

	Dry weight	Root-shoot Ratio	Plant Height	Stem Length	Leave Area	Chl Content	Fv/Fm	PI abs	NBI	Tr	Pn	CI	GS	Rubisco Activity	AhRBCS 1/5	AhRBCS 2/6
Root-shoot Ratio	-0.19															
Plant Height	0.01	0.20														
Stem Length	0.50*	0.20	0.61**													
Leave Area	0.24	0.27	0.83**	0.78**												
Chl Content	0.29	-0.03	-0.08	0.06	-0.12											
Fv/Fm	-0.36	-0.02	0.53**	0.21	0.20	-0.01										
PI abs	-0.16	0.09	0.62**	0.35	0.42*	0.06	0.81**									
NBI	-0.30	0.15	0.59**	0.25	0.37	0.13	0.61**	0.67**								
Tr	0.17	-0.17	-0.50**	-0.31	-0.51**	0.64**	-0.31	-0.41*	-0.14							
Pn	0.05	-0.33	-0.36	-0.34	-0.42*	0.61**	-0.26	-0.34	-0.03	0.90**						
CI	0.27	0.11	-0.08**	-0.27	-0.47*	0.34	-0.39	-0.47*	-0.40*	0.55**	0.21					
GS	0.17	-0.23	-0.51**	-0.28	-0.47*	0.65**	-0.29	-0.39	-0.12	0.99**	0.93**	0.48*				
Rubisco Activity	0.54**	-0.08	0.09	0.48*	0.01	0.20	0.06	0.12	0.01	0.05	-0.01	-0.02	0.05			
AhRBCS 1/5	-0.37	0.06	-0.48*	-0.60**	-0.40*	0.07	-0.46*	-0.53**	-0.39	0.24	0.29	0.27	0.25	-0.68**		
AhRBCS 2/6	-0.37	-0.32	-0.36	-0.60**	-0.41*	-0.19	-0.25	-0.49*	-0.48*	-0.01	0.14	-0.06	0.02	-0.51**	0.74**	
AhRBCS 3/4/7/8	-0.02	0.10	0.38	0.51**	0.50*	-0.26	0.19	0.37	0.47*	-0.17	-0.11	-0.46*	-0.15	0.20	-0.56**	-0.55**

Figure S1: Correlation analysis based on data after 5 days of N- deficiency. From the brightest blue to the brightest red represented the greatest negative correlation and the greatest positive correlation respectively. *Chl* content chlorophyll content in seedling leaves; *Fv/Fm* PSII primary light energy conversion efficiency; *PIabs* performance index based on absorbed light energy; *NBI* nitrogen balance index; *Tr* transpiration rate; *Pn* net photosynthetic rate; *GS* stomatal conductance; *AhRBCS1/5* the expressions of AHRBCS1/5 in leaves; *AhRBCS2/6* the expressions of AhRBCS2/6 in leaves; *AhRBCS3/4/7/8* the expressions of AhRBCS3/4/7/8 in leaves. *significant at $p < 0.05$ level and **significant at $p < 0.01$ level..

	Dry weight	Root-shoot Ratio	Plant Height	Stem Length	Leave Area	Chl Content	Fv/Fm	PI abs	NBI	Tr	Pn	CI	GS	Rubisco Activity	AhRBCS 1/5	AhRBCS 2/6
Root-shoot Ratio	0.03															
Plant Height	-0.02	0.18														
Stem Length	0.26	0.10	0.26													
Leave Area	0.44*	0.23	0.29	0.84**												
Chl Content	0.49*	-0.27	-0.34	0.41*	0.28											
Fv/Fm	0.10	-0.39	0.12	0.36	0.30	0.38										
PI abs	0.12	-0.28	0.15	0.56**	0.46*	0.47*	0.86**									
NBI	-0.29	-0.47*	0.16	0.13	-0.03	0.20	0.49*	0.58**								
Tr	0.33	-0.52**	-0.48*	0.22	0.08	0.76**	0.46*	0.54**	0.21							
Pn	0.21	-0.59**	-0.45*	0.18	0.03	0.69**	0.52*	0.60**	0.38	0.94**						
CI	0.53**	0.11	-0.06	0.31	0.38	-0.02	0.00	-0.28	0.23	-0.04						
GS	0.29	-0.52**	-0.51*	0.18	0.02	0.74**	0.44*	0.51*	0.20	1.00**	0.93**	0.25				
Rubisco Activity	0.14	-0.42*	-0.45*	0.04	0.03	0.57**	0.07	0.19	-0.01	0.71**	0.69**	-0.08	0.71**			
AhRBCS 1/5	0.03	0.47*	0.17	0.13	0.27	-0.18	-0.49*	-0.34	-0.35	-0.46*	-0.63**	0.51*	-0.45*	-0.27		
AhRBCS 2/6	-0.22	0.33	-0.11	-0.26	-0.06	-0.33	-0.73**	-0.53**	-0.31	-0.39	-0.41*	-0.03	-0.37	0.12	0.70**	
AhRBCS 3/4/7/8	0.24	-0.57**	-0.19	0.26	0.11	0.66**	0.56*	0.62**	0.59**	0.74**	0.83**	-0.02	0.71**	0.48*	-0.64**	-0.57**

Figure S2: Correlation analysis based on all data after 10 days of N-deficiency. From the brightest blue to the brightest red represented the greatest negative correlation and the greatest positive correlation respectively. *Chl* content chlorophyll content in seedling leaves; *Fv/Fm* PSII primary light energy conversion efficiency; *PIabs* performance index based on absorbed light energy; *NBI* nitrogen balance index; *Tr* transpiration rate; *Pn* net photosynthetic rate; *GS* stomatal conductance; *AhRBCS1/5* the expressions of AHRBCS1/5 in leaves; *AhRBCS2/6* the expressions of AhRBCS2/6 in leaves; *AhRBCS3/4/7/8* the expressions of AhRBCS3/4/7/8 in leaves. *significant at $p < 0.05$ level and **significant at $p < 0.01$ level.

	Dry Weight	Root-shoot Ratio	Plant Height	Stem Length	Leave Area	Chl Content	Fv/Fm	PI abs	NBI	Tr	Pn	CI	GS	Rubisco Activity	AhRBCS 1/5	AhRBCS 2/6
Root-shoot Ratio	-0.34															
Plant Height	0.60**	-0.47*														
Stem Length	0.76**	-0.46*	0.72**													
Leave Area	0.78**	-0.37	0.58**	0.89**												
Chl Content	0.51*	-0.29	0.16	0.60**	0.79**											
Fv/Fm	0.38	-0.09	0.11	0.51*	0.61**	0.82**										
PI abs	0.44*	-0.09	0.08	0.52**	0.72**	0.87**	0.77**									
NBI	0.45*	-0.15	0.23	0.55**	0.66**	0.61**	0.61**	0.82**								
Tr	0.49*	-0.02	0.15	0.47*	0.63**	0.70**	0.65**	0.83**	0.79**							
Pn	0.60**	-0.10	0.28	0.63**	0.78**	0.80**	0.73**	0.83**	0.74**	0.91**						
CI	-0.46*	0.11	-0.46*	-0.48*	-0.46*	-0.25	-0.27	-0.12	-0.02	-0.08	-0.38					
GS	0.52**	-0.11	0.21	0.49*	0.67**	0.72**	0.63**	0.84**	0.78**	0.95**	0.88**	-0.05				
Rubisco Activity	0.45*	0.12	0.00	0.40	0.60**	0.72**	0.64**	0.88**	0.76**	0.90**	0.79**	-0.01	0.91**			
AhRBCS 1/5	-0.43*	0.17	-0.26	-0.61**	-0.72**	-0.85**	-0.77**	-0.67**	-0.55**	-0.54**	-0.66**	0.24	-0.54**	-0.57**		
AhRBCS 2/6	-0.16	0.32	0.09	-0.34	-0.46*	-0.75**	-0.64**	-0.61**	-0.51*	-0.44*	-0.42*	-0.22	-0.43*	-0.49*	0.80**	
AhRBCS 3/4/7/8	0.29	-0.06	-0.03	0.42*	0.62**	0.78**	0.62**	0.81**	0.69**	0.67**	0.71**	0.05	0.68**	0.69**	-0.72**	-0.73**

Figure S3: Correlation analysis based on data after 15 days of N-deficiency. From the brightest blue to the brightest red represented the greatest negative correlation and the greatest positive correlation respectively. Chl content chlorophyll content in seedling leaves; Fv/Fm PSII primary light energy conversion efficiency; PIabs performance index based on absorbed light energy; NBI nitrogen balance index; Tr transpiration rate; Pn net photosynthetic rate; Gs stomatal conductance; *AhRBCS1/5* the expressions of *AhRBCS1/5* in leaves; *AhRBCS2/6* the expressions of *AhRBCS2/6* in leaves; *AhRBCS3/4/7/8* the expressions of *AhRBCS3/4/7/8* in leaves. *significant at $p < 0.05$ level and **significant at $p < 0.01$ level.

	Rubisco Activity	AhRBCS 1/5	AhRBCS 2/6
AhRBCS 1/5	-0.28		
AhRBCS 2/6	-0.23	0.93**	
AhRBCS 3/4/7/8	0.16	-0.48*	-0.53*
YH1			
	Rubisco Activity	AhRBCS 1/5	AhRBCS 2/6
AhRBCS 1/5	-0.19		
AhRBCS 2/6	-0.19	0.76**	
AhRBCS 3/4/7/8	0.35	-0.62**	-0.73**
AH3			
	Rubisco Activity	AhRBCS 1/5	AhRBCS 2/6
AhRBCS 1/5	-0.34		
AhRBCS 2/6	-0.37	0.55*	
AhRBCS 3/4/7/8	0.46*	-0.63**	-0.87**
PK18			
	Rubisco Activity	AhRBCS 1/5	AhRBCS 2/6
AhRBCS 1/5	-0.17		
AhRBCS 2/6	-0.19	0.98**	
AhRBCS 3/4/7/8	0.36	-0.54*	-0.56*
LH4087			

Figure S4: Correlation analysis based on expressions of *AhRBCSs* by N-deficiency. *AhRBCS1/5* the expressions of *AhRBCS1/5* in leaves; *AhRBCS2/6* the expressions of *AhRBCS2/6* in leaves; *AhRBCS3/4/7/8* the expressions of *AhRBCS3/4/7/8* in leaves. *significant at $p < 0.05$ level and **significant at $p < 0.01$ level.