GCP Crop Ontology

www.cropontology.org

An online platform enabling participatory development, curation and annotation of crop trait information.

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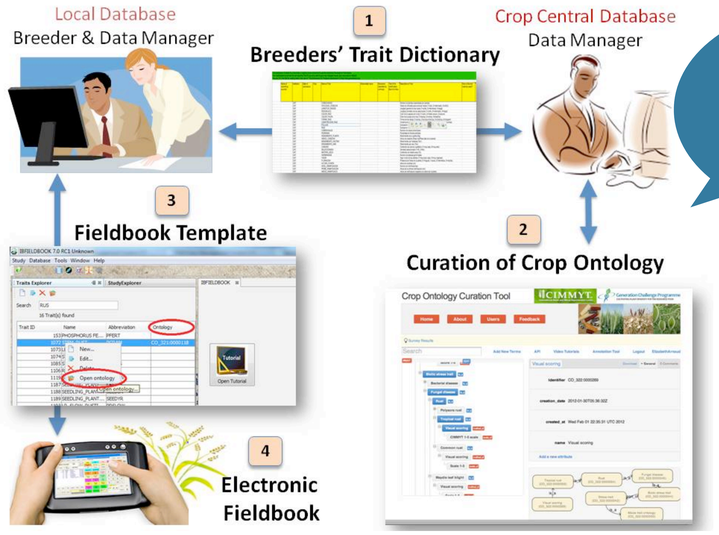
Why?

The Initial Problem

The volume of agriculture-related information and terminology related to phenotype, breeding, germplasm, pedigree, traits, among others, is increasing exponentially.

In order to facilitate access to the data held within and/or across the databases, GCP initiated the development of a Crop Ontology, a tool to facilitate powerful manipulations of the data through ontology-driven approaches.



Ontology

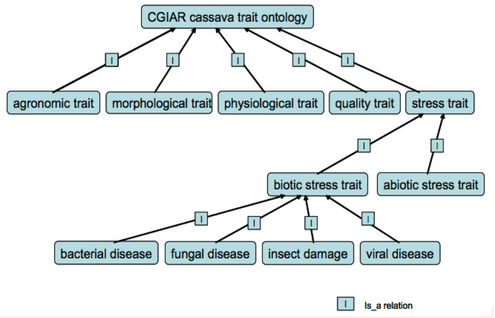
What are the benefits of an ontology?

List of terms

- bacterial disease
- fungal disease
- insect damage
- viral disease

VS

Ontology



Agriculture-related terms aren't merely words. They're information about things in the real world, and understanding the relationships between real-world concepts can help us gather more relevant information.

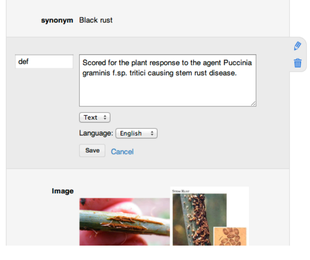
- Ontologies help make explicit the scope, definition, and language and meaning (semantics) of a given domain or world view.
- Ontologies may provide the power to generalize about their domains.
- Ontologies, if hierarchically structured in part (and not all are), can provide the power of inheritance.
- Ontologies provide guidance for how to correctly "place" information in relation to other information in that domain.
- Ontologies may provide the basis to reason or infer over its domain.

Collaboration

How do we allow for easier collaboration?

Through a user-friendly website we allow people from anywhere in the world to access and collaborate on the ontology.

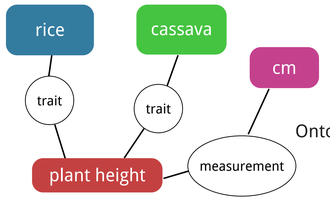
The system works similarly to Wikipedia. It allows anyone to sign up and create their ontologies. However, only after a moderator has validated their terms do they then become "public".



Observations

Websites are highly accessible

Thanks to web standards such as HTML5 and CSS3, we can build highly interactive and easy to use interfaces. This allows users to more easily create and edit ontologies from any computer or mobile device.



Ontologies build connections

Ontologies allow us to build connections between terms and find information that we couldn't otherwise.

APIs increase productivity

By building a platform with a programmable interface (API) we enable others to extend the functionality of our application in ways we didn't think of, or didn't have resources for.

API

Crop Ontology

What we built

This curation and annotation web site is a participatory tool that enables you to browse the Crop Ontology, search for specific terms and access the definition, as well as additional information.

Powered by Open Source

Crop Ontology is built on a suite of modern open source technology including Google App Engine, jQuery, HTML5 and CSS3. The entire source code is available on GitHub.

→ https://github.com/lmatteis/Crop-Ontology

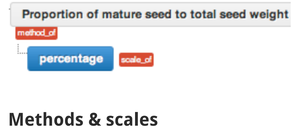
The GCP Crop Ontology currently provides validated names, definitions and relations for traits for eight crops: cassava, chickpea, groundnut, maize, musa, potato, rice, sorghum and wheat. Trait lists are being developed for common beans and cowpea.

Log in & post comments

Share your thoughts and provide feedback on a given trait.

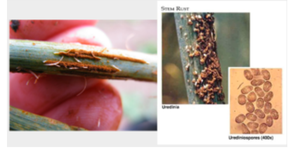
Submit new traits

Easily upload ontologies in OBO formats or build the ontology directly through the web-interface.



Methods & scales

Retrieve and provide information regarding methodology and scales of measurement.



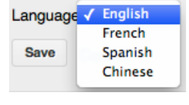
Consult trait information

Access and upload file attachments such as PDFs, Word documents and images.

Annotate your dataset

Match your Excel fields with what exists in the ontology.

Translation



Provide translations of traits directly from within the website's interface.