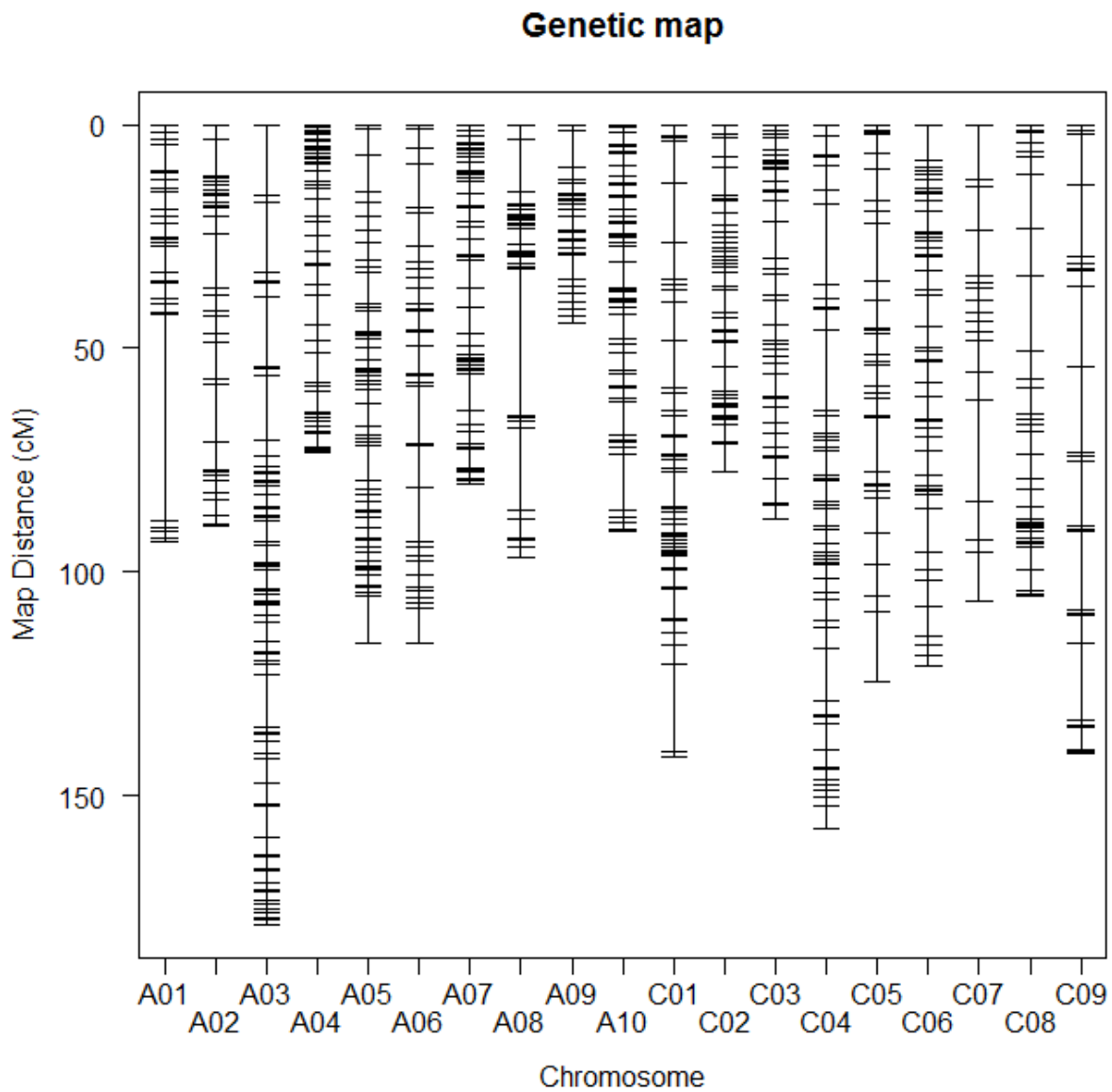


## Supplementary Material

QTL analysis of root morphology, flowering time and yield and their plasticity to drought in *Brassica napus*

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**Figure S1.** Genetic map of the SE-1 doubled haploid population



**Table S1.** ANOVA results for Days to Flower (DTF), Root Pulling Force (RPF), and Yield

	DTF		RPF		Yield	
	F-Value	P	F-Value	P	F-Value	P
DH	31.3	<0.0001	2.7	<0.0001	2.4	<0.0001
Treatment	23.2	<0.0001	40.8	<0.0001	469.0	<0.0001
Treatment (Rep)	17.9	<0.0001	2.1	0.08	18.8	<0.0001
DH x Treatment	1.6	<0.0001	1.0	0.33	1.5	<0.0001

**Table S2.** Genetic and phenotypic correlations among traits measured in Fort Collins, CO in 2010. Genetic correlations are shown above the diagonal, while phenotypic correlations are below, population sizes used in estimating each correlation coefficient are in parentheses. All correlations are significant at  $P < 0.0001$

	RPF <sub>dry</sub>	DTF <sub>dry</sub>	Yield <sub>dry</sub>	RPF <sub>wet</sub>	DTF <sub>wet</sub>	Yield <sub>wet</sub>
RPF <sub>dry</sub>		0.48 (n=195)	-0.41 (n=225)	0.46 (n=225)	0.52 (n=225)	-0.36 (n=225)
DTF <sub>dry</sub>	0.31 (n=544)		-0.69 (n=195)	0.52 (n=195)	0.89 (n=195)	-0.49 (n=195)
Yield <sub>dry</sub>	-0.23 (n=650)	-0.55 (n=544)		-0.45 (n=225)	-0.68 (n=225)	0.52 (n=225)
RPF <sub>wet</sub>					0.66 (n=225)	-0.49 (n=225)
DTF <sub>wet</sub>				0.51 (n=643)		-0.61 (n=225)
Yield <sub>wet</sub>				-0.27 (n=651)	-0.48 (n=643)	

**Table S3.** Summary of QTL identified with a genome-wide significance threshold of  $P \leq 0.05$  based on 1000 permutations

Phenotype	Treatment	QTL	Linkage Group	Position (cM)	LOD	R <sup>2</sup>	Additive Effect (Wichita allele)
DTF	Wet	<i>DTF.wet1</i>	A02	15.4	4.01	2.21	-1.41 ± 0.33
		<i>DTF.wet2</i>	A03	102.0	8.11	4.67	2.04 ± 0.32
		<i>DTF.wet3</i>	A10	75.0	37.69	30.05	5.10 ± 0.32
		<i>DTF.wet4</i>	C02	65.0	41.43	34.50	5.48 ± 0.32
	Dry	<i>DTF.dry1</i>	A03	104.2	4.19	3.92	1.62 ± 0.37
		<i>DTF.dry2</i>	A10	75.0	24.19	28.97	4.62 ± 0.38
<i>DTF.dry3</i>		C02	66.0	33.58	45.51	5.56 ± 0.37	
RPF	Wet	<i>RPF.wet1</i>	A10	73.6	13.73	18.46	6.55 ± 0.80
		<i>RPF.wet2</i>	C02	63.3	14.78	20.09	6.75 ± 0.80
		<i>RPF.wet3</i>	C07	95.0	3.34	4.02	3.21 ± 0.85
	Dry	<i>RPF.dry1</i>	A10	76.0	12.15	19.71	5.32 ± 0.66
		<i>RPF.dry2</i>	C02	63.3	7.22	11.12	3.92 ± 0.65
Yield	Wet	<i>Yld.wet1</i>	A03	85.4	3.14	4.42	-6.78 ± 1.77
		<i>Yld.wet2</i>	A10	74.0	10.17	15.40	-12.84 ± 1.80
		<i>Yld.wet3</i>	C02	64.0	10.95	16.72	-13.23 ± 1.78
	Dry	<i>Yld.dry1</i>	A03	141.7	3.12	3.82	-1.52 ± 0.40
		<i>Yld.dry2</i>	A10	78.0	15.57	21.73	-3.84 ± 0.42
		<i>Yld.dry3</i>	C02	66.0	12.98	17.62	-3.24 ± 0.40
	Sensitivity	<i>YldSens.1</i>	A10	73.6	5.19	9.00	-8.73 ± 1.75
		<i>YldSens.2</i>	C02	56.0	6.36	11.17	-9.87 ± 1.78

**Table S4.** Flowering time strata ranges and the number of lines included in each stratification class

Strata	DTF Range	# Lines
1	60.75-69.3	43
2	69.5-74	51
3	74.75-80.5	41
4	81-88.25	45
5	89-DNF	45