

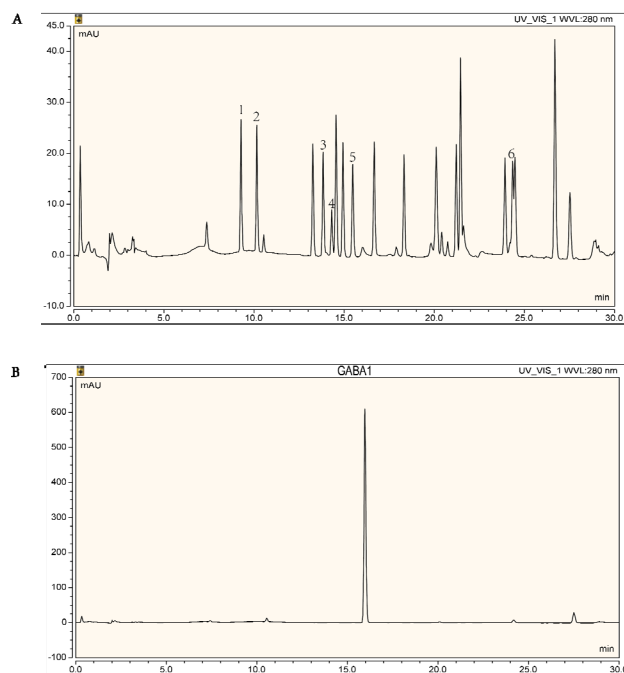
Supplementary Table S1 Irrigation amount of the three treatments

Year	Month	Rainfall amount	CK		LWS		MWS	
			Amount of irrigation (L/plant)	Total irrigation water (L/plant)	Amount of irrigation (L/plant)	Total irrigation water (L/plant)	Amount of irrigation (L/plant)	Total irrigation water (L/plant)
2021	6*	16.854	16.8		9.4		4.8	
	7	6.082	85.4	182.9	51.3	107	22.6	50.4
	8	26.478	51.9		33.5		17.8	
	9	59.631	28.8		12.8		5.2	
2022	6*	30.410	5.5		1.8		0	
	7	57.250	30.4	106.8	10.1	48.6	3.5	25.3
	8	53.308	26.0		13.9		6.5	
	9	13.882	44.9		22.8		15.3	

*The amount of irrigation water was determined using a stress test conducted on June 18, 2021, and subsequently on June 26, 2022.

Supplementary Table S2 List of primers for Real-Time PCR

Gene name	Primer	Sequence (5'-3')
<i>VvGADPH</i>	F	CACGGTCAGTGGAAAGCATCAT
	R	CCTTGTCAGTGAACACACCAG
<i>VvNAD-MDH1</i>	F	ATTGGTGGATGCTGCTTTTC
	R	GCCTGGGACTTGTAGATGGA
<i>VvNAD-MDH2</i>	F	GTGATCACATACGCGATTGG
	R	CTGTGGCATCCATCTTTCCT
<i>VvNADP-ME1</i>	F	TGCTGTCAAGGTGATCAAGC
	R	AAAAATTGCACGACCCTGAG
<i>VvNADP-ME2</i>	F	TACCAAGGAGGTGGTTGAGG
	R	GGCACAAAAAGTTTGCCATT
<i>VvNADP-ME3</i>	F	CGGTCTGGGTTTGATCATCT
	R	CATACGCTTTAGCAGCCACA
<i>VvPEPC1</i>	F	TGCTAGGCATGCTGAAACAC
	R	GCAACTCGGAAGGTATCCAA
<i>VvPEPC2</i>	F	GTGCCTGCAAAAGTGTCTGA
	R	CAACTTCTTGGGGTCGTGTT
<i>VvPEPC3</i>	F	TCGGATCCTATCGAGAATGG
	R	GCGGTTGCCATTGAGATTAT
<i>VvPEPCK</i>	F	GTGACAATGGCGTGTCAAAC
	R	GGGATAGGATGCACGAGTGT
<i>VvPK1</i>	F	ATGGCGAATATAGACATCGAG
	R	CCTCGATGTCTATATTCGCCAT
<i>VvPK2</i>	F	ATGGCGATGGAGAAGAAAACG
	R	CGTTTTCTTCTCCATCGCCAT



Supplementary Figure S1 High-performance liquid chromatography (HPLC) chromatograms of the derivatives of amino acids, ammonium ion and biogenic amines at 280 nm, a standard solution (A) and γ -aminobutyric Acid (GABA) (B). Peak assignments of the **Figure S1A**: (1) Asp; (2) Glu; (3) Gly; (4) Arg; (5) Pro.