EUROPEAN FOREST INSTITUTE
ATLANTIC EUROPEAN REGIONAL OFFICE – EFIATLANTIC

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REINFFORCE
Project overview
&
Long term monitoring trials database

September 2010 state of the art

ATLANTIC AREA
Transnational Programme

European Union

European Regional Development Fund

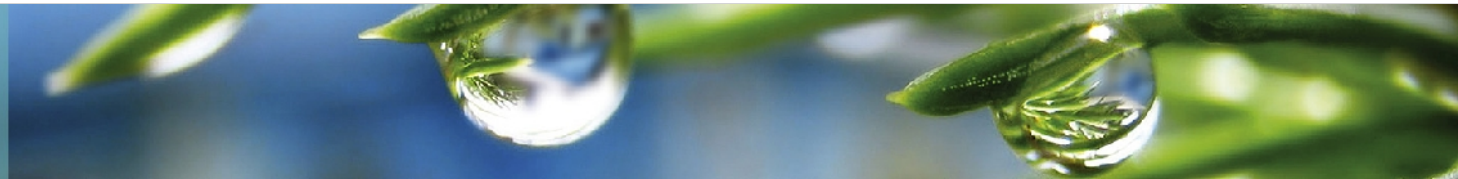
Project tasks

Introduction

CLIMATE CHANGE HAS BECOME OBVIOUS FOR ALL!!

But uncertainty remains because of :

- Climatic uncertainity : trade-off effects, speed of evolution, regional effect, gulf stream, ...
- Economic models : evolution of world trades, energy market, new energies, policies...
- Environmental uncertainty : pest and diseases, plasticity, ...)



Introduction

WHAT IS THE REALITY OF

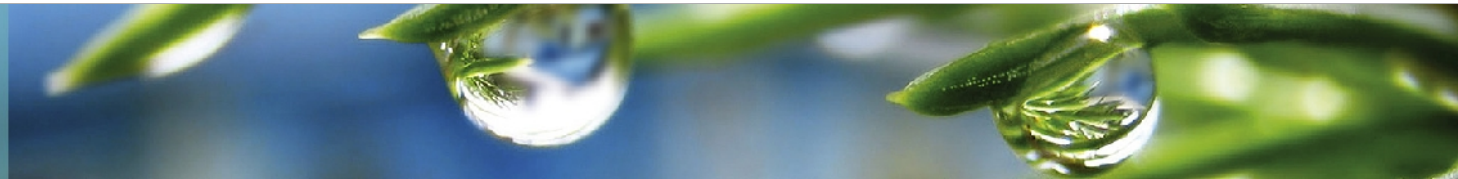
CLIMATE CHANGE

FOR

ATLANTIC FOREST??

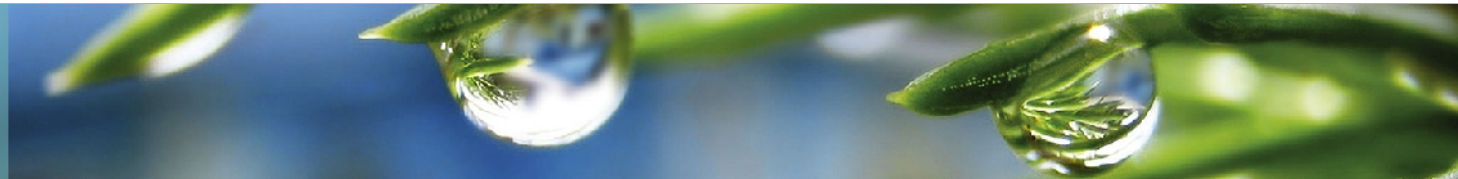
WHAT SHALL WE PLANT?

HOW TO MANAGE EXISTING STANDS?



Objective and Challenges

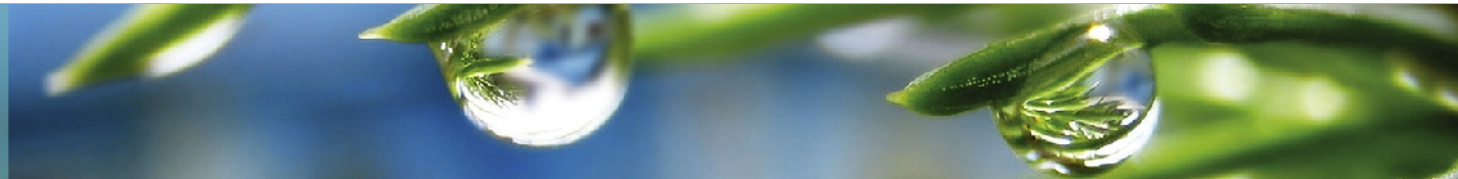
- Modelling approaches are showing their limits in this context, mainly not because of modelling capacity, but by lack of similar events, and by increased stochastic due to politic and social uncertainty at this time scale.
- So the main aim of this project is to monitor all the identified threats at the Atlantic rim level to be able to react before they extend too much. All the actions described have the same aim: to set up a monitoring tool of climatic changes effects, and propose adaptive measures.



Introduction

Potential threats :

- invasion by new pests and pathogens that were not able to expand their home range under colder climatic context,
- increased risk of outbreaks by forest pests and pathogens in response to higher temperatures
- increased frequency of biotic hazards such as strong winds, severe droughts, fires …
- mis-adaptation of local tree species due to a lack of genetic diversity and/or a temporal mismatch between the speed of climate changes and the rapidity of local adaptation processes (*e.g*. changes in phenology, growth - differentiation balance…)
- Increase of wood harvesting for fuel, to reduce CO_2 emissions.



Activity 1 : state of the art, preparation

- Inventory and review of existing information (infrastructures, new sites, projects, data)
- Design protocols for arboretum establishment (species and provenance selection, site selection,...)
- Design protocols for demonstration sites
- Design protocols for data collection : survival rate, growth, health, phenology, sites description, ...
- Design database for online data sharing

Activity 2 : Coordination

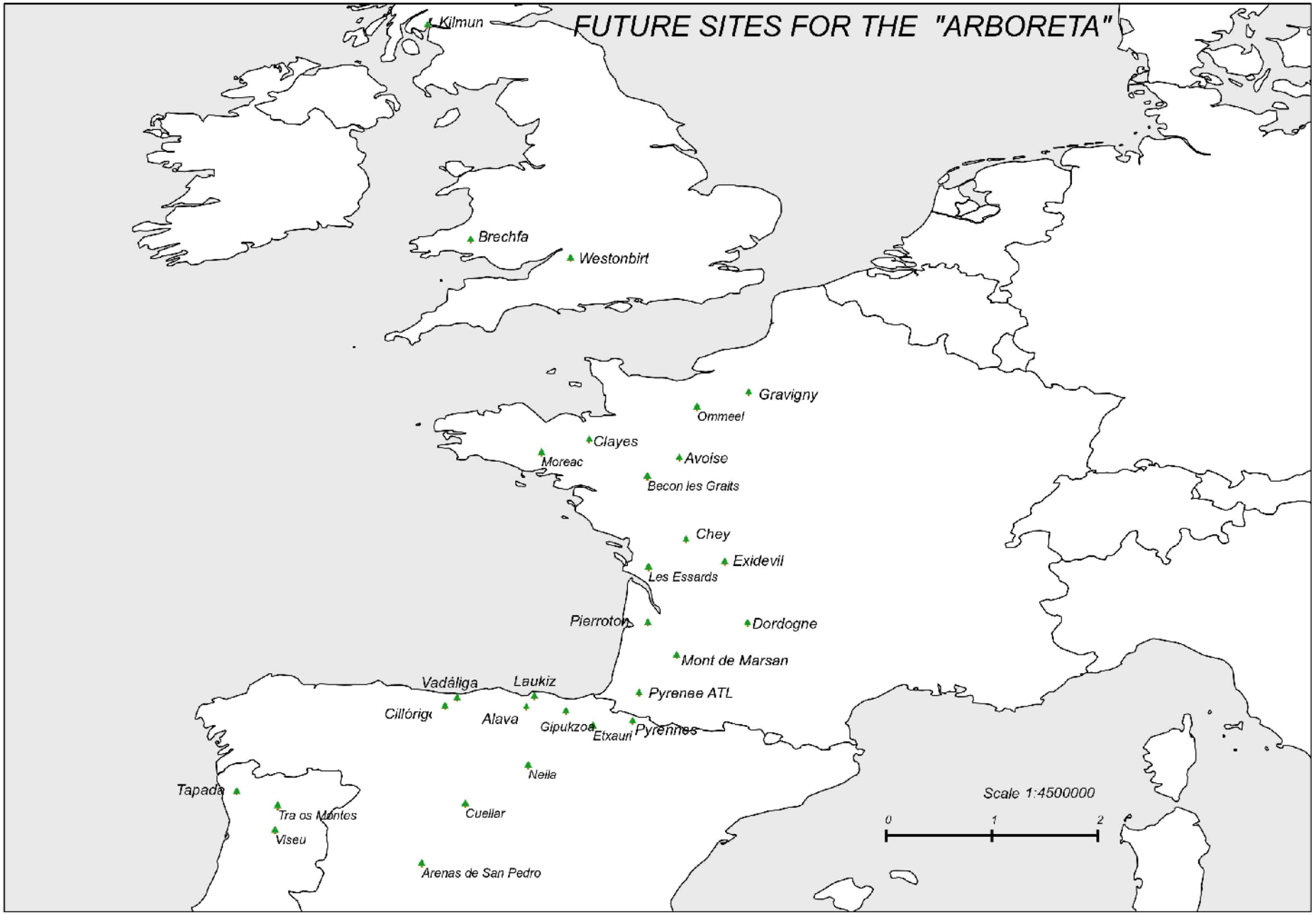
- Coordination made by IEFC/EFIATLANTIC
  - Management council
  - Fund transfert management
  - Reporting for INTERREG
  - Website INTRANET with all management information (schedule, gantt, ...)
  - Leaflet and Website

  http://REINFFORCE.IEFC.NET (EFIATLANTIC webpage was not launched when project started)
- Other Tasks of IEFC/EFIATLANTIC
  - Protocols drafting
  - Database management
  - Seedling logistic

Activity 3 : Network of arboretum

Aim : expose the same genetic material produced in the same conditions to various climate/soil context

- Each arboretum is about 2 hectares and made of 2000 trees.
- 35 arboretums * 30 species * 3provenances * 12 trees mandatory in each arboretum.
- Four species have 3 blocs in each arboretum to assess site variability
- Selection of sites typical for forest management in the area
- Commitment by the partners for minimum set of data collection for 15 years


FUTURE SITES FOR THE "ARBORETA"
Kilmun
Brechfa
Westonbirt
Gravigny
Ommeel
Clayes
Moreac
Avoise
Becon les Graits
Chey
Exidevil
Les Essards
Pierroton
Dordogne
Mont de Marsan
Vadâliga
Laukiz
Pyrenee ATL
Cillórig
Alava
Gipukzoa
Etxauri
Pyrennes
Neila
Tapada
Tra os Montes
Viseu
Cuellar
Arenas de San Pedro
Scale 1:4500000
0
1
2

Activity 4 : Network of demonstration sites

Aim : demonstrate meteorological context producing a damage and demonstrate efficiency of mitigation measures

- Permanent automatic wind and rain measurement close from an exposed forest stand
- Damages assessment in case of extreme event
- Selection of exposed sites
- Possibility to compare various sylvicultural strategies for adaptations: Sheltered regeneration, no thinning, permanent edges, deep soil preparation …

Activity 5 : Database management and first monitoring

- Databases for new arboretums monitoring
- Databases for new trials monitoring
- Databases for climate change impact monitoring
  - On existing sites
  - On new candidates sites

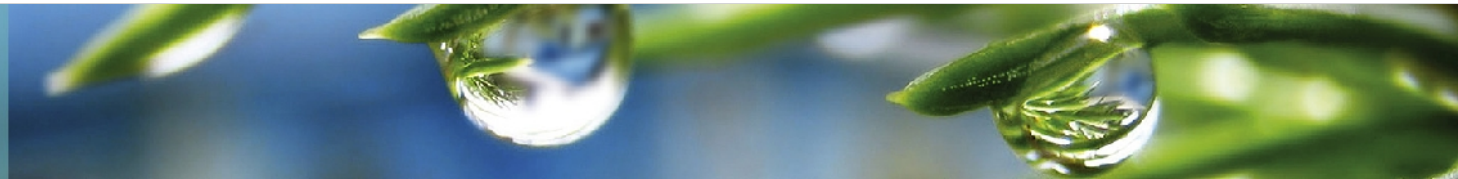
In fact it will be all in one database

- First measurements and protocols validation

Project administrative information

Funding and duration

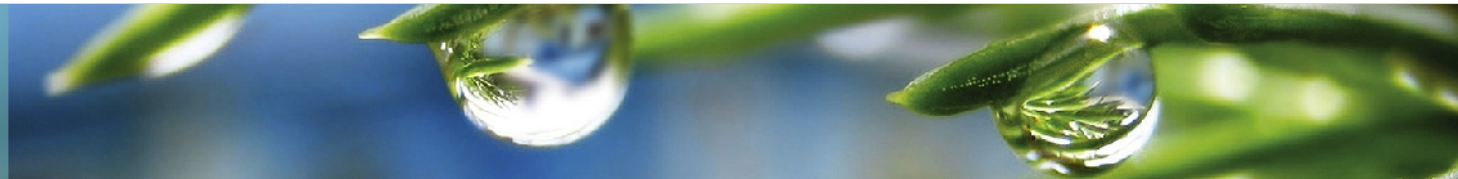
- Project funded by interreg 4B Atlantic area
- Coordinated by IEFC/EFIATLANTIC
- Duration 4 years (2009-2012)
- 4 technical packages
- Additional arboretum planned on extra funding
- Agreement on long term monitoring after project end



Partnership

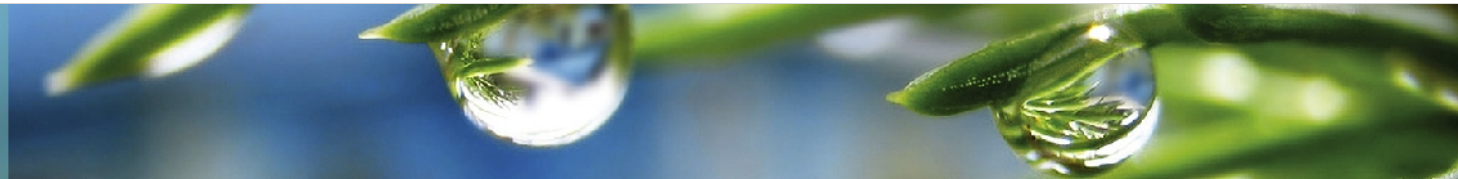
1. IEFC/EFIATLANTIC
2. FR : Forest research, UK
3. INRA, Institut National de la Recherche Agronomique, F
4. CNPF/IDF institut pour le développment forestier, F
5. CNPF/CRPFAquitaine, Centre régional pour la Propriété Forestière, F
6. GAVRN, gestiona ambiaatl, viveros y repoblaciones de navarra, S
7. IKT, Nekazal Teknologia, S
8. NEIKER tecnalia, S
9. Unviversidad de valladolid, Palencia, S
10. CIFA Lourizan, Centro de investigacion foretal, S
11. ISA, Instituto superior do agronomia, P

Database structure



3 Tables

- **Plot** : describing a site where many species can be planted. Also include information on manager and plantation date.
- **Species** : describing a group of trees from the same species and/or provenance on the plot with initial trees number and provenance name
- **Data :** to compile the data referring to a tree group collected at a given date



Content of table plot

- Plot_id, owner
- Experimental serie, Experiement id, Priority
- Latitude, Longitude (WGS84), Country, Region, Municipality, Municipality code, local name
- Altitude, exposition, microtopography, slope, shelter, bedrock, type of soil, soil_profile (y/n), soil texture (y/n), soil profile (y/n)
- Date of stand establishment, stand removal, start of monitoring, end of monitoring
- Responsible institution, department, name, phone, email
- Objective, Results, Comments
- Last_update

Objectives from Noltfox

A: GENETIC DIVERSITY AND BREEDING	B : REGENERATION AND STAND ESTABLISHMENT
1 Exotic tree species	10 Planting
2 Provenances (clinal variation)	11 Sowing
3 Genetic variation within and among stands	12 Shelterwood cutting
4 Progeny testing (controlled crosses)	13 Seed-tree cutting
5 Phenotypic plasticity (clones, rooted cuttings)	14 Soil preparation
6 Clonal tests (emblings)	15 Natural regeneration
7 Seed orchards and clonal archives (grafts)	16 Prescribed burning
8 After effects	17 Ditching drainage

Objectives from Noltfox (2)

C. Stand treatment, growth and yield	D : Ecosystem research
20 Thinning	30 Watershed
21 Fertilization	31 Carbon, nutrient and water balance
22 Liming	32 Roof construction
23 Acidification	33 Climate change
24 Tree species comparison	34 Soil conservation
25 Tree species mixture	35 Forest protection
26 Selection cutting	36 Heavy metals
27 Pruning	37 Biodiversity
28 Urban forestry	
29 Cleaning	

Objectives from Noltfox (3)

E. Christmas Trees and decoration greenery	F. Wood for energy
40 Genetics	50 Compensation
41 Establishment	51 Nutrient balances
42 Fertilization	52 Coppice-forest
43 Weed control	53 Whole tree harvesting
44 Insects and fungi	54 Slash removal
45 Yield and stand improvement	
46 Harvest and logistics	

Objectives from Noltfox (4)

G.Peat-land forestry
60 Drainage
61 Fertilization
63 Tree species comparison

Content of table species

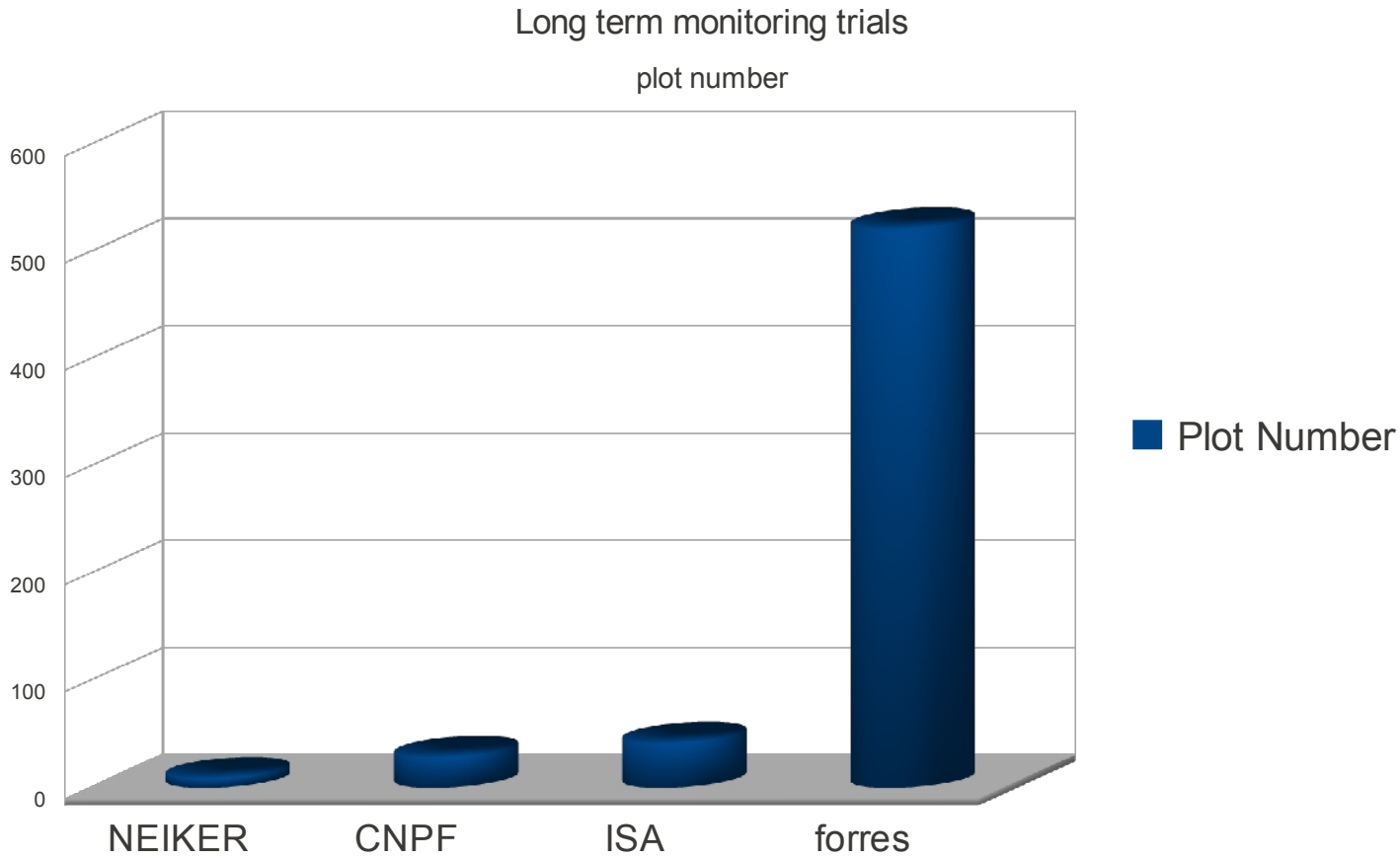
- Species_id, Plot_id, owner
- Latin Name, Provenance-clone-fam, ICPspecies code, Euspecies code, EU provenance code
- Even aegd (y/n), Species_id_mixed
- Initial tree number
- Adaptation to site, explanation
- Last_update

Content of table data

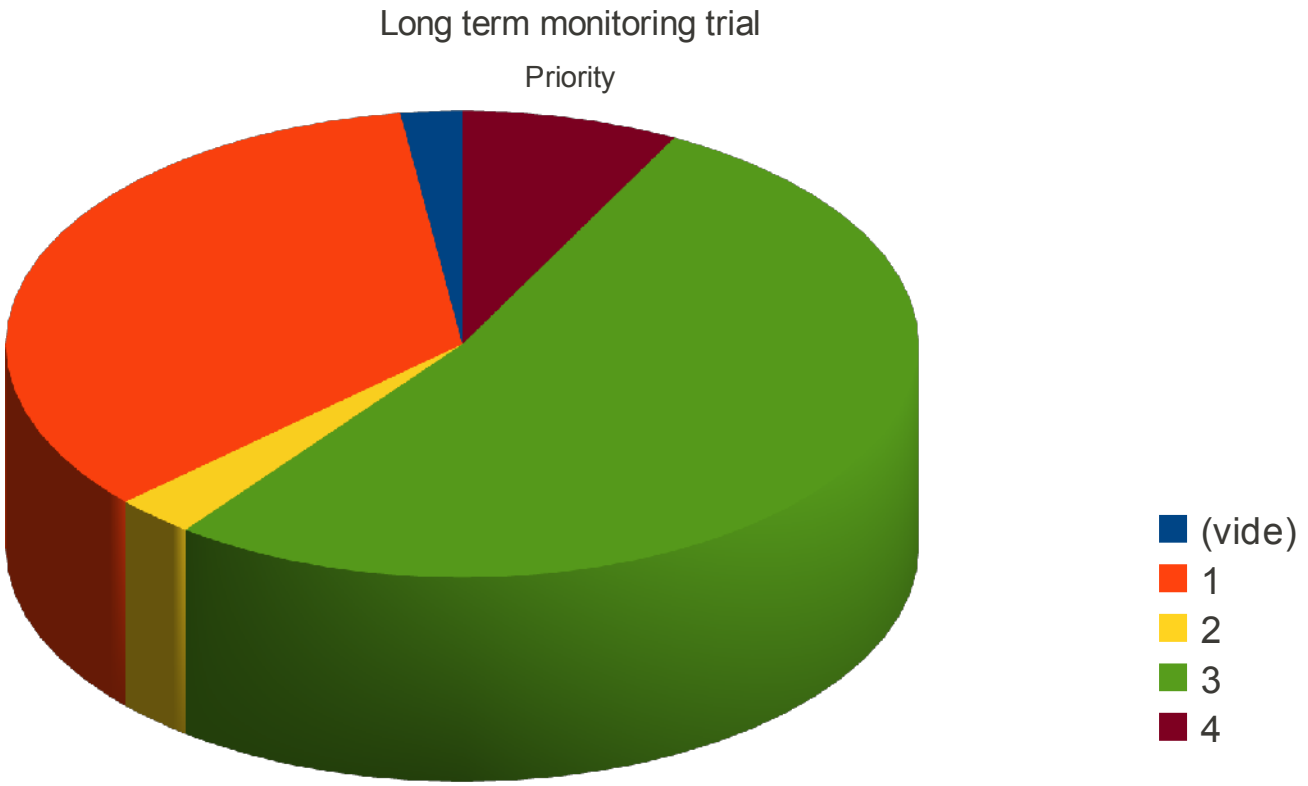
- id_species, id_data, owner
- Observation date, observation year??
- Paramater : 'mean_height_cm', 'mean_circumferenceBH_cm', 'mean_diameter_soil_level_cm', 'mean_diameterBH_cm', 'dominant_height_cm', 'remaining_trees_number', 'BBCH_code'
- Value
- Standard deviation

Data in database on July 2010

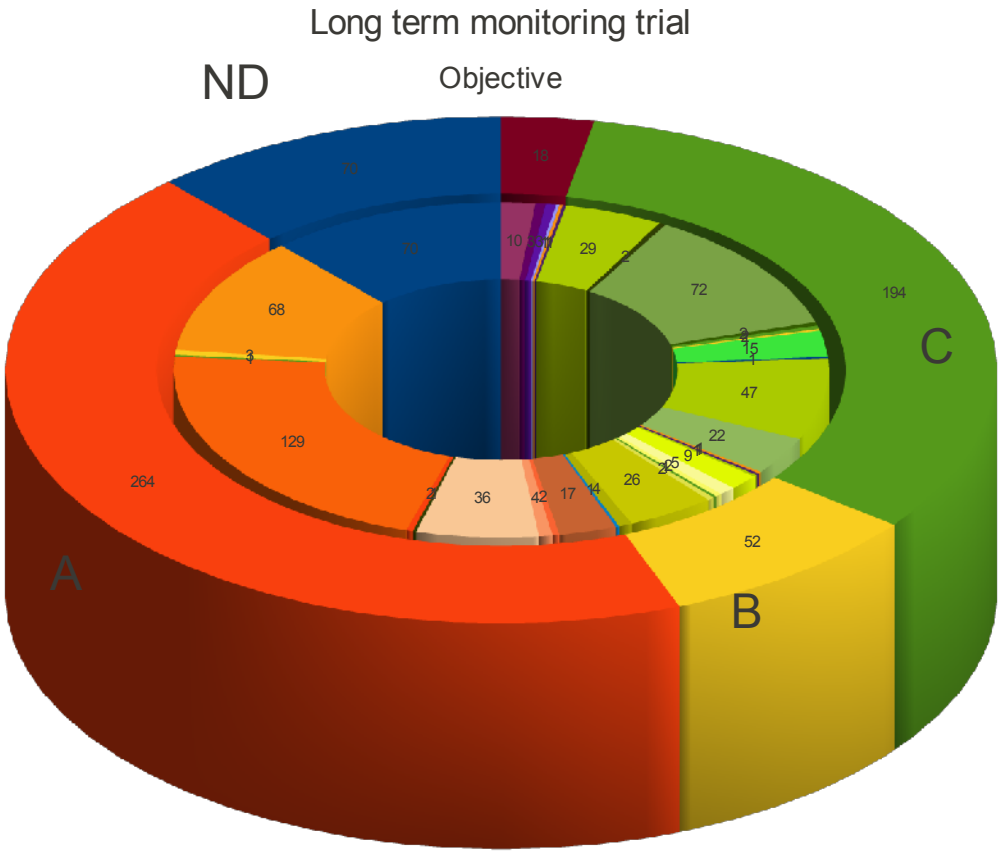
Per data owner



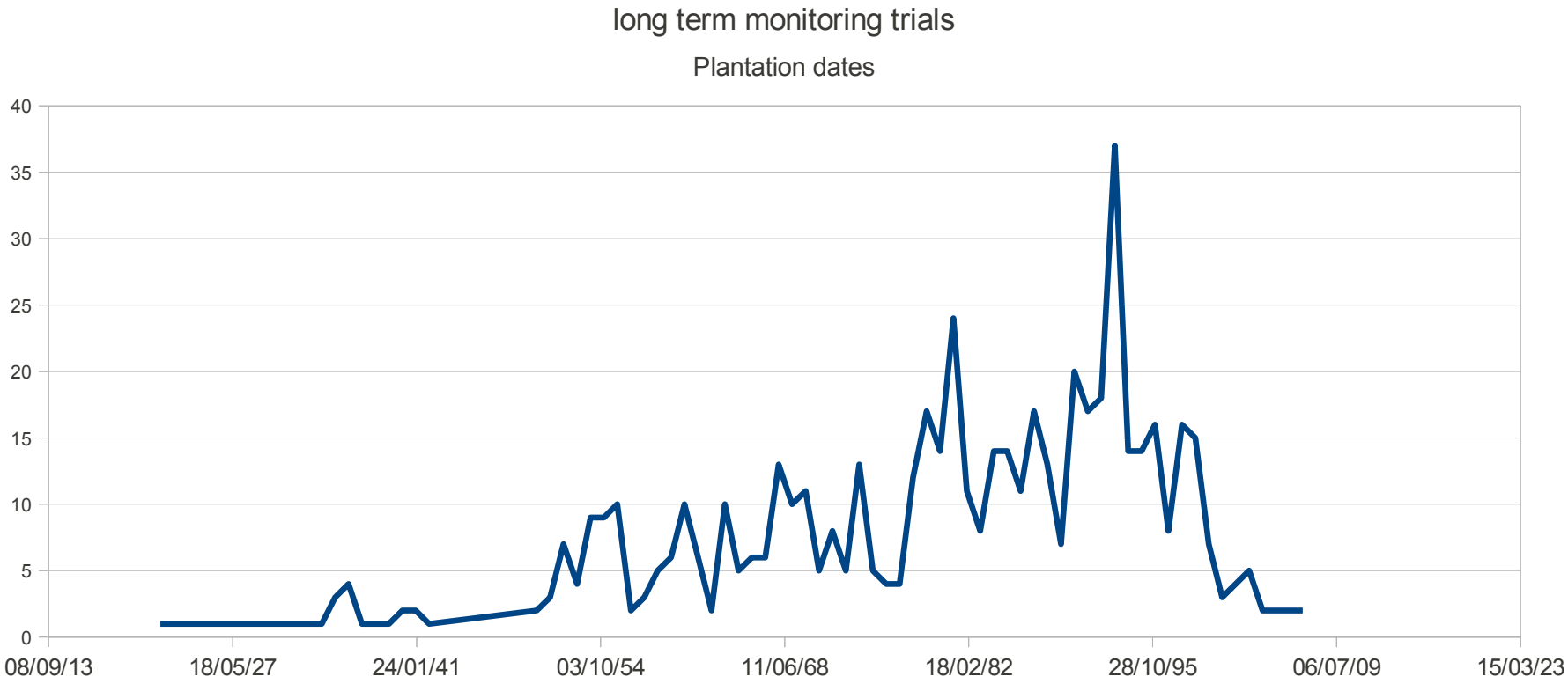
Per robustness



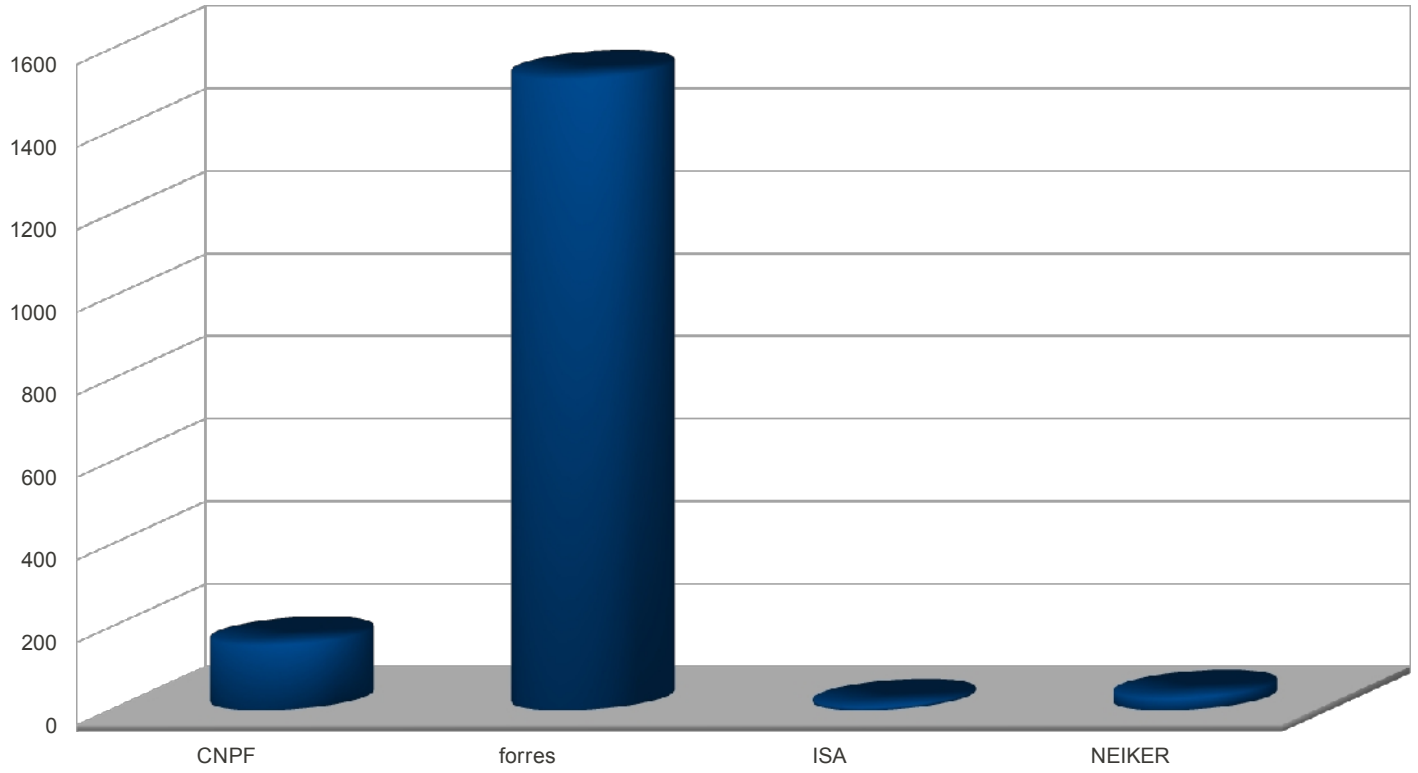
Per objective



Per plantation date



Number of species



End user access

User interfaces

Database structure consultation

Database upload tool

Database data consultation