

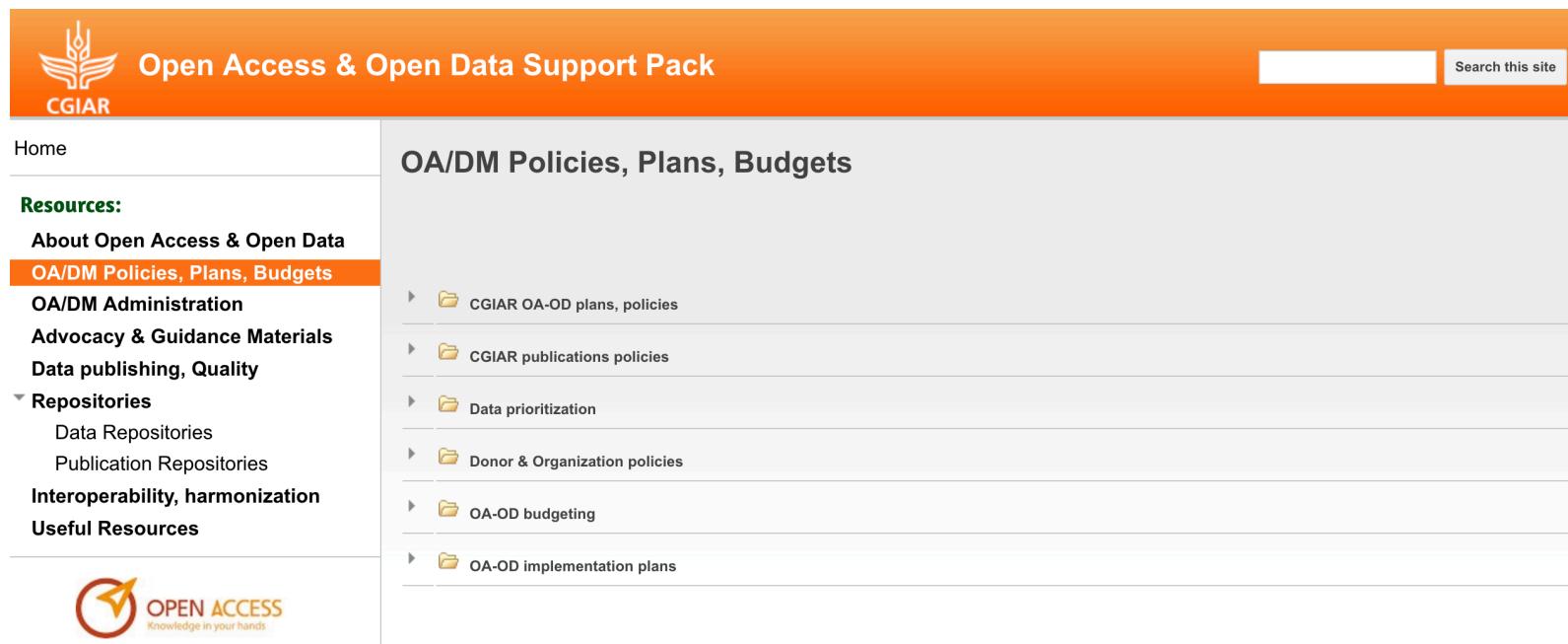
Open Access Open Data (OA - OD) @ IITA

Application to Crop Breeding

**22nd Nov 2018 – ICIPE
Open Science Tour**

Introduction

CGIAR open access / open data policy in 2013



The screenshot shows the 'Open Access & Open Data Support Pack' website. The left sidebar has a 'Resources:' section with links to 'About Open Access & Open Data', 'OA/DM Policies, Plans, Budgets' (which is highlighted in orange), 'OA/DM Administration', 'Advocacy & Guidance Materials', 'Data publishing, Quality', 'Repositories' (with sub-links for 'Data Repositories' and 'Publication Repositories'), 'Interoperability, harmonization', and 'Useful Resources'. Below this is an 'OPEN ACCESS' logo with the tagline 'Knowledge in your hands'. The main content area is titled 'OA/DM Policies, Plans, Budgets' and lists several sub-sections under a folder icon:

- ▶ [CGIAR OA-OD plans, policies](#)
- ▶ [CGIAR publications policies](#)
- ▶ [Data prioritization](#)
- ▶ [Donor & Organization policies](#)
- ▶ [OA-OD budgeting](#)
- ▶ [OA-OD implementation plans](#)

OA-OD working groups and data implementation plans

A lot of material available already as a support pack

<https://sites.google.com/a/cgxchange.org/oad-support-pack/oa-dm-policies-plans>

Phased implementation

Introduction

Big Data Platform of CGIAR

<https://bigdata.cgiar.org/>

3 Modules



ORGANIZE

Support and improve data generation, access, and management in CGIAR



CONVENE

Collaborate and convene around big data and agricultural development



INSPIRE

Lead by example and inspire how big data can deliver development outcomes



Requires champions / advocates

Develop briefs for targeted audiences – 2 pager

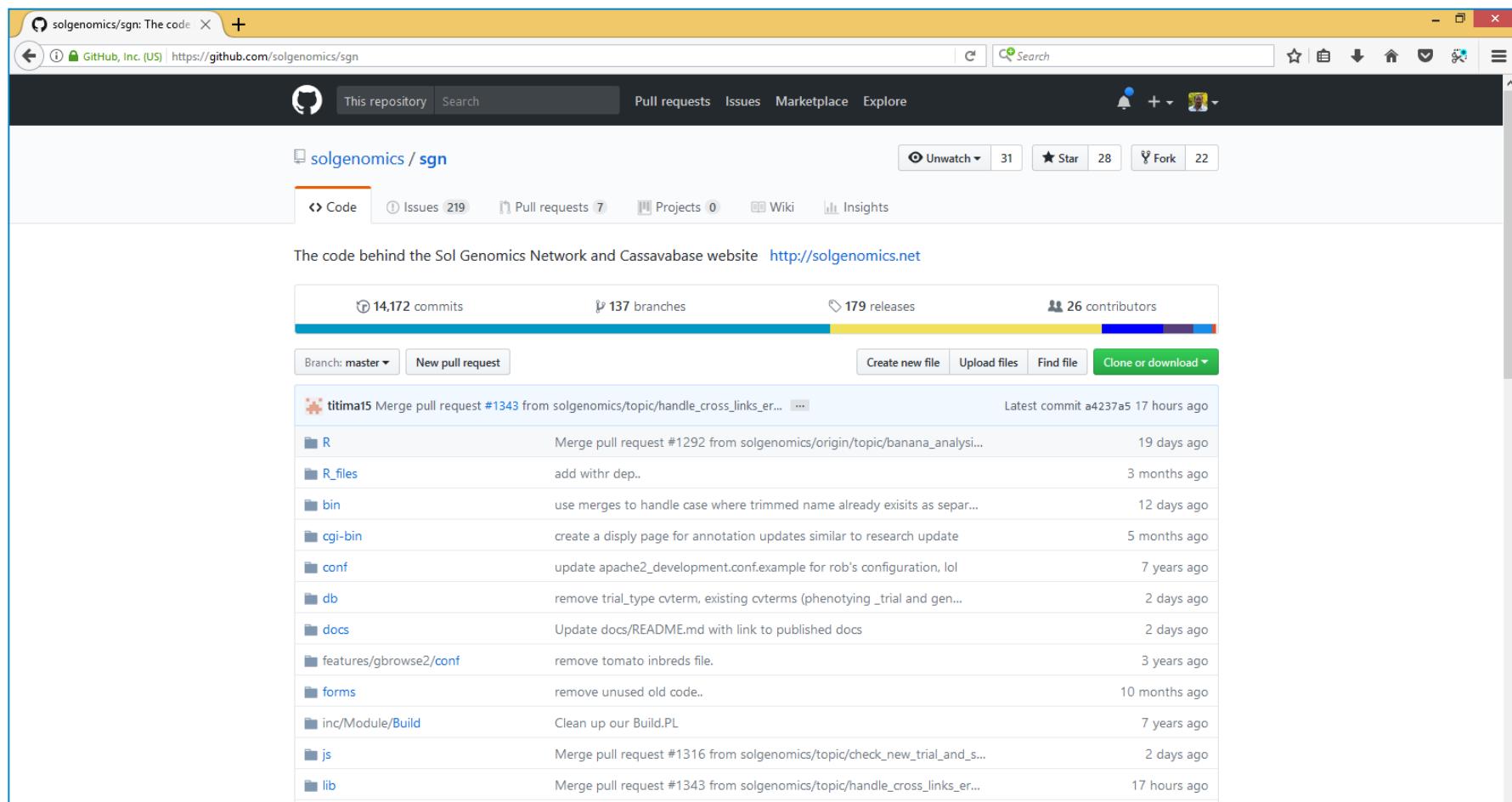
- Benefits
- Roles and responsibilities
- How it impacts my work
- Who to contact
- Tips and FAQs

Share success stories and challenges

RTBBases

- Open access database, providing a one-stop shop for researchers and breeders worldwide, to manage germplasm, genotyping and phenotyping datasets.
- Repository for Roots Tuber Banana projects (NextGen Cassava, Breeding Better Bananas, AfricaYam)
- Collaboration between IITA, BTI, Cornell and NARS across Africa
- Cassavabase.org Yambase.org Musabase.org
- Generic implementation through SGN but crop specific implementations

- 256,437 accessions
- 3178 trials
- 10,841,638 Phenotypic observations
- ~ 30,000 samples genotyped
- > 340,000 SNPs



The code behind the Sol Genomics Network and Cassavabase website <http://solgenomics.net>

Branch: master ▾ New pull request Create new file Upload files Find file Clone or download ▾

Author	Commit Message	Time Ago
titima15	Merge pull request #1343 from solgenomics/topic/handle_cross_links_er...	17 hours ago
R	Merge pull request #1292 from solgenomics/origin/topic/banana_analysi...	19 days ago
R_files	add wrthr dep..	3 months ago
bin	use merges to handle case where trimmed name already exists as separ...	12 days ago
cgi-bin	create a display page for annotation updates similar to research update	5 months ago
conf	update apache2_development.conf.example for rob's configuration, lol	7 years ago
db	remove trial_type cvterm, existing cvterms (phenotyping _trial and gen...	2 days ago
docs	Update docs/README.md with link to published docs	2 days ago
features/gbrowse2/conf	remove tomato inbreds file.	3 years ago
forms	remove unused old code..	10 months ago
inc/Module/Build	Clean up our Build.PL	7 years ago
js	Merge pull request #1316 from solgenomics/topic/check_new_trial_and_s...	2 days ago
lib	Merge pull request #1343 from solgenomics/topic/handle_cross_links_er...	17 hours ago

All the source code and database schemas are open source and available for download at <http://github.com/solgenomics>.

- Ontologies, Standards and Metrics
- Workflow – bringing together data / tools
- Interoperability
- Data quality
- New methodologies being developed

Trait descriptors / ontology

www.croponontology.org

Most Visited Getting Started Year 3 Certificates

Crop Ontology Curation Tool

The Crop ontology is a service of the Integrated Breeding Platform. Guidelines are available at the Crop Ontology wiki; list of crop ontology codes and obo files are on the GCP Pantheon. Check Semantics for Biodiversity web site. New icons appearing on the homepage next to each ontology, will let you download the ontology in RDF/Turtle format. Workshop on Crop Ontology and Phenotyping Data Interoperability, 31 March-4th April 2014, Montpellier <http://tiny.cc/rw51ax>

Search Add New Terms API Help Agri trials Annotation Tool Register Login

Latest

General Germplasm Ontology

FAO/IPGRI Multi-Crop Passport Descriptor 88 terms BOVERITY FAO/IPGRI Multi-Crop Passport Descriptor

Germplasm 386 terms SHRESTHA

Location and Environmental Ontology

Country and Location 1118 terms SHRESTHA Describes official ISO 3166-1 alpha-2, alpha-3 and numeric country codes along with location names.

Crop Research 256 terms SHRESTHA

Attributes Valid Values Usage

Trait Class: Insect and pest resistance
Property: Ear damage
Method: Visual damage scoring
Scale: Score (1-5)
Data Type: Categorical variable
Categorical variate
CO_322:0000165

...links to www.croponontology.org

Crop Specific Trait Dictionaries

A 38 VARIATE	B DESCRIPTION	C PROPERTY	D SCALE	E METHOD
39 APHIDR	Aphid resistance	Aphid resistance	0-4 score	Visual rating of N
40 BB	Resistance to bacterial blight	Resistance to	0-4 score	Visual rating of % N
41 BLCMV	Resistance to blackeye	Resistance to	0-4 score	Visual rating N
42 CAMV	Resistance to cowpea aphid-	Resistance to	0-4 score	Visual rating of N
43 CANOPY	Canopy Height at FLOW50	Canopy Height at	cm	Measurement N
44 CHECK	Check lines		Check Tag	Local Check C
45 CKTME	Cooking time		minutes	Time for dry grain N
46 DRYPOD	Dry pod color		0-4 score	Visual N
47 DTFLWR	Floral abscission score		3 classes	Scoring relative N
48 EYELEA	Pigment bleeding		5 classes	Degree of N
49 FLDSN			7 classes	N
50 FLOW50			Days	N
51 FLOWCO		Flow color	0-4 s	N
52 FODMAT		Biom. at	gram	wt and N
53 FODMID		Biom. at	gram	wt and N
54 FOLTHR		Foliar drip	0-4 s	of N
55 FUSWL3	Resistance to Fusarium wilt	Resistance to	0-4 score	of N
56 FUSWL4	Resistance to Fusarium wilt		0-4 score	Visual rating of N
57 GROHAB	Growth habit		0-4 score	Visual rating at 40 N
58 HI	Harvest index		index	Calc. from N
59 LYGUSR	Resistance to lygus bug		0-4 score	Visual rating of N
60 MACROP	Macrophomina Tolerance		0-4 score	Visual rating of N
61 MAT95	Days to 95% maturity		days	Visual N

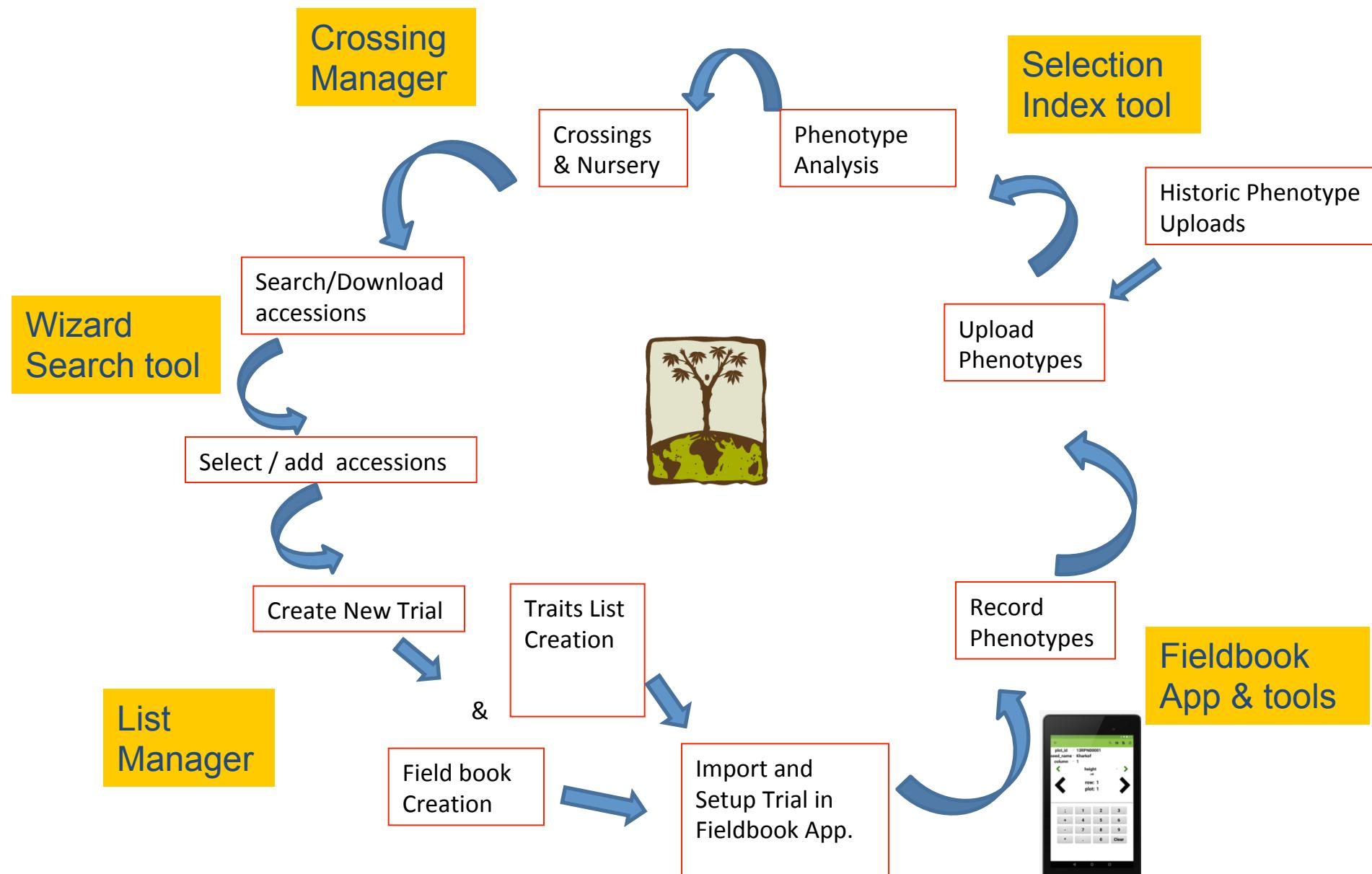
Trait property

Reporting units or scale

Measurement method

Measurement Variate

Workflow



Banana Cross..

Banana Cross..

User Location

Field

Laboratory

Banana Cross..

Field group

Field user name

Margaret Karanja

Jane Njau

Ann Muli

New user

You are beginning the Banana Cross Management System

Banana Cross..

Activity (1) > Record flowering plant

Scan the flowering father plant father

Replace Barcode

IGITSIRI-INTUNTU



Add New Group?

Add a new "Activity" group?

Do Not Add Add Group



You are at the end of Banana Cross Management System.

BDS2017_field-

Mark form as finalized

Save Form and Exit

Banana Cross..

Activity (1) > Record flowering plant

Select the flowering father plant

IGITSIRI-INTUNTU

KIBUNGO-I

EGJOGA

NBB-11

WINE-PLANTAIN



Banana Cross..

Activity (1) > Record flowering plant

Scan the flowering plant mother

Replace Barcode

DWARF-CAVENDISH



Banana Cross..

Activity (1)

Select activity

Record flowering plant

First pollination

Repeat pollination

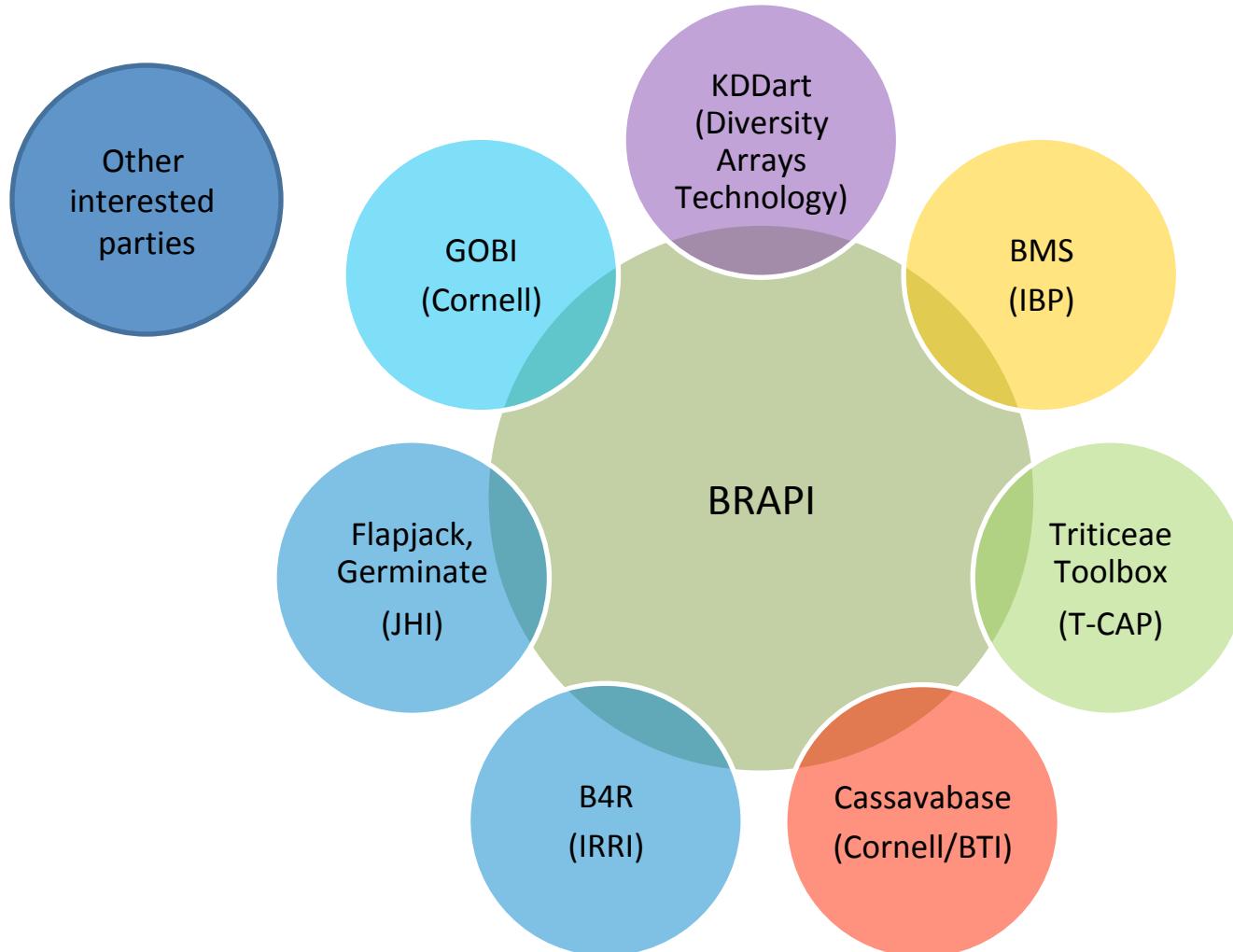
Harvest bunches

Plant status

History of plant

- Plant Breeding API (BRAPI)
 - Partners in the definition of a standard Application Programming Interface (API) for plant breeding
 - BMGF is supporting development
- Will serve to:
 - Facilitate data exchange among different initiatives
 - Expand the range of tools available to IBP clients
 - Reduce unnecessary duplication of tasks / More efficient use of resources
 - Increase communication among programmers working on similar projects (CoP)

Current members of BRAPI



<https://brapi.docs.apiary.io/#>

- Checks and validations in the apps and ontologies
- Outlier detection
- Standardisation of naming conventions
- Metadata