Adaptive differentiation between two populations of dominant Mediterranean dry grassland species (Brachypodium retusum and Thymus vulgaris) in a context of ecological restoration.

Léa Saby*[1,2], Thierry Dutoit[1], Pierre Bourguet[2], and Christel Vidaller[1]

[1]IMBE, Avignon Université – Université d'Avignon – France
[2]Gagneraud Construction – Gagneraud Construction – France

Résumé

Genetic adaptive differentiation between populations is an important strategy for plant species to thrive in different environmental conditions. Grassland populations face genetic divergence mainly under the influence of climate, in particular temperature, precipitation and seasonal distribution. While climate is a major driver of adaptation and genetic differentiation on a large scale, microclimatic gradients can also induce adaptation on a more restricted scale. It is therefore necessary to carefully consider the provenance of seeds and seedlings in ecological restoration.
This is why in this study we selected two dominant species (*Brachypodium retusum* and *Thymus vulgaris*) from the sub-steppic protected grasslands of the Crau plain to be restored after quarry exploitation and intensive agriculture abandonment, with two distinct populations for each species. A population of regional commercial origin (plants collected in a natural environment, in a given biogeographical region), the origin usually recommended for ecological restoration, and a micro-local population harvested by hand in the non-degraded grassland, close to our study site. For each population, *in-situ* measurements of various phenotypic traits will be carried out while comparing two methods used in ecological restoration: seed sowing and seedling transplantation. The objective here is to understand the phenotypic differentiation potentially present between a commercial origin often used in restoration projects and a micro-local origin that may present local adaptations but also to highlight which method is most suitable for future restoration projects.
In particular, it is assumed that micro-local origins will have higher germination (sowing) and survival (transplanting) rates. Commercial populations, on the other hand, may have more developed phenotypic traits (larger size and diameter, more leaves), but representing traits not adapted to harsh environmental conditions, these individuals may have greater difficulty surviving and perpetuating over time.

Mots-Clés: restoration ecology, population dynamics, local adaptation, plant origin

*Intervenant