Combined Linkage Mapping and Genome-Wide Association Study Identified QTLs Associated with Grain Shape and Weight in Rice (*Oryza sativa* L.)

Agronomy - MDPI

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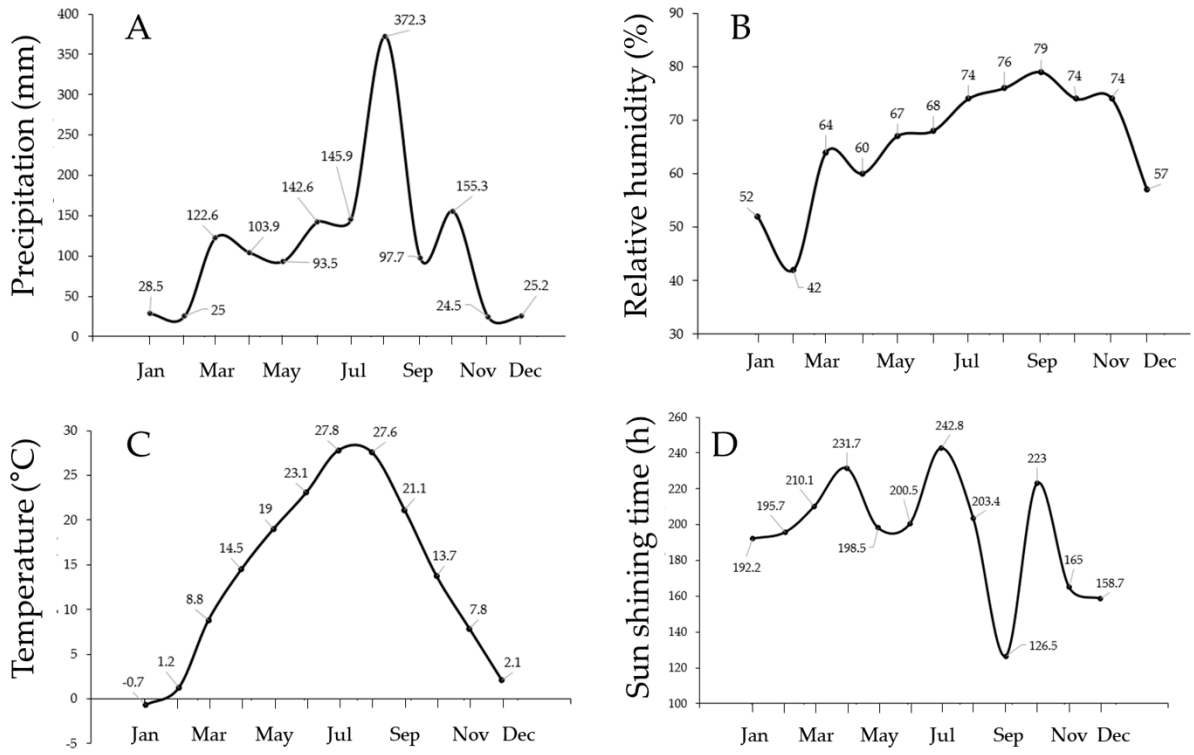

Figure S1. Changes in weather parameters during the rice cropping season of 2018. (**A**) Monthly average precipitation (in mm) throughout 2018. (**B**) Monthly average relative humidity (RH). (**C**) Changes in temperature over the year 2018. (**D**) Pattern of the duration of sun shining during 2018. Data are monthly mean values, obtained from the virtual database of the Korean Meteorological Agency (KMA) (https://data.kma.go.kr).

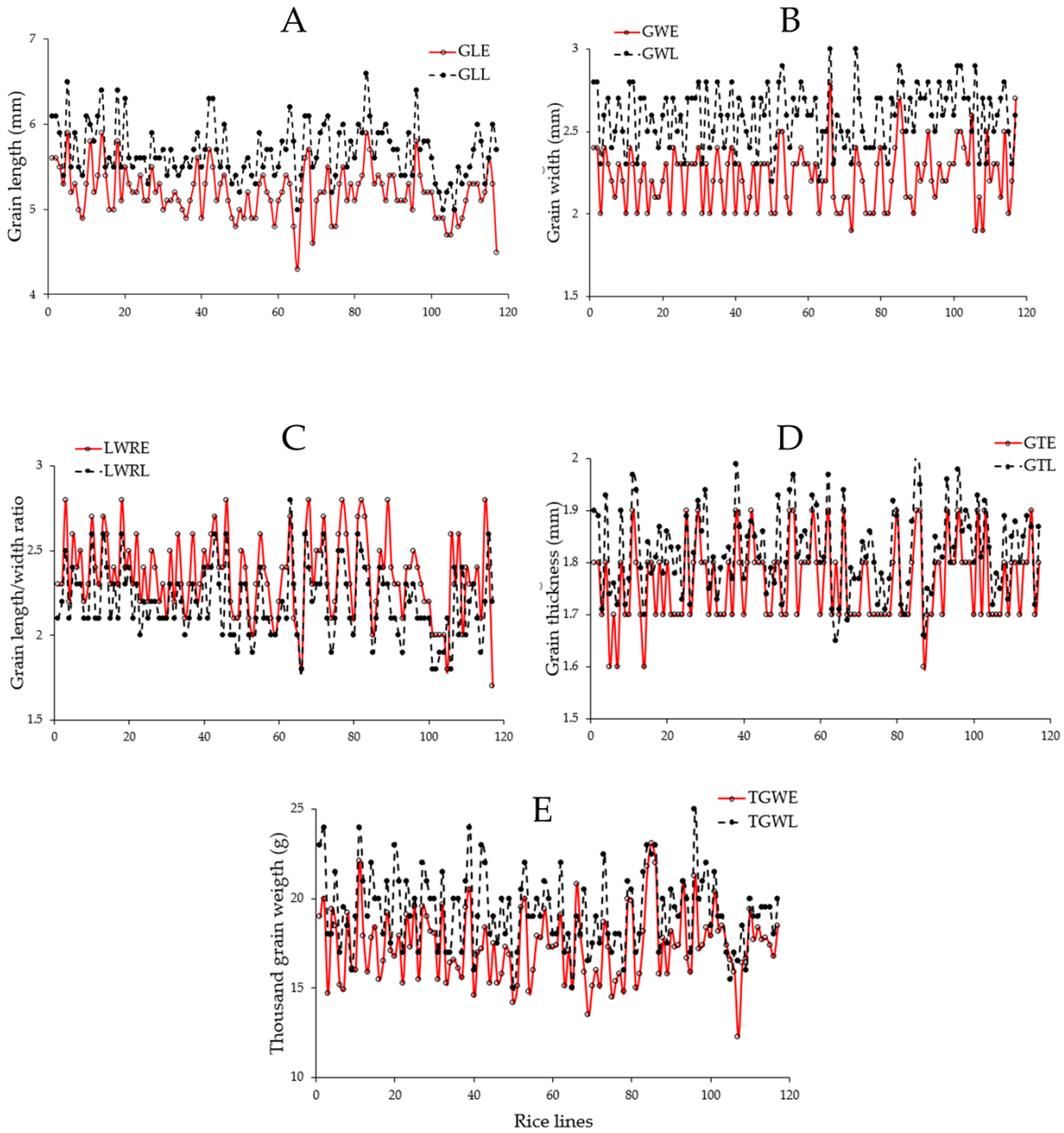

Figure S2. Changes in rice grain traits phenotypes of a doubled haploid population of two transplanting periods. (**A**) Patterns of grain length for early–transplanted rice DH lines (red down continuous lines) and late–transplanted rice (black up discontinuous line). (**B**) changes in grain width (GW) of early–transplanted (red down continuous line) and late–transplanted (black up discontinuous line) DH lines. (**C**) Variation between grain length/width ratio (LWR) in early– and late–transplanted rice. (**D**) difference in grain thickness (GT) between early– and late–transplanted rice DH lines, and (E) thousand grain weight (TGW) pattern of early– and late–transplanted rice DH lines.

Table S1. Correlation analysis between traits at early and late transplanting

	GLE	GWE	GTE	LWRE	TGWE	GLL	GWL	GTL	TGWL	LWRL
GLE	1.000									
GWE	-0.076	1.000								
GTE	0.052	0.455	1.000							
LWRE	0.591	-0.818	-0.342	1.000						
TGWE	0.343	0.729	0.650	-0.407	1.000					
GLL	0.781	-0.163	-0.042	0.544	0.175	1.000				
GWL	0.049	0.689	0.480	-0.537	0.713	-0.090	1.000			
GTL	0.094	0.564	0.828	-0.406	0.726	-0.048	0.678	1.000		
TGWL	0.560	0.457	0.543	-0.100	0.758	0.507	0.664	0.658	1.000	
LWRL	0.427	-0.623	-0.398	0.737	-0.432	0.665	-0.769	-0.531	-0.194	1.000

GLE: grain length, GWE: grain width, GTE: grain thickness, Grain length/width ratio, TGWE: thousand grain weight for early-transplanted; GLL: grain length, GWL: grain weight, GTL: grain thickness, Grain length/width ratio, TGWL: thousand grain weight for late-transplanted rice.