Supplementary Material

Inferring vascular architecture of the wheat spikelet based on resource allocation in the *branched head^t* (*bh^t-A1*) nearisogenic lines

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File S1. Summary of the effect of de-tillering on plant growth and development.

The values represent Mean ± SD. The significant level between FT and DT was calculated based on a two-tailed Student's t-test analysis. P values (0.05, 0.01 and 0.001) were determined by two-tailed, two-sample t-test.

Supplementary Table 1. Summary of the effect of de-tillering on plant growth and development.
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Trait	Treatment	FL-*bh-A1*-NILs (BC3F3 generation)					Floradur(n:20,15)
		Fam1 (n:17,14)	Fam2(n:21,19)	Fam3 (n:17,19)	Fam4(n:16,20)	Fam5(n:20,19)	
TN	FT	4.63 ±0.44	4.05 ±0.76	4.31 ±0.55	3.98 ±0.37	4.52 ±0.81	4.02 ±0.39
	DT	0.00	0.00	0.00	0.00	0.00	0.00
TF	FT	70 ±19	87 ±4	88 ±9	90 ±10	87 ±8	90 ±13
	DT	0.00	0.00	0.00	0.00	0.00	0.00
PH	FT	62.21 ±3.41 *	65.4 ±2.34 ***	65.6 ±2.25 ***	66.5 ±2.98 **	61.8 ±1.96 **	63.1 ±3.46 ***
	DT	66.75 ±4.96	72.42 ±0.82	76.42 ±2.1	72.12 ±2.78	67.62 ±3.41	71.55 ±2.32
PdL	FT	25.59 ±1.5 ns	33.33 ±3.2 ***	33.42 ±2.26 ***	31.15 ±3.94 **	30.08 ±1.4 **	33.57 ±2.35 **
	DT	27.86 ±5.9	39.5 ±1.31	42.63 ±1.18	36.88 ±2.95	34.14 ±2.72	41.75 ±1.69
PH_wPdL	FT	29.12 ±3.18 ns	25.36 ±2.29 ns	25.66 ±3.14 ns	28.89 ±3.59 ns	24.76 ±0.99 ns	22.74 ±2.15 ns
	DT	31.14 ±3.88	25.59 ±1.36	26.53 ±2.49	27.83 ±1.68	25.95 ±2.63	22.35 ±1.74
NPS	FT	20.38 ±2.7 ns	16.47 ±1.35 ns	17.12 ±1.89 ns	17.31 ±1.96 ns	17.69 ±1.28 ns	13.33 ±1.9 ns
	DT	20.13 ±2.89	17.14 ±0.94	17.36 ±1.47	17.60 ±1.61	17.5 ±1.14	13.26 ±1.77
GNS	FT	47.13 ±3.84 *	47.71 ±4.63 ***	49.21 ±5.92 ***	46.14 ±5.51 **	44.07 ±4.1 **	37.93 ±3.7 ***
	DT	59.06 ±11.4	69.12 ±4.8	68.5 ±5.05	62.52 ±9.35	52.43 ±13.33	52.64 ±5.39

TN,Tiller per plant; TF, Tiller Fertility (%); PH, Plant height (cm); PdL, Peduncle Length (cm); PH_wPdL, Plant height without peduncle length; NPS, Node Number Per Spike; GNS, grain Number per spike; FT, Free tillering; DT, De-tillered;Fam, Family ; SD, Standard Deviation; ns , non-significant .The numbers in the parenthesis indicate sample size.

Supplementary Table 1. Continued …

Trait	Treatment	FL-*bh-A1*-NILs (BC3F3 generation)					Floradur
		Fam1	Fam2	Fam3	Fam4	Fam5	
TKW (whole grain)	FT	48.26 ±3.01 *	42.77 ±1.29 ns	42.48 ±2.53 ns	47.17 ±3.22 *	44.98 ±4.08 ns	41.8 ±3.41 ns
TKW (whole grain)	DT	53.49 ±6.54	41.65 ±2.99	43.73 ±3.52	42.06 ±2.94	43.78 ±3.76	43.32 ±2.44
Chaff	FT	0.65 ±0.36 *	0.68 ±0.05 ***	0.87 ±0.15 **	0.72 ±0.09 ***	0.64 ±0.12 **	0.53 ±0.05 ns
Chaff	DT	1.03 ±0.13	0.95 ±0.11	1 ±0.11	0.95 ±0.05	0.89 ±0.54	0.64 ±0.16
SHI	FT	0.69 ±0.06 ns	0.75 ±0.02 ns	0.70 ±0.07 ns	0.74 ±0.03 ns	0.76 ±0.05 ns	0.76 ±0.01 ns
SHI	DT	0.73 ±0.03	0.75 ±0.03	0.75 ±0.02	0.73 ±0.02	0.77 ±0.08	0.79 ±0.05
ND	FT	2.71 ±0.24 ns	2.32 ±0.24 ns	2.58 ±0.28 ns	2.53 ±0.3 ns	2.57 ±0.19 *	1.96 ±0.26 ns
ND	DT	2.59 ±0.31	2.34 ±0.15	2.38 ±0.22	2.4 ±0.22	2.32 ±0.21	1.77 ±0.17
HD	FT	97.2 ±5.22 ns	90.55 ±1.2 ns	89.06 ±0.85 ns	90.57 ±1.23 ns	91.5 ±1.66 ns	88.79 ±0.39 ns
HD	DT	99.47 ±4.8	91.69 ±0.85	90.24 ±1.1	92.43 ±1.92	91.64 ±0.8	88.38 ±0.49

TKW, thousand Kernel Weight (g); SHI, Spike Harvest Index; ND, Node Density; HD, Heading Date; FT, Free tillering; DT, De-tillered; Fam, Family ; SD, Standard deviation; ns, non-significant. The numbers in the parenthesis indicate sample size. Data from FT were also published in (Wolde *et al.*, 2019).

Reference

Wolde GM, Mascher M, Schnurbusch T. 2019. Genetic modification of spikelet arrangement in wheat increases grain number without significantly affecting grain weight. *Molecular Genetics and Genomics* **294**(2): 457-468.