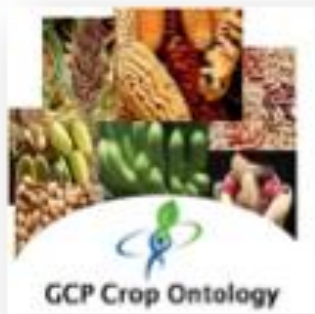


An Online GCP Crop Ontology (CO) for Annotating Trait Data Useful for Plant Breeders

<http://www.croponontology-curationtool.org/>



Crop Ontology Curation Tool

Generation Challenge Programme
CULTIVATING PLANT DIVERSITY FOR THE RESOURCE POOL

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Survey Results

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Latest

- General Germplasm Ontology**
 - FAO/IPGRI Multi-Crop Passport Descriptor **BIOVERSITY**
 - Germplasm **SHRESTHA**
 - ICIS germplasm method **SHRESTHA**
- Plant Anatomy & Development Ontology**
 - Musa Anatomy **CHANNELIERE**
- Phenotype and Trait Ontology**
 - Cassava **BAKARE**
 - Chickpea Trait **PRASAD**
 - Cowpea Trait **SOFOOILE**
 - Groundnut **PRASAD**
 - Maize Trait **SHRESTHA**
 - Musa Trait **CHANNELIERE**
 - Potato Trait **RSIMON**
 - Rice Trait **BORJA**
 - Solanaceae Phenotype Ontology **NMENDA**
 - Sorghum Trait **PRASAD**
 - Wheat Trait **SHRESTHA**

and soon
Barley,
Cowpea,
Pigeon Pea,
Soybean

In
collaboration
with
**Breeders
and crop
data
managers**

**Rosemary Shrestha (CIMMYT),
Luca Matteis (Bioversity),
Milko Skofic (Bioversity),
Graham McLaren (GCP)
Elizabeth Arnaud (Bioversity)**

Generation Challenge Programme

**Plant Ontologies for Agronomic Traits - Workshop 8-9th December 2011
European Bioinformatics Institute, Hinxton Cambridge UK**



An online tool for Crop ontology curators and communities

1. Online curation & consultation

2. Ontology upload and creation

3. Annotation & Xref of Trait lists

pegno	rep	clone	stem rust	cmd11	cmd31	cmd61	mcmd1	cbb3s				
101	1	05/1570	0.7	0.0	0.0	0.0	0.0	3				
102	1	05/1740	0.8	0.0	0.0	0.0	0.0	3				
103	1	05/0303	0.8	0.0	0.0	0.0	0.0	3				
104	1	05/1601		0.0	0.0	0.0	0.0	3				
105	1	05/0127		0.0	0.0	0.0	0.0	3				
106	1	05/0286		0.0	0.0	0.0	0.0	3				
107	1	05/0311		0.0	0.0	0.0	0.0	3				
108	1	05/0125		0.0	0.0	0.0	0.0	4				
109	1	05/0231		0.0	0.0	0.0	0.0	3				
110	1	05/0741	0.8	7	1	1	1.0	0.0	0.0	0.0	3	
111	1	05/1274	0.7	7	1	1	1.0	0.0	0.0	0.0	3	
112	1	05/0128	0.6	5	1	1	1.0	0.0	0.0	0.0	4	
113	1	05/1553	1.0	7	1	1	1.0	0.0	0.0	0.0	3	
114	1	05/0099	0.4	5	1	1	1.0	0.0	0.0	0.0	3	
115	1	TME 1	1.0	7	1	1	1.0	0.0	0.0	0.0	4	
116	1	05/0998	1.0	7	1	1	1.0	0.0	0.0	0.0	4	
117	1	05/1814	0.5	5	1	1	1.0	0.0	0.0	0.0	3	
118	1	05/0327	0.4	7	1	1	1.0	0.0	0.0	0.0	3	
119	1	05/0024	0.8	5	1	1	1.0	0.0	0.0	0.0	3	
120	1	30572	0.9	7	3	2	1	2.0	0.0	0.0	0.0	3
201	2	05/1740	0.8	5	1	1	1.0	0.0	0.0	0.0	0.0	3

On the cloud



One line Server for Crop traits name/methods/scales

Methods & Scales, photos, scores

Abiotic Stress or Quality

Agronomic

Days of 75% emergence is_a

Days at which 75% of the plants have emerged method_of

No. of days scale_of

Days of 75% flowering is_a

Final plant stand is_a

Days to harvest is_a

Pod Yield (g/plot) is_a



API

Fieldbooks & Repository of evaluation data

IBFIELDBOOK 7.0 RC1 Unknown

Study Database Tools Window Help

Traits Explorer

Search: RUS

16 Trait(s) found

Trait ID	Name	Abbrev
153	PHOSPHORUS FE...	PFERT
1072	STEM_BUST	BCDAM
1073	LI	
1074	S	
1085	S	
1106	R	
1119	S	
1187	SEEDLING_PLANT...	
1188	SEEDLING_PLANT...	SEEDYR
1189	SEEDLING_PLANT...	SEEDYR

CO_321:0000118

Open ontology



CLIMATE CHANGE AGRICULTURE AND FOOD SECURITY

The Global Agricultural Trial Repository

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Trial Group Search Trial Bibliography

View Trial

id: 883

Trial group: Inger international rice trials conducted in south asia, 2005-2009

Contact person: A. Anandan

Country: India

Trial site: Annamalainagar, tamil nadu

Field name number:

Trial crop/animal: Rice

Varieties/Race: A 69-1, Csr 28, Csr-90ir-2, Ir 28, Ir 29, Ir 45427-2b-2-2b-1-1, Ir 51337-2b-9-2b-2-2, Ir 51499-2b-29-2b-1-1, Ir 55179-3b-11-3, Ir 59418-7b-21-3, Ir 59443-b-7-3-2, Ir 61919-3b-18-3, Ir 63731-1-1-3-3-2, Ir 66946-3r-178-1-1 (R 478), Ir 68144-2b-2-2-3-2, Ir 68144-2b-2-2-3-3, Ir 70870-b-p-2-2, Ir 71829-3r-89-1-1, Ir 71895-3r-60-3-1, Ir 71897-3r-1-1-2, Ir 72579-b-2r-1-3-2, Ir 72579-b-2r-3-1-1, Ir 72593-b-1-3-3-1, Ir 72593-b-1-8-2-2, Ir 72593-b-3-2-3-3, Ir 73571-3b-14-2, Ir 74095-ac-64, Ir 74095-ac-65, Ir 74099-ac-7, Ir 75395-2b-b-19-2-1-2, Ir 76346-b-b-10-1-1-1, Ir 76393-2b-7-1-1-3-1, Ir 76397-2b-6-1-1-1-1, Ir 77664-b-25-1-2-1-3-12-3-ajy 1, Ir 77664-b-25-1-2-1-3-12-5-ajy 1, Ir 77674-3b-8-1-3-13-2-ajy 2, Ir 77674-3b-8-2-2-13-4-ajy 2, Ir 77674-3b-8-2-2-14-2-ajy 3, Ir 77674-3b-8-2-2-14-2-ajy 4, Ir 78806-b-b-16-1-2-2-ajy 1, Ir 81919-3b-24-3, Tccp 266-1-3b-10-2-1

Variables measured: Soil ph, Soil texture, Days to heading, Plant height, Plot yield in grams, Phenotypic acceptability, Spikelet fertility, Reaction to disease, Reaction to insect, Tillering ability, Alkalinity tolerance, Salinity tolerance

Name: International Rice Soil Stress Tolerance Nursery - Module 2 2009/set 11

Sow date:

Harvest date:

Trial results file: Download File

Supplemental information file:

Weather during trial file:

Soil type conditions during trial file:

License of file Results and file supplemental information:

Files access: Open to all users

Trial type: Real

Wheat trait ontology

- stress trait
 - biotic stress trait
 - fungal disease
 - rust
 - stem rust
 - stem rust method
 - disease scoring method
 - recording in the field
 - scoring severity

scoring severity

Identifier CO_321-183

image

Bibliographic reference

- Roelfs, A.P., R.P. Singh, and E.E. Saari. 1992. Rust Diseases of Wheat: Concepts and methods of disease management. Mexico, D.F.: CIMMYT. 81 pages.
- CIMMYT Wheat doctor. <http://wheatdoctor.cimmyt.org/en/pests-a-diseases/list/122?task=view>

name scoring severity

reated_at Wed Sep 21 23:31:25 UTC 2011

scale type Categorical

comment Use the modified Cobb scale to determine the percentage of possible tissue (100%) rusted (Severity). This recording process relies upon visual observations, and it is common to use the following intervals: Trace, 5, 10, 20, 40, 60, 100 percent infection.

scale name

Add a new attribute



Cross Referencing Important Breeding Traits as ground work for data integration

Crop Ontology Curation Tool

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GRAMENE Search

Ontology Search Find: TO:0000463
 Ontology Type: All Ontology Types
 Options: Exact Match Include Obsolete Terms
 E.g., flower or TO:0000303

Annotation Search Find:
 Annotation Type: All Object Types
 Options: Exact Match
 E.g., d1 or waxy

Trait Term "anthesis silking interval" (TO:0000463)

Term Name	anthesis silking interval
Term Accession	TO:0000463
Aspect	Trait
Synonyms (3)	ANTSKIT, ASI, FLWSLKINTER
Definition	A difference of the average number of days between the maize tassel flowering and the first visible silk (stigma) on the maize ear.
Comment	None

Derivation

- trait ontology (TO:0000387) #14236
 - growth and development trait (TO:0000357) #3347
 - shoot development trait (TO:0000654) #2874
 - inflorescence development trait (TO:0000621) #2033
 - flower development trait (TO:0000622) #361
 - flowering time (TO:0002616) #330
 - anthesis silking interval (TO:0000463) #65

Database Cross-References (0)

Parents (1)

Children (0)

Associations (65)

QTL (65)

Zea mays (65)

xref [Gramene Plant Trait Ontology:TO:0000463, IMIS TRAITID:2004]

created on Fri Oct 14 17:19:39 UTC 2011

Phenotypic & germplasm
 Xref Trait identifier
 Of CIMMYT database

Genetic data
 X ref with Trait ontology
 & Gramene

Crop Ontology Curation Tool

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Search

Search results for drought recovery

Identifier: CO_300_000008

Synonym: ["drought recovery 2nd stress drought RELATED", "drought recovery 3rd stress drought RELATED", "DRIFF EXACT", "DRIFF RELATED", "DRIFFW RELATED"]

AgriAtlas map

Photo

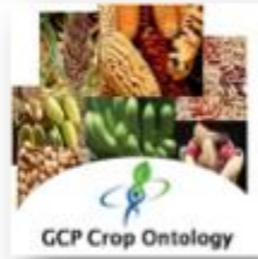
AgriAtlas Agricultural Trial Repository (AgTrials)

Map of India showing trial locations

Search filters: Ag Task, Trait: Drought recovery, Crop: Rice

AgTrials details

<http://www.agtrials.org>
 Environment:
 Xref & integrating
 with Atlas of evaluation sites



- Develop a **Crop Ontology Community of practice** collaborating with the Crop groups to curate and cross reference the terms across important data sources and include partners, like Gramene, MaizGBD, Soybase, Orygene, etc
- Proof of concept: GCP has an objective in 2012 to identify and fully document & cross reference the 50 most important and measured breeding traits crop for 8 crops.