

Supplementary Material

Site-specific, genotypic and temporal variation in photosynthesis and its related biochemistry in wheat (*Triticum aestivum*)

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Supplementary Table S1. Considered growth traits, their categories and growth stage/s of data collection of considered wheat genotypes.

Category	Trait	Growth stage/s of data collection
Growth-related traits	Total spike weight	Heading, 14-dpa, 30-dpa and Complete maturity (CM)
	Total above ground biomass (AGB)	
	Total biomass (TB)	
	Plant height	
	Total biomass without spikes (BWS)	
Photosynthesis-related traits	Photosynthesis area: total spikes (PAS)	Heading, 14-dpa and 30-dpa
	Photosynthesis area: spike, main tiller (PASM)	
	Photosynthesis area: total flag leaves (PAFL)	
	Photosynthesis area: flag leaf, main tiller (PAFLM)	
	Photosynthesis area: total leaves (PAL)	
	Photosynthesis area: total (PAT)	
	Spike area index (SAI)	
Ratio between total spike area and total leaf area (PAS/ PAL)		
Harvest-related traits	Harvest index (HI)	CM
	Total harvest (TH)	
	Spike number	
	Tiller number	

Supplementary Table S3. Summary of multivariate analysis showing multiple comparisons of Vc_{max} , J_{max} and TPU between growth stages. Abbreviation: 3 dpa, three days post anthesis; 14 dpa, fourteen days post anthesis; 30 dpa, thirty days post anthesis; ns, not significant; *, $P < 0.05$; **, $P < 0.01$; ***, $P < 0.001$.

Growth stage comparison		Spikes			Flag leaves		
		Vc_{max}	J_{max}	TPU	Vc_{max}	J_{max}	TPU
stage a	stage b						
Heading	3-dpa	**	**	ns	ns	ns	ns
Heading	14-dpa	**	*	*	***	***	**
Heading	30-dpa	*	**	**	***	***	***
3-dpa	14-dpa	***	***	***	**	***	**
3-dpa	30-dpa	ns	ns	ns	***	***	***
14-dpa	30-dpa	***	***	***	***	***	***

Supplementary Table S4. Multiple comparisons of $V_{c_{max}}$, J_{max} and TPU between wheat genotypes. Summary of multivariate analysis is shown (transformed data: square root). Abbreviations: 3 dpa, three days post anthesis; 14 dpa, fourteen days post anthesis; 30 dpa, thirty days post anthesis; ns, not significant; *, $P < 0.05$; **, $P < 0.01$; ***, $P < 0.001$.

Genotype comparison		Spikes			Flag leaves		
		$V_{c_{max}}$	J_{max}	TPU	$V_{c_{max}}$	J_{max}	TPU
Genotype a	Genotype b						
Huandoy	Amurskaja 75	ns	ns	ns	ns	*	*
Huandoy	Greece 25	***	***	***	ns	ns	*
Amurskaja 75	Greece 25	***	***	***	ns	ns	ns

Supplementary Table S5. List of primer sequences of genes selected for qRT-PCR

Primer abbreviation	Sequence (5'-----3')	Metabolism	Reference
<i>rbcL</i>	F: GGCTGCAGTAGCTGCCGAATCT R: TCCCCAGCAACAGGCTCGATGT	Rubisco biosynthesis and sucrose metabolism	Vicente et al, 2015
<i>rbcS</i>	F: AGCCTCAGCAGCGTCAGCAAT R: CGTGGATAGGGGTGGCAGGTAAGA		
<i>SPP1</i>	F: GCGCACGGGAAGGAGTTTTTCTTCT R: GACCTCCGTAGACATCATCCAGCCC		
<i>SPS1</i>	F: AGAAGGCTCTGCCTCCATTGGTC R: AGGATCATCGGCTTGTGCGGGTT		
<i>SUS1</i>	F: GTATGTTCAACAGGGCAAGGGCA R: GGCGTCAAACCTCAGCAAGCAGC		
<i>ADP riosylation factor</i>	F: GCTCTCCAACAACATTGCCAAC R: GCTTCTGCCTGTCACATACGC	Housekeeping genes	Vicente et al, 2015
<i>TaActin-F</i>	F: TTGCTGACCGTATGAGCAAG R: ACCCTCCAATCCAGACACTG		
<i>TaSand-F</i>	F: TGCCTTGCCCATAAGAAATC R: GTGCGGACCAGTTGCTTTAT		Bachir et al. 2017