

Table 1 Suppl. Details of genotypes, ploidity, genome structure, seed mass [mg], time to physiological maturity during 2018 - 2019 growth season [d], source, and released years of eight wheat genotypes tested in this study.

Genotypes/domestication	Ploidy	Genome	Seed mass	Time to maturity	Source and released years
<i>T. boeoticum</i> / wild (D1)	diploid	BB	18.7	242	
<i>T. monococcum</i> / cultivated (D2)	diploid	BB	17.7	243	
<i>T. dicoccoides</i> / wild (T1)	tetraploid	AABB	46.5	248	
<i>T. dicoccum</i> / cultivated (T2)	tetraploid	AABB	37.3	250	
<i>T. aestivum</i> cv. Fengchan 3 (H1-FC3)	hexaploid	AABBDD	47.2	227	Yangling, China, 1950s
<i>T. aestivum</i> cv. Zhengmai 101 (H2-ZM101)	hexaploid	AABBDD	49.3	227	Zhengzhou, China, 2010s
<i>T. aestivum</i> cv. Changwu 134 (H3-CW134)	hexaploid	AABBDD	48.8	232	Changwu, China, 1990s
<i>T. aestivum</i> cv. Xiaoyan 6 (H4-XY6)	hexaploid	AABBDD	46.5	228	Yangling, China, 1980s

Table 2 Suppl. Relationship of flag leaf area [cm²], vein density (VLA) [mm mm⁻²], major vein density (VLA_{major}) [mm mm⁻²], proportion of minor-vein length (proportion) [%], interveinal distance (IVD) [mm], net photosynthetic rate (P_N) [μmol m⁻²s⁻¹], N content per leaf area (N_{area}) [g m⁻²], photosynthetic N use efficiency (PNUE) [μmol m⁻²s⁻¹] with biomass [kg ha⁻²] and grain yield [kg ha⁻²] in wheat genotypes with differing ploidy. Data are not shown for insignificant variables.

Leaf traits	Biomass modelling equation	R ²	P	Grain yield modelling equation	R ²	P
Leaf area	y = 906.10 x + 5052.29	0.63	<0.05			
VLA				y = -3829.45 x + 24737.83	0.49	=0.055
VLA _{major}	y = -29176.59 x + 53863.84	0.61	<0.05	y = -13263.06 x + 19998.54	0.75	<0.01
Proportion	y = 3056.13 x - 215995.09	0.67	<0.05	y = 1438.28 x - 106567.40	0.88	<0.01
IVD				y = 63369.76 x - 9128.66	0.51	<0.05
P _N	y = -3201.31 x + 94297.01	0.55	<0.05	y = -1406.72 x + 37354.15	0.62	<0.05
N _{area}	y = 22859 x - 17520.79	0.58	<0.05	y = 8620.50 x - 9025.06	0.49	=0.053
PNUE	y = -1948.39 x + 49366.26	0.58	<0.05	y = -800.73 x + 16966.16	0.58	<0.05

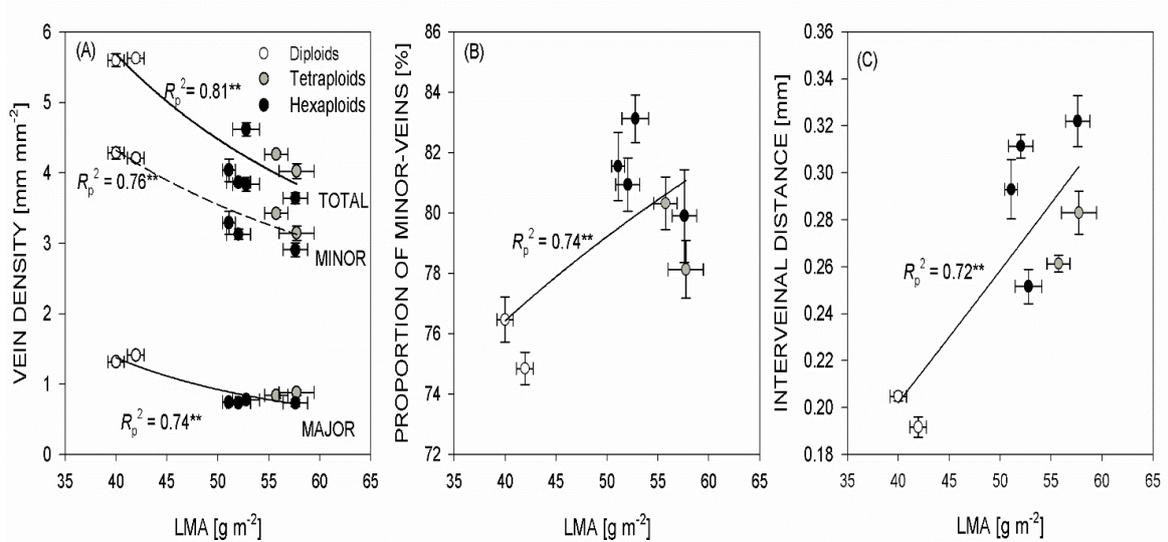


Fig. 1 Suppl. Allometric relationships between flag leaf vein density (A), proportion of minor-veins (B) and interveinal distance (C), and leaf mass per area (LMA) across eight wheat genotypes of differing ploidy levels. Means \pm SEs, $n = 6$. The curves were modeled by a power function. R_p^2 - pseudo R^2 of modeling curves. ** - $P < 0.01$.

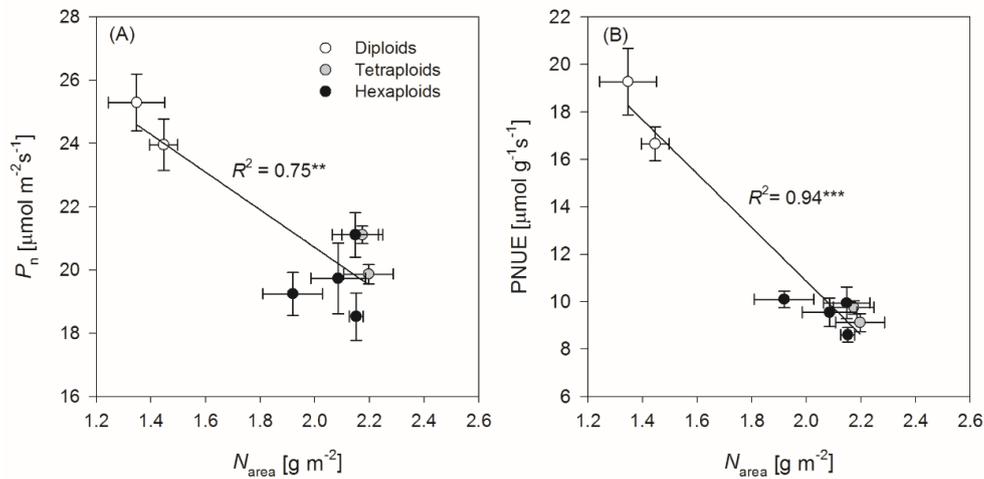


Fig. 2 Suppl. Relationships between net photosynthetic rate (P_n) and photosynthetic N use efficiency (PNUE), and leaf N content per area (N_{area}) of wheat genotypes with differing ploidy. Means \pm SEs, $n = 6$. ** - $P < 0.01$, *** - $P < 0.001$.

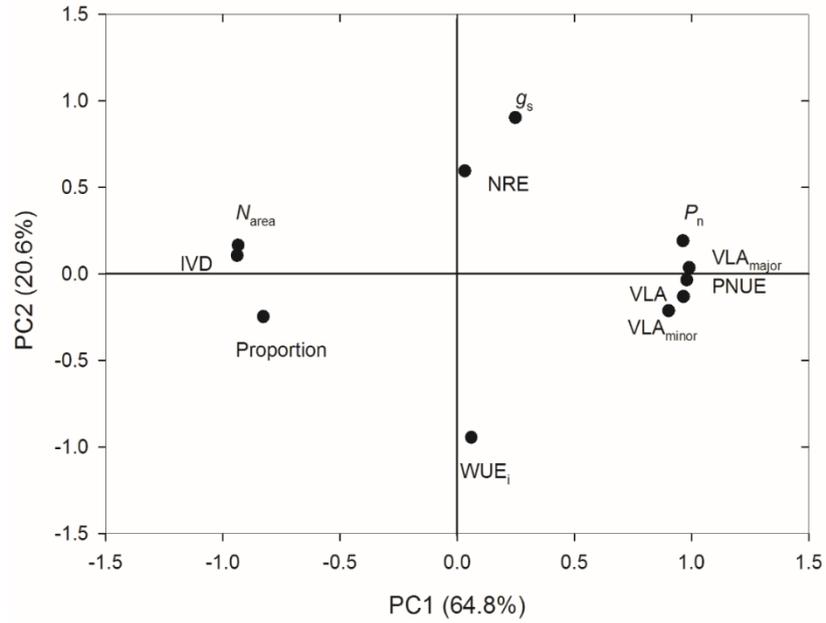


Fig. 3 Suppl. Principal component analysis of correlation between leaf vein traits and physiological functions of wheat genotypes with differing ploidity. VLA - leaf vein density, VLA_{major} - major leaf vein density, VLA_{minor} - minor leaf vein density, Proportion - proportion of minor-vein length, IVD - interveinal distance between small longitudinal veins, P_n - net photosynthetic rate, g_s - stomatal conductance, WUE_i - intrinsic water use efficiency, N_{area} - N content per area, PNUE - photosynthetic N use efficiency, NRE - N remobilization efficiency.