Article:
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Supporting Information

Paper title: Taller trees exhibit greater hydraulic vulnerability in southern Amazonian forests.

Table S1. Regression results of the relationship between P_{50} and height for individual species and across all species. General linear regression (i.e., best-fit line for all species together).

Species	Estimate	Std. Error	t value	R^2	*P*
A. guianensis	0.17	0.02	6.86	0.81	0.00002
B. rubescens	0.13	0.02	4.55	0.58	0.0003
C. cognatum	0.21	0.05	4.19	0.59	0.001
P. altissimum	0.10	0.03	2.80	0.35	0.01
General linear regression	0.13	0.01	6.96	0.45	0.000000003

Table S2. Regression results of the relationship between P_{MIN} and height for individual species and across all species. General linear regression (i.e., best-fit line for all species together).

Species	Estimate	Std. Error	t value	R^2	*P*
A. guianensis	-0.01	0.02	-0.47	0.01	> 0.05
B. rubescens	0.01	0.003	2.90	0.36	0.01
C. cognatum	-0.01	0.03	-0.44	0.01	> 0.05
P. altissimum	0.01	0.02	0.64	0.02	> 0.05
General linear regression	0.05	0.02	1.97	0.06	0.05

Table S3. Regression results of the relationship between HSM_{50} and height for individual species and across all species. General linear regression (i.e., best-fit line for all species together).

Species	Estimate	Std. Error	t value	R^2	*P*
A. guianensis	-0.18	0.04	-3.99	0.59	0.002
B. rubescens	-0.12	0.02	-4.15	0.53	0.0008
C. cognatum	-0.23	0.06	-3.60	0.52	0.003
P. altissimum	-0.08	0.04	-1.81	0.19	> 0.05
General linear regression	-0.07	0.03	-2.09	0.07	0.04

Table S4. Regression results of the relationship between D_V and height for individual species and across all species. General linear regression (i.e., best-fit line for all species together).

Species	Estimate	Std. Error	t value	R^2	*P*
A. guianensis	0.96	0.41	2.32	0.32	0.04
B. rubescens	2.04	0.42	4.85	0.61	0.0002
C. cognatum	2.41	0.56	4.29	0.60	0.001
P. altissimum	1.29	0.35	3.65	0.48	0.002
General linear regression	1.81	0.24	7.44	0.48	0.0000000005

Table S5. Regression results of the relationship between F_V and height for individual species and across all species. General linear regression (i.e., best-fit line for all species together).

Species	Estimate	Std. Error	t value	R^2	*P*
A. guianensis	-2.40	0.70	-3.40	0.51	0.005
B. rubescens	-1.11	0.23	-4.82	0.60	0.0002
C. cognatum	-2.64	0.73	-3.61	0.52	0.003

P. altissimum	-2.57	0.50	-5.11	0.65	0.0001
General linear regression	-2.02	0.36	-5.61	0.35	0.0000005

Table S6. Regression results of the relationship between K_h and height for individual species and across all species. General linear regression (i.e., best-fit line for all species together).

Species	**Estimate**	**Std. Error**	**t value**	**R^2**	***P***
A. guianensis	0.008	0.01	0.61	0.03	> 0.05
B. rubescens	0.001	0.006	0.002	0.0000003	> 0.05
C. cognatum	-0.0008	0.02	-0.03	0.00009	> 0.05
P. altissimum	0.006	0.01	0.63	0.02	> 0.05
General linear regression	0.01	0.008	1.74	0.04	> 0.05

Table S7. Regression results of the relationship between P_{50} and D_v for individual species and across all species. General linear regression (i.e., best-fit line for all species together).

Species	**Estimate**	**Std. Error**	**t value**	**R^2**	***P***
A. guianensis	0.06	0.02	2.48	0.36	0.03
B. rubescens	0.05	0.009	6.06	0.71	0.00002
C. cognatum	0.04	0.02	2.09	0.26	0.05
P. altissimum	0.04	0.02	1.90	0.20	> 0.05
General linear regression	0.04	0.007	5.92	0.37	0.0000001

Table S8. Regression results of the relationship between P_{50} and F_v for individual species and across all species. General linear regression (i.e., best-fit line for all species together).

Species	Estimate	Std. Error	t value	R^2	*P*
A. guianensis	-0.04	0.01	-4.21	0.61	0.001
B. rubescens	-0.10	0.01	-6.15	0.71	0.00001
C. cognatum	-0.03	0.01	-1.86	0.22	> 0.05
P. altissimum	-0.02	0.012	-1.99	0.22	> 0.05
General linear regression	-0.02	0.006	-3.70	0.19	0.0004

Table S9. Regression results of the relationship between P_{50} and K_h for individual species and across all species. General linear regression (i.e., best-fit line for all species together).

Species	Estimate	Std. Error	t value	R^2	*P*
A. guianensis	0.63	1.29	0.49	0.02	> 0.05
B. rubescens	0.86	1.72	0.49	0.01	> 0.05
C. cognatum	-1.57	0.84	-1.86	0.22	> 0.05
P. altissimum	0.59	1.06	0.55	0.02	> 0.05
General linear regression	0.23	0.39	0.57	0.005	> 0.05

Table S10. Regression results of the relationship between D_h and height for individual species and across all species. General linear regression (i.e., best-fit line for all species together).

Species	Estimate	Std. Error	t value	R^2	*P*
A. guianensis	0.62	0.41	1.51	0.17	> 0.05
B. rubescens	1.03	0.37	2.72	0.33	0.01
C. cognatum	1.00	0.64	1.56	0.16	> 0.05

P. altissimum	0.84	0.37	2.24	0.26	0.04
General linear regression	1.23	0.30	4.07	0.22	0.0001

Table S11. Regression results of the relationship between P_{50} and D_h for individual species and across all species. General linear regression (i.e., best-fit line for all species together).

Species	**Estimate**	**Std. Error**	**t value**	**R^2**	***P***
A. guianensis	0.05	0.03	1.50	0.17	> 0.05
B. rubescens	0.06	0.01	3.84	0.49	0.001
C. cognatum	-0.01	0.03	-0.47	0.01	> 0.05
P. altissimum	0.03	0.02	1.41	0.12	> 0.05
General linear regression	0.02	0.009	2.80	0.11	0.006

Table S12. Regression results of the relationship between P_{50} and vulnerability index for individual species and across all species. General linear regression (i.e., best-fit line for all species together).

Species	**Estimate**	**Std. Error**	**t value**	**R^2**	***P***
A. guianensis	2.06	0.61	3.35	0.50	0.006
B. rubescens	0.30	0.05	5.28	0.65	0.00009
C. cognatum	0.55	0.23	2.34	0.31	0.03
P. altissimum	0.67	0.34	1.95	0.21	> 0.05
General linear regression	0.29	0.05	4.96	0.29	0.000006

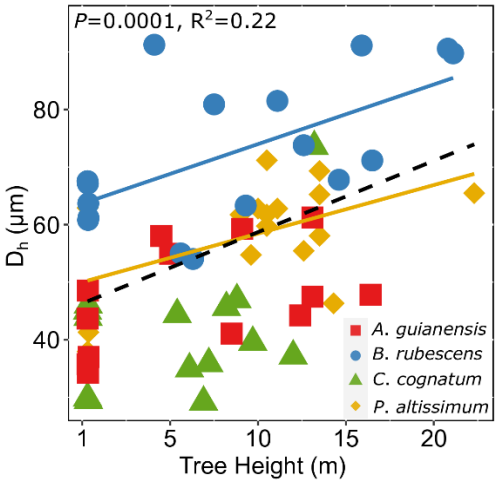

Fig. S1 Relationship between tree height and hydraulically weighted vessel diameter (D_h). The solid lines provide the predicted linear regression for each species. The bold dashed black line provides the general linear regression best-fit line for all species together (The R^2 in the figure and *P* value refers to the general linear regression best-fit line for all species together, extended data Table **S10**).

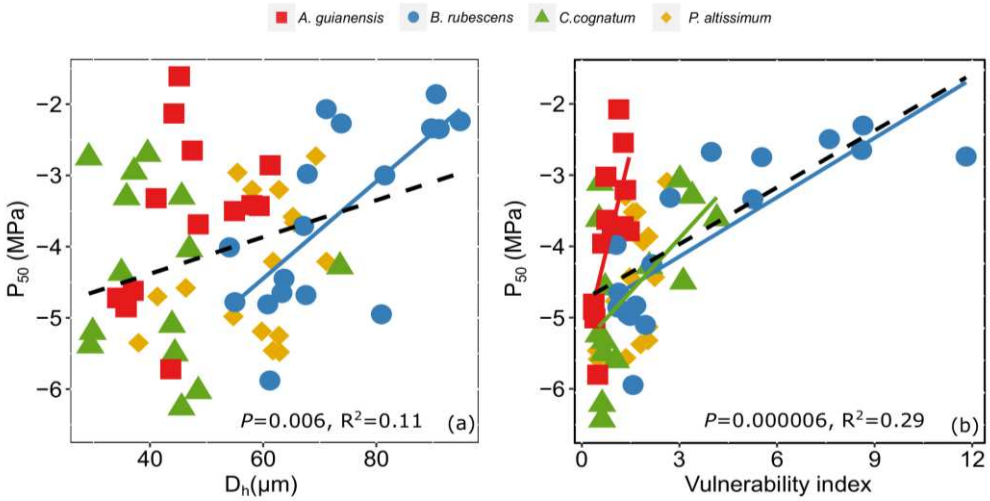

Fig. S2 Relationship between hydraulically weighted vessel diameter, vulnerability index and resistance to xylem embolism - P_{50}: (a) hydraulically weighted vessel diameter - D_h and (b) vulnerability index. The solid lines provide the predicted linear regression for each species. The bold dashed black line provides the general linear regression best-fit line for all species together (The R^2 in the figure and *P* value refers to the general linear regression best-fit line for all species together, extended data Tables **S11** to **S12**).

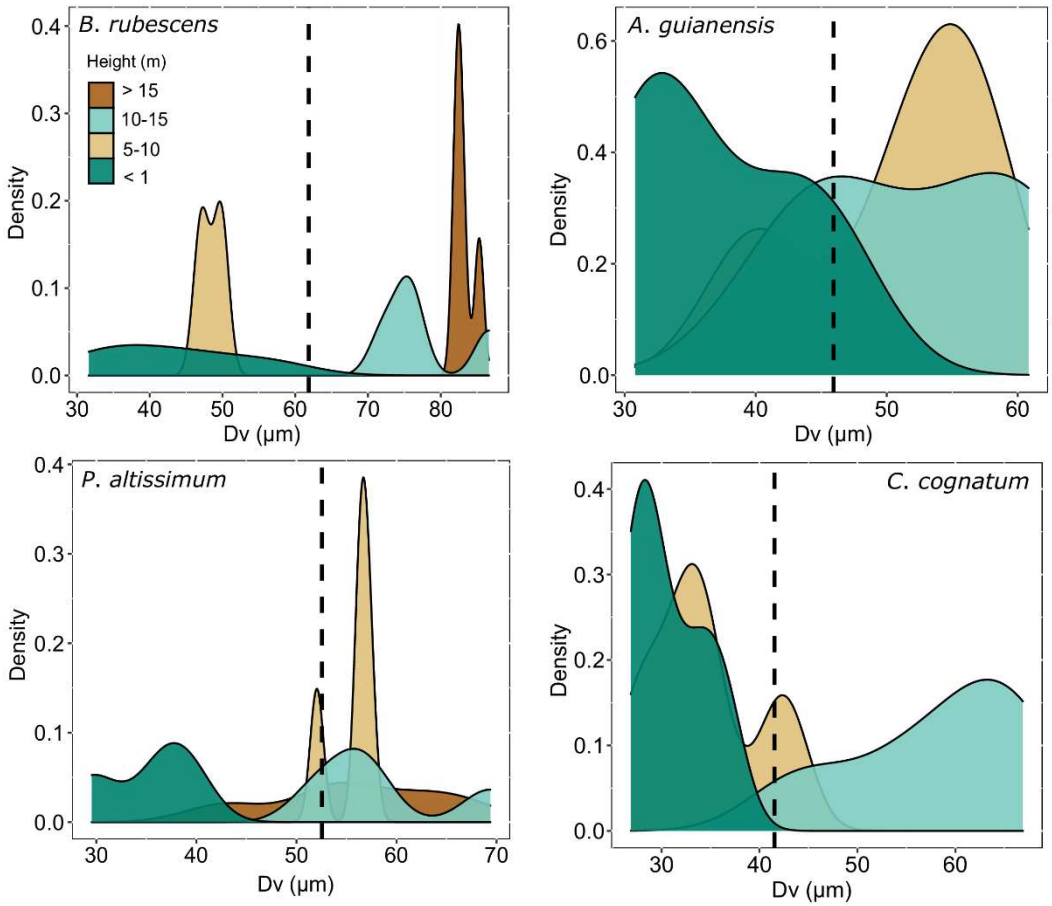

Fig. S3 Distribution of vessel lumen diameter for four tree species in southern Amazon. The dashed line represents the mean vessel lumen diameter for the species.

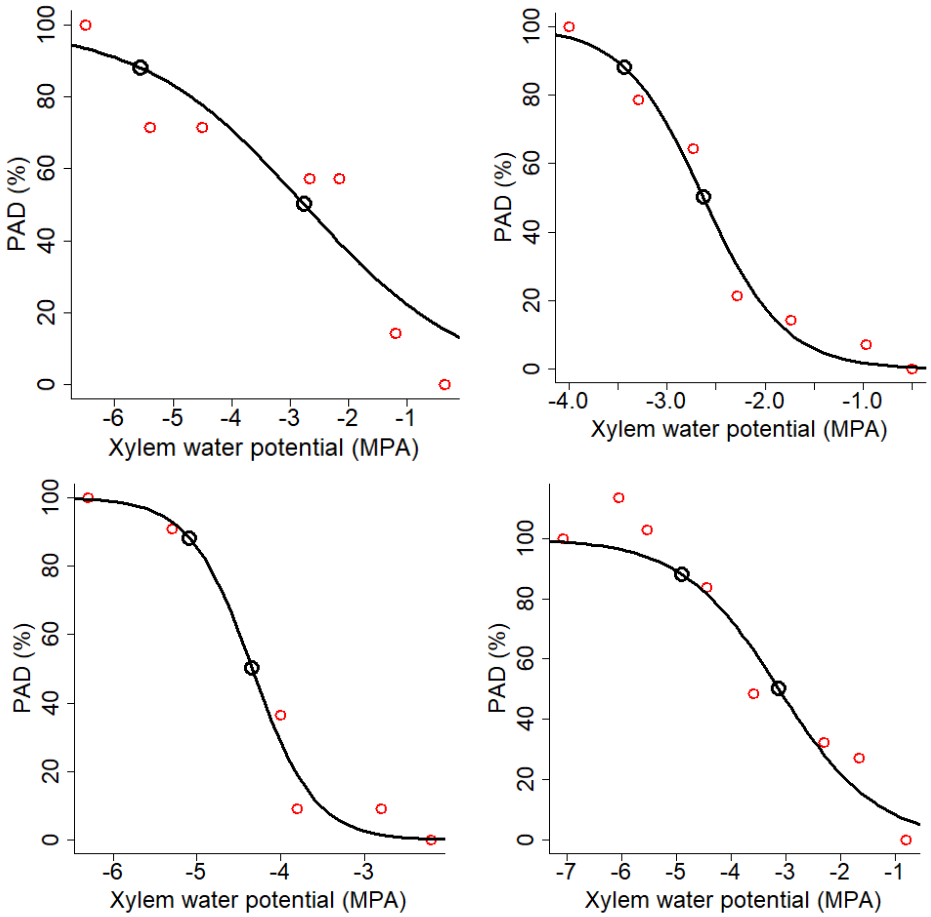

Fig. S4 Xylem vulnerability curves of *Amaioua guianensis* intermediate 10-15m growing in the southern Amazon. The black dots represent P_{50} and P_{88} values.

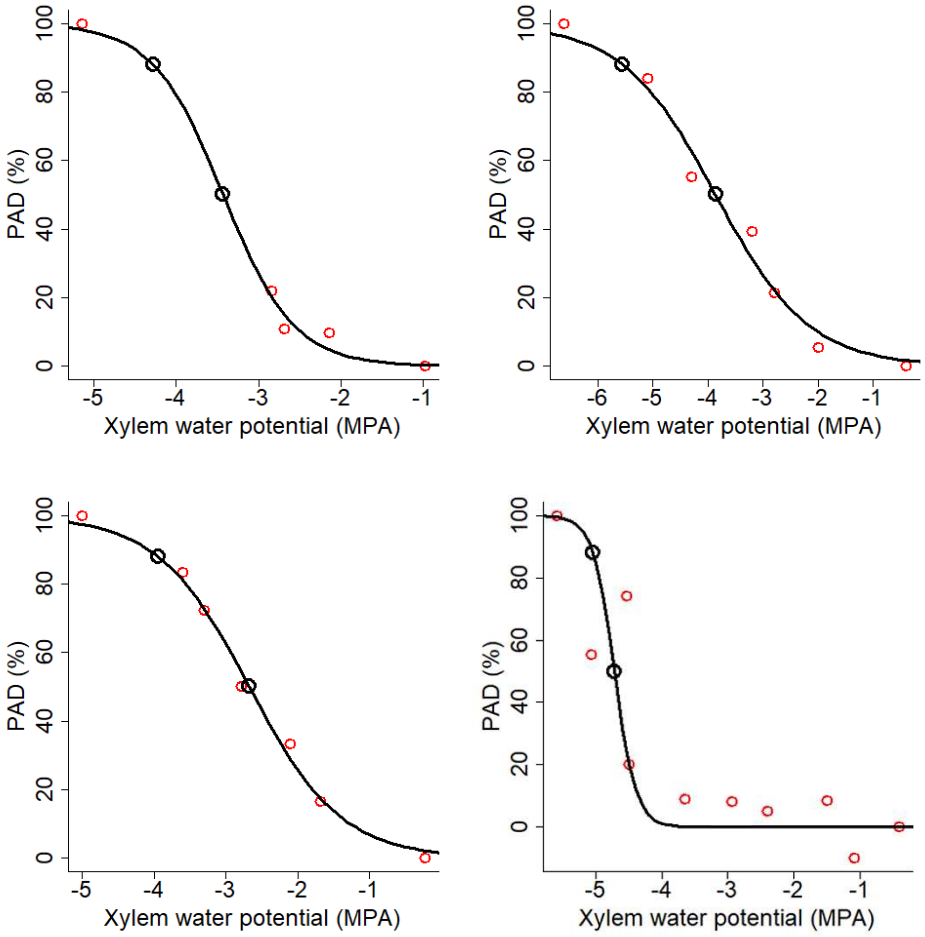

Fig. S5 Xylem vulnerability curves of *Amaioua guianensis* low 5-10m growing in the southern Amazon. The black dots represent P_{50} and P_{88} values.

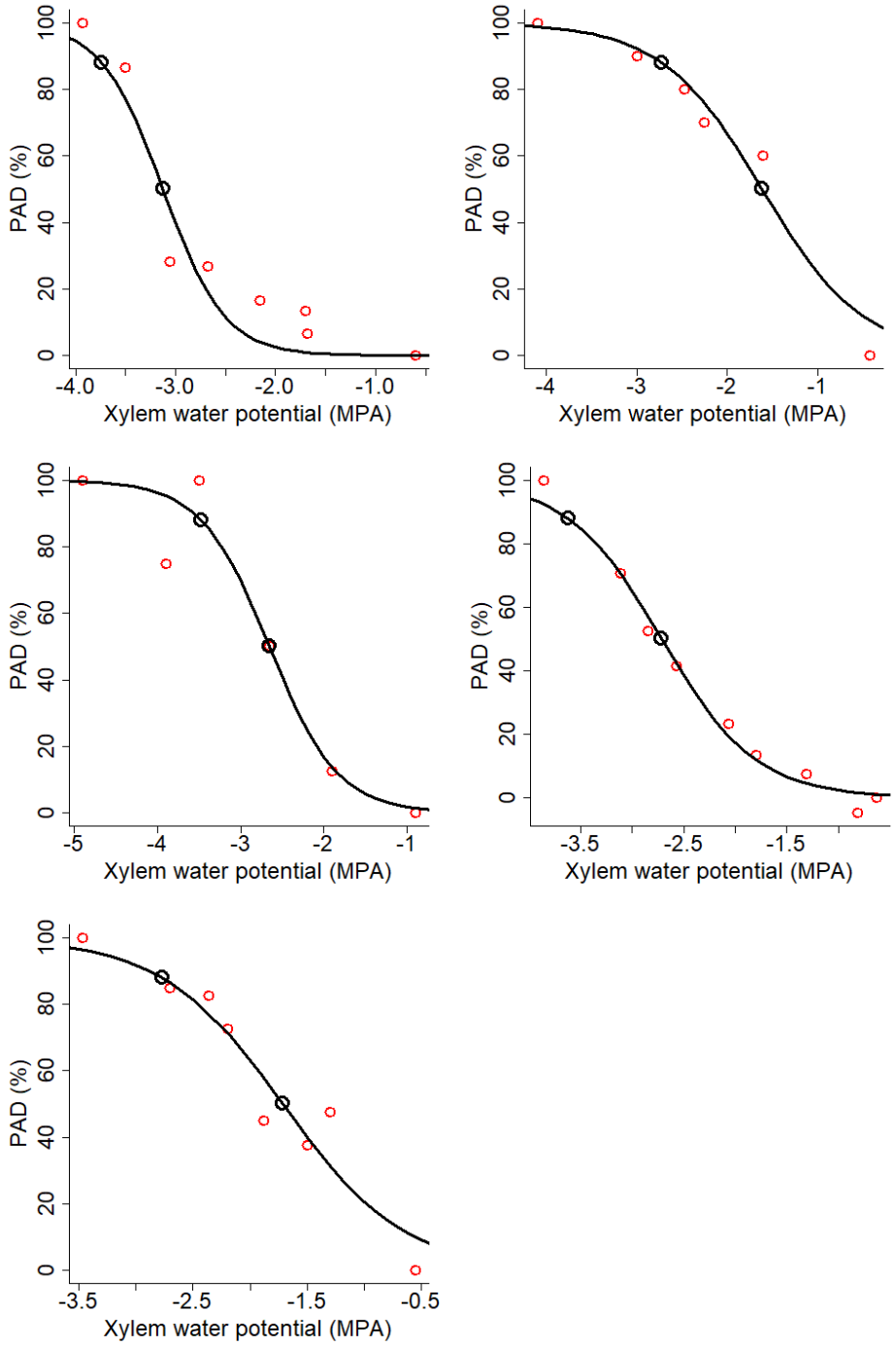

Fig. S6 Xylem vulnerability curves of *Amaioua guianensis* saplings < 1m growing in the southern Amazon. The black dots represent P_{50} and P_{88} values.

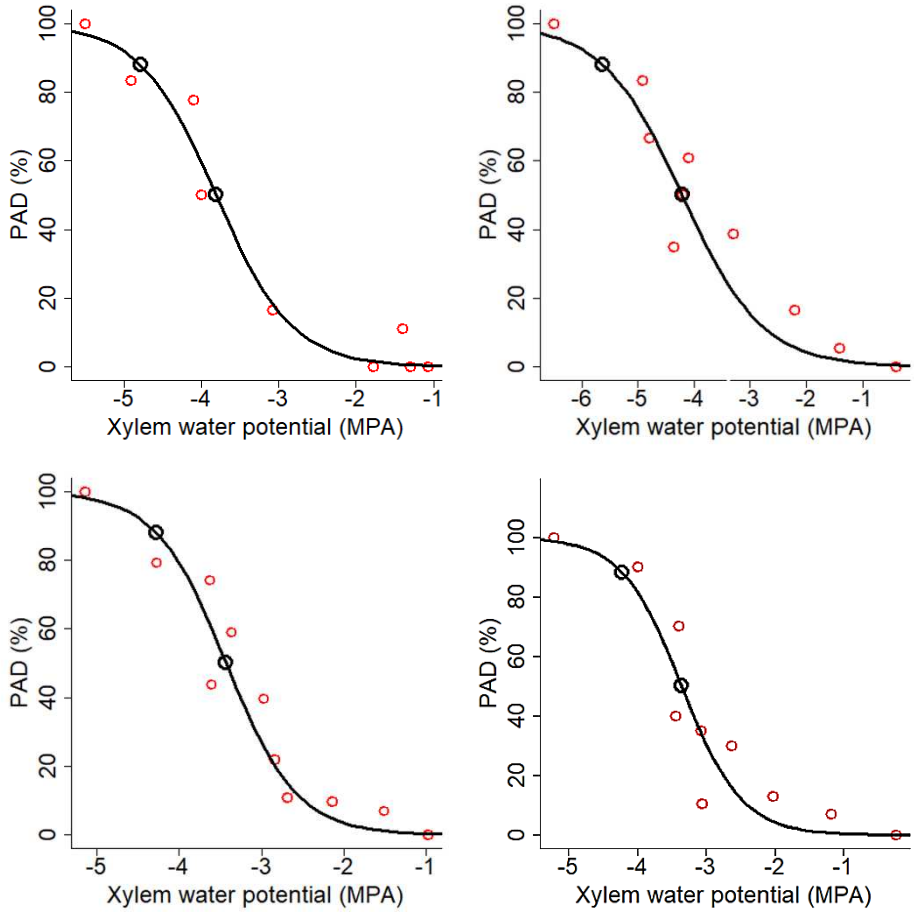

Fig. S7 Xylem vulnerability curves of *Brosimum rubescens* tall >15m growing in the southern Amazon. The black dots represent P_{50} and P_{88} values.

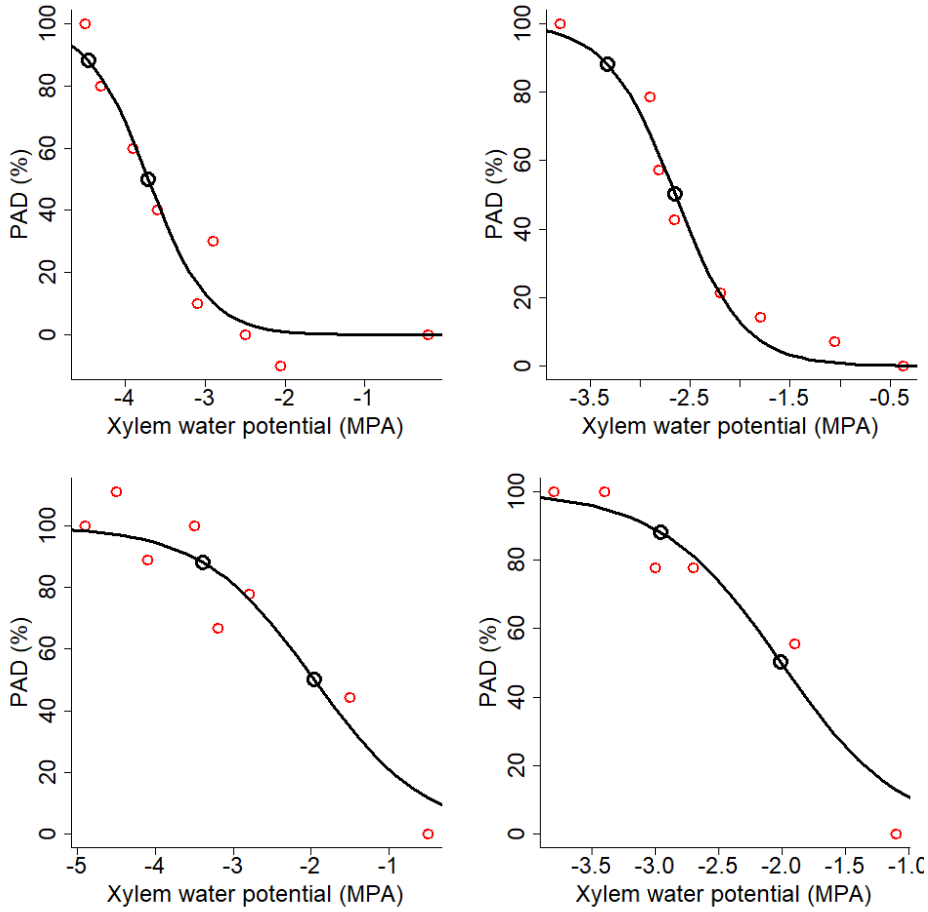

Fig. S8 Xylem vulnerability curves of *Brosimum rubescens* intermediate 10-15m growing in the southern Amazon. The black dots represent P_{50} and P_{88} values.

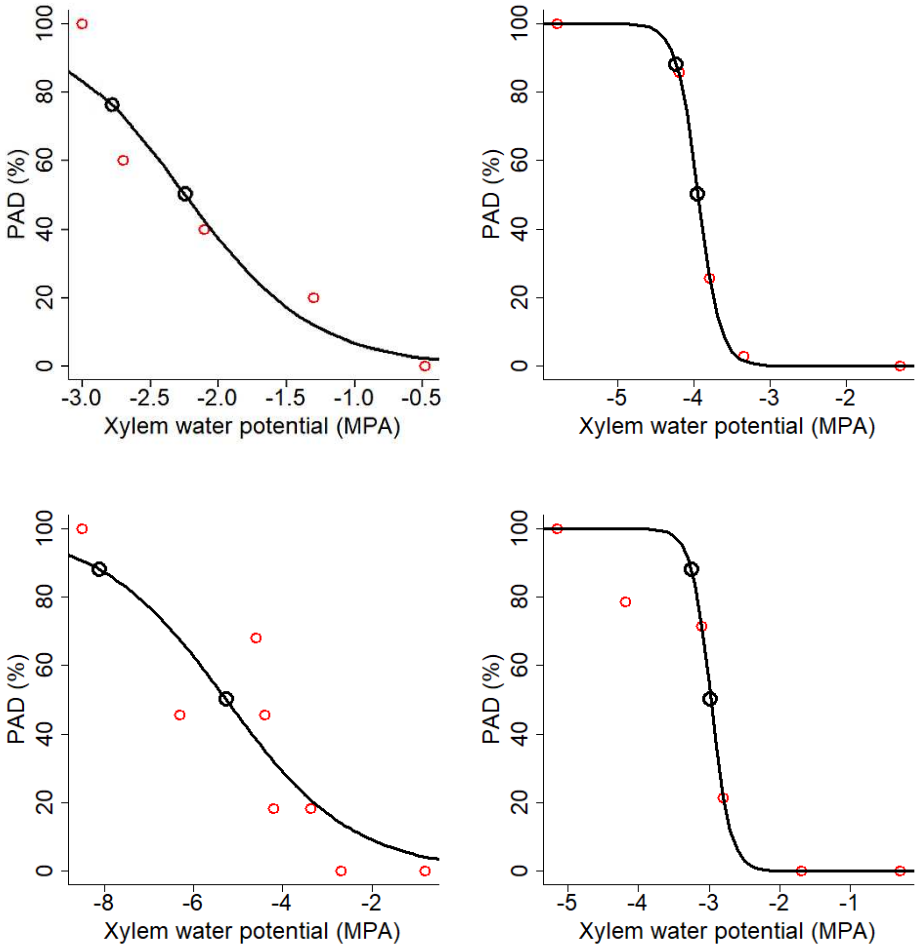

Fig. S9 Xylem vulnerability curves of *Brosimum rubescens* low 5-10m growing in the southern Amazon. The black dots represent P_{50} and P_{88} values.

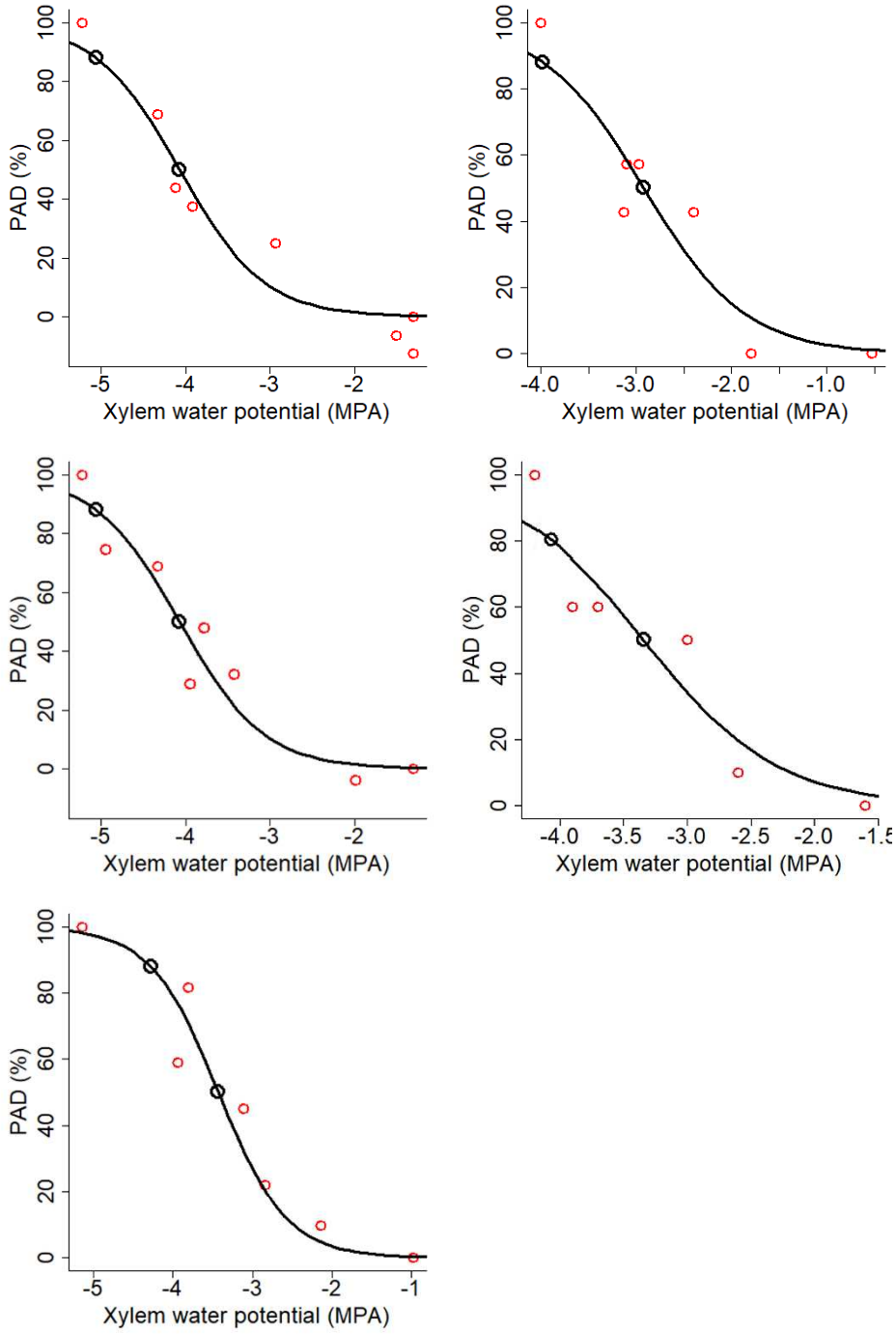

Fig. S10 Xylem vulnerability curves of *Brosimum rubescens* saplings < 1m growing in the southern Amazon. The black dots represent P_{50} and P_{88} values.

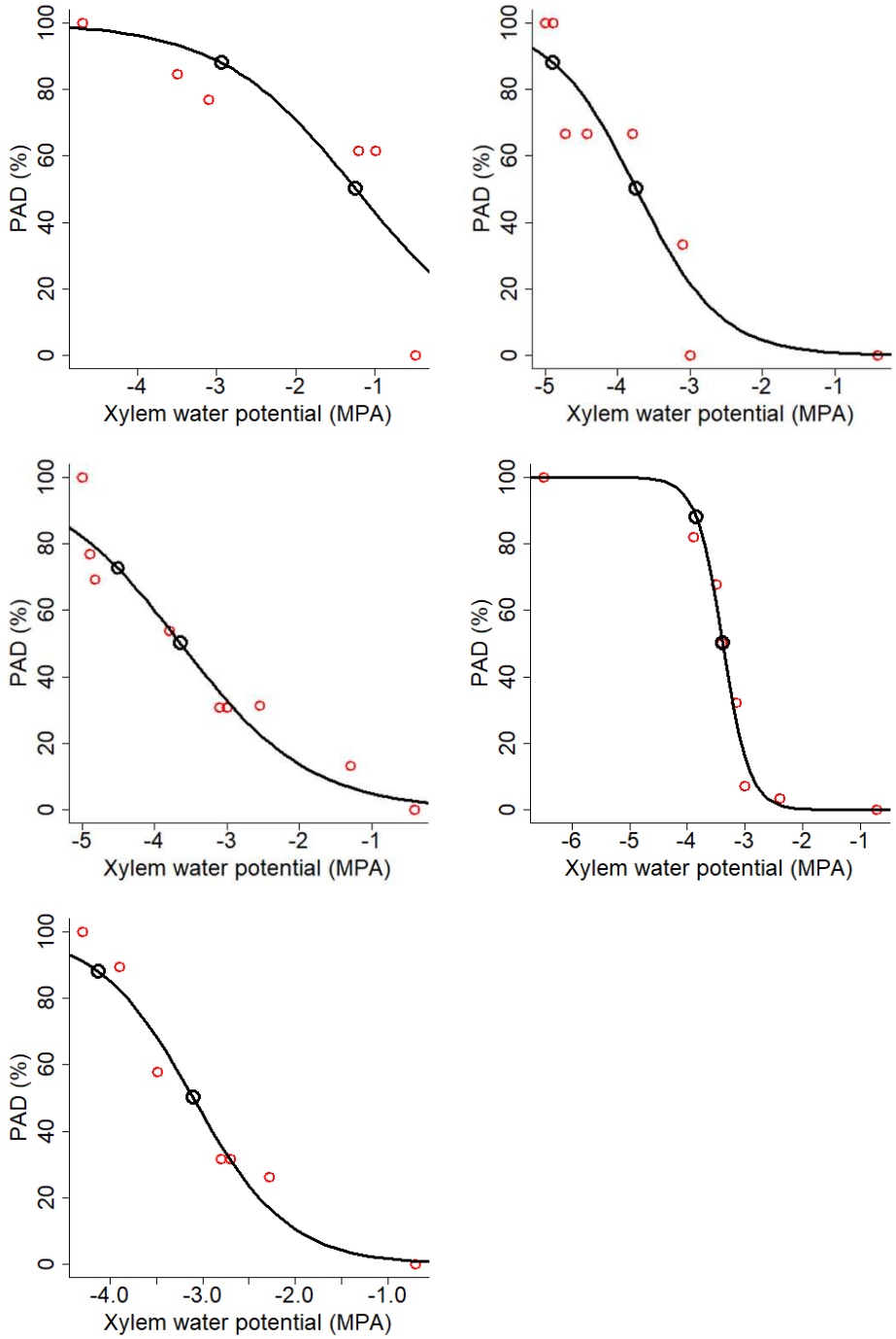

Fig. S11 Xylem vulnerability curves of *Cheiloclinium cognatum* intermediate 10-15m growing in the southern Amazon. The black dots represent P_{50} and P_{88} values.

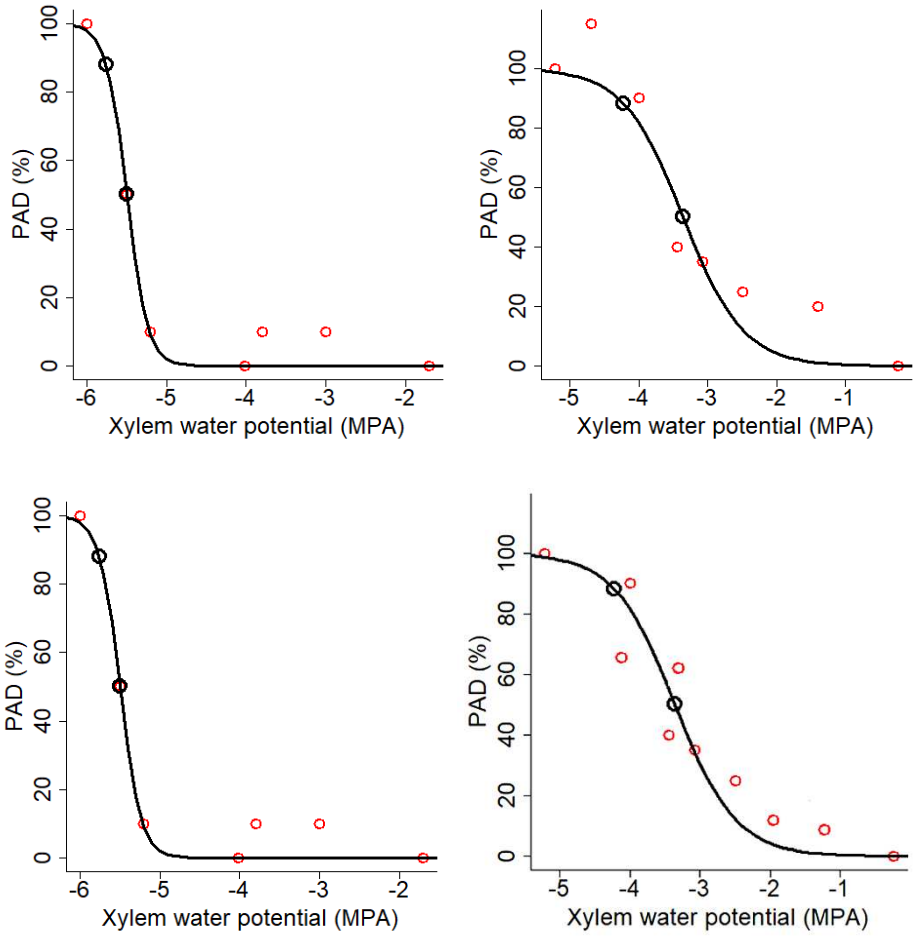

Fig. S12 Xylem vulnerability curves of *Cheiloclinium cognatum* low 5-10m growing in the southern Amazon. The black dots represent P_{50} and P_{88} values.

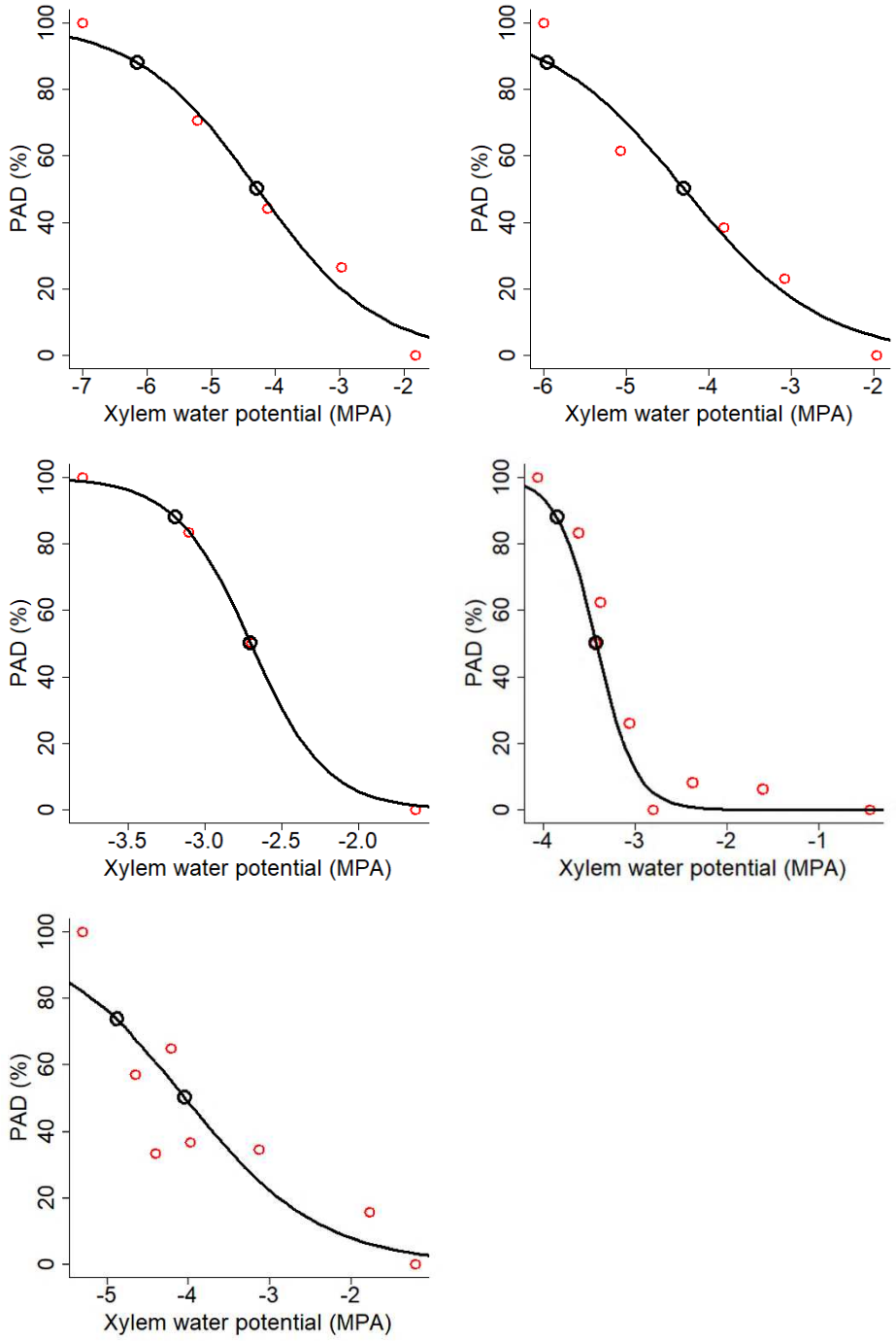

Fig. S13 Xylem vulnerability curves of *Cheiloclinium cognatum* saplings < 1m growing in the southern Amazon. The black dots represent P_{50} and P_{88} values.

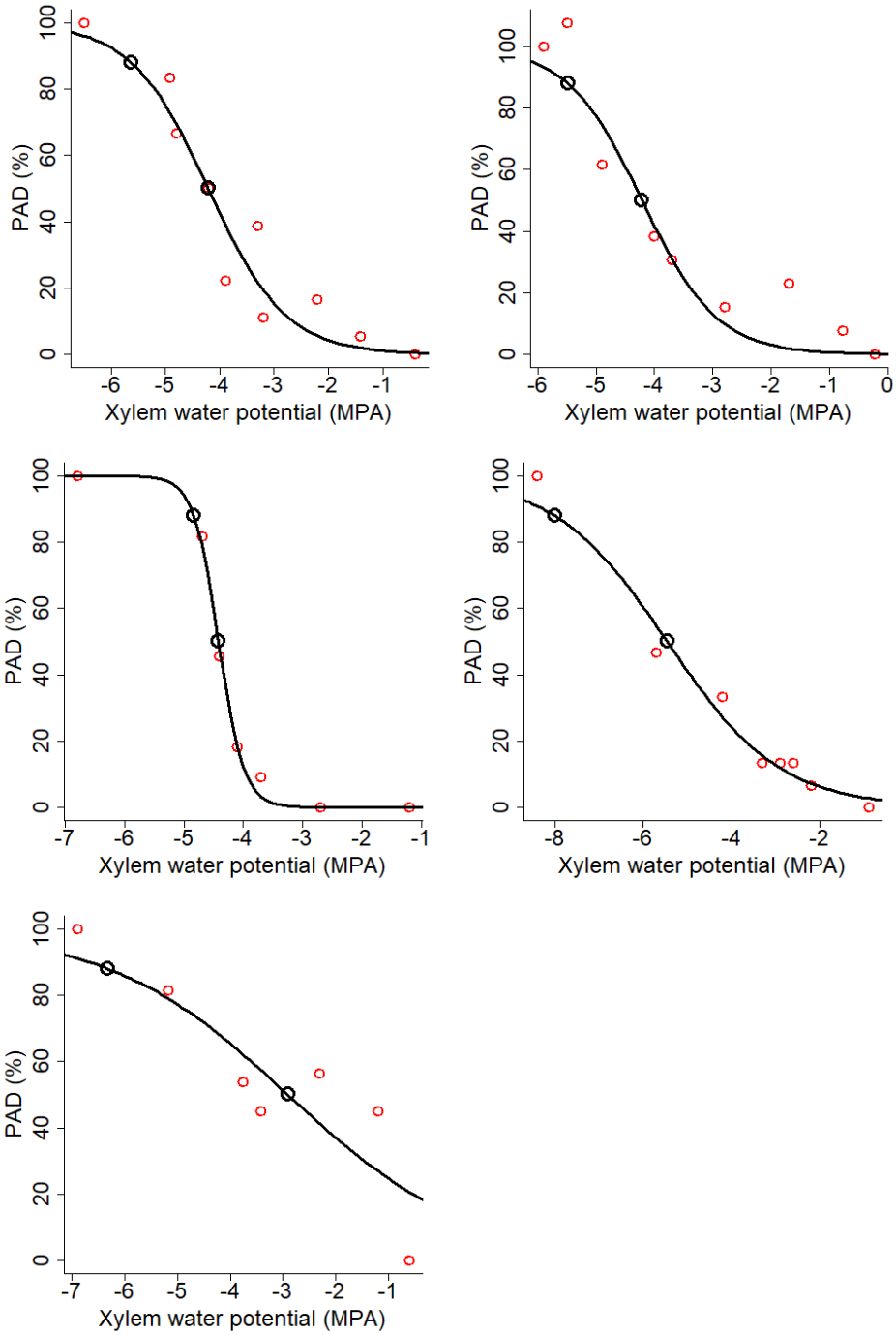

Fig. S14 Xylem vulnerability curves of *Protium altissimum* tall >15m growing in the southern Amazon. The black dots represent P_{50} and P_{88} values.

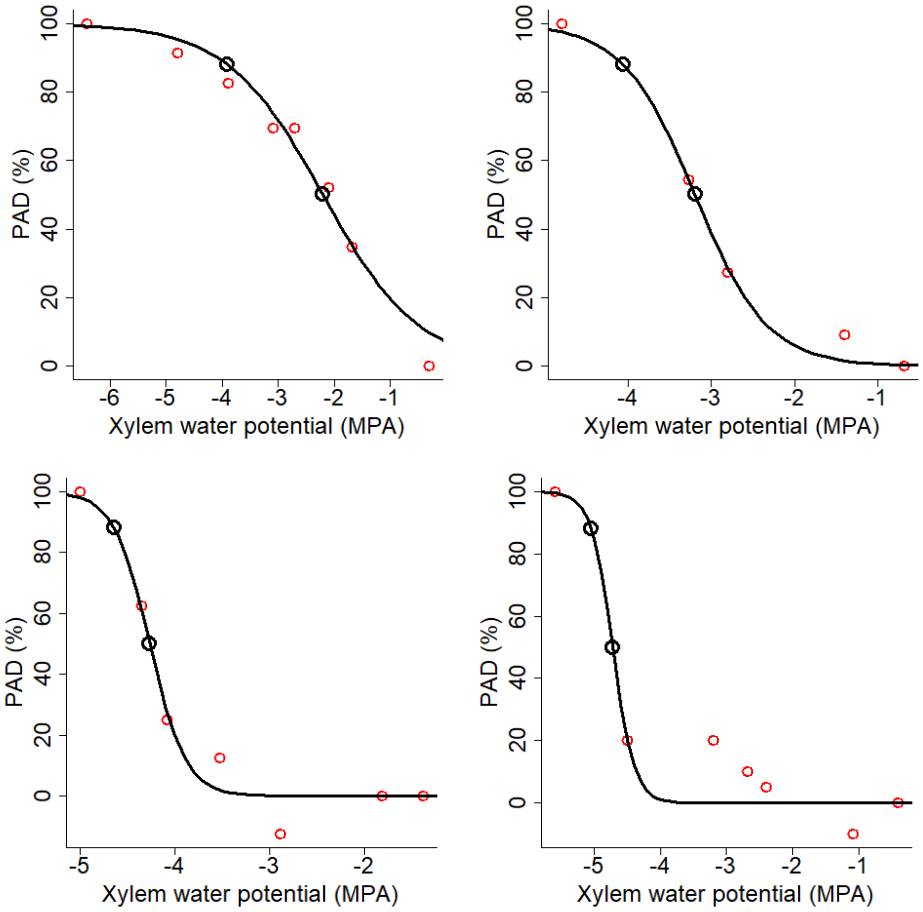

Fig. S15 Xylem vulnerability curves of *Protium altissimum* intermediate 10-15m growing in the southern Amazon. The black dots represent P_{50} and P_{88} values.

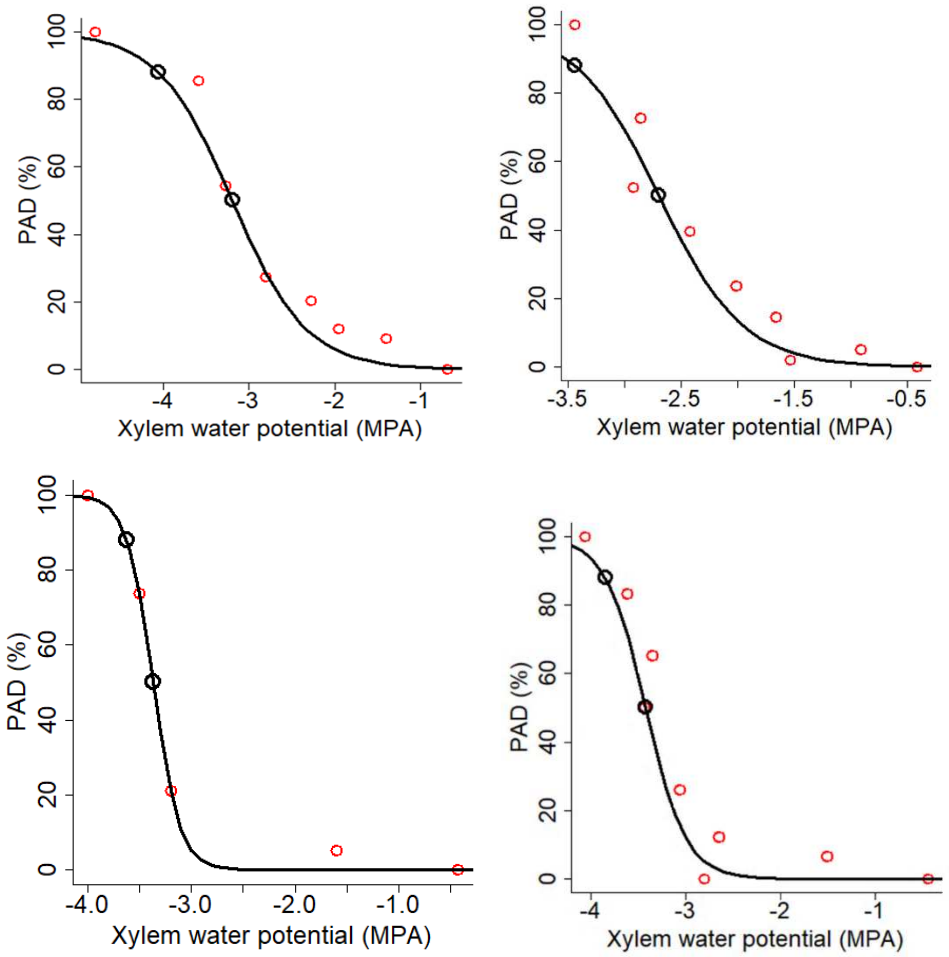

Fig. S16 Xylem vulnerability curves of *Protium altissimum* low 5-10m growing in the southern Amazon. The black dots represent P_{50} and P_{88} values.

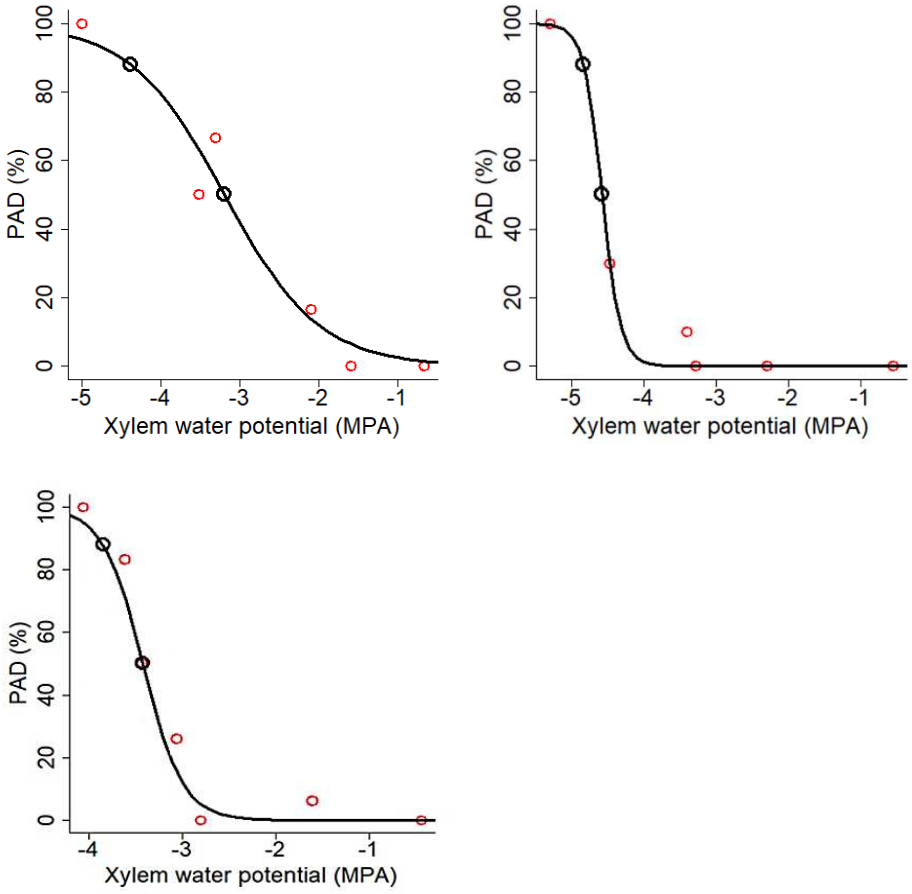

Fig. S17 Xylem vulnerability curves of *Protium altissimum* saplings < 1m growing in the southern Amazon. The black dots represent P_{50} and P_{88} values.