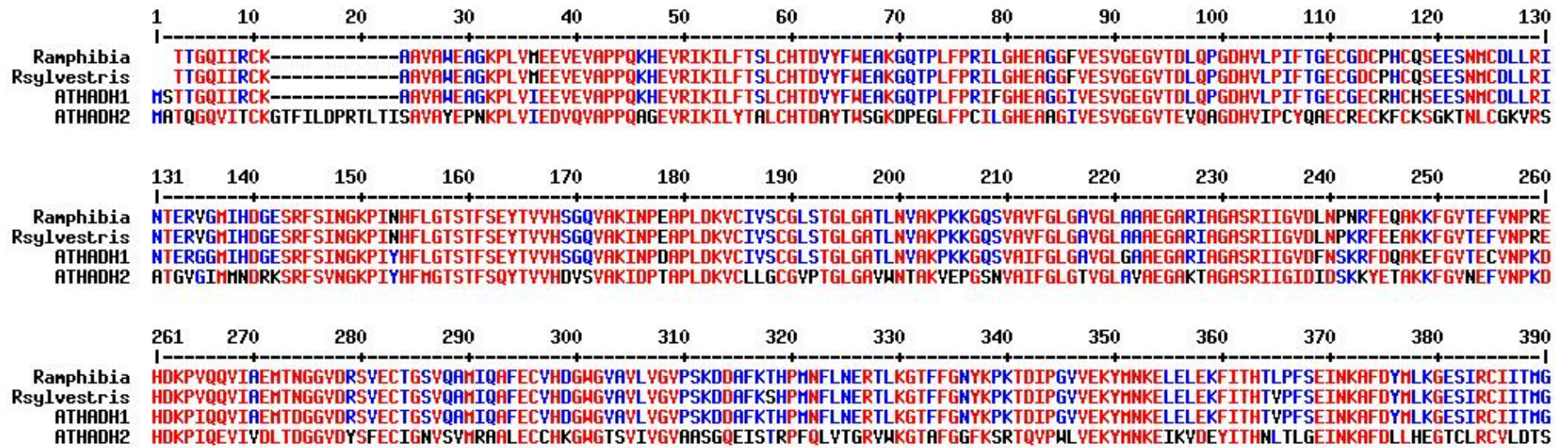


FIG. S7. *SUS* gene alignments for *Arabidopsis thaliana* and *Rorippa*.

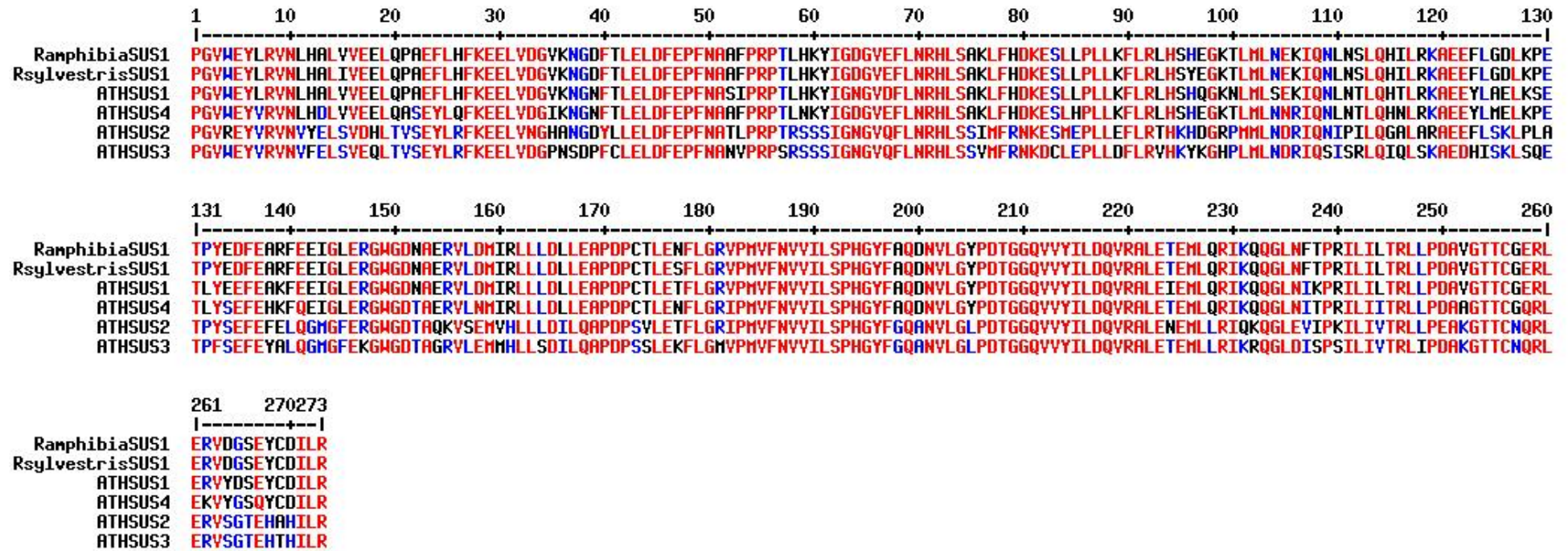


TABLE S1. ANOVA results for first submergence experiment

Source	Dependent variable	Type III sum of squares	Tests of between-subjects effects			
			d.f.	Mean square	<i>F</i>	<i>P</i>
Species	Stem elongation	$8.806 \times 10^5$	2	$4.403 \times 10^5$	247.817	<0.001
	Below-ground d. wt	1.171	2	0.585	14.099	<0.001
	Above-ground d. wt	27.369	2	13.685	142.637	<0.001
Treatment	Stem elongation	$2.013 \times 10^5$	1	$2.013 \times 10^5$	113.280	<0.001
	Below-ground d. wt	12.629	1	12.629	304.208	<0.001
	Above-ground d. wt	14.656	1	14.656	152.757	<0.001
Time point	Stem elongation	$1.20 \times 10^6$	3	$4.002 \times 10^5$	225.266	<0.001
	Below-ground d. wt	6.807	3	2.269	54.653	<0.001
	Above-ground d. wt	3.018	3	1.006	10.486	<0.001
Species $\times$ treatment	Stem elongation	$1.012 \times 10^5$	2	$5.062 \times 10^4$	28.492	<0.001
	Below-ground d. wt	0.145	2	0.073	1.747	0.179
	Above-ground d. wt	2.263	2	1.132	11.796	<0.001
Species $\times$ Time point	Stem elongation	$1.227 \times 10^5$	6	$2.045 \times 10^4$	11.511	<0.001
	Below-ground d. wt	0.521	6	0.087	2.093	0.060
	Above-ground d. wt	2.093	6	0.349	3.636	0.003
Treatment $\times$ Time point	Stem elongation	$7.224 \times 10^3$	2	$3.612 \times 10^3$	2.033	0.136
	Below-ground d. wt	1.145	2	0.572	13.785	<0.001
	Above-ground d. wt	2.119	2	1.06	11.045	<0.001
Species $\times$ Treatment $\times$ Time point	Stem elongation	$5.059 \times 10^4$	4	$1.265 \times 10^4$	7.118	<0.001
	Below-ground d. wt	0.161	4	0.04	0.971	0.427
	Above-ground d. wt	0.813	4	0.203	2.117	0.084
Error	Stem elongation	$1.812 \times 10^5$	102	$1.777 \times 10^3$		
	Below-ground d. wt	4.234	102	0.042		
	Above-ground d. wt	9.786	102	0.096		



TABLE S2. ANOVA results for second submergence experiment

Source	Dependent variable	Type III sum of squares	Tests of between-subjects effects			
			d.f.	Mean square	<i>F</i>	<i>P</i>
Time point	Below-ground d. wt	0.088	2	0.044	1.140	0.323
	Above-ground d. wt	5.478	2	2.739	6.496	0.002
Treatment	Below-ground d. wt	0.411	1	0.411	10.665	0.001
	Above-ground d. wt	25.743	1	25.743	61.057	<0.001
Genotype	Below-ground d. wt	0.499	2	0.249	6.475	0.002
	Above-ground d. wt	52.362	2	26.181	62.095	<0.001
Time point × Treatment	Below-ground d. wt	0.032	1	0.032	0.824	0.366
	Above-ground d. wt	3.656	1	3.656	8.671	0.004
Time point × Genotype	Below-ground d. wt	0.122	4	0.030	0.790	0.533
	Above-ground d. wt	5.273	4	1.318	3.127	0.017
Treatment × Genotype	Below-ground d. wt	0.078	2	0.039	1.014	0.365
	Above-ground d. wt	8.461	2	4.230	10.033	<0.001
Time point × Treatment × Genotype	Below-ground d. wt	0.238	2	0.119	3.090	0.049
	Above-ground d. wt	7.304	2	3.652	8.662	<0.001
Error	Below-ground d. wt	5.433	141	0.039		
	Above-ground d. wt	59.449	141	0.422		

TABLE S3. ANOVA results for porosity measurements

	Sum of squares	d.f.	Mean square	<i>F</i>	<i>P</i>
Between groups	214.393	2	107.196	83.498	<0.001
Within groups	14.122	11	1.284		
Total	228.515	13			

TABLE S4. LSD *post hoc* test results for porosity measurements

<i>(I)</i> spp	<i>(J)</i> spp	Mean difference <i>(I - J)</i>	s.e.	<i>P</i>	95% confidence interval	
					Lower bound	Upper bound
<i>R. amphibia</i>	Hybrid	4.25	0.760078665	0.000	2.58	5.92
	<i>R. sylvestris</i>	9.25	0.716609038	0.000	7.67	10.8
Hybrid	<i>R. amphibia</i>	-4.25	0.760078665	0.000	-5.92	-2.58
	<i>R. sylvestris</i>	5.00	0.760078665	0.000	3.33	6.67
<i>R. sylvestris</i>	<i>R. amphibia</i>	-9.25	0.716609038	0.000	-10.8	-7.67
	Hybrid	-5.00	0.760078665	0.000	-6.67	-3.33