



Figure S1 - Mean weekly values, in days after sowing, of the temperature (°C), relative humidity (%) and solar radiation (MJ m⁻².day⁻¹) throughout the growth period of the popcorn lines (April to August 2016). Male flowering began 67 days after sowing (June 24).

Table S1. Precipitation and irrigation (mm) applied, in days after sowing (DAS), to early and late popcorn genotypes under full irrigation (FI) and drought stress (DS).

DAS	Precipitation	DS - late	DS - early	FI - late	FI - early
7	-	13	13	11	12
14	26	9	8	9	8
21	7	8	9	10	11
28	7	12	10	11	6
35	-	4	6	4	6
42	1	13	13	14	13
49	18	2	1	3	3
56	20	-	-	4	4
63	-	-	-	10	10
70	15	-	-	9	8
77	4	-	-	7	7
84	-	-	-	14	14
91	-	-	-	13	12
98	-	-	-	13	13
105	24	-	-	8	10
112	4	-	-	-	-
119	7	-	-	-	-
Total	133	60	60	138	138

Table S2. Path analysis of the partitioning of genotypic correlations in components of direct and indirect effects obtained from first-order agricultural traits and morphoagricultural, physiological, and second-order root traits evaluated in popcorn lines under FI and DS.

Variables/Effect	100GW		EL		ED		NGR		PRO		
	DS	FI	DS	FI	DS	FI	DS	FI	DS	FI	
ASI	Direct	0.19	-0.37	-1.11	-0.81	0.16	-0.23	-0.35	-0.65	-0.84	-0.23
	Indirect via TL	-0.00	0.01	0.00	0.14	0.00	0.13	0.00	0.18	0.01	-0.03
	Indirect via NTB	-0.24	-0.17	0.27	0.09	0.10	-0.10	0.36	0.19	0.53	-0.37
	Indirect via PH	0.07	-0.07	0.17	0.09	-0.01	-0.17	0.07	0.05	0.00	-0.09
	Indirect via SDM	0.00	-0.05	0.06	-0.04	-0.02	0.01	-0.00	-0.07	0.04	-0.06
	Indirect via SPAD	0.02	0.19	0.23	0.07	0.07	0.24	0.20	0.25	0.08	0.24
	Indirect via CTD	-0.00	0.33	0.00	-0.20	0.00	0.46	0.01	-0.04	0.02	0.02
	Indirect via RA	-0.08	-0.09	0.09	0.29	-0.03	-0.02	-0.18	0.20	0.54	0.25
	Indirect via CRV	-0.03	-0.00	0.17	0.00	-0.10	-0.00	0.09	-0.00	0.26	-0.00
	Indirect via TRV	0.08	0.04	-0.27	0.05	0.00	-0.04	-0.20	-0.01	-0.39	-0.11
	Total effects	0.01	-0.18	-0.38	-0.29	0.17	0.30	0.00	0.10	0.26	-0.39
TL	Direct	-0.83	0.07	0.44	0.87	0.35	0.86	0.55	1.17	1.24	-0.20
	Indirect via ASI	0.00	-0.05	-0.00	-0.13	0.00	-0.03	-0.00	-0.10	-0.00	-0.03
	Indirect via NTB	0.17	0.16	-0.19	-0.09	-0.07	0.10	-0.26	-0.19	-0.37	0.36
	Indirect via PH	0.39	-0.23	0.89	0.29	-0.09	-0.53	0.37	0.16	0.01	-0.29
	Indirect via SDM	-0.04	0.02	-0.47	0.02	0.20	-0.00	0.00	0.03	-0.30	0.03
	Indirect via SPAD	-0.00	-0.13	-0.02	-0.05	-0.00	-0.17	-0.01	-0.17	-0.00	-0.17
	Indirect via CTD	-0.01	0.19	0.03	-0.11	0.02	0.26	0.09	-0.02	0.15	0.01
	Indirect via RA	0.01	0.02	-0.01	-0.07	0.00	0.00	0.02	-0.05	-0.07	-0.06
	Indirect via CRV	-0.05	-0.26	0.25	0.02	-0.15	-0.27	0.14	-0.02	0.39	-0.16
	Indirect via TRV	0.09	-0.06	-0.31	-0.08	0.00	0.05	-0.22	0.02	-0.44	0.15
Total effects	-0.02	-0.27	0.60 [#]	0.65 [#]	0.26	0.27	0.67 [#]	0.79 [#]	0.60 [#]	-0.37	

	Direct	0.51	0.48	-0.57	-0.27	-0.21	0.29	-0.77	-0.55	-1.12	1.04
	Indirect via ASI	-0.09	0.13	0.53	0.29	-0.07	0.08	0.16	0.23	0.40	0.08
	Indirect via TL	-0.28	0.02	0.14	0.30	0.12	0.30	0.18	0.39	0.42	-0.07
	Indirect via PH	0.33	-0.25	0.76	0.32	-0.08	-0.58	0.31	0.17	0.01	-0.32
	Indirect via SDM	-0.06	0.06	-0.64	0.05	0.28	-0.01	0.00	0.08	-0.41	0.08
NTB	Indirect via SPAD	0.00	-0.10	0.03	-0.04	0.01	-0.13	0.03	-0.13	0.01	-0.13
	Indirect via CTD	-0.00	0.21	0.01	-0.12	0.00	0.29	0.02	-0.02	0.04	0.01
	Indirect via RA	0.03	0.02	-0.03	-0.07	0.01	0.00	0.06	-0.05	-0.19	-0.06
	Indirect via CRV	-0.01	-0.25	0.05	0.02	-0.03	-0.26	0.03	-0.01	0.08	-0.15
	Indirect via TRV	-0.03	-0.01	0.11	-0.01	-0.00	0.00	0.08	0.00	0.16	0.02
	Total effects	0.39	0.31	0.41	0.45*	0.01	-0.00	0.14	0.10	-0.58#	0.50*
	Direct	0.74	-0.55	1.67	0.69	-0.18	-1.25	0.69	0.37	0.03	-0.68
	Indirect via ASI	0.02	-0.05	-0.11	-0.11	0.01	-0.03	-0.03	-0.09	-0.08	-0.03
	Indirect via TL	-0.44	0.03	0.23	0.37	0.19	0.36	0.29	0.48	0.66	-0.08
	Indirect via NTB	0.23	0.22	-0.26	-0.12	-0.09	0.13	-0.35	-0.25	-0.50	0.48
	Indirect via SDM	-0.15	-0.21	-1.47	-0.19	0.64	0.05	0.00	-0.31	-0.94	-0.29
PH	Indirect via SPAD	0.03	0.29	0.31	0.11	0.10	0.36	0.27	0.37	0.10	0.36
	Indirect via CTD	0.01	0.47	-0.04	-0.29	-0.03	0.66	-0.11	-0.06	-0.20	0.03
	Indirect via RA	-0.10	-0.04	0.11	0.15	-0.03	-0.01	-0.24	0.10	0.69	0.12
	Indirect via CRV	-0.03	-0.13	0.19	0.01	-0.12	-0.14	0.10	-0.01	0.29	-0.08
	Indirect via TRV	0.05	-0.03	-0.20	-0.04	0.00	0.03	-0.14	0.01	-0.29	0.08
	Total effects	0.35	-0.01	0.42	0.57#	0.48*	0.17	0.48*	0.61#	-0.23	-0.08

SDM	Direct	-0.18	-0.54	-1.78	-0.49	0.78	0.13	0.00	-0.78	-1.15	-0.74
	Indirect via ASI	-0.00	-0.03	0.03	-0.07	-0.00	-0.02	0.01	-0.06	0.02	-0.02
	Indirect via TL	-0.22	-0.00	0.11	-0.04	0.09	-0.03	0.14	-0.05	0.32	0.00
	Indirect via NTB	0.18	-0.05	-0.20	0.03	-0.07	-0.03	-0.27	0.06	-0.40	-0.11
	Indirect via PH	0.61	-0.21	1.38	0.27	-0.14	-0.49	0.57	0.15	0.02	-0.27
	Indirect via SPAD	0.05	0.69	0.50	0.27	0.16	0.88	0.43	0.88	0.17	0.88
	Indirect via CTD	0.04	-0.05	-0.11	0.03	-0.08	-0.07	-0.27	0.00	-0.47	-0.00
	Indirect via RA	-0.12	-0.06	0.13	0.21	-0.04	-0.01	-0.27	0.14	0.79	0.18
	Indirect via CRV	-0.03	0.09	0.16	-0.00	-0.10	0.10	0.08	0.00	0.24	0.06
	Indirect via TRV	0.00	-0.03	-0.01	-0.04	0.00	0.03	-0.01	0.01	-0.02	0.08
	Total effects	0.32	-0.22	0.21	0.16	0.58 [#]	0.45 [*]	0.42	0.37	-0.44 [*]	0.06
SPAD	Direct	0.08	0.74	0.81	0.29	0.27	0.94	0.70	0.94	0.28	0.94
	Indirect via ASI	0.05	-0.09	-0.31	-0.21	0.04	-0.06	-0.10	-0.17	-0.24	-0.06
	Indirect via TL	0.02	-0.01	-0.01	-0.16	-0.00	-0.16	-0.01	-0.21	-0.03	0.03
	Indirect via NTB	0.02	-0.06	-0.02	0.03	-0.01	-0.04	-0.03	0.07	-0.05	-0.14
	Indirect via PH	0.28	-0.21	0.63	0.27	-0.06	-0.49	0.26	0.14	0.01	-0.26
	Indirect via SDM	-0.11	-0.51	-1.10	-0.46	0.48	0.12	0.00	-0.73	-0.70	-0.69
	Indirect via CTD	0.02	0.16	-0.05	-0.10	-0.04	0.22	-0.13	-0.02	-0.23	0.01
	Indirect via RA	-0.11	-0.08	0.12	0.28	-0.04	-0.02	-0.25	0.19	0.73	0.23
	Indirect via CRV	-0.03	-0.09	0.19	0.00	-0.11	-0.10	0.10	-0.00	0.28	-0.05
	Indirect via TRV	0.04	0.07	-0.15	0.09	0.00	-0.06	-0.11	-0.03	-0.21	-0.18
	Total effects	0.27	-0.11	0.10	0.04	0.51 [*]	0.34	0.44 [*]	0.18	-0.16	-0.18

CTD	Direct	0.05	0.70	-0.15	-0.43	-0.12	0.98	-0.39	-0.09	-0.67	0.05
	Indirect via ASI	-0.00	-0.17	0.03	-0.38	-0.00	-0.11	0.01	-0.30	0.02	-0.13
	Indirect via TL	0.19	0.02	-0.10	0.23	-0.08	0.23	-0.12	0.31	-0.29	-0.05
	Indirect via NTB	-0.03	0.14	0.03	-0.08	0.01	0.08	0.05	-0.01	0.07	0.31
	Indirect via PH	0.22	-0.37	0.49	0.47	-0.05	-0.85	0.20	0.25	0.00	-0.46
	Indirect via SDM	-0.13	0.04	-1.24	0.03	0.54	-0.00	0.00	0.05	-0.80	0.05
	Indirect via SPAD	0.03	0.17	0.28	0.06	0.09	0.21	0.24	0.21	0.10	0.21
	Indirect via RA	-0.11	-0.07	0.11	0.25	-0.03	-0.02	-0.24	0.17	0.71	0.21
	Indirect via CRV	-0.02	-0.07	0.12	0.00	-0.07	-0.07	0.07	-0.00	0.19	-0.04
	Indirect via TRV	-0.12	-0.01	0.42	-0.01	-0.00	0.01	0.30	0.00	0.59	0.03
	Total effects	0.07	0.36	0.01	0.15	0.26	0.46*	0.12	0.44*	-0.05	0.21
RA	Direct	0.20	0.14	-0.21	-0.47	0.07	0.04	0.44	-0.32	-1.28	-0.40
	Indirect via ASI	-0.08	0.23	0.47	0.51	-0.06	0.15	0.15	0.41	0.35	0.14
	Indirect via TL	-0.04	0.01	0.02	0.14	0.02	0.14	0.03	0.19	0.07	-0.03
	Indirect via NTB	0.07	0.08	-0.08	-0.04	-0.03	0.04	-0.11	-0.09	-0.16	0.17
	Indirect via PH	-0.40	0.17	-0.90	-0.22	0.09	0.40	-0.37	-0.12	-0.01	0.21
	Indirect via SDM	0.11	0.25	1.10	0.22	-0.48	-0.05	-0.00	0.35	0.71	0.33
	Indirect via SPAD	-0.05	-0.44	-0.46	-0.17	-0.15	-0.55	-0.40	-0.56	-0.16	-0.55
	Indirect via CTD	-0.03	-0.38	0.08	0.23	0.06	-0.53	0.21	0.05	0.37	-0.02
	Indirect via CRV	0.02	0.12	-0.11	-0.01	0.06	0.13	-0.06	0.01	-0.16	0.08
	Indirect via TRV	-0.07	-0.04	0.26	-0.05	-0.00	0.03	0.19	0.01	0.37	0.10
	Total effects	-0.27	0.16	0.17	0.14	-0.42	-0.19	0.07	-0.05	0.08	0.03

CRV	Direct	0.21	0.73	-1.04	-0.06	0.64	0.77	-0.56	0.05	-1.58	0.45
	Indirect via ASI	-0.03	0.00	0.18	0.00	-0.02	0.00	0.05	0.00	0.14	0.00
	Indirect via TL	0.20	-0.02	-0.10	-0.31	-0.08	-0.30	-0.13	-0.40	-0.30	0.07
	Indirect via NTB	-0.02	-0.16	0.03	0.09	0.01	-0.10	0.04	0.19	0.06	-0.36
	Indirect via PH	-0.13	0.10	-0.31	-0.12	0.03	0.23	-0.13	-0.07	-0.00	0.12
	Indirect via SDM	0.02	-0.07	0.27	-0.06	-0.12	0.01	-0.00	-0.10	0.17	-0.09
	Indirect via SPAD	-0.01	-0.09	-0.14	-0.03	-0.05	-0.12	-0.12	-0.12	-0.05	-0.12
	Indirect via CTD	-0.00	-0.06	0.01	0.04	0.01	-0.09	0.04	0.00	0.08	-0.00
	Indirect via RA	0.02	0.02	-0.02	-0.08	0.00	0.00	0.04	-0.05	-0.13	-0.07
	Indirect via TRV	-0.19	-0.08	0.67	-0.10	-0.00	0.07	0.48	0.03	0.95	0.19
	Total effects	0.05	0.35	-0.45*	-0.65 [#]	0.41	0.47*	-0.28	-0.46*	-0.67 [#]	0.20
TRV	Direct	-0.30	-0.19	1.07	-0.24	-0.00	0.16	0.77	0.07	1.52	0.46
	Indirect via ASI	-0.05	0.08	0.28	0.19	-0.04	0.05	0.09	0.15	0.21	0.05
	Indirect via TL	0.24	0.02	-0.12	0.29	-0.10	0.29	-0.16	0.38	-0.36	-0.06
	Indirect via NTB	0.05	0.02	-0.06	-0.01	-0.02	0.01	-0.08	-0.03	-0.12	0.05
	Indirect via PH	-0.14	-0.09	-0.31	0.12	0.03	-0.22	-0.13	0.06	-0.00	-0.12
	Indirect via SDM	0.00	-0.10	0.02	-0.09	-0.01	0.02	-0.00	-0.14	0.01	-0.13
	Indirect via SPAD	-0.01	-0.29	-0.11	-0.11	-0.03	-0.37	-0.10	-0.37	-0.04	-0.37
	Indirect via CTD	0.02	0.05	-0.06	-0.03	-0.04	0.07	-0.15	-0.00	-0.26	0.00
	Indirect via RA	0.04	0.03	-0.05	-0.10	0.01	0.00	0.11	-0.07	-0.31	-0.09
	Indirect via CRV	0.13	0.31	-0.65	-0.02	0.40	0.33	-0.35	0.02	-0.99	0.19
Total effects	-0.00	-0.14	-0.00	-0.02	0.17	0.38	-0.01	0.07	-0.35	-0.01	
R ²	0.63 ^{ns}	0.81*	1.29 [#]	0.92 [#]	2.09 [#]	0.60 ^{ns}	1.03 [#]	0.85 [#]	0.83 [#]	1.21 [#]	
Residual effect	0.60	0.43	0.00	0.26	0.00	0.62	0.00	0.38	0.40	0.00	

[#], * :significance at 1% and 5% probability by the t test, respectively. R²: [#], * and ^{ns} :significance at 1%, 5% and not significant probability, by the F test. FI: full irrigation; DS: drought stress; 100GW: 100-grain weight; EL: ear length; ED: ear diameter; NGR: number of grains per row; and PRO: prolificacy; ASI: anthesis to silking interval; TL: tassel length; NTB: tassel branch number; PH: plant height; SDM: dry matter; SPAD: green index; CTD: canopy temperature depression; RA: root angle; CRV: crown root volume; and TRV: tap root volume.

Table S3. Path analysis of the partitioning of genotypic correlations in components of direct and indirect effects obtained between the main trait and first-order agricultural traits and morphoagricultural, physiological, and second-order root traits evaluated in popcorn lines under FI and DS.

Variables/Effect	100GW		EL		ED		NGR		PRO		Residual effect		Total		
	DS	FI	DS	FI	DS	FI	DS	FI	DS	FI	DS	FI	DS	FI	
ASI	Direct EVP	0.11	-0.33	1.30	-0.02	-0.17	0.00	-0.95	-0.69	0.28	0.17	-1.58	0.05	-1.00	-0.83
	Indirect via TL	0.04	-0.07	-0.20	0.00	0.02	0.00	0.19	0.06	0.00	0.07	0.14	-0.09	0.19	-0.03
	Indirect via NTB	0.00	-0.04	-0.07	0.00	0.03	0.00	0.00	-0.08	-0.01	0.05	0.08	0.05	0.03	-0.03
	Indirect via PH	0.01	0.17	-0.27	0.00	-0.08	0.00	0.54	0.27	-0.03	-0.18	0.11	0.05	0.28	0.31
	Indirect via SDM	0.00	0.29	-0.01	0.00	0.00	0.00	0.03	-0.05	-0.01	-0.02	0.04	0.29	0.05	0.50
	Indirect via SPAD	-0.05	-0.08	-0.11	0.01	0.03	0.00	-0.50	0.22	-0.18	-0.18	1.00	-0.20	0.20	-0.24
	Indirect via CTD	-0.02	0.04	-0.20	0.00	0.11	0.00	0.25	-0.02	-0.09	0.08	0.22	-0.13	0.27	-0.03
	Indirect via RA	0.05	0.00	0.32	0.00	0.00	0.00	-0.53	0.00	0.13	0.00	-0.55	0.00	-0.58	0.00
	Indirect via CRV	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.20	0.00	0.02	0.00	-0.09	0.00	0.14
	Indirect via TRV	-0.14	-0.15	-0.32	0.00	-0.11	0.00	0.97	0.21	-0.17	0.26	0.43	0.00	0.66	0.33
Total effects	0.01	-0.16	0.44*	-0.01	-0.18	0.00	0.01	0.11	-0.08	0.28	-0.10	-0.09	0.10	0.12	
TL	Direct EVP	-0.49	0.06	-0.52	0.02	-0.37	0.00	1.47	1.22	-0.41	0.14	0.49	-0.59	0.18	0.86
	Indirect via ASI	0.23	-0.21	-1.04	0.01	0.10	0.00	0.99	0.17	-0.01	0.21	0.72	-0.27	0.99	-0.09
	Indirect via NTB	-0.03	0.02	0.55	0.00	-0.21	0.00	0.01	0.04	0.10	-0.02	-0.64	-0.02	-0.22	0.01
	Indirect via PH	0.00	-0.12	0.03	0.00	0.01	0.00	-0.05	-0.19	0.00	0.12	-0.01	-0.03	-0.03	-0.22
	Indirect via SDM	-0.01	0.17	-0.04	0.00	-0.03	0.00	0.24	-0.03	-0.05	-0.01	0.30	0.17	0.41	0.29
	Indirect via SPAD	0.01	0.02	0.01	0.00	0.00	0.00	0.07	-0.06	0.02	0.05	-0.14	0.05	-0.03	0.06
	Indirect via CTD	-0.03	-0.06	-0.30	0.00	0.16	0.00	0.37	0.03	-0.13	-0.11	0.32	0.19	0.40	0.05
	Indirect via RA	0.05	-0.23	0.37	0.00	0.00	0.00	-0.60	-0.02	0.14	0.11	-0.62	0.18	-0.66	0.04
	Indirect via CRV	0.10	0.15	0.23	0.00	0.08	0.00	-0.69	-0.20	0.12	-0.25	-0.30	0.00	-0.47	-0.32
	Indirect via TRV	0.00	-0.05	0.01	0.00	0.00	0.00	-0.01	-0.11	0.00	0.03	-0.01	0.01	-0.01	-0.13
Total effects	-0.16	-0.24	-0.71 [#]	0.01	-0.28	0.00	1.80 [#]	0.85 [#]	-0.20	0.26	0.12	-0.33	0.57 [#]	0.56 [#]	

	Direct EVP	0.30	0.43	0.67	-0.01	0.22	0.00	-2.05	-0.59	0.37	-0.74	-0.90	0.00	-1.39	-0.91
	Indirect via ASI	0.20	-0.23	-0.89	0.01	0.08	0.00	0.84	0.19	0.00	0.23	0.61	-0.30	0.84	-0.10
	Indirect via TL	-0.04	0.05	0.75	0.00	-0.29	0.00	0.01	0.09	0.14	-0.06	-0.87	-0.05	-0.30	0.04
	Indirect via PH	0.00	-0.09	-0.05	0.00	-0.01	0.00	0.09	-0.14	0.00	0.09	0.02	-0.03	0.05	-0.17
	Indirect via SDM	0.00	0.18	-0.01	0.00	-0.01	0.00	0.07	-0.03	-0.01	-0.01	0.08	0.18	0.11	0.32
NTB	Indirect via SPAD	0.02	0.02	0.04	0.00	-0.01	0.00	0.18	-0.06	0.06	0.05	-0.36	0.05	-0.07	0.06
	Indirect via CTD	-0.01	-0.01	-0.07	0.00	0.04	0.00	0.08	0.00	-0.03	-0.02	0.07	0.03	0.09	0.01
	Indirect via RA	-0.02	-0.22	-0.13	0.00	0.00	0.00	0.22	-0.02	-0.05	0.11	0.23	0.17	0.24	0.04
	Indirect via CRV	-0.16	0.02	-0.17	0.01	-0.12	0.00	0.49	0.42	-0.14	0.05	0.17	-0.20	0.06	0.30
	Indirect via TRV	-0.05	0.12	-0.62	0.01	0.08	0.00	0.45	0.25	-0.13	-0.06	0.75	-0.02	0.48	0.30
	Total effects	0.23	0.27	-0.48*	0.01	-0.02	0.00	0.39	0.11	0.19	-0.35	-0.19	-0.17	0.11	-0.12
	Direct EVP	0.43	-0.48	-1.95	0.02	0.19	0.01	1.85	0.40	-0.01	0.48	1.35	-0.65	1.86	-0.22
	Indirect via ASI	-0.09	-0.19	1.72	0.00	-0.67	0.00	0.02	-0.33	0.31	0.21	-1.99	0.19	-0.69	-0.13
	Indirect via TL	0.02	0.26	-0.36	0.00	-0.11	0.00	0.72	0.40	-0.04	-0.26	0.15	0.07	0.38	0.46
	Indirect via NTB	0.01	0.42	0.05	-0.01	0.04	0.00	-0.31	-0.07	0.07	-0.02	-0.38	0.41	-0.52	0.72
	Indirect via SDM	-0.06	-0.04	-0.13	0.00	0.04	0.00	-0.64	0.11	-0.23	-0.09	1.27	-0.10	0.25	-0.12
PH	Indirect via SPAD	-0.02	-0.03	-0.23	0.00	0.12	0.00	0.28	0.01	-0.10	-0.06	0.25	0.10	0.30	0.03
	Indirect via CTD	0.03	-0.12	0.24	0.00	0.00	0.00	-0.39	-0.01	0.09	0.06	-0.40	0.09	-0.43	0.02
	Indirect via RA	-0.26	0.03	-0.27	0.01	-0.20	0.00	0.78	0.52	-0.22	0.06	0.26	-0.25	0.10	0.37
	Indirect via CRV	0.14	0.20	0.31	0.00	0.10	0.00	-0.93	-0.28	0.17	-0.34	-0.41	0.00	-0.63	-0.43
	Indirect via TRV	0.01	-0.05	0.14	0.00	-0.02	0.00	-0.10	-0.10	0.03	0.02	-0.16	0.01	-0.10	-0.11
	Total effects	0.21	-0.01	-0.50*	0.01	-0.50*	0.00	1.29#	0.66#	0.08	0.06	-0.06	-0.13	0.51*	0.59#

SDM	Direct EVP	-0.11	-0.48	2.09	-0.01	-0.81	0.00	0.03	-0.83	0.38	0.52	-2.41	0.48	-0.84	-0.32
	Indirect via ASI	0.36	-0.19	-1.61	0.01	0.15	0.00	1.53	0.16	-0.01	0.19	1.12	-0.26	1.53	-0.09
	Indirect via TL	0.03	0.61	-0.59	0.01	-0.17	0.00	1.16	0.94	-0.06	-0.62	0.24	0.17	0.61	1.10
	Indirect via NTB	0.02	-0.05	0.13	0.00	0.09	0.00	-0.73	0.01	0.15	0.00	-0.90	-0.05	-1.23	-0.08
	Indirect via PH	-0.07	-0.06	-0.15	0.00	0.05	0.00	-0.73	0.16	-0.26	-0.13	1.47	-0.15	0.29	-0.17
	Indirect via SPAD	-0.02	-0.03	-0.19	0.00	0.10	0.00	0.24	0.02	-0.08	-0.06	0.20	0.10	0.25	0.03
	Indirect via CTD	0.00	0.08	0.02	0.00	0.00	0.00	-0.03	0.01	0.01	-0.04	-0.03	-0.07	-0.04	-0.02
	Indirect via RA	-0.13	0.00	-0.14	0.00	-0.10	0.00	0.39	-0.06	-0.11	-0.01	0.13	0.03	0.05	-0.04
	Indirect via CRV	0.11	-0.05	0.24	0.00	0.08	0.00	-0.74	0.07	0.13	0.08	-0.32	0.00	-0.50	0.10
	Indirect via TRV	0.00	-0.03	-0.05	0.00	0.01	0.00	0.03	-0.06	-0.01	0.02	0.06	0.00	0.03	-0.08
	Total effects	0.19	-0.19	-0.25	0.00	-0.60 [#]	0.00	1.14 [#]	0.41	0.14	-0.04	-0.45	0.27	0.17	0.44 [*]
SPAD	Direct EVP	0.05	0.65	-0.95	0.01	-0.28	0.00	1.88	1.01	-0.09	-0.66	0.40	0.18	1.00	1.18
	Indirect via ASI	0.16	-0.19	-0.75	0.01	0.07	0.00	0.71	0.16	0.00	0.19	0.52	-0.25	0.71	-0.09
	Indirect via TL	-0.07	-0.45	1.28	-0.01	-0.50	0.00	0.02	-0.78	0.23	0.49	-1.49	0.45	-0.52	-0.30
	Indirect via NTB	0.01	0.14	0.06	0.00	0.04	0.00	-0.37	-0.02	0.08	-0.01	-0.45	0.14	-0.62	0.25
	Indirect via PH	-0.07	-0.07	-0.14	0.01	0.04	0.00	-0.68	0.20	-0.24	-0.17	1.36	-0.19	0.27	-0.22
	Indirect via SDM	-0.02	0.07	-0.22	0.00	0.12	0.00	0.27	-0.03	-0.09	0.13	0.24	-0.22	0.29	-0.06
	Indirect via CTD	0.03	-0.08	0.18	0.00	0.00	0.00	-0.30	-0.01	0.07	0.04	-0.30	0.06	-0.33	0.02
	Indirect via RA	0.01	-0.01	0.01	0.00	0.01	0.00	-0.04	-0.23	0.01	-0.03	-0.01	0.11	0.00	-0.16
	Indirect via CRV	0.01	-0.06	0.03	0.00	0.01	0.00	-0.10	0.08	0.02	0.10	-0.04	0.00	-0.07	0.13
	Indirect via TRV	0.03	-0.09	0.37	0.00	-0.05	0.00	-0.27	-0.18	0.08	0.04	-0.45	0.01	-0.29	-0.22
Total effects	0.16	-0.10	-0.12	0.00	-0.53 [*]	0.00	1.13 [#]	0.20	0.05	0.13	-0.24	0.29	0.45 [*]	0.53 [*]	

CTD	Direct EVP	0.03	0.61	0.18	-0.01	0.13	-0.01	-1.04	-0.11	0.22	-0.04	-1.29	0.61	-1.76	1.06
	Indirect via ASI	0.13	-0.33	-0.58	0.01	0.06	0.00	0.55	0.27	0.00	0.33	0.40	-0.44	0.55	-0.15
	Indirect via TL	-0.08	0.04	1.46	0.00	-0.56	0.00	0.02	0.06	0.26	-0.04	-1.68	-0.04	-0.59	0.02
	Indirect via NTB	0.02	0.15	-0.33	0.00	-0.10	0.00	0.66	0.23	-0.03	-0.15	0.14	0.04	0.35	0.27
	Indirect via PH	-0.06	-0.07	-0.14	0.01	0.04	0.00	-0.66	0.19	-0.23	-0.15	1.31	-0.18	0.26	-0.21
	Indirect via SDM	-0.02	-0.01	-0.15	0.00	0.08	0.00	0.19	0.01	-0.06	-0.02	0.16	0.04	0.20	0.01
	Indirect via SPAD	-0.07	-0.06	-0.49	0.00	0.00	0.00	0.81	-0.01	-0.20	0.03	0.83	0.05	0.89	0.01
	Indirect via RA	0.11	0.02	0.12	0.01	0.09	0.00	-0.34	0.33	0.09	0.04	-0.11	-0.16	-0.04	0.23
	Indirect via CRV	-0.02	0.13	-0.04	0.00	-0.01	0.00	0.13	-0.18	-0.02	-0.22	0.06	0.00	0.09	-0.27
	Indirect via TRV	0.00	-0.16	-0.04	-0.01	0.01	0.00	0.03	-0.33	-0.01	0.08	0.05	0.02	0.03	-0.39
	Total effects	0.04	0.32	-0.02	0.00	-0.28	0.00	0.34	0.48*	0.02	-0.15	-0.14	-0.05	-0.02	0.60#
RA	Direct EVP	0.12	0.13	0.25	-0.01	-0.07	0.00	1.18	-0.34	0.42	0.28	-2.36	0.32	-0.47	0.38
	Indirect via ASI	-0.23	0.15	1.05	0.00	-0.10	0.00	-1.00	-0.13	0.01	-0.15	-0.73	0.21	-1.00	0.07
	Indirect via TL	0.07	0.22	-1.29	0.01	0.50	0.00	-0.02	0.38	-0.23	-0.24	1.50	-0.22	0.52	0.14
	Indirect via NTB	-0.03	-0.39	0.55	0.00	0.16	0.00	-1.08	-0.60	0.05	0.39	-0.23	-0.11	-0.57	-0.70
	Indirect via PH	-0.02	-0.33	-0.10	0.01	-0.07	0.00	0.58	0.06	-0.12	0.02	0.71	-0.33	0.98	-0.58
	Indirect via SDM	0.01	-0.04	0.13	0.00	-0.07	0.00	-0.16	0.02	0.06	-0.07	-0.14	0.12	-0.17	0.03
	Indirect via SPAD	-0.04	0.11	-0.31	0.00	0.00	0.00	0.51	0.01	-0.12	-0.06	0.52	-0.09	0.56	-0.02
	Indirect via CTD	-0.03	0.01	-0.03	0.00	-0.02	0.00	0.09	0.21	-0.02	0.02	0.03	-0.10	0.01	0.14
	Indirect via CRV	0.05	0.07	0.10	0.00	0.03	0.00	-0.31	-0.10	0.06	-0.12	-0.14	0.00	-0.21	-0.15
	Indirect via TRV	-0.05	0.21	-0.55	0.01	0.07	0.00	0.40	0.44	-0.12	-0.10	0.67	-0.03	0.42	0.52
	Total effects	-0.16	0.14	-0.21	0.00	0.43	0.00	0.19	-0.05	-0.03	-0.03	-0.17	-0.22	0.06	-0.16

CRV	Direct EVP	-0.18	0.64	-1.25	0.00	0.01	0.00	2.06	0.06	-0.50	-0.32	2.11	-0.50	2.25	-0.12
	Indirect via ASI	-0.08	0.09	0.37	0.00	-0.04	0.00	-0.35	-0.08	0.00	-0.09	-0.26	0.12	-0.35	0.04
	Indirect via TL	0.00	-0.06	-0.03	0.00	0.01	0.00	0.00	-0.11	-0.01	0.07	0.04	0.06	0.01	-0.04
	Indirect via NTB	-0.01	-0.08	0.14	0.00	0.04	0.00	-0.27	-0.13	0.01	0.09	-0.06	-0.02	-0.14	-0.15
	Indirect via PH	0.01	-0.06	0.07	0.00	0.05	0.00	-0.41	0.01	0.09	0.00	-0.51	-0.06	-0.69	-0.11
	Indirect via SDM	0.03	0.02	0.06	0.00	-0.02	0.00	0.29	-0.06	0.10	0.05	-0.58	0.06	-0.12	0.07
	Indirect via SPAD	0.08	-0.07	0.77	0.00	-0.42	0.00	-0.94	0.04	0.32	-0.14	-0.82	0.24	-1.01	0.06
	Indirect via CTD	0.14	-0.02	0.15	-0.01	0.11	0.00	-0.43	-0.43	0.12	-0.05	-0.14	0.21	-0.05	-0.30
	Indirect via RA	0.03	-0.15	0.07	0.00	0.02	0.00	-0.22	0.20	0.04	0.25	-0.10	0.00	-0.15	0.31
	Indirect via TRV	-0.03	0.00	-0.34	0.00	0.04	0.00	0.25	0.00	-0.07	0.00	0.41	0.00	0.26	0.01
Total effects	0.00	0.31	0.01	-0.01	-0.18	0.00	-0.03	-0.49*	0.12	-0.14	0.09	0.11	0.00	-0.24	
TRV	Direct EVP	0.12	-0.17	1.22	-0.01	-0.66	0.00	-1.51	0.08	0.52	-0.32	-1.31	0.56	-1.62	0.14
	Indirect via ASI	-0.08	-0.09	0.37	0.00	-0.03	0.00	-0.35	0.07	0.00	0.09	-0.25	-0.12	-0.35	-0.04
	Indirect via TL	0.02	-0.09	-0.33	0.00	0.13	0.00	0.00	-0.16	-0.06	0.10	0.38	0.09	0.13	-0.06
	Indirect via NTB	-0.01	-0.26	0.17	0.00	0.05	0.00	-0.34	-0.40	0.02	0.26	-0.07	-0.07	-0.18	-0.47
	Indirect via PH	0.00	0.05	-0.02	0.00	-0.02	0.00	0.13	-0.01	-0.03	0.00	0.16	0.05	0.22	0.08
	Indirect via SDM	0.01	0.03	0.03	0.00	-0.01	0.00	0.13	-0.08	0.04	0.06	-0.25	0.07	-0.05	0.08
	Indirect via SPAD	-0.11	0.28	-0.78	0.00	0.01	0.00	1.29	0.03	-0.31	-0.14	1.32	-0.21	1.41	-0.05
	Indirect via CTD	0.12	0.02	0.13	0.01	0.09	0.00	-0.36	0.41	0.10	0.05	-0.12	-0.20	-0.04	0.29
	Indirect via RA	-0.02	0.02	-0.04	0.00	-0.01	0.00	0.12	-0.03	-0.02	-0.04	0.05	0.00	0.08	-0.05
	Indirect via CRV	-0.02	0.08	-0.22	0.00	0.03	0.00	0.16	0.17	-0.05	-0.04	0.26	-0.01	0.17	0.20
Total effects	0.03	-0.13	0.53*	0.00	-0.43	0.00	-0.74 [#]	0.08	0.22	0.01	0.16	0.16	-0.24	0.12	

[#], * :significance at 1% and 5% probability by the t test, respectively. FI: full irrigation; DS: drought stress; EPV: popcorn volume per hectare; 100GW: 100-grain weight; EL: ear length; ED: ear diameter; NGR: number of grains per row; and PRO: prolificacy; ASI: anthesis to silking interval; TL: tassel length; NTB: tassel branch number; PH: plant height; SDM: dry matter; SPAD: green index; CTD: canopy temperature depression; RA: root angle; CRV: crown root volume; and TRV: tap root volume.