Supplementary Material

Waterlogging as an environmental filter to tree recruitment in tropical wet grasslands

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Table S1. Study species according to preferred habitat (Savanna; Generalist; Forest), dispersal period, and date, location (municipality), and vegetation type of seed collection

TS: typical savanna; SSF: seasonal semideciduous forest; FS: forested savanna; GF: gallery forest.

Species	Dispersal period	Date of collection	Municipality	Vegetation type	Geographic coordinates
Savanna					
Dimorphandra mollis	Nov–Dec[A]	Nov–18	Birigui	TS	21°15'11.3"S 50°19'50.4"W
Hymenaea stigonocarpa	Aug–Sep[A]	Oct–16	Assis	TS	22°36'50''S, 50°24'52''W
Stryphnodendron rotundifolium	Jul–Sep[A]	Jul–17	Assis	TS	22°36'50''S, 50°24'52''W
Tabebuia aurea	Oct–Nov[A]	Oct–18	Penápolis	TS	21°26'15.6"S 50°08'36.4"W
Generalist					
Copaifera langsdorffii	Aug–Oct[A]	Sep–18	Assis	TS	22°36'50''S, 50°24'52''W
Guazuma ulmifolia	Aug–Sep[B]	Aug–17	Birigui	SSF	21°15'11.3"S 50°19'50.4"W
Moquiniastrum polymorphum	Dec–Fev[A]	Feb–18	Assis	FS	22°36'50''S, 50°24'52''W
Tapirira guianensis	Jan–Mar[A]	Feb–17	Assis	GF	22°36'50''S, 50°24'52''W
Forest					
Calophyllum brasiliense	May[A]	Jul–16	Assis	GF	22°36'50''S, 50°24'52''W
Handroanthus heptaphyllus	Oct[A]	Oct–18	Araraquara	SSF	21°48'25.3"S 48°13'20.3"W
Styrax pohlii	Mar[A]	Mar–18	Assis	GF	22°36'50''S, 50°24'52''W

[A]Dispersal period according to Durigan *et al.* (1999).

[B]Dispersal period according to Durigan *et al.* (1997).

Table S2. Parameters estimated by the GLM models for total germination percentage of Cerrado tree species in different submergence and floating treatments (treatments)

Control treatment (normoxia) was used as intercept. e: estimate; se: standard error; significance level: *, $P < 0.05$; **, $P < 0.01$; ***, $P < 0.0001$; ns, non-significant. The other study species are not included in the table because they did not germinate (*D. mollis*, *S. rotumdifolium* and *C. langsdorffii*)

Species	Treatments	Submergence			Floating		
		e	se	P	e	se	P
Hymenaea stigonocarpa	Intercept	-0.405	0.102	***	-	-	-
	15 days	-1.939	0.204	***	-	-	-
Tabebuia aurea	Intercept	1.208	0.237	***	1.208	0.237	***
	15 days	-3.959	0.483	***	0.308	0.352	ns
	30 days	-	-	-	0.116	0.341	ns
	45 days	-	-	-	0.377	0.356	ns
Guazuma ulmifolia	Intercept	0.405	0.102	***	-	-	-
	15 days	0.441	0.149	**	-	-	-
	30 days	0.213	0.146	ns	-	-	-
	45 days	-0.041	0.144	ns	-	-	-
Moquiniastrum polymorphum	Intercept	1.450	0.127	***	1.450	0.254	***
	15 days	-0.741	0.166	***	-0.505	0.338	ns
	30 days	-2.158	0.166	***	-0.831	0.330	*
	45 days	-3.108	0.186	***	-0.960	0.327	**
Tapirira guianensis	Intercept	3.178	0.255	***	3.178	0.510	***
	15 days	-2.424	0.276	***	-1.853	0.566	**

	30 days	-4.993	0.293	***	-3.057	0.548	***
Calophyllum brasiliense	Intercept	1.324	0.245	***	1.098	0.230	***
	15 days	0.260	0.362	ns	0.559	0.357	ns
	30 days	0.667	0.393	ns	0.559	0.357	ns
	45 days	0.872	0.414	*	1.215	0.418	**
Handroanthus heptaphyllus	Intercept	-0.619	0.104	***	-0.619	0.209	**
	15 days	-1.471	0.191	***	0.337	0.291	ns
	30 days	-	-	-	0.171	0.293	ns
	45 days	-	-	-	0.255	0.292	ns
Styrax pohllii	Intercept	0.160	0.100	ns	0.160	0.200	ns
	15 days	-0.160	0.141	ns	-0.110	0.283	ns
	30 days	-0.230	0.141	ns	-0.779	0.290	**
	45 days	-0.200	0.141	ns	-1.259	0.305	***

Table S3. Parameters estimated by the GLM models for percentage of seedling development and seedlings per germinated seeds (*SGS*%) of Cerrado tree species in different submergence treatments (treatments)

Control treatment (normoxia) was used as intercept. e: estimate; se: standard error. significance level: *, $P < 0.05$; **, $P < 0.01$; ***, $P < 0.0001$; ns, non-significant. The other study species are not included in the table because they did not germinate (*D. mollis*, *S. rotumdifolium* and *C. langsdorffii*) or did not develop seedling (*H. stigonocarpa* and *T. aurea*)

Species	Treatments	Seedlings per seeds placed to germinate			Seedlings per germinated seeds		
		e	se	*P*	e	se	*P*
Guazuma ulmifolia	Intercept	-0.895	0.220	***	0.027	0.264	ns
	15 days	0.095	0.308	ns	-0.430	0.352	ns
	30 days	2.996	0.747	***	-3.411	0.766	***
Moquiniastrum polymorphum	Intercept	0.944	0.222	***	2.068	0.352	***
	15 days	-1.064	0.299	**	-0.983	0.450	*
	30 days	-1.744	0.310	***	1.377	1.065	ns
	45 days	-1.607	0.306	***	0.661	1.100	ns
Tapirira guianensis	Intercept	0.200	0.201	ns	0.288	0.206	ns
	15 days	0.331	0.288	ns	2.192	0.511	***
	30 days	-2.643	0.419	***	-0.411	0.527	ns
Calophyllum brasiliense	Intercept	1.098	0.230	***	2.769_{e+01}	7.212_{e+04}	ns
	15 days	0.487	0.352	ns	9.568_{e-02}	1.018_{e+05}	ns

	30 days	1.098	0.405	**	1.492_{e-01}	1.017_{e+05}	ns
	45 days	0.893	0.384	**	1.729_{e-01}	1.018_{e+05}	ns
Handroanthus heptaphyllus	Intercept	-0.895	0.220	***	1.579	0.449	***
	15 days	-1.547	0.429	**	-1.008	0.771	ns
Styrax pohllii	Intercept	0.120	0.200	ns	3.284	0.729	***
	15 days	-0.525	0.286	ns	-1.896	0.810	*
	30 days	-0.320	0.283	ns	-1.805	0.818	*
	45 days	-0.402	0.284	ns	-1.322	0.849	ns

Table S4. Parameters estimated by the GLM models for percentage of seedling development and seedlings per germinated seeds (*SGS*%) of six Cerrado tree species in different floating treatments (treatments)

Control treatment (normoxia) was used as intercept. e: estimate; se: standard error. significance level: *, $P < 0.05$; **, $P < 0.01$; ***, $P < 0.0001$; ns, non-significant

Species	Treatments	Seedlings per seeds placed to germinate			Seedlings per germinated seeds		
		e	se	*P*	e	se	*P*
Tabebuia aurea	Intercept	-0.281	0.201	ns	0.236	0.229	ns
	15 days	-0.082	0.286	ns	-0.236	0.318	ns
Moquiniastrum polymorphum	Intercept	0.944	0.222	***	2.068	0.352	***
	15 days	-1.064	0.299	**	-1.434	0.430	***
	30 days	-1.744	0.310	***	-2.158	0.430	***
	45 days	-1.607	0.306	***	-1.880	0.434	***
Tapirira guianensis	Intercept	3.178	0.510	***	0.288	0.206	***
	15 days	-1.791	0.568	**	2.049	0.445	***
	30 days	-2.814	0.549	***	-0.590	0.334	ns
Calophyllum brasiliense	Intercept	1.098	0.230	***	23.68	9759.9	ns
	15 days	0.487	0.352	ns	-19.32	9759.9	ns
	30 days	1.098	0.405	**	0.171	13765.1	ns
	45 days	0.893	0.384	*	-19.43	9759.9	ns
Handroanthus heptaphyllus	Intercept	-0.895	0.220	***	1.579	0.449	***
	15 days	-1.547	0.429	***	-3.058	0.596	***

Styrax pohllii	Intercept	0.120	0.200	ns	3.284	0.729	***
	15 days	-0.240	0.283	ns	-0.508	0.942	ns
	30 days	-0.873	0.293	**	-0.898	0.949	ns
	45 days	-1.218	0.305	***	17.41	3788.1	ns