**Palm functional trait responses to local environmental factors in the Colombian Amazon**

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**SUPLEMENT 2.**

**R and Q matrices used in the analysis**

**Matrix R(n x p)**. Environmental variables of the 29 transects studied

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| transect | Forest type | *Moist* | *Gaps* | *Slope* |
| 0 | Ter | 0 | 8 | 0.64 |
| 1 | FP | 6 | 7 | 0.61 |
| 2 | FP | 5 | 6 | 1.18 |
| 3 | FP | 20 | 3 | 0.97 |
| 4 | Ter | 0 | 9 | 0.70 |
| 5 | Ter | 0 | 6 | 0.86 |
| 6 | Ter | 9 | 23 | 2.28 |
| 7 | FP | 9 | 13 | 0.49 |
| 8 | FP | 42 | 8 | 0.34 |
| 9 | FP | 47 | 9 | 0.92 |
| 10 | FP | 40 | 5 | 0.00 |
| 11 | FP | 44 | 10 | 0.00 |
| 12 | FP | 66 | 10 | 0.72 |
| 13 | TF | 4 | 22 | 4.22 |
| 14 | TF | 2 | 11 | 5.39 |
| 15 | TF | 1 | 12 | 6.52 |
| 16 | FP | 48 | 7 | 0.35 |
| 17 | FP | 19 | 7 | 1.63 |
| 18 | FP | 12 | 11 | 0.77 |
| 19 | TF | 2 | 13 | 3.14 |
| 20 | TF | 4 | 10 | 5.26 |
| 21 | TF | 0 | 10 | 0.89 |
| 22 | TF | 3 | 6 | 6.11 |
| 23 | TF | 2 | 7 | 3.92 |
| 24 | TF | 2 | 6 | 5.20 |
| 25 | TF | 0 | 5 | 1.94 |
| 26 | TF | 2 | 8 | 6.38 |
| 27 | FP | 21 | 4 | 0.37 |
| 28 | FP | 8 | 6 | 1.32 |

gaps=presence of tree fall gaps, slope=inclination, moist=soil moisture; TF=terra firme forest, FP=floodplain forest and Ter=terrace forest

**Matrix L (n x q)**. Number of adult palm in 29 transects along Guaviare River (Colombian Amazon) sampled in 2009. (Table L)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Species** | **Transect** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **0** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** | **20** | **21** | **22** | **23** | **24** | **25** | **26** | **27** | **28** |
| *Astrocaryum gynacanthum* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 31 | 3 | 11 | 0 | 13 | 1 | 84 | 32 | 95 | 50 | 46 | 12 | 4 | 20 | 0 | 0 |
| *Attalea butyracea* | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 19 | 5 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 10 |
| *Attalea maripa* | 6 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| *Attalea microcarpa* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 98 | 65 | 0 | 0 | 0 | 6 | 0 | 17 | 35 | 53 | 65 | 0 | 0 | 0 | 0 |
| *Bactris acanthocarpa* | 16 | 0 | 0 | 0 | 4 | 3 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 4 | 2 | 0 | 3 | 0 | 17 | 7 | 20 | 11 | 10 | 11 | 17 | 3 | 0 | 0 |
| *Bactris brongniartii* | 0 | 3 | 24 | 6 | 0 | 0 | 0 | 4 | 21 | 45 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 |
| *Bactris corossilla* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 13 | 33 | 1 | 1 | 3 | 1 | 5 | 0 | 0 |
| *Bactris hirta* | 0 | 0 | 0 | 0 | 0 | 8 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 | 0 | 0 | 3 | 6 | 2 | 7 | 19 | 10 | 5 | 9 | 0 | 0 | 0 |
| *Bactris major* | 0 | 46 | 318 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Bactris maraja* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 5 | 0 | 3 | 0 | 4 | 0 | 6 | 8 | 11 | 0 | 1 | 1 | 0 | 6 | 0 | 0 |
| *Bactris simplicifrons* | 23 | 0 | 0 | 0 | 6 | 5 | 11 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 4 | 2 | 0 | 5 | 4 | 8 | 3 | 3 | 2 | 3 | 0 | 1 | 1 | 0 | 0 |
| *Desmoncus giganteus* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Desmoncus mitis* | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Desmoncus polyacanthos* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Euterpe precatoria* | 3 | 1 | 9 | 2 | 0 | 0 | 4 | 1 | 7 | 7 | 17 | 10 | 10 | 2 | 0 | 1 | 36 | 2 | 14 | 3 | 1 | 1 | 2 | 1 | 0 | 0 | 11 | 8 | 5 |
| *Geonoma deversa* | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 1 | 198 | 6 | 11 | 0 | 9 | 36 | 28 | 23 | 23 | 3 | 62 | 10 | 22 | 17 | 0 | 0 |
| *Geonoma macrostachys* | 16 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 0 |
| *Geonoma maxima* | 0 | 0 | 5 | 0 | 1 | 14 | 4 | 0 | 10 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 0 | 0 | 0 | 3 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Hyospathe elegans* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Iriartella setigera* | 0 | 0 | 0 | 0 | 8 | 59 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 5 | 28 | 0 | 30 | 11 | 23 | 29 | 36 | 43 | 77 | 108 | 15 | 3 | 0 | 0 |
| *Manicaria saccifera* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Mauritiella armata* | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Oenocarpus bacaba* | 1 | 0 | 0 | 0 | 2 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 3 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 2 | 0 | 0 | 0 |
| *Oenocarpus bataua* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 13 | 2 | 3 | 0 | 8 | 1 | 2 | 1 | 0 | 0 | 0 |
| *Socratea exorrhiza* | 1 | 0 | 1 | 5 | 0 | 0 | 2 | 1 | 1 | 2 | 4 | 17 | 6 | 2 | 1 | 1 | 0 | 2 | 0 | 3 | 2 | 4 | 1 | 0 | 0 | 1 | 5 | 3 | 6 |