Mapping a region within the 1RS.1BL translocation in common wheat affecting grain yield and canopy water status

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Table S1 Statistical analyses of the effect of genetic background (cv. Hahn vs. cv. Attila) in the presence of both the full 1RS arm and the engineered 1RS^{WW} arm. In most experiments, the differences between cultivars in yield, carbon isotope discrimination, (CID) and canopy spectral reflectance were significant only in the presence of the 1RS^{WW} genotype

Location	Year	Trait	Irrigation treatment	Cultivar effect 1RS	Cultivar effect 1RS^{WW}
Davis	08-09	Yield	-	0.5345	<0.0001***
DREC	09-10	Yield	-	0.4024	0.0016**
		CID	-	0.0875	0.0168*
Davis	10-11	Yield	Normal	0.9009	0.0412*
			Low	0.3690	0.0048**
		CID	Normal	0.7608	<0.0001***
			Low	0.1989	<0.0001***
		NWI-3	Normal	0.5510	0.0006***
			Low	0.8429	<0.0001***
DREC	10-11	Yield	Normal	0.0844	0.0574
			Low	0.7165	0.4129

* = <0.05, ** = <0.01, *** = <0.001.

Fig. S1 Field "heat map" of yield for the DREC 2010-2011 trial. H= Hahn plots (in brown), A= Attila plots (in blue). 1RS genotypes are underlined and 1RS^{WW} genotypes are not underlined to facilitate comparisons between genotypes . Background color indicates yield level, with high yield in green, low yield in red and intermediate yield in yellow. Lines indicate blocks. A) Normal irrigation section. B) Low irrigation section. The observed decrease in yield with increased distance to the irrigation alley was corrected using this distance as a covariable (see main text).
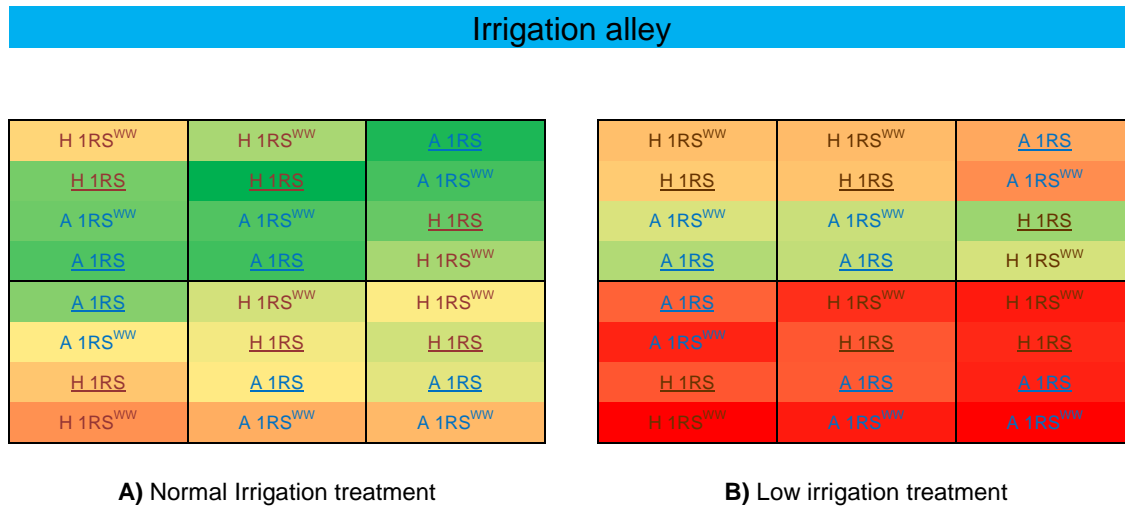
Irrigation alley

A) Normal Irrigation treatment

H 1RS^{WW}	H 1RS^{WW}	A 1RS
H 1RS	H 1RS	A 1RS^{WW}
A 1RS^{WW}	A 1RS^{WW}	H 1RS
A 1RS	A 1RS	H 1RS^{WW}
A 1RS	H 1RS^{WW}	H 1RS^{WW}
A 1RS^{WW}	H 1RS	H 1RS
H 1RS	A 1RS	A 1RS
H 1RS^{WW}	A 1RS^{WW}	A 1RS^{WW}

B) Low irrigation treatment

H 1RS^{WW}	H 1RS^{WW}	A 1RS
H 1RS	H 1RS	A 1RS^{WW}
A 1RS^{WW}	A 1RS^{WW}	H 1RS
A 1RS	A 1RS	H 1RS^{WW}
A 1RS	H 1RS^{WW}	H 1RS^{WW}
A 1RS^{WW}	H 1RS	H 1RS
H 1RS	A 1RS	A 1RS
H 1RS^{WW}	A 1RS^{WW}	A 1RS^{WW}

Fig. S2 Principle component biplot integrating different traits recorded in the Davis 2012-2013 field experiment. The lengths of the vectors for each trait are proportional to their contribution to the different components. Variables are abbreviated as follows: **CID** - carbon isotope discrimination, measured in flour from mature grains; **CIDpred** - predicted carbon isotope discrimination; **CIR** - carbon isotope ratio, measured in flour from mature grains; **CIRpred** - predicted carbon isotope ratio; **Cond** - stomatal conductance; **CoverByEye** - canopy closure, estimated by eye; **DW_880** - downwelling intensity of 880 nm light; **DW_970** - downwelling intensity of 970 nm light; **DW_NWI3** - NWI3 index calculated from DW_970 and DW_880; **GNDVI** - green normalized vegetation index (Babar et al. 2006); **JazTime and DW_time** - measurement time for CSR indices; **NDVI** - normalized vegetation index; **NWI1** - normalized water index 1 (Babar et al. 2006); **NWI2** - normalized water index 2 (Babar et al. 2006); **NWI3** - normalized water index 3 (Gutierrez et al. 2010); **NWI4** - normalized water index 4 (Gutierrez et al. 2010); **Photo** - photosynthetic rate; **PRI** - photochemical reflective index (Babar et al. 2006); **RNDVI** - red normalized vegetation index (Babar et al. 2006); **SPAD** - relative chlorophyll content; **SR** - simple ratio (Babar et al. 2006); **VPDair** - vapor pressure deficit of air. Ellipses for each group are drawn at the default 68% confidence level for the ggbiplot package in R.
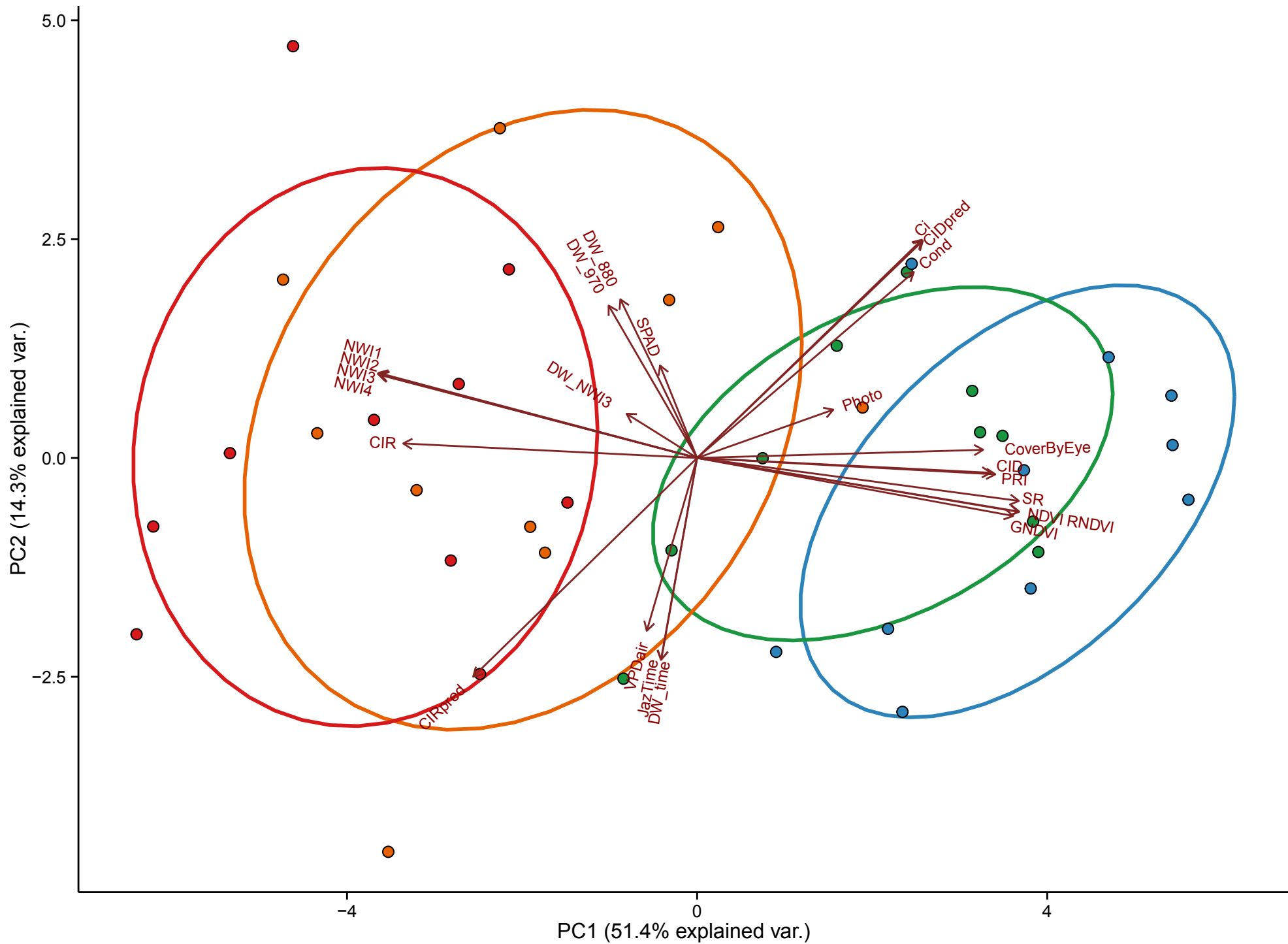
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