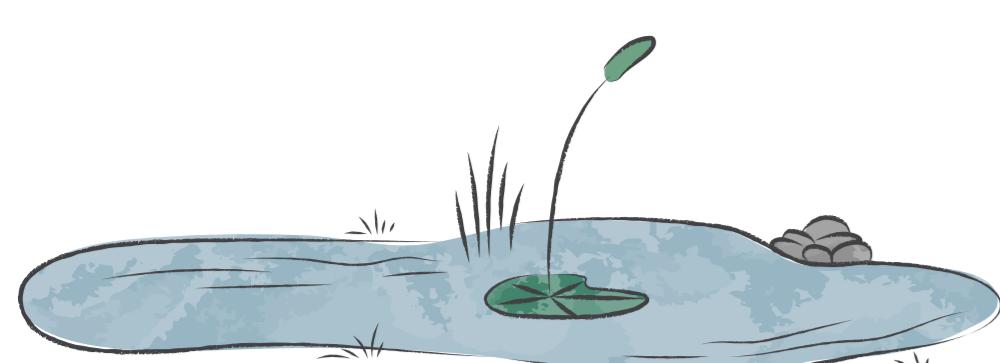


# Green spaces and their management :

## How is the vegetation and soil structure of the Lez riparian zone structured ?

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(1) M2 BioGET, (2) M2 CEPAGE - 2024/2025

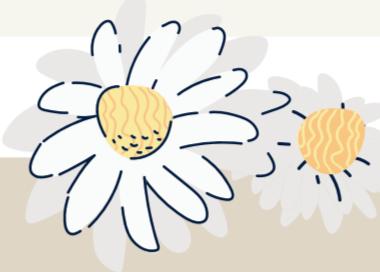


### CONTEXT

The Lez, a 30 km river crossing Montpellier, has been the subject of **developments aimed at preserving its banks** while supporting **local biodiversity**. The management of these areas is based on **four main axes**: saving water, protecting soils and reducing pollution, supporting biodiversity, and raising public awareness. Various environmentally **friendly developments** are being implemented, such as bank stabilization to combat erosion, preservation of sensitive areas, practices such as late mowing, pruning, mulching, and planting local species.

This management raises the question of how the plant community and the pedology of different parks in Lez are structured?

### Aims



This study proposes **two** main hypotheses:

- The way green spaces are managed influences the distribution of biological types between different parks.
- The soil structure differs between parks and affects the floristic composition.

### METHODS & SITES

#### Study of parks via a floristic and pedological approach



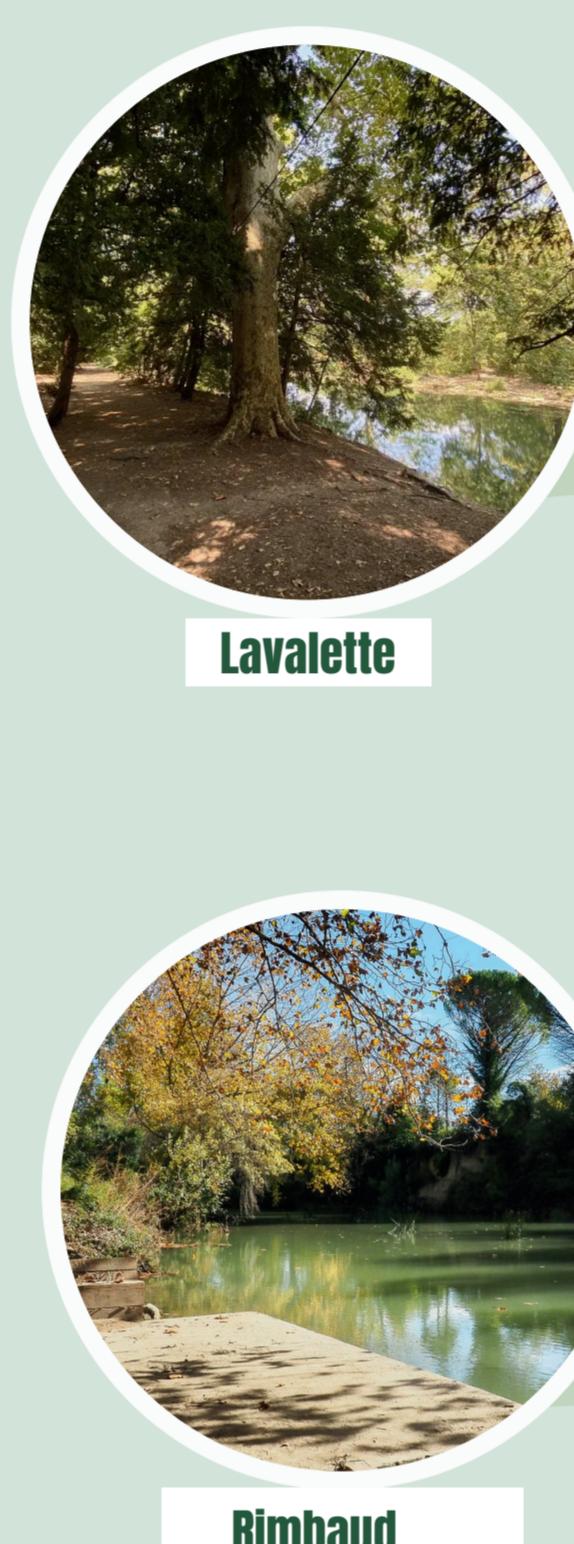
Three 64 m<sup>2</sup> quadrats in each park.



Identification of species via:  
 PlantNet



Three 60 cm soil cores taken per quadrat using a 20 cm diameter auger



Additional granulometric analyses in the laboratory.

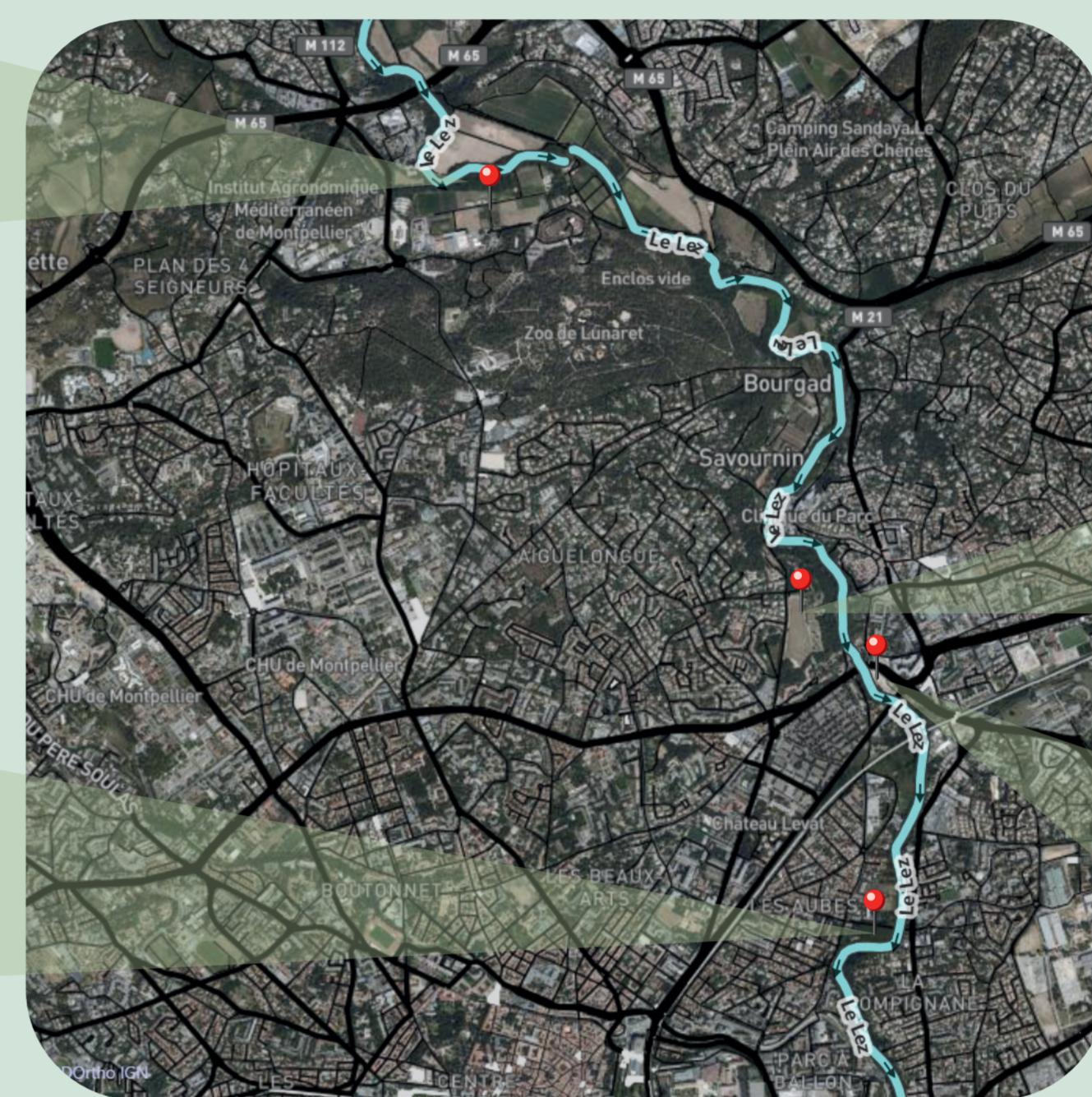


Figure 1 : Location of green spaces along the Lez in Montpellier (Lavalette, Rimbaud, Domaine de Méric, the Banks of the Lez in Castelnau).

Prades-Le-Lez

Lez

Montpellier

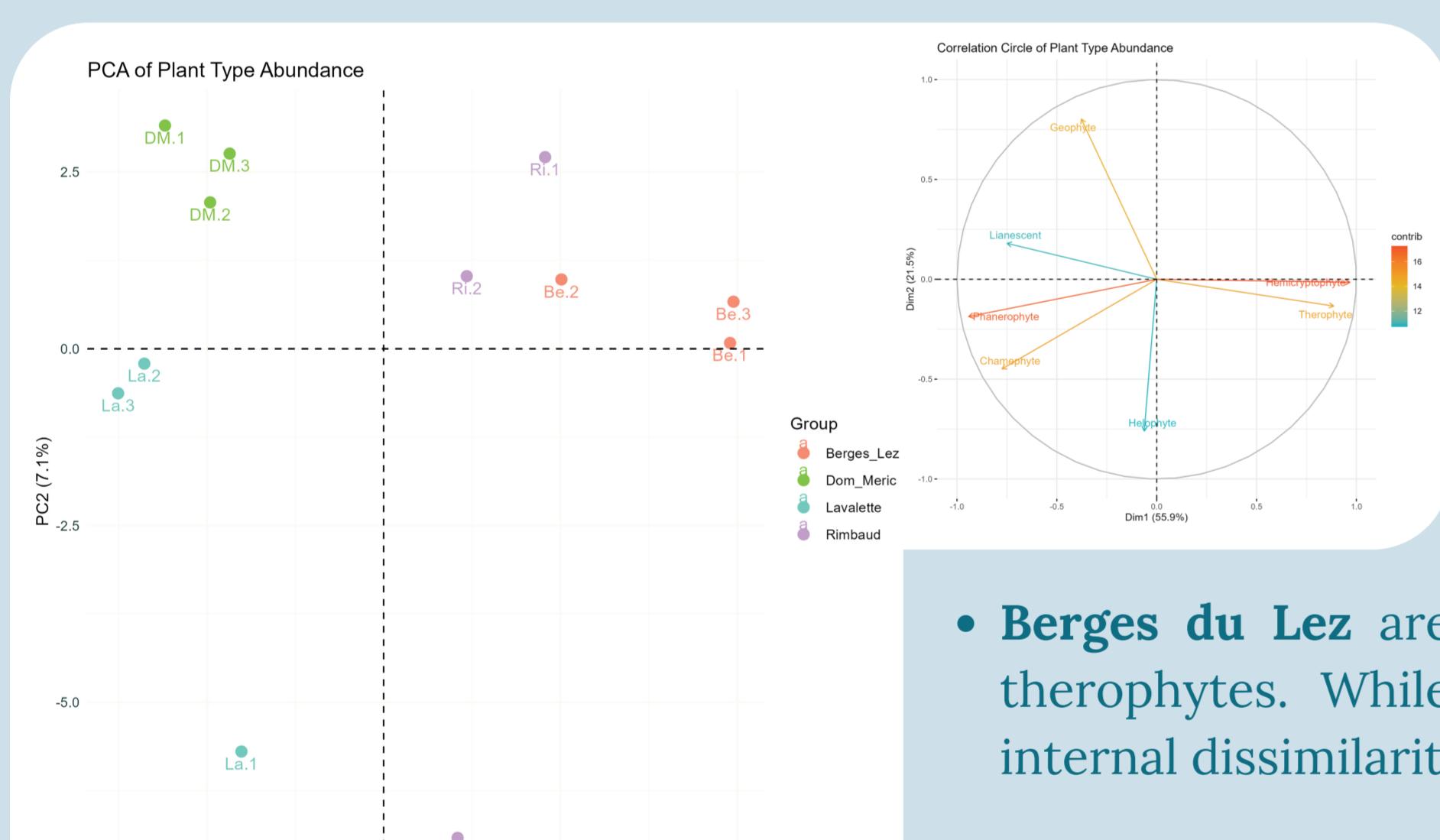
Lattes

Etangs  
Palavasians



Berge du Lez

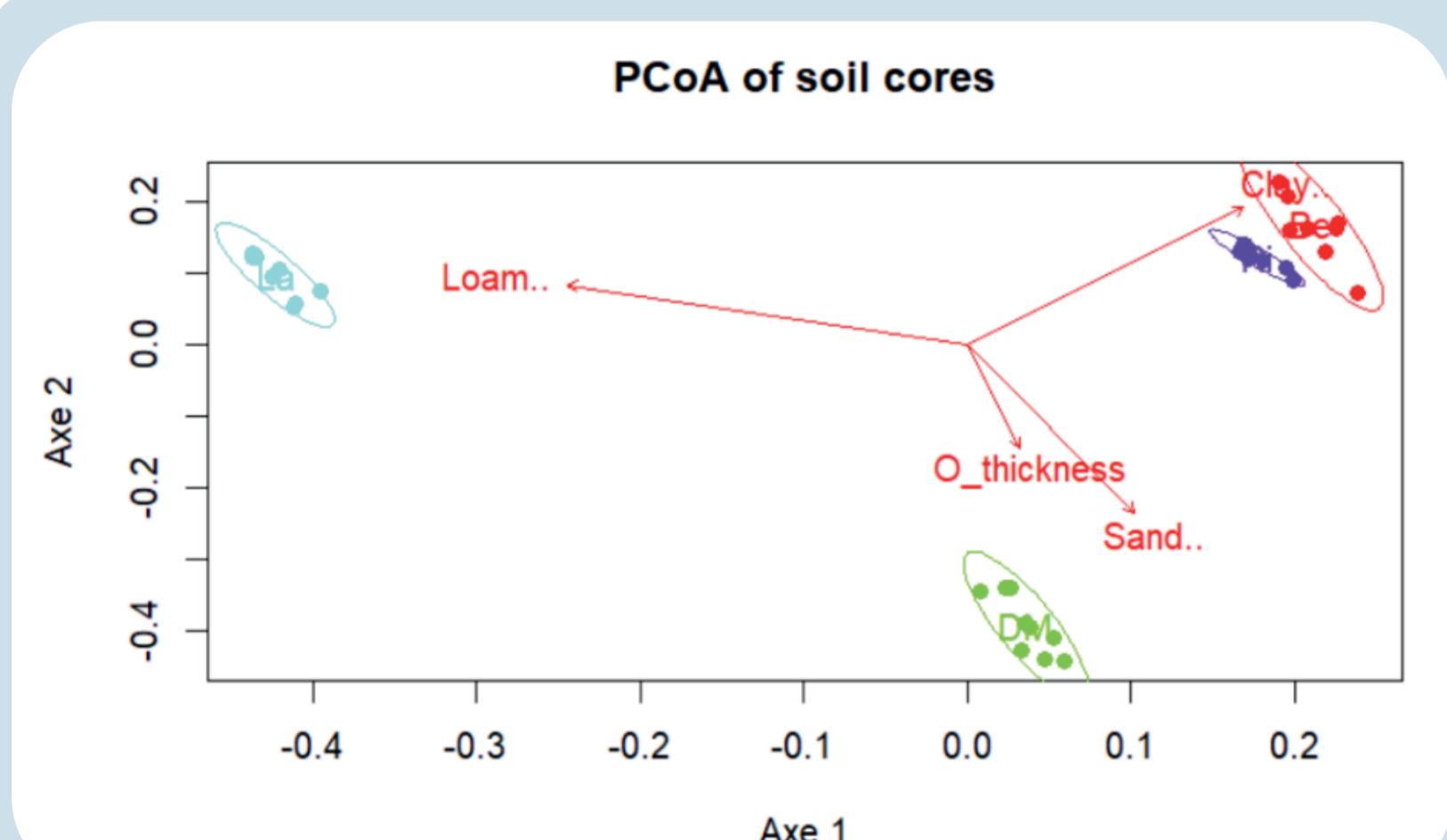
### RESULTS & DISCUSSION



- **Domaine de Méric** is mainly composed of geophytes, while **Lavalette** is dominated by phanerophytes (Fig.2).

- **Berges du Lez** are more composed of hemicryptophytes and therophytes. While the **Rimbaud** park presents the greatest internal dissimilarity and is also rich in hemicryptophytes (Fig.2).

Figure 2 : PCA and correlation circle for the abundance of biological types for each park.



- **Lavalette** is distinguished by a high silt content, while the **Domaine de Méric** has a high content of very organic sand reflecting **low anthropogenic disturbance** [1;2] (Fig.3).

- **Berges du Lez** and **Rimbaud** show **clayey soils** and a more marked **internal variability** between each quadrat possibly **linked to common sedimentary deposits** or anthropogenic influences [3;4] (Fig.3).

Figure 3: Pedological structuring of soil cores: PCoA analysis with contributions of textural variables and horizon thickness.

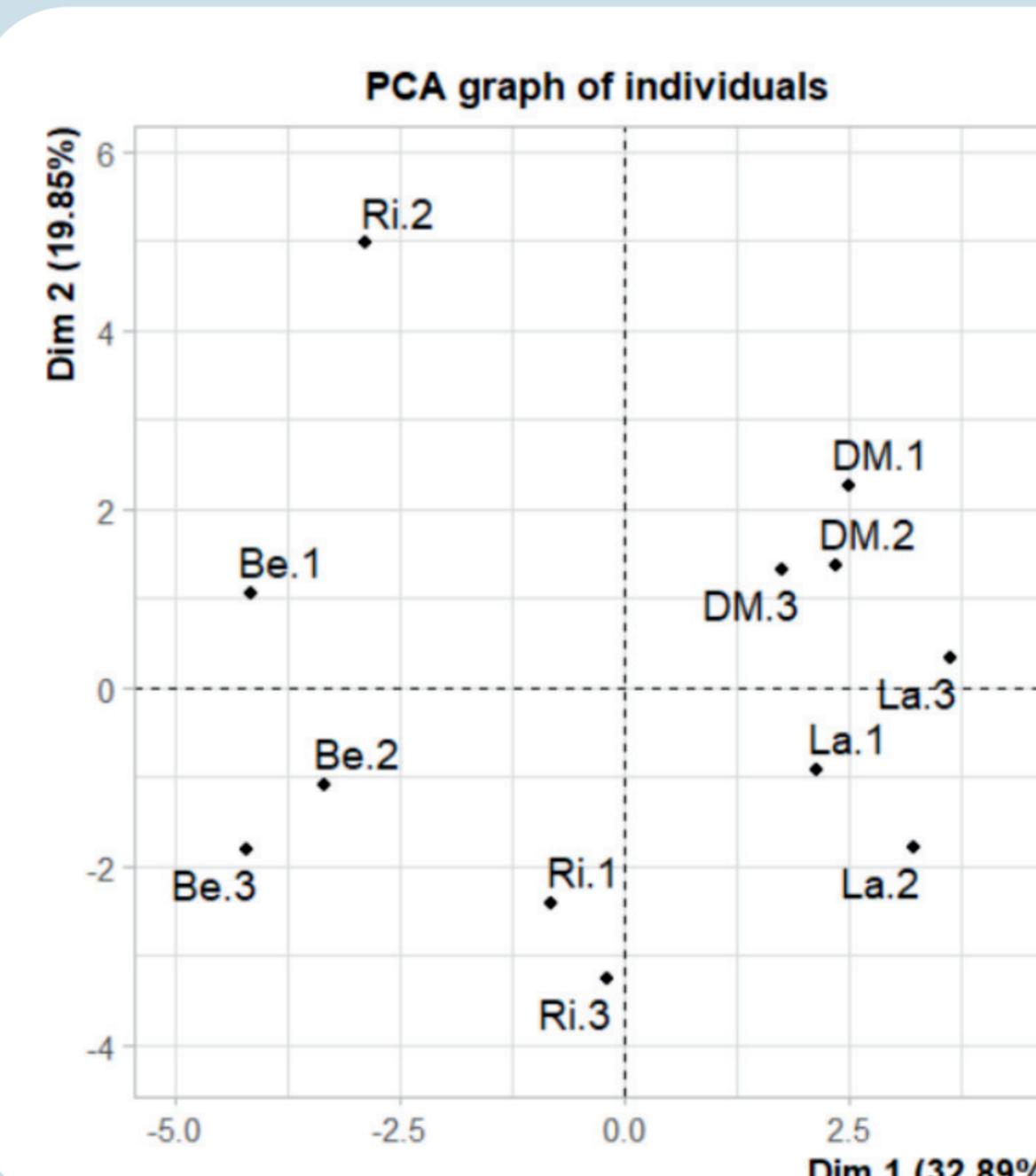
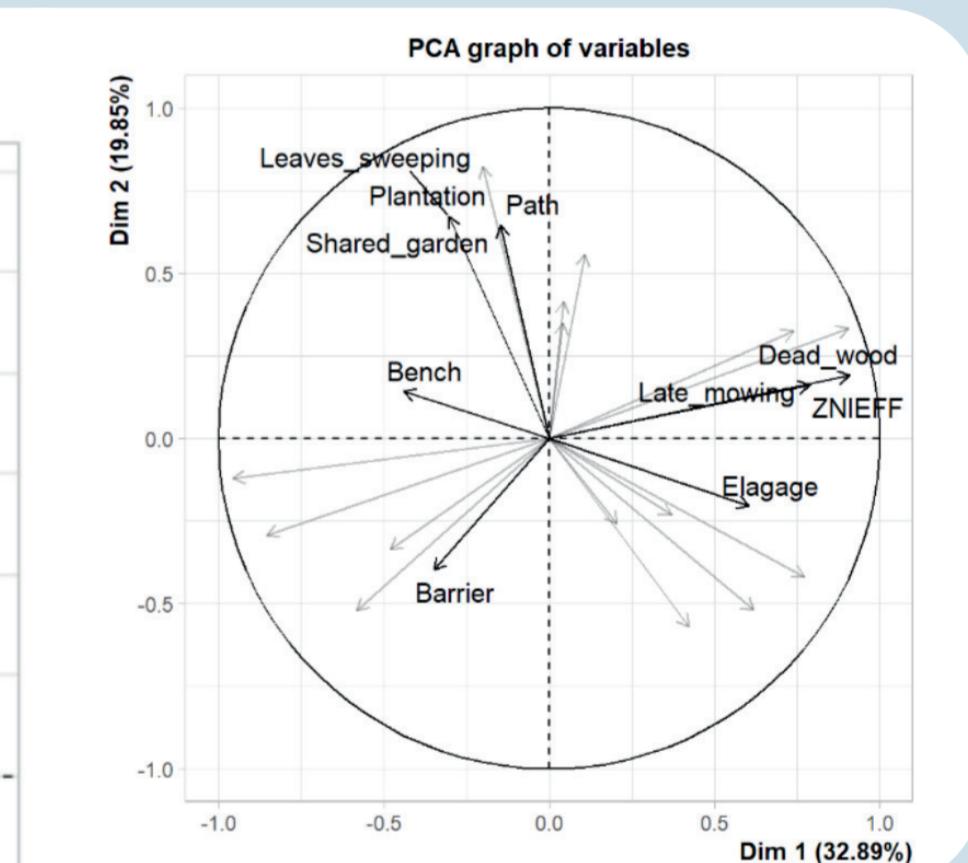


Figure 4 : PCA and correlation circle, illustrating the influence of park management variables on ecological structuring.

- The **Domaine de Méric** and **Lavalette**, classified as **ZNIEFF** zones, are dominated by phanerophytes with floristic differences linked to soil texture. The differentiated management at the Domaine de Méric and the ecological management at Lavalette both promote a green framework and soil preservation [5] (Fig.4).
- The structures of the plant community and the pedology are mainly **influenced by the natural dynamics** of the Lez riparian forest and the topography. There is therefore the establishment of a **mosaic of young and advanced ecological succession** [6].
- **Berges du Lez**, not classified as a **ZNIEFF** zone, are **sustainably managed**. Its vegetation dominated by **hemicryptophytes** and **therophytes**, reflects a young ecological stage and disturbances with a sandy soil with little differentiation. The recent development of the park and the management promoting biodiversity, as evidenced by the “Territory committed to Nature” label, obtained by the town of Castelnau-Le-Lez [7], also structure the park.



### TAKE HOME MESSAGE

Green spaces with **deep integrative management** are characterized by **pioneer vegetation** illustrated by **therophytes** and **hemicryptophytes**.

Green spaces with **moderate urban design** present a pedological structure conducive to the development of **phanerophytes**.

Different management practices can thus **promote natural dynamics** that play a key role in maintaining the ecological balance of urban riparian forests.

