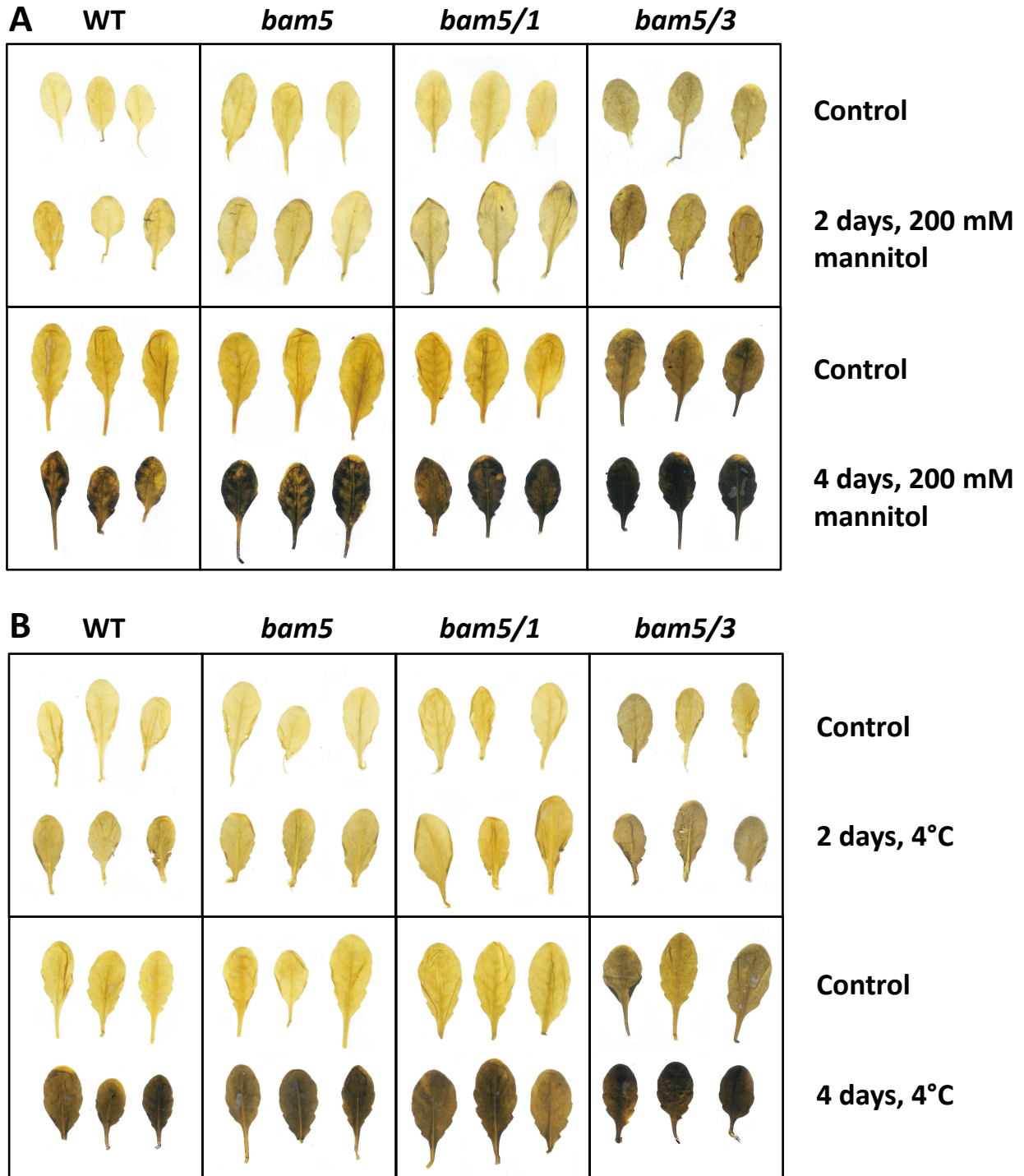


Supplemental Figure S1. Radial phylogenetic tree based on an alignment of the β -amylase catalytic domains from all of the complete BAM sequences in nine Eudicot genomes: *Arabidopsis thaliana*, *Populus trichocarpa*, *Vitis vineifera*, *Ricinus communis*, *Fragaria vesca*, *Citrus sinensis*, *Cucumis sativus*, *Glycine max*, and *Solanum lycopersicum*. The variable N-terminal sequences were removed up to the first highly conserved residue; Val13 of Arabidopsis BAM5. Four subfamilies were identified by Fulton et al. (2008). Arabidopsis BAM1 through BAM9 are labeled with circled numbers.



Supplemental Figure S2. Effect of osmotic stress or cold stress on starch levels in leaves of 5-week old wild type, *bam5*, *bam5/1*, or *bam5/3* Arabidopsis plants. Leaves were harvested at the start of the photoperiod and stained with iodine after 2 or 4 days of treatment. A, Plants were treated with 200 mL of nutrient solution (control) or nutrient solution containing 200 mM mannitol. B, Plants were incubated at 22°C (control) or 4°C under a 12/12 hr photoperiod. Representative leaves are shown.

Supplemental Table SI. List of primers used in PCR and RT-PCR reactions.

Target Gene	Locus	Purpose	Primer Sequence 5' to 3'
<i>BAM1</i>	At3g23920	T-DNA PCR, T-DNA RT-PCR, Transcript levels	TCAACCTCTTCAACAACCCAC
			CTCACGGAACAGATCCATCAC
<i>BAM2</i>	At4g00490	T-DNA PCR	TACAGACGCGACACATCTGAC
			CCAGCAGTCAACCATAACACC
		T-DNA RT-PCR	GGGAATTCATGGCGATTAGGTTGAAT
			CCAGCAGTCAACCATAACACC
<i>BAM3</i>	At4g17090	T-DNA PCR	CGTGAATCACATCGAACACAC
			TTGTTGGAGGAACTTTCTTGG
		T-DNA RT-PCR	GGGAATTCATGGAATTGACACTGAAT
			CAGGGTATGATGGGTATCTC
		Transcript levels	GAGAGTTCCAGTGCTACGAC
			TCTCAGCGATCTTGCCTT
<i>BAM5</i>	At4g15210	T-DNA PCR	TCACACCAAATTTTTGACATCC
			CCCTTGTCTCCGTAAATTCAA
		T-DNA RT-PCR	GGGGATCCAATGGCTACCAATAC
			TTGGGGGTAAGAAGGATAAC
<i>BAM6</i>	At2g32290	T-DNA PCR	ATCGCACGATAACCATCTCTG
		T-DNA RT-PCR	TCGTTTCATAGATGTGGAGGC
T-DNA primer LBc1		T-DNA PCR	AAAGAAAAACCACCCAGTACA
<i>Cor78</i>	At5g52310	Cold stress control	CTTTGACTCTGTTCTCGGT
			GTTGTCAGTTTCTCCGCC
<i>Hsp70</i>	At3g12580	Osmotic stress control	TCAAGCGGATAAGAGTCACT
			CTCGTCCGGGTTAATGCT
<i>PP2A</i>	At1g13320	Internal Control	AGACAGAGTTCCAAACATCA
			GAACCAAACACAATTCGTTG

Supplemental Table SII. List of reference sequence numbers for BAMs identified in nine eudicot genomes and used for generation of the phylogenetic tree shown in Supplemental Figure S1, those BAM1 and BAM3 orthologs used in the amino acid composition analysis, and the amino acids used in the analysis.

Species	BAM protein	Used for Composition	Amino acid numbers
<i>Arabidopsis thaliana</i>	NP_189034.1	AtBAM1	42-575
	NP_567523.1	AtBAM3	50-548
	NP_567460.1		
	NP_191958.3		
	NP_180788.2		
	NP_568829.2		
	NP_182112.2		
	NP_199343.1		
	NP_197368		
<i>Citrus sinensis</i>	XP_006493994.1	CisBAM1	34-580
	XP_006477060.1	CisBAM3	43-551
	XP_006447463.1		
	XP_006476339.1		
	XP_006445046.1		
	XP_006491093.1		
	XP_006489160.1		
	XP_006432891.1		
	XP_006493994.1		
	XP_006477060.1		
	XP_006447463.1		
	XP_006476339.1		
	<i>Cucumis sativus</i>	XP_004134029.1	CusBAM1
XP_004147196.1			
XP_004147264.1		CusBAM3	43-538
XP_004144400.1			
XP_004144579.1			
XP_004164639.1			
XP_004138591.1			
XP_004144975.1			
XP_004150546.1			
<i>Fragaria vesca</i>	XP_004296549.1	FvBAM1	35-578
	XP_004300297.1	FvBAM3	43-553
	XP_004289151.1		
	XP_004301815.1		
	XP_004306786.1		
	XP_004291809.1		
	XP_004306787.1		
	XP_004296793.1		
	XP_004301812.1		
	XP_004301768.1		
<i>Glycine max</i>	XP_003534086.1	GmBAM1	31-569
	XP_003548316.1		

	XP_006573703.1		
	NP_001236350.1		
	XP_003539125.1		
	XP_003524296.1	GmBAM3	41-547
	XP_003539882.1		
	NP_001236247.1		
	XP_003540325.2		
	XP_003532447.1		
	XP_003541934.2		
	XP_003525331.1		
	XP_003552392.1		
	XP_003534564.1		
	XP_003542915.1		
	NP_001236364.1		
	XP_003534334.1		
	XP_003516502.1		
<i>Populus trichocarpa</i>	XP_002314522.2	PtBAM1	33-586
	XP_002311706.1		
	XP_006385389.1	PtBAM3	41-547
	XP_006385589.1		
	XP_002297961.1		
	XP_006372993.1		
	XP_002320794.2		
	XP_002302585.2		
	XP_002320793.2		
	XP_002312750.2		
	XP_002304400.1		
	<i>Ricinus communis</i>	XP_002518196.1	RcBAM1
XP_002517513.1		RcBAM3	41-547
XP_002515712.1			
XP_002511858.1			
XP_002511857.1			
XP_002516865.1			
XP_002519919.1			
<i>Solanum lycopersicum</i>	NP_001234556.1	SIBAM1	35-580
	XP_004244551.1	SIBAM3	42-542
	XP_004245844.1		
	XP_004245482.1		
	XP_004243448.1		
	XP_004229887.1		
	NP_001234052.1		
	XP_004244442.1		
<i>Vitis vineifera</i>	XP_002285569.1	VvBAM1	35-573
	XP_002282871.1	VvBAM3	42-543
	XP_002263816.2		
	XP_002281003.1		
	XP_002274612.2		
	XP_002265698.1		
	XP_002273843.1		
	XP_002276777.1		
	XP_002270680.1		