EIFFEL

Experimental Initiative for the Future of Forest Ecosystems in Lorraine

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With the collaboration of: Jardins botaniques du Grand Nancy and Lorraine University

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Context —Climate change changes the way trees and forests work, raising questions about their future adaptation and evolution. It is from the ambition to respond to these issues that a consortium of different local actors was formed, resulting in the birth of the EIFFEL project. It brings together research organizations specializing in the forest sector - the University of Lorraine, INRA and AgroParisTech - as well as scientific mediation and environmental education structures - the Botanical Gardens of Grand Nancy and the University of Lorraine and the CPIE Nancy Champenoux.

Objectives — EIFFEL is an experimental forest of 2.5 ha which will be located at the Jean-Marie Pelt Botanical Garden in Villers-lès-Nancy in order to study the probable evolution of the Lorraine forest and its functioning in the face of climate change. In conjunction with this multidisciplinary research program, a participatory research action with schoolchildren from the greater Nancy area will be implemented. This project will therefore not be limited to scientific research by becoming a place of attractiveness and scientific culture as well as a vehicle for communication and raising citizens' awareness of issues related to climate change.

Approaches — Recruitment of an engineer assistant to draft specifications with a view to financing the planting operation (sponsorship)

Key results — (presented as separated bullet points)

- The EIFFEIL forest will be made up of three typical facies grouping together the species which are the most representative for them:
  Lorraine facies: typical species currently present on the Lorraine limestone plateaus;
  Thermophilic facies: species requiring more heat already present in Lorraine;
  Mediterranean facies: more thermophilic species which could establish themselves in Lorraine in the future.
- Choice of species: A list of species has been drawn up with the help of several scientific experts. Five species were selected for each of the three facies.
- Block arrangement: A compromise was made due to the small surface area available and the search for robustness for the analysis of future scientific data, which resulted in the division into two replicates of the experimental set-up. These two blocks are oriented parallel to the contour lines so that the three facies of each repetition are in the most homogeneous possible environment conditions.
- Planting system: The trees will be planted foot by foot in a row by random drawing, which will bring a certain scientific robustness to the system. The planting lines will be oriented parallel to the contour lines for the sake of homogeneity of the environment but also to promote the collection of runoff water. The spacing between the plants has been defined in such a way to allow tillage according to a specific process, the "3B" Becker technique. In addition, the choice was made to have a fairly high density in order to allow the trees to quickly come into contact, which will limit competition with the herbaceous layer on the lines. The trees will therefore be planted with a spacing of 3m between the rows and 1m on the rows, which will result in a planting density of 3333 plants / ha. The plantation will therefore include 8,332 plants in total and 555 individuals per forest species.

Main conclusions including key points of discussion —

- The project was successfully completed: financing plan with identification of nurseries and companies in charge of preparatory work for the site, planting and post-planting interviews
- A presentation brochure, a website, a Facebook page and a more detailed file intended for future patrons have been produced (attached in appendix)

Perspectives —

Only one sponsor responded favourably for an amount covering only 5% of the cost of the operation. The project was de facto stopped by the project to extend the tram line