

Update on the WheatIS tools

Michael Alaux



WheatIS data discovery tool



SolR search

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WheatIS

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About

This project aims at building an International Wheat Information System, called hereafter WheatIS, to support the wheat research community. The main objective is to provide a single-access web base system to access to the available data resources and bioinformatics tools.

This project is based on the principles listed below:

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- Incremental implementation to offer rapidly an operational information system;
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wheatis-contact @ wheatis.org

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WheatIS @WheatIS 9 Dec
WheatIS talk at next PAG conference. Book your agenda pag.confex.com/pag/xxiv/meeti...
Expand

Michael Alaux @michaelalaux 4 Dec
Program of IWGSC Standards & Protocols workshop at PAG 2016 wheatgenome.org/Meetings-and-W... via @wheatgenome
Retweeted by WheatIS
Expand

Michael Alaux @michaelalaux 4 Dec
Next talk at #PAGXXIV about the IWGSC Sequence Repository pag.confex.com/pag/xxiv/webpr... @wheatgenome @Inra_urgi @fredChoulet
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Tweet to @WheatIS

<http://www.wheatis.org/>

SolR search

WheatIS

Search

How To Join

About

WheatIS nodes:

transPlant-MIPS (UP):

- CrowsNest: 13324

transPlant-IPK (UP):

- CR-EST: 199220
- GEBIS: 51814
- MetaCrop: 355

transPlant-EBI (UP):

- Ensembl Plants: 218282

UWA (UP):

- Wheat Pangenome: 167167

GrainGenes (UP):

- GrainGenes: 548

Gramene-WheatIS (UP):

- Gramene: 229851

transplant-IPGPAS (UP):

- PlantPhenoDB: 2

T3 (UP):

- Triticeae Toolbox: 185781

CIMMYT (DOWN - error: 401)

URGI (UP):

- IWGSC@GnplS: 2301763
- GnplS: 57998
- WheatIS File Repository: 6



Search in all WheatIS nodes...

Examples: [fwb](#), [wmc430](#), [Triticum](#), [TRAES3BF001000010CFD](#)

New data in 2017

transPlant-MIPS (UP):

- CrowsNest: 13324

transPlant-IPK (UP):

- CR-EST: 199220
- GEBIS: 51814
- MetaCrop: 355

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- Ensembl Plants: 218282

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- PlantPhenoDB: 2

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T3 (UP):

- Triticeae Toolbox: 185781

CIMMYT (UP):

- CIMMYT Dspace: 918
- CIMMYT dataverse: 37

UWA (UP):

- Wheat Pangenome: 167167 GBrowse

GrainGenes (UP):

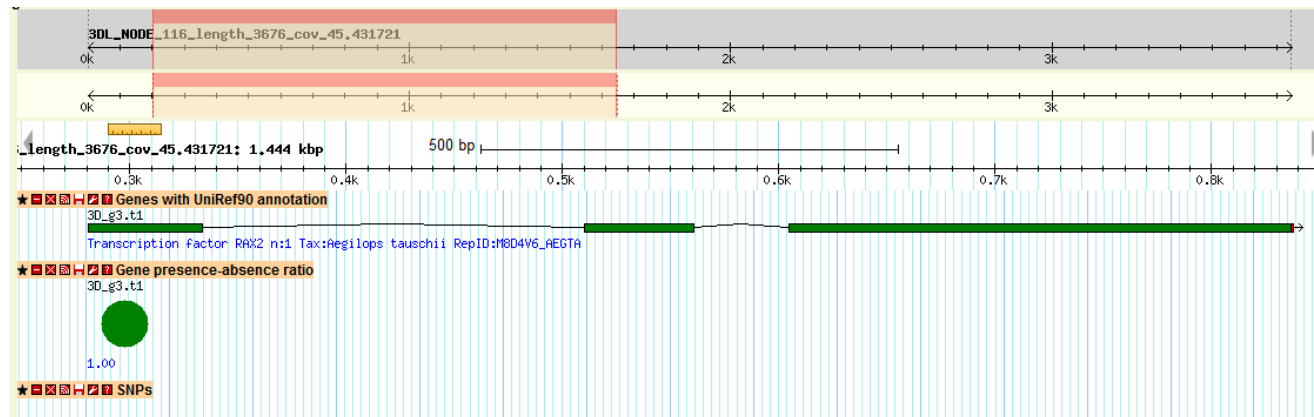
- GrainGenes: 548 QTLs

Gramene-WheatIS (UP):

- Gramene: 229851 Genes, GO, pathways, etc.

UWA Wheat pangenome

ID	Source	Type	Taxon	Description
3D_g3.t1	Wheat Pangenome	SEQUENCE FEATURE	Triticum aestivum	SEQUENCE FEATURE, Wheat Pangenome, 3D_g3.t1, Presence=1.00, Transcription factor RAX2 n:1 Tax:Aegilops tauschii RepID:M8D4V6_AEGTA, Triticum aestivum, mRNA, 3D_g3.t1
3D_g7.t1	Wheat Pangenome	SEQUENCE FEATURE	Triticum aestivum	SEQUENCE FEATURE, Wheat Pangenome, 3D_g7.t1, Presence=1.00, Uncharacterized protein n:8 Tax:Triticeae RepID:A0A077S4R6_WHEAT, Triticum aestivum, mRNA, 3D_g7.t1
3D_g9.t1	Wheat Pangenome	SEQUENCE FEATURE	Triticum aestivum	SEQUENCE FEATURE, Wheat Pangenome, 3D_g9.t1, Presence=1.00, Uncharacterized protein n:1 Tax:Triticum aestivum RepID:A0A080YUN9_WHEAT, Triticum aestivum, mRNA, 3D_g9.t1
3D_g9.t2	Wheat Pangenome	SEQUENCE FEATURE	Triticum aestivum	SEQUENCE FEATURE, Wheat Pangenome, 3D_g9.t2, Presence=1.00, Uncharacterized protein n:1 Tax:Triticum aestivum RepID:A0A080YUN9_WHEAT, Triticum aestivum, mRNA, 3D_g9.t2
3D_g11.t1	Wheat Pangenome	SEQUENCE FEATURE	Triticum aestivum	SEQUENCE FEATURE, Wheat Pangenome, 3D_g11.t1, Presence=1.00, No Hits, Triticum aestivum, mRNA, 3D_g11.t1
3D_g12.t1	Wheat Pangenome	SEQUENCE FEATURE	Triticum aestivum	SEQUENCE FEATURE, Wheat Pangenome, 3D_g12.t1, Presence=1.00, Uncharacterized protein n:5 Tax:Triticeae RepID:W5D2X2_WHEAT, Triticum aestivum, mRNA, 3D_g12.t1
3D_g15.t1	Wheat Pangenome	SEQUENCE FEATURE	Triticum aestivum	SEQUENCE FEATURE, Wheat Pangenome, 3D_g15.t1, Presence=1.00, Uncharacterized protein n:1 Tax:Aegilops tauschii RepID:R7WFP4_AEGTA, Triticum aestivum, mRNA, 3D_g15.t1
3D_g21.t1	Wheat Pangenome	SEQUENCE FEATURE	Triticum aestivum	SEQUENCE FEATURE, Wheat Pangenome, 3D_g21.t1, Presence=1.00, Galactosylgalactosylxylosylprotein 3-beta-glucuronosyltransferase 2 n:2 Tax:Triticeae RepID:N1QQK4_AEGTA, Triticum aestivum, mRNA, 3D_g21.t1
3D_g23.t1	Wheat Pangenome	SEQUENCE FEATURE	Triticum aestivum	SEQUENCE FEATURE, Wheat Pangenome, 3D_g23.t1, Presence=1.00, GDSL esterase/lipase n:1 Tax:Aegilops tauschii RepID:M8BY45_AEGTA, Triticum aestivum, mRNA, 3D_g23.t1
3D_g27.t1	Wheat Pangenome	SEQUENCE FEATURE	Triticum aestivum	SEQUENCE FEATURE, Wheat Pangenome, 3D_g27.t1, Presence=1.00, Uncharacterized protein n:8 Tax:Triticeae RepID:M0ZDK5_HORVD, Triticum aestivum, mRNA, 3D_g27.t1




GrainGenes QTLs

ID	Source	Type	Taxon	Description
QAmc.ocs-4A.1	GrainGenes	QTL	Triticum aestivum	QTL, GrainGenes, QAmc.ocs-4A.1, Amylose content; Identification of genetic loci affecting amylose content and agronomic traits on chromosome 4A of wheat, Triticum aestivum
QCc.mst-2D	GrainGenes	QTL	Triticum aestivum	QTL, GrainGenes, QCc.mst-2D, Wheat stem sawfly attraction; Identification of Novel QTL for Sawfly Resistance in Wheat, Triticum aestivum
QCc.mst-4A	GrainGenes	QTL	Triticum aestivum	QTL, GrainGenes, QCc.mst-4A, Wheat stem sawfly attraction; Identification of Novel QTL for Sawfly Resistance in Wheat, Triticum aestivum
QCkf.ucw-7B	GrainGenes	QTL	Triticum turgidum ssp. durum	QTL, GrainGenes, QCkf.ucw-7B, Cooked firmness; QTL analysis of pasta quality using a composite microsatellite and SNP map of durum wheat, Triticum turgidum ssp. durum
QCol.wak-2B	GrainGenes	QTL	Triticum aestivum	QTL, GrainGenes, QCol.wak-2B, Leaf color/glaucousness; Identifying QTL for high-temperature adult-plant resistance to stripe rust (Puccinia striiformis f. sp. tritici) in the spring wheat (Triticum aestivum L.) cultiva[...]
QDon.crc-3B	GrainGenes	QTL	Triticum aestivum	QTL, GrainGenes, QDon.crc-3B, Deoxynivalenol (DON) accumulation; Molecular mapping of novel genes controlling Fusarium head blight resistance and deoxynivalenol accumulation in spring wheat, Triticum aestivum
QDon.crc-5A	GrainGenes	QTL	Triticum aestivum	QTL, GrainGenes, QDon.crc-5A, Deoxynivalenol (DON) accumulation; Molecular mapping of novel genes controlling Fusarium head blight resistance and deoxynivalenol accumulation in spring wheat, Triticum aestivum

GrainGenes QTL Report: QAmc.ocs-4A.1

[\[Printable Version \]](#) [\[Submit comment/correction \]](#)

QTL	QAmc.ocs-4A.1
Trait Affected	Amylose content
Ontology	TO:0000196 Planteome amylose content
Chromosome	4AS
Positive Significant Marker	Xbcd1738-4A Xcdo1387-4A
Species	Triticum aestivum
Reference	 Araki E et al. (1999) Identification of genetic loci affecting amylose content in wheat. <i>Genetics</i> 153:977-984.

map based on quantitative trait

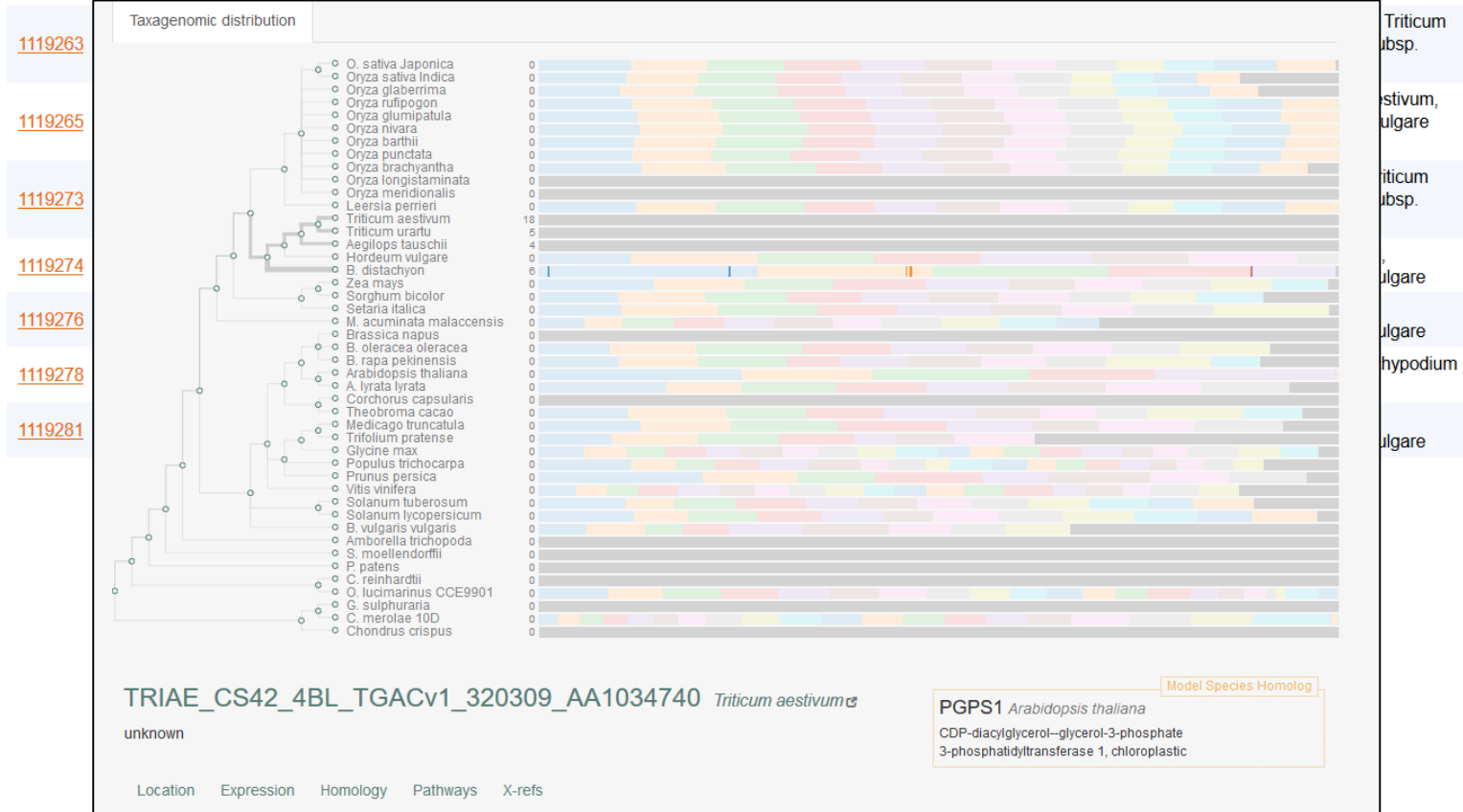
GrainGenes Locus Report: Xbcd1738-4A

[\[Printable Version \]](#) [\[Submit comment/correction \]](#)

Locus	Xbcd1738-4A [Marker Report]
Type	RFLP
Chromosome	4A
Chromosome Arm	4AS
Map	Ta-Synthetic/Opata-4A 19.5 Ta-Synthetic/Opata-BARC-4A 18.4 Ta-Synthetic/Opata-GPW-4A 26.5
	[Show Nearby Loci]
In QTL	QAmc.ocs-4A.1 [Show all 6]
Map Data	Wheat, Synthetic x Opata [GBrowser] Wheat, Synthetic x Opata, BARC Wheat, Synthetic x Opata, GPW
Probe	BCD1738
Homology	CAB61839.1 e-value: 9e-37 (AJ242803) putative serine/threonine phosphatase type 2c [Sporobolus stapfianus]
Image	BCD1738 SO autoradiogram

Gramene

ID	Source	Type	Taxon	Description
1119260	Gramene	Pathway	Triticum aestivum, Triticum urartu, Brachypodium distachyon, Aegilops tauschii, Hordeum vulgare subsp. vulgare	Gramene, Pathway, 1119260, cardiolipin biosynthesis, Triticum aestivum, Triticum urartu, Brachypodium distachyon, Aegilops tauschii, Hordeum vulgare subsp. vulgare
1119261	Gramene	Pathway	Triticum aestivum, Triticum urartu, Brachypodium distachyon, Aegilops tauschii, Hordeum vulgare subsp. vulgare	Gramene, Pathway, 1119261, salicylate biosynthesis, Triticum aestivum, Triticum urartu, Brachypodium distachyon, Aegilops tauschii, Hordeum vulgare subsp. vulgare
1119262	Gramene	Pathway	Triticum aestivum, Triticum urartu, Brachypodium distachyon, Aegilops tauschii, Hordeum vulgare subsp. vulgare	Gramene, Pathway, 1119262, threonine biosynthesis from homoserine, Triticum aestivum, Triticum urartu, Brachypodium distachyon, Aegilops tauschii, Hordeum vulgare subsp. vulgare



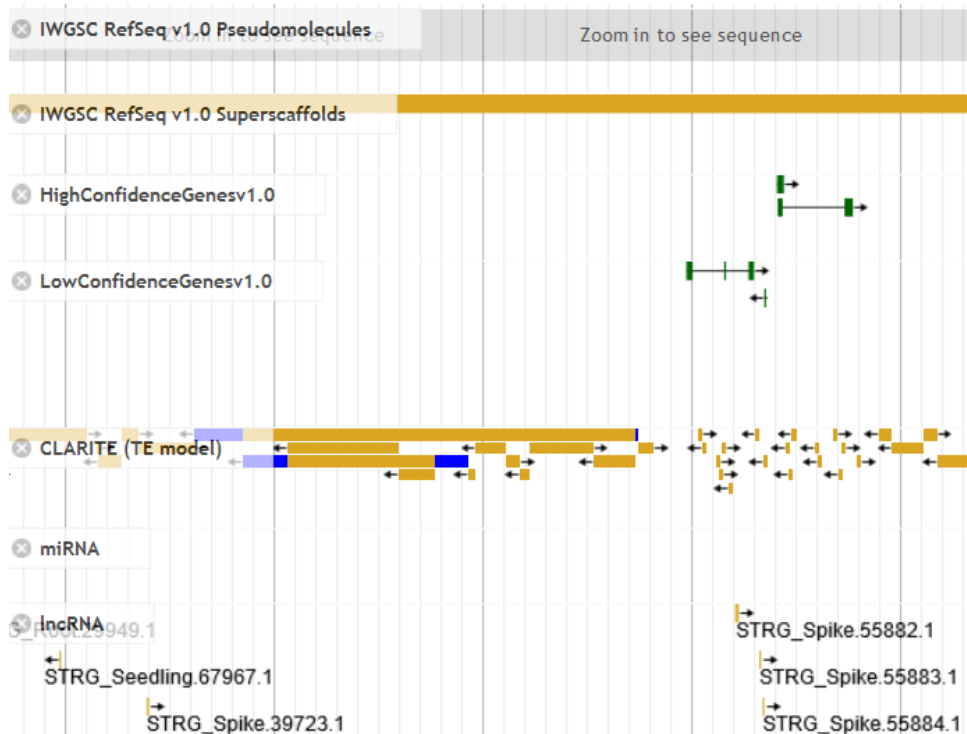
In progress at URGI

URGI (UP):

- IWGSC@GnplS: 23295514 **New data from the IWGSC RefSeq v1.0**
- GnplS: 58000
- OpenMinTeD: 3398 **New data from publications**
- WheatIS File Repository: 6

In progress at URGI

ID	Source	Type	Taxon	Description
JBrowse chr1A 100233074 100233167 miRNA	IWGSC@GnpIS	SEQUENCE FEATURE	Triticum aestivum	Start = 100233074 [...]
JBrowse chr1A 101106604 101106809 miRNA	IWGSC@GnpIS	SEQUENCE FEATURE	Triticum aestivum	Start = 101106604 [...]
JBrowse chr1A 10158696 10158807 miRNA	IWGSC@GnpIS	SEQUENCE FEATURE	Triticum aestivum	Start = 10158696 [...]
JBrowse chr1A 10231918 10232011 miRNA	IWGSC@GnpIS	SEQUENCE FEATURE	Triticum aestivum	Start = 10231918 [...]
JBrowse chr1A 102424297 102424428 miRNA	IWGSC@GnpIS	SEQUENCE FEATURE	Triticum aestivum	Start = 102424297 [...]
JBrowse chr1A 104839251 104839344 miRNA	IWGSC@GnpIS	SEQUENCE FEATURE	Triticum aestivum	Start = 104839251 [...]
JBrowse chr1A 104839691 104839784 miRNA	IWGSC@GnpIS	SEQUENCE FEATURE	Triticum aestivum	Start = 104839691 [...]
JBrowse chr1A 105619444 105619537 miRNA	IWGSC@GnpIS	SEQUENCE FEATURE	Triticum aestivum	Start = 105619444 [...]
JBrowse chr1A 107474939 107475091 miRNA	IWGSC@GnpIS	SEQUENCE FEATURE	Triticum aestivum	Start = 107474939 [...]
JBrowse chr1A 108071355 108071486 miRNA	IWGSC@GnpIS	SEQUENCE FEATURE	Triticum aestivum	Start = 108071355 [...]




In progress at URGI

ID	Source	Type	Taxon	Description
10.1007/s10681-014-1343-6	OpenMinTeD	Bibliography	Triticum	Effects and interactions of genes <i>Lr34</i> , <i>Lr68</i> and <i>Sr2</i> on wheat leaf rust adult plant resistance in Uruguay Achieving durable resistance to leaf rust (LR), caused by <i>Puccinia triticina</i> , in wheat has been one of the main objectives of breeding programs [...]
10.1007/s10681-014-1349-0	OpenMinTeD	Bibliography	Triticum	Identification of QTL for adult plant resistance to stripe rust in Chinese wheat landrace Caoxuan 5 Yellow (or stripe) rust, caused by <i>Puccinia striiformis</i> f [...]
10.1016/j.eja.2015.04.007	OpenMinTeD	Bibliography	Triticum	A simple approach to predict growth stages in winter wheat (<i>Triticum aestivum</i> L.) combining prediction of a crop model and marker based prediction of the deviation to a reference cultivar: A case study in France Predicting wheat growth stages using ecophysiological models is of particular interest as it allows anticipating important agricultural managements [...]
10.1007/s00122-015-253	Euphytica			controlled by two major genes. The <i>Lr34</i> gene is governed by two major genes arms 2DL and 3BS [...]
10.1007/s00122-015-253				the short arm of chromosome 1A of wheat. Selection for low rust severity) based on the DNA marker <i>cssfr5</i> [...]
10.1007/s00122-015-253				wheat By applying comparative genomics the <i>Lr34</i> locus was identified [...]
10.1007/s00122-015-253				genomic regions of powdery mildew resistance in wheat <i>Triticum aestivum</i> L. Rapid evolution of resistance genes in wheat subgenomes [...]
10.1016/j.cropro.2015.04				resistance to stripe rust in Chinese winter wheat [...]
10.1371/journal.pone.011				genetic improvement Identifying and validating marker assisted breeding programs is an important challenge [...]
10.2135/cropsci.2014.10				in the United States Barley (<i>Hordeum vulgare</i> L.) [...]

[Euphytica](#)
August 2015, Volume 204, [Issue 3](#), pp 599–608 | [Cite as](#)

Effects and interactions of genes *Lr34*, *Lr68* and *Sr2* on wheat leaf rust adult plant resistance in Uruguay

Authors [Authors and affiliations](#)

Paula Silva , Violeta Calvo-Salazar, Federico Condón, Martin Quincke, Clara Pritsch, Lucía Gutiérrez, Ariel Castro, Sybil Herrera-Foessel, Jarislav von Zitzewitz, Silvia Germán

Article
First Online: 20 January 2015

607 Downloads 2 Citations

Abstract

Achieving durable resistance to leaf rust (LR), caused by *Puccinia triticina*, in wheat has been one of the main objectives of breeding programs. Durability of LR resistance is considered to be associated with adult plant resistance (APR) genes that are quantitatively inherited and whose expression is largely influenced by environment. Our objective was to study the effects and interactions of APR genes *Lr34*, *Lr68* and *Sr2* on LR response in Uruguay using two BC₁F₆ populations ('LE2304*2/Parula' and 'ORL99192*2/Parula'). The experimental material was screened for LR in three artificially inoculated environments (La Estanzuela 2012 and 2013 and Young 2012). Linked molecular markers were used to detect the presence of the genes



Bug fixed

- It is now possible to find metadata containing special characters such as « . », « - », « _ »

Solr package

You'd like to join the WheatIS federation in order to make your data discoverable through the [WheatIS search tool](#) ?

You should [contact us](#) to have support and to choose the best option that fits your needs.

- The simpler option is to extract your data in the dedicated CSV format and to provide us this file (either stored on your web server, or by any other way). We then will be able to fetch and index this file at URGI and make your data visible within the WheatIS search tool.
- If you want to keep full control over your data, you can also install and configure an on-premise Solr instance. Once installation completed, some data indexed and network opened to URGI's servers, we'll be able to add your node to our federation and you'll be visible in the WheatIS search tool.

To ease the WheatIS nodes to expose their data into the WheatIS search tool, we developed a package to help the installation, the configuration and the management of a WheatIS node, or to get primary insights about how to format your data. Download the package:

[WheatIS-search-tool-](#)

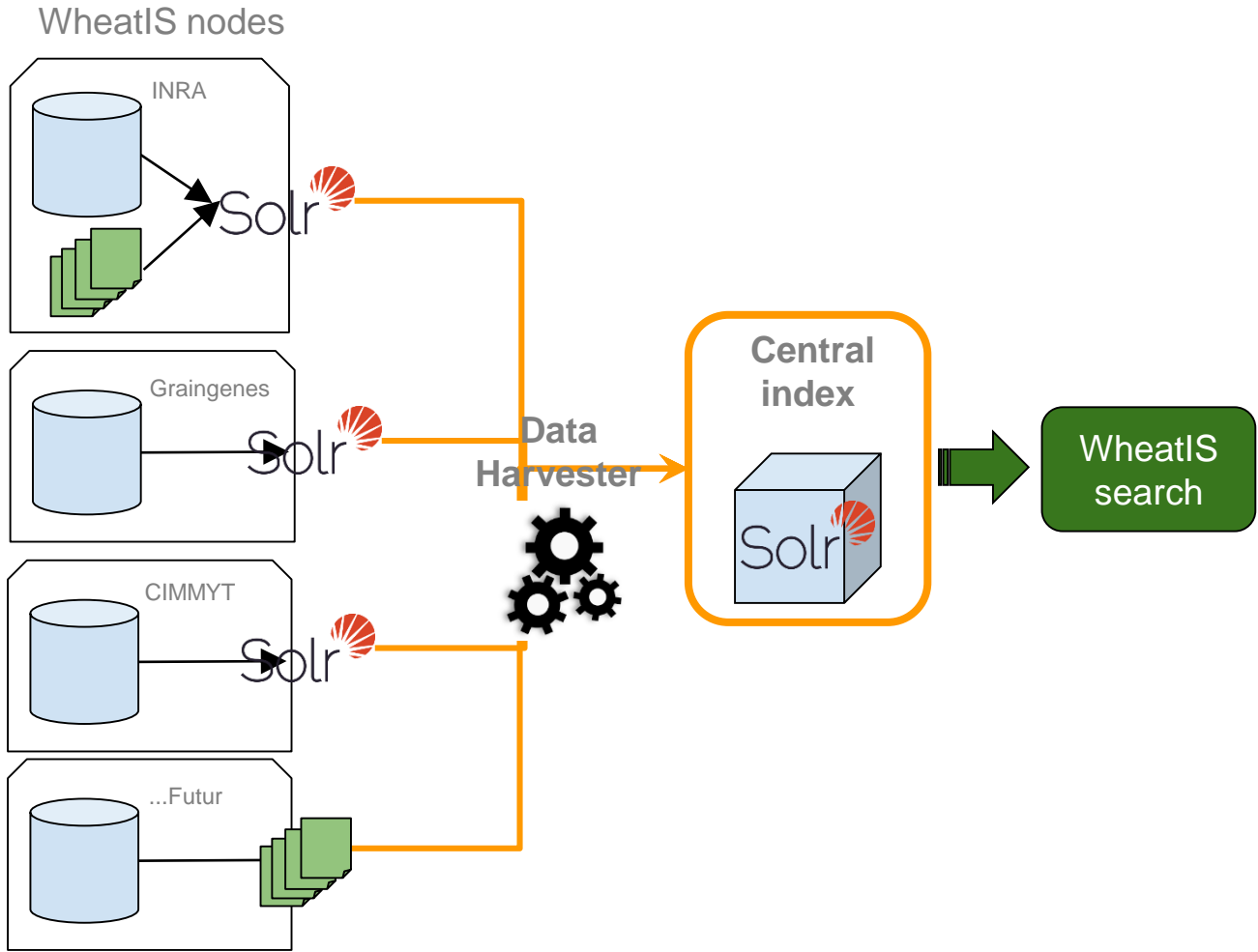
[sha1_solr_7fec39d8006b2c2163ddc72f294c65b17358f46f_etl_script_c4cb7cfb6d139b75640133ddd78b67dbdcf04866.tar.gz](#)
(415.17 kB)

Please [contact us](#) to get support and to add your data to the WheatIS search.

Powered by



Perspectives



Perspectives

- Central index approach
 - FTP/Web repository on each node (like Trackhub)
 - Metadata harvested / indexed
 - CSV Files
 - Export from existing solr with slight configuration adaptation
- Pros
 - Lighter implementation for new nodes
 - Easy update of the Solr engine
 - Easy addition of new functionalities
- Cons / things to check
 - Centralisation of queried metadata
 - Description metadata only
 - All content of CSV files
 - Delay in index updates (day or week)

Data standards



Data standards

[About](#) [Collaborators](#) [Search](#) [Data Standards](#) [Submit Data](#) [Tools](#) [Links](#) [WheatIS Nodes](#)

WheatIS

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wheatis-contact @ wheatis.org

A screenshot of a Twitter feed. The top tweet is from @WheatIS, dated 9 Dec, with the text: "WheatIS talk at next PAG conference. Book your agenda pag.confex.com/pag/xxiv/meeti...". Below it is a tweet from @michaelalaux, dated 4 Dec, with the text: "Program of IWGSC Standards & Protocols workshop at PAG 2016 wheatgenome.org/Meetings-and-W... via @wheatgenome". Another tweet from @michaelalaux, dated 4 Dec, says: "Next talk at #PAGXXIV about the IWGSC Sequence Repository pag.confex.com/pag/xxiv/webpr... @wheatgenome @Inra_urgi @fredChoulet". The bottom tweet is from @Ajwhall, dated 9 Dec, with the text: "Find out more about UK iPlant @iPlantCollab at @joyn #PAGXXIV pag.confex.com/pag/xxiv/meeti...".

<http://www.wheatis.org/>

Data standards

- News will be presented by Hadi Quesneville.



<http://www.wheatis.org/DataStandards.php>

WheatIS data submission



DSpace - iRODS

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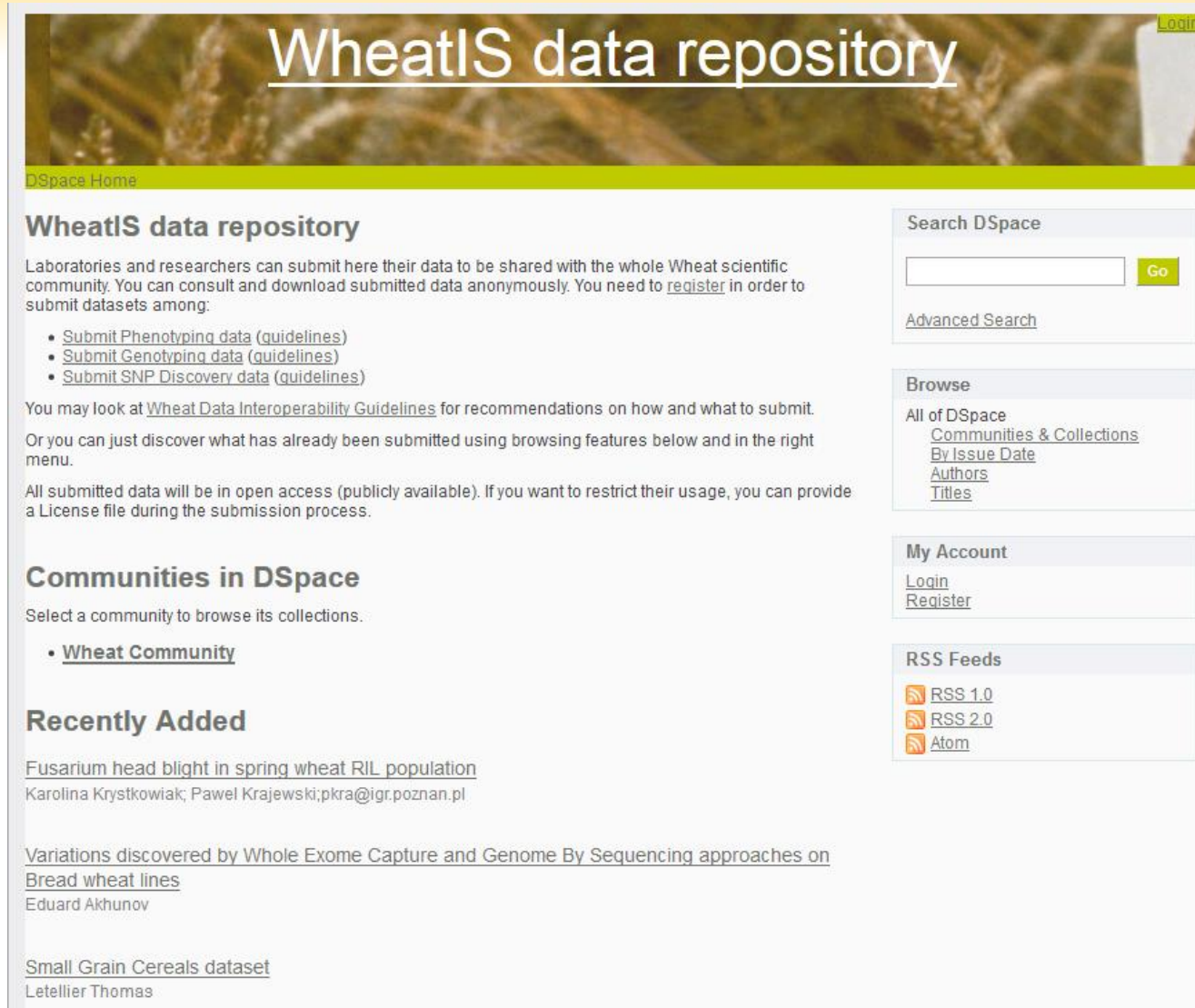
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Next talk at #PAGXXIV about the IWGSC Sequence Repository pag.confex.com/pag/xxiv/webpr... @wheatgenome @Inra_urgi @fredChoulet
Retweeted by WheatIS
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Anthony Hall @Ajwhall 9 Dec
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Tweet to @WheatIS

<http://www.wheatis.org/>

DSpace - iRODS



The screenshot shows the WheatIS data repository page. At the top, there is a banner with the text "WheatIS data repository" and a "Login" link. Below the banner is a green navigation bar with "DSpace Home". The main content area is divided into several sections: "WheatIS data repository" with a description and a list of submission guidelines; "Communities in DSpace" with a link to the "Wheat Community"; "Recently Added" with three entries: "Fusarium head blight in spring wheat RIL population", "Variations discovered by Whole Exome Capture and Genome By Sequencing approaches on Bread wheat lines", and "Small Grain Cereals dataset". On the right side, there are three sidebar sections: "Search DSpace" with a search box and a "Go" button; "Browse" with links for "All of DSpace", "Communities & Collections", "By Issue Date", "Authors", and "Titles"; and "My Account" with links for "Login" and "Register". At the bottom of the sidebar is an "RSS Feeds" section with links for "RSS 1.0", "RSS 2.0", and "Atom".

WheatIS data repository

Laboratories and researchers can submit here their data to be shared with the whole Wheat scientific community. You can consult and download submitted data anonymously. You need to [register](#) in order to submit datasets among:

- [Submit Phenotyping data \(guidelines\)](#)
- [Submit Genotyping data \(guidelines\)](#)
- [Submit SNP Discovery data \(guidelines\)](#)

You may look at [Wheat Data Interoperability Guidelines](#) for recommendations on how and what to submit.

Or you can just discover what has already been submitted using browsing features below and in the right menu.

All submitted data will be in open access (publicly available). If you want to restrict their usage, you can provide a License file during the submission process.

Communities in DSpace

Select a community to browse its collections:

- [Wheat Community](#)

Recently Added

[Fusarium head blight in spring wheat RIL population](#)
Karolina Krystkowiak; Pawel Krajewski;pkra@igr.poznan.pl

[Variations discovered by Whole Exome Capture and Genome By Sequencing approaches on Bread wheat lines](#)
Eduard Akhunov

[Small Grain Cereals dataset](#)
Letellier Thomas

Search DSpace

Go

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Browse

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[Authors](#)
[Titles](#)

My Account

[Login](#)
[Register](#)

RSS Feeds

[RSS 1.0](#)
[RSS 2.0](#)
[Atom](#)

DSpace - iRODS

- DSpace metadata are indexed in the SolR search
- We will add IWGSC public data / metadata soon

Acknowledgements



Questions

WheatIS:

<http://www.wheatis.org/>

Download the SolR package to add your node in the search:

<http://wheat-urgi.versailles.inra.fr/Projects/Wheat-Information-System/SolR-tool-package>

Contacts: michael.alaux@inra.fr
raphael.flores@inra.fr
thomas.letellier@inra.fr
wheatis-contact@wheatis.org