National programme for the conservation of Forest genetic resources in France

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Introduction

Genetic diversity is a key component of biodiversity and allows species\textsuperscript{'s} adaptation in changing environments. Forest genetic resources (FGR) are the heritable materials maintained within and among tree populations that are of actual or potential economic, environmental, scientific or societal value.

As a portfolio for adaptive strategies, genetic diversity needs to be preserved for current and future needs:
- Nowadays patrimonial diversity
- Known diversity to answer actual threats (diseases, climate, ...)
- Potential diversity not yet known but that could answer future threats.

CRGF is build on multi-actor engagement (CF logos bellow) and proposes the national programme\textsuperscript{’}s map guidelines and priorities to the Ministry in charge of Forests.

What is the French strategy to conserve FGR?

Material and method

In situ conservation units (CUs)

Ex situ collections

- Used when maintaining big enough population is difficult due to sanitary crisis, habitat destruction, scattered distribution of rare species, etc.
- Clones or seeds are taken from trees identified in natural environments and representative of genetic diversity of the species (Collin et al 2012).
- Clonal archives are maintained in vivo and in cryobanks. No sexual reproduction occurs, thus genetic diversity conservation is static.

Rarely used. Diverse genetic material is planted to create a new population ex situ where sexual reproduction occurs and creates new genetic diversity with local adaptation.

Map of the CUs in January 2020

10 species
102 CUs

6 species
1,648 clones

2 species
5 units

Dynamic ex-situ devices

- Algies allies (2 units)
- Prunus avium (2 units)

Ex-situ collections

- ONF PINGF Castanea
- Prunus nigra sp. salmonei (694 clones)
- ONF PINGF Guinromé-Penfao
- Juglans regia (58 clones)
- Populus nigra (260 clones)
- Prunus avium (261 clones)
- Ulmus (341 clones)
- JIRA-BELLEGARDE
- Sorbus domestica (44 clones)

In-situ conservation units

- Allocia (23 units)
- Fagus sylvatica (58 units)
- Populus (25 units)
- Prunus spinosa (4 units)
- Prunus salmonea (1 unit)
- Prunus avium (341 clones)
- Ulmus (341 clones)
- JIRA-BELLEGARDE
- Sorbus domestica (44 clones)

Signatories:
- Forest owner
- Forest manager
- CRGF

Is compliant with the requirements established at European scale (Koskela et al 2013) by EUFORGEN;

Guarantees, via an adapted management:
- A long term conservation,
- A sufficient genetic diversity in the population,
- An effective generation turn-over.

Contains general and locally specific guidelines, including structure of the CU:

- Buffer area: protects again pollen pollutions
- Core area: must contain a sufficient number of reproductive trees in accordance to conservation goal*

Results

Dynamic of conservation units (CUs) creation during the last 10 years

Map of the CUs

Conclusion

Currently 13 species are included within the French conservation program of forest genetic resources. This effort can be analysed using the new indicators on forest genetic resources established by EUFORGEN for the Ministerial Conference on the Protection of Forests in Europe (FOREST EUROPE) .

A reflection is in progress to extend the existing networks in a different way, aiming to include populations of interest for conservation from other species with limited extra resources: (i) to reevaluate CUs and protected areas networks based on the IUCN category IV; (ii) to establish a new type of conservation device, targeting specific populations of interest; (iii) to integrate genetic conservation in a national strategy on French FGR.