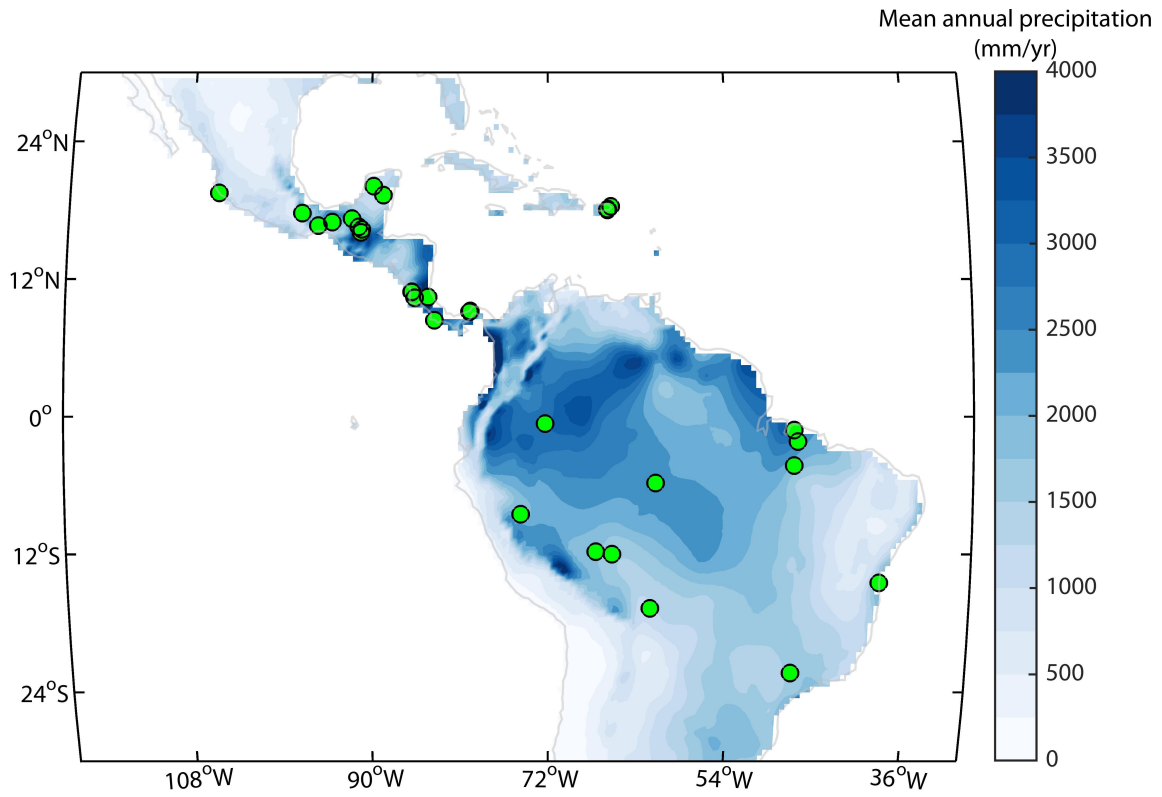


Legume Abundance Along Successional And Rainfall Gradients In Neotropical Forests

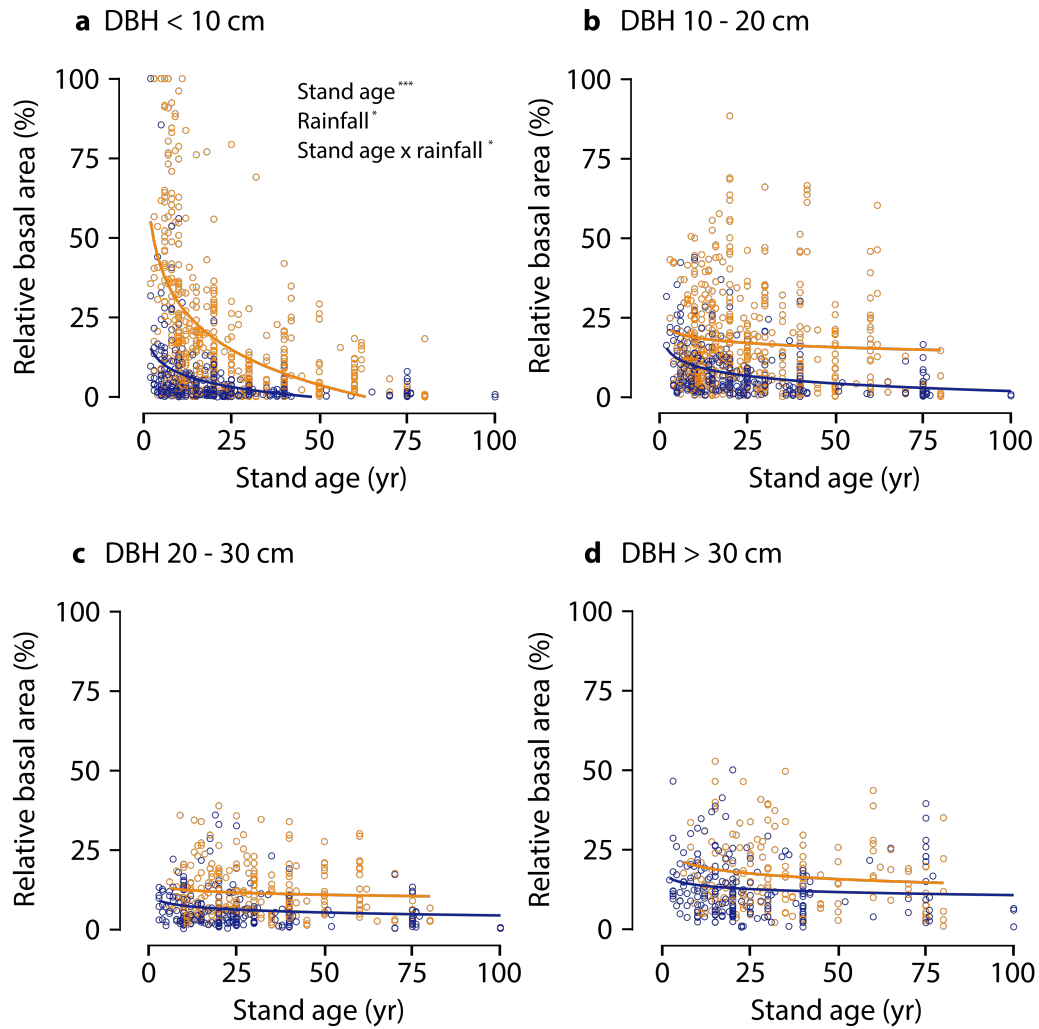
This PDF file includes:

Supplementary Fig. 1 to 7
Supplementary Tables 1 to 6
References (63–85)

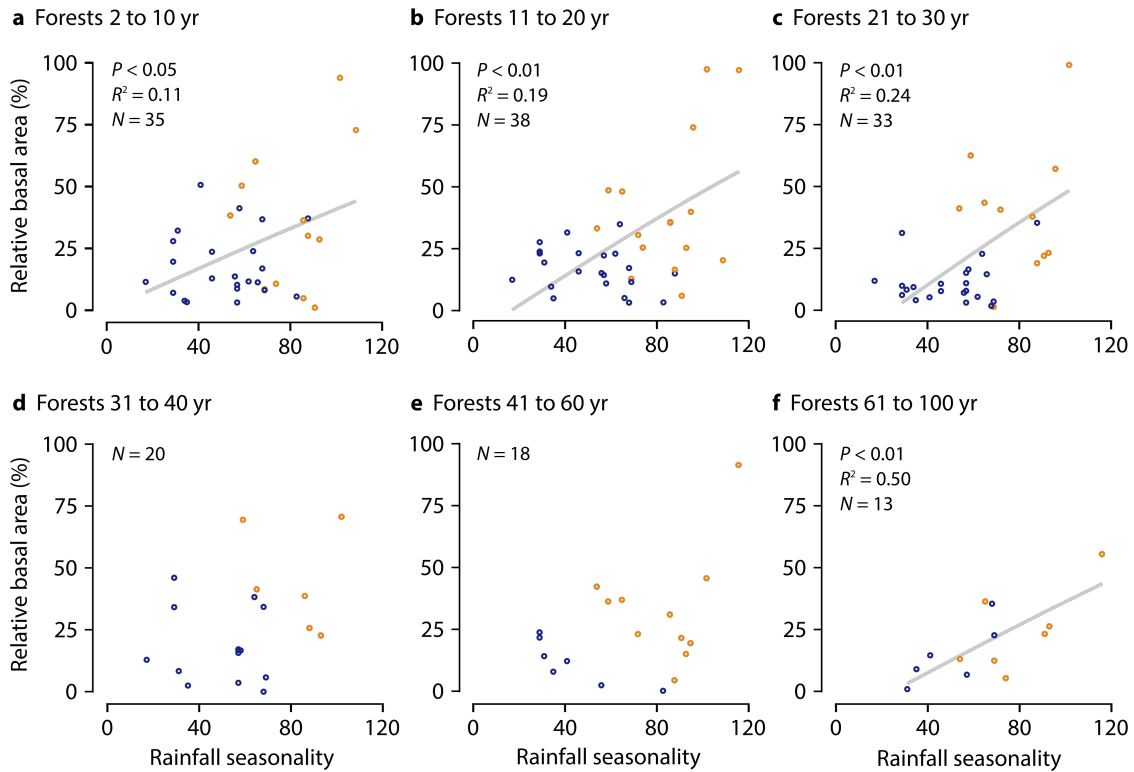
**Legume Abundance Along Successional
And Rainfall Gradients In Neotropical Forests**



Supplementary Fig. 1 | The 2ndFOR study sites included in this study ($N = 42$). Shading illustrates mean annual precipitation between 1971 and 2010 (derived from the TS2p1 dataset, Climate Research Unit, University of East Anglia)⁶³.

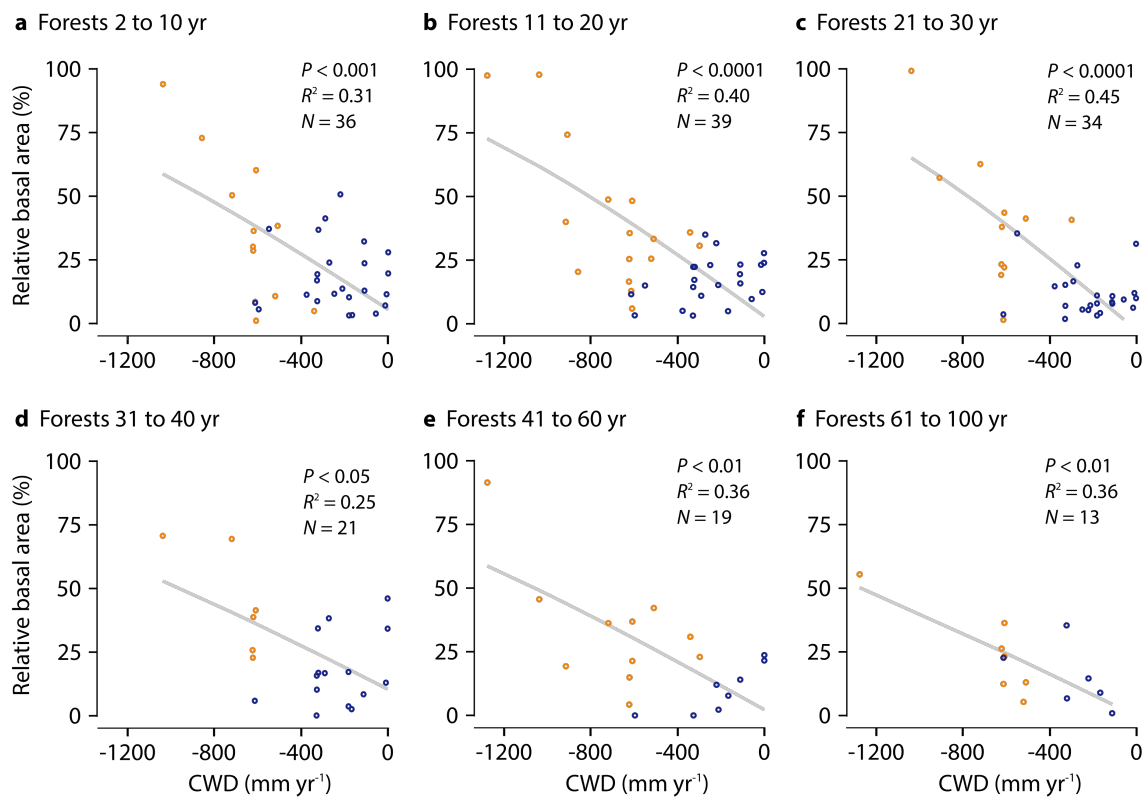


Supplementary Fig. 2 | Plot-level relative basal area of legumes in secondary dry (orange circles) and wet forests (blue circles), stratified by size classes, $N = 42$ sites. Results of a linear mixed model, with stand age and rainfall (and their interaction) as fixed effects and site as random effect are shown ($^{\dagger} P < 0.05$; $* P < 0.01$; $ P < 0.001$; $*** P < 0.0001$).**



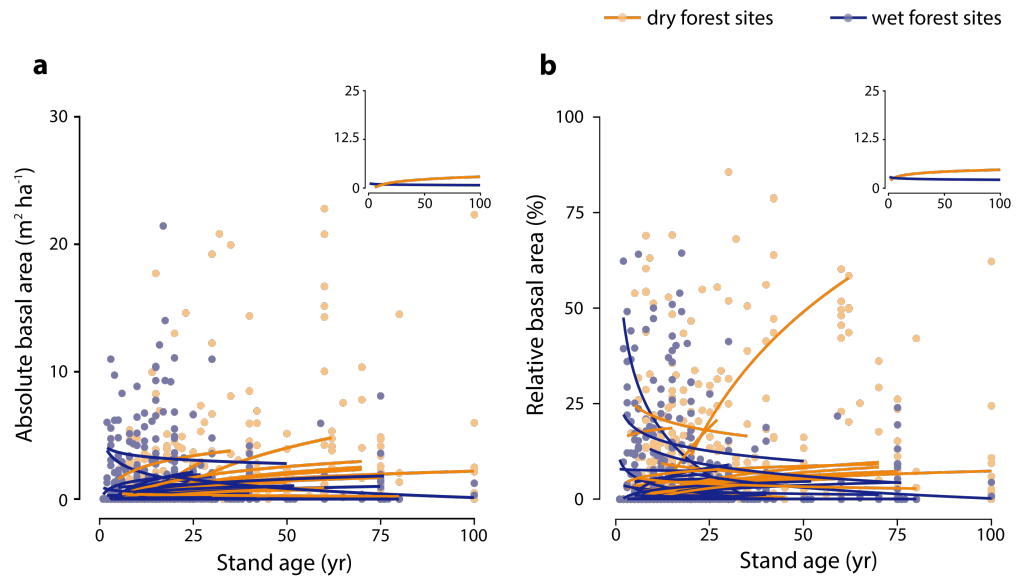
Supplementary Fig. 3 | Relationship between legume relative basal area and rainfall seasonality at sites of similar stand age.

(**a**) 2 to 10 yr old forests, (**b**) 11 to 20 yr old forests, (**c**) 21 to 30 yr old forests, (**d**) 31 to 40 yr old forests, (**e**) 41 to 60 yr old forests, and (**f**) 61 to 100 yr old forests. Dry forest sites are shown orange circles, and wet forests as blue circles. Results of linear regressions performed on arcsin transformed RA are shown in each panel ($^{\dagger} P < 0.05$; $^* P < 0.01$; $^{**} P < 0.001$; $^{***} P < 0.0001$).

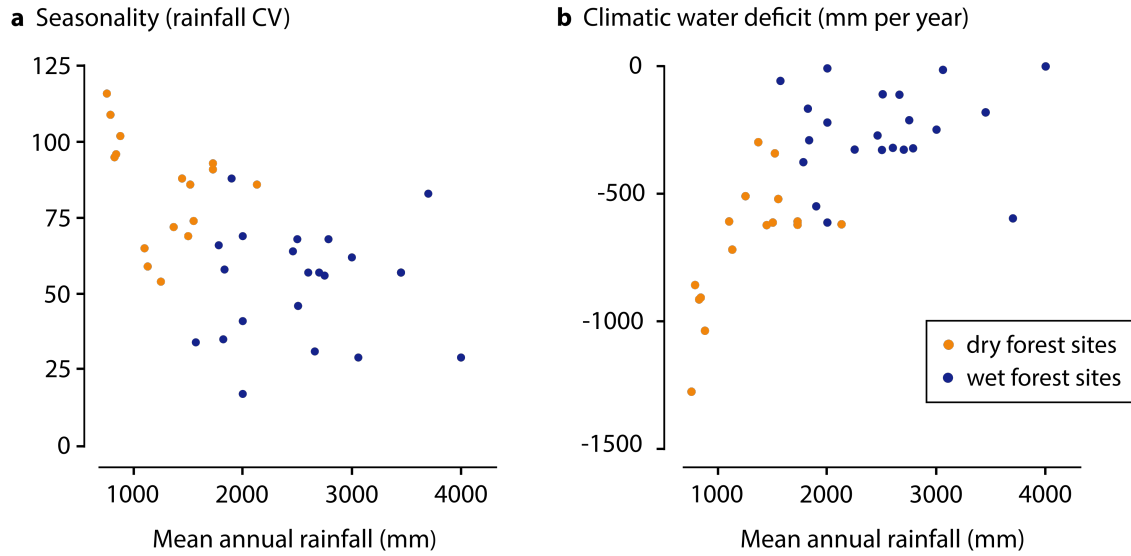


Supplementary Fig. 4 | Relationship between legume relative basal area and climatic water deficit at sites of similar stand age.

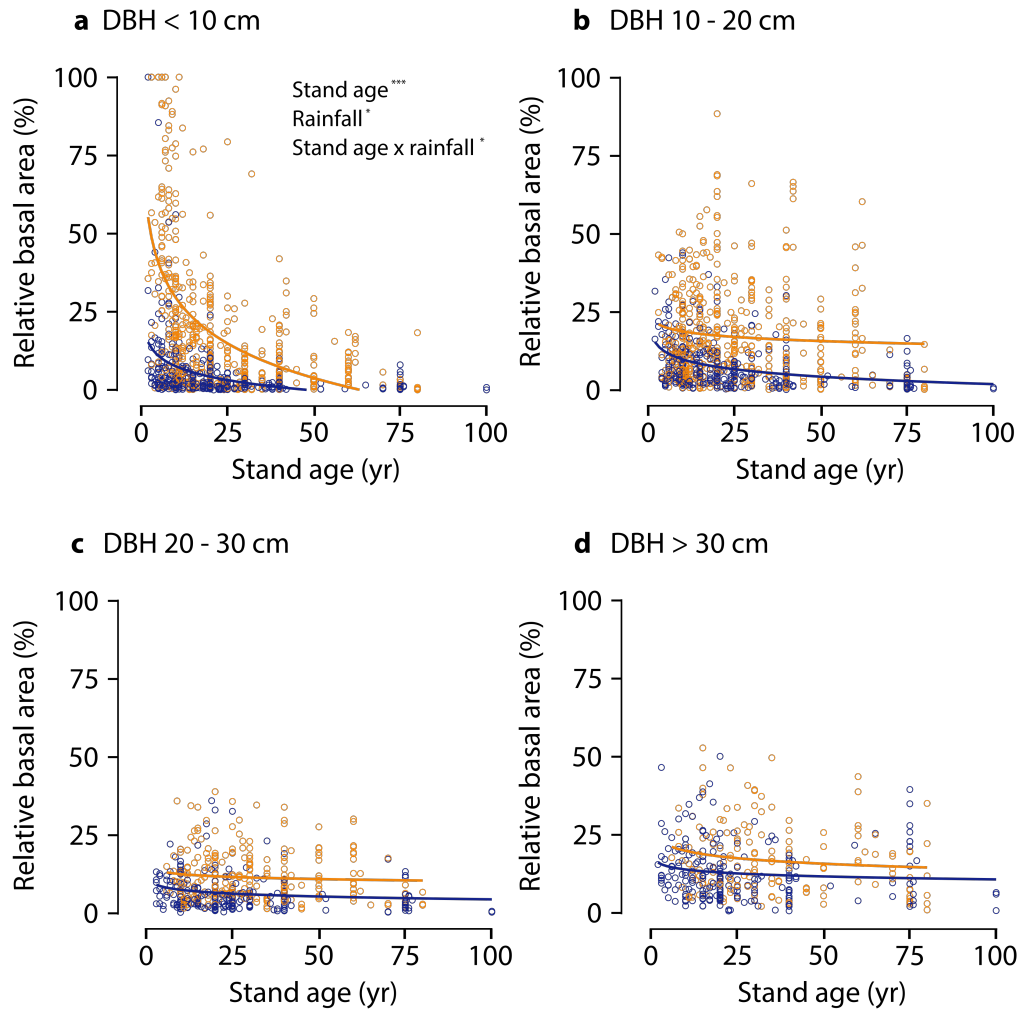
(**a**) 2 to 10 yr old forests, (**b**) 11 to 20 yr old forests, (**c**) 21 to 30 yr old forests, (**d**) 31 to 40 yr old forests, (**e**) 41 to 60 yr old forests, and (**f**) 61 to 100 yr old forests. Dry forest sites are shown orange circles, and wet forests as blue circles. Results of linear regressions performed on arcsin transformed RA are shown in each panel ($^{\dagger} P < 0.05$; $* P < 0.01$; $** P < 0.001$; $*** P < 0.0001$).



Supplementary Fig. 5 | Relationship between relative basal area of non-fixing legume species and stand age in Neotropical secondary forests, $N = 42$ sites. (a) Plot-level total basal area, and (b) relative basal area of non-fixing legumes. Each circle represents one plot and each line the successional trajectory of an individual chronosequence ($N = 42$). In panel (b), the dry forest curve with a positive trend (spanning from 1 to 58% relative basal area) describes the observed increase in the relative abundance of *Caesalpinia pyramidalis* in older forests at Patos, Brazil.



Supplementary Fig. 6 | (a) Seasonality (rainfall coefficient of variation from WorldClim²⁵), $N = 41$ sites (one site was excluded because no climatic data were available), and (b) climatic water deficit (calculated as the total rainfall minus evapotranspiration during dry months and expressed in mm/yr²⁶, http://chave.ups-tlse.fr/pantropical_allometry.htm) in dry and wet forest sites, $N = 42$ sites.



Supplementary Fig. 7 | Relationship between relative basal area of legume species and stand age in Neotropical secondary forests, $N = 42$ sites.

(a) Legume species with bipinnate, (b) pinnate, and (c) unifoliolate leaves. Each line represents a different chronosequence site.

Supplementary Table 1 | Metadata associated with 2ndFOR sites in the Neotropics.

Site	Country	Lat.	Long.	MAT	Rainfall	Forest	CWD	Seasonality	Age	Ref.
El Tigre	Bolivia	-11.98	-65.72	26.3	1780	wet	-375.63	66	3-25	64
El Turi	Bolivia	-11.75	-67.33	26	1833	wet	-289.58	58	2-40	64
San Lorenzo	Bolivia	-16.7	-61.87	19.2	1129	dry	-718.63	59	3-50	65
Bahia	Brazil	-14.48	-39.09	9.8	2000	wet	-7.67	17	10-40	66
Cajueiro	Brazil	-14.98	-43.9	24.4	840	dry	-907	96	15-59	
Serra do Cipó	Brazil	-19.35	-43.62	20.9	1519	dry	-341	86	8-50	
Eastern Pará 1	Brazil	-4.26	-47.73	25.8	1898	wet	-548.79	88	5-25	67
Eastern Pará 2	Brazil	-2.16	-47.38	26.4	2460	wet	-270.92	64	5-40	67
Eastern Pará 3	Brazil	-1.17	-47.75	26.4	2785	wet	-321.25	68	2-70	67
Middle Madeira	Brazil	-5.77	-61.43	11.3	2507	wet	-109.25	46	5-30	68
Middle Madeira	Brazil	-5.77	-61.43	11.3	2507	wet	-109.25	46	6.5-30	68
Mata Seca	Brazil	-14.86	-43.99	24.2	825	dry	-914	95	14-58	69
Patos	Brazil	-7.02	-37.25		750	dry	-1276	116	22-64	70
São Paulo	Brazil	-22.32	-47.57	20.4	1367	dry	-297.17	72	11-45	24
Araracuara	Colombia	-0.6	-72.37	26.8	3059	wet	-13.54	29	2-30	71
Nicoya	Costa Rica	9.97	-85.3	25	2130	dry	-619.32	86	5-35	72
Matapalo	Costa Rica	8.4	-83.33	26	3450	wet	-180.25	57	5-30	14

Site	Country	Lat.	Long.	MAT	Rainfall	Forest	CWD	Seasonality	Age	Ref.
Mogos	Costa Rica	8.4	-83.33	26	3450	wet	-180.25	57	5-40	14
Santa Rosa (oak forest)	Costa Rica	10.89	-85.6	25	1727	dry	-608.25	91	5-70	73
Palo Verde	Costa Rica	10.36	-85.31	26.5	1444	dry	-622.5	88	7-60	73
Piro	Costa Rica	8.4	-83.33	26	3450	wet	-180.25	57	15-40	14
Santa Rosa	Costa Rica	10.86	-85.61	24.9	1727	dry	-621.25	93	6-70	73
Sarapiqui (Chazdon)	Costa Rica	10.43	-83.98	26	4000	wet	0	29	10-41	74
Sarapiqui (Letcher)	Costa Rica	10.43	-83.98	26	4000	wet	0	29	10-42	75
Chajul	Mexico	16.07	-90.75	25.5	3000	wet	-248	62	0-27	76
Chamela	Mexico	19.5	-105.05	26.4	788	dry	-857.54	109	3-15	77
Chinantla	Mexico	17.75	-96.65	18.4	3700	wet	-596.08	83	5-50	24
El Ocote 1	Mexico	16.96	-93.63	21.8	1500	dry	-612.42	69	2-75	78
El Ocote 2	Mexico	16.96	-93.63	21.8	2000	wet	-612.42	69	3-75	78
JM Morelos	Mexico	19.31	-88.57	25.8	1250	dry	-508.96	54	2-100	79
Kaxil Kiuic	Mexico	20.08	-89.55	25.6	1100	dry	-608.13	65	3-70	80
Lacandona	Mexico	16.54	-90.96	24.6	2500	wet	-327.71	68	1-31	24
Marqués de Comillas	Mexico	16.33	-90.67		2250	wet	-326.21	NA	2-50	24
Nizanda	Mexico	16.66	-95.01	26.2	878	dry	-1036.88	102	2-60	81
Zona Norte	Mexico	17.27	-91.66	25.8	2750	wet	-211	56	2-52	24

Site	Country	Lat.	Long.	MAT	Rainfall	Forest	CWD	Seasonality	Age	Ref.
Agua Salud	Panama	9.22	-79.78	26	2700	wet	-326.63	57	2-31	82
Barro Colorado	Panama	9.15	-79.85	26	2600	wet	-319.46	57	20-100	83
Playa Venado	Panama	7.43	-80.18	26.4	1550	dry	-520.05	74	6-80	
Pucallpa	Peru	-8.5	-74.8	26.2	1570	wet	-56.83	34	5-30	24
Cayey	Puerto Rico	18.02	-66.08	21.5	2000	wet	-220.17	41	10-80	84
El Carite	Puerto Rico	18.08	-66.07	21.5	1822	wet	-165.79	35	4-77	85
Luquillo	Puerto Rico	18.34	-65.76	24.4	2660	wet	-111	31	9-76	85

Supplementary Table 2 | Taxonomic distribution⁴⁵, nitrogen fixation potential, and leaf arrangement in the 398 legume species present at our 42 study sites.

Functional trait or subfamily	Number of species	Percentage of total species within each trait or category
<i>Leguminosae subfamily</i>		
Caesalpinioideae	216	54%
Cercidoideae	12	3%
Detarioideae	9	2%
Dialioideae	3	1%
Papilionoideae	158	40%
<i>Nfixation potential</i>		
Fixer	298	75%
Non-fixer	96	24%
Unknown fixation	4	1%
<i>Leaf type</i>		
Bipinnate	104	26%
Pinnate	275	69%
Unifoliolate	19	5%
<i>N-fixing species and leaf type</i>		
Fixer bipinnate	75	25%
Fixer pinnate	219	73%
Fixer unifoliolate	4	1%
<i>Non-fixing species and leaf type</i>		
Non-fixer bipinnate	25	26%
Non-fixer pinnate	56	58%
Non-fixer unifoliolate	15	16%
<i>Bipinnate leaves and Nfixation potential</i>		
Bipinnate fixer	75	72%
Bipinnate non-fixer	25	24%
Bipinnate unknown fixation	4	4%
<i>Pinnate leaves and Nfixation potential</i>		
Pinnate fixer	219	80%
Pinnate non-fixer	56	20%
<i>Unifoliolate leaves and Nfixation potential</i>		
Unifoliolate fixer	4	21%
Unifoliolate non-fixer	15	79%

Supplementary Table 3 | List of 398 Leguminosae species present in 42 Neotropical chronosequences, their current⁴⁵ (and previous⁴⁶) subfamily classification, their potential to form symbioses with N-fixing bacteria, leaf type, and average (and standard deviation) leaflet length and width (cm).

Species	Subfamily	Potential to fix N ₂	Leaf type	Leaflet length	Leaflet width
<i>Abarema adenophora</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	5.03 ± 1.45	3.44 ± 1.12
<i>Abarema aggregatum</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate		
<i>Abarema barbouriana</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.93 ± 0.45	0.43 ± 0.19
<i>Abarema cochleata</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	4.84 ± 1.26	2.44 ± 0.42
<i>Abarema jupunba</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	2.54 ± 1.18	1.5 ± 0.7
<i>Abarema macradenia</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	2.66 ± 0.77	1.14 ± 0.43
<i>Abarema turbinata</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	9.8 ± 2.94	3.84 ± 1.2
<i>Acacia pennatula</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.18 ± 0.04	0.06 ± 0.03
<i>Acosmium cardenasii</i>	Papilionoideae	Yes	pinnate	1.26 ± 0.41	0.41 ± 0.11
<i>Acosmium lentiscifolium</i>	Papilionoideae	Yes	pinnate	3.23 ± 1.75	1.16 ± 0.53
<i>Albizia adinocephala</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	4.41 ± 1.52	1.44 ± 0.36
<i>Albizia leucocalyx</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate		
<i>Albizia niopoides</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.67 ± 0.31	0.13 ± 0.05
<i>Albizia occidentalis</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	1.8 ± 0.39	3.23 ± 0.79
<i>Albizia polycephala</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.63 ± 0.19	0.27 ± 0.09
<i>Albizia tomentosa</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	1.14 ± 0.14	0.44 ± 0.05

Species	Subfamily	Potential to fix N₂	Leaf type	Leaflet length	Leaflet width
<i>Alexa grandiflora</i>	Papilionoideae	No	pinnate	4.95 ± 2.28	2.99 ± 1.45
<i>Amburana cearensis</i>	Papilionoideae	No	pinnate	9.94 ± 5.47	4.02 ± 1.72
<i>Anadenanthera colubrina</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.48 ± 0.14	0.13 ± 0.04
<i>Andira inermis</i>	Papilionoideae	Yes	pinnate	7.23 ± 1.14	2.66 ± 0.63
<i>Andira legalis</i>	Papilionoideae	Yes	pinnate	10.95 ± 3.27	5.04 ± 1.93
<i>Andira lewisii</i>	Papilionoideae	Yes	pinnate		
<i>Andira multistipula</i>	Papilionoideae	Yes	pinnate	7.97 ± 3.15	2.73 ± 1.04
<i>Andira parviflora</i>	Papilionoideae	Yes	pinnate	3.9 ± 1.14	1.76 ± 0.34
<i>Apoplanesia paniculata</i>	Papilionoideae	No	pinnate	3.35 ± 1.11	1.29 ± 0.25
<i>Apuleia leiocarpa</i>	Dialioideae (Caesalpinioideae)	No	pinnate	3.39 ± 0.86	1.71 ± 0.33
<i>Arapatiella psilophylla</i>	Caesalpinioideae	No	pinnate	7.89 ± 1.44	3.51 ± 0.66
<i>Ateleia cubensis</i>	Papilionoideae	Yes	pinnate	3.22 ± 0.97	1.52 ± 0.27
<i>Ateleia herbert-smithii</i>	Papilionoideae	Yes	pinnate	6.98 ± 1.09	3.46 ± 0.45
<i>Balizia elegans</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.45 ± 0.08	0.15 ± 0.03
<i>Balizia leucocalix</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	2.57 ± 0.54	1.37 ± 0.37
<i>Balizia pedicellaris</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.67 ± 0.13	0.21 ± 0.04
<i>Batesia floribunda</i>	Caesalpinioideae	No	pinnate	11.35 ± 2.51	4.87 ± 0.92
<i>Bauhinia acreana</i>	Cercidoideae (Caesalpinioideae)	No	unifoliolate	7.7 ± 1.13	6.02 ± 1.56
<i>Bauhinia acuruana</i>	Cercidoideae (Caesalpinioideae)	No	unifoliolate	6.21 ± 2.4	4.03 ± 1.12
<i>Bauhinia brevipes</i>	Cercidoideae (Caesalpinioideae)	No	unifoliolate	4.31 ± 0.95	2.32 ± 0.49
<i>Bauhinia cheilantha</i>	Cercidoideae (Caesalpinioideae)	No	unifoliolate	7.72 ± 1.78	7.6 ± 1.4
<i>Bauhinia divaricata</i>	Cercidoideae (Caesalpinioideae)	No	unifoliolate	5.87 ± 2.97	6.51 ± 1.54
<i>Bauhinia guianensis</i>	Cercidoideae (Caesalpinioideae)	No	bifoliolate	11.19 ± 3.93	3.79 ± 0.59

Species	Subfamily	Potential to fix N ₂	Leaf type	Leaflet length	Leaflet width
<i>Bauhinia longicuspis</i>	Cercidoideae (Caesalpinioideae)	No	unifoliolate	12.93 ± 1.74	6 ± 2.23
<i>Bauhinia melastomatoides</i>	Cercidoideae (Caesalpinioideae)	No	unifoliolate	17.47 ± 1.71	7.33 ± 1.04
<i>Bauhinia ovata</i>	Cercidoideae (Caesalpinioideae)	No	unifoliolate	7.72 ± 0.9	4.83 ± 0.9
<i>Bauhinia pauletia</i>	Cercidoideae (Caesalpinioideae)	No	unifoliolate	4.04 ± 1.08	4.23 ± 1.46
<i>Bauhinia rufa</i>	Cercidoideae (Caesalpinioideae)	No	unifoliolate	8.42 ± 2.34	7.64 ± 1.81
<i>Bauhinia unglata</i>	Cercidoideae (Caesalpinioideae)	No	unifoliolate	8.42 ± 4.32	6.17 ± 3.06
<i>Bowdichia virgilioides</i>	Papilionoideae	Yes	pinnate	3.36 ± 0.82	1.42 ± 0.56
<i>Caesalpinia caladenia</i>	Caesalpinioideae	No	bipinnate	1.67 ± 0.45	0.92 ± 0.26
<i>Caesalpinia coriaria</i>	Caesalpinioideae	No	bipinnate	0.45 ± 0.08	0.15 ± 0.02
<i>Caesalpinia eriostachys</i>	Caesalpinioideae	No	bipinnate	0.95 ± 0.21	0.45 ± 0.06
<i>Caesalpinia exostemma</i>	Caesalpinioideae	No	bipinnate	1.73 ± 0.44	0.86 ± 0.17
<i>Caesalpinia ferrea</i>	Caesalpinioideae	No	bipinnate	1.66 ± 0.51	0.89 ± 0.26
<i>Caesalpinia floribunda</i>	Caesalpinioideae	No	bipinnate	0.72 ± 0.13	0.4 ± 0.04
<i>Caesalpinia gaumeri</i>	Caesalpinioideae	No	bipinnate	1.68 ± 0.35	0.98 ± 0.22
<i>Caesalpinia mollis</i>	Caesalpinioideae	No	bipinnate	4.46 ± 1.32	1.89 ± 0.27
<i>Caesalpinia platyloba</i>	Caesalpinioideae	No	bipinnate	3.35 ± 1.06	1.55 ± 0.2
<i>Caesalpinia pyramidalis</i>	Caesalpinioideae	No	bipinnate	1.96 ± 0.36	1.22 ± 0.17
<i>Caesalpinia sclerocarpa</i>	Caesalpinioideae	No	bipinnate	1.61 ± 0.56	0.87 ± 0.32
<i>Caesalpinia yucatanensis</i>	Caesalpinioideae	No	bipinnate	3.08 ± 0.86	1.46 ± 0.44
<i>Calliandra formosa</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.69 ± 0.23	0.31 ± 0.08
<i>Calliandra grandiflora</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.39 ± 0.18	0.11 ± 0.04
<i>Cassia fastuosa</i>	Caesalpinioideae	No	pinnate	3.78 ± 0.8	1.01 ± 0.15
<i>Cassia ferruginea</i>	Caesalpinioideae	No	pinnate	2.74 ± 0.5	0.86 ± 0.09
<i>Cassia grandis</i>	Caesalpinioideae	No	pinnate	4.04 ± 1.47	1.39 ± 0.23

Species	Subfamily	Potential to fix N₂	Leaf type	Leaflet length	Leaflet width
<i>Cenostigma tocaninum</i>	Caesalpinioideae	No	pinnate	9.55 ± 2.83	3.67 ± 0.76
<i>Centrolobium microchaete</i>	Papilionoideae	Yes	pinnate	5.53 ± 1.88	4.08 ± 2.36
<i>Centrolobium sclerophyllum</i>	Papilionoideae	Yes	pinnate	7.48 ± 1.91	4.38 ± 0.9
<i>Centrolobium tomentosum</i>	Papilionoideae	Yes	pinnate	9.75 ± 2.28	5.21 ± 1.33
<i>Ceratonia siliqua</i>	Caesalpinioideae	No	pinnate	4.82 ± 0.81	3.17 ± 0.54
<i>Chamaecrista apoucouita</i>	Caesalpinioideae	Yes	pinnate	5.76 ± 1.27	2.56 ± 0.6
<i>Chamaecrista bahiae</i>	Caesalpinioideae	Yes	pinnate	7.63 ± 1.89	4.36 ± 0.8
<i>Chamaecrista duartei</i>	Caesalpinioideae	Yes	pinnate	9.94 ± 2.64	4.37 ± 0.8
<i>Chamaecrista eitenorum</i>	Caesalpinioideae	Yes	pinnate	5.47 ± 1.28	2.77 ± 0.67
<i>Chamaecrista xinguensis</i>	Caesalpinioideae	Yes	pinnate	5.91 ± 2.23	2.46 ± 1
<i>Chloroleucon dumosum</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.77 ± 0.19	0.26 ± 0.1
<i>Chloroleucon foliolosum</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.22 ± 0.1	0.07 ± 0.02
<i>Chloroleucon mangense</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.72 ± 0.26	0.29 ± 0.18
<i>Clathrotropis macrocarpa</i>	Papilionoideae	Yes	pinnate	12.6 ± 4.63	5.14 ± 1.34
<i>Clitoria glaberrima</i>	Papilionoideae	Yes	pinnate	10.06 ± 3.22	5.26 ± 1.55
<i>Cojoba arborea</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.59 ± 0.18	0.13 ± 0.03
<i>Copaifera langsdorffii</i>	Detarioideae (Caesalpinioideae)	No	pinnate	3.18 ± 1	1.65 ± 0.44
<i>Coursertia ferruginea</i>	Papilionoideae	Yes	pinnate	3.25 ± 0.94	1.87 ± 0.28
<i>Crotalaria maypurensis</i>	Papilionoideae	Yes	pinnate	4.85 ± 1.33	1.54 ± 0.32
<i>Crudia amazonica</i>	Detarioideae (Caesalpinioideae)	No	pinnate	5.37 ± 1.47	1.64 ± 0.34
<i>Dalbergia acuta</i>	Papilionoideae	Yes	pinnate	1.81 ± 0.6	0.63 ± 0.15
<i>Dalbergia brownei</i>	Papilionoideae	Yes	pinnate	3.99 ± 1.2	2.78 ± 1.18

Species	Subfamily	Potential to fix N ₂	Leaf type	Leaflet length	Leaflet width
<i>Dalbergia cearensis</i>	Papilionoideae	Yes	pinnate	3.41 ± 0.99	1.77 ± 0.63
<i>Dalbergia congestiflora</i>	Papilionoideae	Yes	pinnate	2.97 ± 0.95	1.6 ± 0.54
<i>Dalbergia glomerata</i>	Papilionoideae	Yes	pinnate	4.32 ± 1.19	1.92 ± 0.44
<i>Dalbergia monetaria</i>	Papilionoideae	Yes	pinnate	8.05 ± 3.1	4.86 ± 1.19
<i>Dalbergia retusa</i>	Papilionoideae	Yes	pinnate	6.36 ± 2.1	3.11 ± 1.18
<i>Dalbergia spruceana</i>	Papilionoideae	Yes	pinnate	2.96 ± 0.88	1.26 ± 0.22
<i>Dalbergia stevensonii</i>	Papilionoideae	Yes	pinnate	6.46 ± 0.47	3.08 ± 0.21
<i>Dialium guianense</i>	Dialioideae (Caesalpinioideae)	No	pinnate	7.94 ± 3.08	3.45 ± 0.74
<i>Diphysa americana</i>	Papilionoideae	Yes	pinnate	2.49 ± 0.48	1.33 ± 0.19
<i>Diphysa carthagenensis</i>	Papilionoideae	Yes	pinnate	1.04 ± 0.3	0.51 ± 0.2
<i>Diphysa robinoides</i>	Papilionoideae	Yes	pinnate	2.19 ± 0.43	0.8 ± 0.11
<i>Diphysa yucatanensis</i>	Papilionoideae	Yes	pinnate	3.16 ± 0.84	1.74 ± 0.5
<i>Diploptropis ferruginea</i>	Papilionoideae	Yes	pinnate	5.35 ± 1.63	2.68 ± 0.34
<i>Diploptropis incexis</i>	Papilionoideae	Yes	pinnate	5.87 ± 1.3	2.79 ± 0.25
<i>Diploptropis martiusii</i>	Papilionoideae	Yes	pinnate	10.51 ± 3.01	4.34 ± 1.15
<i>Diploptropis purpurea</i>	Papilionoideae	Yes	pinnate	7.89 ± 2.31	4.49 ± 0.97
<i>Diploptropis triloba</i>	Papilionoideae	Yes	pinnate	8.02 ± 1.37	4.17 ± 0.82
<i>Dipteryx odorata</i>	Papilionoideae	No	pinnate	13.37 ± 2.89	5.68 ± 0.78
<i>Dipteryx oleifera</i>	Papilionoideae	No	pinnate		
<i>Dipteryx panamensis</i>	Papilionoideae	No	pinnate	11.47 ± 1.73	5.14 ± 0.58
<i>Diptychandra aurantiaca</i>	Caesalpinioideae	No	pinnate	4.16 ± 1.06	1.89 ± 0.39
<i>Dussia macrophyllata</i>	Papilionoideae	Yes	pinnate	9.98 ± 2.63	5.93 ± 1.09
<i>Enterolobium contortisiliquum</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	1.62 ± 0.66	0.53 ± 0.21
<i>Enterolobium cyclocarpum</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.93 ± 0.28	0.25 ± 0.05
<i>Enterolobium schomburgkii</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.25 ± 0.08	0.05 ± 0.02
<i>Erythrina berteriana</i>	Papilionoideae	Yes	pinnate	8.06 ± 0.75	5.22 ± 1.13
<i>Erythrina costaricensis</i>	Papilionoideae	Yes	pinnate	9.02 ± 0.31	5.66 ± 0.84
<i>Erythrina folkersii</i>	Papilionoideae	Yes	pinnate	7.76 ± 2.32	6.84 ± 1.39
<i>Erythrina standleyana</i>	Papilionoideae	Yes	pinnate		

Species	Subfamily	Potential to fix N₂	Leaf type	Leaflet length	Leaflet width
<i>Exostyles venusta</i>	Papilionoideae	No	pinnate	2.95 ± 1.09	1.38 ± 0.29
<i>Gliricidia maculata</i>	Papilionoideae	Yes	pinnate		
<i>Gliricidia sepium</i>	Papilionoideae	Yes	pinnate	5.4 ± 1.38	2.79 ± 0.84
<i>Goniorrhachis marginata</i>	Detarioideae (Caesalpinioideae)	No	pinnate	4.13 ± 1.05	1.85 ± 0.23
<i>Haematoxylum brasiletto</i>	Caesalpinioideae	No	pinnate	2.59 ± 3.61	0.72 ± 0.12
<i>Haematoxylum campechianum</i>	Caesalpinioideae	No	pinnate	1.67 ± 0.28	1.4 ± 0.16
<i>Harleyodendron unifoliolatum</i>	Papilionoideae	No	unifoliolate	26.31 ± 5.4	7.51 ± 1.27
<i>Havardia albicans</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.59 ± 0.12	0.15 ± 0.02
<i>Havardia campylacantha</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.26 ± 0.08	0.07 ± 0.03
<i>Hymenaea courbaril</i>	Detarioideae (Caesalpinioideae)	No	pinnate	7.32 ± 1.19	3.14 ± 0.3
<i>Hymenaea parvifolia</i>	Detarioideae (Caesalpinioideae)	No	pinnate	6.97 ± 1.4	3.46 ± 0.8
<i>Hymenolobium mesoamericanum</i>	Papilionoideae	Yes	pinnate	4.56 ± 1.42	1.99 ± 0.45
<i>Indigofera fruticosa</i>	Papilionoideae	Yes	pinnate	2.12 ± 0.24	1.16 ± 0.22
<i>Inga acrocephala</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	10.52 ± 4	3.99 ± 1.16
<i>Inga acuminata</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	9.07 ± 2.82	2.76 ± 0.88
<i>Inga aestuariorum</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate		
<i>Inga alba</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	5.92 ± 2.86	4.12 ± 3.32
<i>Inga auristellae</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	5.66 ± 2.69	2.62 ± 0.81
<i>Inga bella</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	15.53 ± 3.74	6.82 ± 1.55

Species	Subfamily	Potential to fix N₂	Leaf type	Leaflet length	Leaflet width
<i>Inga blanchetiana</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	10.57 ± 3.45	2.15 ± 0.69
<i>Inga brachyrhachis</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	15.03 ± 4.4	6.79 ± 1.8
<i>Inga capitata</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	8.3 ± 3.78	3.38 ± 1.56
<i>Inga cayennensis</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	8.09 ± 3.19	3.6 ± 1.27
<i>Inga chartacea</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	16.51 ± 3.65	7.45 ± 1.97
<i>Inga chocoensis</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	15.77 ± 7.06	9.35 ± 3.45
<i>Inga chrysantha</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	10.08 ± 3.48	3.19 ± 1.04
<i>Inga cinnamomea</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	12.2 ± 3.27	5.02 ± 0.95
<i>Inga cocleensis</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	11.54 ± 4.08	4.27 ± 1.13
<i>Inga coruscans</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	9.82 ± 4.5	4.29 ± 1.77
<i>Inga disticha</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	7.85 ± 2.68	2.87 ± 0.74
<i>Inga edulis</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	8.89 ± 3.51	4.1 ± 1.85
<i>Inga filiformis</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	17.57 ± 6.36	7.53 ± 1.78
<i>Inga flagelliformis</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	11.28 ± 2.27	3.46 ± 0.77
<i>Inga goldmanii</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate		
<i>Inga gracilifolia</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	2.81 ± 0.7	1.11 ± 0.29
<i>Inga grandiflora</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	13.92 ± 4.39	5.55 ± 1.73

Species	Subfamily	Potential to fix N₂	Leaf type	Leaflet length	Leaflet width
<i>Inga hayesii</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	7.41 ± 1.9	3.56 ± 0.67
<i>Inga heterophylla</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	4.89 ± 1.19	1.72 ± 0.41
<i>Inga ingoides</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	9.32 ± 2.33	4.59 ± 1.2
<i>Inga jimenezii</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	18.25 ± 5.89	8.09 ± 2.03
<i>Inga jinicuil</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	8.33 ± 3.2	3.4 ± 1.22
<i>Inga lateriflora</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	5.89 ± 1.42	2.33 ± 0.69
<i>Inga latibracteata</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	8.55 ± 3.93	4.33 ± 1.78
<i>Inga laurina</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	6.12 ± 3	2.76 ± 1.28
<i>Inga leiocalycina</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	8.15 ± 3.8	3.38 ± 1.36
<i>Inga litoralis</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	9.82 ± 3.03	4.17 ± 0.93
<i>Inga lomatoxylla</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	13.28 ± 4.06	6.92 ± 2.02
<i>Inga longiflora</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	12.71 ± 4.43	4.07 ± 1.01
<i>Inga luschnathiana</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	5.17 ± 2.08	5.47 ± 4.1
<i>Inga macrophylla</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	12.34 ± 3.13	6.38 ± 1.48
<i>Inga marginata</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	9.12 ± 3.25	2.96 ± 0.65
<i>Inga micheliana</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	7.33 ± 2.98	3.03 ± 1.43
<i>Inga microcalyx</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	9.76 ± 3.6	5.87 ± 1.92

Species	Subfamily	Potential to fix N₂	Leaf type	Leaflet length	Leaflet width
<i>Inga mucuna</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	12.64 ± 2.17	6 ± 1.14
<i>Inga multijuga</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	9.12 ± 4.88	3.52 ± 1.49
<i>Inga nobilis</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	7.68 ± 2.34	2.94 ± 1.13
<i>Inga obidensis</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	9.36 ± 2.54	4.16 ± 0.84
<i>Inga oerstediana</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	9.23 ± 3.17	4.63 ± 2.39
<i>Inga paraensis</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	10.18 ± 3.2	4.99 ± 1.18
<i>Inga pauciflora</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	9.47 ± 3.85	4.33 ± 1.52
<i>Inga pavoniana</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	12.77 ± 4.68	6.25 ± 2.89
<i>Inga pezizifera</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	10.54 ± 3.95	4.58 ± 1.09
<i>Inga pilosula</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	10.2 ± 3.75	4.51 ± 1.37
<i>Inga pleiogyna</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	15.81 ± 4.8	7.06 ± 2.06
<i>Inga portobellensis</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate		
<i>Inga punctata</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	10.84 ± 4.49	5.26 ± 2.26
<i>Inga rubiginosa</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	9.36 ± 3.3	4.91 ± 1.84
<i>Inga ruiziana</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	15.63 ± 5.45	7.29 ± 2.4
<i>Inga sapindioides</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate		
<i>Inga sertulifera</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	10.58 ± 3.67	4.63 ± 1.91

Species	Subfamily	Potential to fix N₂	Leaf type	Leaflet length	Leaflet width
<i>Inga spectabilis</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	11.68 ± 4.77	5.99 ± 2.9
<i>Inga stipularis</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	11.96 ± 2.58	5.32 ± 1.56
<i>Inga tenuis</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	2.17 ± 0.63	0.9 ± 0.18
<i>Inga thibaudiana</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	9.06 ± 2.86	4.48 ± 1.55
<i>Inga tonduzii</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	10.54 ± 4.34	5.62 ± 1.92
<i>Inga umbellifera</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	7.6 ± 2.57	2.3 ± 0.65
<i>Inga venusta</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	11.65 ± 4.49	4.95 ± 2.65
<i>Inga vera</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	9.36 ± 4.12	3.69 ± 1.62
<i>Leptolobium panamense</i>	Papilionoideae	Yes	pinnate	4.85 ± 1.5	2.1 ± 0.43
<i>Leucaena lanceolata</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	2.72 ± 1.08	1.14 ± 0.4
<i>Leucaena leucocephala</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.86 ± 0.2	0.19 ± 0.04
<i>Lonchocarpus acuminatus</i>	Papilionoideae	Yes	pinnate	5.74 ± 1.22	3 ± 0.75
<i>Lonchocarpus campestris</i>	Papilionoideae	Yes	pinnate	3.66 ± 1.58	1.56 ± 0.44
<i>Lonchocarpus castilloi</i>	Papilionoideae	Yes	pinnate	4.57 ± 1.13	1.21 ± 0.18
<i>Lonchocarpus costaricensis</i>	Papilionoideae	Yes	pinnate	8.56 ± 3.86	5.27 ± 2.14
<i>Lonchocarpus felipei</i>	Papilionoideae	Yes	pinnate	10.13 ± 4.51	5.9 ± 2.76
<i>Lonchocarpus ferrugineus</i>	Papilionoideae	Yes	pinnate	20.37 ± 4.4	8.84 ± 2.28
<i>Lonchocarpus guatemalensis</i>	Papilionoideae	Yes	pinnate	6.99 ± 2.55	3.15 ± 1.19

Species	Subfamily	Potential to fix N₂	Leaf type	Leaflet length	Leaflet width
<i>Lonchocarpus heptaphyllus</i>	Papilionoideae	Yes	pinnate	9.68 ± 2.74	4.31 ± 1.46
<i>Lonchocarpus hondurensis</i>	Papilionoideae	Yes	pinnate	6.36 ± 2.29	2.91 ± 1.06
<i>Lonchocarpus hughesii</i>	Papilionoideae	Yes	pinnate	1.32 ± 0.25	0.58 ± 0.06
<i>Lonchocarpus lanceolatus</i>	Papilionoideae	Yes	pinnate	4.85 ± 0.84	1.92 ± 0.31
<i>Lonchocarpus macrophyllus</i>	Papilionoideae	Yes	pinnate		
<i>Lonchocarpus minimiflorus</i>	Papilionoideae	Yes	pinnate	3.48 ± 1.69	1.65 ± 0.77
<i>Lonchocarpus montanus</i>	Papilionoideae	Yes	pinnate		
<i>Lonchocarpus mutans</i>	Papilionoideae	Yes	pinnate	5.44 ± 0.87	2.44 ± 0.44
<i>Lonchocarpus parviflorus</i>	Papilionoideae	Yes	pinnate	3.45 ± 1.51	1.68 ± 0.71
<i>Lonchocarpus peninsularis</i>	Papilionoideae	Yes	pinnate	5.74 ± 1.22	3 ± 0.75
<i>Lonchocarpus phaseolifolius</i>	Papilionoideae	Yes	pinnate	6.46 ± 4.2	4.49 ± 2.66
<i>Lonchocarpus rugosus</i>	Papilionoideae	Yes	pinnate	4.14 ± 1.01	1.6 ± 0.23
<i>Lonchocarpus salvadorensis</i>	Papilionoideae	Yes	pinnate	7.21 ± 1.39	3.19 ± 0.71
<i>Lonchocarpus sericeus</i>	Papilionoideae	Yes	pinnate	7.94 ± 2.75	3.95 ± 0.97
<i>Lonchocarpus torresiorum</i>	Papilionoideae	Yes	pinnate		
<i>Lonchocarpus velutinus</i>	Papilionoideae	Yes	pinnate	10.56 ± 4.32	4.32 ± 1.9
<i>Lonchocarpus xuul</i>	Papilionoideae	Yes	pinnate	4.99 ± 1.08	2.28 ± 0.4
<i>Lonchocarpus yucatanensis</i>	Papilionoideae	Yes	pinnate	4.15 ± 1.4	1.88 ± 0.46
<i>Luetzelburgia andrade-limae</i>	Papilionoideae	No	pinnate		
<i>Lysiloma acapulcense</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.33 ± 0.09	0.09 ± 0.01

Species	Subfamily	Potential to fix N ₂	Leaf type	Leaflet length	Leaflet width
<i>Lysiloma auritum</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.2 ± 0.13	0.35 ± 0.69
<i>Lysiloma divaricatum</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.34 ± 0.21	0.13 ± 0.09
<i>Lysiloma latisiliquum</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	1.75 ± 2.57	1.03 ± 1.46
<i>Lysiloma microphyllum</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.3 ± 0.08	0.12 ± 0.03
<i>Machaerium acutifolium</i>	Papilionoideae	Yes	pinnate	5.93 ± 0.84	2.75 ± 0.31
<i>Machaerium biovulatum</i>	Papilionoideae	Yes	pinnate	4.02 ± 0.87	2.24 ± 0.35
<i>Machaerium brasiliense</i>	Papilionoideae	Yes	pinnate	4.43 ± 1.16	1.69 ± 0.26
<i>Machaerium hirtum</i>	Papilionoideae	Yes	pinnate	1.47 ± 0.28	0.37 ± 0.06
<i>Machaerium hoehneanum</i>	Papilionoideae	Yes	pinnate	7.26 ± 1.86	2.57 ± 0.3
<i>Machaerium nyctitans</i>	Papilionoideae	Yes	pinnate	2.18 ± 0.51	0.87 ± 0.31
<i>Machaerium pittieri</i>	Papilionoideae	Yes	pinnate		
<i>Machaerium scleroxylon</i>	Papilionoideae	Yes	pinnate	1.62 ± 0.63	0.64 ± 0.19
<i>Machaerium stipitatum</i>	Papilionoideae	Yes	pinnate	3.03 ± 1.09	1.21 ± 0.56
<i>Machaerium vestitum</i>	Papilionoideae	Yes	pinnate	3.85 ± 0.77	1.6 ± 0.22
<i>Machaerium villosum</i>	Papilionoideae	Yes	pinnate	5.14 ± 1.26	2.14 ± 0.44
<i>Macrolobium costaricense</i>	Detarioideae (Caesalpinioideae)	No	pinnate		
<i>Macrolobium latifolium</i>	Detarioideae (Caesalpinioideae)	No	pinnate	9.42 ± 5.19	4 ± 2.26
<i>Macrolobium limbatum</i>	Detarioideae (Caesalpinioideae)	No	pinnate	14.01 ± 1.2	5.69 ± 0.52
<i>Mariosousa centralis</i>	Caesalpinioideae (Mimosoideae)	unknown	bipinnate	0.25 ± 0.1	0.1 ± 0.03
<i>Mariosousa usumacintensis</i>	Caesalpinioideae (Mimosoideae)	unknown	bipinnate	0.39 ± 0.11	0.12 ± 0.03

Species	Subfamily	Potential to fix N ₂	Leaf type	Leaflet length	Leaflet width
<i>Marmaroxylon racemosum</i>	Caesalpinioideae (Mimosoideae)	No	bipinnate	1.04 ± 0.22	0.44 ± 0.09
<i>Mimosa acantholoba</i> <i>var eurycarpa</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.56 ± 0.22	0.14 ± 0.09
<i>Mimosa arenosa</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.38 ± 0.13	0.09 ± 0.03
<i>Mimosa bahamensis</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.32 ± 0.09	0.21 ± 0.07
<i>Mimosa tenuiflora</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.5 ± 0.16	0.12 ± 0.02
<i>Moldenhauera blanchetiana</i>	Caesalpinioideae	Yes	pinnate		
<i>Myrospermum frutescens</i>	Papilionoideae	No	pinnate		
<i>Myroxylon peruiferum</i>	Papilionoideae	No	pinnate	5.15 ± 0.98	2.45 ± 0.12
<i>Ormosia amazonica</i>	Papilionoideae	Yes	pinnate	15.47 ± 4.41	7.14 ± 1.59
<i>Ormosia coccinea</i>	Papilionoideae	Yes	pinnate	14.5 ± 4.43	7.35 ± 0.93
<i>Ormosia discolor</i>	Papilionoideae	Yes	pinnate	13.02 ± 3.65	5.12 ± 0.82
<i>Ormosia flava</i>	Papilionoideae	Yes	pinnate	11.01 ± 3.32	4.4 ± 1.48
<i>Ormosia grossa</i>	Papilionoideae	Yes	pinnate	12.48 ± 3.91	7.6 ± 1.72
<i>Ormosia isthmensis</i>	Papilionoideae	Yes	pinnate	10.92 ± 2.89	5.34 ± 0.45
<i>Ormosia krugii</i>	Papilionoideae	Yes	pinnate	15.03 ± 3.01	7.53 ± 1.29
<i>Ormosia macrocalyx</i>	Papilionoideae	Yes	pinnate	9.23 ± 2.2	4.47 ± 0.84
<i>Ormosia macrophylla</i>	Papilionoideae	Yes	pinnate	11.88 ± 2.73	6.54 ± 1.71
<i>Ormosia nobilis</i>	Papilionoideae	Yes	pinnate	16.91 ± 2.77	7.37 ± 0.74
<i>Ormosia paraensis</i>	Papilionoideae	Yes	pinnate	6.02 ± 0.99	3.28 ± 0.76
<i>Ormosia subsimplex</i>	Papilionoideae	Yes	pinnate	11.07 ± 2.77	4.29 ± 0.74
<i>Ormosia velutina</i>	Papilionoideae	Yes	pinnate	8 ± 2.24	4.79 ± 0.92
<i>Parkia bahiae</i>	Caesalpinioideae (Mimosoideae)	No	bipinnate	2.1 ± 0.32	0.49 ± 0.06
<i>Parkia decussata</i>	Caesalpinioideae (Mimosoideae)	No	bipinnate	2.82 ± 0.53	0.73 ± 0.15
<i>Parkia multijuga</i>	Caesalpinioideae (Mimosoideae)	No	bipinnate	0.87 ± 0.13	0.25 ± 0.04

Species	Subfamily	Potential to fix N₂	Leaf type	Leaflet length	Leaflet width
<i>Parkia nitida</i>	Caesalpinioideae (Mimosoideae)	No	bipinnate	1.13 ± 0.42	0.31 ± 0.09
<i>Parkia oppositifolia</i>	Caesalpinioideae (Mimosoideae)	No	bipinnate	0.83 ± 0.29	0.3 ± 0.09
<i>Parkia pendula</i>	Caesalpinioideae (Mimosoideae)	No	bipinnate	0.33 ± 0.07	0.08 ± 0.02
<i>Parkinsonia praecox</i>	Caesalpinioideae	No	bipinnate	0.65 ± 0.16	0.25 ± 0.04
<i>Peltogyne pauciflora</i>	Detarioideae (Caesalpinioideae)	No	pinnate	5.64 ± 1.73	2.55 ± 0.75
<i>Peltogyne purpurea</i>	Detarioideae (Caesalpinioideae)	No	pinnate	5.59 ± 0.24	2.33 ± 0.27
<i>Peltogyne venosa</i>	Detarioideae (Caesalpinioideae)	No	pinnate	11.18 ± 1.57	4.43 ± 0.56
<i>Peltophorum dubium</i>	Caesalpinioideae	No	bipinnate	0.67 ± 0.16	0.24 ± 0.07
<i>Pentaclethra macroloba</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.57 ± 0.2	0.22 ± 0.17
<i>Piptadenia constricta</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.91 ± 0.3	0.49 ± 0.17
<i>Piptadenia gonoacantha</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.59 ± 0.19	0.13 ± 0.03
<i>Piptadenia moniliformis</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	1.21 ± 0.38	0.53 ± 0.13
<i>Piptadenia obliqua</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	1.38 ± 0.37	0.87 ± 0.23
<i>Piptadenia paniculata</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	2.95 ± 0.88	1.27 ± 0.35
<i>Piptadenia stipulacea</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.54 ± 0.16	0.09 ± 0.02
<i>Piptadenia viridiflora</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.5 ± 0.1	0.13 ± 0.03
<i>Piscidia carthagenensis</i>	Papilionoideae	Yes	pinnate	6.16 ± 1.29	3.59 ± 1.44
<i>Piscidia piscipula</i>	Papilionoideae	Yes	pinnate	7.6 ± 1.64	4.73 ± 1.46
<i>Pithecellobium arboreum</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.94 ± 0.31	0.45 ± 0.3

Species	Subfamily	Potential to fix N ₂	Leaf type	Leaflet length	Leaflet width
<i>Pithecellobium bipinnatum</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	3.14 ± 0.82	1.5 ± 0.31
<i>Pithecellobium dulce</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	2.68 ± 0.78	1.28 ± 0.33
<i>Pithecellobium hymenaeifolium</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	6.97 ± 2.41	3.44 ± 1.43
<i>Pithecellobium lanceolatum</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	4.7 ± 0.85	1.55 ± 0.35
<i>Plathymenia reticulata</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.94 ± 0.11	0.41 ± 0.06
<i>Platycyamus regnellii</i>	Papilionoideae	Yes	pinnate	15.34 ± 3.23	15.67 ± 4.88
<i>Platymiscium blanchetii</i>	Papilionoideae	Yes	pinnate		
<i>Platymiscium curuense</i>	Papilionoideae	Yes	pinnate	10.76 ± 3.02	4.75 ± 1.08
<i>Platymiscium dimorphandrum</i>	Papilionoideae	Yes	pinnate	6.29 ± 1.45	2.68 ± 0.67
<i>Platymiscium lasiocarpum</i>	Papilionoideae	Yes	pinnate		
<i>Platymiscium parviflorum</i>	Papilionoideae	Yes	pinnate	8.09 ± 2.24	6.88 ± 2.86
<i>Platymiscium pinnatum</i>	Papilionoideae	Yes	pinnate	6.53 ± 1.97	3.55 ± 0.83
<i>Platymiscium speciosum</i>	Papilionoideae	Yes	pinnate	10.01 ± 3.58	4.67 ± 1.33
<i>Platymiscium ulei</i>	Papilionoideae	Yes	pinnate	6.06 ± 2.05	2.7 ± 0.9
<i>Platymiscium yucatanum</i>	Papilionoideae	Yes	pinnate	3.27 ± 0.93	1.56 ± 0.36
<i>Platypodium elegans</i>	Papilionoideae	Yes	pinnate	2.89 ± 0.49	1.14 ± 0.2
<i>Poecilanthus effusa</i>	Papilionoideae	Yes	pinnate	8.85 ± 1.9	3.2 ± 0.49
<i>Poeppigia procera</i>	Dialioideae (Caesalpinioideae)	No	pinnate	1.5 ± 0.42	0.39 ± 0.1
<i>Poincianella pluviosa</i>	Caesalpinioideae	No	bipinnate	2.04 ± 0.52	1.51 ± 0.3
<i>Prioria copaifera</i>	Detarioideae (Caesalpinioideae)	No	pinnate	9.72 ± 2.25	4.74 ± 1.19
<i>Pseudopiptadenia contorta</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.25 ± 0.09	0.07 ± 0.01

Species	Subfamily	Potential to fix N₂	Leaf type	Leaflet length	Leaflet width
<i>Pseudosamanea guachapele</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	2.91 ± 1	1.53 ± 0.51
<i>Pterocarpus acapulcensis</i>	Papilionoideae	Yes	pinnate	5.7 ± 2.17	2.86 ± 1.18
<i>Pterocarpus hayesii</i>	Papilionoideae	Yes	pinnate	11.12 ± 2.94	4.18 ± 0.49
<i>Pterocarpus michelianus</i>	Papilionoideae	Yes	pinnate		
<i>Pterocarpus officinalis</i>	Papilionoideae	Yes	pinnate	8.9 ± 1.41	4.54 ± 0.4
<i>Pterocarpus orbiculatus</i>	Papilionoideae	Yes	pinnate	8.53 ± 0.81	3.27 ± 0.03
<i>Pterocarpus rohrii</i>	Papilionoideae	Yes	pinnate	9.61 ± 1.71	4.17 ± 0.79
<i>Pterocarpus violaceus</i>	Papilionoideae	Yes	pinnate	6.15 ± 1.74	2.96 ± 0.47
<i>Pterocarpus zehntneri</i>	Papilionoideae	Yes	pinnate		
<i>Pterodon abruptus</i>	Papilionoideae	No	pinnate	1.54 ± 0.3	1.07 ± 0.17
<i>Pterogyne nitens</i>	Caesalpinioideae	No	pinnate	4.87 ± 1.01	2.06 ± 0.41
<i>Samanea saman</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	3.42 ± 1.5	1.65 ± 0.54
<i>Schizolobium amazonicum</i>	Caesalpinioideae	No	bipinnate	3.35 ± 1.35	2.26 ± 0.87
<i>Schizolobium parahyba</i>	Caesalpinioideae	No	bipinnate	2.96 ± 0.43	0.78 ± 0.1
<i>Sclerolobium costaricense</i>	Caesalpinioideae	Yes	pinnate	12.69 ± 2.29	5.53 ± 0.88
<i>Sclerolobium densiflorum</i>	Caesalpinioideae	Yes	pinnate	8.54 ± 2.25	5.1 ± 1.17
<i>Sclerolobium paniculatum</i>	Caesalpinioideae	Yes	pinnate	10.27 ± 1.96	3.94 ± 0.92
<i>Sclerolobium paraense</i>	Caesalpinioideae	Yes	pinnate	12.27 ± 2.9	4.04 ± 0.81
<i>Senegalia gaumeri</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.9 ± 0.21	0.33 ± 0.06
<i>Senegalia langsdorffii</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.99 ± 1.18	0.84 ± 1.76
<i>Senegalia loretensis</i>	Caesalpinioideae (Mimosoideae)	unknown	bipinnate	0.62 ± 0.14	0.14 ± 0.04

Species	Subfamily	Potential to fix N₂	Leaf type	Leaflet length	Leaflet width
<i>Senegalia martii</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.34 ± 0.07	0.09 ± 0.02
<i>Senegalia piauhiensis</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.88 ± 0.16	0.26 ± 0.08
<i>Senegalia picachensis</i>	Caesalpinioideae (Mimosoideae)	unknown	bipinnate	0.8 ± 0.14	0.25 ± 0.08
<i>Senegalia polyphylla</i>	Caesalpinioideae (Mimosoideae)	No	bipinnate		
<i>Senna acuruensis</i>	Caesalpinioideae	No	pinnate	1.36 ± 0.2	0.65 ± 0.07
<i>Senna atomaria</i>	Caesalpinioideae	No	pinnate	3.73 ± 1.81	2.38 ± 1.19
<i>Senna bacillaris</i>	Caesalpinioideae	No	pinnate	10.5 ± 3.16	4.6 ± 0.87
<i>Senna fruticosa</i>	Caesalpinioideae	No	pinnate	7.89 ± 2.1	3.87 ± 1.51
<i>Senna hayesiana</i>	Caesalpinioideae	No	pinnate	9.08 ± 2.93	4.08 ± 0.97
<i>Senna multijuga</i>	Caesalpinioideae	No	pinnate	2.14 ± 0.75	0.6 ± 0.22
<i>Senna papillosa</i>	Caesalpinioideae	No	pinnate	14.65 ± 2.75	6.13 ± 0.83
<i>Senna racemosa</i>	Caesalpinioideae	No	pinnate	7.89 ± 2.1	3.87 ± 1.51
<i>Senna spectabilis</i>	Caesalpinioideae	No	pinnate	5.04 ± 1.09	1.83 ± 0.29
<i>Senna sylvestris</i>	Caesalpinioideae	No	pinnate	6.96 ± 1.73	2.47 ± 0.48
<i>Senna undulata</i>	Caesalpinioideae	No	pinnate	6.11 ± 1.79	3.01 ± 0.77
<i>Senna velutina</i>	Caesalpinioideae	No	pinnate	5.13 ± 1.6	2.1 ± 0.65
<i>Senna villosa</i>	Caesalpinioideae	No	pinnate	3.97 ± 0.89	1.66 ± 0.34
<i>Stryphnodendron barbatimam</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	1.6 ± 0.17	1.4 ± 0.1
<i>Stryphnodendron guianense</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.85 ± 0.27	0.37 ± 0.11
<i>Stryphnodendron microstachyum</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	2.18 ± 0.61	1.03 ± 0.25
<i>Stryphnodendron occhionianum</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate		
<i>Stryphnodendron pulcherrimum</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.6 ± 0.17	0.21 ± 0.07
<i>Stryphnodendron purpureum</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate		
<i>Swartzia apetala</i>	Papilionoideae	Yes	pinnate	6.34 ± 1.16	2.94 ± 0.46

Species	Subfamily	Potential to fix N₂	Leaf type	Leaflet length	Leaflet width
<i>Swartzia apetala</i> var <i>apetala</i>	Papilionoideae	Yes	pinnate	7.06 ± 2.23	3.4 ± 1.11
<i>Swartzia arborescens</i>	Papilionoideae	Yes	pinnate	3.89 ± 1.71	2.12 ± 0.55
<i>Swartzia brachyrachis</i>	Papilionoideae	Yes	pinnate	5.6 ± 1.88	2.68 ± 0.66
<i>Swartzia cubensis</i>	Papilionoideae	Yes	pinnate	6.45 ± 1.4	2.13 ± 0.18
<i>Swartzia cuspidata</i>	Papilionoideae	Yes	pinnate	7.91 ± 1.44	3.55 ± 0.85
<i>Swartzia flaemingii</i>	Papilionoideae	Yes	pinnate	3.65 ± 1.32	1.39 ± 0.64
<i>Swartzia laurifolia</i>	Papilionoideae	Yes	pinnate	17.87 ± 5.79	6.69 ± 2.61
<i>Swartzia laxiflora</i>	Papilionoideae	Yes	pinnate	7.12 ± 2.05	2.41 ± 0.63
<i>Swartzia macrostachya</i>	Papilionoideae	Yes	pinnate	5.2 ± 1.97	2.83 ± 1.01
<i>Swartzia multijuga</i>	Papilionoideae	Yes	pinnate	7.73 ± 2.23	3.12 ± 0.42
<i>Swartzia myrtifolia</i>	Papilionoideae	Yes	pinnate	3.76 ± 1.07	1.53 ± 0.44
<i>Swartzia nicaraguensis</i>	Papilionoideae	Yes	pinnate	7.9 ± 1.7	3.63 ± 0.67
<i>Swartzia ochracea</i>	Papilionoideae	Yes	unifoliolate	14.37 ± 8.32	5.48 ± 2.64
<i>Swartzia panamensis</i>	Papilionoideae	Yes	pinnate	9.74 ± 3.37	3.24 ± 0.63
<i>Swartzia polyphylla</i>	Papilionoideae	Yes	pinnate	10.52 ± 4.36	3.83 ± 1.61
<i>Swartzia reticulata</i>	Papilionoideae	Yes	pinnate	16.01 ± 3.89	8.47 ± 1.44
<i>Swartzia schomburgkii</i>	Papilionoideae	Yes	pinnate	12.33 ± 2.36	5.24 ± 0.91
<i>Swartzia simplex</i>	Papilionoideae	Yes	unifoliolate		
<i>Swartzia simplex</i> var <i>continentalis</i>	Papilionoideae	Yes	unifoliolate	9.41 ± 2.71	4.14 ± 1.25
<i>Swartzia simplex</i> var <i>grandiflora</i>	Papilionoideae	Yes	unifoliolate	5.5 ± 1.87	2.75 ± 0.8
<i>Swartzia tessmannii</i>	Papilionoideae	Yes	pinnate	7.75 ± 2.67	4.03 ± 0.67
<i>Sweetia fruticosa</i>	Papilionoideae	No	pinnate	2.57 ± 0.76	1.27 ± 0.2
<i>Tabaroa caatingicola</i>	Papilionoideae	Yes	pinnate	3.94 ± 0.79	2.21 ± 0.27
<i>Tachigali cenepensis</i>	Caesalpinioideae	Yes	pinnate	18.63 ± 6.15	9.03 ± 1.3
<i>Tachigali chrysaloides</i>	Caesalpinioideae	Yes	pinnate	11.12 ± 3.7	4.32 ± 1.31
<i>Tachigali macbridei</i>	Caesalpinioideae	Yes	pinnate	10.5 ± 3.68	3.87 ± 1.14
<i>Tachigali myrmecophila</i>	Caesalpinioideae	Yes	pinnate	9.64 ± 3.01	3.8 ± 1.17
<i>Tachigali paniculata</i>	Caesalpinioideae	Yes	pinnate	7.93 ± 1.88	3.63 ± 1.22
<i>Tachigali polyphylla</i>	Caesalpinioideae	Yes	pinnate	6.34 ± 3.36	2.03 ± 1.2
<i>Tachigali vasquezii</i>	Caesalpinioideae	Yes	pinnate		
<i>Tachigali versicolor</i>	Caesalpinioideae	Yes	pinnate	15.4 ± 4.9	5.07 ± 1.11

Species	Subfamily	Potential to fix N₂	Leaf type	Leaflet length	Leaflet width
<i>Vachellia allenii</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.7 ± 0.07	0.18 ± 0.03
<i>Vachellia campechiana</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.11 ± 0.01	0.04 ± 0.01
<i>Vachellia collinsii</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.69 ± 0.15	0.16 ± 0.02
<i>Vachellia cornigera</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.62 ± 0.12	0.17 ± 0.04
<i>Vachellia farnesiana</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.3 ± 0.05	0.08 ± 0.02
<i>Vachellia macracantha</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.22 ± 0.06	0.06 ± 0.01
<i>Vatairea erythrocarpa</i>	Papilionoideae	No	pinnate	10.13 ± 3.21	4.69 ± 1.63
<i>Vatairea lundellii</i>	Papilionoideae	No	pinnate	5.56 ± 1.88	2.29 ± 0.58
<i>Vataireopsis glaziovii</i>	Papilionoideae	No	pinnate		
<i>Vataireopsis iglesiasii</i>	Papilionoideae	No	pinnate	7.12 ± 8.5	6.67 ± 7.42
<i>Zapoteca formosa</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	1.81 ± 1.15	0.98 ± 0.6
<i>Zollernia latifolia</i>	Papilionoideae	No	unifoliolate	9.47 ± 2.47	9.36 ± 2.11
<i>Zollernia paraensis</i>	Papilionoideae	No	unifoliolate	10.2 ± 2.08	3.69 ± 0.68
<i>Zygia cognata</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	7.71 ± 3.08	2.78 ± 1.16
<i>Zygia gigantifoliola</i>	Caesalpinioideae (Mimosoideae)	Yes	pinnate	17.03 ± 6.02	5.57 ± 2.4
<i>Zygia racemosa</i>	Caesalpinioideae (Mimosoideae)	Yes	bipinnate	0.74 ± 0.06	0.24 ± 0.02

Supplementary Table 4 | Comparison of linear mixed models addressing the effects of stand age and three climatic variables on legume relative abundance in Neotropical secondary forests.

Linear mixed models were run for relative basal area of all legume species with stand age and one of three climatic variables (mean annual rainfall, rainfall seasonality “RS”, and climatic water deficit “CWD”). Random site intercepts account for between-site variation in initial legume basal area, and random slopes for the variation of the effect of stand age on legume basal area among sites. Standardized coefficients and *F*-values of each predictor and their interaction in linear mixed effects models are shown ($\dagger P < 0.05$; $*P \leq 0.01$; $**P \leq 0.001$; $***P \leq 0.001$). The standardized regression coefficients compare the effect of the independent variables on the dependent variable. Values of marginal (R^2 (m)) and conditional (R^2 (c)) R^2 indicate the proportion of the variance explained by the fixed predictors of the model, and the fit of the whole model with fixed and random factors, respectively. Change in AIC for small sample sizes ($\Delta AICc$) compared with the best model (A) and R^2 are shown. For all models $N = 41$ chronosequence sites (one site was excluded because no climatic data were available).

Dependent variable	Parameter	Standardized coefficients	F-value	R^2 (m)	R^2 (c)	$\Delta AICc$
A. Legume relative basal area				17.18	62.14	0.00
	Stand age	-0.61	21.15**			
	Rainfall	-0.95	16.23**			
	Stand age \times Rainfall	0.62	12.01*			
B. Legume relative basal area				10.45	48.89	13.93
	Stand age	0.22	2.08 ^{n.s.}			
	RS	0.61	9.81**			
	Stand age \times RS	-0.49	6.05*			
C. Legume relative basal area				20.45	48.43	2.66
	Stand age	0.11	1.56 ^{n.s.}			
	CWD	-0.89	22.51***			
	Stand age \times CWD	0.59	13.33***			

Supplementary Table 5 | Effects of stand age and rainfall on the abundance of non-fixing legumes in Neotropical secondary forests.

Linear mixed models were run for absolute and relative basal area of non-fixing legume species (A and B respectively). Random site intercepts account for between-site variation in initial legume basal area, and random slopes for the variation of the effect of stand age on legume basal area among sites. Standardized coefficients and *F*-values of each predictor and their interaction in linear mixed effects models are shown ($\dagger P < 0.05$; $*P \leq 0.01$; $**P \leq 0.001$; $***P \leq 0.001$). The standardized regression coefficients compare the effect of the independent variables on the dependent variable. Values of marginal (R^2 (m)) and conditional (R^2 (c)) R^2 indicate the proportion of the variance explained by the fixed predictors of the model, and the fit of the whole model with fixed and random factors, respectively. $N = 42$ chronosequence sites.

Dependent variable	Parameter	Standardized coefficients	F-value	R^2 (m)	R^2 (c)
A- Absolute basal area – non-fixing legumes	Stand age	0.47	27.32**	4.23	12.37
	Rainfall	0.37	8.42*		
	Stand age \times Rainfall	-0.48	13.81*		
B- Relative basal area – non-fixing legumes	Stand age	0.39	4.18 ^{n.s.}	3.35	26.41
	Rainfall	0.29	1.67 ^{n.s.}		
	Stand age \times Rainfall	-0.48	3.56 ^{n.s.}		

Supplementary Table 6 | Modelling parameters for the effects of stand age and rainfall on legume abundance in Neotropical secondary forests, shown in Fig. 1.

Equations for absolute basal area and relative basal area (RA) of all legume species as well as N-fixing and bipinnate species are shown. Random site intercepts for between-site variation in initial legume basal area, and random slopes for the variation of the effect of stand age on legume basal area among sites were both included. $N = 42$ chronosequence sites.

Dependent variable	Transformation on Y	Model
Absolute basal area of all legumes	none	$\text{basal area} = -0.15 + 1.70 \times \text{stand age} - 0.18 \times (\text{rainfall}/1000) + 0.08 \times \text{stand age} \times (\text{rainfall}/1000)$
RA of all legumes	arcsin	$\text{RA} = 1.30 - 0.23 \times \text{stand age} - 0.40 \times (\text{rainfall}/1000) + 0.08 \times \text{stand age} \times (\text{rainfall}/1000)$
RA of N-fixing legumes	arcsin	$\text{RA} = 1.34 - 0.29 \times \text{stand age} - 0.43 \times (\text{rainfall}/1000) + 0.10 \times \text{stand age} \times (\text{rainfall}/1000)$
RA of bipinnate legumes	arcsin	$\text{RA} = 0.82 - 0.13 \times \text{stand age} - 0.26 \times (\text{rainfall}/1000) + 0.04 \times \text{stand age} \times (\text{rainfall}/1000)$

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