

## **transPLANT milestone report**

### **MS17 (work package 6): Ephesis integrated in transPLANT portal**

Like genomic or expression data, phenotypic data must be stored and kept available in the long term. Therefore, a phenotype data repository must be designed and built.

To provide trans-national access to a phenotypic data repository, the transPLANT portal includes a direct interface to Ephesis (<https://urgi.versailles.inra.fr/epheis/>), a web portal dedicated to phenotype and environment experimental trials. The Ephesis portal allows users to build phenotyping datasets that cover multiple trials, potentially spanning several years across multiple locations. Datasets can be downloaded and used for metanalysis of genotype–environment interactions (G×E) or genetic association and GWAS studies.

Ephesis currently stores data for all plant species studied at INRA (<http://www.inra.fr/>), including annual species like wheat and barley, and perennial species like grape, oak and poplar. Scientists at INRA are involved in many collaborative European projects using Ephesis as a repository for the data produced by INRA and its partners. Ephesis is evolving into an international, distributed information system, allowing broader data integration.

The phenotype and environment data stored in Ephesis forms a dedicated module of the URGI (<https://urgi.versailles.inra.fr>) information system, GnpIS (<https://urgi.versailles.inra.fr/gnpis/>). It is highly generic and its data model has been inspired by other generic systems such as the Chado database developed by the GMOD consortium, the Genomic Diversity and Phenotype Data Model, and the International Crop Information System (ICIS).

The Ephesis web-application has been integrated into the transPLANT portal (<http://transplantdb.eu/epheis>) using the HTML <iframe> element (HTML 'inline frame' element), allowing users to build and download phenotyping datasets directly within the transPLANT portal. The iframe allows one document to be embed within another HTML document, providing a seamless user experience.

Figure 1, building a phenotyping dataset using Ephesis within the transPLANT portal.

The screenshot shows the transPLANT portal with a green header containing navigation links: Home, Blog, Tools, Training, Standards, and About. A search bar is on the right. Below the header, the text reads "trans-national infrastructure for plant genomic science".

The main content area is titled "Tools" and features a section for "Ephesis". The text describes Ephesis as a web portal for phenotype and environment experimental trials, used for GxE meta-analysis and GWAS studies. It mentions that the database currently stores data for all plant species studied at INRA, including annual species like wheat and barley, and perennial species like grape, oak, and poplar. A small diagram illustrates the data flow and integration.

Below the text, there is a link to the Ephesis web-application: <https://urgi.versailles.inra.fr/epheis/>, or through the GnpIS portal.

The interface shows a "Phenotypes" section with tabs for "Genotype", "Variables", and "Trial". Under "Genotype", there are input fields for "Taxon scientific name" (containing "hord") and "Accession numbers" (containing "Hordeum vulgare"). Below these is a section for "Build your own varietal list" with a link: "Pick genotypes. Click on '+' to add your choice to the selection."

Figure 2, browsing Ephesis search results.

The screenshot shows the search results page for "Phenotypes". It includes a "Search parameters" section with a "Back to form" button. The search criteria is "Taxon Scientific Name: Hordeum vulgare".

Navigation controls show "1-1 of 1" results and "Display 10 results per page".

Details	Trial Name	Trial Number	Site	Data Access
<a href="#">Details</a>	IGR_2010_1	IGR_2010_1	<a href="#">IPGPAS</a>	yes

A "Get data" button is located at the bottom right of the results table.

Figure 3, viewing a phenotyping dataset. Datasets can be downloaded in CSV or ISATAB format for offline analysis.

## Phenotypes

[Back to form](#)

[Search parameters](#)

- Taxon Scientific Name: Hordeum vulgare

[Headers](#)


Available trait and environment variables (observed level) Available phenotyping Campaign

sample none available

[Refresh results](#)

1-10 of 592 | Display 10 results per page

lotNumber	trialName	trialSite	Task	Replication	Pot	Sample	Drought condition(IPGPAS:Drought)
Harmal	IGR_2010_1	IPGPAS	Z02	1	23	1	0
Georgia	IGR_2010_1	IPGPAS	Z02	1	13	1	2
Lubuski	IGR_2010_1	IPGPAS	Z02	1	25	1	1
Lubuski	IGR_2010_1	IPGPAS	Z02	1	31	1	0
MDingo	IGR_2010_1	IPGPAS	Z02	1	43	1	3
Stratus	IGR_2010_1	IPGPAS	Z02	1	61	1	2
Harmal	IGR_2010_1	IPGPAS	Z02	1	21	1	2
Camb1	IGR_2010_1	IPGPAS	Z02	1	3	1	3
Maresi	IGR_2010_1	IPGPAS	Z02	1	33	1	1
Maresi	IGR_2010_1	IPGPAS	Z02	1	35	1	3

Ephesis data export  ISATAB export 