

Supplementary Material

1 Supplementary Tables

Supplementary Table S1: Mean NDVI and leaf parameters for every core set genotype. Genotypes with same letters indicate no significant difference ($p<0.05$) for the particular trait.

Genotype	Trait	NDVI				Leaf Area						Leaf Length				Leaf Width				
						L1	L1	L2	L2	L1 & L2	L1 & L2	L1	L1	L2	L2	L1	L1	L2	L2	
		Year	2015	2016	2017	2017														
		DAS	29	29	21	29	21	29	21	29	21	29	21	29	21	29	21	29	21	29
Dharwah dry		0.34	0.23	0.33	0.31	4.53	4.11	3.35	6.51	7.88 a	10.61	13.8	12.4	11.07	18.47	0.33	0.33	0.28	0.35 cdef	
		a	a	ab	ab	ab	abcd	ab	abcde		abcdef	a	abcde	ab	ab	a	bcd	abc		
FAC10-16		0.34	0.27	0.25	0.36	3.65	4.26	3.03	6.68	6.68 a	10.94	11.52	10.84	10.33	15.65	0.32	0.39	0.29	0.43 abc	
		a	a	ab	ab	ab	abcd	ab	abcde		abcde	ab	bcdefghi	ab	bcdefg	a	ab	abc		
Gladius		0.31	0.33	0.23	0.32	4.61	4.97 a	3.45	6.5	8.06 a	11.47	11.38	11.65	10.17	14.73	0.41	0.42	0.34	0.44 ab	
		a	a	ab	ab	ab		ab	abcde		abc	ab	abcdefgh	ab	defg	a	a	abc		
Gregory		0.32	0.27	0.22	0.34	4.05	3.08	3.04	5.51	7.09 a	8.59	12.86	10.41	10.78	16.33	0.32	0.3 d	0.28	0.34 def	
		a	a	b	ab	ab	de	ab	cdef		defgh	ab	cdefghi	ab	abcdef	a		abc		
Halberd		0.34	0.19	0.26	0.36	4.93	4.34	2.05	5.3	7.09 a	9.64	13.05	12.64	9.21	14.84	0.38	0.34	0.22	0.36 bcdef	
		a	a	ab	ab	ab	abcd	b	def		abcdefgh	ab	abcd	ab	defg	a	abcd	c		
UQBL1		0.37	0.25	NA	NA	3.74	4.13	2.82	6.02	6.56 a	10.15	11.62	11.43	9.88	15.91	0.32	0.36	0.27	0.38 bcde	
		a	a			ab	abcd	ab	abcdef		abcdefg	ab	abcdefgh	ab	abcdefg	a	abcd	abc		
Janz		0.31	0.29	NA	NA	3.77	3.55	2.51	4.86	6.28 a	8.4	12.04	11.51	9.05	15.55	0.31	0.31	0.27	0.31 ef	
		a	a			ab	bcde	ab	ef		efgh	ab	abcdefgh	b	cdefg	a	cd	abc		
MACE		0.33	0.38	0.23	0.31	3.47	3.6	2.68	6.27	6.15 a	9.87	10.76	10.55	8.9 b	15.68	0.33	0.34	0.3	0.4 abcd	
		a	a	ab	ab	b	abcde	ab	abcde		abcdefgh	b	cdefghi		bcdefg	a	abcd	abc		

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MACE-148	0.4 a	0.19 a	0.37 a	0.23 ab	5.2 ab	4.36 abcd	4.29 a	7.86 a	9.49 a	12.23 a	13.67 ab	11.29 abcdefgh	10.35 ab	16.58 abcdef	0.37 a	0.39 abc	0.41 a	0.47 a
MACE-193	0.39 a	0.33 a	0.29 ab	0.23 ab	5.01 ab	4.07 abcd	2.68 ab	6.53 abcde	7.69 a	10.6 abcdef	12.97 ab	11.62 abcdefgh	10.31 ab	16.44 abcdef	0.38 a	0.35 abcd	0.26 abc	0.4 abcde
MACE-212	0.35 a	0.31 a	0.35 ab	0.24 ab	3.54 b	3.52 bcde	3.14 ab	5.11 def	6.68 a	8.62 cdefgh	10.92 ab	10.07 efghi	10.69 ab	15.52 cdefg	0.32 a	0.35 abcd	0.29 abc	0.33 def
MACE-219	0.38 a	0.3 a	0.25 ab	0.23 ab	4.17 ab	3.07 de	3.29 ab	4.17 f	7.46 a	7.23 h	12.2 ab	9.58 hi	10.96 ab	14.16 efg	0.34 a	0.32 bcd	0.3 abc	0.3 f
MACE-98	0.3 a	0.35 a	0.26 ab	0.37 ab	4.17 ab	4.02 abcd	2.96 ab	6.24 abcde	7.13 a	10.26 abcdefg	11.86 ab	11.13 abcdefgh	9.98 ab	16.72 abcdef	0.35 a	0.36 abcd	0.29 abc	0.37 bcdef
UQ114	0.35 a	0.35 a	0.23 ab	0.31 ab	4.03 ab	3.95 abcde	3.73 ab	5.83 bcdef	7.77 a	9.78 abcdefgh	12.06 ab	11.95 abcdefg	10.89 ab	15.03 defg	0.34 a	0.33 bcd	0.33 abc	0.39 bcde
Scout	0.31 a	0.24 a	0.36 ab	0.25 ab	3.68 ab	3.2 cde	2.83 ab	4.86 ef	6.51 a	8.06 fgh	12.31 ab	9.72 ghi	8.6 b	15.44 defg	0.3 a	0.33 bcd	0.32 abc	0.32 def
Seri	0.34 a	0.2 a	0.28 ab	0.22 ab	3.71 ab	3.34 cde	2.6 ab	5.17 def	6.31 a	8.54 defgh	11.15 ab	9.86 fghi	8.58 b	13.28 g	0.33 a	0.34 abcd	0.29 abc	0.39 bcde
SUNTOP	0.33 a	0.28 a	0.34 ab	0.23 ab	3.49 b	3.95 abcde	3.06 ab	6.37 abcde	6.55 a	10.32 abcdefg	11.39 ab	11.57 abcdefgh	9.5 ab	16.51 abcdef	0.3 a	0.34 abcd	0.32 abc	0.39 bcde
SUNTOP-2	0.38 a	0.32 a	0.22 b	0.31 ab	5.77 a	4.86 ab	2.88 ab	7.49 ab	8.65 a	12.35 a	13.76 a	13.21 a	9.13 b	18.72 a	0.42 a	0.37 abcd	0.31 abc	0.39 abcde
SUNTOP-205	0.36 a	0.25 a	0.31 ab	0.39 a	4.55 ab	4.34 abcd	3.82 ab	7.31 abc	8.37 a	11.65 ab	13.72 ab	12.71 abc	12.35 a	18.33 abc	0.34 a	0.34 abcd	0.31 abc	0.4 abcd
SUNTOP-294	0.38 a	0.19 a	0.26 ab	0.33 ab	3.94 ab	4.1 abcd	2.1 b	6.12 abcde	6.04 a	10.21 abcdefg	11.43 ab	10.91 abcdefghi	8.72 b	15.46 defg	0.35 a	0.38 abcd	0.23 c	0.4 abcde
SUNTOP-374	0.36 a	0.23 a	0.23 ab	0.35 ab	4.11 ab	3.33 cde	3.32 ab	5.57 bcdef	7.43 a	8.89 bcdefgh	12.53 ab	10.36 defghi	10.46 ab	15.22 defg	0.32 a	0.32 bcd	0.31 abc	0.37 bcdef
SUNTOP-439	NA	0.21 a	0.32 ab	0.33 ab	3.9 ab	3.31 cde	3.14 ab	5.75 bcdef	7.05 a	9.06 bcdefgh	11.59 ab	10.9 abcdefghi	9.52 ab	16.18 abcdef	0.33 a	0.3 d	0.31 abc	0.36 cdef
SUNTOP-447	0.35 a	0.4 a	0.24 ab	0.38 a	4.9 ab	4.52 abc	4.11 ab	6.9 abcd	9.01 a	11.42 abcd	13.46 ab	13.03 ab	10.59 ab	17.55 abcd	0.36 a	0.35 abcd	0.38 ab	0.39 abcde

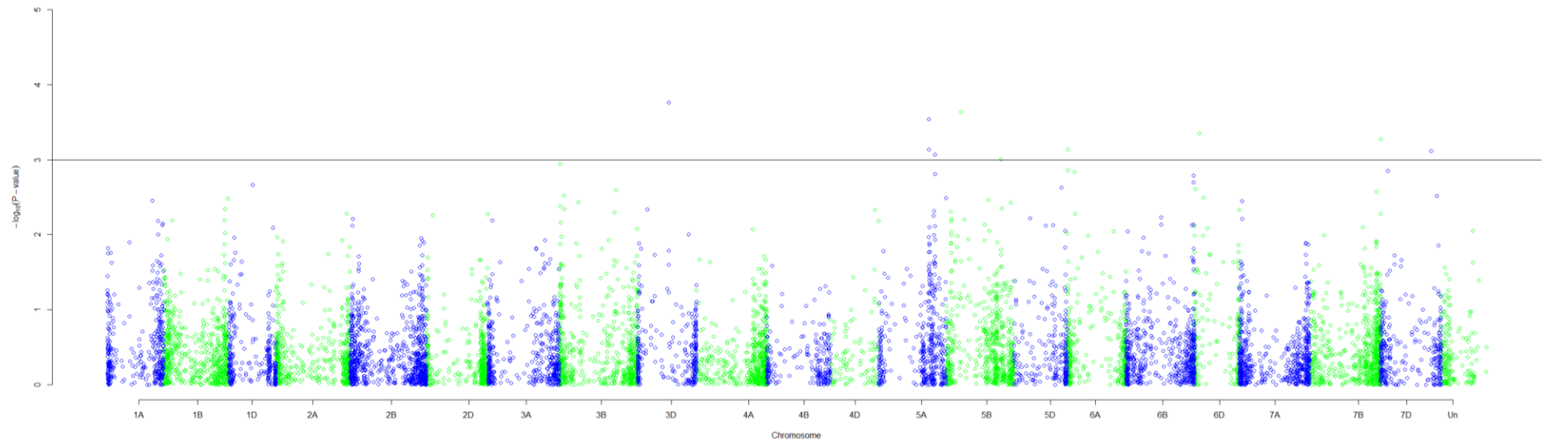
SUNTOP-65	0.34 a	0.28 a	0.22 b	0.31 ab	4.76 ab	3.83 abcde	3.85 ab	6.7 abcde	8.61 a	10.53 abcdef	13.19 ab	10.78 bcdefghi	10.72 ab	15.58 cdefg	0.36 a	0.36 abcd	0.35 abc	0.43 abc
Wallup	NA	0.19 a	0.24 ab	0.27 ab	3.91 ab	3.7 abcde	3.54 ab	5.27 def	7.45 a	8.97 bcdefgh	12.22 ab	11.09 bcdefgh	10.98 ab	15.08 defg	0.32 a	0.33 bcd	0.33 abc	0.35 cdef
Westonia	0.35 a	0.26 a	0.3 ab	0.31 ab	3.43 b	4.2 abcd	3.47 ab	6.15 abcde	6.89 a	10.34 abcdefg	11.06 ab	11.59 bcdefgh	10.31 ab	16.96 abcde	0.3 a	0.36 abcd	0.34 abc	0.36 bcdef
UQBL2	NA	0.21 a	0.23 ab	0.32 ab	4.34 ab	3.74 abcde	3.7 ab	5.13 def	8.04 a	8.87 bcdefgh	12.79 ab	10.42 cdefghi	10.67 ab	14.51 efg	0.34 a	0.36 abcd	0.35 abc	0.35 cdef
Wylie	0.37 a	0.25 a	0.22 ab	0.32 ab	3.96 ab	2.63 e	2.98 ab	4.94 ef	6.94 a	7.56 gh	12.32 ab	8.59 i	9.02 b	13.96 fg	0.32 a	0.31 cd	0.33 abc	0.35 cdef
Yitpi	0.28 a	0.4 a	0.34 ab	0.28 ab	3.83 ab	4.39 abcd	2.92 ab	4.82 ef	6.75 a	9.02 bcdefgh	12.69 ab	12.15 abcdef	11.08 ab	13.78 fg	0.3 a	0.36 abcd	0.25 bc	0.35 cdef
ZWB10-50	0.38 a	0.32 a	0.25 ab	0.35 ab	4.86 ab	4.19 abcd	3.39 ab	6.39 abcde	8.25 a	10.58 abcdef	11.65 ab	10.73 bcdefghi	10 ab	15.11 defg	0.42 a	0.39 ab	0.33 abc	0.42 abc

Supplementary Table S2: Mean PLA and leaf parameters for every core set genotype. Genotypes with same letters indicate no significant difference ($p < 0.05$) for the particular trait.

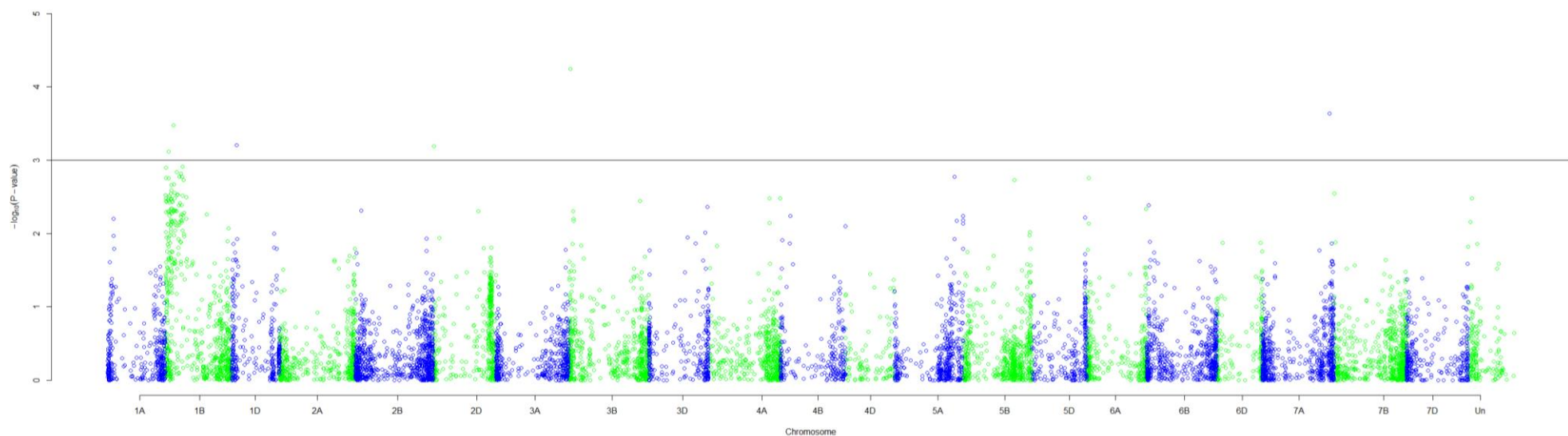
Genotype	Trait	PLA			Leaf Area		Leaf Length		Leaf Width	
		DAS	17	L1	L2	L1 & L2	L1	L2	L1	L2
				21	21	21	21	21	21	21
Dharwah-dry		8.24 b	17.77 a	3.15 ab	6.54 bcde	9.69 bcde	10.4 ab	17.37 abc	0.29 b	0.36 b
FAC10-16		11.5 ab	15.21 a	3.03 ab	7.53 abcde	10.55 abcde	9.55 ab	16.63 abc	0.32 ab	0.45 ab
Gladius		9.92 ab	14.25 a	4.72 a	10.57 ab	15.29 ab	9.78 ab	18.15 abc	0.48 a	0.58 a
Gregory		13.27 ab	14.63 a	3.24 ab	6.09 bcde	9.33 bcde	10.05 ab	15.9 bc	0.32 ab	0.38 ab
Halberd		18.97 ab	19.27 a	5:00 AM	9.95 ab	14.95 ab	10.35 ab	18.12 abc	0.48 a	0.55 ab
UQBL1		15.78 ab	15.53 a	2.66 ab	4.6 e	7.26 de	9.05 ab	12.5 c	0.3 ab	0.37 b
Janz		11 ab	11.66 a	2.6 ab	5.19 cde	7.8 cde	8.7 ab	13.57 bc	0.3 ab	0.38 ab
MACE		19.68 a	16.35 a	4.06 ab	8.33 abcde	12.39 abcde	10.43 ab	15.9 bc	0.38 ab	0.52 ab
MACE-148		12.74 ab	15.7 a	4.74 a	7.66 abcde	12.4 abcde	10.38 ab	16.63 abc	0.45 ab	0.45 ab
MACE-193		15.92 ab	14.69 a	3.96 ab	6.14 bcde	10.1 abcde	10.32 ab	16 abc	0.38 ab	0.38 ab
MACE-212		12.67 ab	12.35 a	5.13 a	6.35 bcde	11.47 abcde	11.22 a	14.83 bc	0.45 ab	0.43 ab
MACE-219		11.14 ab	13.84 a	2.72 ab	6.33 bcde	9.05 bcde	8.92 ab	14.22 bc	0.3 ab	0.45 ab
MACE-98		14.33 ab	14.53 a	3.22 ab	8.13 abcde	11.35 abcde	9.52 ab	16.96 abc	0.34 ab	0.48 ab
UQ114		13.36 ab	14.28 a	3.33 ab	6.05 bcde	9.38 bcde	10.4 ab	14.58 bc	0.32 ab	0.42 ab
Scout		15.78 ab	15.25 a	3 ab	7.52 abcde	10.52 abcde	8.58 ab	16.05 abc	0.35 ab	0.47 ab
Seri		12.22 ab	13.11 a	3.3 ab	6.57 bcde	9.87 abcde	8.62 ab	16 abc	0.37 ab	0.4 ab
SUNTOP		12.07 ab	13.61 a	3.67 ab	8 abcde	11.67 abcde	9.62 ab	17.87 abc	0.37 ab	0.45 ab
SUNTOP-2		18.61 ab	15.03 a	4.52 ab	9.39 abcd	13.91 abcd	11.32 a	18.43 ab	0.4 ab	0.5 ab
SUNTOP-205		17.67 ab	17.03 a	5.03 a	9.2 abcde	14.23 abcd	11.84 a	18.34 abc	0.42 ab	0.5 ab

SUNTOP-294	13.94 ab	16.41 a	4.2 ab	8.29 abcde	12.5 abcde	10.8 a	17.68 abc	0.38 ab	0.47 ab
SUNTOP-374	15.09 ab	15.92 a	2.9 ab	7.52 abcde	10.42 abcde	9.66 ab	16.96 abc	0.3 ab	0.44 ab
SUNTOP-439	10.56 ab	13.14 a	3.13 ab	6.57 bcde	9.7 bcde	9.32 ab	15.7 bc	0.33 ab	0.42 ab
SUNTOP-447	12.67 ab	16.02 a	4.29 ab	12.2 a	16.49 a	12.1 a	21.7 a	0.37 ab	0.57 ab
SUNTOP-65	13.56 ab	20.35 a	4.09 ab	8.14 abcde	12.22 abcde	10.38 ab	17.98 abc	0.4 ab	0.45 ab
Wallup	14.31 ab	14.35 a	3.83 ab	6.77 bcde	10.6 abcde	9.4 ab	16.1 abc	0.4 ab	0.42 ab
Westonia	17.24 ab	18.08 a	3.39 ab	6.95 bcde	10.34 abcde	10.22 ab	16.27 abc	0.33 ab	0.43 ab
UQBL2	15.56 ab	15.22 a	3.76 ab	8.09 abcde	11.85 abcde	9.72 ab	15.68 bc	0.38 ab	0.52 ab
Wylie	12.46 ab	13.6 a	1.98 b	4.93 de	6.92 e	6.75 b	13.2 bc	0.28 b	0.37 b
Yitpi	15.16 ab	13.2 a	4.27 ab	8.19 abcde	12.46 abcde	10.6 ab	16.98 abc	0.4 ab	0.48 ab
ZWB10-50	11.41 ab	12.78 a	4.71 a	9.63 abc	14.34 abc	11.23 a	18.48 ab	0.42 ab	0.52 ab

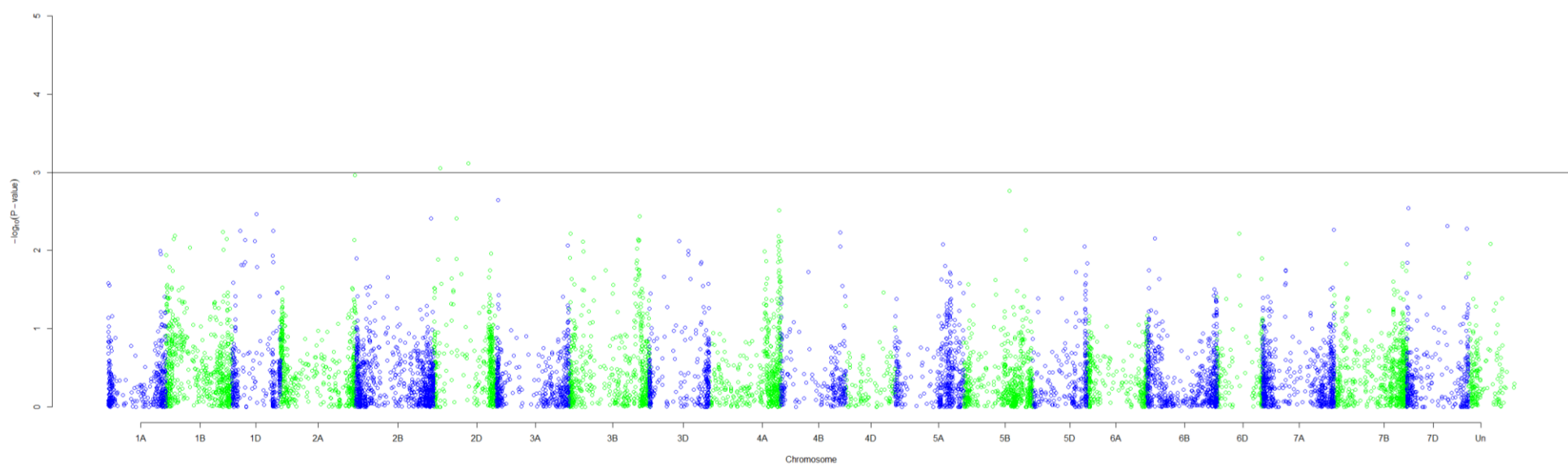
2 Supplementary Figure



Supplementary Figure 1: Manhattan plot for NDVI15 at 29DAS. The horizontal line at $\log_{10}(P) = 3$ indicates the chosen probability threshold to indicate a significant association with the trait.



Supplementary Figure 2: Manhattan plot for NDVI16 at 21DAS. The horizontal line at $\log_{10}(P) = 3$ indicates the chosen probability threshold to indicate a significant association with the trait.



Supplementary Figure 3: Manhattan plot for NDVI17 at 29DAS. The horizontal line at $\log_{10}(P) = 3$ indicates the chosen probability threshold to indicate a significant association with the trait.