

# What KOS can do, with the proper tools available

About AGROVOC, edited in VocBench and used in  
the AGRIS web application

Caterina Caracciolo, Johannes Keizer  
Food and Agriculture Organization of the UN

**ISKO UK biennial conference, 13<sup>th</sup> – 14<sup>th</sup> July 2014, London**

# Today

- AGRIS, a semantically enabled mash-up application
- AGROVOC, a KOS, a concept scheme
- VocBench, a web based SKOS editor

**AGRIS**

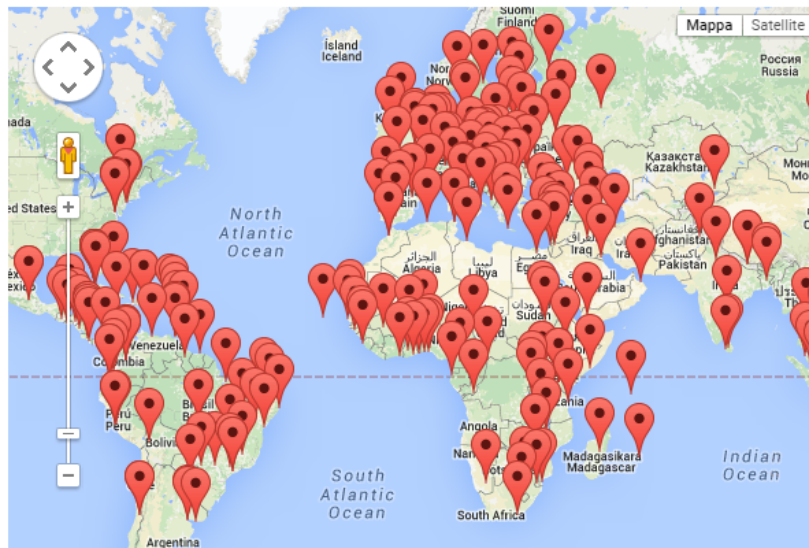
# Three views on AGRIS

1. A **network**: collaborative network of more than 150 institutions from 65 countries
2. An **RDF database**: a multilingual bibliographic database for agricultural science and technology
3. A **Web portal**: [agris.fao.org/](http://agris.fao.org/) is a Web application that links the AGRIS repository to related Web resources. Uses Linked Open Data methodologies

# From the network of partners...

The name **AGRIS centers** stands for all the data providers that have contributed or are contributing with bibliographic data to AGRIS, from national libraries, institutional repositories, single or corporate journal publishers to service providers.

Currently the AGRIS network consists of 150 AGRIS centers from 65 countries. Each center is indicated on the map down below. If you click on a marker, the name and URL of the provider will appear in an info window.



[view larger map](#)

More detailed information about the centers has been stored in the [CIARD RING](#), a global registry for information providers and their services. You may search the [RING by Data Providers](#), specifying the type of institution, country or name. Otherwise check the [List of AGRIS centers](#) that have been active for the past five years (an extraction from the RING).

Would you also like to contribute to AGRIS? For detailed information, please visit the ["For contributors"](#) section.

# ...to the agris.fao.org web portal



Looking for Agricultural Science and Technology Information? Papers, data, statistics, and multimedia material, you get it with AGRIS all on one page

Some of the newest records from the AGRIS database:

### Assessment of cytogenetic damages on human peripheral lymphocytes following gamma rays local cutaneous exposures

Chul-Song, P.; Eun-Jun, K.; Kyu-Shik, J.; Sang-Joon, P.; Dong-Mi, K.; Oh-Deog, K.; Man-Hee, R.; Seung-Chun, P.; Sung-Ho, K.; Si-Yoon, R.; Chun-Ho, K.; Tae-Hwan, K.; C ...

### Optimization of $\beta$ -Glucosidase Production by a Strain of *Stereum hirsutum* and Its Application in Enzymatic Saccharification

Ramachandran, P., Konkuk University, Seoul; Nguyen, N.P.T., Konkuk University, Seoul; Choi, J.H., Wonkwang University, Iksan-city; Kang, Y.C., Konkuk University, Seoul; Jeya, M ...

### Влияние технологий применения минеральных удобрений на продуктивность полевого севооборота и изменение агрохимических показателей почвы

Artem'ev, A.A., Mordovia Research and Development Inst. of Agriculture

Statistics

### Assessment of cytogenetic damages on human peripheral lymphocytes following gamma rays local cutaneous exposures

Chul-Song, P.; Eun-Jun, K.; Kyu-Shik, J.; Sang-Joon, P.; Dong-Mi, K.; Oh-Deog, K.; Man-Hee, R.; Seung-Chun, P.; Sung-Ho, K.; Si-Yoon, R.; Chun-Ho, K.; Tae-Hwan, K.; Chang-Mo, K.

#### Abstract:

The purpose of this paper is to establish the cytogenetic analyses of human peripheral blood samples caused by simulation of partial-body exposures. Either accidental or occupational partial-body exposure to ionizing radiation poses significant health hazards that are indicated by induction of chromosome aberrations (CA). The percentages of mixtures of blood samples irradiated in vitro with 2 Gy of gamma rays were 10, 25, 50, 75 and 100.0%. Lymphocytes were cultured for 48 hr, harvested with standard procedures and then first-division metaphase cells were analyzed. It showed that the frequencies of unstable CA depend on the proportion of the irradiated blood. All frequencies of the observed CA was lower than that of predicted or calculated from 100% exposed blood, except in one case, indicating a phenomenon of "dilution" of the un-irradiated into irradiated lymphocytes that may take place a bystander effects. Our data showed that the quantification of CA in human peripheral blood lymphocytes may be an important tool of dose assessment for partial-body exposure to ionizing radiation.

#### Agrovoc Keywords

- lymphocytes
- adults
- damage

#### Source:

**National Agricultural Research Centre** ([click here for contact information](#))

National Agricultural Research Centre (NARC), Islamabad established in 1984, is the largest research centre of the Pakistan Agricultural Research Council (PARC). NARC, with a total land area of approximately 1 [...]

HOME PAGE: <http://www.parc.gov.pk/NARC/narc.html>

#### Pakistan Veterinary Journal (Pakistan) (Journal)

#### Other information

Volume: 34

Issue: 1

Extent: p. 68-72

Language: English

In AGRIS since: 2015

#### All titles:

"Assessment of cytogenetic damages on human peripheral lymphocytes following gamma rays local cutaneous exposures"

# AGRIS in figures

- ~ 8 million *multilingual* bibliographic records
  - 400,000 from Latin America
  - 150,000 from Africa
  - 760,000 from Asia + 400,000 links to CASDD (China)
- ~ 250 million triples
  
- Accessed from 200+ countries and territories
- ~ 250,000 visits/month (Google Analytics)

# How data comes to AGRIS

1. Partners send their data
  2. AGRIS does some harvesting
- AGRIS links it to external relevant data (e.g. statistics, other doc rep, maps, country profiles, etc.)



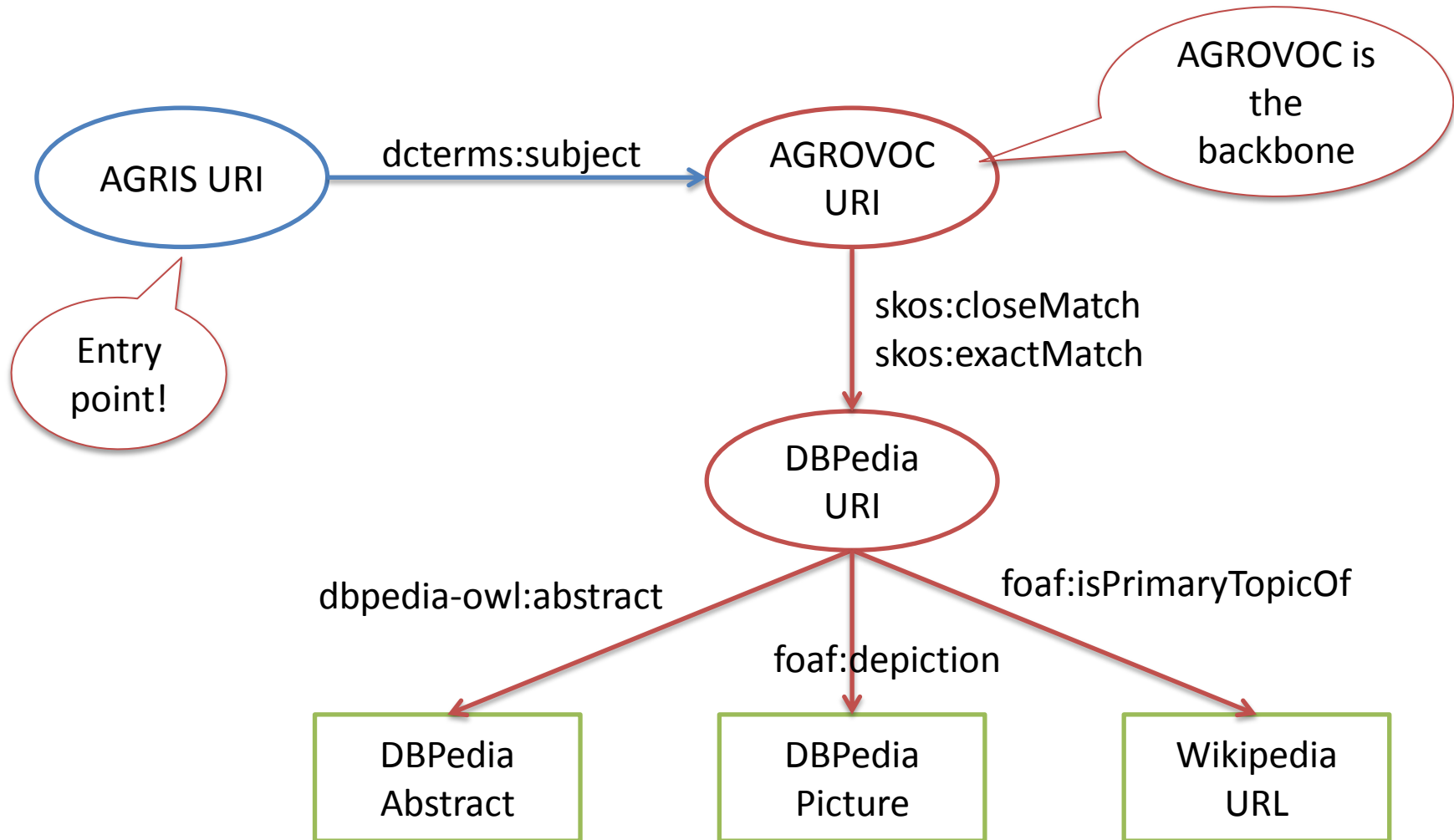
# The role of KOS in AGRIS

A KOS is the backbone for all the linking presented to users - AGROVOC

How?

1. By exploiting the links between AGROVOC and other thesauri
  1. i.e. start by a resource indexed with AGROVOC and retrieve the resources indexed with the linked concepts
2. By querying external Web Services using AGROVOC terms/concepts

# Example: from AGRIS to DBPedia



# An AGRIS record - a screenshot

**AGRIS** Find resources... About Feedback

## Identification and mapping of QTLs [quantitative trait loci] for drought tolerance introgressed from *Oryza glaberrima* Steud. into indica rice (*O. sativa* L.)

RDF lodlive

Bimpong, I.K.

**Abstract:**  
Genetic variability for physiological traits; water use efficiency (WUE), leaf water potential and relative water content was studied in 8 *O. glaberrima* accessions. Of these accessions, CG14, RAM 118 and RAM 152 had higher WUE and RAM 3 had higher dehydration tolerance as compared to recurrent *O. sativa* parent. A set of 2091 BCsub2Fsub3 progenies produced from crosses of *O. sativa* x *O. glaberrima* was evaluated for drought related traits in lowland and upland nurseries at 2 locations in 2008. Yield of recurrent parents was reduced by 68% in IR64 and 16% in IR55423-01 under drought stress. Evaluation of 2091 progenies under drought stress showed 33 having higher yield per plant than IR64 and 22 progenies better than the drought tolerant recurrent parent (IR55423-01). Molecular analysis revealed 4-6% introgression from *O. glaberrima* in BCsub2Fsub3. A set of 350 introgression lines was selectively genotyped with SSR[Simple Sequence Repeats] and STS[Sequence Tagged Site] markers. Single-point and interval mapping was done using QTL[Quantitative Trait Loci]Mapper 1.60 and Mapmanager QTX 20. Molecular analysis of IR64 x *O. glaberrima* population revealed 49 QTLs for different agronomic traits of which 18 are new. Similarly, 51 QTLs were identified from IR55423-01 x *O. glaberrima* where 36 were new. *O. glaberrima* contributed 50-67% alleles to the newly identified QTLs. Two QTLs for grain yield per plant (ypp2.1 and ypp4.2) were new and another 2 (yld1.1 and yld8.

[Read More](#)

**Agrovoc Keywords**

- *Oryza sativa*
- loci
- Drought resistance
- genetic maps
- plant genetics
- *Oryza glaberrima*
- Plant breeding
- Introgression
- identification

**Other information**

Extent: 255 leaves; 14 ill.; 30 graphs; 48 tables. Bibliography (239 ref.). Received Jan 2011

Language: English

Type: Bibliography

Powered by Google™  
Read the article and/or related articles:

- Identification of a Rice Stripe Necrosis Virus resistance locus and ...
- Jan 8, 2010 ... Mapping of the RSN1 locus represents the first identification of a genetic ... Asian rice (*Oryza sativa* L.) is one of the most important food crops for mankind and ... Major QTL for *O. glaberrima* Acc. MG12 resistance to the Rice Stripe ... and tolerance to aluminium toxicity, acid soil conditions and drought [56].

Go to the page

- ▶ The Wild Relative of Rice: Genomes and Genomics
- ▶ Yield QTL analysis of *Oryza sativa* x *O. glumaepatula* introgression ...
- ▶ [PDF] ABSTRACTS

**Data from CGRIS Germplasm:**

- ▶ 一早籼
- ▶ 三蔴粒
- ▶ 宽叶二谷粟
- ▶ 醉醉芒
- ▶ 北京江米稻

**Data from collecting missions supported by Bioversity international**

- ▶ Expedition to Northern India 1976
- ▶ Netherlands-Pakistan Germplasm Expedition to Chitral and Swat (Pakistan) 1976
- ▶ The Plant Collecting Exploration of Ghana
- ▶ Plant Exploration in Liberia

**Data from www.nature.com:**

Data from World Bank (double-click an area to zoom)

**Cereal yield (kg per hectare)**

Cereal yield (kg per hectare)  
178 74,210

***Oryza sativa* distribution map. Data from Global Biodiversity Information Facility (GBIF)**

View a larger map

# Highlight

- Multilinguality, also supported by AGROVOC
  - AGRIS records are indexed with AGROVOC keywords in a specific language
  - The translation to RDF makes AGROVOC URIs available:
  - Indexing AGROVOC RDF (Apache Solr)
  - A user's query in a specific language is expanded to match results in all languages available in AGROVOC



## Effects of straw returned to the field on growth and water use efficiency of maize in lime concretion black soil region



Shen Xueshan, Anhui Agricultural University, Hefei(China), College of Agronomy

Li Jincai, Anhui Agricultural University, Hefei(China), College of Agronomy

Qu Huijuan, Anhui Agricultural University, Hefei(China), College of Agronomy

### Abstract:

The effects of straw returned to the field which including no straw returning(CK),wheat straw returning(T1),maize straw returning(T2) and wheat and maize straw returning(T3) on emergence,growth,yield and water use efficiency of maize under field location condition to generalize the techniques of total straw of wheat and maize returned to the filed in lime concretion black soil region of Huaibei plain.The results showed that to compared with CK,the maize emergence number of T3 were increased by 3.25% and 11.98% in 2008 and 2009,respectively.The emergence rate,emergence uniformity,evenness of plant height,seedling quality and soil water content of T3 were higher than that of CK,which created a good population growth condition for maize,thus the population leaf area index and dry matter accumulation of that were improved.Finally,be compared with CK,the yield of T3 were increased by 7.92% and 9.51% while water use efficiency of that were increased by 8.15% and 9.48% in 2008 and 2009,respectively.Therefore,under the condition of wheat/maize straw returned in two seasons,the growth and grain yield of maize could be improved.

<p>▼ Agrovoc Keywords</p> <ul style="list-style-type: none"> <li>• straw</li> <li>• Efficiency</li> <li>• maize</li> <li>• Water use</li> <li>• Floor husbandry</li> </ul>	<p>▼ Zhongguo Nongye Daxue xuebao (Journal)</p> <p>FREQUENCY: Bimonthly</p> <p>START DATE: 1996</p>
<p>▼ Other information</p> <p>Volume: 16</p> <p>Issue: 2</p> <p>Language: Chinese</p> <p>Type: Journal Article</p> <p><b>All titles:</b></p> <p>"Effects of straw returned to the field on growth and water use efficiency of maize in lime concretion black soil region"</p> <p>"砂姜黑土区秸秆还田对玉米生育及水分利用效率的影响"</p>	<p>▼ Source:</p> <p><b>Institute of Agricultural Information, Chinese Academy of Agricultural Sciences</b> (<i>click here for contact information</i>)</p> <p>Homepage: <a href="http://www.caas.net.cn">http://www.caas.net.cn</a></p>

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Read the article and/or related articles:

▼ Analysis of the Bacterial Communities in Lime Concretion Black Soil ...

Keywords: Crop Residues; Bacterial Community; **Lime Concretion Black Soil**; Denaturing ... chronous plant **growth** and residue decomposition are ... both conserved and variable **regions** (the V1-V9 **regions**), ... Take the quantity of **corn straw returning** by grinding ..... **field** conditions, we decided to **use** the most representa-

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▶ 秸秆还田和施肥对砂姜黑土理化性质及小麦-玉米产量的影响

▶ [PDF] EFFECT OF INTEGRATED SOIL MOISTURE CONSERVATION AND ...

▶ 秸秆还田和施肥对砂姜黑土理化性质及小麦-玉米产量的影响

Data from [www.nature.com](http://www.nature.com):

▶ A crop of maize variants

▶ US processor rejects maize that EU won't take

▶ A transposon in tb1 drove maize domestication

▶ A cornucopia of maize genes

Data from [DBpedia](http://DBpedia):

▶ Straw

▶ Maize

▶ Efficiency

▶ Water use



## 砂姜黑土区秸秆还田对玉米生育及水分利用效率的影响 [apr.2011]

RDF lod:live

Shen Xueshan, Anhui Agricultural University, Hefei(China), College of Agronomy

Li Jincui, Anhui Agricultural University, Hefei(China), College of Agronomy

Qu Huijuan, Anhui Agricultural University, Hefei(China), College of Agronomy

### 摘要:

**摘要:** 为了在淮北砂姜黑土区推广小麦玉米秸秆全量还田技术,采用大田定位试验,设置小麦玉米秸秆不还田、小麦玉米秸秆单季还田和小麦玉米秸秆两季还田4种秸秆还田方式,研究了小麦、玉米秸秆全量粉碎还田对机播夏玉米出苗、生育、产量和水分利用效率的影响。结果表明:小麦玉米秸秆两季还田处理2008和2009年玉米出苗数分别比对照高3.25%和11.98%;出苗均匀度、株高整齐度、幼苗素质和耕层土壤含水量均高于对照,最终2008和2009年玉米产量分别较对照提高了7.92%、9.51%,土壤水分利用效率分别提高了8.15%、9.48%。可见,砂姜黑土区小麦玉米秸秆两季全量还田有利于玉米生长发育,提高籽粒产量。

#### ▼ Agrovoc关键词

- 秸秆
- 效率
- 玉米
- 用水
- 地面饲养

#### ▼ 其他信息

卷: 16

期: 2

语言: Chinese

类型: Journal Article

#### 所有题名:

"Effects of straw returned to the field on growth and water use efficiency of maize in lime concretion black soil region"

"砂姜黑土区秸秆还田对玉米生育及水分利用效率的影响"

#### ▼ Zhongguo Nongye Daxue xuebao (学术期刊)

频率: Bimonthly

起始日期: 1996

#### ▼ 来源:

Institute of Agricultural Information, Chinese Academy of Agricultural Sciences (点击查看详情)

主页: <http://www.caas.net.cn>

由...驱动 Google™

阅读文章和/或者相关文章:

▼ 秸秆全量还田条件下配施化肥对沿淮砂姜黑土培肥及玉米产量的影响①

关键词: 沿淮砂姜黑土区; 秸秆全量还田; 化学氮肥; 培肥; 产量 ... 重化肥而轻有机肥[3]; 秸秆利用率约45%, 剩余秸秆 ..... 秸秆还田对玉米生育及水分利用效率的影响.

前往网页

▶ [PDF] 砂姜黑土区小麦玉米秸秆全量还田对玉米抗倒性的影响

▶ 秸秆还田和施肥对砂姜黑土理化性质及小麦玉米产量的影响

▶ 砂姜黑土区小麦玉米一年两熟秸秆全量还田对夏玉米生育及产量影响 ...

数据来源于 [www.nature.com](http://www.nature.com):

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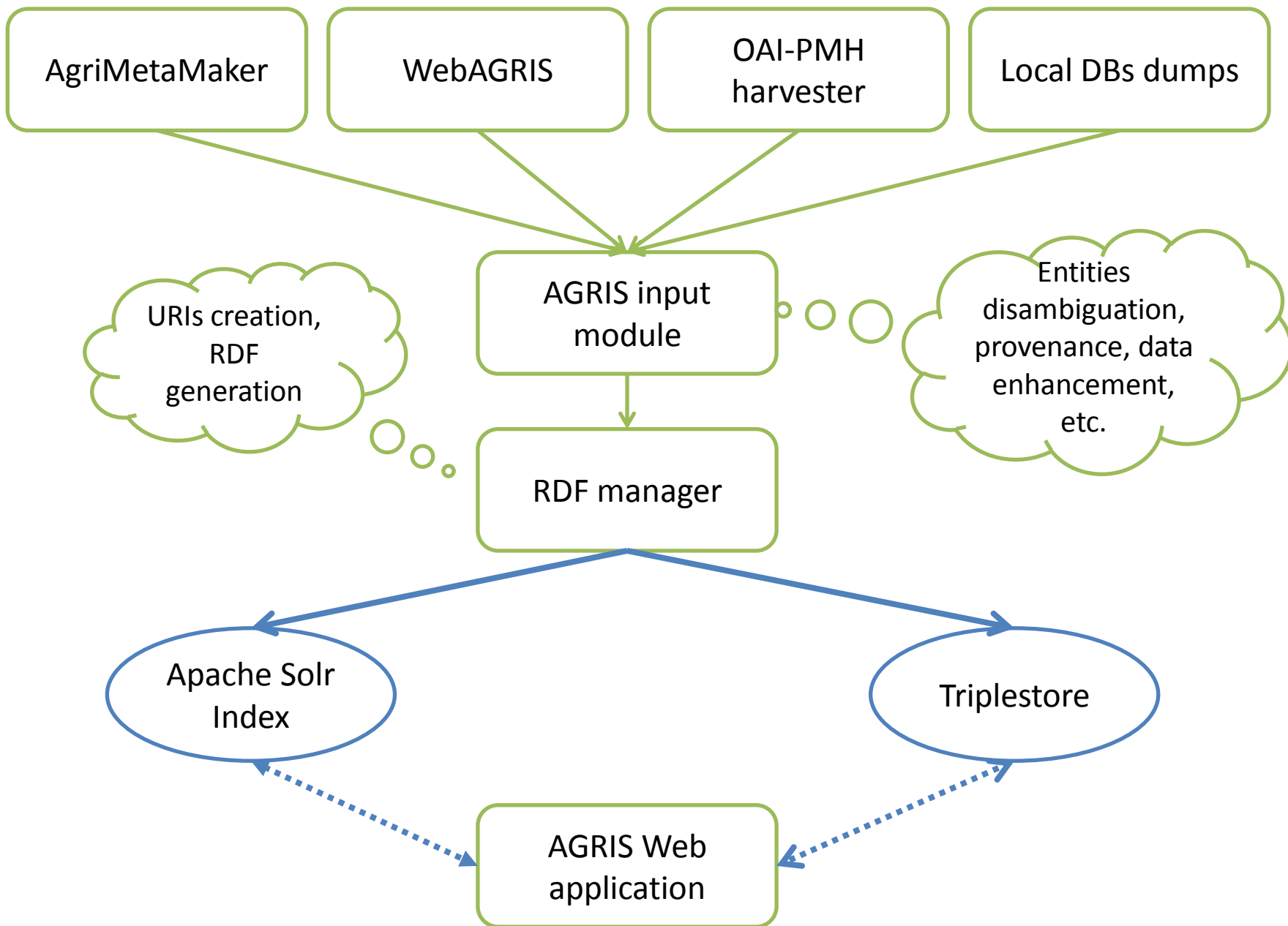
▶ Straw

▶ Efficiency

▶ Water use

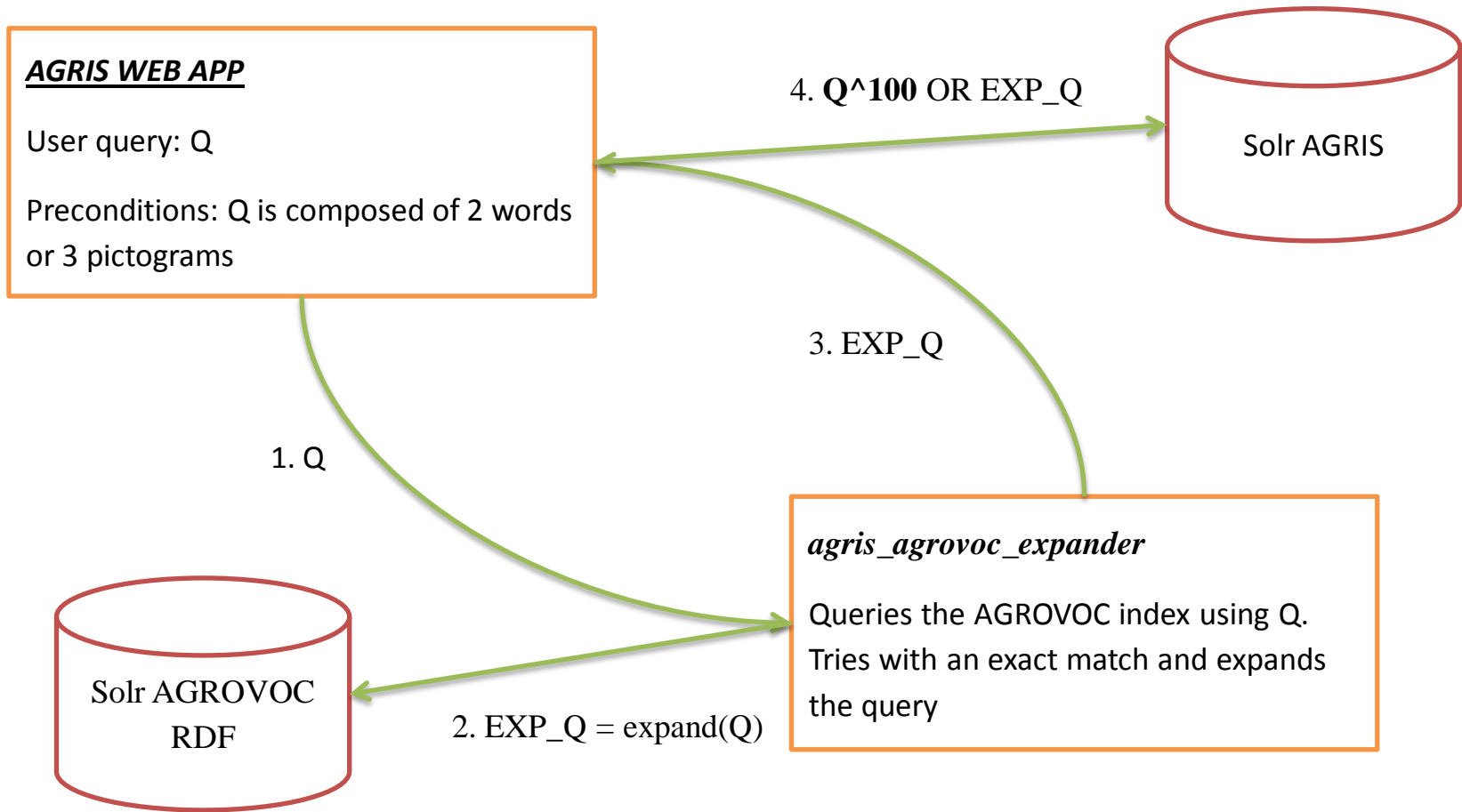
▶ Maize

A quick look at data flow and  
architecture





# The architecture



AGROVOC

# aims.fao.org/agrovoc

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## AGROVOC Multilingual agricultural thesaurus

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### Latest AGROVOC release : March 2015

AGROVOC is a controlled vocabulary covering all areas of interest of the Food and Agriculture Organization (FAO) of the United Nations, including food, nutrition, agriculture, fisheries, forestry, environment etc. It is published by FAO and edited by a community of experts.

AGROVOC consists of over 32,000 concepts available in 23 languages: Arabic, Chinese, Czech, English, French, German, Hindi, Hungarian, Italian, Japanese, Korean, Lao, Malay, Persian, Polish, Portuguese, Russian, Slovak, Spanish, Telugu, Thai, Turkish and Ukrainian.

You can use AGROVOC to look up the common name of a plant in a language that you do not master, or to find relations between a commodity and the crop from which it is produced. Your library can use AGROVOC to index its documents, or you can use it from inside your content management system (e.g., Drupal) to organize your documents or web site. You can also use AGROVOC as a hub to access many other vocabularies available on the web.

To date, AGROVOC is used by researchers, librarians and information managers for indexing, retrieving and organizing data in agricultural information systems and Web pages. Currently, AGROVOC is an SKOS-XL concept scheme and a Linked Open Data (LOD) set aligned with 16 other multilingual knowledge organization systems related to agriculture.

You may download AGROVOC, access its Web Services or SPARQL endpoint.



Register and subscribe to receive e-mail updates

#### TYPE

thesaurus

#### CONTACT EMAIL

[agrovoc@fao.org](mailto:agrovoc@fao.org)

#### CREATION DATE

1 Jan 1980

#### MODIFICATION DATE

1 Jul 2014

#### SUPPORTED LANGUAGE(S)

*Multiple Languages*

#### URL(S)

<http://aims.fao.org/standards/agrovoc>

#### DOMAIN(S)

# AGROVOC in short

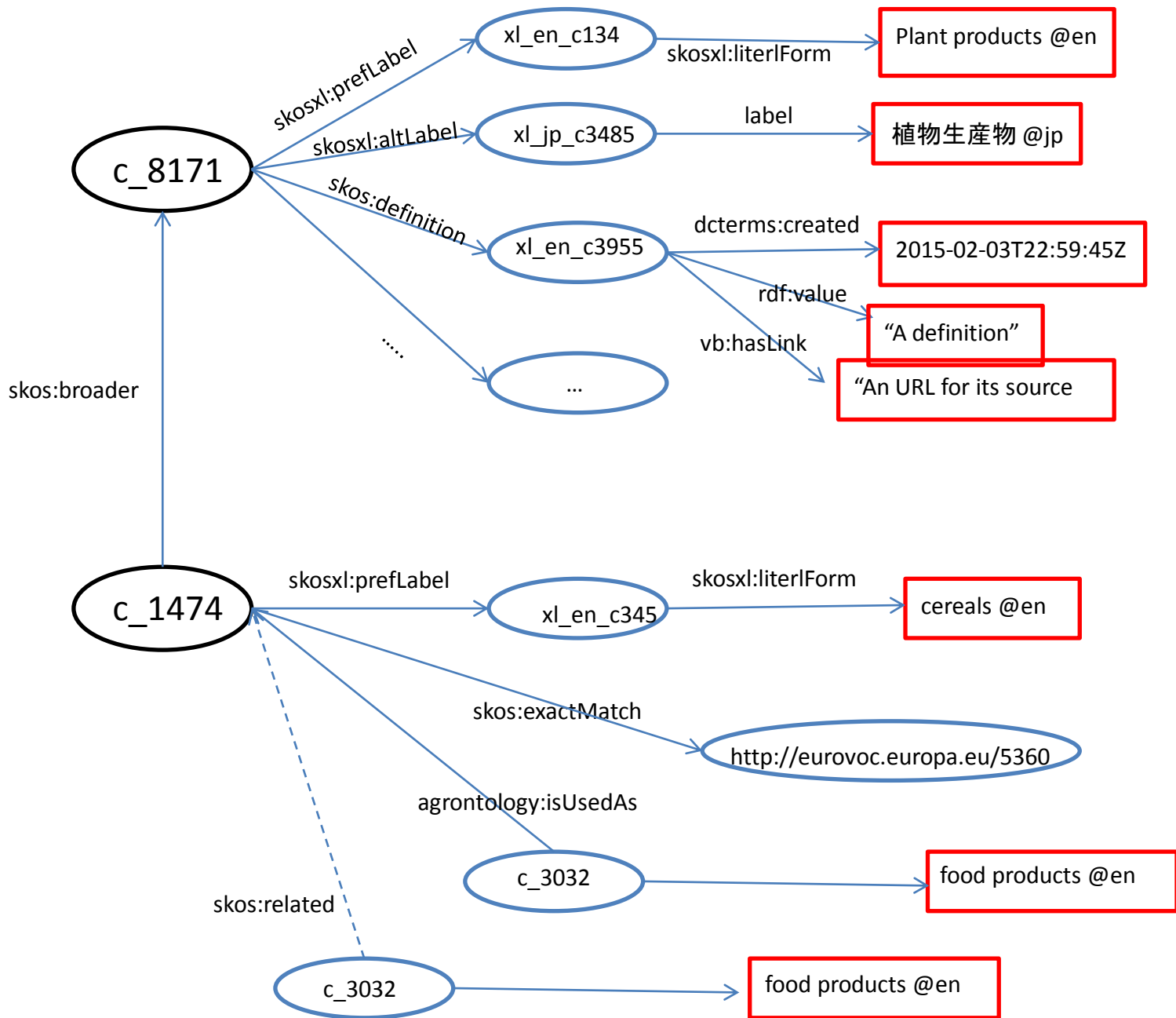
- Covers all areas of interest to FAO, e.g. agriculture, forestry, fisheries, nutrition, environment, ...
- 32,000+ concepts in up to 22 languages
- An RDF dataset, expressed using SKOS-XL
- A Linked Open Dataset, available in various formats

# aims.fao.org/agrovoc – section “Uses”

## Applications using AGROVOC

- [AgriDrupal](#)
- [AGRIMetaMaker](#)
- [Agrimoodle](#)
- [AgriOcean DSpace](#)
- [AGRIS](#)
- [AgriVivo](#)
- [Agropedia India](#)
- [AgroTagger](#)
- [ALEPH \(Ex Libris\)](#)
- [ASKOSI](#)
- [BIBSYS](#)
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- [CGSpace Repository](#)
- [data.fao.org](#)
- [e-Termos](#)
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- [FAO Country Profiles](#)
- [FAO Corporate Document Repository](#)
- [FAO TERM](#)
- [Global Range Lands](#)
- [Hive](#)
- [ICRISAT OA Repository](#)
- [International Maize and Wheat Improvement Center \(CIMMYT\)](#)
- [IFPRI Knowledge Repository](#)
- [KAINet](#)
- [KOHA](#)
- [Maui](#)
- [NOR2O software library](#)
- [National Bibliography on Tropical Biology \(BINABITROP\)](#)

... [View all applications](#) ...



# Multilinguality

- 32,000+ concepts in **up to 22 languages**
- = concepts may be expressed (have labels) in one or more languages
  - One hierarchy, many languages
  - No language is “compulsory”
  - Although there is an historical preference for English, and the need to understand each other...
- Editing rights by language
  - Thinking of expansions, i.e., rights by “domain”

# RDF, plus SKOS, DC, ... and agrontology



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IRI:

<http://aims.fao.org/aos/agrontology>

Other visualisation:

[Ontology source](#)

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2. [Data Properties](#)
3. [Named Individuals](#)
4. [Annotation Properties](#)
5. [Namespace Declarations](#)

## Object Properties

[Acts upon](#) [Affects](#) [Afflicts](#) [Benefits from](#) [Causative relationship](#) [Causes](#) [Compose](#) [Controls](#) [Develops from](#) [Develops into](#) [Follows](#)  
[Formerly included in](#) [Formerly includes](#) [Greater than](#) [Grows in](#) [Has abbreviation](#) [Has acronym](#) [Has antonym or](#) [Has opposite](#)  
[Has biological control agent](#) [Has breeding method](#) [Has broader synonym](#) [Has chemical formula](#) [Has component](#) [Has composition](#)  
[Has control method](#) [Has cropping system](#) [Has cultivation process](#) [Has disease](#) [Has disorder](#) [has goal or process](#) [Has host or Is vector for](#)  
[Has infection part](#) [Has local name](#) [Has member](#) [Has narrower synonym](#) [Has natural enemy](#) [Has near synonym](#) [Has object of activity](#)  
[Has old name](#) [Has parent](#) [Has part](#) [Has pathogen](#) [Has pest](#) [Has physiological function](#) [Has post-production practice](#) [Has practice](#)  
[Has product](#) [Has propagation material](#) [Has Propagation process](#) [Has property](#) [Has scientific name](#) [Has spelling variant](#) [Has substitute](#)  
[Has symbol](#) [Has symptom](#) [Has Synonym](#) [Has taxonomic level](#) [Has theme](#) [Has trade name, has commercial name](#) [Has transliteration](#)  
[Has type](#) [Has variety](#) [Has vector or Is host for](#) [Has weed](#) [Included in](#) [Includes](#) [Includes subprocess](#) [Indicates](#) [Influences](#)  
[Is a growth environment for](#) [Is a local name of](#) [Is a pest of](#) [Is a trade name of](#) [Is a transliteration of](#) [Is abbreviation of](#) [Is achieved by means of](#)  
[Is acronym of](#) [Is acted upon by](#) [Is affected by](#) [Is afflicted by](#) [Is beneficial for](#) [Is biological control agent of](#) [Is breeding method of](#) [Is caused by](#)  
[Is chemical formula of](#) [Is component of](#) [Is composed of](#) [Is composition of](#) [Is control method of](#) [Is controlled by](#) [Is cropping system of](#)  
[Is cultivation process of](#) [Is derived from](#) [Is disease for](#) [Is disorder of](#) [Is infected part of](#) [Is influenced by or Depends on](#) [Is input for](#)  
[Is made from](#) [Is means for](#) [Is measured by](#) [Is member of](#) [Is natural enemy of](#) [Is object of activity](#) [Is old name of, is a deprecated name for](#)  
[Is output from](#) [Is parent of](#) [Is part of](#) [Is pathogen of](#) [Is performed by](#) [Is performed by means of](#) [Is physiological function of](#)  
[Is post-production practice for](#) [Is practice for](#) [Is represented by](#) [Is process for](#) [Is produced by](#) [Is propagation material of](#) [Is propagation process of](#)



# agrontology visualized in VB (a fragment)

Signed in as caracciolo (Administrator) to: agrovoc\_2015-03-24\_core | Global data management | Administration | About VocBench | English | RSS feed | Preferences

**VocBench** VERSION 2.3 [Build 20150423]

Exact word  Go [Advanced search](#)

Recent changes Concepts **Properties** Schemes Validation SPARQL ICV [Concept navigation](#)

**Properties** Object properties  Show URI

- skos:inScheme
- skosxl:labelRelation
  - skosxl:prefLabel
- skos:semanticRelation
- skos:broaderTransitive
- skos:narrowerTransitive
- skos:related
  - skos:relatedMatch
- agrontology:hasGoalOrProcess
  - agrontology:makeUseOf
- agrontology:includes
- agrontology:hasSubstitute
- agrontology:hasParent
- agrontology:group

Legend ■ Proposed ■ Validated ■ Published ■ Revised ■ Proposed deprecated ■ Deprecated Sho

**agrontology:includes**

Label (1) Definition (0) Property (0) Inverse Property (1) Domain (0) & Range (0)

Add new property label

Language	Label
English	<input checked="" type="checkbox"/> Includes

# VOID file to describe the LODset

```
void:linkPredicate skos:closeMatch ;
void:objectsTarget :ASFATheseaurus ;
void:subjectsTarget :Agrovoc ;
void:triples 1784 .

:AGROVOC2Biotechglossary
  rdf:type void:Linkset ;
  void:linkPredicate skos:closeMatch ;
  void:objectsTarget :Biotechglossary ;
  void:subjectsTarget :Agrovoc ;
  void:triples 793 .

:AGROVOC2DBPEDIA
  rdf:type void:Linkset ;
  void:linkPredicate skos:exactMatch ;
  void:objectsTarget <http://dbpedia.org/void/Dataset> ;
  void:subjectsTarget :Agrovoc ;
  void:triples 11015 .

:AGROVOC2DDC
  rdf:type void:Linkset ;
  void:linkPredicate skos:closeMatch ;
  void:objectsTarget :DDC ;
  void:subjectsTarget :Agrovoc ;
  void:triples 401 .

:AGROVOC2DNB
  rdf:type void:Linkset ;
  void:objectsTarget :DNB ;
  void:subjectsTarget :Agrovoc ;
  void:triples 6212 .

:AGROVOC2EUROVOC
  rdf:type void:Linkset ;
  void:linkPredicate skos:exactMatch ;
  void:objectsTarget :EUROVOC ;
  void:subjectsTarget :Agrovoc ;
  void:triples 1268 .

:AGROVOC2GEMET
  rdf:type void:Linkset ;
  void:linkPredicate skos:exactMatch ;
  void:objectsTarget :GEMET ;
  void:subjectsTarget :Agrovoc ;
  void:triples 1178 .
```

# Distributions and Formats

- 2 distributions
  - Core: AGROVOC only
  - LOD: AGROVOC + links to other vocabularies
- Formats
  - rdf/xml, nt, nq
- Considering other formats...

# How to access AGROVOC

- Online, search
- Download (RDF)
- Web services built on top of the RDF
- SPARQL endpoint

# An AGROVOC concept in the LOD view

[http://aims.fao.org/aos/agrovoc/c\\_12332](http://aims.fao.org/aos/agrovoc/c_12332)

**maize**

Property	Value
rdf:type	skos:Concept
skos:broader	<a href="http://aims.fao.org/aos/agrovoc/c_1474">http://aims.fao.org/aos/agrovoc/c_1474</a> <a href="http://aims.fao.org/aos/agrovoc/c_1474">http://aims.fao.org/aos/agrovoc/c_1474</a>
skos:narrower	<a href="http://aims.fao.org/aos/agrovoc/c_7152">http://aims.fao.org/aos/agrovoc/c_7152</a> <a href="http://aims.fao.org/aos/agrovoc/c_2974">http://aims.fao.org/aos/agrovoc/c_2974</a> <a href="http://aims.fao.org/aos/agrovoc/c_8337">http://aims.fao.org/aos/agrovoc/c_8337</a> <a href="http://aims.fao.org/aos/agrovoc/c_6108">http://aims.fao.org/aos/agrovoc/c_6108</a> <a href="http://aims.fao.org/aos/agrovoc/c_2187">http://aims.fao.org/aos/agrovoc/c_2187</a> <a href="http://aims.fao.org/aos/agrovoc/c_7552">http://aims.fao.org/aos/agrovoc/c_7552</a> <a href="http://aims.fao.org/aos/agrovoc/c_14385">http://aims.fao.org/aos/agrovoc/c_14385</a>
skos:exactMatch	<a href="http://www.caas.net.cn/caas/cat/c_1771">http://www.caas.net.cn/caas/cat/c_1771</a> <a href="http://eurovoc.europa.eu/1744">http://eurovoc.europa.eu/1744</a> <a href="http://www.caas.net.cn/caas/cat/c_1763">http://www.caas.net.cn/caas/cat/c_1763</a> <a href="http://www.caas.net.cn/caas/cat/c_57079">http://www.caas.net.cn/caas/cat/c_57079</a> <a href="http://www.caas.net.cn/caas/cat/c_55466">http://www.caas.net.cn/caas/cat/c_55466</a> <a href="http://zbw.eu/stw/descriptor/14093-4">http://zbw.eu/stw/descriptor/14093-4</a> <a href="http://d-nb.info/gnd/4037135-9">http://d-nb.info/gnd/4037135-9</a> <a href="http://www.caas.net.cn/caas/cat/c_55604">http://www.caas.net.cn/caas/cat/c_55604</a> <a href="http://www.caas.net.cn/caas/cat/c_1747">http://www.caas.net.cn/caas/cat/c_1747</a> <a href="http://www.caas.net.cn/caas/cat/c_1764">http://www.caas.net.cn/caas/cat/c_1764</a>
skos:closeMatch	<a href="http://dbpedia.org/resource/Maize">http://dbpedia.org/resource/Maize</a>
skos:broadMatch	<a href="http://www.caas.net.cn/caas/cat/c_3948">http://www.caas.net.cn/caas/cat/c_3948</a> <a href="http://www.caas.net.cn/caas/cat/c_3948">http://www.caas.net.cn/caas/cat/c_3948</a>
dcterms:created	2011-11-20T20:35:16Z
dcterms:modified	2014-07-03T18:42:49Z
void:inDataset	<a href="http://aims.fao.org/aos/agrovoc/void.ttl#Agrovoc">http://aims.fao.org/aos/agrovoc/void.ttl#Agrovoc</a>
skos:inScheme	<a href="http://aims.fao.org/aos/agrovoc">http://aims.fao.org/aos/agrovoc</a>
skos:relatedMatch	<a href="http://www.caas.net.cn/caas/cat/c_55567">http://www.caas.net.cn/caas/cat/c_55567</a>
foaf:depiction	<a href="http://aims.fao.org/aos/agrovoc/c_img_1306147386623">http://aims.fao.org/aos/agrovoc/c_img_1306147386623</a>
vocbench:hasStatus	Published

prefLabel	altLabel	Lang
кукуруза (зерно)	зерно кукурузы	ru
maize	corn (maize)	en
옥수수		ko
Mais		de
Kukurydza (ziarno)	Ziarno kukurydzy	pl
Maïs		fr
ข้าวโพด		th
kukorica		hu
Mais	Granoturco	it
சாவி		lo
ذرة صفراء		ar
kukuřičné zrnо	zrnо kukuřice	cs
トウモロコシ	コーン	ja
Milho		pt
misir		tr
Jagung		ms
Maíz		es
kukurica siata	zrnо (kukurica)	sk
मक्का	अनाज (मक्का)	hi
ذرت		fa
玉米	苞谷	zh

	Resource	Topics	Total # of Linked concepts	Languages	Linked Resource available as LOD?	Type of link (and # of linked concepts)
1	<a href="#">ASFA</a>	Fisheries	1784		Yes	skos:closeMatch (38), skos:LexactMatch (1741)
2	<a href="#">Biotechnology Glossary (FAO)</a>	Biotechnologies	793	EN, ES, FR, +3 more	Yes	skos:closeMatch (793)
3	Chinese Agriculture Thesaurus (CAT)	Agriculture			Yes	skos:narrowMatch (137)  skos:broadMatch (10153)  skos:exactMatch (10325)
4	<a href="#">DBpedia</a>	General	11009	EN, ES, FR + 8 more	Yes	skos:closeMatch (11009)
5	<a href="#">Dewey Decimal Classification (DDC)</a>	General	401	EN, ES, FR + 8 more	Yes	skos:closeMatch (2)  skos:exactMatch (399)
6	<a href="#">EUROVOC</a>	General EU	1 269	EN, ES, FR + 21 more	Yes	skos:exactMatch (1269)
7	<a href="#">GEMET</a>	Environment	1 175	EN, ES, FR + 30 more	Yes	skos:exactMatch (1175)
8	<a href="#">GeoNames</a>	Geographical entities	206	EN, ES, FR + 63 more	Yes	skos:exactMatch (206)
9	<a href="#">Geopolical Ontology</a>	Geopolitical entities	253	AR, CH, EN, ES, FR, RU	Yes	skos:exactMatch (253)
10	<a href="#">Library of Congress Subject Headings (LCSH)</a>	General	1 075	EN	Yes	skos:exactMatch (1075)

11	<a href="#">NAL Thesaurus</a>	Agriculture	13114	EN, ES	Yes	skos:exactMatch (13114)  skos:closeMatch (2)
12	<a href="#">RAMEAU Répertoire d'autorité-matière encyclopedique et alphabetique unifie</a>	General	670	FR	Yes	skos:exactMatch (670)
13	<a href="#">STW - Thesaurus for Economics</a>	Economy	1125	EN, DE	Yes	skos:exactMatch (1122)  skos:closeMatch (3)
14	<a href="#">TheSoz - Thesaurus for the Social Sciences</a>	Social sciences	827	EN, DE	Yes	skos:exactMatch (821)  skos:closeMatch (6)
15	<a href="#">SWD (Schlagwortnormdatei)</a>	General	6 245	DE	Yes	skos:exactMatch skos:closeMatch skos:broadMatch skos:narrowMatch
16	<a href="#">EARTH</a>	Environment	1363	EN+	Yes	skos:exactMatch (1363)

Table 1. Some figures of vocabularies linked from AGROVOC (last updated on January 2015)

# The future... **GACS**, beta

GACSDemo

Vocabularies About Feedback Help

GACS Beta

Search within this vocabulary

English ▾

Search

Alphabetical Hierarchy Group index

- pulp
- seaweed products
- spices
- starch products
- stimulants
- sugar products
- sugarbeet
- sugarcane
- tea
- vegetable products
  - canned vegetables
  - dried vegetables
  - frozen vegetables
  - plant oils
    - essential oils
    - olive oil
    - palm oils**
      - palm kernel oil
    - seed oils
  - potato products
  - soybean products
  - vegetable extracts
  - vegetable juices
  - vegetables
- weed science
- plant residues
- plant sciences
- plants (botany)
- soil management
- products
  - Maillard reaction products
  - concentrates
  - contaminants
  - fishery products
  - fresh products
  - frozen semen
  - hydrolysates

... > agricultural products > plant products > vegetable products > plant oils > palm oils  
Plant Science and Plant Products > plant products > vegetable products > plant oils > palm oils  
... > processed products > processed plant products > vegetable products > plant oils > palm oils  
... > agricultural products > plant products > plant fats and oils > plant oils > palm oils  
Plant Science and Plant Products > plant products > plant fats and oils > plant oils > palm oils  
... > products and commodities > oils > plant fats and oils > plant oils > palm oils  
... > materials > oils > plant fats and oils > plant oils > palm oils

PREFERRED TERM

**palm oils**

CONCEPT TYPE

Topic

DEFINITION

Aceites exprimidos de la pulpa del fruto de varias palmas (Arecaceae). La palma africana (*Elaeis guineensis*) es una fuente común para el aceite de palma. El aceite de palma es alto en grasa saturada y caroteno, y es usado en comidas, jabones, cosméticos, velas. Compare con aceite de palmiche. (es)  
Oils pressed from the pulp of the fruit of various palms (Arecaceae). The African palm (*Elaeis guineensis*) is a common source for palm oil. Palm oils are high in saturated fat and carotene, and used in foods, soaps, cosmetics, candles. Compare with palm kernel oil.

BROADER CONCEPT

plant oils

NARROWER CONCEPTS

palm kernel oil

RELATED CONCEPTS

cooking oils

BELONGS TO GROUP

Economics, Business and Industry  
Plant Science and Plant Products

IN OTHER LANGUAGES

زيوت النخيل	Arabic
棕櫚油	Chinese
palmový olej	Czech
palmoliën	Dutch
Huile de palme	French
-	-



# GACS beta (..scrolling down..)

Alphabetical
Hierarchy
Group index

- pulp
- seaweed products
- spices
- starch products
- stimulants
- sugar products
- sugarbeet
- sugarcane
- tea
- vegetable products
  - canned vegetables
  - dried vegetables
  - frozen vegetables
  - plant oils
    - essential oils
    - olive oil
    - **palm oils**
      - palm kernel oil
    - seed oils
  - potato products
  - soybean products
  - vegetable extracts
  - vegetable juices
  - vegetables
- weed science
- plant residues
- plant sciences
- plants (botany)
- soil management
- products
  - Maillard reaction products
  - concentrates
  - contaminants
  - fishery products
  - fresh products
  - frozen semen
  - hydrolysates
  - meal
  - natural products
  - plant residues
  - processed products
    - canned products
    - dried products
    - fermentation products
    - frozen products

BROADER CONCEPT

NARROWER CONCEPTS

RELATED CONCEPTS

BELONGS TO GROUP

IN OTHER LANGUAGES

<u>plant oils</u>	
<u>palm kernel oil</u>	
<u>cooking oils</u>	
<u>Economics, Business and Industry</u>	
<u>Plant Science and Plant Products</u>	
زيوت النخيل 棕櫚油 palmový olej palmoliën Huile de palme Palmöl Palmoel गरी का तेल pálmaolaj Oli di palma 棕榈油 아자기를 ນ້ຳມັນປາລັມ روغن های حرما Olej palmowy óleos de palmeiras Óleo de palma пальмовое масло palmový olej aceites de palmas aceite de palma น้ำมันปาล์ม palm yağı hurma yağı	Arabic Chinese Czech Dutch French German Hindi Hungarian Italian Japanese Korean Lao Persian Polish Portuguese Russian Slovak Spanish Thai Turkish

URI

Download this concept: <http://gacs.agrisemantics.org/id/C9070>

[RDF/XML](#) [TURTLE](#)

EXACT MATCH

palm oils palm oils palm oils	AGROVOC CAB Thesaurus NAL Thesaurus
-------------------------------------	---

VocBench

# VocBench (VB) user interface

Signed in as Administrator (Administrator) to: Eurovoc-Euvoc | Global data management | Administration | About VocBench | English | RSS feed | Preferences | Help | Sign out

**VocBench** VERSION 2.3 [Build 20150423] [DEVELOPMENT]

Exact word | Go | Advanced search

Recent changes | Concepts | Properties | Schemes | Validation | SPARQL | ICV | Concept navigation history | Content language

### Concepts

Show URI | Show non-preferred

- currency reform (en); currency situation (en); monetary policy (en); money policy (en); política monetaria (es); reforma monetaria (es); situación monetaria (es); politica monetaria (it); riforma monetaria (it); situazione monetaria (it); stabilità monetaria (it)
- bank of issue (en); central bank (en); federal bank (en); national bank (en); banco central (es); Banco de España (es); banco emisor (es); banco federal (es); banco nacional (es); banca centrale (it); banca d'emissione (it); banca federale (it); banca nazionale (it); istituto d'emissione (it)
- currency adjustment (en); ajuste monetario (es); aggiustamento monetario (it); rettifica monetaria (it)
  - currency revaluation (en); revaluation (en); revalorización monetaria (es); revaluación (es); revaluación monetaria (es); rivalutazione (it); rivalutazione della moneta (it); rivalutazione monetaria (it)
  - devaluation (en); depreciación monetaria (es); devaluación (es); deprezzamento della moneta (it); svalutazione (it); svalutazione monetaria (it)
- issuing of currency (en); emisión de moneda (es); emisión monetaria (es); emissione di moneta (it); emissione monetaria (it)
- liquidity control (en); open-market operations (en); open-market policy (en); control de liquidez (es); mercado abierto (es); open market (es); operación de mercado abierto (es); política de mercado abierto (es); controllo della liquidità (it); operazione di mercato libero (it); politica di mercato libero (it)
- Economic and Monetary Union (en); EMU (en); Werner plan (en); Werner report (en); Informe Werner (es); Plan Werner (es); UEM (es); Unión Económica y Monetaria (es); piano Werner (it); rapporto Werner (it); UEM (it); Unione economica e monetaria (it)
- coordination of EMU policies (en); coordinación de políticas UEM (es); coordinamento delle politiche UEM (it)
  - multilateral surveillance (en); vigilancia multilateral (es); sorveglianza multilaterale (it)
  - Stability and Growth Pact (en); stability pact (en); pacto de estabilidad (es); Pacto de Estabilidad y Crecimiento (es); patto di stabilità (it); patto di stabilità e crescita (it)
  - Economic and Financial Committee (en)
  - ESCB (en); European System of Central Banks (en); SEBC (es); Sistema Europeo de Bancos Centrales (es); SEBC (it); Sistema europeo di banche centrali (it)
  - single exchange-rate policy (en); política de cambios única (es); politica unica dei cambi (it)
  - single monetary policy (en); política monetaria única (es); politica monetaria unica (it)
  - timetable for EMU (en); calendario de la UEM (es); calendario dell'UEM (it)

### coordination of EMU policies (en); coordinación de políticas UEM (es); coordinamento delle politiche UEM (it)

Show inferred and explicit | Show/hide tabs

Terms (27) | Definition (0) | Attribute (0) | Relationships (5) | Alignment (0) | Note (0) | Annotation (0) | Image (0) | Schemes (2) | Hierarchy | History (0)

+ Add new term

Language	Term
English (en)	<input checked="" type="checkbox"/> <input type="checkbox"/> coordination of EMU policies (Preferred) W
Español (es)	<input checked="" type="checkbox"/> <input type="checkbox"/> coordinación de políticas UEM (Preferred) W
Français (fr)	<input checked="" type="checkbox"/> <input type="checkbox"/> coordination des politiques UEM (Preferred) W
Português (pt)	<input checked="" type="checkbox"/> <input type="checkbox"/> coordenação das políticas UEM (Preferred) W
Cesky (cs)	<input checked="" type="checkbox"/> <input type="checkbox"/> koordinace politik v Evropské měnové unii (Preferred) W
Deutsch (de)	<input checked="" type="checkbox"/> <input type="checkbox"/> Koordinierung der WWU-Politiken (Preferred) W
Hungarian (hu)	<input checked="" type="checkbox"/> <input type="checkbox"/> GMU-politikák összehangolása (Preferred) W
Italiano (it)	<input checked="" type="checkbox"/> <input type="checkbox"/> coordinamento delle politiche UEM (Preferred) W
Polski (pl)	<input checked="" type="checkbox"/> <input type="checkbox"/> koordynacja polityk UGW (Preferred) W
Slovak (sk)	<input checked="" type="checkbox"/> <input type="checkbox"/> koordinácia politik EMÚ (Preferred) W
Swedish (sv)	<input checked="" type="checkbox"/> <input type="checkbox"/> samordning av EMU-politik (Preferred) W
suomi, suomen kieli (fi)	<input checked="" type="checkbox"/> <input type="checkbox"/> EMU-politikkojen yhteensovittaminen (Preferred) W
српски језик (sr)	<input checked="" type="checkbox"/> <input type="checkbox"/> координација политика ЕМУ (Preferred) W
Nederlands (nl)	<input checked="" type="checkbox"/> <input type="checkbox"/> coördinatie van EMU-beleid (Preferred) W
македонски јазик (mk)	<input checked="" type="checkbox"/> <input type="checkbox"/> координација на политиките на Економската и монетарната унија (Preferred) W
	<input checked="" type="checkbox"/> <input type="checkbox"/> координација на политиките за ЕМУ W

Legend: ■ Proposed ■ Validated ■ Published ■ Revised ■ Proposed deprecated ■ Deprecated

Show more

# VB - Features

## **Collaborative editing**

- Editorial workflow (propose, validate, publish, revise, deprecate...)
- Full editing history (not only for concepts)
- RSS Feeds

## **Multilinguality**

- Full support to editing multi-lingual thesauri
- Multilingual interface (currently, English, Dutch, Spanish)

## **Native RDF support**

- Support for different triple stores
- Internal SPARQL endpoint to query/update data
- SKOS-XL management (SKOS-core can be exported)

## **Large scale thesauri management**

- Scalability limited only by the underlying triple store

## **Extensibility**

- OSGi connectable services

## **Advanced skos:ConceptScheme Management**

- SKOS allows for non-trivial management of multiple conceptual schemes

## **Free and Open Source**

# Functional comparison with other tools

Name	License	Free to use	Deployment	Data Models	Import/Export	Scheme Management	Custom Relations	Reasoner	Data quality	Extendibility / Interoperability	ACL	Workflow Management	Collaboration, Content Validation	RDF Middleware	RDF Backend	SPARQL Querying	Semantic Integration
<b>VocBench</b>	GNU GPL v3 (web application), Mozilla Public License MPL (Semantic Turkey)	Yes	Web application	SKOS-XL, SKOS through offline scaling tool	SKOS(-XL), versatile spreadsheet import (through ST Firefox UI)	Yes	Creation, Import, use	Depends on triple store	Metrics	API, shared backend, pluggable	Yes	Yes	Change feed, validation	OWL ART API (connectors to others: Sesame2 bundled)	provided by Sesame2, or other connectors	Yes	assisted (browse&search) linking of resources from other projects / manual linking of LOD resources. Extensions for RDF lifting from unstructured content
<b>PoolParty</b>	Proprietary	No	Web application	SKOS, SKOS-XL add-on	SKOS(-XL), static spreadsheet import	Only top concepts	Creation, Import, use	Depends on triple store	Metrics Validation rules	REST API	Yes	Yes (addon)	History, versioning, validation	Sesame SAIL API	provided by Sesame2	Yes	Linking Text Mining & Entity Extraction, Search function
<b>WebProtégé</b>	Mozilla Public License (MPL)	Yes	Web application	OWL 2, OBO	OWL	Not applicable	Creation, Import, use	No, external reasoning possible	Metrics	API, shared backend, pluggable	Yes	No	Discussion, watching, changes feed	OWL API	provided by Protégé 3	No	linking to BioPortal
<b>TemaTres</b>	GNU General Public License version 2.0 (GPLv2)	Yes	Web application	Term based thesaurus organization	MADS, SKOS-Core, Zthes, Others Import from: Skos-Core, tabulated or tagged text file	One scheme per vocabulary	Creation, use	No	Metrics, Reports	API	Yes; limited	Yes; limited	Limited validation	No RDF Middleware, SKOS RDF/XML available only as an export	Relational database (MySQL by default)	Not native, no realtime, can export data to a SPARQL endpoint through ARC2 (RDF library for PHP)	Linking between vocabularies, Entity Extraction (via addon)
<b>SKOSEd</b>	GNU Lesser GPL	Yes	Desktop application	SKOS	SKOS	Only top concepts	Creation, Import, use	Depends on available plugins	KB consistency	Pluggable	No	No	No	OWL API (used by Protégé 4)	provided by Protégé 4 (OWL API)	Yes (inherited from Protégé 4)	N/A

# Other users of VocBench

Full list at: <http://aims.fao.org/tools/vocbench/partners>

- FAO: [AGROVOC](#), [Biotechnology](#), [Land and Water](#), [FAO Topics](#)
- EU Documentation Office: [EUROVOC](#)
- [Italian Senate](#): [TESEO](#)
- European Environment Agency ([EEA](#)): [GEMET](#)
- [Harvard University](#): Unified Astronomy Thesaurus ([UAT](#))
- EC Parliament Library
- Agence Nationale de la Recherche > Infrastructure nationale [AnaEE](#) France
- [CABI](#)
- United Nations Convention to Combat Desertification ([UNCCD](#))
- [Scottish Government](#): Gov metadata
- Columbia University: [IEDA Thesaurus](#)

# Credits

- AGROVOC: Caterina Caracciolo, Sarah Dister, Johannes Keizer, Marie-Angelique Laporte, Karna Wegner, Luciana Zedda
- AGRIS: Fabrizio Celli, Yves Jaques, Mauro Ranchicchio
- VocBench: Armando Stellato, Andrea Turbati (U Tor Vergata, Rome)
- **Technical support:** [MIMOS Berhad](#) (Kuala Lumpur, Malaysia) hosts some of the technical infrastructure for the online publication of AGROVOC.

# Pointers and contacts

AGROVOC: [aims.fao.org/agrovoc](http://aims.fao.org/agrovoc)

AGRIS: [agris.fao.org](http://agris.fao.org)

VocBench: <http://vocbench.uniroma2.it/>

VocBench sandbox: <http://202.73.13.50:55481/vocbench/> (with AGROVOC)

AIMS community: <http://aims.fao.org/>

Subscribe, you get the news

VB m-list: <http://groups.google.com/group/vocbench-user>

[caterina.caracciolo@fao.org](mailto:caterina.caracciolo@fao.org)

[johannes.keizer@fao.org](mailto:johannes.keizer@fao.org)