FOREST4EU

ITHub 2 – Forest Adaptation to climate change

FOREST4EU partner: CNPF
OG: RAISON
OG's country: France
Type of Innovation: Product

Survey of atypical tree species in Normandy thought to be resistant to climate change

Introduction

Regional players are increasingly concerned about the multiple effects of climate change, and it seems necessary to increase the number of feedbacks and experiments, and to analyse them, in order to increase knowledge and anticipate the effects of climate change. As part of the RAISON project, an inventory was made of the stands of atypical species present in Normandy. The aim was to study their behaviour in relation to the soil and climate conditions in which they were planted. The ultimate aim was to identify the species that might be best adapted to climate change in Normandy.

Methodology and results

Lists of potential substitute species were proposed for each forest region and each type of site, including Pubescent Oak, Cormier, Oriental Beech, Tulip Tree, Atlas Cedar, Calabrian Pine, Douglas Fir, Taeda Pine, Nordmann Fir, Western Red Cedar, Japanese Cryptomeria, Evergreen Sequoia and Calocedar. During the summer of 2019, the National Forestry Property Centre contacted all forest managers and owners, as well as forestry contractors and nurserymen, to find out whether such species had been planted. At the same time, an article in a regional technical journal (Bois & Forêts de Normandie) and a page devoted to the project on the CNPF website were published, with an opportunity to fill in a form reporting atypical stands in the study area. The French National Forestry Office (ONF), which is responsible for managing public forests, was also approached. Between December 2019 and May 2021, 384 stands were inventoried from a list of 500 stands of interest. The individual results were systematically sent to the owners.

The majority of alerts concerned softwood species, with 317 alerts, compared with 67 for hardwood species. The most common softwood species reported, in order of importance, were Maritime Pine, Atlas Cedar, Western Red Cedar and Evergreen Redwood. Sixteen other softwood species were reported. The most common deciduous species reported, in order of importance, were Virginia Tulip Tree, Corsican Alder, Nothofagus obliqua and Pubescent Oak. Nine other deciduous species were reported. Many species have all their age classes represented, but these are not in balance and may reflect a dynamic in the use of the species. For example, maritime pine was heavily planted more than 50 years ago, but the area planted has since fallen sharply.

Western red cedar shows a similar trend, although there has been renewed interest in the species over the last 10 years. Other species reflect a fashion effect. For example, Nothofagus obliqua was planted extensively in 1980, but the harsh winters damaged these plantations, and they have not been planted since. Calabrian pine has been put aside in favour of Corsican laricio pine for reasons of quality and branching. Conversely, Sequoia sempervirens and Corsican Alder have been used for silvicultural purposes for some forty years. It is important to have trees in all age classes, so that we can study the behaviour of the species throughout the life of the stand and begin to examine the various possibilities in terms of silviculture.

Lessons learned

The lack of experience of the behaviour of these species means that it is not possible at present to draw up a list of new species to be planted on a large scale, but the monitoring of experiments should enable us to respond with greater certainty in the future. For newly planted species, it is important to continue to monitor the growth of stands when they are young and to restart the planting of those that are no longer used or are used infrequently, in order to improve our knowledge of the behaviour of these species in their first years of life.

The number of surveys carried out does not allow statistically robust conclusions to be drawn about their behaviour, but it does illustrate certain trends, particularly for the Atlas Cedar. It is therefore necessary to multiply this type of initiative, already present in public forests, within private forests and to pool the results to enable more robust studies to be carried out, for all types of site conditions. Identifying these atypical species and experimenting with different management methods is a long-term project for the forest and requires long-term sources of funding to enable these stands to be monitored.
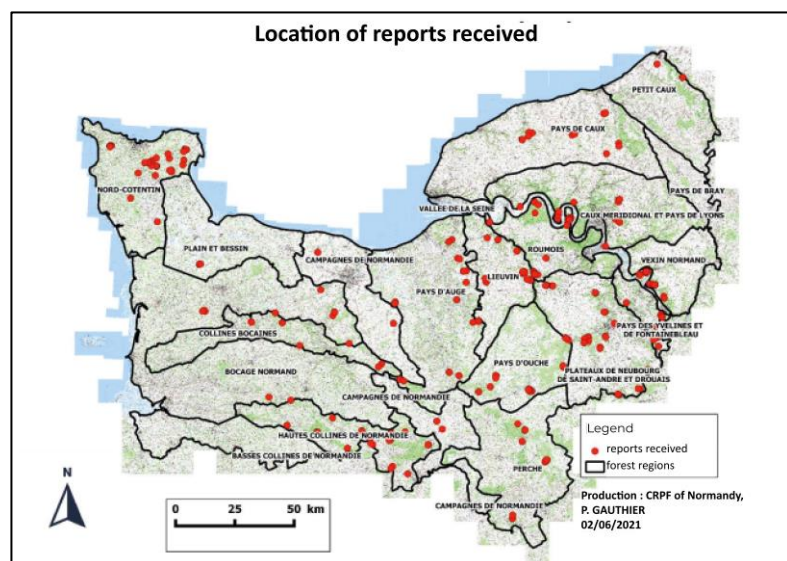

Figure 1. Location of reports received on atypical tree species in Normandy.
Pierre Gauthier © CNPF

The information presented in this factsheet was developed by the FOREST4EU partner, drawing on the innovations and knowledge generated by the indicated operational group with their explicit authorization.

Further information

https://hautsdefrance-normandie.cnpf.fr/projet-raison

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