Is floret primordia death triggered by floret development in durum wheat?

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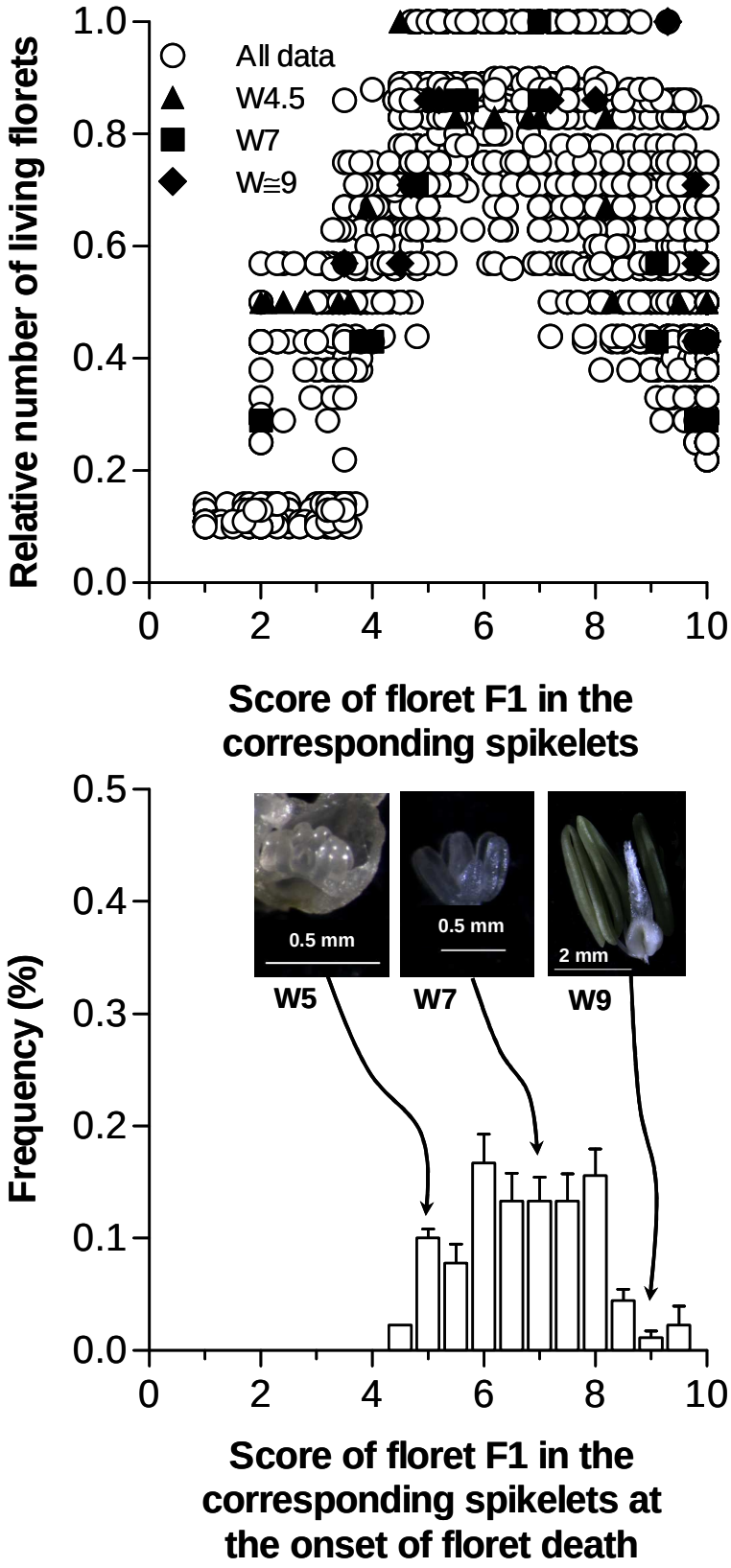
Supplementary Material

Figure S1. Top panel: Relationship between the number of living florets, in relative terms to standardise for differences in maximum number of floret primordia depending on treatments and spikelet positions, and score of floret F1 in the corresponding spikelets (basal, central or apical spikelets). Open circles corresponding to the dynamics of all data (in each particular case unidentified in this figure always the values peak to 1 before the onset of floret death). To illustrate the range of differences in score of F1 in the corresponding spikelets at the onset of floret death in the wide range of conditions analysed, we identified the two extreme cases in which the onset of floret death coincided with F1 in the corresponding spikelets being at stages as early as a score of 4.5 (closed triangles) or as late as a score of 9 (closed rhomb).
Bottom panel: Frequency of developmental scores of the proximal florets (F1) in the corresponding spikelets at which floret death started considering the whole dataset analysed. Bars represent standard errors. Pictures show the appearance of the primordia of F1 in the corresponding spikelets corresponding to two extreme and one intermediate conditions.

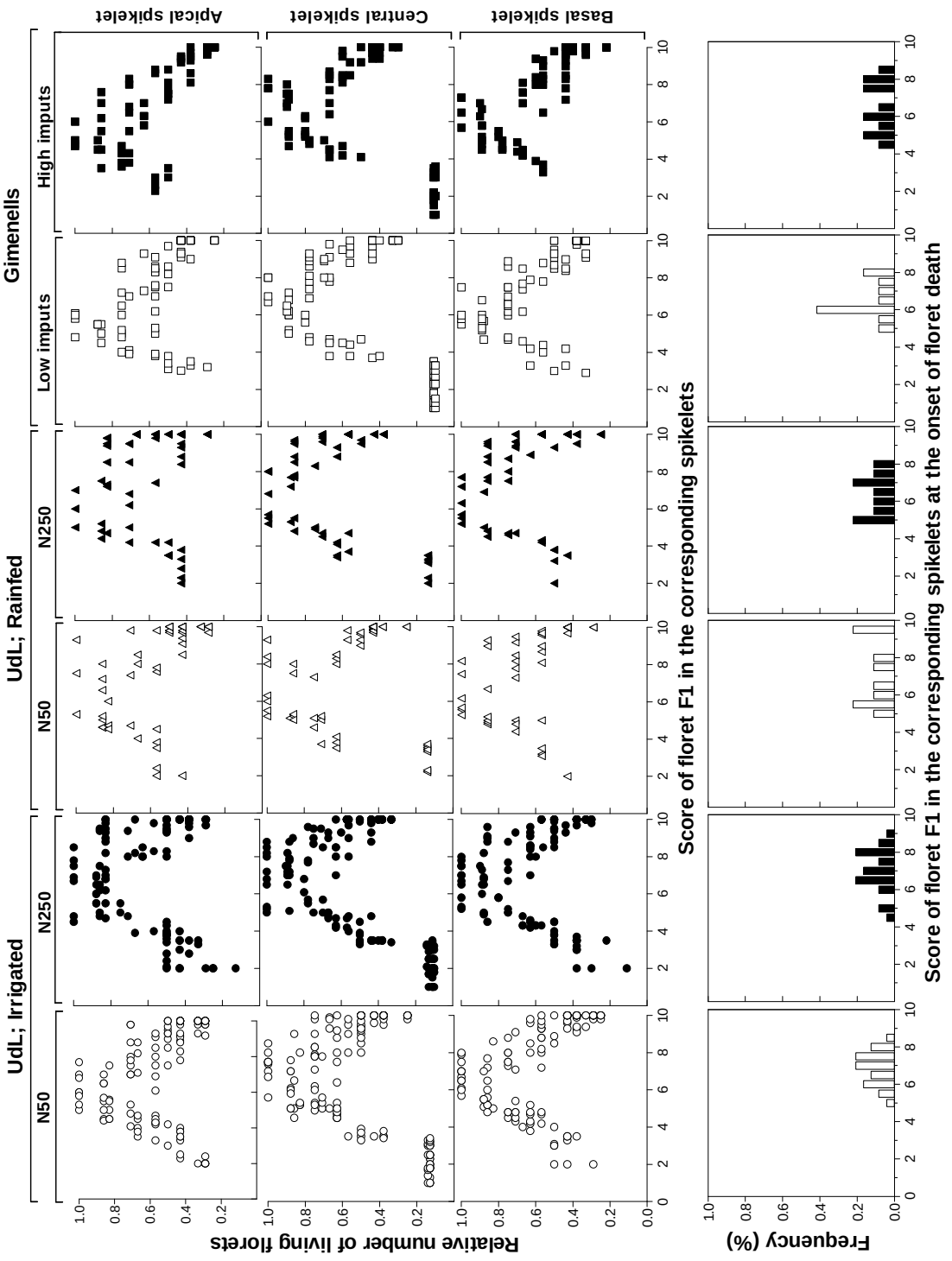
Figure S2. Top panel: Number of living florets (relative to the maximum in each case) plotted against the developmental stage of the most advance floret (F1) in the corresponding spikelets (basal, central or apical spikelets) for each of the three spikelet positions considered (upper panels) analysed for each of the 6 environmental conditions explored throughout the studies analysed independently.
Bottom panel: Frequency of developmental scores of the F1 in the corresponding spikelets at which the onset of floret death took place in each environmental conditions studied.

Figure S3. Top panel (a): Boxplot of the stages of development of the most advanced floret (F1) in the corresponding spikelets (basal, central or apical spikelets) at the onset of floret death for different experimental conditions (experiments and treatments). The horizontal line within each box is the median, and the bottom and top of each box represent the 25th and 75th percentiles, respectively. Crosses correspond to the mean. The whiskers represent the 10th and 90th percentiles, respectively and the values outside this range are individual outliers (closed circles).
Bottom panels: Relationships between the average (b) or the standard deviation (c) of the scores of floret F1 in the corresponding spikelets at the onset of floret death in each environmental condition analysed and yield achieved by the crop in those conditions (as indicator of resource availability). Environmental conditions were (i) high- and low-nitrogen levels in the UdL (closed and open symbols, respectively) under irrigated (circles) or rainfed conditions (triangles), and (ii) high- or low-inputs (closed and open squares, respectively) in the field experiments.

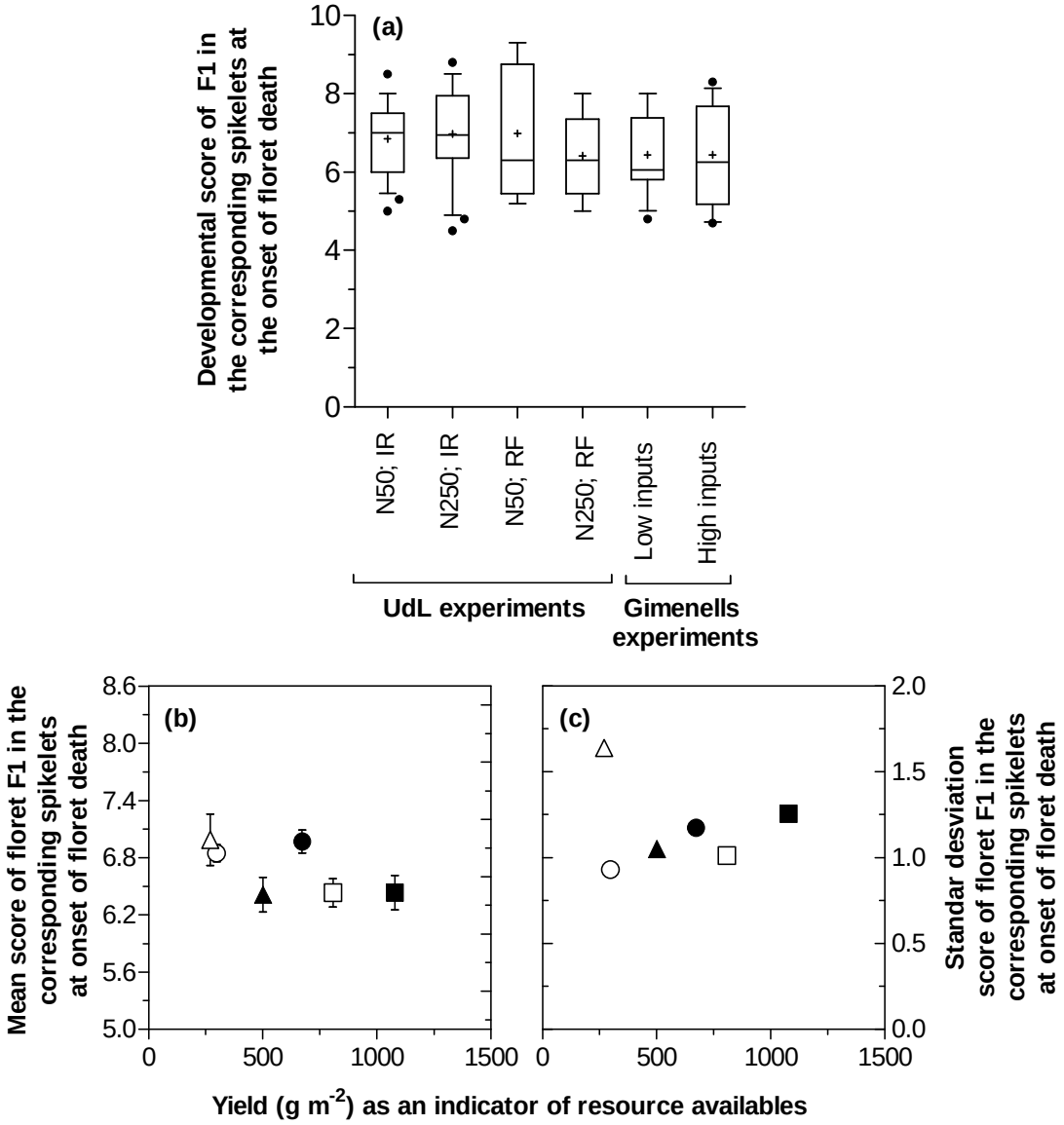
Table S1. Spike dry weight (SDW) at anthesis and parameters of the bilinear regression analysis of floret developmental stage vs. thermal time (slope: rate of progress in development, breakpoint: timing when floret development stopped, and coefficient of determination) for the most proximal (F1) and one distal (F4) florets of central spikelets of wheat grown under a wide range of conditions.



Supplementary Figure 1 at JXB online. Ferrante *et al.*



Supplementary Figure 2 at JXB online. Ferrante *et al.*



Supplementary Figure 3 at JXB online. Ferrante *et al.*

Table S1. Spike dry weight (SDW) at anthesis and parameters of the bilinear regression analysis of floret developmental stage vs. thermal time (slope: rate of progress in development, breakpoint: timing when floret development stopped, and coefficient of determination) for the most proximal (F1) and one distal (F4) florets of central spikelets of wheat grown under a wide range of conditions.

Exps.	Water regime	N availability (kgN ha^{-1})	Cultivars	$SDW_{anthesis}$ (g m^{-2})	Slope (stages [ºC d]$^{-1}$)		Breakpoint (ºC d)		R^{2} *	
					F1	F4	F1	F4	F1	F4
1	Irrigated	70	Claudio	106.5	0.017±0.001	0.011±0.002	1176±20.68	1099±37.65	0.99	0.93
		170		198.1	0.018±0.001	0.014±0.001	1168±15.14	1238±24.54	0.99	0.99
2	Irrigated	50	Claudio	83.8	0.014±0.001	0.011±<0.001	1212±15.47	1223±14.90	0.99	0.99
		250		175.6	0.015±0.001	0.014±0.001	1215±22.95	1391±37.33	0.97	0.98
	Rainfed	50	Claudio	72.7	0.018±0.001	0.015±0.001	1097±12.07	1065±16.95	0.99	0.97
		250		131.3	0.017±0.001	0.015±0.001	1139±11.38	1108±14.60	0.99	0.98
3	Irrigated	50	Claudio	75.8	0.010±<0.001	0.013±0.001	1410±29.00	1330±19.84	0.99	0.98
		250		198.4	0.010±<0.001	0.015±0.002	1439±40.30	1269±41.42	0.97	0.95
		50	Donduro	122.8	0.012±<0.001	0.018±0.001	1295±25.11	1200±11.31	0.98	0.99
		250		209.4	0.011±<0.001	0.017±0.001	1362±25.67	1249±25.83	0.99	0.97
		50	Simeto	101.1	0.013±<0.001	0.011±0.001	1267±21.02	1247±22.85	0.99	0.98
		250		208.5	0.012±<0.001	0.14±0.001	1308±25.73	1405±26.36	0.98	0.98
		50	Vitron	91.0	0.012±0.001	0.018±0.001	1281±26.58	1199±16.50	0.98	0.98
		250		229.4	0.012±<0.001	0.014±0.001	1327±23.40	1406±20.19	0.99	0.99
4	Rainfed	130	Claudio	287.8	0.013±<0.001	0.014±<0.001	1096±12.16	1104±11.03	0.99	0.99
			Donduro	295.4	0.013±<0.001	0.013±<0.001	1070±14.69	1194±18.62	0.99	0.99
			Simeto	235.0	0.014±<0.001	0.015±<0.001	1050±15.24	1152±11.13	0.99	0.99
			Vitron	230.8	0.013±<0.001	0.014±<0.001	1098±12.98	1106±8.93	0.99	0.99
5	Irrigated	580	Claudio	235.5	0.012±<0.001	0.015±<0.001	1073±19.05	1141±17.50	0.99	0.99
			Donduro	318.6	0.012±<0.001	0.015±<0.001	1089±13.58	1135±13.95	0.99	0.99
			Simeto	386.2	0.013±<0.001	0.017±<0.001	1006±18.25	1037±16.76	0.99	0.98
			Vitron	354.7	0.012±<0.001	0.016±<0.001	1081±18.94	1129±13.78	0.99	0.99
6	Irrigated	50	Donduro	70.0	0.014±0.001	0.013±<0.001	1199±18.96	1300±9.17	0.98	0.99
		250		168.0	0.014±0.001	0.014±0.001	1220±17.66	1328±21.51	0.99	0.98
		50	Vitron	69.6	0.015±<0.001	0.013±<0.001	1169±11.14	1271±10.09	0.99	0.99
		250		192.0	0.015±<0.001	0.015±0.001	1186±17.94	1314±17.56	0.99	0.99
	Rainfed	50	Donduro	61.0	0.014±<.0001	0.012±<0.001	1199±18.96	1302±9.82	0.98	0.99
		250		164.0	0.014±<.0001	0.014±0.001	1224±15.07	1307±18.11	0.99	0.99
		50	Vitron	82.7	0.015±0.001	0.015±0.001	1175±16.47	1217±12.15	0.99	0.99
		250		164.0	0.014±<0.001	0.014±0.001	1198±16.94	1316±15.44	0.99	0.99

* In all cases the coefficient of determination was highly significant (n=9 - 27, P<0.001)

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