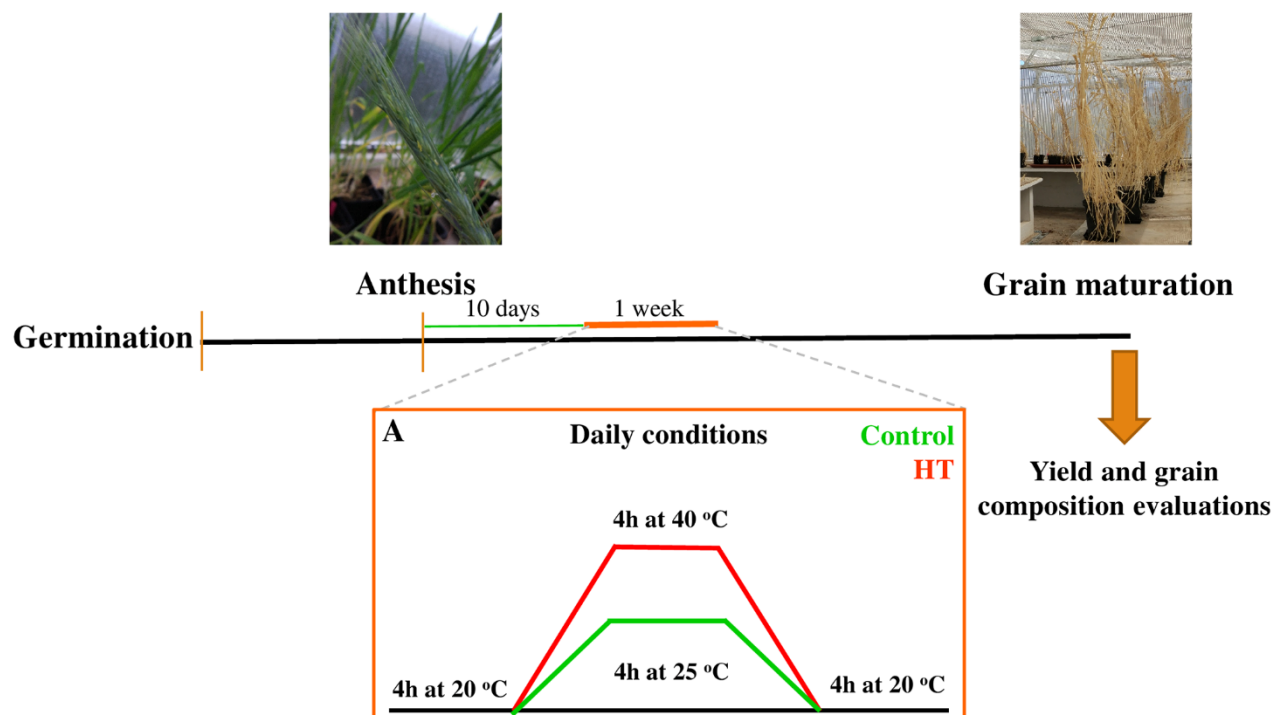


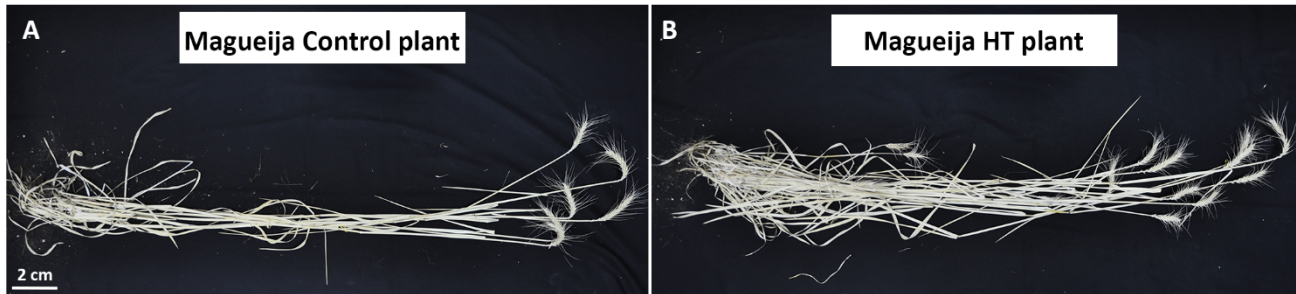
## Supplementary Material

**Supplementary Table 1.** Flowering time (days from germinations to flowering) of wheat landraces studied.

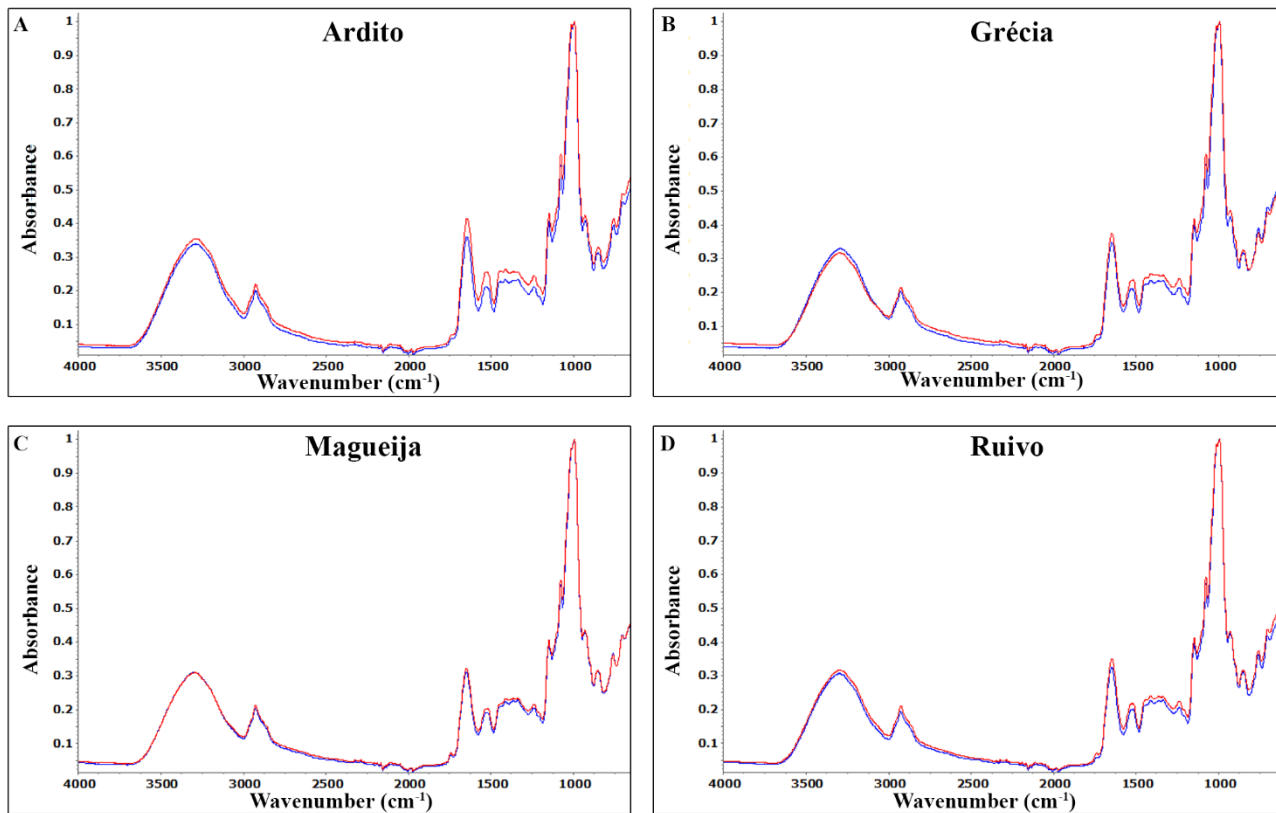
Wheat landraces	Days until flowering
Ardito	126±3
Grécia	140±6
Magueija	157±3
Ruivo	129±4



**Supplementary Figure 1.** High temperature assay schematic representations.



**Supplementary Figure 2.** Wheat Magueija mature plants (A) kept in control conditions and (B) high temperature (HT) treated.



**Supplementary Figure 3.** Average ATR-FTIR spectra of flour from control (blue) and HT treated (red) plants of wheat landraces (A) Ardito, (B) Grécia, (C) Magueija and (D) Ruivo.

**Supplementary Table 2.** Nitrogen content of flour samples from plants kept in control conditions and high temperature (HT) treated, quantified by Elemental Analysis.

Sample	Nitrogen content (mg of N/ 100 mg of flour)	
	Predicted by model	Quantification by elemental analysis
Ardito HT	4.7	4.5
Ardito HT	4.2	3.8
Grécia HT	3.9	3.4
Ardito HT	3.7	2.9
Ardito Control	3.5	2.8
Ardito Control	3.2	2.6
Grécia HT	3.1	2.7
Magueija HT	2.8	2.5
Ruivo HT	2.4	2.1
Magueija HT	2.0	2.1