Supplementary Material

Table S1. Maximum photosynthetic carboxylation rate (*Vc max* μmol CO_2 m^{-2} s^{-1}), maximum rate of electron transport (*Jmax* μmol e- m^{-2} s^{-1}) and intrinsic water use efficiency (WUE_i, μmol mol^{-1}) in *Panicum virgatum* L., *Miscanthus x giganteus* and *Arundo donax* L. plants grown under irrigated (WA) and non-water (NW) conditions during the first (1st) and second (2nd) year at T0 (May), T1 (June) and T2 (August). *Miscanthus* plants presented foliar senescence under T2 and NW conditions; thus, these parameters could not be measured during either year of evaluation. Values represent the mean ± SE of nine replicates (n=9). Different capital letters indicate significant differences ($p < 0.05$) between years for the same specie, time and treatment. Different lowercase letters indicate significant differences ($p < 0.05$) between treatment for the same specie, time and year.

			Panicum virgatum L.				*Miscanthus x giganteus*				*Arundo donax* L.			
Parameter	Time	Treatment	1st year		2nd year		1st year		2nd year		1st year		2nd year	
Vcmax	T0	WA	53.41	±5.09 Aa	55.39	±6.74 Aa	45.09	±5.45 Ba	60.77	±9.82 Ab	107.45	±10.75 Aa	117.56	±10.24 Aa
	T0	NW	53.41	±5.09 Aa	55.39	±6.74 Aa	45.09	±5.45 Ba	60.77	±9.82 Ab	107.45	±10.75 Aa	117.56	±10.24 Aa
	T1	WA	53.38	±8.84 Ba	78.66	±15.28 Ab	57.39	±2.56 Bb	71.89	±3.10 Cc	103.95	±14.08 Aa	107.97	±6.76 Aa
	T1	NW	24.08	±4.41 Cb	20.16	±5.16 Cc	9.29	±1.70 Ec	21.79	±9.47 Dd	100.24	±12.10 Aa	95.44	±8.72 Aa
	T2	WA	57.96	±10.27Dd	60.26	±4.60 Dd	41.31	±12.16 Aa	83.67	±3.14 Fe	112.78	±29.90 Aa	91.84	±22.77 Ab
	T2	NW	6.51	±3.66 Ee	9.48	±3.73 Ce		sd		sd	51.37	±12.62 Bb	55.01	±11.90 Bc
Jmax	T0	WA	90.80	±11.26 Aa	146.38	±13.48 Bb	73.38	±9.70 Aa	127.50	±7.08 Ba	208.13	±6.68 Ba	278.13	±65.44 Ab
	T0	NW	90.80	±11.26 Aa	146.38	±13.48 Bb	73.38	±9.70 Aa	127.50	±7.08 Ba	208.13	±6.68 Ba	278.13	±65.44 Ab
	T1	WA	120.52	±20.96 Cb	150.80	±22.28 Cc	93.00	±4.4 Cb	102.46	±3.26 Db	137.93	±16.28 Dd	233.17	±11.92 Cd
	T1	NW	30.15	±3.99 Dc	32.75	±9.51 Dd	26.49	±5.03 Ec	31.58	±7.38 Ec	123.44	±15.36 Ed	156.71	±22.53 Ec
	T2	WA	92.32	±15.20 Aa	127.27	±11.44 Be	68.45	±3.54 Aa	66.72	±8.06 Fd	185.88	±37.07 Eb	168.63	±9.78 Ee
	T2	NW	19.84	±6.11 Ee	31.72	±4.08 Df		sd		sd	115.81	±15.36 Gc	85.86	±14.51 Fe
WUE_i	T0	WA	148.69	±16.34Aa	141.67	±17.47Aa	142.50	±16.69 Aa	137.04	±11.62 Aa	78.13	±8.83 Aa	65.28	±2.19 Aa
	T0	NW	148.69	±16.34Aa	141.67	±17.47Aa	142.50	±16.69 Aa	137.04	±11.62 Aa	78.13	±8.83 Aa	65.28	±2.19 Aa
	T1	WA	175.00	±3.54Bb	94.43	±30.34 Bb	134.75	±22.00 Aa	166.63	±18.91 Bb	66.68	±24.76 Aa	83.96	±10.65 Bb
	T1	NW	321.43	±14.23Dd	169.00	±12.17 Cc	125.00	±27.42 Aa	200.00	±22.52 Cc	134.82	±25.76 Bb	143.76	±8.65 Dc
	T2	WA	172.22	±14.23Bb	134.75	±33.17 Cd	163.83	±30.93 Bb	134.38	±23.32 Aa	75.00	±11.30 Aa	55.30	±7.31 Cd
	T2	NW	198.13	±18.05Cc	177.67	±26.09 De		nd		nd	71.40	±8.94 Aa	125.98	±27.35 De

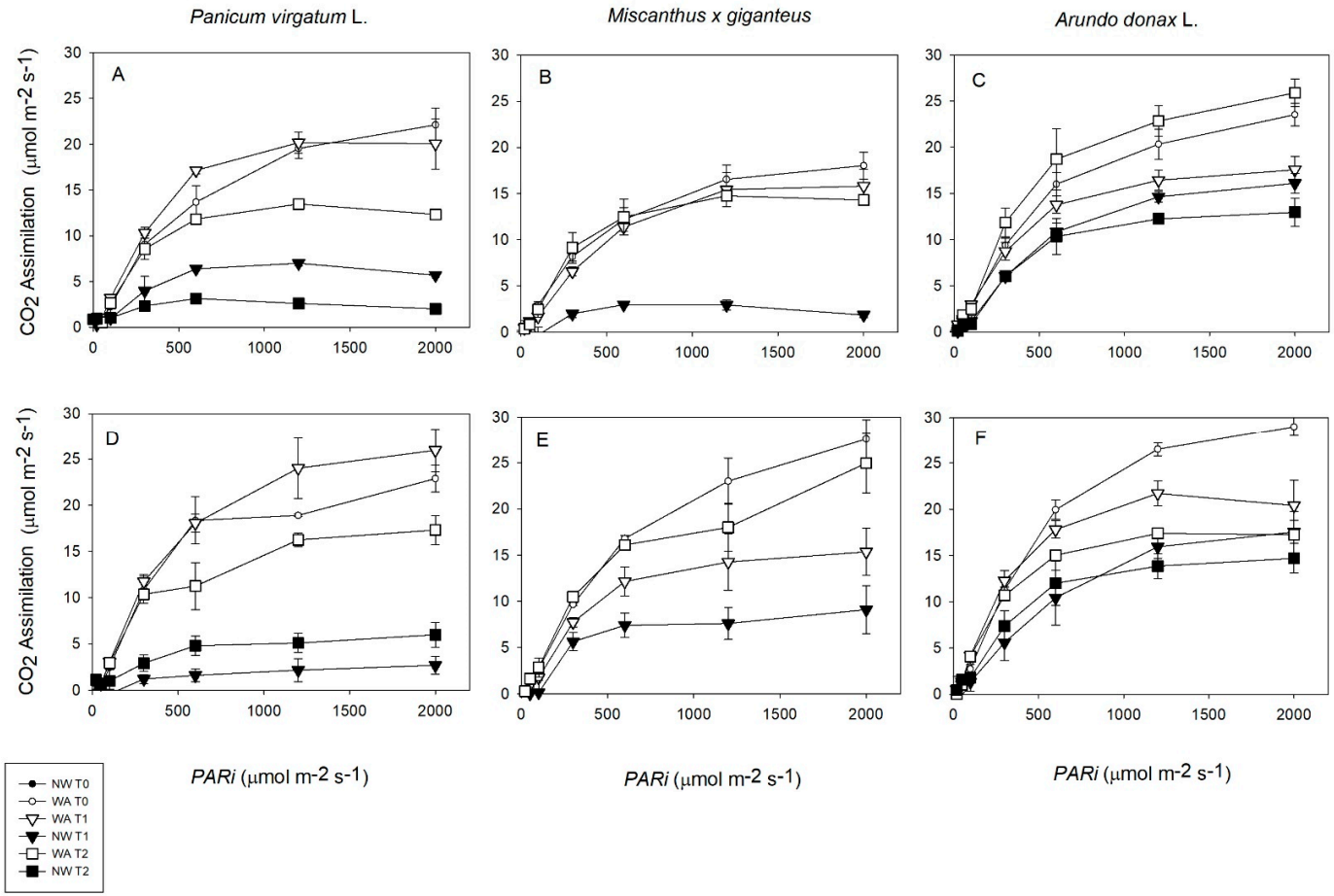

Figure S1. Photosynthetic light response curves (A/PARi) in *Panicum virgatum* L., *Miscanthus x giganteus* and *Arundo donax* L. plants grown under irrigated (WA) and non-water (NW) conditions, during the 1st (A, B, C) and 2nd year (D, E, F), at different times (T0: May, T1: June and T2: August). *Miscanthus* plants presented foliar senescence under T2 and NW conditions; thus, this parameter could not be measured during both years of evaluation. Values represent the mean ± SD of nine replicates (n=9).

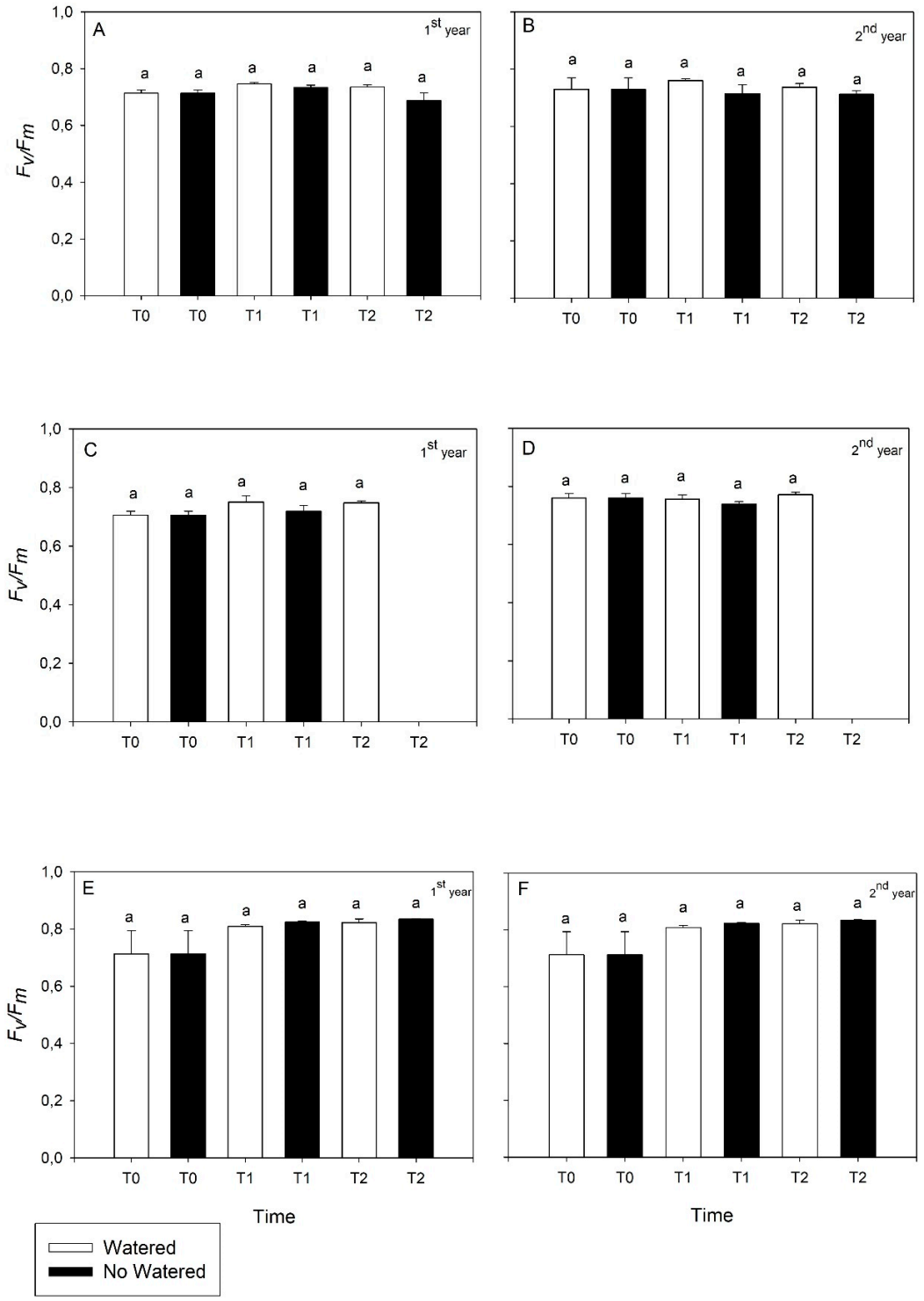

Figure S2. Maximum quantum yield of photosystem II (*Fv/Fm*) in *Panicum virgatum* L. (A, B), *Miscanthus x giganteus* (C, D) and *Arundo donax* L. (E, F) plants grown under irrigated (WA) and non-water (NW) conditions during the 1st and 2nd year, at different times (T0: May, T1: June and T2: August). *Miscanthus* plants presented foliar senescence under T2 and NW conditions; thus, this parameter could not be measured during either year of evaluation. Values represent the mean ± SD of nine replicates (n=9). Different lowercase letters indicate significant differences ($p< 0.05$) between treatment for the same time.

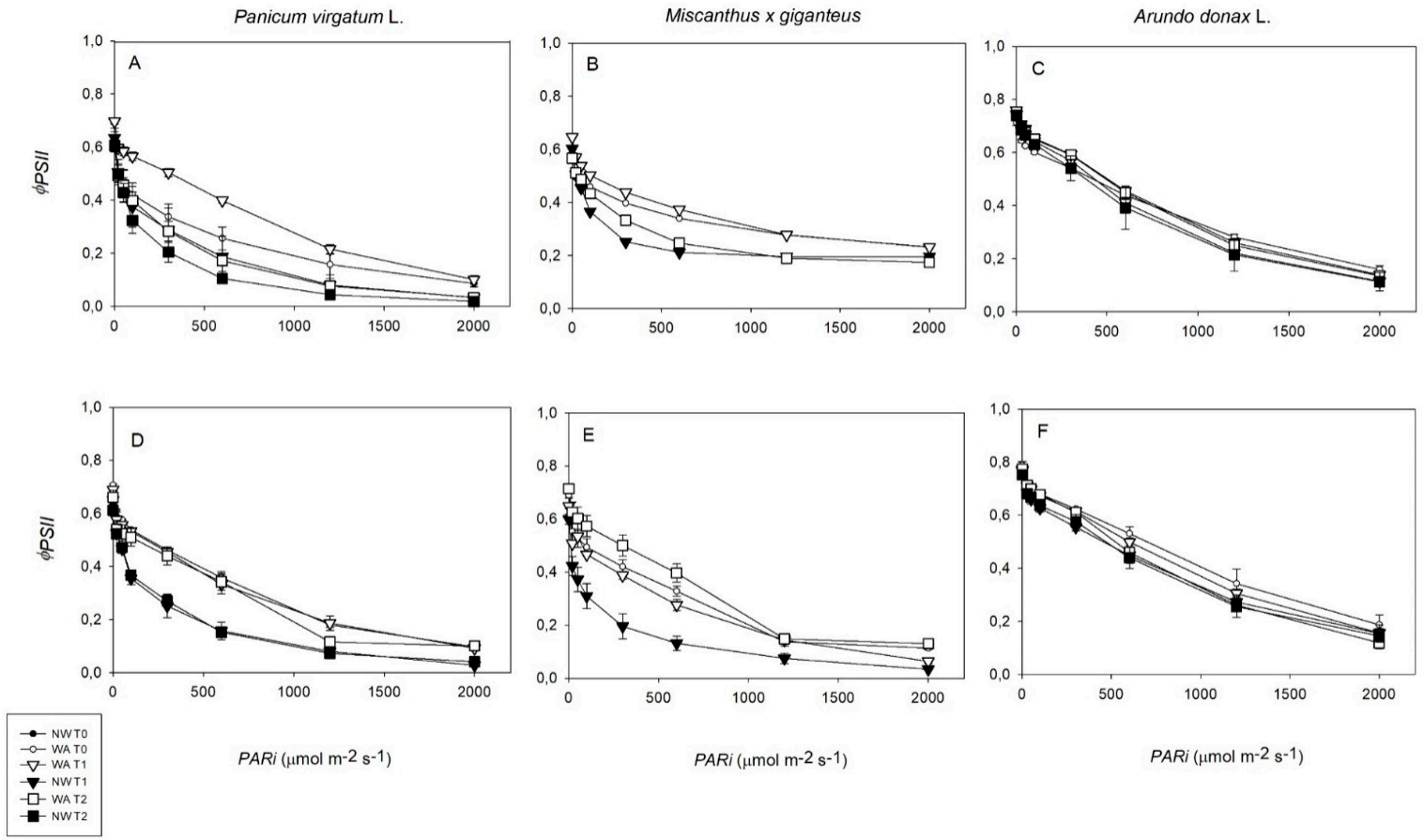

Figure S3. Relative quantum efficiency of photosystem II electron transport (ΦPSII) in *Panicum virgatum* L., *Miscanthus x giganteus* and *Arundo donax* L. plants grown under irrigated (WA) and non-watered (NW) conditions, during the 1st (A, B, C) and 2nd year (D, E, F), at different times (T0: May, T1: June and T2: August). *Miscanthus* plants presented foliar senescence under T2 and NW conditions; thus, this parameter could not be measured during both years of evaluation. Values represent the mean ± SD of nine replicates (n=9).

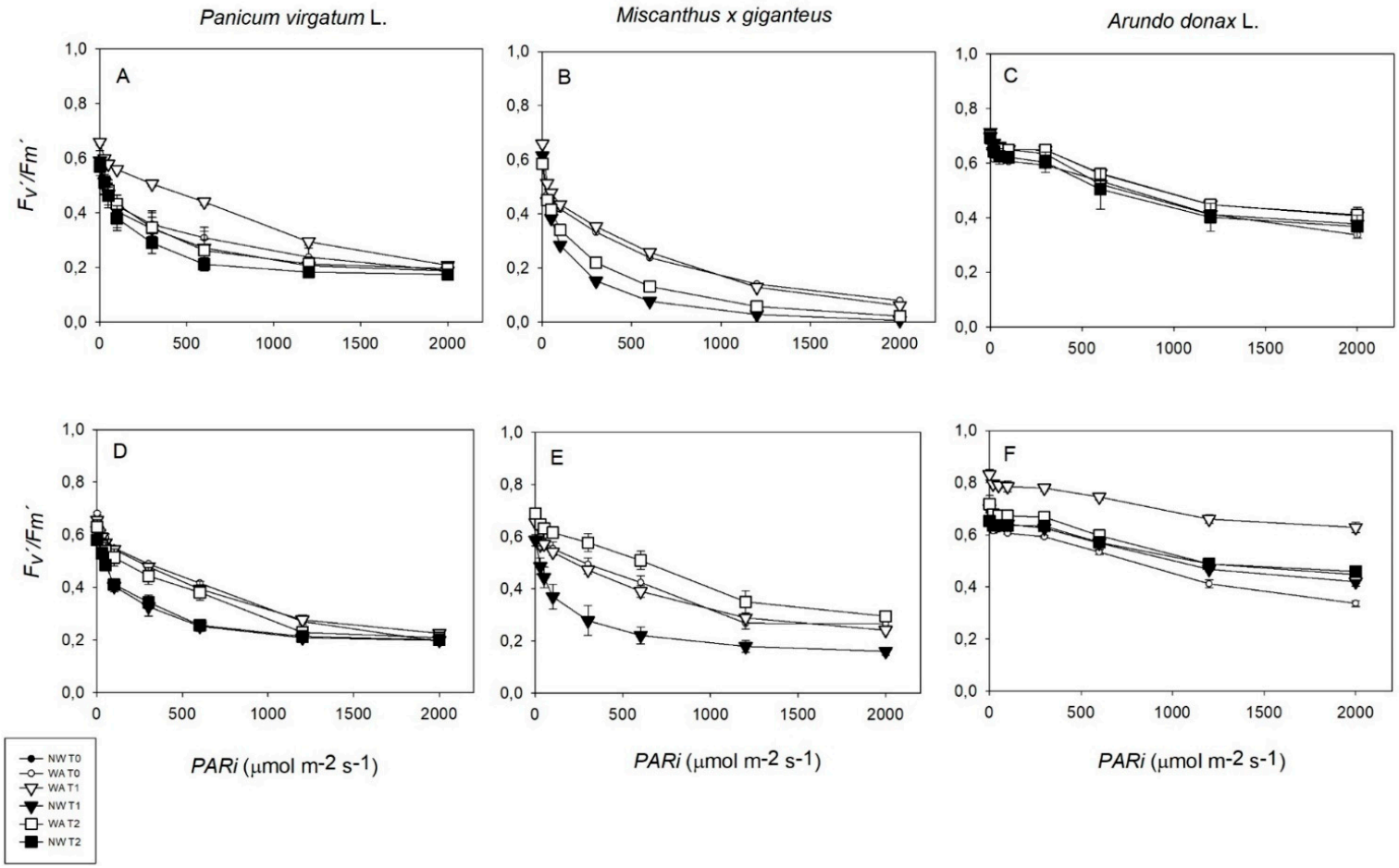

Figure S4. Efficiency of excitation energy captured by the open reaction centers of photosystem II (Fv´/Fm´) in *Panicum virgatum* L., *Miscanthus x giganteus* and *Arundo donax* L. plants grown under irrigated (WA) and non-watered (NW) conditions, during the 1st (A, B, C) and 2nd year (D, E, F), at different times (T0: May, T1: June and T2: August). *Miscanthus* plants presented foliar senescence under T2 and NW conditions; thus, this parameter could not be measured during both years of evaluation.Values represent the mean ± SD of nine replicates (n=9).

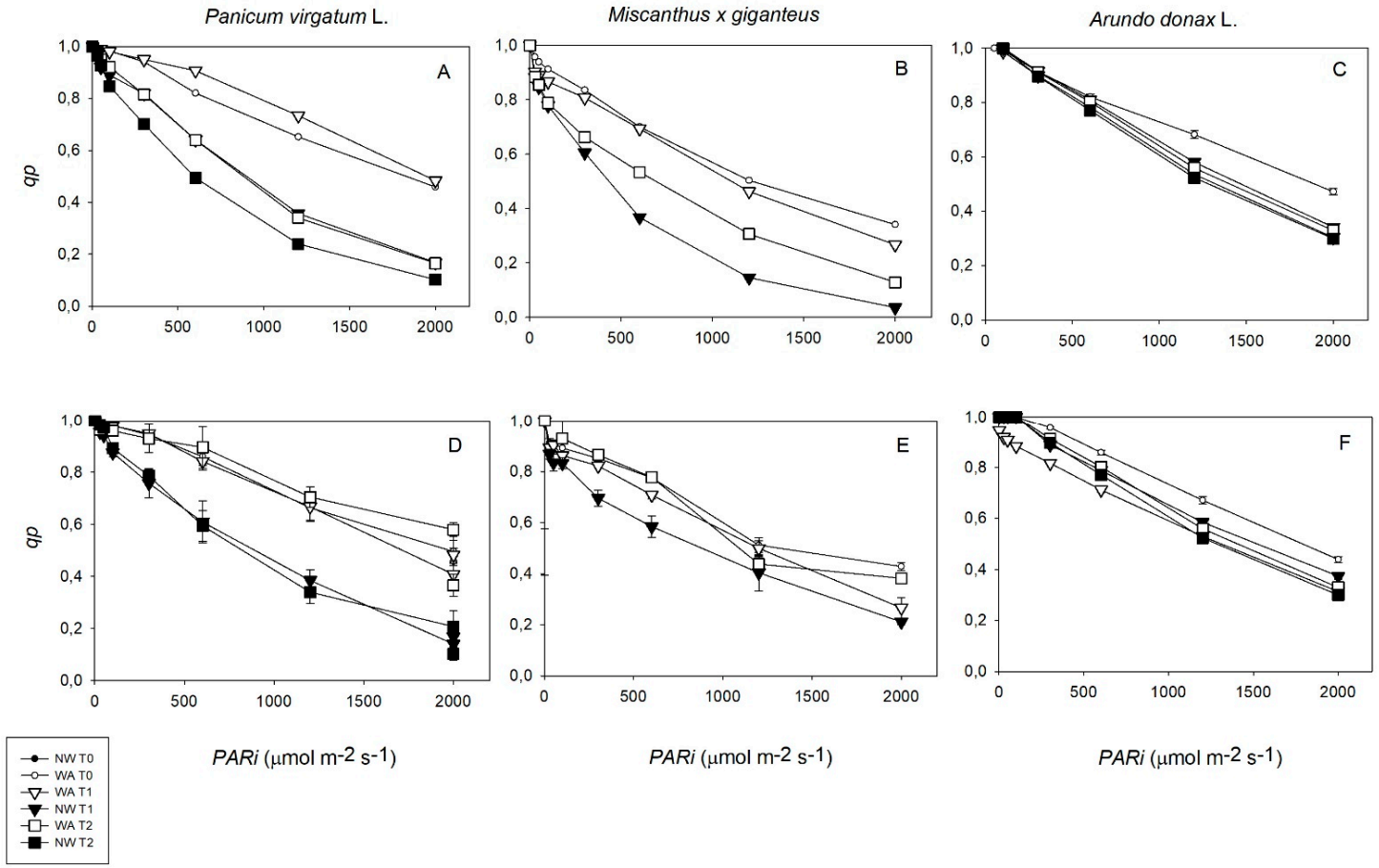

Figure S5. Photochemical quenching (qp) in *Panicum virgatum* L., *Miscanthus x giganteus* and *Arundo donax* L. plants grown under irrigated (WA) and non-watered (NW) conditions, during the 1st (A, B, C) and 2nd year (D, E, F) at different times (T0: May, T1: June and T2: August). *Miscanthus* plants presented foliar senescence under T2 and NW conditions; thus, this parameter could not be measured during both years of evaluation.Values represent the mean ± SD of nine replicates (n=9).

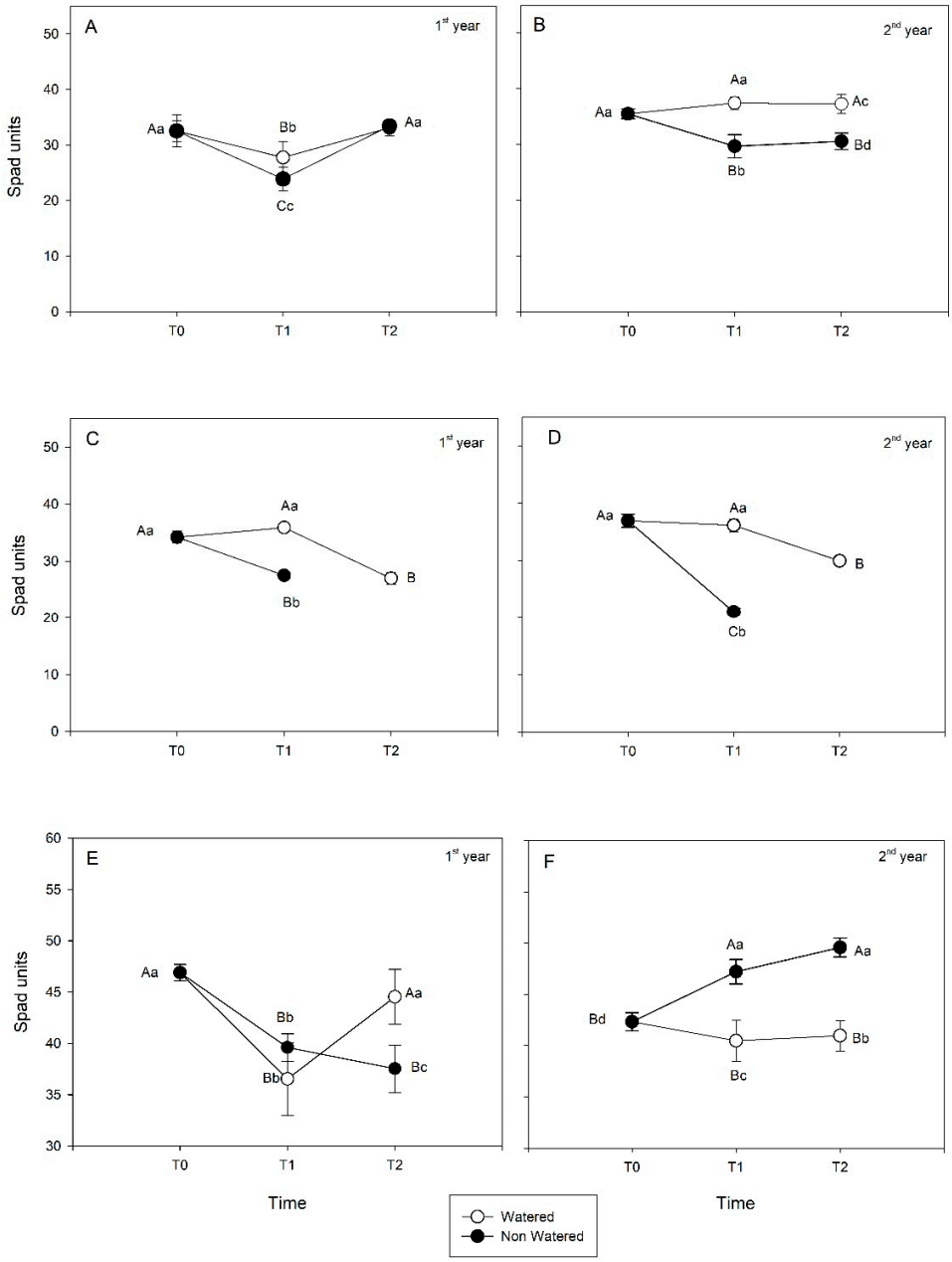

Figure S6. Leaf greenness (SPAD units) in leaves of *Panicum virgatum* L. (A, B), *Miscanthus x giganteus* (C, D) and *Arundo donax* L. (E, F) grown under irrigated (WA) and non-water (NW) conditions, during the 1st and 2nd year at different times (T0: May, T1: June and T2: August). *Miscanthus* plants presented foliar senescence under T2 and NW conditions; thus, this parameter could not be measured during both years of evaluation.Values represent the mean ± SD of nine replicates (n=9). Different capital letters indicate significant differences ($p < 0.05$) between time for the same treatment. Different lowercase letters indicate significant differences ($p < 0.05$) between treatment for the same time.

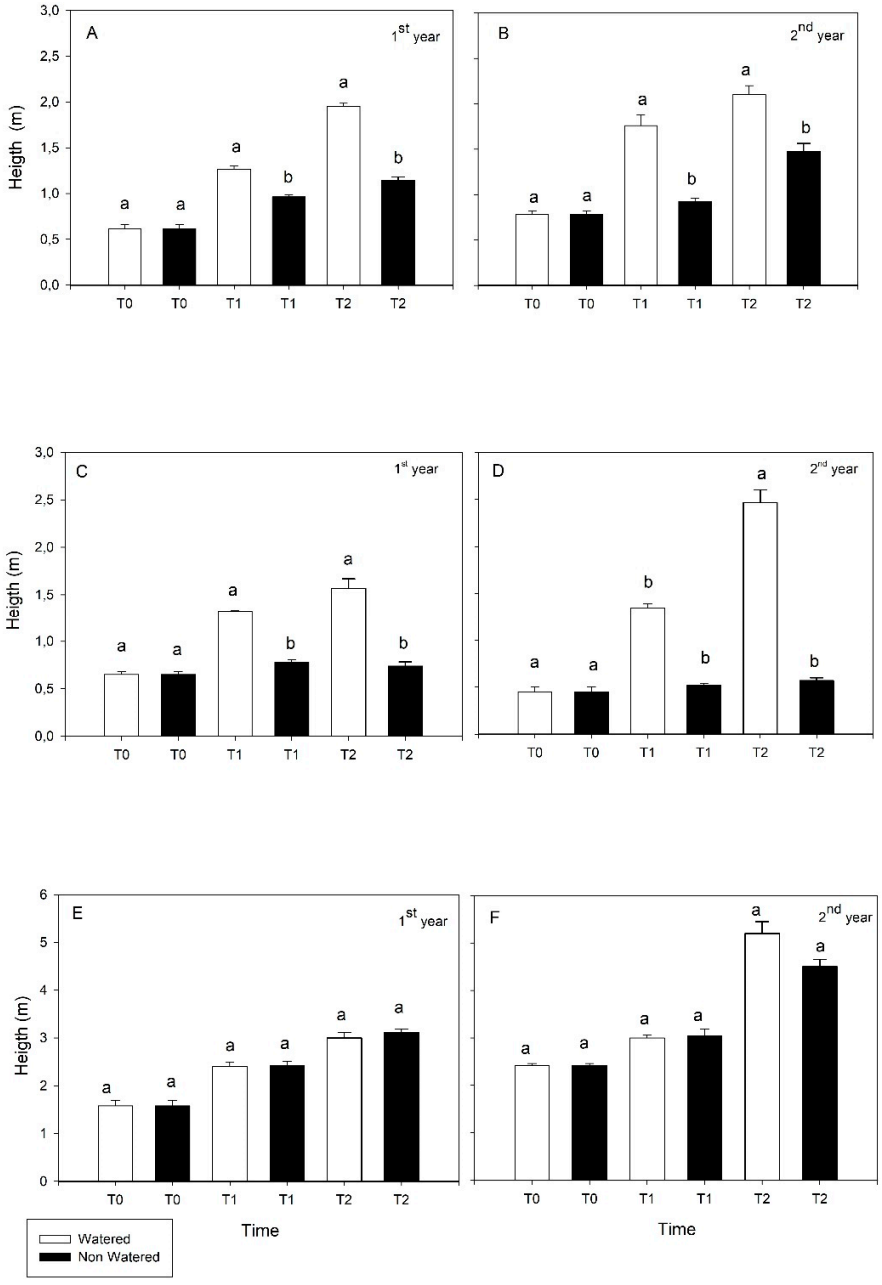

Figure S7. Height (m) of *Panicum virgatum* L., *Miscanthus x giganteus* and *Arundo donax* L. plants grown under irrigated (WA) and non-water (NW) conditions during the 1st (A, C, E) and 2nd year (B, D, F) at different times (T0: May, T1: June and T2: August). Values represent the mean ± SD of nine replicates (n=9). Different lowercase letters indicate differences ($p<0.05$) between treatments for the same time.