



Introduction to AGROVOC Concept Scheme

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Outline

- ▶ AGROVOC Thesaurus
- ▶ AGROVOC Concept Scheme
- ▶ AGROVOC Linked Open Data
- ▶ VocBench

AGROVOC Thesaurus

- ▶ AGROVOC is a 30 years old multilingual vocabulary containing more than 40 000 concepts in 21 languages
- ▶ It covers topics related to food, nutrition, agriculture, fisheries, forestry, environment and related domains
- ▶ Its purpose is to standardize the indexing process to make searching simpler and more efficient
- ▶ AGROVOC is used by terminologists, librarians, researchers, AGRIS centers that index agricultural bibliographic resources
- ▶ A community of editors maintain AGROVOC using VocBench, a tool supporting SKOS and OWL that allows to edit concepts information, search concepts, exports data in SKOS

AGROVOC Concept Scheme

- ▶ SKOS (Simple Knowledge Organisation System) is a data model for representation of classification schemes, taxonomies, thesauri and every structured controlled vocabulary
- ▶ AGROVOC is a thesauri expressed as a concept scheme using SKOS
- ▶ The conversion from relational database to SKOS added semantics value to relationships

Structure of AGROVOC Concept Scheme

- ▶ Three levels of representation
- ▶ **Concepts** are the abstract meaning and globally identified using URIs. They build the actual structure of the concept scheme.
 - ▶ e.g. ‘maize’ in the sense of a cereal
- ▶ **Terms** are language-specific lexical forms attached to concepts. A concept is represented by all terms, preferred and non-preferred, in all languages, to which it is associated.
 - ▶ e.g. ‘maize’, ‘maïs’, ‘玉米’, ‘ข้าวโพด’
- ▶ **Term variants** are the range of forms that can occur for each term (spelling variants, abbreviations...)
 - ▶ e.g. ‘organization’ or ‘organisation’, ‘cow’ or ‘cows’

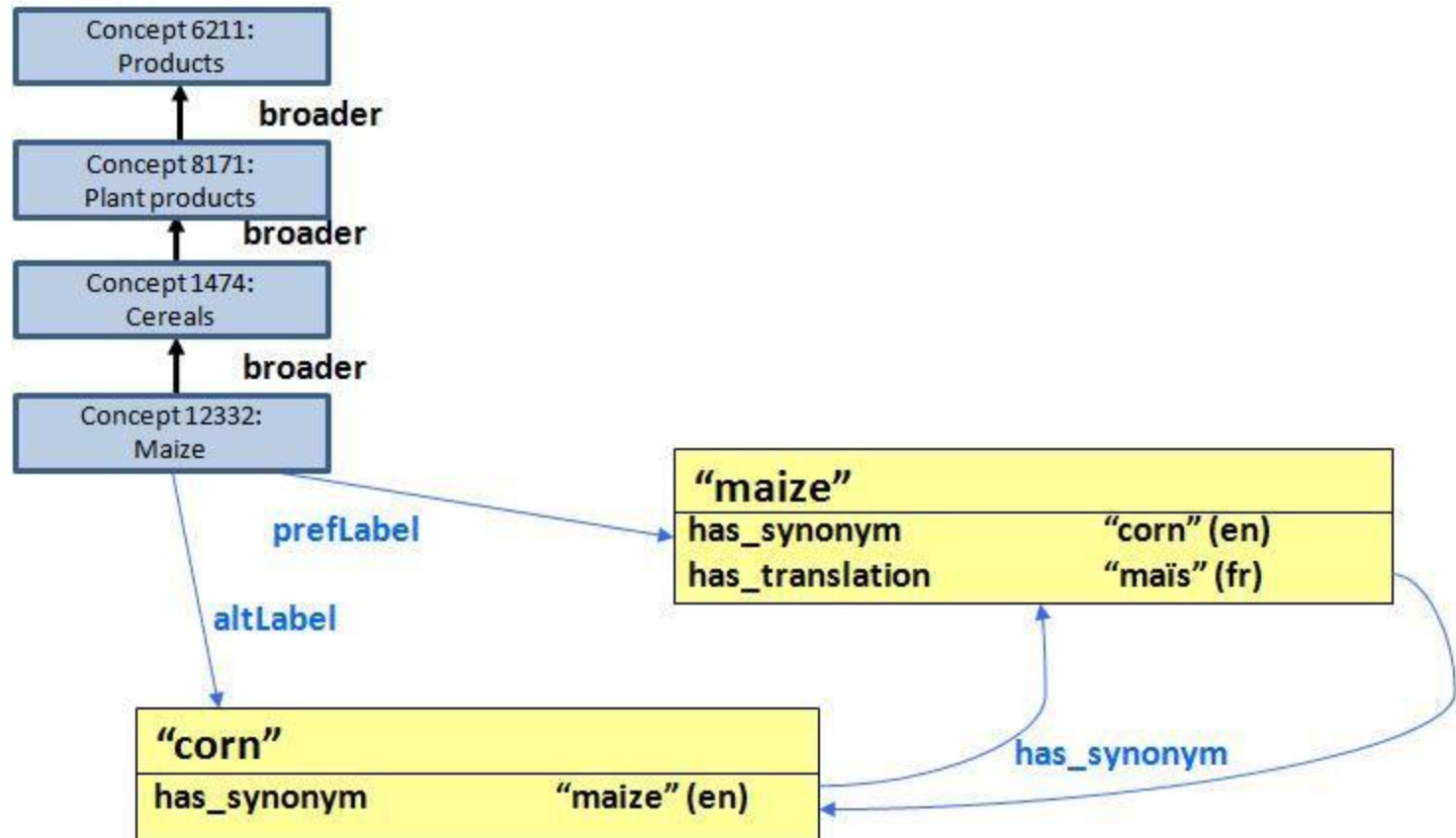
Inter-level relationships

- ▶ Used to associate concepts to terms and terms to strings
- ▶ **Concept-to-Term:** *has_lexicalization* (links concepts to their lexical realizations) links a concept to its language-dependent terms
 - ▶ (concept) rice *has_lexicalization* (English term) rice.
- ▶ **Term-to-String:** *has_acronym*, *has_spelling_variant*, *has_abbreviation* (link language-dependent terms to their variants)
 - ▶ European Union *has_acronym* EU

Intra-level relationships

- ▶ Used to associate concepts to concepts and terms to terms
- ▶ **Concept-to-Concept:** relates two different ideas, such as *has_subconcept*, *is_used_to_make*
 - ▶ cereals *has_subconcept* maize
 - ▶ maize *is_used_to_make* corn flour
- ▶ **Term-to-Term:** relates two terms that belong to the same concept, such as *has_synonym*, *has_scientific_name*
 - ▶ maize *has_synonym* corn
 - ▶ beetles *has_scientific_name* Coleoptera.

An AGROVOC fragment



AGROVOC Linked Open Data

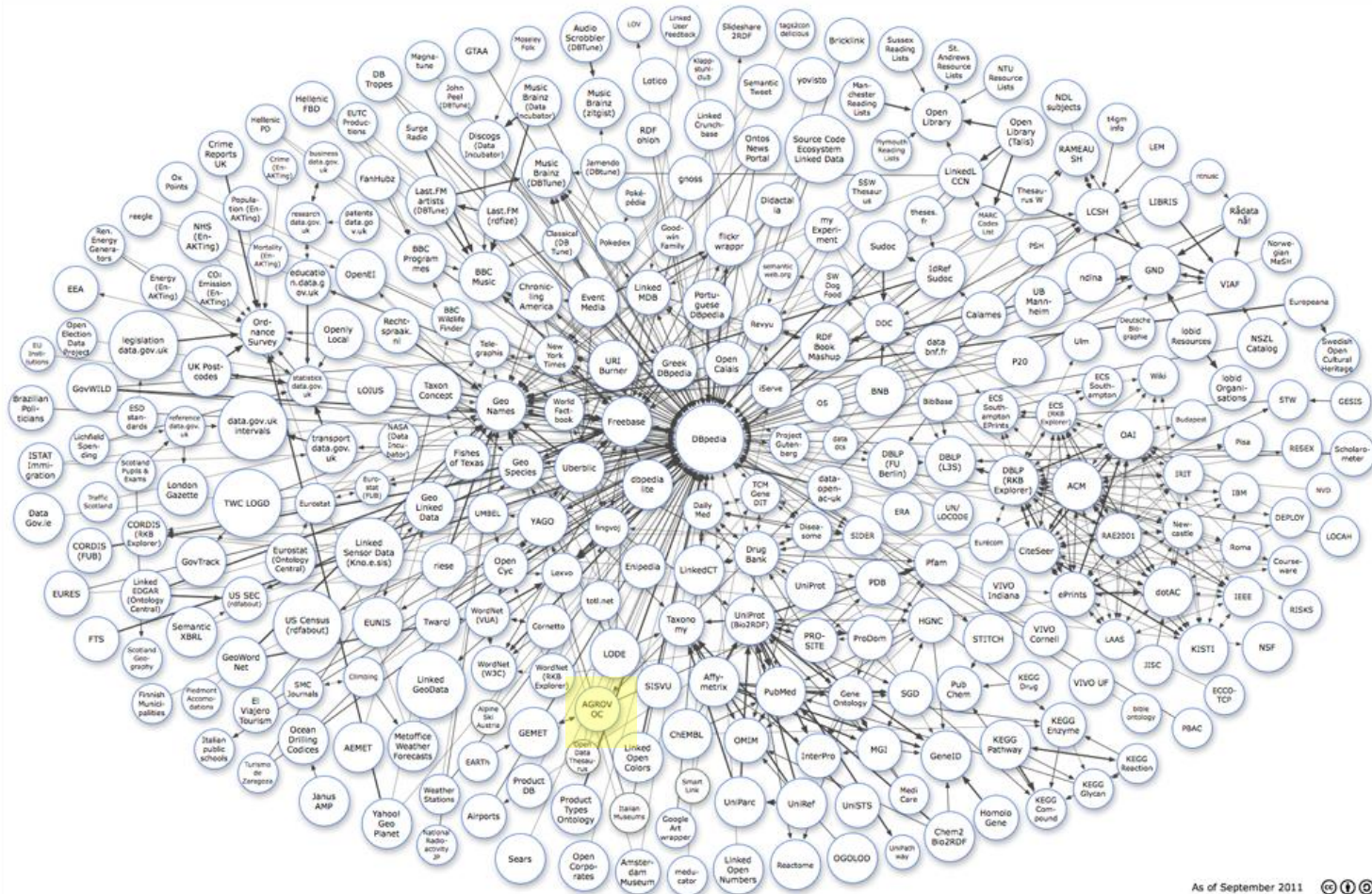
- ▶ AGROVOC is published in the Linked Open Data cloud
- ▶ It is aligned (i.e. linked) with 12 other vocabularies
- ▶ A sparql endpoint is available to query Agrovoc triples:
 - ▶ <http://agrovoc.mimos.my:55824/catalogs/performance/repositories/agrovoc>
- ▶ A modified version of the Pubby (<http://www4.wiwiss.fu-berlin.de/pubby/>) linked data front end is provided to allow URI dereferencing, i.e. to obtain the HTML or RDF description of a concept given its URI

AGROVOC Linked Open Data

- ▶ Each Agrovoc concept is uniquely identified by a URI, starting with the prefix <http://aims.fao.org/aos/agrovoc/>
- ▶ Relationships *skos:broader*, *skos:narrower*, *skos:related* link an AGROVOC concept to another AGROVOC concept
 - ▶ e.g. [agrovoc:c_12332](http://aims.fao.org/aos/agrovoc/c_12332) *skos:narrower* [agrovoc:c_14385](http://aims.fao.org/aos/agrovoc/c_14385)
- ▶ AGROVOC concepts are also linked to other external sources. An automatic tool extracts exact string matching, then manually checked to ensure correctness
 - ▶ e.g. the Agrovoc concept http://aims.fao.org/aos/agrovoc/c_12332 is linked to the EUROVOC concept <http://eurovoc.europa.eu/219871> by the predicate *skos:exactMatch* since both represent the same product *Maize*

Linked Data Cloud 2011

“Linking Open Data cloud diagram, by Richard Cyganiak and Anja Jentzsch. <http://lod-cloud>



Resource	Topics	Concepts	Languages	Linked Data	Type of link
AGROVOC	Agriculture, food, fishery, forestry	31 956	EN, ES, FR + 19 more	Yes	skos:broader, skos:narrower, skos:related
EUROVOC	General EU	6 779	EN, ES, FR + 21 more	Yes	skos:exactMatch
GEMET	Environment	5 298	EN, ES, FR + 30 more	Yes	skos:exactMatch
Library of Congress Subject Headings (LCSH)	General	30 784	EN	Yes	skos:exactMatch
NAL Thesaurus	General	30 298	EN, ES	Yes	skos:exactMatch
RAMEAU Répertoire d'autorité-matière encyclopedique et alphabetique unifie	General	16 407	FR	Yes	skos:exactMatch
STW - Thesaurus for Economics	Economy	1 165	EN, DE	Yes	skos:exactMatch
TheSoz - Thesaurus for the Social Sciences	Social sciences	7 750	EN, DE	Yes	skos:exactMatch
Geopolical Ontology	Country Names	253	AR, CH, EN, ES, FR, RU	Yes	skos:exactMatch
Dewey Decimal Classification	General	409	EN, ES, FR + 8 more	Yes	skos:exactMatch
DBpedia	General	10 989	EN, ES, FR + 8 more	Yes	skos:exactMatch skos:closeMatch
SWD (Schlagwortnormdatei)	General	6 245	DE	Yes	skos:exactMatch skos:closeMatch skos:broadMatch skos:narrowMatch
GeoNames	Geographical database	212	EN, ES, FR + 63 more	Yes	skos:exactMatch



Property	Value
altLabel	<ul style="list-style-type: none">■ Granoturco (it)■ Ziarno kukurydzy (pl)■ corn (maize) (en)■ kukorica (hu)■ zrno (kukurica) (sk)■ zrno kukuřice (cs)■ зерно кукурузы (ru)■ अनाज (मक्का) (hi)■ コーン (ja)■ 苞谷 (zh)
broader	<ul style="list-style-type: none">■ <http://aims.fao.org/aos/agrovoc/c_1474>
closeMatch	<ul style="list-style-type: none">■ <http://dbpedia.org/resource/Maize>
exactMatch	<ul style="list-style-type: none">■ <http://d-nb.info/gnd/4037135-9>■ <http://eurovoc.europa.eu/1744>■ <http://zbw.eu/stw/descriptor/14093-4>
<i>date of creation</i>	<ul style="list-style-type: none">■ 1981-01-26
<i>date of last update</i>	<ul style="list-style-type: none">■ 2005-08-09
isProducedBy	<ul style="list-style-type: none">■ <http://aims.fao.org/aos/agrovoc/c_8504>
isUsedToMake	<ul style="list-style-type: none">■ <http://aims.fao.org/aos/agrovoc/c_15500>■ <http://aims.fao.org/aos/agrovoc/c_25472>
narrower	<ul style="list-style-type: none">■ <http://aims.fao.org/aos/agrovoc/c_14385>■ <http://aims.fao.org/aos/agrovoc/c_2187>■ <http://aims.fao.org/aos/agrovoc/c_2974>■ <http://aims.fao.org/aos/agrovoc/c_6108>■ <http://aims.fao.org/aos/agrovoc/c_7152>■ <http://aims.fao.org/aos/agrovoc/c_7552>■ <http://aims.fao.org/aos/agrovoc/c_8337>
prefLabel	<ul style="list-style-type: none">■ Kukurydza (ziarno) (pl)■ MAIS (de)■ Mais (it)■ Maíz (es)■ Maïs (fr)■ Milho (pt)■ kukorica (hu)■ kukurica siata (sk)■ kukuřičné zrno (cs)

About: Zea mays

An Entity of Type : plant, from Named Graph : <http://dbpedia.org>, within Data Space : dbpedia.org

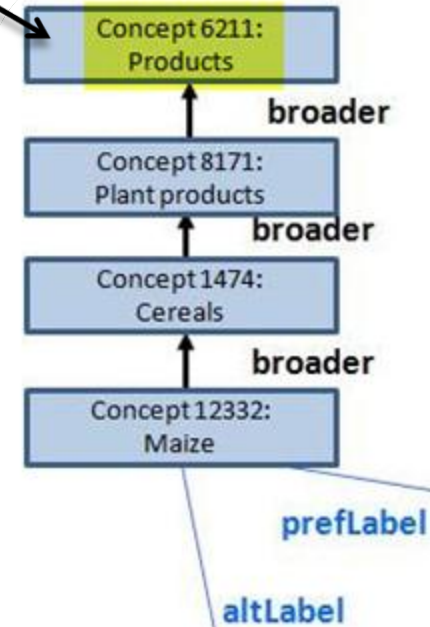
Il mais è una pianta erbacea annuale della famiglia delle Poaceae, tribù delle Maydeae. È uno dei più importanti cereali largamente coltivate in zone temperate, in quest'ultimo caso a ciclo autunno-primaverile. Il mais rappresenta la base alimentare tradizionale nelle popolazioni dell'America latina e del Nordamerica.

Property

dbpedia-owl:abstract

Value

- Mais - in Österreich auch Kukuruz - (Zea mays) ist eine Pflanzenart aus der Familie der Südhäufige C4-Pflanze, nutzt also einen anderen Grundtypus der Photosynthese als beispielsweise Getreide. Weltwirtschaftlich bedeutend ist die kultivierte Unterart Zea mays subsp. mays, die als Wildmaiss bezeichnet werden. Sie deutet darauf hin, dass sich diese Unterart vor allem von Zea mays subsp. parviglumis ableitet, die von anderen Teosinte-Typen (eine Formengruppe innerhalb der Gattung Zea) zur heutigen Form Zea mays subsp. mexicana zum mexikanischen Hochlandmais. Es gibt ca. 5.000 verschiedene Maissorten. Zea mays wird zur Herstellung von Biokraftstoffen und als Energiemaiss zur Erzeugung von Ethanol genutzt. Zea mays ist ein Ausgangsprodukt für Biokunststoffe, als Fermentationsmedium für die Herstellung von Ziermais. Mais enthält weniger für den Menschen verwertbare Nährstoffe als Getreide.
▪ Zea mays, comúnmente llamada maíz, choclo, millo o maza. Actualmente, es el cereal con mayor volumen de producción en el mundo.
▪ Maissi (Zea mays) on viljelykasvi, joka on alkuaan kauran kaltainen kasvi, joka kasvaa yleensä yli 2,5-metriseksi, mutta pituuteen rajoittuu maanviljelyssä. Kasvi on kehittänyt kukinnot, joissa siemenet ovat tasaisesti sijoitettuja. Maissi on teosintti-heinästä noin 8700 vuotta sitten Meksikossa kasvien soluissa oleviin mineraaliliuoksiin, joiden peittäminen on tärkeää. Maissista on myöhemmin kehitetty kauraa muistuttavia tuotteita, jotka ovat jauhomaissi, kivimaa ja kauramaissi. Se muistuttaa ihmisen poskihampaita. Se on pienimuotoisesti viljellä sielläkin, missä kasvukausi on lyhyempi. Maissi on intiaanien viljelemä kasvi ja lienee tärkein elintarvike Amerikassa.
▪ Il mais è una pianta erbacea annuale della famiglia delle Poaceae, tribù delle Maydeae. È uno dei più importanti cereali largamente coltivate in zone temperate, in quest'ultimo caso a ciclo autunno-primaverile. Il mais rappresenta la base alimentare tradizionale nelle popolazioni dell'America latina e del Nordamerica.



VocBench

- ▶ VocBench is a Web-based, multilingual, vocabulary editing tool developed by FAO
- ▶ It transforms thesauri, authority lists and glossaries into SKOS/RDF concept schemes for use in a linked data environment
- ▶ VocBench is a tool that allows maintaining AGROVOC and to keep it growing
- ▶ To explore the VocBench functionalities, use the [Sandbox](#). You can test editor functionalities by using the guest login

VocBench

VERSION 1.1

Welcome to the VocBench

The VocBench manages concepts and terms in AGROVOC, FAO's agricultural thesaurus, and supports its evolution to an ontology.

[Learn more about the VocBench](#)

You must log in or create an account to use the VocBench.

This site is optimized for following browsers: Safari Google Chrome Mozilla Firefox

What's new

- The VocBench Web Services Beta version has been released for developers of agricultural information management systems to incorporate the VocBench into their applications via web services.



[Help](#)

User login

Username:

Password:

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VocBench Partners:



Food and Agriculture Organization of the United Nations
for a world without hunger



Kasetsart University
Bangkok, Thailand



Thai National Agris Center
Bangkok, Thailand



MIMOS Berhad
Kuala Lumpur, Malaysia


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UNIVERSITY OF MARYLAND

Concepts  Show URI Show also non-preferred terms

Cereal crops (en)

Terms (3) Definition (0) Notes (12) Attribute (0) Relationships (19) History (0) Image (0) Hierarchy

+ Add new relationship

Relationship	Concepts
Is affected by (en)	C Sprouting in the ear(en); preharvest sprouting(en)
Included in (en)	C Small grain cereals (grain)(en); Cereals(en)
Has member (en)	C Bambusa arundinacea(en)
	C Fagopyrum(en)
	C Hordeum(en)
	C Oryza(en); rice (plant)(en)
Is used as (en)	C Triticum(en)
	C Feed crops(en); Animal feed crops(en); Fodder crops(en); Forage crops(en); Pasture plants(en)
	C Avena(en)
	C Canihua(en); Chenopodium pallidicaule(en)

Export



Select export language

Format	<input type="text" value="--None--"/>	Classification	<input type="text" value="--Select--"/>
Concept	<input type="text" value="--None--"/>	<input type="button" value="Browse"/>	<input type="checkbox"/> Include children
Date	Create <input type="text" value="From"/> To <input type="text" value="To"/>	Term code	<input type="text" value="--None--"/> <input type="button" value="Browse"/>

Preview

References

- ▶ <http://aims.fao.org/standards/agrovoc/about>
- ▶ <http://aims.fao.org/tools/vocbench-2>
- ▶ http://aims.fao.org/aos/agrovoc/c_12332
- ▶ <http://202.73.13.50:55481/vocbenchv1.3i/>

AGROVOC Web-Services:

- ▶ <http://agrovoc.mimos.my/ACSWebService/services/ACSWebService>
- ▶ <http://agrovoc.mimos.my/ACSWebServiceClient/sampleACSWebServiceProxy/TestClient.jsp>

Thank you very much
for the attention!