

# Enhancing the Potential of Plant Microbial Fuel Cells: The Influence of Botanical Characteristics on Bioelectrical Performance

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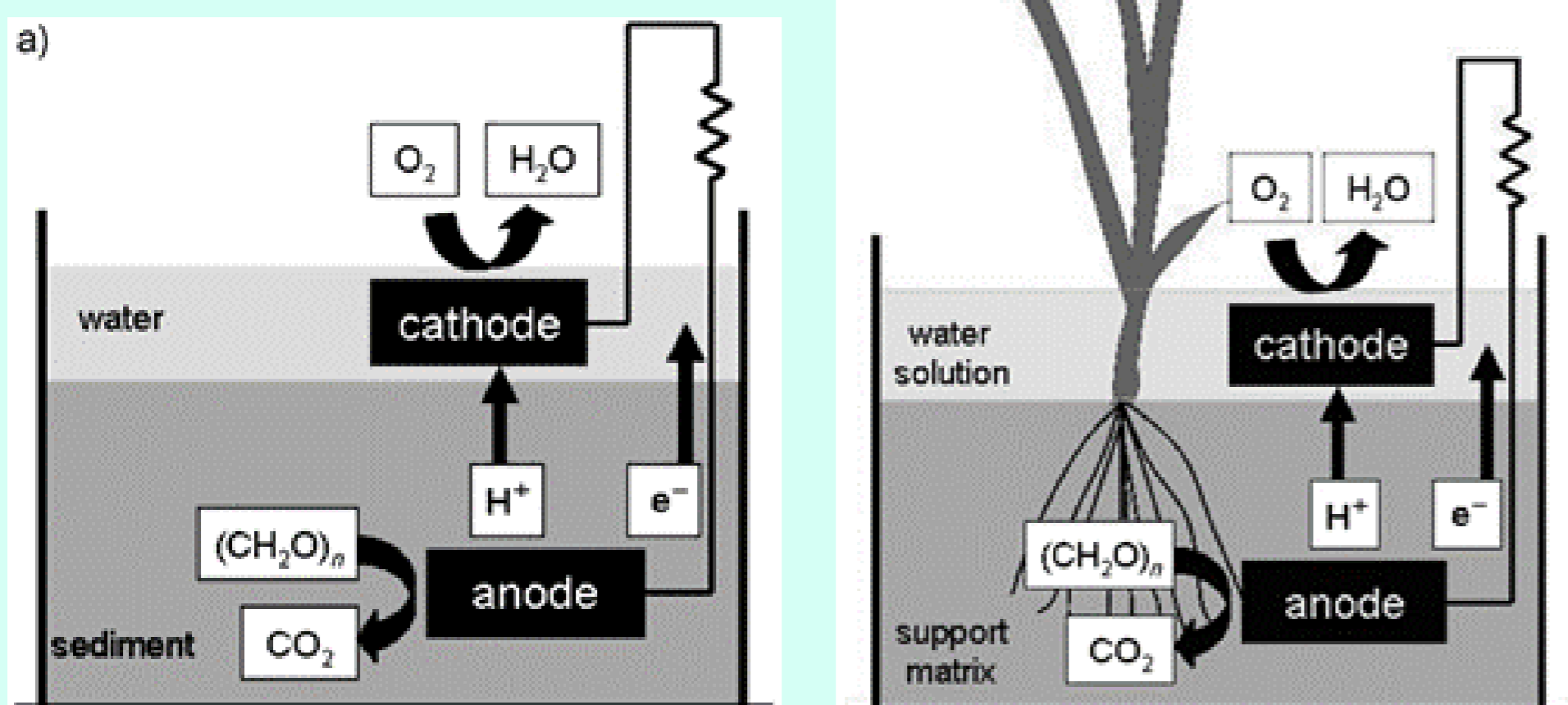
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## Plant microbial fuel cells are a derived technology of microbial fuel cells

a) MFC: Microbial Fuel Cell

b) PMFC: Plant Microbial Fuel Cell

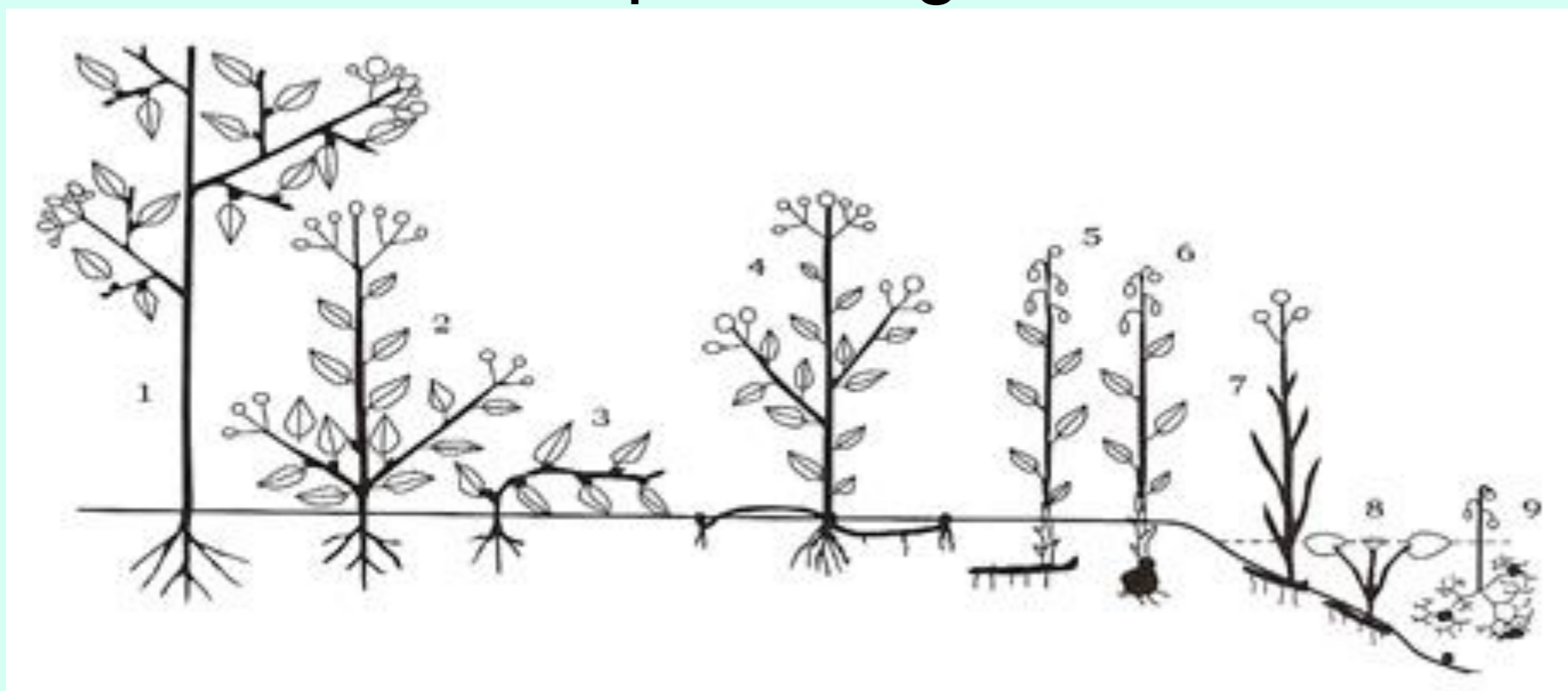


A PMFCs uses plant rhizodeposition as nourishment for the electrochemically active bacteria growing on the surface of the anode and **enabling the generation of bio-electricity**. Choosing the proper species is crucial to maximize the bioelectrical performance.

We analyzed some **botanical aspects** of different species used in PMFCs to verify variation in their electrical performances.

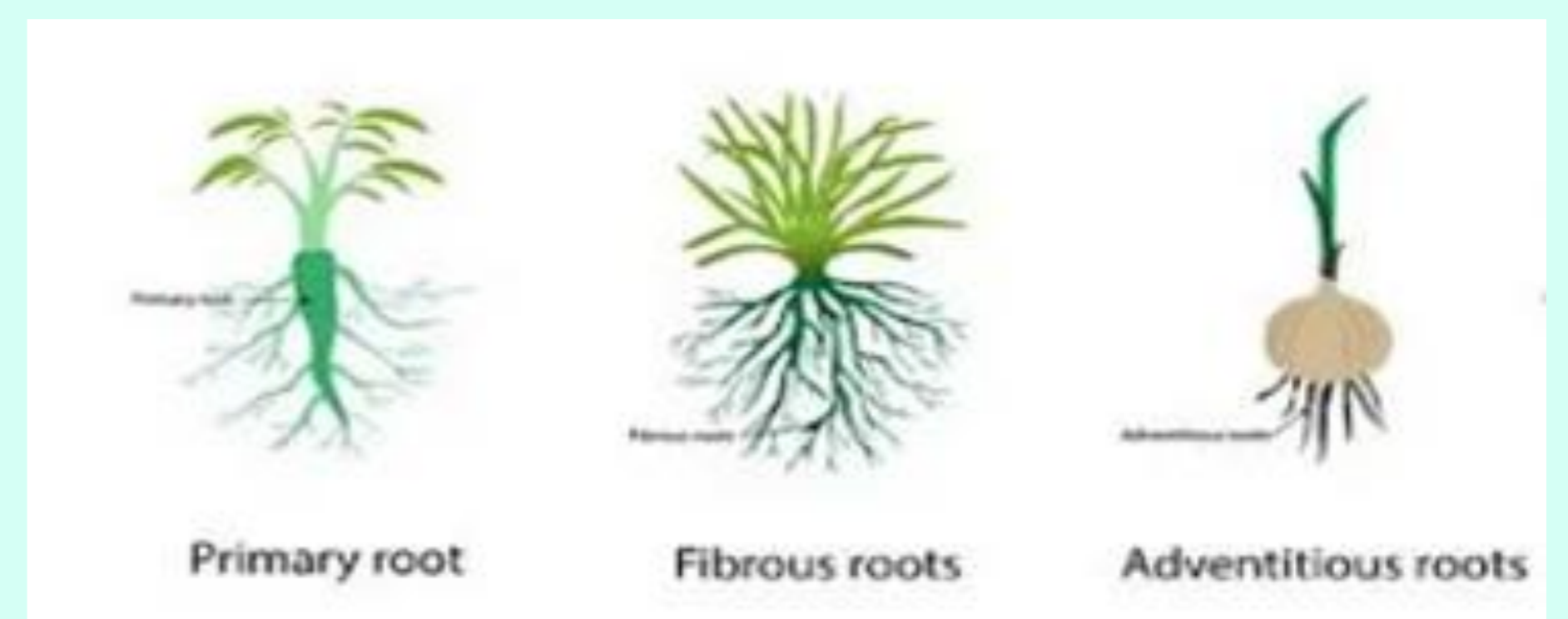
### Raunkiaer life forms

different biomasses providing nutrients for EAB

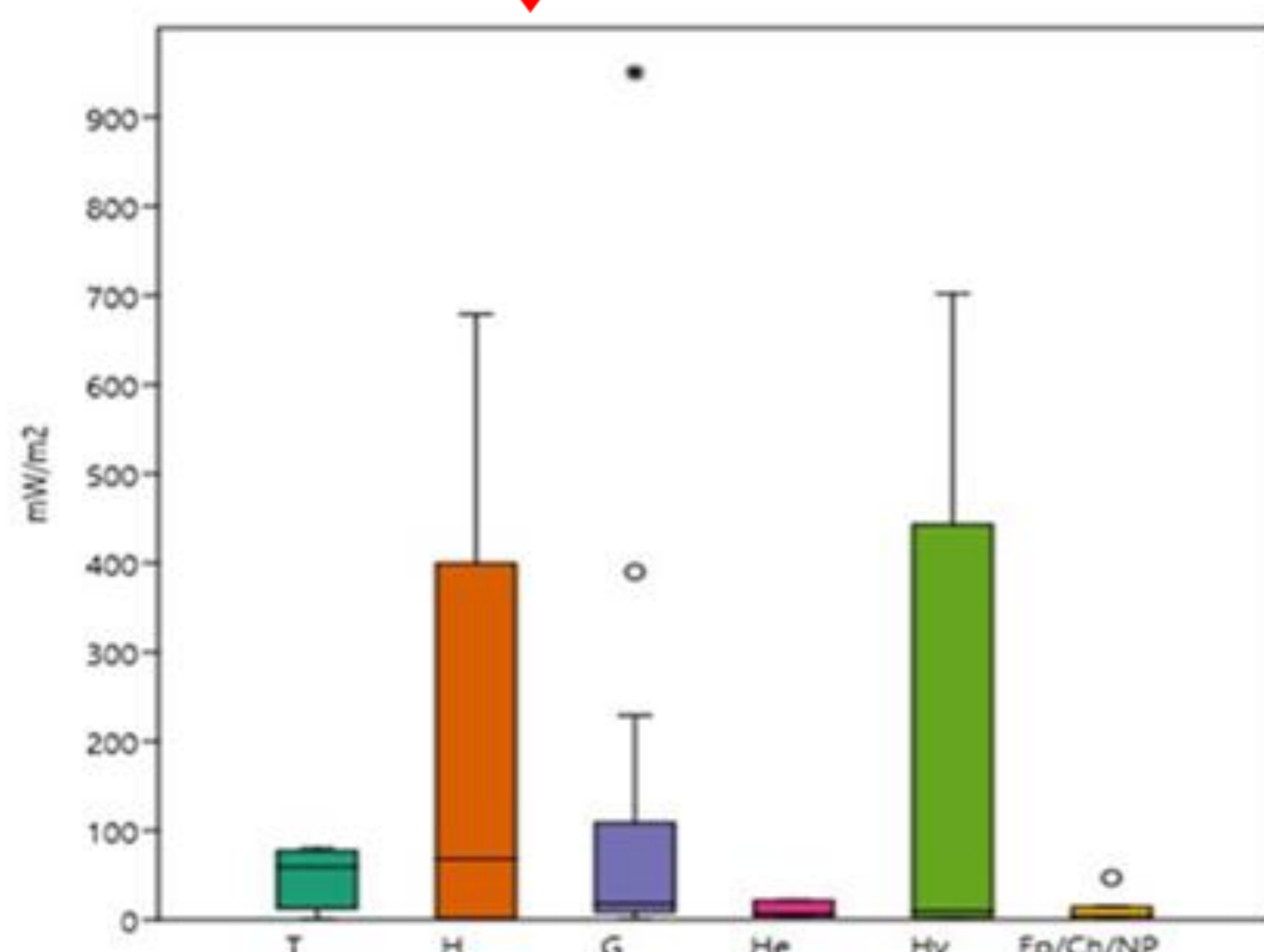


### Root types/architecture

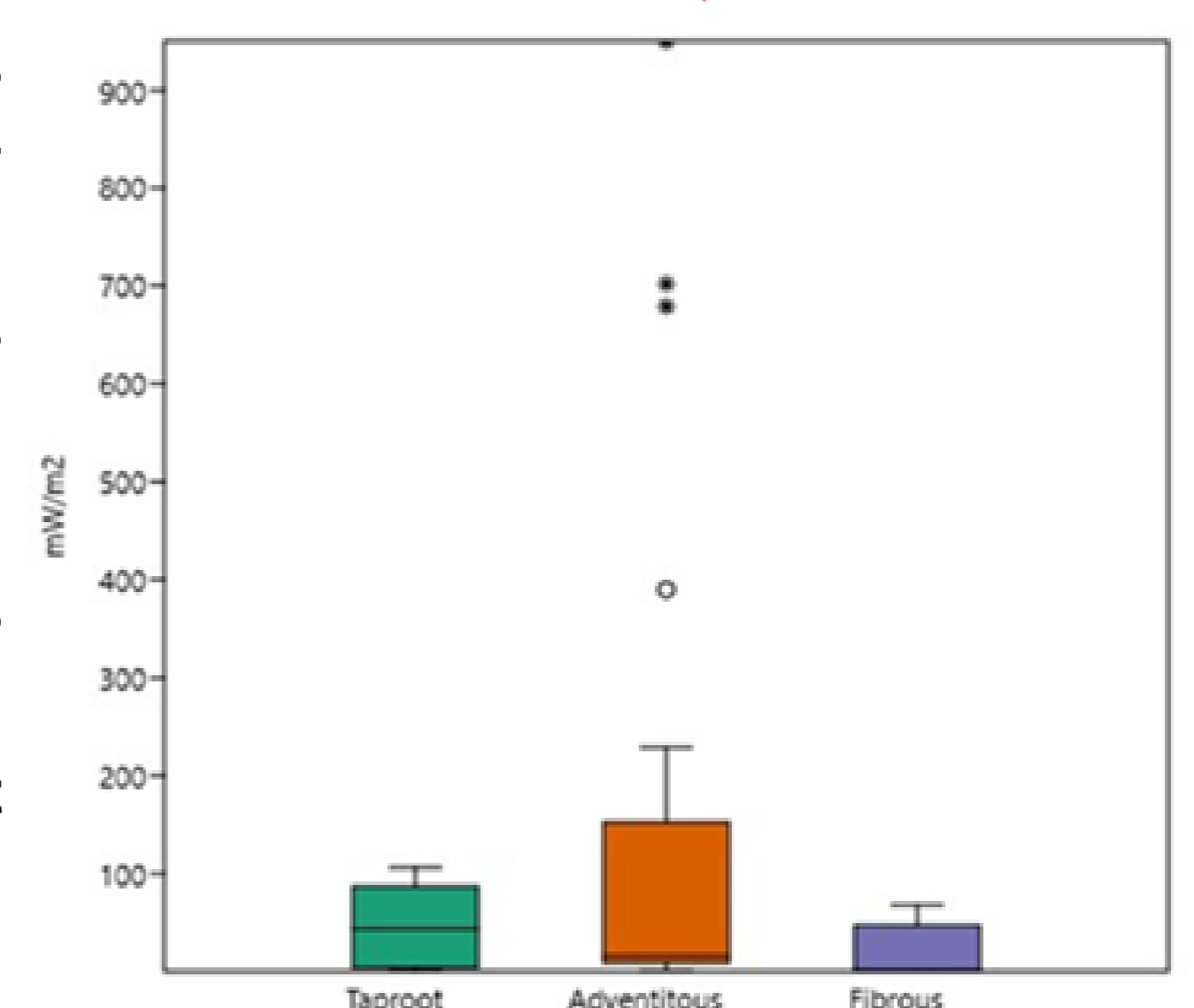
around which microbial communities develop



## Distributions of power density values



- There are **significant differences** between Epiphyte/Chamaephyte/Nano-Phanerophytes group and Geophytes
- Therophytes and Hemicryptophytes show the **highest median values**
- There are **significant differences** among root architecture groups
- Taproots root type show the **highest median value**



**Electrical performances seem to be affected by life forms and root systems.** Anyway, results may have suffered by some limitations due to the lack of a common benchmark for electrical measures, implying a necessary approximation of power density values.