

Another simulation approach was used to compare the ability of the different models to detect QTLs. The genetic model was simulated as in the second step of simulations presented in the paper (the QTLs were sampled among all the PANZEA SNPs) but considering now that markers within a given genetic distance of a QTL were under H1 and the others under H0. We considered genetic distances of 1, 2, 3, 5 and 10 cM. For each genetic model (50 or 100 QTLs) and each panel, 200 runs were used to estimate the proportion of QTLs (PowerQTL), and the proportion of H1-markers (Power) declared significant at a realized FDR of 0.1. The realized false discovery rate (FDR) was defined as the proportion of markers under H0 among the markers declared significant. To estimate PowerQTL, we considered that a QTL was detected when at least one of the corresponding H1-markers had a significant Pvalue.

Table S1 Power of the QTL detections with M_{K_Freq} , M_{K_Chr} , and M_{K_LD} at a realized FDR of 0.1. PowerQTL is the proportion of QTL discovered, Power is the proportion of H1-markers discovered.

	Nb QTLs	Window (cM)	PowerQTL			Power		
			M_{K_Freq}	M_{K_Chr}	M_{K_LD}	M_{K_Freq}	M_{K_Chr}	M_{K_LD}
C-K	50	1	0.08	0.11	0.10	0.0012	0.0028	0.0025
	50	2	0.11	0.14	0.13	0.0010	0.0024	0.0021
	50	3	0.12	0.16	0.15	0.0009	0.0021	0.0019
	50	5	0.15	0.21	0.19	0.0008	0.0019	0.0017
	50	10	0.24	0.32	0.29	0.0008	0.0019	0.0016
	100	1	0.03	0.05	0.04	0.0004	0.0011	0.0008
	100	2	0.05	0.07	0.06	0.0004	0.0010	0.0008
	100	3	0.06	0.10	0.08	0.0004	0.0010	0.0008
	100	5	0.09	0.15	0.13	0.0004	0.0011	0.0009
	100	10	0.21	0.32	0.27	0.0006	0.0017	0.0013
CF-Dent	50	1	0.09	0.12	0.11	0.0019	0.0052	0.0041
	50	2	0.11	0.17	0.15	0.0015	0.0052	0.0038
	50	3	0.13	0.21	0.19	0.0014	0.0054	0.0038
	50	5	0.17	0.28	0.26	0.0013	0.0053	0.0036
	50	10	0.26	0.46	0.40	0.0014	0.0065	0.0037
	100	1	0.04	0.07	0.06	0.0007	0.0030	0.0020
	100	2	0.05	0.12	0.09	0.0006	0.0032	0.0019
	100	3	0.07	0.17	0.12	0.0006	0.0036	0.0019
	100	5	0.11	0.26	0.19	0.0007	0.0045	0.0022
	100	10	0.24	0.54	0.42	0.0011	0.0081	0.0039
CF-Flint	50	1	0.09	0.10	0.09	0.0014	0.0026	0.0023
	50	2	0.11	0.14	0.12	0.0012	0.0023	0.0019
	50	3	0.13	0.17	0.15	0.0010	0.0022	0.0018
	50	5	0.16	0.22	0.19	0.0010	0.0022	0.0017
	50	10	0.25	0.35	0.30	0.0010	0.0024	0.0016
	100	1	0.03	0.05	0.04	0.0005	0.0013	0.0010
	100	2	0.05	0.08	0.06	0.0004	0.0013	0.0010
	100	3	0.06	0.10	0.08	0.0004	0.0013	0.0009
	100	5	0.09	0.16	0.13	0.0005	0.0015	0.0010
	100	10	0.18	0.34	0.27	0.0006	0.0023	0.0014