



HAL
open science

Forest tree GnpIS: an information system dedicated to forest tree genetics, genomics and phenomics

Célia Michotey, Christel Anger, François Ehrenmann, Odile Rogier, Véronique V. Jorge, Cyril Pommier, Catherine Bastien, Christophe Plomion, Christian Pichot, Hadi Quesneville, et al.

► To cite this version:

Célia Michotey, Christel Anger, François Ehrenmann, Odile Rogier, Véronique V. Jorge, et al.. Forest tree GnpIS: an information system dedicated to forest tree genetics, genomics and phenomics. 35. New Phytologist Symposium, Jun 2015, Boston, United States. 2015. hal-02795537

HAL Id: hal-02795537

<https://hal.inrae.fr/hal-02795537v1>

Submitted on 5 Jun 2020

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Forest tree GnpIS: an information system dedicated to forest tree genetics, genomics and phenomics

C. MICHOTÉY¹, C. ANGER², F. EHRENMANN⁴, O. ROGIER³, V. JORGE³, C. POMMIER¹, C. BASTIEN³, C. PLOMION⁴, C. PICHOT⁵, H. QUESNEVILLE¹, D. STEINBACH¹



- ¹ INRA, UR1164 - URGI, route de Saint-Cyr – RD 10, 78026 Versailles cedex, France
- ² INRA, UE0995 - GBFOR, 2163 avenue de la Pomme de Pin, CS 40001 Ardon, 45075 Orléans cedex, France
- ³ INRA, UR0588 - AGPF, 2163 avenue de la Pomme de Pin, CS 40001 Ardon, 45075 Orléans cedex, France
- ⁴ INRA, UMR1202 - BIOGECO, 69 route d'Arcachon, 33612 Cestas cedex, France
- ⁵ INRA, UR0629 - URFM, 228 route de l'Aérodrome, 84914 Avignon, France



The URGI is a research unit of the French National Institute for Agricultural Research (INRA) which aims to develop tools, integrate data and acquire a better understanding of plant's genome structure, evolution and functioning. It hosts a bioinformatics platform (member of the French network of bioinformatics platforms, ReNaBi) which develops and maintains a multispecies integrative information system dedicated to plants and crop parasites: GnpIS. It integrates and links genetic, genomic, phenomic and environmental data into a single environment, allowing researchers to store, query and explore information from different angles. The Ecology division of INRA uses GnpIS as its referential information system to manage forest tree genetic, genomic and phenomic data.

The forest tree resources are accessible through the GnpIS web portal. Its main entry point is a google-like search, a tool using keywords for data discovery. The bird's eye view obtained allows navigation through the data with dedicated tools facilitating more specific queries and data retrieval from the database. Cards were developed to gather all representative information on major elements (accession, experiment and such). This information system (IS) is developed in Java. It is regularly improved with new functionalities answering specific needs raised by scientists and released several times a year.

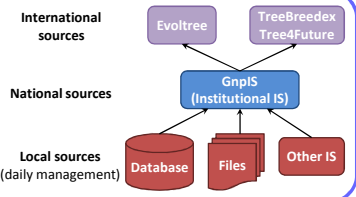
<https://urqi.versailles.inra.fr/gnpis>

The screenshot displays the GnpIS web portal interface. Key sections include:

- Search:** A search bar with a "google-like search" label and a "SEARCH" button. Below it, a "Log In" section and a "Data" sidebar with categories like GENOMES, TAXONS, SEQUENCES, PHENOTYPES, etc.
- Phenotypes:** A section titled "Phenotypes" with a "Phenotypes" button. It shows a list of phenotypes with columns for "Accession Number" and "Access". A "Phenotypes" card is shown with details like "Trial name", "Trial number", "Trial type", etc.
- Genotyping form:** A section titled "Genotyping form" with a "Genotyping form" button. It shows a form for entering genotyping data, including "Marker set" and "Custom marker set".
- Accession: 242:** A detailed view of an accession, showing "IDENTIFICATION", "HOLDING", "GENEALOGY", and "COLLECTIONS" sections.

Data are supplied by local sources produced and managed by research teams working on forest trees. Workflows are implemented to automate data flow: 1) data insertion in GnpIS from local sources, 2) data extraction from GnpIS and insertion into international IS.

Data are already available in this forest IS (<https://urqi.versailles.inra.fr/Species/Forest-trees/Database-overview>). We are giving access to oak and poplar genetic, phenomic and genomic data. Integration of the data produced within the common garden network (over 1,000 trials with genotypes gathered from ~15 species) is in progress.



References

- [1] D. Samson-Steinbach, F. Legeai, E. Karsenty, S. Reboux, JB. Veyrieras, J. Just, E. Barillot, GéoPlante-Info (GPI): a collection of databases and bioinformatics resources for plant genomics, *Nucleic Acids Research* 2003
- [2] D. Steinbach, M. Alaux, J. Anselem, N. Choisne, S. Durand, R. Flores, A.O. Keliet, E. Kimmel, N. Lapalu, I. Luyten, C. Michotey, N. Mohellibi, C. Pommier, S. Reboux, D. Valdenaire, D. Verdelet, and H. Quesneville. GnpIS: an information system to integrate genetic and genomic data from plants and fungi, *Database Journal* 2013

Acknowledgements
Thanks to the "information system and data integration" team of URGI who developed and maintained GnpIS, thus help me with the Forest tree GnpIS.

Contact
celia.michotey@versailles.inra.fr