## 14.1 Table 1

**Table 1:** **Replication statement of the statistical analysis in this study.**

|  |  |  |
| --- | --- | --- |
| **Scale of inference** | **Scale at which the factor of interest is applied** | **Number of replicates at the appropriate scale** |
| Leaf functional traits | Species | Treatment = 2 (E-, E+), Tropical tree species = 7, Replicates per species = 5. Replicate leaves per plant = 3 |
| Genomic data | Species | Treatment = 2 (E-, E+), Tropical tree species = 7, Replicates per species = 5 |
| Herbivore assays | Species/individual | Treatment = 2 (E-, E+), Tropical tree species = 7, Replicates per species = 5, Replicates per plant = 1 |
| Pathogen assays | Species/individual | Treatment = 2 (E-, E+), sub-treatment = 2 (control and pathogen) for pathogen trials, Tropical tree species = 7, Replicates per species = 5, Replicates per plant = 1 |

## 14.2 Table 2

**Table 2: Summary statistics for the leaf functional traits**

|  | ***A. membranacea, n = 831*** | ***C. alliodora, n = 1001*** | ***C. cainito, n = 1501*** | ***Dypterix sp., n = 2881*** | ***H. concinna, n = 1321*** | ***L. panamensis, n = 1851*** | ***T. cacao, n = 1761*** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| *Treatment* |  |  |  |  |  |  |  |
| E- (n = 570) | 47 | 54 | 75 | 144 | 66 | 95 | 89 |
| E+ (n = 544) | 36 | 46 | 75 | 144 | 66 | 90 | 87 |
| Anthocyanins (ACI) | 5.35 ± 1.06 | 3.47 ± 0.43 | 8.21 ± 1.41 | 6.34 ± 1.15 | 6.77 ± 2.86 | 5.91 ± 1.30 | 4.18 ± 0.77 |
| Leaf Thickness (LT) (µm) | 270 ± 45 | 207 ± 37 | 205 ± 30 | 148 ± 13 | 214 ± 42 | 245 ± 18 | 200 ± 43 |
| Leaf Punch Strength (LPS) (N mm/1) | 0.22 ± 0.05 | 0.21 ± 0.05 | 0.53 ± 0.09 | 0.43 ± 0.06 | 0.77 ± 0.23 | 0.33 ± 0.04 | 0.38 ± 0.06 |
| Leaf Mass per Area (LMA) (mg/mm) | 0.0011 ± 0.0002 | 0.0007 ± 0.0001 | 0.0015 ± 0.0002 | 0.0011 ± 0.0001 | 0.0017 ± 0.0004 | 0.0014 ± 0.0002 | 0.0009 ± 0.0001 |
| 1n = observations ; Mean ± SD | | | | | | | |

## 14.3 Table 3

**Table 3: Generalized linear mixed models (GLMMs) for predicting leaf herbivory and pathogen damage**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Herbivory model** | | **Pathogen damage model** | |
| **Predictors** | **Estimate** | **CI [t-statistic]** | **Estimate** | **CI [t-statistic]** |
| ***Fixed effects*** |  |  |  |  |
| Intercept | -0.257 | (-2.315 - 1.801 ) [-0.246] | **-3.416 \*\*\*** | **(-4.403 - -2.428 ) [-6.801]** |
| Thickness | **-0.010 \*** | **(-0.018 - -0.002 ) [-2.517]** | 0.003 | (-0.001 - 0.007 ) [1.666] |
| LMA | **1741.216 \*\*\*** | **(768.816 - 2713.616 ) [3.531]** | 171.649 | (-181.400 - 524.698 ) [0.956] |
| Endophyte load (E+) | **-0.777 \*\*\*** | **(-1.109 - -0.445 ) [-4.619]** |  |  |
| ***Random effects*** |  |  |  |  |
| Intercept | 1.390 | (0.753 - 2.565 ) |  |  |
| Observations | 1.827 |  |  |  |
| *A. membranacea* | 1.000 |  | 1.000 |  |
| *C. cainito* | 0.654 |  | 0.780 |  |
| *C. alliodora* | 0.600 |  | 0.463 |  |
| *Dypterix sp.* | 0.784 |  | 0.513 |  |
| *H. concinna* | 0.822 |  | 0.365 |  |
| *L. panamensis* | 0.425 |  | 0.312 |  |
| *T. cacao* | 0.782 |  | 0.767 |  |
| N | 210 |  | 382 |  |
| logLik | -358.893 |  | -492.620 |  |
| AIC | 741.785 |  | 1011.239 |  |
| Significance levels are represented by asterisks [p < 0.05 (\*), p <= 0.01 (\*\*), p <= 0.001 (\*\*\*), and p < 0.0001 (\*\*\*\*)]. T statistics in brackets. | | | | |

# 15. Supplementary Materials

## 15.1 Table S1

| **Table S1: Student's t-Tests of mean anthocyanins (ACI)**  Pairwise comparisons of ACI between species. | | | | |
| --- | --- | --- | --- | --- |
|  | *p* - values | | | |
| Comparison Species*1* | p | p.adj | p.format | p.signif*2* |
| ***A. membranacea*** | | | | |
| *C. cainito* | **2.636 × 10^-16** | **4.500 × 10^-15** | **2.6e-16** | **\*\*\*\*** |
| *C. alliodora* | **3.713 × 10^-15** | **5.600 × 10^-14** | **3.7e-15** | **\*\*\*\*** |
| *Dypterix* sp. | **2.296 × 10^-6** | **1.600 × 10^-5** | **2.3e-06** | **\*\*\*\*** |
| *H. concinna* | **6.179 × 10^-6** | **3.700 × 10^-5** | **6.2e-06** | **\*\*\*\*** |
| *L. panamensis* | **1.538 × 10^-2** | **4.600 × 10^-2** | **0.01538** | **\*** |
| *T. cacao* | **9.137 × 10^-8** | **8.200 × 10^-7** | **9.1e-08** | **\*\*\*\*** |
| ***C. cainito*** | | | | |
| *C. alliodora* | **3.154 × 10^-23** | **6.300 × 10^-22** | **< 2e-16** | **\*\*\*\*** |
| *Dypterix* sp. | **4.559 × 10^-10** | **5.000 × 10^-9** | **4.6e-10** | **\*\*\*\*** |
| *H. concinna* | 5.309 × 10^-1 | 5.300 × 10^-1 | 0.53085 | ns |
| *L. panamensis* | **1.599 × 10^-11** | **2.200 × 10^-10** | **1.6e-11** | **\*\*\*\*** |
| *T. cacao* | **3.656 × 10^-22** | **6.900 × 10^-21** | **< 2e-16** | **\*\*\*\*** |
| ***C. alliodora*** | | | | |
| *Dypterix* sp. | **1.150 × 10^-26** | **2.400 × 10^-25** | **< 2e-16** | **\*\*\*\*** |
| *H. concinna* | **7.276 × 10^-11** | **9.500 × 10^-10** | **7.3e-11** | **\*\*\*\*** |
| *L. panamensis* | **2.486 × 10^-15** | **4.000 × 10^-14** | **2.5e-15** | **\*\*\*\*** |
| *T. cacao* | **1.428 × 10^-7** | **1.100 × 10^-6** | **1.4e-07** | **\*\*\*\*** |
| ***Dypterix* sp.** | | | | |
| *H. concinna* | **3.050 × 10^-3** | **1.200 × 10^-2** | **0.00305** | **\*\*** |
| *L. panamensis* | 6.646 × 10^-2 | 1.300 × 10^-1 | 0.06646 | ns |
| *T. cacao* | **3.807 × 10^-18** | **6.900 × 10^-17** | **< 2e-16** | **\*\*\*\*** |
| ***H. concinna*** | | | | |
| *L. panamensis* | **3.062 × 10^-4** | **1.500 × 10^-3** | **0.00031** | **\*\*\*** |
| *T. cacao* | **5.704 × 10^-9** | **5.700 × 10^-8** | **5.7e-09** | **\*\*\*\*** |
| ***L. panamensis*** | | | | |
| *T. cacao* | **3.583 × 10^-10** | **4.300 × 10^-9** | **3.6e-10** | **\*\*\*\*** |
| *1* *n* = 156 individuals | | | | |
| *2*Significance levels are represented by *ns* (not significant) and asterisks [*p* = 0.05 (\*), *p* = 0.01 (\*\*), *p* = 0.001 (\*\*\*), and *p* < 0.0001 (\*\*\*\*)]. | | | | |

## 15.2 Table S2

| **Table S2: Student's t-Tests of mean leaf thickness (LT) (μm)**  Pairwise comparisons of LT between species. | | | | |
| --- | --- | --- | --- | --- |
|  | *p* - values | | | |
| Comparison Species*1* | p | p.adj | p.format | p.signif*2* |
| ***A. membranacea*** | | | | |
| *C. cainito* | **1.793 × 10^-8** | **2.300 × 10^-7** | **1.8e-08** | **\*\*\*\*** |
| *C. alliodora* | **6.857 × 10^-8** | **8.200 × 10^-7** | **6.9e-08** | **\*\*\*\*** |
| *Dypterix* sp. | **7.836 × 10^-18** | **1.500 × 10^-16** | **< 2e-16** | **\*\*\*\*** |
| *H. concinna* | **1.255 × 10^-5** | **1.000 × 10^-4** | **1.3e-05** | **\*\*\*\*** |
| *L. panamensis* | 4.986 × 10^-1 | 1.000 | 0.499 | ns |
| *T. cacao* | **1.604 × 10^-6** | **1.400 × 10^-5** | **1.6e-06** | **\*\*\*\*** |
| ***C. cainito*** | | | | |
| *C. alliodora* | 7.854 × 10^-1 | 1.000 | 0.785 | ns |
| *Dypterix* sp. | **2.605 × 10^-19** | **5.200 × 10^-18** | **< 2e-16** | **\*\*\*\*** |
| *H. concinna* | 6.876 × 10^-2 | 4.800 × 10^-1 | 0.069 | ns |
| *L. panamensis* | **1.382 × 10^-12** | **2.100 × 10^-11** | **1.4e-12** | **\*\*\*\*** |
| *T. cacao* | 4.765 × 10^-1 | 1.000 | 0.477 | ns |
| ***C. alliodora*** | | | | |
| *Dypterix* sp. | **8.662 × 10^-17** | **1.500 × 10^-15** | **< 2e-16** | **\*\*\*\*** |
| *H. concinna* | 1.347 × 10^-1 | 8.100 × 10^-1 | 0.135 | ns |
| *L. panamensis* | **1.161 × 10^-10** | **1.600 × 10^-9** | **1.2e-10** | **\*\*\*\*** |
| *T. cacao* | 6.481 × 10^-1 | 1.000 | 0.648 | ns |
| ***Dypterix* sp.** | | | | |
| *H. concinna* | **8.177 × 10^-17** | **1.500 × 10^-15** | **< 2e-16** | **\*\*\*\*** |
| *L. panamensis* | **8.008 × 10^-32** | **1.700 × 10^-30** | **< 2e-16** | **\*\*\*\*** |
| *T. cacao* | **4.639 × 10^-13** | **7.400 × 10^-12** | **4.6e-13** | **\*\*\*\*** |
| ***H. concinna*** | | | | |
| *L. panamensis* | **7.274 × 10^-7** | **7.300 × 10^-6** | **7.3e-07** | **\*\*\*\*** |
| *T. cacao* | 3.649 × 10^-1 | 1.000 | 0.365 | ns |
| ***L. panamensis*** | | | | |
| *T. cacao* | **1.707 × 10^-7** | **1.900 × 10^-6** | **1.7e-07** | **\*\*\*\*** |
| *1* *n* = 156 individuals | | | | |
| *2*Significance levels are represented by *ns* (not significant) and asterisks [*p* = 0.05 (\*), *p* = 0.01 (\*\*), *p* = 0.001 (\*\*\*), and *p* < 0.0001 (\*\*\*\*)]. | | | | |

## 15.3 Table S3

| **Table S3: Student's t-Tests of mean leaf punch strength (LPS) (N mm-1)**  Pairwise comparisons of LPS between species. | | | | |
| --- | --- | --- | --- | --- |
|  | *p* - values | | | |
| Comparison Species*1* | p | p.adj | p.format | p.signif*2* |
| ***A. membranacea*** | | | | |
| *C. cainito* | **9.032 × 10^-36** | **1.600 × 10^-34** | **< 2e-16** | **\*\*\*\*** |
| *C. alliodora* | 3.180 × 10^-1 | 3.200 × 10^-1 | 0.32 | ns |
| *Dypterix* sp. | **3.538 × 10^-43** | **7.400 × 10^-42** | **< 2e-16** | **\*\*\*\*** |
| *H. concinna* | **7.548 × 10^-21** | **8.700 × 10^-20** | **< 2e-16** | **\*\*\*\*** |
| *L. panamensis* | **7.304 × 10^-26** | **1.200 × 10^-24** | **< 2e-16** | **\*\*\*\*** |
| *T. cacao* | **7.242 × 10^-21** | **8.700 × 10^-20** | **< 2e-16** | **\*\*\*\*** |
| ***C. cainito*** | | | | |
| *C. alliodora* | **3.873 × 10^-39** | **7.700 × 10^-38** | **< 2e-16** | **\*\*\*\*** |
| *Dypterix* sp. | **3.649 × 10^-16** | **2.200 × 10^-15** | **3.6e-16** | **\*\*\*\*** |
| *H. concinna* | **6.101 × 10^-12** | **2.400 × 10^-11** | **6.1e-12** | **\*\*\*\*** |
| *L. panamensis* | **3.975 × 10^-28** | **6.800 × 10^-27** | **< 2e-16** | **\*\*\*\*** |
| *T. cacao* | **7.651 × 10^-21** | **8.700 × 10^-20** | **< 2e-16** | **\*\*\*\*** |
| ***C. alliodora*** | | | | |
| *Dypterix* sp. | **1.738 × 10^-36** | **3.300 × 10^-35** | **< 2e-16** | **\*\*\*\*** |
| *H. concinna* | **1.267 × 10^-21** | **1.600 × 10^-20** | **< 2e-16** | **\*\*\*\*** |
| *L. panamensis* | **8.205 × 10^-21** | **8.700 × 10^-20** | **< 2e-16** | **\*\*\*\*** |
| *T. cacao* | **1.371 × 10^-22** | **1.900 × 10^-21** | **< 2e-16** | **\*\*\*\*** |
| ***Dypterix* sp.** | | | | |
| *H. concinna* | **1.617 × 10^-15** | **8.100 × 10^-15** | **1.6e-15** | **\*\*\*\*** |
| *L. panamensis* | **7.768 × 10^-26** | **1.200 × 10^-24** | **< 2e-16** | **\*\*\*\*** |
| *T. cacao* | **3.965 × 10^-7** | **8.800 × 10^-7** | **4.0e-07** | **\*\*\*\*** |
| ***H. concinna*** | | | | |
| *L. panamensis* | **2.293 × 10^-18** | **1.800 × 10^-17** | **< 2e-16** | **\*\*\*\*** |
| *T. cacao* | **1.173 × 10^-17** | **8.200 × 10^-17** | **< 2e-16** | **\*\*\*\*** |
| ***L. panamensis*** | | | | |
| *T. cacao* | **2.949 × 10^-7** | **8.800 × 10^-7** | **2.9e-07** | **\*\*\*\*** |
| *1* *n* = 156 individuals | | | | |
| *2*Significance levels are represented by *ns* (not significant) and asterisks [*p* = 0.05 (\*), *p* = 0.01 (\*\*), *p* = 0.001 (\*\*\*), and *p* < 0.0001 (\*\*\*\*)]. | | | | |

## 15.4 Table S4

| **Table S4:** **Student's t-Tests of mean leaf mass per area (LMA) (mg mm-2)**  Pairwise comparisons of LMA between species. | | | | |
| --- | --- | --- | --- | --- |
|  | *p* - values | | | |
| Comparison Species*1* | p | p.adj | p.format | p.signif*2* |
| ***A. membranacea*** | | | | |
| *C. cainito* | **9.032 × 10^-36** | **1.600 × 10^-34** | **< 2e-16** | **\*\*\*\*** |
| *C. alliodora* | 3.180 × 10^-1 | 3.200 × 10^-1 | 0.32 | ns |
| *Dypterix* sp. | **3.538 × 10^-43** | **7.400 × 10^-42** | **< 2e-16** | **\*\*\*\*** |
| *H. concinna* | **7.548 × 10^-21** | **8.700 × 10^-20** | **< 2e-16** | **\*\*\*\*** |
| *L. panamensis* | **7.304 × 10^-26** | **1.200 × 10^-24** | **< 2e-16** | **\*\*\*\*** |
| *T. cacao* | **7.242 × 10^-21** | **8.700 × 10^-20** | **< 2e-16** | **\*\*\*\*** |
| ***C. cainito*** | | | | |
| *C. alliodora* | **3.873 × 10^-39** | **7.700 × 10^-38** | **< 2e-16** | **\*\*\*\*** |
| *Dypterix* sp. | **3.649 × 10^-16** | **2.200 × 10^-15** | **3.6e-16** | **\*\*\*\*** |
| *H. concinna* | **6.101 × 10^-12** | **2.400 × 10^-11** | **6.1e-12** | **\*\*\*\*** |
| *L. panamensis* | **3.975 × 10^-28** | **6.800 × 10^-27** | **< 2e-16** | **\*\*\*\*** |
| *T. cacao* | **7.651 × 10^-21** | **8.700 × 10^-20** | **< 2e-16** | **\*\*\*\*** |
| ***C. alliodora*** | | | | |
| *Dypterix* sp. | **1.738 × 10^-36** | **3.300 × 10^-35** | **< 2e-16** | **\*\*\*\*** |
| *H. concinna* | **1.267 × 10^-21** | **1.600 × 10^-20** | **< 2e-16** | **\*\*\*\*** |
| *L. panamensis* | **8.205 × 10^-21** | **8.700 × 10^-20** | **< 2e-16** | **\*\*\*\*** |
| *T. cacao* | **1.371 × 10^-22** | **1.900 × 10^-21** | **< 2e-16** | **\*\*\*\*** |
| ***Dypterix* sp.** | | | | |
| *H. concinna* | **1.617 × 10^-15** | **8.100 × 10^-15** | **1.6e-15** | **\*\*\*\*** |
| *L. panamensis* | **7.768 × 10^-26** | **1.200 × 10^-24** | **< 2e-16** | **\*\*\*\*** |
| *T. cacao* | **3.965 × 10^-7** | **8.800 × 10^-7** | **4.0e-07** | **\*\*\*\*** |
| ***H. concinna*** | | | | |
| *L. panamensis* | **2.293 × 10^-18** | **1.800 × 10^-17** | **< 2e-16** | **\*\*\*\*** |
| *T. cacao* | **1.173 × 10^-17** | **8.200 × 10^-17** | **< 2e-16** | **\*\*\*\*** |
| ***L. panamensis*** | | | | |
| *T. cacao* | **2.949 × 10^-7** | **8.800 × 10^-7** | **2.9e-07** | **\*\*\*\*** |
| *1* *n* = 156 individuals | | | | |
| *2*Significance levels are represented by *ns* (not significant) and asterisks [*p* = 0.05 (\*), *p* = 0.01 (\*\*), *p* = 0.001 (\*\*\*), and *p* < 0.0001 (\*\*\*\*)]. | | | | |

## 15.5 Table S5

| **Table S5: Taxonomy of OTUs significantly correlated OTUs with tree host species.** | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  | Multilevel pattern analysis | | | |
| Kingdom | Phylum | Class | Order | Family | Genus | Species | OTU | Index | Stat | *p1* | *p*adj*2* |
| ***T. cacao*** | | | | | | | | | | | |
| Fungi | Ascomycota | Dothideomycetes | Capnodiales | Mycosphaerellaceae | Coremiopassalora | *Coremiopassalora leptophlebae* | OTU 2 | 7 | 0.507 | \*\* | 0.012 |
| Fungi | Ascomycota | Dothideomycetes | Capnodiales | Mycosphaerellaceae | Pseudocercospora | *Pseudocercospora sp* | OTU 5 | 7 | 0.531 | \*\* | 0.012 |
| Fungi | Ascomycota | Eurotiomycetes | Eurotiales | Trichocomaceae | Talaromyces | *Talaromyces sp* | OTU 3 | 7 | 0.469 | \*\* | 0.012 |
| Fungi | Ascomycota | unidentified | unidentified | unidentified | unidentified | *Ascomycota sp* | OTU 14 | 7 | 0.500 | \*\* | 0.012 |
| Fungi | Ascomycota | Dothideomycetes | Capnodiales | Cladosporiaceae | Cladosporium | *Cladosporium sp* | OTU 20 | 7 | 0.382 | \*\* | 0.012 |
| Fungi | Ascomycota | Dothideomycetes | Capnodiales | Mycosphaerellaceae | Zasmidium | *Zasmidium queenslandicum* | OTU 95 | 7 | 0.390 | \*\* | 0.012 |
| Fungi | Ascomycota | Sordariomycetes | Hypocreales | Hypocreales\_fam\_Incertae\_sedis | Acremonium | *Acremonium sp* | OTU 84 | 7 | 0.430 | \*\* | 0.012 |
| Fungi | Ascomycota | Dothideomycetes | Capnodiales | Dissoconiaceae | Ramichloridium | *Ramichloridium sp* | OTU 79 | 7 | 0.362 | \*\* | 0.019 |
| Fungi | Ascomycota | Dothideomycetes | Capnodiales | Mycosphaerellaceae | Mycosphaerella | *Mycosphaerella sp* | OTU 183 | 7 | 0.427 | \*\* | 0.012 |
| Fungi | Ascomycota | Sordariomycetes | Xylariales | Xylariaceae | Annulohypoxylon | *Annulohypoxylon urceolatum* | OTU 279 | 7 | 0.352 | \*\* | 0.019 |
| Fungi | Ascomycota | Dothideomycetes | Capnodiales | Mycosphaerellaceae | Zasmidium | *Zasmidium commune* | OTU 286 | 7 | 0.331 | \*\* | 0.041 |
| ***H. concinna*** | | | | | | | | | | | |
| Fungi | Ascomycota | Sordariomycetes | Hypocreales | Nectriaceae | Fusarium | *Fusarium sp* | OTU 7 | 5 | 0.330 | \*\* | 0.012 |
| Fungi | Ascomycota | Eurotiomycetes | Chaetothyriales | Herpotrichiellaceae | Exophiala | *Exophiala oligosperma* | OTU 21 | 5 | 0.220 | \*\* | 0.012 |
| Fungi | Ascomycota | Sordariomycetes | Hypocreales | Clavicipitaceae | unidentified | *Clavicipitaceae sp* | OTU 53 | 5 | 0.281 | \*\* | 0.012 |
| Fungi | Ascomycota | Saccharomycetes | Saccharomycetales | Saccharomycetales\_fam\_Incertae\_sedis | Candida | *Candida parapsilosis* | OTU 67 | 5 | 0.272 | \*\* | 0.027 |
| Fungi | Ascomycota | Eurotiomycetes | Chaetothyriales | Trichomeriaceae | Bradymyces | *Bradymyces sp* | OTU 160 | 5 | 0.251 | \*\* | 0.047 |
| Fungi | Ascomycota | Eurotiomycetes | Chaetothyriales | Herpotrichiellaceae | Exophiala | *Exophiala oligosperma* | OTU 173 | 5 | 0.350 | \*\* | 0.012 |
| Fungi | Ascomycota | Sordariomycetes | Sordariales | Chaetomiaceae | unidentified | *Chaetomiaceae sp* | OTU 209 | 5 | 0.351 | \*\* | 0.019 |
| Fungi | Ascomycota | Dothideomycetes | Pleosporales | Didymellaceae | Neodidymelliopsis | *Neodidymelliopsis sambuci* | OTU 596 | 5 | 0.351 | \*\* | 0.019 |
| ***Dypterix sp.*** | | | | | | | | | | | |
| Fungi | Ascomycota | Dothideomycetes | Capnodiales | Dissoconiaceae | Uwebraunia | *Uwebraunia dekkeri* | OTU 12 | 4 | 0.418 | \*\* | 0.012 |
| Fungi | Ascomycota | Eurotiomycetes | Eurotiales | Aspergillaceae | Aspergillus | *Aspergillus sp* | OTU 122 | 4 | 0.257 | \*\* | 0.047 |
| Fungi | Ascomycota | Dothideomycetes | Capnodiales | Dissoconiaceae | Ramichloridium | *Ramichloridium punctatum* | OTU 151 | 4 | 0.378 | \*\* | 0.012 |
| Fungi | Ascomycota | Sordariomycetes | Xylariales | Xylariaceae | unidentified | *Xylariaceae sp* | OTU 216 | 4 | 0.390 | \*\* | 0.019 |
| Fungi | Ascomycota | Dothideomycetes | Capnodiales | Schizothyriaceae | Zygophiala | *Zygophiala qianensis* | OTU 305 | 4 | 0.333 | \*\* | 0.034 |
| ***A. membranacea*** | | | | | | | | | | | |
| Fungi | Ascomycota | Sordariomycetes | Xylariales | unidentified | unidentified | *Xylariales sp* | OTU 25 | 1 | 0.219 | \*\* | 0.012 |
| Fungi | Ascomycota | Dothideomycetes | Capnodiales | Mycosphaerellaceae | Septoria | *Septoria sp* | OTU 26 | 1 | 0.366 | \*\* | 0.012 |
| Fungi | Ascomycota | Sordariomycetes | Xylariales | Xylariaceae | Xylaria | *Xylaria curta* | OTU 172 | 9 | 0.413 | \*\* | 0.012 |
| Fungi | Ascomycota | Dothideomycetes | Pleosporales | Pleosporaceae | Curvularia | *Curvularia sp* | OTU 120 | 1 | 0.352 | \*\* | 0.047 |
| ***C. alliodora*** | | | | | | | | | | | |
| Fungi | Ascomycota | Dothideomycetes | Botryosphaeriales | Phyllostictaceae | Phyllosticta | *Phyllosticta capitalensis* | OTU 32 | 19 | 0.362 | \*\* | 0.012 |
| Fungi | Ascomycota | Sordariomycetes | Diaporthales | Diaporthaceae | Diaporthe | *Diaporthe longicolla* | OTU 31 | 3 | 0.531 | \*\* | 0.012 |
| Fungi | Ascomycota | Sordariomycetes | Glomerellales | Glomerellaceae | Colletotrichum | *Colletotrichum gigasporum* | OTU 34 | 3 | 0.374 | \*\* | 0.012 |
| Fungi | Ascomycota | Sordariomycetes | Xylariales | Xylariaceae | Xylaria | *Xylaria sp* | OTU 62 | 3 | 0.516 | \*\* | 0.012 |
| Fungi | Ascomycota | unidentified | unidentified | unidentified | unidentified | *Ascomycota sp* | OTU 52 | 3 | 0.494 | \*\* | 0.012 |
| Fungi | Ascomycota | Sordariomycetes | Diaporthales | Diaporthaceae | Diaporthe | *Diaporthe sp* | OTU 99 | 3 | 0.443 | \*\* | 0.012 |
| Fungi | Ascomycota | Sordariomycetes | Sordariales | Chaetomiaceae | Ovatospora | *Ovatospora brasiliensis* | OTU 61 | 3 | 0.374 | \*\* | 0.012 |
| Fungi | Ascomycota | Dothideomycetes | Pleosporales | Phaeosphaeriaceae | Setophoma | *Setophoma sp* | OTU 71 | 3 | 0.386 | \*\* | 0.012 |
| Fungi | Ascomycota | Sordariomycetes | Xylariales | Xylariaceae | Annulohypoxylon | *Annulohypoxylon stygium* | OTU 78 | 3 | 0.503 | \*\* | 0.012 |
| Fungi | Ascomycota | Sordariomycetes | Xylariales | Xylariaceae | Hypoxylon | *Hypoxylon sp* | OTU 101 | 3 | 0.483 | \*\* | 0.012 |
| Fungi | Ascomycota | Sordariomycetes | Diaporthales | Diaporthaceae | Diaporthe | *Diaporthe sp* | OTU 223 | 3 | 0.415 | \*\* | 0.012 |
| Fungi | Ascomycota | Sordariomycetes | Xylariales | Xylariaceae | Xylaria | *Xylaria sp* | OTU 212 | 3 | 0.501 | \*\* | 0.012 |
| Fungi | Ascomycota | Dothideomycetes | Capnodiales | Cladosporiaceae | Melomastia | *Melomastia sp* | OTU 117 | 3 | 0.429 | \*\* | 0.012 |
| Fungi | Ascomycota | Dothideomycetes | Pleosporales | Morosphaeriaceae | Acrocalymma | *Acrocalymma sp* | OTU 169 | 3 | 0.434 | \*\* | 0.012 |
| Fungi | Ascomycota | Sordariomycetes | Diaporthales | Diaporthaceae | Diaporthe | *Diaporthe sp* | OTU 512 | 3 | 0.461 | \*\* | 0.012 |
| Fungi | Ascomycota | Sordariomycetes | Diaporthales | Diaporthaceae | Diaporthe | *Diaporthe melonis* | OTU 179 | 3 | 0.475 | \*\* | 0.012 |
| Fungi | Ascomycota | Sordariomycetes | Xylariales | Xylariales\_fam\_Incertae\_sedis | Oxydothis | *Oxydothis garethjonesii* | OTU 94 | 57 | 0.366 | \*\* | 0.027 |
| Fungi | Ascomycota | Sordariomycetes | Xylariales | Xylariaceae | unidentified | *Xylariaceae sp* | OTU 106 | 3 | 0.455 | \*\* | 0.012 |
| Fungi | Ascomycota | Sordariomycetes | Xylariales | Xylariaceae | Hypoxylon | *Hypoxylon hypomiltum* | OTU 142 | 3 | 0.369 | \*\* | 0.012 |
| Fungi | Ascomycota | Sordariomycetes | Xylariales | Xylariaceae | Xylaria | *Xylaria sp* | OTU 262 | 3 | 0.399 | \*\* | 0.012 |
| Fungi | Ascomycota | Sordariomycetes | Diaporthales | Diaporthaceae | Diaporthe | *Diaporthe sp* | OTU 327 | 3 | 0.480 | \*\* | 0.012 |
| Fungi | Ascomycota | Sordariomycetes | Xylariales | Xylariaceae | Hypoxylon | *Hypoxylon submonticulosum* | OTU 202 | 3 | 0.339 | \*\* | 0.012 |
| Fungi | Ascomycota | Sordariomycetes | Xylariales | Amphisphaeriaceae | Lepteutypa | *Lepteutypa sambuci* | OTU 210 | 3 | 0.410 | \*\* | 0.012 |
| Fungi | Ascomycota | Sordariomycetes | Xylariales | Xylariaceae | unidentified | *Xylariaceae sp* | OTU 380 | 3 | 0.351 | \*\* | 0.019 |
| Fungi | Ascomycota | Sordariomycetes | Xylariales | Xylariaceae | unidentified | *Xylariaceae sp* | OTU 537 | 3 | 0.451 | \*\* | 0.012 |
| Fungi | Ascomycota | Sordariomycetes | Sordariales | Lasiosphaeriaceae | unidentified | *Lasiosphaeriaceae sp* | OTU 219 | 3 | 0.349 | \*\* | 0.019 |
| Fungi | Ascomycota | unidentified | unidentified | unidentified | unidentified | *Ascomycota sp* | OTU 192 | 3 | 0.395 | \*\* | 0.012 |
| Fungi | Ascomycota | Sordariomycetes | Xylariales | Xylariaceae | Lopadostoma | *Lopadostoma americanum* | OTU 936 | 3 | 0.417 | \*\* | 0.019 |
| Fungi | Ascomycota | Sordariomycetes | Sordariales | Sordariales\_fam\_Incertae\_sedis | Ramophialophora | *Ramophialophora sp* | OTU 362 | 3 | 0.330 | \*\* | 0.041 |
| Fungi | Ascomycota | unidentified | unidentified | unidentified | unidentified | *Ascomycota sp* | OTU 784 | 3 | 0.399 | \*\* | 0.012 |
| Fungi | Ascomycota | Sordariomycetes | unidentified | unidentified | unidentified | *Sordariomycetes sp* | OTU 397 | 3 | 0.435 | \*\* | 0.019 |
| Fungi | Ascomycota | Sordariomycetes | Diaporthales | Diaporthaceae | Diaporthe | *Diaporthe fraxini-angustifoliae* | OTU 575 | 3 | 0.379 | \*\* | 0.019 |
| Fungi | Ascomycota | Sordariomycetes | Glomerellales | Glomerellaceae | Colletotrichum | *Colletotrichum ignotum* | OTU 614 | 3 | 0.342 | \*\* | 0.034 |
| ***C. cainito*** | | | | | | | | | | | |
| Fungi | Ascomycota | Sordariomycetes | Xylariales | unidentified | unidentified | *Xylariales sp* | OTU 58 | 2 | 0.362 | \*\* | 0.027 |
| Fungi | Ascomycota | Sordariomycetes | Hypocreales | Hypocreales\_fam\_Incertae\_sedis | Sarocladium | *Sarocladium gamsii* | OTU 75 | 18 | 0.335 | \*\* | 0.012 |
| Fungi | Ascomycota | Sordariomycetes | Diaporthales | Valsaceae | Phomopsis | *Phomopsis sp* | OTU 86 | 2 | 0.323 | \*\* | 0.012 |
| Fungi | Ascomycota | Sordariomycetes | Sordariales | Cephalothecaceae | Phialemonium | *Phialemonium dimorphosporum* | OTU 139 | 2 | 0.334 | \*\* | 0.019 |
| Fungi | Ascomycota | Sordariomycetes | Hypocreales | Hypocreales\_fam\_Incertae\_sedis | Acremonium | *Acremonium hennebertii* | OTU 145 | 2 | 0.406 | \*\* | 0.012 |
| Fungi | Ascomycota | Sordariomycetes | Xylariales | unidentified | unidentified | *Xylariales sp* | OTU 128 | 50 | 0.341 | \*\* | 0.041 |
| Fungi | Ascomycota | Arthoniomycetes | Lichenostigmatales | Phaeococcomycetaceae | Phaeococcomyces | *Phaeococcomyces rothmanniae* | OTU 197 | 2 | 0.352 | \*\* | 0.012 |
| Fungi | Ascomycota | Sordariomycetes | Diaporthales | Diaporthaceae | Diaporthe | *Diaporthe sp* | OTU 761 | 2 | 0.418 | \*\* | 0.012 |
| ***L. panamensis*** | | | | | | | | | | | |
| Fungi | Ascomycota | Sordariomycetes | Xylariales | Xylariales\_fam\_Incertae\_sedis | Oxydothis | *Oxydothis sp* | OTU 221 | 6 | 0.335 | \*\* | 0.027 |
| Fungi | Ascomycota | Dothideomycetes | Pleosporales | unidentified | unidentified | *Pleosporales sp* | OTU 232 | 6 | 0.336 | \*\* | 0.027 |
| Fungi | Ascomycota | Sordariomycetes | Glomerellales | Glomerellales\_fam\_Incertae\_sedis | Malaysiasca | *Malaysiasca phaii* | OTU 735 | 6 | 0.309 | \*\* | 0.019 |
| *1* Significance levels are represented by *ns* (not significant) and asterisks [*p* <= 0.05 (\*), *p <*= 0.01 (\*\*), *p <*= 0.001 (\*\*\*), and *p* < 0.0001 (\*\*\*\*)]. | | | | | | | | | | | |
| *2*Benjamini & Hochberg method adjustment for multiple comparisons | | | | | | | | | | | |

## 15.6 Table S6

| **Table S6: Taxonomy of significantly correlated OTUs with *Atta colombica* herbivory levels** | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  | Multilevel pattern analysis | | | |
| Kingdom | Phylum | Class | Order | Family | Genus | Species | OTU | Index | Stat | *p2* | *p*adj*3* |
| **Medium** | | | | | | | | | | | |
| Fungi | Ascomycota | Eurotiomycetes | Chaetothyriales | Cyphellophoraceae | Cyphellophora | *Cyphellophora oxyspora* | OTU 19 | 3 | 0.293 | \* | 1.000 |
| Fungi | Ascomycota | unidentified | unidentified | unidentified | unidentified | *Ascomycota sp* | OTU 153 | 3 | 0.307 | \* | 1.000 |
| Fungi | Ascomycota | Sordariomycetes | Hypocreales | unidentified | unidentified | *Hypocreales sp* | OTU 682 | 3 | 0.307 | \* | 1.000 |
| **High** | | | | | | | | | | | |
| Fungi | Ascomycota | Sordariomycetes | Xylariales | Xylariaceae | Xylaria | *Xylaria sp* | OTU 62 | 1 | 0.315 | \* | 1.000 |
| Fungi | Ascomycota | Eurotiomycetes | Eurotiales | Aspergillaceae | Aspergillus | *Aspergillus terreus* | OTU 55 | 1 | 0.232 | \* | 1.000 |
| Fungi | Ascomycota | Sordariomycetes | Xylariales | Xylariaceae | Xylaria | *Xylaria sp* | OTU 212 | 1 | 0.343 | \* | 1.000 |
| Fungi | Ascomycota | Sordariomycetes | Xylariales | Xylariaceae | unidentified | *Xylariaceae sp* | OTU 106 | 1 | 0.306 | \* | 1.000 |
| Fungi | Ascomycota | Sordariomycetes | Microascales | unidentified | unidentified | *Microascales sp* | OTU 608 | 1 | 0.268 | \* | 1.000 |
| Fungi | Ascomycota | Sordariomycetes | Hypocreales | Cordycipitaceae | Beauveria | *Beauveria sp* | OTU 204 | 1 | 0.283 | \* | 1.000 |
| Fungi | Ascomycota | unidentified | unidentified | unidentified | unidentified | *Ascomycota sp* | OTU 784 | 1 | 0.258 | \* | 1.000 |
| Fungi | Ascomycota | Sordariomycetes | Sordariales | unidentified | unidentified | *Sordariales sp* | OTU 437 | 1 | 0.300 | \* | 1.000 |
| Fungi | Ascomycota | Sordariomycetes | unidentified | unidentified | unidentified | *Sordariomycetes sp* | OTU 492 | 1 | 0.257 | \* | 1.000 |
| Fungi | Ascomycota | Dothideomycetes | Pleosporales | Lentitheciaceae | Poaceascoma | *Poaceascoma sp* | OTU 644 | 1 | 0.280 | \* | 1.000 |
| Fungi | Ascomycota | Sordariomycetes | Microascales | unidentified | unidentified | *Microascales sp* | OTU 1043 | 1 | 0.301 | \* | 1.000 |
| Fungi | Ascomycota | Sordariomycetes | Microascales | Halosphaeriaceae | unidentified | *Halosphaeriaceae sp* | OTU 1053 | 1 | 0.245 | \* | 1.000 |
| Fungi | Ascomycota | Sordariomycetes | Xylariales | Xylariales\_fam\_Incertae\_sedis | Phialemoniopsis | *Phialemoniopsis sp* | OTU 1067 | 1 | 0.303 | \* | 1.000 |
| **Low** | | | | | | | | | | | |
| Fungi | Ascomycota | Sordariomycetes | Hypocreales | Hypocreales\_fam\_Incertae\_sedis | Acremonium | *Acremonium hennebertii* | OTU 100 | 2 | 0.323 | \*\* | 1.000 |
| *1*High = >70% leaf area damage, Medium = 31-69% leaf area damage, Low = <30% leaf area damage | | | | | | | | | | | |
| *2*Significance levels are represented by *ns* (not significant) and asterisks [*p* <= 0.05 (\*), *p <*= 0.01 (\*\*), *p <*= 0.001 (\*\*\*), and *p* < 0.0001 (\*\*\*\*)]. | | | | | | | | | | | |
| *3*Benjamini & Hochberg method adjustment for multiple comparisons | | | | | | | | | | | |

## 15.7 Table S7

| **Table S7: Taxonomy of significantly correlated OTUs with *Calonectria* sp. pathogen damage levels** | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  | Multilevel pattern analysis | | | |
| Kingdom | Phylum | Class | Order | Family | Genus | Species | OTU | Index | Stat | *p2* | *p*adj*3* |
| **High** | | | | | | | | | | | |
| Fungi | Ascomycota | Sordariomycetes | Glomerellales | Glomerellaceae | Colletotrichum | *Colletotrichum fructicola* | OTU 1 | 1 | 0.222 | \* | 1.000 |
| Fungi | Ascomycota | Dothideomycetes | Capnodiales | Dissoconiaceae | Ramichloridium | *Ramichloridium apiculatum* | OTU 18 | 1 | 0.239 | \* | 1.000 |
| Fungi | Ascomycota | Dothideomycetes | Botryosphaeriales | Phyllostictaceae | Phyllosticta | *Phyllosticta capitalensis* | OTU 32 | 1 | 0.229 | ns | 1.000 |
| Fungi | Ascomycota | Dothideomycetes | Pleosporales | unidentified | unidentified | *Pleosporales sp* | OTU 70 | 1 | 0.226 | \* | 1.000 |
| Fungi | Ascomycota | Sordariomycetes | unidentified | unidentified | unidentified | *Sordariomycetes sp* | OTU 114 | 1 | 0.187 | \* | 1.000 |
| Fungi | Ascomycota | Dothideomycetes | Pleosporales | Leptosphaeriaceae | Leptosphaeria | *Leptosphaeria modesta* | OTU 108 | 1 | 0.236 | \* | 1.000 |
| Fungi | Ascomycota | Sordariomycetes | Chaetosphaeriales | Chaetosphaeriaceae | unidentified | *Chaetosphaeriaceae sp* | OTU 177 | 1 | 0.204 | ns | 1.000 |
| Fungi | Ascomycota | Sordariomycetes | Xylariales | Xylariaceae | Hypoxylon | *Hypoxylon sp* | OTU 244 | 1 | 0.205 | \* | 1.000 |
| Fungi | Ascomycota | Sordariomycetes | Hypocreales | unidentified | unidentified | *Hypocreales sp* | OTU 196 | 1 | 0.227 | ns | 1.000 |
| Fungi | Ascomycota | Sordariomycetes | Sordariales | Lasiosphaeriaceae | unidentified | *Lasiosphaeriaceae sp* | OTU 258 | 1 | 0.225 | \* | 1.000 |
| Fungi | Ascomycota | Sordariomycetes | Phomatosporales | Phomatosporaceae | Phomatospora | *Phomatospora sp* | OTU 637 | 1 | 0.209 | \* | 1.000 |
| *1*High = >30% leaf area damage, Low = <29% leaf area damage | | | | | | | | | | | |
| *2*Significance levels are represented by *ns* (not significant) and asterisks [*p* = 0.05 (\*), *p* = 0.01 (\*\*), *p* = 0.001 (\*\*\*), and *p* < 0.0001 (\*\*\*\*)]. | | | | | | | | | | | |
| *3*Benjamini & Hochberg method adjustment for multiple comparisons | | | | | | | | | | | |

## 15.8 Table S8

| **Table S8: Taxonomy of significantly correlated OTUs with FEF inoculation levels** | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  | Multilevel pattern analysis | | | |
| Kingdom | Phylum | Class | Order | Family | Genus | Species | OTU | Index | Stat | *p1* | *p*adj*2* |
| **E+** | | | | | | | | | | | |
| Fungi | Ascomycota | Sordariomycetes | Glomerellales | Glomerellaceae | Colletotrichum | *Colletotrichum fructicola* | OTU 1 | 2 | 0.110 | \*\* | 0.022 |
| Fungi | Ascomycota | Sordariomycetes | Xylariales | Sporocadaceae | Neopestalotiopsis | *Neopestalotiopsis sp* | OTU 10 | 2 | 0.196 | \*\* | 0.022 |
| Fungi | Ascomycota | Dothideomycetes | Capnodiales | Dissoconiaceae | Uwebraunia | *Uwebraunia dekkeri* | OTU 12 | 2 | 0.202 | \*\* | 0.022 |
| Fungi | Ascomycota | Sordariomycetes | unidentified | unidentified | unidentified | *Sordariomycetes sp* | OTU 36 | 2 | 0.415 | \*\* | 0.022 |
| Fungi | Ascomycota | Sordariomycetes | Hypocreales | unidentified | unidentified | *Hypocreales sp* | OTU 39 | 2 | 0.301 | \*\* | 0.022 |
| Fungi | Ascomycota | Sordariomycetes | Diaporthales | Diaporthaceae | Diaporthe | *Diaporthe longicolla* | OTU 31 | 2 | 0.208 | \*\* | 0.022 |
| Fungi | Ascomycota | Sordariomycetes | Glomerellales | Plectosphaerellaceae | Wallrothiella | *Wallrothiella subiculosa* | OTU 35 | 2 | 0.271 | \*\* | 0.022 |
| Fungi | Ascomycota | Sordariomycetes | Glomerellales | Glomerellaceae | Colletotrichum | *Colletotrichum gigasporum* | OTU 34 | 2 | 0.273 | \*\* | 0.022 |
| Fungi | Ascomycota | Sordariomycetes | unidentified | unidentified | unidentified | *Sordariomycetes sp* | OTU 42 | 2 | 0.416 | \*\* | 0.022 |
| Fungi | Ascomycota | Sordariomycetes | Xylariales | Sporocadaceae | Pseudopestalotiopsis | *Pseudopestalotiopsis sp* | OTU 46 | 2 | 0.192 | \*\* | 0.022 |
| Fungi | Ascomycota | Sordariomycetes | Hypoceales | Amplistromataceae | Amplistroma | *Amplistroma erinaceum* | OTU 60 | 2 | 0.319 | \*\* | 0.022 |
| Fungi | Ascomycota | Sordariomycetes | Xylariales | Xylariaceae | Xylaria | *Xylaria sp* | OTU 62 | 2 | 0.236 | \*\* | 0.022 |
| Fungi | Ascomycota | Sordariomycetes | Hypocreales | Hypocreales\_fam\_Incertae\_sedis | Acremonium | *Acremonium sp* | OTU 49 | 2 | 0.174 | \*\* | 0.022 |
| Fungi | Ascomycota | unidentified | unidentified | unidentified | unidentified | *Ascomycota sp* | OTU 52 | 2 | 0.289 | \*\* | 0.022 |
| Fungi | Ascomycota | Sordariomycetes | Diaporthales | Diaporthaceae | Diaporthe | *Diaporthe sp* | OTU 99 | 2 | 0.210 | \*\* | 0.037 |
| Fungi | Ascomycota | Dothideomycetes | Capnodiales | Cladosporiaceae | Cladosporium | *Cladosporium sp* | OTU 132 | 2 | 0.196 | \*\* | 0.037 |
| Fungi | Ascomycota | Sordariomycetes | Hypocreales | Hypocreales\_fam\_Incertae\_sedis | Acremonium | *Acremonium hennebertii* | OTU 77 | 2 | 0.270 | \*\* | 0.022 |
| Fungi | Ascomycota | Sordariomycetes | Diaporthales | Diaporthaceae | Diaporthe | *Diaporthe sp* | OTU 223 | 2 | 0.179 | \*\* | 0.022 |
| Fungi | Ascomycota | Sordariomycetes | Hypocreales | Hypocreales\_fam\_Incertae\_sedis | Acremonium | *Acremonium hennebertii* | OTU 100 | 2 | 0.262 | \*\* | 0.022 |
| Fungi | Ascomycota | Dothideomycetes | Capnodiales | Cladosporiaceae | Melomastia | *Melomastia sp* | OTU 117 | 2 | 0.167 | \*\* | 0.037 |
| Fungi | Ascomycota | Sordariomycetes | unidentified | unidentified | unidentified | *Sordariomycetes sp* | OTU 92 | 2 | 0.293 | \*\* | 0.022 |
| Fungi | Ascomycota | Dothideomycetes | Pleosporales | Leptosphaeriaceae | Leptosphaeria | *Leptosphaeria modesta* | OTU 108 | 2 | 0.282 | \*\* | 0.022 |
| Fungi | Ascomycota | Sordariomycetes | Diaporthales | Diaporthaceae | Diaporthe | *Diaporthe melonis* | OTU 179 | 2 | 0.223 | \*\* | 0.037 |
| Fungi | Ascomycota | Sordariomycetes | Xylariales | Xylariales\_fam\_Incertae\_sedis | Oxydothis | *Oxydothis garethjonesii* | OTU 94 | 2 | 0.300 | \*\* | 0.022 |
| Fungi | Ascomycota | Sordariomycetes | Xylariales | Xylariaceae | unidentified | *Xylariaceae sp* | OTU 106 | 2 | 0.256 | \*\* | 0.022 |
| Fungi | Ascomycota | Eurotiomycetes | Chaetothyriales | unidentified | unidentified | *Chaetothyriales sp* | OTU 126 | 2 | 0.308 | \*\* | 0.022 |
| Fungi | Ascomycota | Sordariomycetes | Glomerellales | Plectosphaerellaceae | unidentified | *Plectosphaerellaceae sp* | OTU 146 | 2 | 0.130 | \*\* | 0.037 |
| Fungi | Ascomycota | Sordariomycetes | Sordariomycetes\_ord\_Incertae\_sedis | Sordariomycetes\_fam\_Incertae\_sedis | Distoseptispora | *Distoseptispora sp* | OTU 148 | 2 | 0.288 | \*\* | 0.022 |
| Fungi | Ascomycota | Eurotiomycetes | Chaetothyriales | Herpotrichiellaceae | Phialophora | *Phialophora geniculata* | OTU 278 | 2 | 0.301 | \*\* | 0.022 |
| Fungi | Ascomycota | Sordariomycetes | Glomerellales | Plectosphaerellaceae | Plectosphaerella | *Plectosphaerella cucumerina* | OTU 390 | 2 | 0.197 | \*\* | 0.022 |
| Fungi | Ascomycota | Dothideomycetes | unidentified | unidentified | unidentified | *Dothideomycetes sp* | OTU 201 | 2 | 0.269 | \*\* | 0.022 |
| *1*Significance levels are represented by *ns* (not significant) and asterisks [*p* <= 0.05 (\*), *p <*= 0.01 (\*\*), *p <*= 0.001 (\*\*\*), and *p* < 0.0001 (\*\*\*\*)]. | | | | | | | | | | | |
| *2*Benjamini & Hochberg method adjustment for multiple comparisons | | | | | | | | | | | |

## 15.9 Table S9

**Table S9: Sterilization protocol for tropical tree seeds**

|  |  |  |  |
| --- | --- | --- | --- |
| **Tree Species** | **Number of seed collected** | **Number of maternal sources** | **Sterilization protocol** |
| *Apeiba membranacea* | 500 | 3 | Soak in water 3-5 days; 0.5% NaClO for 4 minutes; 70% EtOH for 5 minutes |
| *Chrysophylum cainito* | 100 | 1 | Soak in water 3-5 days; 0.5% NaClO for 4 minutes, 70% EtOH for 5 minutes |
| *Cordia alliodora* | 403 | 1 | Soak in water 1 day; 0.5% NaClo for 3 minutes; 50% EtOH for 3 minutes |
| *Dypterix sp.* | ~100 | 1 | Soak in water 7 days; 0.5% NaClO for 5 minutes; 70% EtOH for 5 minutes |
| *Heisteria concinna* | 250 | ~6 | Soak in water 3-5 days; 0.5% NaClO for 4 minutes; 70% EtOH for 5 minutes |
| *Lacmellea panamensis* | 75 | 3 | Soak in water 3-5 days; 0.25% NaClO for 3 minutes; 50% EtOH for 3 minutes |
| *Theobroma cacao* | 44 | 1 | Rinsed seeds in running tap water; 0.5% NaClO for 5 minutes |