Supplementary Materials A

Table S1. Number of formal actors for plant material supply in different Brazilian biomes, including native seed collectors, forest seedling nurseries, and seed testing laboratories.

Biome	Registered collectors (n)	Accredited seed laboratories	Registered seedling nurseries	Brazil's restoration target by 2030 (Mha)
Amazon	63	-	-	4.8
Atlantic Forest	129	7	214	4.75
Cerrado	71	-	63	2.1
Caatinga	1	-	-	0.5
Pantanal	-	-	-	0.05
Pampa	-	5	-	0.3
Total	264	12	277	12.5

Source: Ministry of Agriculture (2018).

Supplementary Materials B

1. Determination of the number of seeds needed per unit of area (kg/ha)

1.1. Estimation of Mean Germination Rates by Species

Original germination test database (São Paulo Forestry Institute) for 156 tree plant species of the Brazilian flora were organized in a table containing species name, mean germination (standard deviation), the average number of seeds in one kilogram. Three parameters used in the germination test were the number of lots tested, number of sites where seed are collected, and the number of years in which they were collected (Complete list at the end of this document). Due to the significant variation in these three parameters, the n sample (germination test number) was estimated by the interaction between the number of lots, sites of collection and years of collection, in order to better express the variability of germination tests.

The interaction of the variables for the composition of the estimated n sample was made by Poisson regression in 2 stages. In the first stage, we considered as dependent variable the number of collection sites while for the independent variables the number of years of collection and amount of seeds per kilogram, assuming the latter is an indicator of ease of obtaining seeds in the field.

The second stage considered as dependent variable the number of lots used in the experiments and independent variables the estimated number of collection sites (instrumentalized by years of the collection) controlled by the number of seeds per kilogram. The estimated n sample (lots_hat) was used with n sample for each species, is used to calculate the confidence interval (95%) of the germination average instead of the number of seed lots used in the tests.

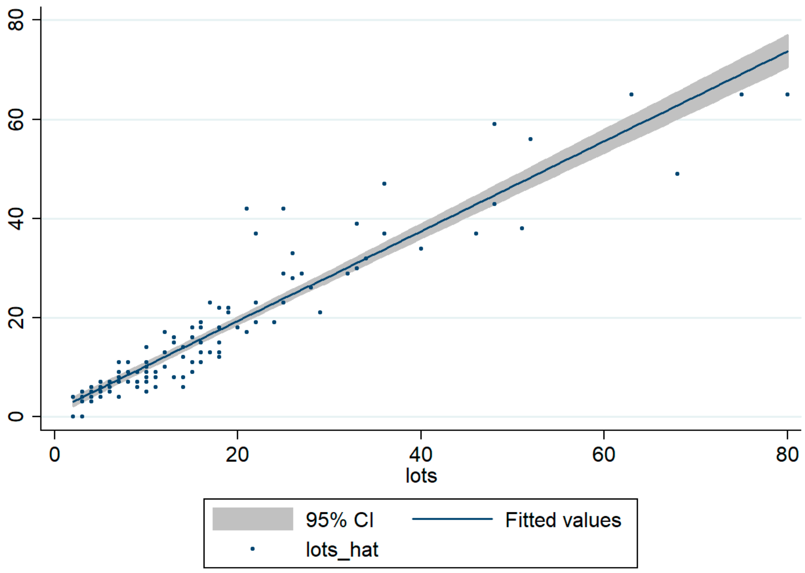

Figure S1. Relates the number of original lots (lots) and estimated lots (lots_hat).

The general format of a Poisson model can be written as follows:

$$logSites_i = \beta_0 + \beta_1 years_i + \beta_2 \, seedskilo_i + e \tag{1}$$

And:

$$logLots_i = \beta_0 + \beta_3 \widehat{sites}_i + \beta_4 \, seedskilo_i \tag{2}$$

Where

Sites is the number of sites where tested seeds of species i were collected

years the number of years when tested seeds of species i were collected

seedskilo is the number of seeds per kilogram of species i

Lots is the number of tested lots of species i

With outputs as

```
. cor sites years seedskilo
(obs=156)

             |    sites    years seedsk~o
-------------+---------------------------
       sites |   1.0000
       years |   0.8027   1.0000
   seedskilo |  -0.0182  -0.0630   1.0000


.
. poisson sites years seedskilo

Iteration 0:   log likelihood = -326.69538
Iteration 1:   log likelihood = -326.69495
Iteration 2:   log likelihood = -326.69495

Poisson regression                                Number of obs     =        156
                                                  LR chi2(2)        =     290.86
                                                  Prob > chi2       =     0.0000
Log likelihood = -326.69495                       Pseudo R2         =     0.3080

------------------------------------------------------------------------------
       sites |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       years |   .1882199   .0110778    16.99   0.000     .1665079    .2099319
   seedskilo |   2.18e-07   2.33e-07     0.93   0.350    -2.39e-07    6.75e-07
       _cons |   .4636218   .0911667     5.09   0.000     .2849385    .6423052
------------------------------------------------------------------------------

.
. predict sites_hat
(option n assumed; predicted number of events)
(2 missing values generated)

.
. poisson lots sites_hat seedskilo

Iteration 0:   log likelihood = -522.89207
Iteration 1:   log likelihood = -518.49157
Iteration 2:   log likelihood = -518.48726
Iteration 3:   log likelihood = -518.48726

Poisson regression                                Number of obs     =        156
                                                  LR chi2(2)        =    1323.36
                                                  Prob > chi2       =     0.0000
Log likelihood = -518.48726                       Pseudo R2         =     0.5607

------------------------------------------------------------------------------
        lots |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   sites_hat |   .1826833   .0046841    39.00   0.000     .1735025     .191864
   seedskilo |   2.29e-07   1.34e-07     1.71   0.088    -3.39e-08    4.92e-07
       _cons |   1.339179    .046601    28.74   0.000     1.247843    1.430515
------------------------------------------------------------------------------

.
. predict lots_hat
```

Figure S2. Two stages Poisson Regression application to estimate the n sample (lots_hat) as a function of the number of sites (lots) and number of years of collection (years), controlled by the number of seeds available per kilogram of each species (seedskilo).

With the estimated n sample (lots_hat), we calculated the confidence intervals (95%) for the average germination of each species. For each species, we simulated the normal distribution with 100 repetitions. We considered that the most probable germination range for each species would be the most frequently found in the simulation sited between the lower and upper limits of the confidence interval. We opted for only 100 repetitions to give the distribution more randomness, since simulations with more than 1,000 repetitions would tend to produce well-behaved standard curves, leading to higher frequencies closer to the midpoint of the confidence intervals. We then exclude all species whose most frequent range within the confidence interval was negative and greater than 100, for the apparent statistical inconsistency. Since these results also reflected the existence of very low sample size, we suggest that such species would not be recommended for inclusion in the study putting at risk directly sowing efficiency. Under this criterion, we excluded 34 species. From there, all the work went on with the remaining 122 species. The remaining 122 species were then classified as large and small, considering large those that had less than 3,000 seeds per kilogram (n = 29) and small others (n = 93).

1.2. Estimated seed weight by restoration method

We consider that the seeds should have two purposes to promote forest restoration (1) direct sowing and (2) seedling production.

1.2.1. Direct sowing

For seeds destined for direct seeding we considered a predation rate of 47%. Due to the lack of literature on disease involvement, we considered the same proportion used for predation based on [37–40], that is, another 47%, so that the recruitment rate would be given by

$$r_i = g_i * (1 - 0.47)^2 \tag{3}$$

where
r_i recruitment rate of seed species i
g_i germination rate of species i, as estimated in 1.1

For each species the number of seeds which will survived after germination per kilogram was then estimated as follows.

$$s_i = r_i * k_i \tag{4}$$

Where:
s_i survived seeds of species i (number of seeds)
k_i seeds of species i (number of seeds/kg)

In line with the criteria and recommendations on minimum biodiversity to be met in restoration activities in Brazil, we assume that the seed mix intended for direct sowing should contain precisely 80 species, 30% necessarily consisting of large seeds and 70% small seeds. By Markov Chain Monte Carlo (MCMC) method, we run 10,000 simulations to determine random combinations for seed mixtures containing 24 out of 29 large species and 56 out of 93 small species, restricting the possibility of repeating species in the same pack.

We repeated the procedure 4 times in order to estimate different germination levels.

Low Germination if the germination rate for each species in the pack is the lower limit for its own mean (mean – confident interval) after the 10,000 rounds, Medium Germination if the germination rate for each species in the pack is exactly its own mean, High Germination level if the germination rate for each species in the pack is the upper limit for its own mean (mean + confident interval), and the Randomly Germination if germination rate for each species in the pack is randomly determined within its confident interval for mean (mean - ci or mean or mean + ci. The results after the 10,000 rounds for each level is presented in table a.

Table S2. Simulations to determine the germination rate. (10,000 rounds for each).

		seeds germ %		
	Low Germination	Medium Germination	High Germination	Ramdomly
minimum	18.25	35.51	48.67	32.12
maximum	38.08	53.43	68.55	52.60
mean	28.73	44.13	59.48	42.30
confidence interval	0.05	0.04	0.05	0.05
upper limit of mean (95%)	28.77	44.17	59.53	42.36
lower limit of mean (95%)	28.68	44.08	59.43	42.25
standart deviation	2.30	2.29	2.68	2.74

In order to estimate the estimated the seeds per kg of packs and the expected value of seeds would germinate, we adopted the same method above, with results showed in table b.

Table S3. simulations to determine the total seeds per kg of mixed pack and expected value of germinated seeds per kg (10,000 rounds for each).

			seeds germ per kg		
	total Seeds per kg	Low Germination	Medium Germination	High Germinati on	Ramdomly
minimum	110,063	2,784	5,460	7,455	4,472
maximum	14,414	23,300	31,915	40,801	30,671
mean	40,742	8,635	13,451	18,367	13,168
confidence interval	274	54	68	90	72
upper limit of mean (95%)	40,468	8,689	13,519	18,457	13,240
lower limit of mean (95%)	41,016	8,581	13,382	18,277	13,097
standart deviation	13,990	2,752	3,474	4,598	3,653

For determining the necessary quantity of the seed package destined to restore one hectare (10,000 m2) by direct sowing, we used the findings of Souza, Engel (2018) who, in an empirical study, concluded that on average the sowing of 82,500 previously selected seeds - fertilized and without apparent disease. Thus, we consider that the average weight of seed packages should be

$$p=82{,}500/s \quad (5)$$

Where,

p seed mix pack weight in required to restore 1 hectare (kg)

s survived seeds in 1 kg of mixed pack (number of seeds)

Applying this formula to the MCMC simulated package set, we get the following results, as shown in table c.

Table S4. simulations to determine the total kg of mixed pack to 1 hectare of direct sowing (10,000 rounds for each).

	seeds for direct sowing kg/ha			
	Low Germination	Medium Germination	High Germination	Ramdomly
minimum	99.85	54.79	39.68	55.97
maximum	12.29	9.41	6.84	6.91
mean	37.81	23.31	17.13	23.14
confidence interval	0.24	0.12	0.09	0.14
upper limit of mean (95%)	37.57	23.19	17.04	23.00
lower limit of mean (95%)	38.05	23.43	17.22	23.28
standart deviation	12.12	6.17	4.38	7.08

1.2.2. Planting by seedlings

For seedlings intended for seedling production, we considered the same germination rates (gi) estimated in item 1.1.1, with no predation rate or loss due to field-acquired diseases. However, we consider a 30% loss rate in seedling selection. We determined an anticipated rate of seedling loss in the field (need for replanting), being 8% in the first year, and 5% in the following three years. For the total planting method, we defined the final density of 1.667 seedlings/ha and for enrichment 600 seedlings/ha. We follow the same procedure of seed pack formation simulations, as described in the previous item, considering the literature [37–40].

$$r_i = g_i * (1 - 0.3) * (1 - 0.08) * (1 - 0.05)^3 \quad (6)$$

Where,

r_i survived seeds of species i

g_i germination rate of species i, as estimated in 1.1

$$s_i = r_i * k_i$$

Where,

s_i survived seeds of species i (number of seeds)

k_i seeds of species i (number of seeds/kg)

And

$$p = d/s \quad (7)$$

Where,

p seed mix pack weight is required to restore 1 hectare (kg)

d desirable density of seedlings per hectare, being d=1,667 if full restoration or d=600 if enrichment

s survived seeds in 1 kg of the mixed pack (number of seeds)

The 10,000 simulations for 80 species random packages returned the results shown in tables (d,e) below.

Table S5. simulations to determine the total kg of mixed pack to 1 hectare of seedlings - enrichment (10,000 rounds for each).

	seeds for seedlings-enrichment kg/ha			
	Low Germination	Medium Germination	High Germination	Ramdomly
minimum	0.3837	0.2091	0.1460	0.1996
maximum	0.0483	0.0345	0.0279	0.0300
mean	0.1406	0.0860	0.0630	0.0841
confidence interval	0.0009	0.0004	0.0003	0.0005
upper limit of mean (95%)	0.1415	0.0865	0.0633	0.0846
lower limit of mean (95%)	0.1397	0.0856	0.0626	0.0837
standart deviation	0.0450	0.0229	0.0161	0.0251

Table S6. simulations to determine the total kg of mixed pack to 1 hectare of seedlings – total planting (10,000 rounds for each).

	seeds for seedlings-total planting kg/ha			
	Low Germination	Medium Germination	High Germination	Ramdomly
minimum	1.0106	0.5780	0.4302	0.5795
maximum	0.1191	0.0891	0.0665	0.0907
mean	0.3870	0.2403	0.1751	0.2566
confidence interval	0.0024	0.0013	0.0009	0.0013
upper limit of mean (95%)	0.3895	0.2416	0.1760	0.2579
lower limit of mean (95%)	0.3846	0.2391	0.1743	0.2553
standart deviation	0.1239	0.0640	0.0449	0.0663

Table S7. Native seed sources required to meet Brazil's restoration target according to 5 restoration scenarios and the possibilities of Lower Limit Production (LL), Mean Center Production (MC), Upper Limit Production (UL), Full Range Production (FR).

FR	UL	MC	LL	
15,624	11,422	15,632	25,506	Scenario 1
8,375	6,100	8,352	13,624	Scenario 2
4,596	3,334	4,568	7,449	Scenario3
3,620	2,633	3,606	5,883	Scenario 4
3,645	2,651	3,632	5,925	Scenario 5

2. Determination of the number of seeds collected per collector (kg /collector) and average income generated per collector (USD/collector)

In order to determine the number of seeds that an average collector collects annually, we had a database of 6 seed networks containing the number of seeds collected (kg), number of collectors, number of species collected, and value of revenue generated. Revenues originally in Brazilian Reais were deflated by the IGP-DI (General Price Index-Internal Availability) and converted into US Dollars using the average exchange rate for the last 60 months (December 2014 to November October 2019) at the rate of 1 US = $ 3.4975. Data for each network varied according to availability, from 2007 to 2018, according to table A8.

Table S8. Primary seed production data from the six major seed networks assessed.

year	network_name	network_id	seeds_kg	species	collectors	income
2015	Arboretum	1	720	70	21	13,159.80
2016	Arboretum	1	1,060	119	27	17,787.10
2017	Arboretum	1	1,810	230	29	28,596.90
2018	Arboretum	1	1,240	232	29	16,599.10
2012	Cerrado	2	600	23	3	593.86
2013	Cerrado	2	1,000	26	10	967.27
2014	Cerrado	2	2,000	30	22	1,813.88
2015	Cerrado	2	6,000	34	38	3,899.96
2016	Cerrado	2	12,000	72	66	14,827.00
2017	Cerrado	2	7,000	51	30	8,695.13
2018	Cerrado	2	8,000	72	60	25,322.80
2010	Portal	3	17,000	134	250	194,707.00
2011	Portal	3	27,800	183	150	147,887.00
2012	Portal	3	31,500	168	100	147,271.00
2013	Portal	3	1,000	93	100	4,851.79
2014	Portal	3	9,300	141	74	43,718.70
2015	Portal	3	16,000	158	85	91,588.40
2016	Portal	3	12,800	176	102	84,099.50
2017	Portal	3	16,500	156	120	109,603.00
2018	Portal	3	10,800	154	120	47,757.90
2012	Tupygua	4	590	29	22	3,338.12
2013	Tupygua	4	2,490	81	89	15,830.00
2014	Tupygua	4	2,710	85	65	18,256.30
2015	Tupygua	4	3,500	94	69	21,826.60
2016	Tupygua	4	2,780	72	78	15,661.30
2017	Tupygua	4	780	22	65	4,509.83
2018	Tupygua	4	120	14	8	1,225.74
2017	Vale do Ribeira	5	40	11	10	966.13
2018	Vale do Ribeira	5	90	19	14	2,411.74
2007	Xingu	6	5,000	120	10	10,733.50
2008	Xingu	6	8,000	125	50	41,626.30
2009	Xingu	6	15,000	207	240	78,790.80
2010	Xingu	6	25,000	214	300	103,843.00
2011	Xingu	6	19,000	185	300	96,077.60
2012	Xingu	6	25,000	159	350	172,748.00
2013	Xingu	6	22,000	177	350	128,853.00
2014	Xingu	6	17,500	124	420	130,838.00
2015	Xingu	6	17,000	120	420	106,397.00
2016	Xingu	6	22,000	140	447	135,753.00
2017	Xingu	6	26,000	164	568	203,855.00
2018	Xingu	6	18,200	147	568	114,101.00

To estimate the amount of seeds collected by each collector, a panel regression was estimated assuming as dependent variable the amount of seeds collected and independent variable the number of collectors, using as control the number of species collected squared, a As a correlation hint was found between the number of collectors and species. The same procedure was used to estimate the revenue per collector, substituting in the dependent variable the number of seeds collected by the value of the generated revenues (US), as shown in figure (g). Panel regression estimated can be written as:

$$Seeds\_kg_{it} = \beta_i + \beta_{it} collectors + X\beta'_{i\,t} + \xi_i + e_{it} \qquad (8)$$

And:

$$Income_{it} = \beta_i + \beta_{it} collectors + X\beta'_{i\,t} + \xi_i + e_{it}, \tag{9}$$

With outputs as

```
Random-effects GLS regression                   Number of obs      =        40
Group variable: network_id                      Number of groups   =         6

R-sq:  within  = 0.4188                         Obs per group: min =         2
       between = 0.8874                                        avg =       6.7
       overall = 0.7423                                        max =        12

                                                Wald chi2(6)       =     95.06
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0000

------------------------------------------------------------------------------------
         seeds_kg |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------------+-----------------------------------------------------------------
       collectors |   30.41506   8.580616     3.54   0.000     13.59736    47.23276
     evap_driest_q |  -2611.013   1486.114    -1.76   0.079    -5523.743    301.7175
      evap_moist_q |   955.8946   413.5684     2.31   0.021     145.3154    1766.474
indigenous_dummy |   79.81604    2226.09     0.04   0.971     -4283.24    4442.872
         species2 |    .186357   .0628073     2.97   0.003     .0632568    .3094571
          lforest |    85.8564   950.2247     0.09   0.928     -1776.55    1948.263
            _cons |   -3899.22   12139.39    -0.32   0.748    -27691.99    19893.55
------------------+-----------------------------------------------------------------
          sigma_u |          0
          sigma_e |  4937.2045
              rho |          0   (fraction of variance due to u_i)
------------------------------------------------------------------------------------

.
.
.
.
. estimates store random

.
. xtreg income collectors evap_driest_q evap_moist_q species2, re

Random-effects GLS regression                   Number of obs      =        40
Group variable: network_id                      Number of groups   =         6

R-sq:  within  = 0.5367                         Obs per group: min =         2
       between = 0.8849                                        avg =       6.7
       overall = 0.7352                                        max =        12

                                                Wald chi2(4)       =     51.10
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0000

---------------------------------------------------------------------------------
        income |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
---------------+-----------------------------------------------------------------
    collectors |    284.557   43.86542     6.49   0.000     198.5823    370.5316
 evap_driest_q |  -7276.994   8186.444    -0.89   0.374    -23322.13    8768.141
  evap_moist_q |   2463.636    2706.13     0.91   0.363    -2840.281    7767.553
      species2 |   .8100336   .4252043     1.91   0.057    -.0233514    1.643419
         _cons |  -9700.643   26323.88    -0.37   0.712    -61294.49     41893.2
---------------+-----------------------------------------------------------------
       sigma_u |  28078.626
       sigma_e |  30317.404
           rho |  .46171842   (fraction of variance due to u_i)
---------------------------------------------------------------------------------
```

Figure S3. Outputs of panel regressions.

All variables are related to a spatial (networks=i) and time (year=t) indexes. "Collectors" is the number of seeds collectors (individuals). Controllers are "evap_driest_q" - proxy of evapotranspiration in the driest season in the host municipality of each network, estimated as the total rainfall in the driest quarter (mm)/average temperature in the same quarter (^{0}C). "evap_moist_quarter" - proxy of evapotranspiration in the wetter season, which is the total rainfall in the wetter quarter (mm)/average temperature in the same quarter (^{0}C). "indigenous_dummy" is a binary variable, assuming 1 if the network is an indigenous network, 0 otherwise. "species2" is the squared of the number of species collected. "lforest" is the natural log of the area of native vegetation in host municipality of each network

To extrapolate the amount of seeds (kg) needed to meet the different proposed restoration scenarios, as well as the number of collectors and expected recipes, these parameters obtained in panel regressions were used. List of species is provided in table A9.

Table S9. Germination database of the Institute of Forestry.

Specie	id	germination rate (%)	standard deviation	seeds (1kg)	lots	sites	years	lots_hat	large	small	Included in Analysis
Acacia podalyriaefolia	1	50	41.8489	16390	4	2	3	5	0	1	1
Acacia polyphylla DC.	2	80.3	22.351	15598.2	11	5	3	6	0	1	1
Acrocomia aculeata (Jacq.) Lodd. ex Mart.	3	0	0	24	3	2	1	3	1	0	0
Aegiphilla sellowiana Cham.	4	12.625	10.0561	37416.2	6	3	3	5	0	1	1
Albizia hasslerii	5	72.5	3.53553	233995	3	3	3	5	0	1	1
Albizzia sp	6	50.5	25.018	11097	6	3	5	7	0	1	1
Alchornea triplinervia(Spreng.) Müll.Arg.	7	3.5	3.78153	22453.8	6	4	4	6	0	1	1
Alleurites mollucana	8	7	9.8995	107	3	2	2	4	1	0	0
Anadenanthera colubrina (Vell.) Brenan	9	56.8333	28.6791	25371.3	25	12	8	23	0	1	1
Anadenanthera falcata	10	67.1429	36.2097	12430.8	7	4	6	9	0	1	1
Anadenanthera macrocarpa (benth.) Brenan	11	53.6	21.8701	10241.8	5	3	4	6	0	1	1
Araucaria angustifolia	12	68.9236	20.7551	163.542	24	5	10	19	1	0	1
Araucaria excelsa	13	12.7143	16.0178	2684.2	7	2	3	4	1	0	0
Archontophoenix cunninghamiana	14	8.33333	19.6373	1732	25	8	11	29	1	0	1
Aspidosperma olivaceum	15	78.3755	31.2255	3561.27	10	5	8	14	0	1	1
Aspidosperma polyneuron Muell. Arg.	16	31.2143	34.1224	11409.8	15	7	8	16	0	1	1
Aspidosperma ramiflorum	17	82.8	33.5216	1932.2	5	1	4	5	1	0	0
Balfourodendron riedelianum (Engl.) Engl	18	12.36	14.6796	2413.86	26	12	10	33	1	0	1
Bauhinea variegata	19	67.85	35.3706	4708.74	20	6	9	18	0	1	1
Bauhinea variegata var.candida	20	72.3	26.9817	3205.13	10	5	6	10	0	1	1
Bauhinia blackeana	21	79.7	22.1663	3587.56	10	3	6	8	0	1	1
Bixa orelana L.	22	29.6667	23.1805	1495	3	2	3	4	1	0	1
Bowdichia virgilioides Kunth	23	44.6	9.8387	12820	4	1	1	3	0	1	1
Cabralea canjerana (Vell.) Mart.	24	0.25	0.707107	3527.5	6	3	3	5	0	1	0
Caesalpinea ferrea Mart. ex Tul. var. leiostachya Benth.	25	52.0263	25.1609	15385.1	19	6	10	21	0	1	1
Caesalpinia peltophoroides	26	49.9431	27.2012	5072.29	36	17	10	47	0	1	1
Caesalpinia pulcherrima	27	78.875	7.53188	5432.5	4	4	3	5	0	1	1
Callicarpa reevesii	28	0	0	260591	4	2	3	5	0	1	0
Cariniana estrellensis (Raddi) O. Kuntze	29	61.8125	24.4546	10426.4	16	9	8	18	0	1	1
Cariniana legalis (Mart.) Kuntze	30	60.8	19.066	26073	10	4	7	11	0	1	1
Caryota urens	31	14.6429	20.0638	1388.15	14	8	6	12	1	0	1
Cassia ferruginea (Scharad. ex) DC.	32	72.8889	28.5501	13808.3	10	4	6	9	0	1	1
Cassia fistula	33	60.7333	31.9765	11106.4	16	6	8	15	0	1	1
Cassia grandis L.f.	34	40.9167	35.9809	2559.29	13	9	7	15	1	0	1
Cassia javanica	35	51.375	16.8887	5755	4	4	4	6	0	1	1
Cassia leptophylla Vog.	36	37.3333	27.7369	4994.67	3	2	3	4	0	1	1
Cecropia pachystachya Trec.	37	32.6667	29.1433	568000	3	2	3	5	0	1	1
Cedrela fissilis Vell.	38	77.0896	17.8425	21587.7	68	15	11	49	0	1	1
Cedrela odorata L.	39	65	38.3275	24308.8	5	2	4	5	0	1	1
Centrolobium tomentosum Guill. Ex Benth	40	23.402	18.6796	114.706	17	9	6	13	1	0	1
Chorisia speciosa St. Hil.	41	46.0968	26.8717	6502.65	33	11	10	30	0	1	1
Clitoria fairchildiana Howard	42	19.2	31.2522	2397.75	5	4	4	6	1	0	0
Colubrina glandulosa (C. rufa)	43	16	12.4419	42008.8	6	3	3	5	0	1	1
Columbrina glandulosa Perk.	44	28.8	27.941	35429.5	5	3	4	6	0	1	1
Copaifera langsdorffii Desf.	45	57.625	26.7313	2411.14	32	13	9	29	1	0	1
Cordia sellowiana Cham.	46	18.75	22.3215	3850.67	4	3	2	4	0	1	0
Cordia trichotoma (Vell.) Arrab. Ex Steud	47	5.20833	15.2115	56245.7	24	9	8	19	0	1	0
Croton floribundus Spreng.	48	11.9091	15.4626	25139.7	13	3	6	8	0	1	1
Croton urucurana Baill.	49	7.85714	19.9201	140397	6	4	4	7	0	1	0
Cryptocaria aschersoniana	50	35.4367	39.7929	1970.67	3	2	3	4	1	0	0
Crysalidocarpus lutescens	51	5.8	19.9213	1984.49	52	17	11	56	1	0	1
Cunninghamia konishii	52	14	8.42615	163388	6	3	5	7	0	1	1
Cyclolobium vecchi A. Samp. ex Hochne	53	49.8	31.0355	2853.8	5	1	3	4	1	0	1
Cysbistax antisyphilitica	54	40.2778	30.4176	42202.3	3	1	3	4	0	1	1
Cysbistax antisyphilitica (Mart.) Mart.	55	78	17.4738	61552.3	4	3	3	5	0	1	1
Cytharexyllum myrianthum	56	13.4286	32.4698	14939.6	7	4	5	7	0	1	0
Dalbergia nigra (Vell.) Fr. All. Ex Benth.	57	52.9519	31.5695	10320.3	21	13	11	42	0	1	1
Dictyloma vandellianum Adr. Juss	58	78.6667	9.29157	326753	3	3	3	5	0	1	1
Didymopanax morototonii (Aubl.) D. et P.	59	4.78571	7.65786	29311.4	14	4	4	6	0	1	0
Dimorphandra mollis Benth.	60	6.83611	5.93305	1113.78	12	6	6	10	1	0	1
Dipterix alata Vog.	61	69.2129	19.5027	4840.36	12	7	7	13	0	1	1
Duguetia lanceolata St. Hil.	62	1.5	2.73861	2893	5	3	5	7	1	0	0
Enterolobium contortisiliquum	63	63.875	33.3464	6642.06	16	7	7	13	0	1	1
Eriotheca candolleana	64	67	33.7787	16727	3	1	3	4	0	1	0
Erythrina verna (E. mulungu)	65	55.6667	18.8007	3120.67	6	2	5	6	0	1	1
Esenbeckia leiocarpa Engl.	66	62.0263	35.5631	12249.9	19	9	9	22	0	1	1
Eugenia jambolana	67	58.4333	35.5614	1544.7	10	7	6	11	1	0	1
Eugenia uniflora L.	68	54.5	35.6254	3789.67	10	3	5	7	0	1	1
Euterpe edulis Mart.	69	25.5207	28.2259	1815.82	75	19	11	65	1	0	1
Gallesia integrifolia (Spreng.) Harms	70	68.0864	21.6456	18172.5	11	7	5	9	0	1	1
Genipa americana L.	71	54.93	31.8933	23934.5	18	6	7	12	0	1	1
Grevilea robusta	72	33.1538	20.6946	63361.6	12	4	8	13	0	1	1
Guarea guidonea L. (Sleumer)	73	9.78571	17.2768	3406.71	7	4	7	11	0	1	0
Guazuma ulmifolia	74	26.2222	25.208	121354	11	8	4	9	0	1	1
Hovenia dulcis	75	62.8333	19.202	45294.1	12	5	9	17	0	1	1
Hymenaea courbaril L. var. stilbocarpa	76	70.7963	24.2099	256.083	51	14	10	38	1	0	1
Ingá uruguensis Hook. et Arn.	77	47	54.4243	2414.5	2	2	2	4	1	0	0
Jacaranda mimosaefolia	78	63.0345	20.8844	86732.3	29	8	9	21	0	1	1
Jacaratia spinosa (Aubl.) A. DC.	79	13.875	15.4498	58152.1	8	4	6	9	0	1	1
Joannesia princepis	80	18.4643	19.2048	193.714	7	7	4	8	1	0	1
Kielmeyera variabilis Mart.	81	72.3333	12.2202	6518.67	3	3	2	4	0	1	1
Lafoensia glyptocarpa	82	45.3571	26.8804	33181.3	14	5	8	14	0	1	1
Lafoensia pacari St. Hil.	83	59.6	24.7952	39174	5	3	3	5	0	1	1
Lagerstroemia speciosa	84	12.6	14.4326	67343.3	5	3	3	5	0	1	0
Lecythis pisonis Camb.	85	31.4812	29.2922	522.5	15	7	6	11	1	0	1
Licania tomentosa	86	15.5556	22.7507	3641.33	3	1	2	3	0	1	0
Licania tomentosa	87	39.1667	50.676	8888	3	2	3	4	0	1	0
Ligustrum lucidum	88	4.28125	9.64415	16520.4	48	11	12	43	0	1	1
Lithraea molleoides	89	13	2.82843	106174	2	2	2	4	0	1	1
Livistona chinensis	90	22.1071	29.0891	1420.16	28	9	10	26	1	0	1
Lonchocarpus guilheminianus Benth.	91	41.8539	31.0001	4054.5	4	1	1	3	0	1	0
Lonchocarpus muehlbergianus Hassl.	92	65.4422	30.1826	1344.83	16	4	7	11	1	0	1
Luehea divaricata	93	44.2857	15.1626	171143	7	4	4	7	0	1	1
Mabea fistulifera Mart.	94	29	41.8688	18455	3	3	3	5	0	1	0
Machaerium acutifolium	95	32.4569	29.5691	1655.5	18	9	7	15	1	0	1
Machaerium brasiliense	96	44.7	31.4078	7588.25	6	3	5	7	0	1	1
Machaerium nyctitans (Vell.) Benth.	97	12.25	13.1244	4829	4	2	3	4	0	1	0
Machaerium scleroxylon Tul.	98	38.8646	40.2056	11656.8	4	2	4	5	0	1	1
Machaerium villosum Vog.	99	19.0556	26.6292	2609.62	18	7	7	13	1	0	1
Magnolia grandiflora	100	0	0	5981.67	4	1	4	5	0	1	0
Michelia champaca	101	0.061275	0.357289	11172.6	33	12	11	39	0	1	0
Mimosa bimucronata	102	39	25.385	93661	6	2	5	7	0	1	1
Mimosa caesalpiniaefolia Benth.	103	57.3333	18.5	14751.9	9	4	4	6	0	1	1
Mimosa scabrella Benth.	104	41.5	28.4055	50873.9	9	3	5	7	0	1	1
Murraya paniculata	105	25.0185	29.6319	13191	27	8	11	29	0	1	1
Myracrodruon urundeuva	106	24.25	27.0067	74881.8	18	11	8	22	0	1	1
Myrocarpus frondosus	107	25.6	26.8011	1906	5	3	3	5	1	0	0
Myroxylon peruiferum	108	19.3182	24.6023	14068.7	22	9	12	37	0	1	1
Ocotea Porosa	109	15.5238	28.0143	862	9	4	6	9	1	0	0
Ormosia arborea (Vell.) Harms	110	47.1667	40.9766	1062.5	3	2	3	4	1	0	1
Parapiptadenia rigida (Benth.) Brenan	111	53.7778	37.4928	9278.15	40	10	11	34	0	1	1
Peltophorum dubium (Spreng.) Taub.	112	67.903	25.4685	10666.2	80	14	13	65	0	1	1
Peschiera fuchsiaefolia Miers.	113	62.6667	32.8075	21914	2	2	2	4	0	1	1
Phoenix loureiri Kunth	114	60.625	34.3884	3348.75	4	2	4	5	0	1	1
Phoenix roebelenii	115	52.08	33.6027	4001.3	25	13	11	42	0	1	1
Piptadenia gonoacantha (Mart.) Macbr.	116	42.8	25.9172	23808.2	5	4	3	5	0	1	1
Piracantha coceineta	117	25.3571	25.3455	135645	7	4	6	9	0	1	1
Pitosporum undulatum	118	22.8611	30.6185	90707	4	3	3	5	0	1	0
Plathymenia reticulata Benth.	119	46.6418	27.8406	72057.9	11	3	6	8	0	1	1
Platycyamus regnellii Benth.	120	43.3333	17.7726	2005.33	6	4	4	6	1	0	1
Platypodium elegans Vog.	121	33.8571	30.1077	3155.43	7	5	4	7	0	1	1
Poecilanthe parviflora Benth.	122	59.4378	30.0688	1612.14	8	4	6	9	1	0	1
Poncirus	123	33	38.4187	6206.75	4	3	4	6	0	1	0
Poncirus trifoliata	124	15	29.8137	5899.67	8	3	5	7	0	1	0
Prunus selowoii	125	2.25	1.06066	8334	2	2	2	4	0	1	1
Psidium gajava	126	61.25	38.4307	114048	4	1	3	4	0	1	1
Pterocarpus rohrii	127	34.8333	28.7857	2206.78	18	9	8	18	1	0	1
Pterogyne nitens Tul.	128	58.4768	25.2072	9133.35	46	9	12	37	0	1	1
Qualea dichotoma	129	71	14.4222	2904.33	3	1	2	3	1	0	1
Rapanea ferruginea (Ruiz et Pav.) Mez	130	0	0	54329.3	3	2	2	4	0	1	0
Rapanea umbellata	131	11.6667	20.2073	58515.3	3	2	2	4	0	1	0
Reseda speciosa	132	8.53333	4.92499	121325	5	1	4	5	0	1	1
Roystonea oleracea	133	40.1871	32.4673	3513.46	15	9	8	18	0	1	1
Roystonea regia	134	23.3846	29.8762	3777.83	15	6	5	9	0	1	1
Sabal sp	135	47.4	37.6104	5160.92	16	7	9	19	0	1	1
Sapindus saponaria L.	136	28.3	19.0017	1243.12	22	7	9	19	1	0	1
Schinus terebinthifolius	137	19.6538	26.8075	57298.8	13	9	7	16	0	1	1
Schizolobium parahyba	138	64.9808	25.4639	553.941	26	10	10	28	1	0	1
Senna macranthera (Colla) Irwin et Barn.	139	42.2667	34.458	36005.1	17	7	10	23	0	1	1
Senna multijuga (Rich.) Irwin et Barn.	140	48.75	50.7239	87780	4	4	3	5	0	1	1
Stryphnodentron adstringens	141	43.125	27.4717	9726.33	8	4	7	11	0	1	1
Syagrus romanzoffiana (Cham.) Glassm.	142	27.2708	32.5627	995.733	16	9	8	18	1	0	1
Tabebuia avellanedae	143	56.0759	29.2392	19183.6	48	20	10	59	0	1	1
Tabebuia chrysotricha (Mart ex D.C.) St.	144	49.312	29.4375	78175.6	63	21	10	65	0	1	1
Tabebuia heptaphylla	145	59.2049	31.5825	26385.9	12	6	6	10	0	1	1
Tabebuia impetiginosa (Mart.) Standl.	146	45.5196	30.1591	11622.2	21	10	7	17	0	1	1
Tabebuia ochracea (Cham.) Standl.	147	36	20.7686	75848.5	4	4	3	5	0	1	1
Tabebuia roseo-alba (Ridl.) Sand.	148	68.5	27.2277	85260.2	14	5	5	8	0	1	1
Tabebuia sp	149	29.0946	29.2021	7979.9	10	2	4	5	0	1	1
Terminalia argentea Mart. et Succ.	150	22.2	20.4222	75668	9	6	4	7	0	1	1
Tibouchina granulosa	151	0.924578	0.737912	1300000	34	10	8	32	0	1	1
Tipuana tipu	152	57.6719	31.3188	2095.67	36	16	9	37	1	0	1
Trema micrantha (L.) Blume	153	17.25	21.6852	142517	3	3	3	5	0	1	0
Triplaris brasiliana Cham.	154	38.1429	27.8106	20333.5	22	7	10	23	0	1	1
Zanthoxyllum riedelianum Engl.	155	0.4	0.894427	27459.8	6	4	3	5	0	1	0
Zeyheria tuberculosa (Vell.) Bur.	156	76.8	11.9666	10384	5	3	3	5	0	1	1