

MIAPPE Plant Phenotyping Data standard

Minimum Information About Plant Phenotyping Experiment and its implementations

elixir, EMPHASIS, Bioversity International, Crop Ontology

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PLANT PHENOTYPING DATA STANDARD NEED

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Plant Phenotyping Experiment Data

- Heterogeneous Datasets
 - Single field trial
 - Phenotyping Field networks on multiple years
 - Automated Greenhouse
- Heterogeneous measure types
 - Experimenter measures and notations
 - Low throughput sensors and measurement devices
 - Yield, plant height, disease notations, NIRS
 - Automated measures
 - High throughput Greenhouses or Field
 - Drones, Phenomobiles, sensor networks
 - Images, Multispectral, LIDAR, NIRS
- Heterogeneous, multiscale variables
- Highly distributed repositories: Experimental platform, Projects, Institutes

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Plant Phenotyping Experiment Data Interoperability

- High Data Interoperability need
 - Intra dataset interoperability
 - Phenotyping networks consolidation
 - Project integration
 - Inter dataset interoperability
 - large scale breeding
 - genetic analysis
 - climat change studies
 - ...
- Interoperability and sharing principle

FAIR

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Plant Phenotyping Experiment Data FAIR Data Principles

F Findable	A Accessible	I Interoperable	R Reusable
Ids Metadata Indexed	Open Protocols Perennial Metadata	Linked Data Vocabularies	License Well described Provenance Standards

<https://www.ontoforce.com>

Wilkinson, M. D. et al. The FAIR Guiding Principles for scientific data management and stewardship. *Scientific Data* 3, 160018 (2016).

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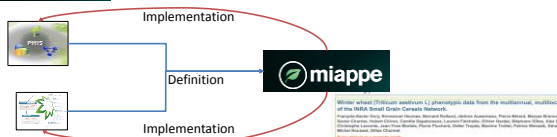
IMPLEMENTATIONS



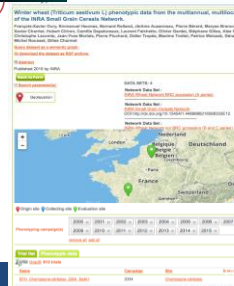
- Databases and repositories
- File archive
- Web services
- Semantic web and RDF



MIAPPE: Databases

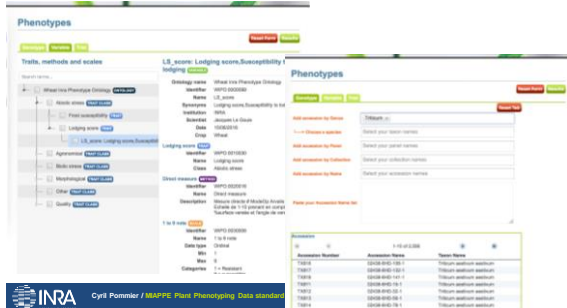


- Production databases
 - PHIS
- Cleaned data publication repositories
 - GnpIS <http://dx.doi.org/10.15454/1.44896621568333E12>
 - eDale
 - PlantPhenoDB
- Implementation
 - Internal
 - Web services API



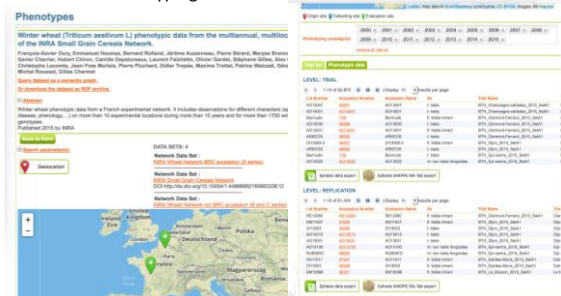
MIAPPE databases & FAIR

- Findable: Indexed metadata
- Interoperable : Vocabularies/Ontologies, Plant material ID



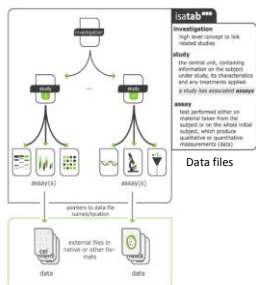
MIAPPE databases & FAIR

- Accessible
- Reusable: License, File standard
- Whole Phenotyping Network



MIAPPE File Archive

- ISA Tab for Phenotyping
 - Investigation/Study/Assay
 - Zip Archive
 - MIAPPE Metadata
 - Raw data
 - CSV
 - Images or binary files
 - Reference to image archive (URI/URL)
 - Elaborated data
 - CSV
 - Provenance



MIAPPE Web Service : Breeding API

- International collaboration
- Vision : To provide a standard Open API for easily, securely, and efficiently exchanging information between systems and applications that support breeding
- MIAPPE BrAPI alignment and compliance



