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

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**SUPLEMENT 1.**

List of functional traits studied in Colombian palm species

Growth form is a categorical trait studied here, which had three categories: acaulescent, climbing and erect. Acaulescent palms do not develop a aboveground stem but instead produce a short underground stem and the leaves emerge below the ground (Galeano & Bernal 2010). The climbing forms are represented in Colombia only by a few species of the genus *Desmoncus* and are characterized by producing very long stems without proportional growth in thickness; to ensure support, climbing palms rests on other plants, to which they attach by means of pinnae modified into hooks (Galeano & Bernal 2010). Finally, the erect palms have a stem that grows rapidly in length from germination, producing a vertical stem with proportional growth in thickness. Another categorical trait was the lifeform in which we recognized two categories: solitary when there is only one stem per plant and cespitose when the main stem produces basal shoots generating several clustered stems (Galeano & Bernal 2010).

Breading system was included as a categorical trait with following categories: monoecious when the male and female flowers are on the same plant and dioecious when, the male and female flowers are on different plants (Galeano & Bernal 2010).

The specific leaf area (SLA) is an important trait in energy capture efficiency and is defined as the light capture area per unit of previously photosynthesized dry mass assigned for this purpose (Westoby 1998). However, this trait is not widely available for palms due in part to the fact that in most species the leaves are large and pinnate or webbed with a high number of pinnae which makes their measurement difficult. Therefore, leaf rachis length was used here as a proxy for leaf size that can be consistently obtained in all palm species and has been used in other studies of functional ecology in palms (Göldel et al. 2015).

**Table 1**. List of functional traits studied in Colombian palm species

| **Trait** | **Trait type /unit of measure** | **Function** |
| --- | --- | --- |
| **LF** | Lifeform (cespitose = ces, solitary = sol) | categorical, without dimension |  |
| **GF** | Growth form (acaulescent = aca, erect = ere, climbing = cli) | categorical, without dimension | Resource use and climatic factors (Cornelissen et al. 2003).  |
| **StH** | Stem maximum height | continuous (m) | It is considered a measure of organism size and is associated with competitive vigor and plant fecundity. |
| **LN** | Leaves maximum number | Continuous (number) |  |
| **RL** | Leaf rachis maximum length | continuous (cm) | It is a measurement of the leaf size. Its inter-specific variation has been associated with the climatic gradients, altitude y latitude. Stress to warmth, drought and high radiation tend to select relatively small leaves. In general, the leaf traits are responsible for light capture for photosynthesis, therefore, for the plant energy production and competition for light (Westoby 1998). |
| **PeL** | Petiole maximum length | continuous (cm) | Petiole size can be associated with a competitive strategy. Long petioles can increase the crown radius, which allows small understory species to intercept more light and reduce the shade that neighboring plants might generate (Chazdon 1985, 1986; Poorter & Bongers 2006). |
| **FD** | Fruit maximum diameter | continuous (mm) | It is an indicator of the propagule size; smaller propagules are probably more dispersed due to their lower mass (Murray et al. 2002) they are also related to the colonization capacity of new habitats and to recruitment in resource-limiting environments. Associated with regenerative potential (Salgado-Negret & Paz 2016). |
| **SN** | Seeds number | continuous | Reproductive potential. |
| **BS** | Breeding system (dioecious = dio, monoecious = mon) | categorical, dimensionless | Gene flow, differential selective effects in male and female plants (Cepeda-Cornejo & Dirzo 2010, Adam et al. 2005, Barot et al. 2005) |

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