**Table S1:** Trees sampled for A/Ci curves, with TPU-enabled SS parameter values presented. Thirteen trees representing twelve species were measured. The relative vertical position of each tree is given, with 1 being the tallest tree and 12 being the lowest tree. The lower the tree, the less ambient light. Two trees of the same species (*Abarema mataybifolia*) were located at the same position on the vertical gradient (position = 5). Mean and standard deviation parameter estimates are presented.

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| --- | --- | --- | --- | --- | --- |
| **Family** | **Species** | **Relative Canopy Position** | **Overshoot?** | **TPU-enabled Mean Vcmax (μmol CO2 m−2·s−1)** | **TPU-enabled Mean Jmax (μmol CO2 m−2·s−1)** |
| Sapotaceae | *Manilkara elata* | 1 | YES | 63.4 (1.3) | 106.0 (4.3) |
| Fabaceae | *Tachigali chrysophylla* | 2 | YES | 73.7 (13.4) | 112.0 (12.5) |
| Rubiaceae | *Chimarrhis turbinata* | 3 | No | 25.7 (1.4) | 49.0 (1.2) |
| Lecythidaceae | *Eschweilera* sp. *trufle1* | 4 | YES | 33.6 (1.2) | 61.7 (8.9) |
| Fabaceae | *Abarema mataybifolia-1* | 5 | No | 22.3 (3.0) | 55.0 (4.8) |
| Fabaceae | *Abarema mataybifolia-2* | 5 | No | 14.4 (4.8) | 32.4 (11.8) |
| Burseraceae | *Protium apiculatum* | 6 | No | 21.8 (2.9) | 39.9 (4.7) |
| Melastomataceae | *Miconia egensis* | 7 | No | 36.0 (1.4) | 61.5 (0.9) |
| Rubiaceae | *Coussarea paniculata* | 8 | No | 25.3 (4.6) | 50.5 (6.3) |
| Euphorbiaceae | *Aparisthmium cordatum* | 9 | No | 43.4 (0.2) | 70.7 (1.7) |
| Hypericaceae | *Vismia cayennensis* | 10 | No | 26.3 (7.5) | 45.0 (7.0) |
| Lecythidaceae | *Couratari stellata* | 11 | Variable | 15.7 (NA) | 31.5 (NA) |
| Annonaceae | *Anaxagorea dolichocarpa* | 12 | YES | 22.8 (1.2) | 32.3 (4.5) |