



# AGROVOC Linked Open Data and the VocBench, potentials for the community

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Office of Knowledge Exchange, Research and Extension  
Food and Agriculture Organization of the UN

Talk at the US National Agricultural Library,  
May 20 2011



A I M S



***We will promote research for food and agriculture, including research to adapt to, and mitigate climate change, and access to research results and technologies at national, regional and international levels.***

***We will reinvigorate national research systems and will share information and best practices.***

***We will improve access to knowledge.***

world food summit 2009



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# ...Sharing Information

AIMS

- 1975 – AGRIS
- 1980 - AGROVOC
- 2000 - Rethinking of AGRIS
- 2002 - AOS/AGMES
- 2005 - CIARD
- 2005 - AIMS





Food and Agriculture  
Organization of the  
United Nations

for a world without hunger

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## AGRICULTURAL INFORMATION MANAGEMENT STANDARDS

"INTEROPERABILITY, REUSABILITY AND COOPERATION"

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### Weekly's Spotlight

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#### FAO Geopolitical Ontology in RDF-LOD version

The FAO Country Profiles portal is embracing the W3C Linked Open Data (LOD) initiative and recently released its Geopolitical Ontology in RDF format, including reference data used to manage country-based information and relevant key resources. The portal is also exposing some data in RDFa, which improves search and reuse.

#### OF INTEREST

Launch of Institutional Repository seen as "Milestone in the access and diffusion of information on Africa"  
10/05/2011 - 15:16

EIFL-PLIP Call for Concept Papers  
05/05/2011 - 09:15

The WebAGRIS usage survey – Results!  
03/05/2011 - 14:46

A common path towards Linked Open Data  
21/04/2011 - 15:25

More at the Of Interest Section

#### EVENTS SERVICE. UPCOMING EVENTS

Workshop on Creation, Harmonization and Application of Terminology Resources  
When: Wed, 05/11/2011 - Fri, 05/13/2011  
Where: Latvia

WSIS Forum 2011  
When: Mon, 05/16/2011 - Fri, 05/20/2011  
Where: Switzerland

4th African Conference for Digital Scholarship and Curation  
When: Tue, 05/17/2011 - Thu, 05/19/2011  
Where: South Africa

More at the Events Service

#### FLYERS



#### RELATED LINKS

- AGRIS search engine
- AgriFeeds
- CIARD Ring
- e-agriculture
- VERCON

#### AIMS supports

SUPPORTING



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# Today's Talk

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- What's new with AGROVOC
- AGROVOC Linked Open Data
- The VocBench
- Why mapping Vocabularies
- Automatic Indexing
- AGRIS





# AGROVOC



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# AGROVOC

A I M S

- A multilingual agricultural vocabulary organized as **concept scheme** in 20 languages
- Covers agriculture, forestry, fisheries and related themes (food security, land use, environment, etc.)
- Organized in sub-vocabularies, e.g. chemicals, fisheries terms, scientific/common names of organisms
- Maintained by a global community (e.g. librarians, terminologists, information managers) using VocBench

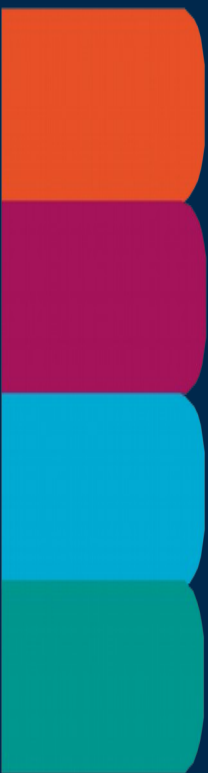




# AGROVOC - Statistics

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<b>Total terms</b>	<b>580,239</b>
<b>Concepts</b>	<b>ca. 40,000</b>
<b>Top concepts</b>	<b>25</b>
<b>English concepts / terms</b>	<b>ca. 32,000 concepts / 40,737 terms</b>
<b>French terms</b>	<b>38,395</b>
<b>Spanish terms</b>	<b>41,745</b>
<b>Terms in Arabic, Chinese, Czech, German, Hindi, Hungarian, Italian, Japanese, Korean, Lao, Persian (Farsi), Polish, Portuguese, Russian, Slovak, Thai</b>	<b>456,952</b>







# AGROVOC - Restructuring

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- **Goal:** Transform AGROVOC from a traditional thesaurus into a **concept scheme** with distinction between conceptual level and terminological level
- Overall revision done by **FAO** in collaboration with KSI (Knowledge Sharing and Innovation) team at **ICRISAT**, Hyderabad, India
- Top concepts reduced from 918 to 25
- Around 85,000 term relations revised
- Non-hierarchical relationships refined by semantic relations
- Ca. 4,000 non-preferred terms changed to preferred terms





# Top concepts

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VocBench VERSION 1.1

Exact word  Go

Recent changes **Concepts** Relationships Validation Export Statistics

Concepts    Show also non-preferred terms

- activities (en)**
- entities (en)**
- events (en)**
- factors (en)**
- features (en)**
- groups (en)**
- location (en)**
- measure (en)**
- methods (en); Ways of doing (en)**
- objects (en)**
- phenomena (en)**
- processes (en)**
- properties (en)**
- resources (en)**
- site (en)**
- stages (en)**
- state (en)**
- strategies (en)**
- subjects (en)**
- substances (en)**
- systems (en)**
- time (en)**
- Gaeabionta (en); life on earth (en); **organisms (en)**
- produce (en); **products (en)**
- Technics (en); **technology (en)**





# Relationships (examples)

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Relationships Object properties

- R Causative relationship (en)
  - R Acts upon (en)
- R Affects (en)
  - R Afflicts (en)
- R Benefits from (en)
- R Causes (en)
- R Controls (en)
- R Has a related type (en)
- R Has biological control agent (en)
- R Has breeding method (en)
- R Has control method (en)
- R Has cropping system (en)
- R Has cultivation process (en)
- R Has disease (en)
- R Has disorder (en)
- R Has infection part (en)
- R Has natural enemy (en)

Legend  Proposed by  Proposed  Valid

Relationships Object properties

- R Has object of activity (en)
- R Has pathogen (en)
- R Has pest (en)
- R Has physiological function (en)
- R Has practice (en)
  - R Has post-production practice (en)
- R Has product (en)
- R Has Propagation process (en)
- R Has property (en)
- R Has theme (en)
- R Is a pest of (en)
- R Is a related type of (en)
- R Is acted upon by (en)
- R Is affected by (en)
- R Is beneficial for (en)
- R Is biological control agent of (en)
- R Is breeding method of (en)

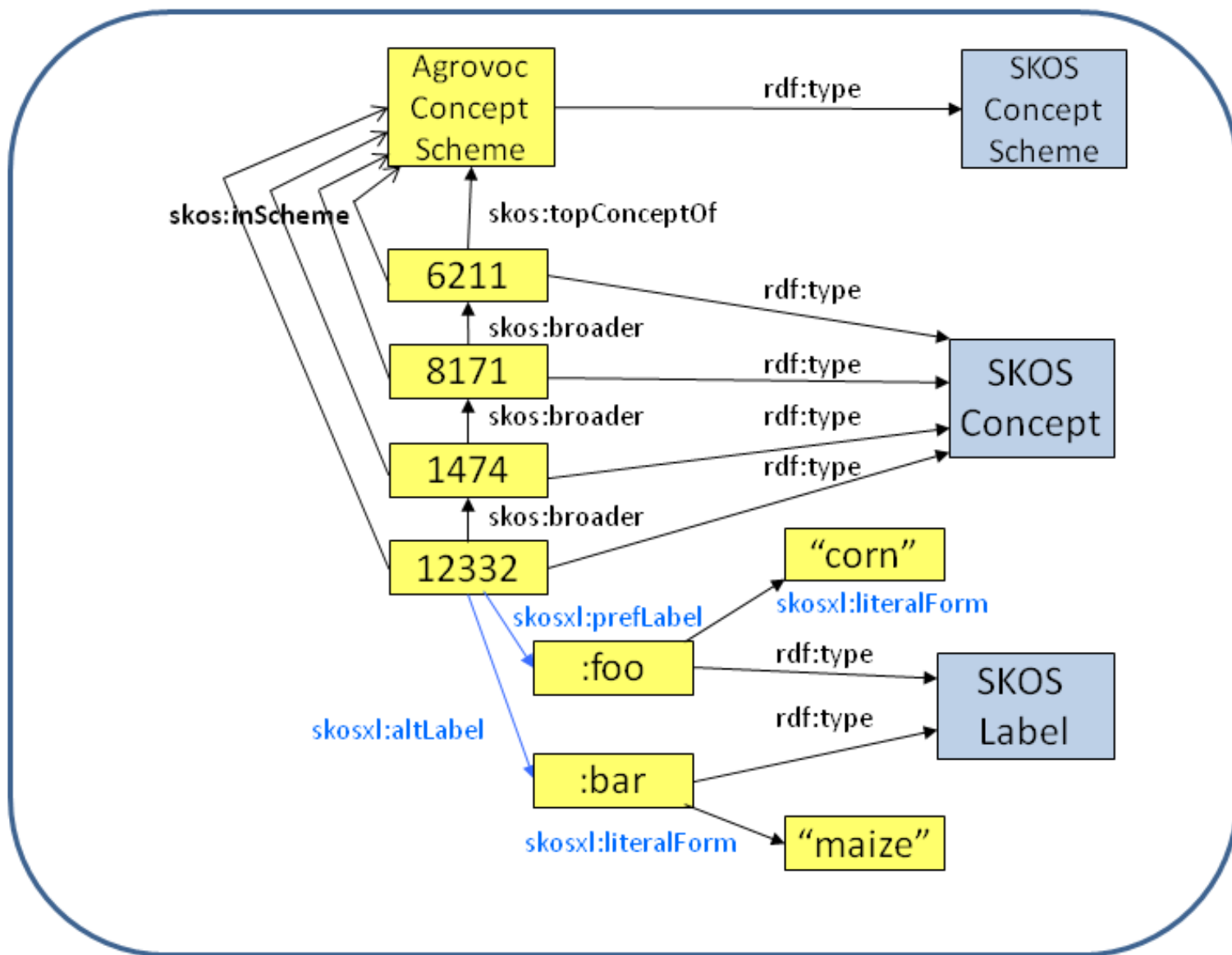
Legend  Proposed by  Proposed  Valid





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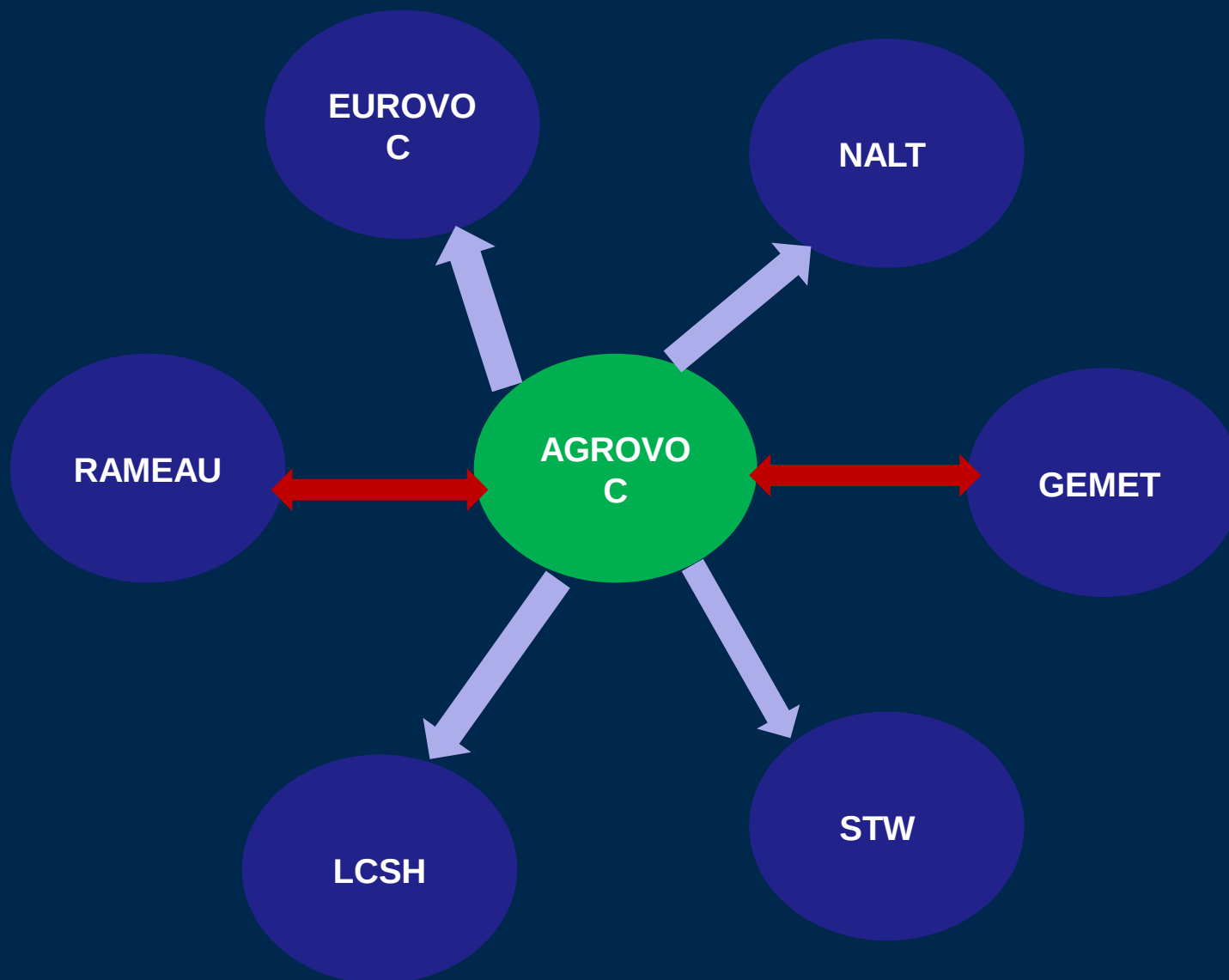
# The AGROVOC SKOS Model





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# Thesauri into the AGROVOC LOD Cloud



- ❖ 18000 outlinks
- ❖ 2000 inlinks



# toxic substances

at AGROVOC

Thesaurus



[http://aims.fao.org/aos/agrovoc/c\\_7825](http://aims.fao.org/aos/agrovoc/c_7825)



Property	Value
altLabel	GIFT (de) Injurious chemicals (en) Poison (fr) Poisons (en) Prodotti chimici nocivi (it) Produto químico nocivo (pt) SCHAEDLICHE CHEMIKALIE (de) Sostanze velenose (it) Szkodliwe substancje chemiczne (pl) Trucizna (pl) Tóxico (pt) Veneno (es) jedovaté látky (sk) jedovaté látky (cs) méreg (hu) ártalmas vegyszer (hu) škodlivé chemikálie (cs) škodlivé chemikálie (sk) вредные химикаты (ru) яды (ru) سموم (fa) مواد توکسیک (fa) مواد شیمیایی آسیب‌رسان (fa) विष (hi) हानिकारक रसायन (hi) ยาพิษ (th) สารเคมีที่เป็นอันตราย (th) 독물 (ko)

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causes	< <a href="http://aims.fao.org/aos/agrovoc/c_7201">http://aims.fao.org/aos/agrovoc/c_7201</a> > < <a href="http://aims.fao.org/aos/agrovoc/c_7826">http://aims.fao.org/aos/agrovoc/c_7826</a> >
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date of last update	2007-04-20
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isUsedToMake	< <a href="http://aims.fao.org/aos/agrovoc/c_5739">http://aims.fao.org/aos/agrovoc/c_5739</a> >
narrower	< <a href="http://aims.fao.org/aos/agrovoc/c_1313">http://aims.fao.org/aos/agrovoc/c_1313</a> > < <a href="http://aims.fao.org/aos/agrovoc/c_7671">http://aims.fao.org/aos/agrovoc/c_7671</a> > < <a href="http://aims.fao.org/aos/agrovoc/c_7828">http://aims.fao.org/aos/agrovoc/c_7828</a> >
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aquaculture

at AGROVOC Thesaurus

[http://aims.fao.org/aos/agrovoc/c\\_550](http://aims.fao.org/aos/agrovoc/c_550)



Property	Value
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AGROVOC and the VocBench, NAL, 2011, May 19

agricultural information management standards and services - dr. johannes keizer

AIMS





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AGRO  
agricultura

Done





# AGROVOC LOD-



GEMET Thesaurus

Vocabulary and Alignment Repository

supported by

---

SERVICES | REPORTNET | TOOLS | TOPICS (ETCS)

Repository homepage | STITCH

---

**Local navigation**

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- » NFP/Eionet IG
- » Mails to NFPs
- » SERIS
- » Eionet Wiki
- » Workplan/planner
- » Meetings & events
- » Priority dataflows
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## Europe

**Definition:**  
 The second smallest continent, forming the W extension of Eurasia: the coastline is generally extremely indented and there are several peninsulas (including the British Isles and Iceland). It contains a series of great mountains (including the Alps and the Caucasus), a large central plain, and a N region of lakes and mountains.

**broader terms**

- world

**narrower terms**

- Eastern Europe
- Western Europe

**Scope note:**  
scope note is not available

**Groups:**  
LAND (landscape, geography)

**Themes:**  
geography

**Other relations:**

- Has exact match
  - [AGROVOC: Europe](#)
  - <http://eurovoc.europa.eu/909>
- Wikipedia article
  - [Europe](#)

**Concept information**

<b>URI</b>	http://stitch.cs.vu.nl/vocabularies/rameau/ark:/12148/cb11931301w	
<b>prefLabel</b>	x-notation	FRBNF119313017
	fr	Europe
<b>altLabel</b>	fr	Conseil de l'Europe, Pays du
	fr	Pays du Conseil de l'Europe
<b>scopeNote</b>	fr Voir aussi aux différentes parties de l'Europe, par ex. Europe de l'Ouest	
<b>editorialNote</b>	fr Source : GLU	
<b>inScheme</b>	<a href="#">Rameau</a>	
	<a href="#">Rameau - Noms Géographiques</a>	
<b>broader</b>	<a href="#">Eurasie</a>	
<b>narrower</b>	<a href="#">Pays de l'Union européenne</a>	
<b>related</b>	<a href="#">Et l'Europe</a>	

**Mappings (simple SKOS statements)**

Mapping Relation	Concept
exactMatch	<a href="http://aims.fao.org/aos/agrovoc/c_2724">http://aims.fao.org/aos/agrovoc/c_2724</a>
<b>Russian:</b>	Европа
<b>Slovak:</b>	Európa
<b>Slovenian:</b>	Evropa
<b>Spanish:</b>	Europa
<b>Swedish:</b>	Europa
<b>Turkish:</b>	Avrupa

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 GEMET - Concepts, version 2.4, 2010-01-13





# AGROVOC Links after 3 weeks LOD

AIMS

## Outlinks:

GEMET-AGROVOC  
1,198

RAMEAU-AGROVOC :  
700

Total Outlinks: 1898

## Inlinks:

AGROVOC-EUROVOC:1,297

AGROVOC-GEMET:1,198

AGROVOC-LCSH :1,093

AGROVOC-NAL: 13,390

AGROVOC-STW:1136

AGROVOC-RAMEAU:700

Total Inlinks:18,814





AIMS

## RE: GEMET and AGROVOC linking

You forwarded this message on 4/7/2011 4:49 PM.

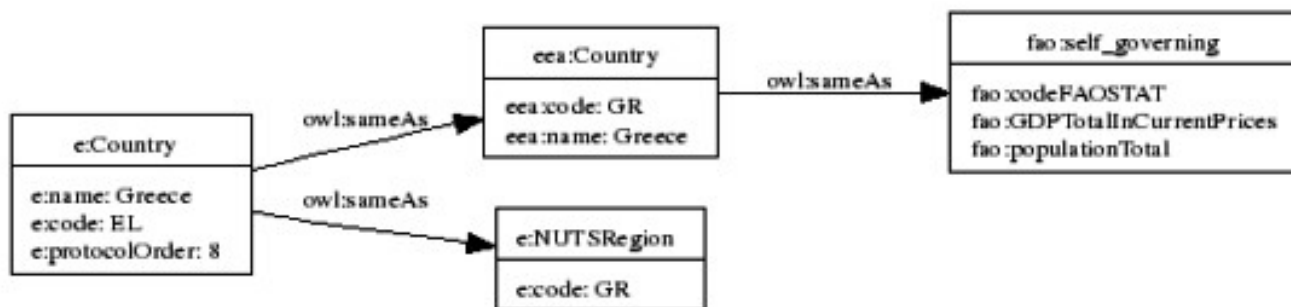
Jaques, Yves (OEKC)

**Sent:** Tuesday, April 05, 2011 5:05 PM

**To:** Søren Roug [Soren.Roug@eea.europa.eu]; Morshed, Ahsan (OEKC)

**Cc:** Johannsen, Gudrun (OEKC); Keizer, Johannes (OEKC); FAO-Country-Profiles; Stefan Jensen [Stefan.Jensen@eea.europa.eu]

We noticed you have made the FAO Country profiles available as RDF. We now have a SPARQL database and I loaded your data. I then linked our country codes to your country codes and we already had links to Eurostat like this:



We can then make queries on our SPARQL endpoint at <http://cr3.eionet.europa.eu/sparql>.

For instance, this query shows country codes for three organisations and the GDP data from FAO.

<u>eeaURI</u>	<u>estatcode</u>	<u>eeacode</u>	<u>nutscod</u>	<u>faocode</u>	<u>gdp</u>	<u>name</u>
<a href="http://rdfdata.eionet.europa.eu/eea/countries/BE">http://rdfdata.eionet.europa.eu/eea/countries/BE</a>	BE	BE	BE	255	44.252934	Belgium
<a href="http://rdfdata.eionet.europa.eu/eea/countries/BG">http://rdfdata.eionet.europa.eu/eea/countries/BG</a>	BG	BG	BG	27	6.4575214	Bulgaria
<a href="http://rdfdata.eionet.europa.eu/eea/countries/CZ">http://rdfdata.eionet.europa.eu/eea/countries/CZ</a>	CZ	CZ	CZ	167	18.350275	Czech Republic

We're on a path to something really useful!



AGROVOC and the VocBench, NAL, 2011, May 19

agricultural information management standards and services - dr. johannes keizer

AIMS





# Get the NALT into the LOD cloud too!

AIMS

- Some notes from Ahsan

- Issues

- 1. Only problem is that the online version and the SKOS version 2011 of NALT are totally different according to the terms code . They need to make the stable version of their terms code .
- 2. Since the AGROVOC is connected with the NALT so they are in the LOD according to the principle. They can put our 13,000 mapping links into their SKOS file. It will cover outlinks and inlinks.

- Necessary activities

- 1. Put the SKOS version in the triple store.
- 2. Make the dereferenceable URIs in their website (They can use the biotech drupal module that we are going to build now)
- 3. Publish the URIs by using Pubby tool

<http://www4.wiwiss.fu-berlin.de/pubby/>



Europe:(It is better to use this example during the presentation)

[http://aims.fao.org/aos/agrovoc/c\\_2724](http://aims.fao.org/aos/agrovoc/c_2724)

From the Top concept:

Ref: [http://aims.fao.org/aos/agrovoc/c\\_7644](http://aims.fao.org/aos/agrovoc/c_7644)

Vocbench (Production)

Ref: <http://agrovoc.mimos.my/vocbenchv1.1i/>

VocBench(Sandbox)

Ref:<http://agrovoc.mimos.my/vocbenchv1.1i/>



# The VocBench



AIMS

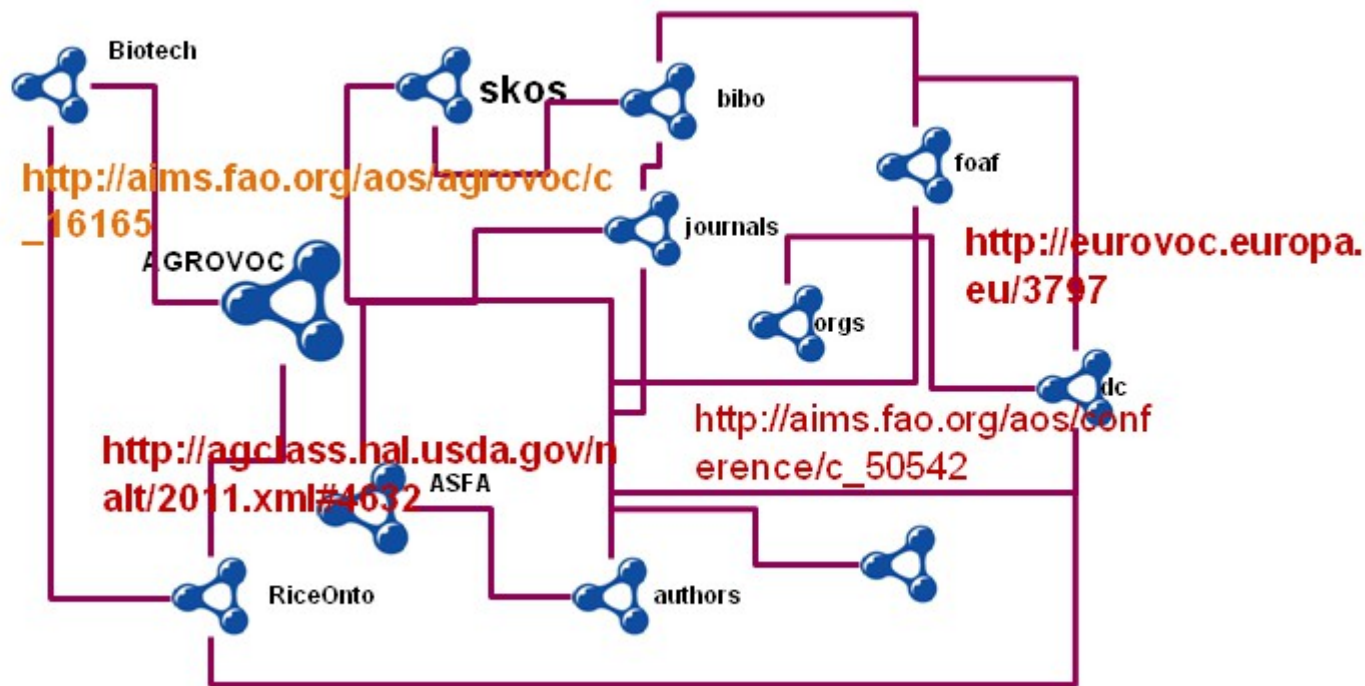


# The VocBench

VocBench

concepts and entities triples

AIMS



AGROVOC and the VocBench, NAL, 2011, May 19

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# VocBench Features

AIMS

- Domain independent
- Structure independent (i.e. thesauri, Glossaries, etc)
- Supports RDF (SKOS, SKOS-XL), OWL
- Supports collaborative editing
- Supports editorial workflow, with user roles
- Simple and advanced search
- Supports data export: SKOS, Relational format (MySQL)





Concepts  Show URI  Show also non-

- Cruelty prevention (en)
- navigation (en)
- Organization (en)
- economic activities (en)
  - repayment (en)
  - product development (en)
  - farm closures (en)
  - income generation (en)
  - horticulture (en)
  - hire purchase (en)
  - occupations (en)
  - financing (en)
  - capital leasing (en)
  - mortgages (en)
  - lending (en)
  - insurance (en)
  - investment (en)
  - property transfers (en)
  - entrepreneurship (en)
  - Spending (en)
  - capital formation (en)
  - fisheries (en)
    - Estuarine fisheries (en)
    - Pelagic fisheries (en)
    - Marine fisheries (en)
    - Multispecies fisheries (en)
    - aquaculture (en)

## aquaculture (en)

Terms (2) Definition (0) Note (0) Attribute (0) Relationships (7) History (0) Image (0) Hierarchy

+ Add new term

Language	Term
English (en)	<input type="checkbox"/> aquaculture (Preferred) <input type="checkbox"/> W
	<input type="checkbox"/> Sea ranching <input type="checkbox"/> W
Español (es)	<input type="checkbox"/> Acuicultura (Preferred) <input type="checkbox"/> W
	<input type="checkbox"/> Producción acuícola <input type="checkbox"/> W
Français (fr)	<input type="checkbox"/> Aquaculture (Preferred) <input type="checkbox"/> W
	<input type="checkbox"/> Production aquacole <input type="checkbox"/> W
Arabic (ar)	<input type="checkbox"/> تربية الأحياء المائية (Preferred) <input type="checkbox"/> W
中文 (zh)	<input type="checkbox"/> 水产养殖 (Preferred) <input type="checkbox"/> W
	<input type="checkbox"/> 海洋牧场 <input type="checkbox"/> W
Русский (ru)	<input type="checkbox"/> аквакультура (Preferred) <input type="checkbox"/> W
	<input type="checkbox"/> выращивание и разведение водных организмов <input type="checkbox"/> W
	<input type="checkbox"/> разведение морских организмов <input type="checkbox"/> W
Português (pt)	<input type="checkbox"/> Aquicultura (Preferred) <input type="checkbox"/> W
Česky (cs)	<input type="checkbox"/> akvakultura (Preferred) <input type="checkbox"/> W
	<input type="checkbox"/> chov mořských ryb <input type="checkbox"/> W
Lao (lo)	<input type="checkbox"/> ການລ້ຽງ ອົງປ່າງນ້ຳ (Preferred) <input type="checkbox"/> W
Persian (fa)	<input type="checkbox"/> آبی‌پروری (Preferred) <input type="checkbox"/> W
	<input type="checkbox"/> پرورش آبزیان <input type="checkbox"/> W

Legend ■ Proposed by guest ■ Proposed ■ Validated ■ Published ■ Revised by guest ■ Revised ■ Proposed deprecated ■ Deprecated

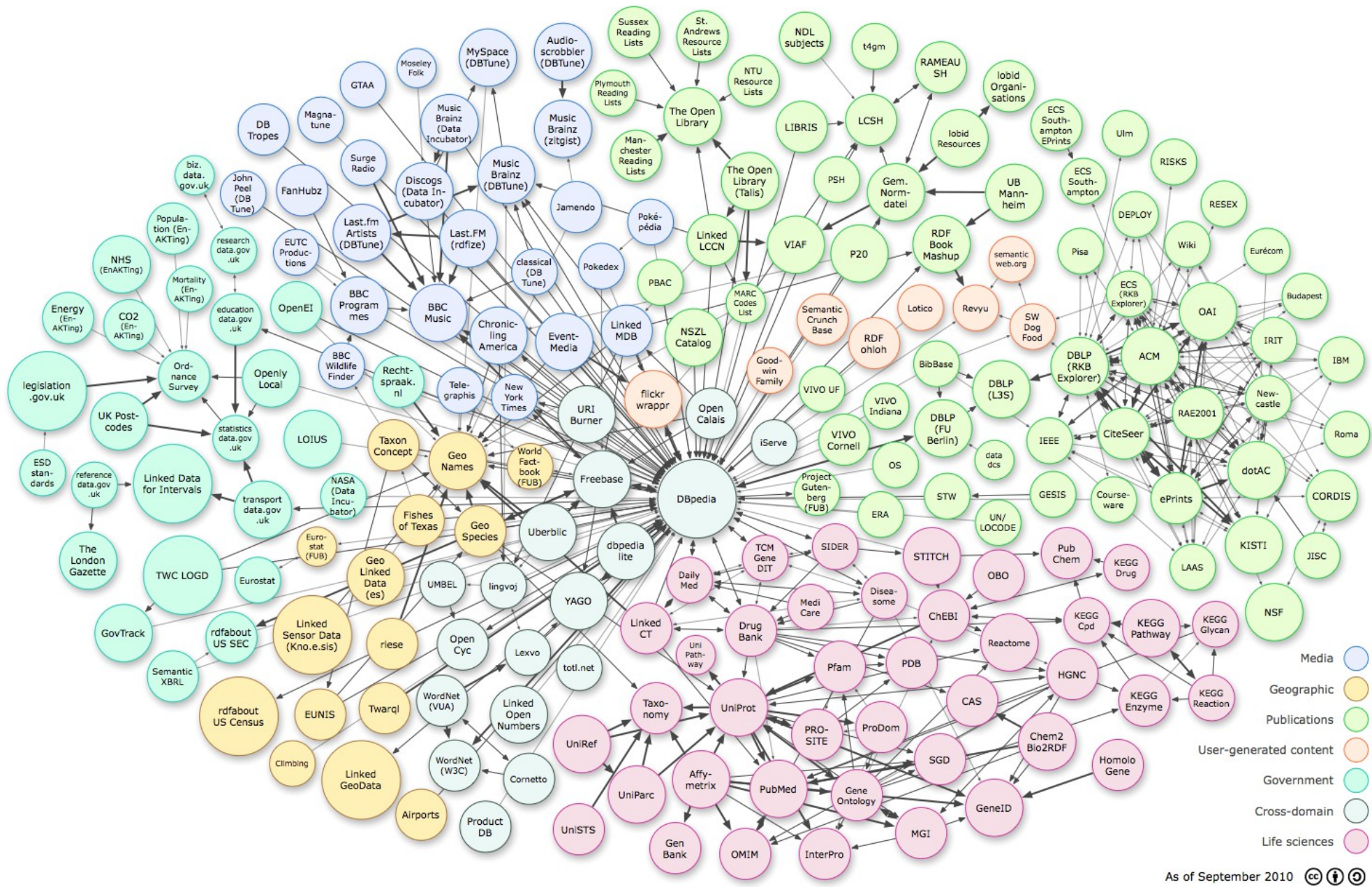
Show more



# Why linking vocabularies?



AIMS



As of September 2010



AGROVOC and the VocBench, NAL, 2011, May 19  
 agricultural information management standards and services - dr. johannes keizer



**Proceedings of the National Conference on Hazardous Wastes and Hazardous Materials: March 16-18, 1987, Washington, DC**

Anon.

[http://aims.fao.org/aos/agrovoc/c\\_7825](http://aims.fao.org/aos/agrovoc/c_7825)

**Record number** US9020057  
**Personal authors** [Anon.](#)  
**Conference** National Conference on Hazardous Wastes and Hazardous Materials, Washington, D.C. (USA), 1987  
**Publisher** Hazardous Materials Control Research Institute Silver Spring, Md. (USA)  
**Date of publication** 1987  
**AGRIS Categories** [Pollution](#)  
**AGROVOC English terms** [Usa](#); [Wastes](#); [Toxic substances](#); [Environmental impact](#)  
**AGROVOC French terms** [Etats-unis](#); [Dechet](#); [Substance toxique](#); [Impact sur l'environnement](#)  
**AGROVOC Spanish terms** [Estados unidos de america](#); [Desechos](#); [Substancias toxicas](#); [Impacto ambiental](#)  
**Language** English  
**Notes** ill. bibliographies. Spine title: Hazardous wastes and hazardous materials. "Affiliates U.S. Environmental Protection Agency ... [et al.  
**Type** Bibliography  
**Pagination** 424 p.

About the Title

[Hazardous and industrial solid waste minimization ... of Waste Management Alternatives," Proceedings of Waste Management Alternatives," Proceedings of Waste Management Alternatives,](#) [Washington, DC](#)

[books.google.com](#)

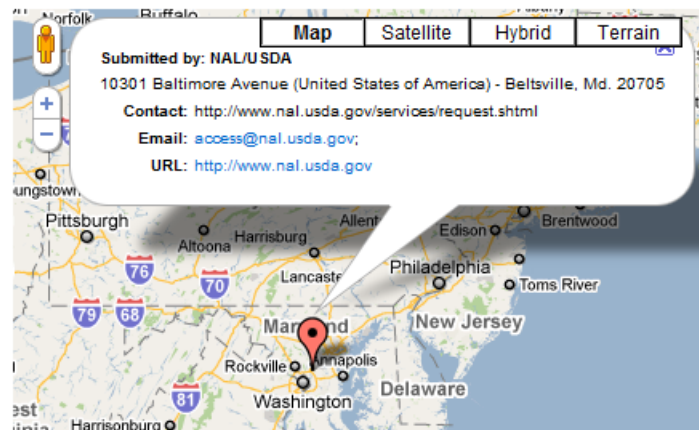
About the author Anon.

[Electronic waste - Wikipedia, the free encyclopedia](#)

The **USA** discards 30 million computers each year and 100 million phones are ... and has no domestic laws forbidding the export of **toxic waste**, the Basel Action .... The station is also taking steps to reduce its own **environmental impact**, ... [edit] **Electronic waste substances**. Several sizes of button and coin cell ...

[en.wikipedia.org](#)

About the Journal (0)



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**Proceedings of the National Conference on Hazardous Wastes and Hazardous Materials: March 16-18, 1987, Washington, DC**

Anon.

Record number US9020057  
 Personal authors Anon.  
 Conference National Conference on Hazardous Wastes and Hazardous Materials, Washington, D.C. (USA), 1987  
 Publisher Hazardous Materials Control Research Institute Silver Spring, Md. (USA)  
 Date of publication 1987  
 AGRIS Categories Pollution  
 AGROVOC English terms Usa; Wastes; Toxic substances; Environmental impact  
 AGROVOC French terms Etats-unis; Dechet; Substance toxique; Impact sur l'environnement  
 AGROVOC Spanish terms Estados Unidos de America; Desechos; Substancias toxicas; Impacto ambiental  
 Language English  
 Notes ill. bibliographies. Spine title: Hazardous wastes and hazardous materials. U.S. Environmental Protection Agency ... [et al.]  
 Type Bibliography  
 Pagination 424 p.

[http://aims.fao.org/aos/agrovoc/c\\_7825](http://aims.fao.org/aos/agrovoc/c_7825)

About the Title

[Hazardous and industrial solid waste minimization ... of Waste Management Alternatives," Proceedings of the National Conference on Hazardous Wastes and Hazardous Materials, Washington, DC, 1987](#)

books.google.com

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 Display results: ordered by date

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▶ **52010DC0514**

REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL on the application of Regulation (EC) No 850/2004 on persistent organic pollutants in accordance with Article 12(6) of the Regulation

/\* COM/2010/0514 final \*/

- ▶ [Bibliographic notice](#)
- ▶ [Bibliographic notice + Text \(bilingual display\)](#)
- ▶ [html](#) ▶ [pdf](#) ▶ [doc](#)

<http://eurovoc.europa.eu/218754>

▶ **32009L0141R(01)**

This corrigendum does not concern the English version.

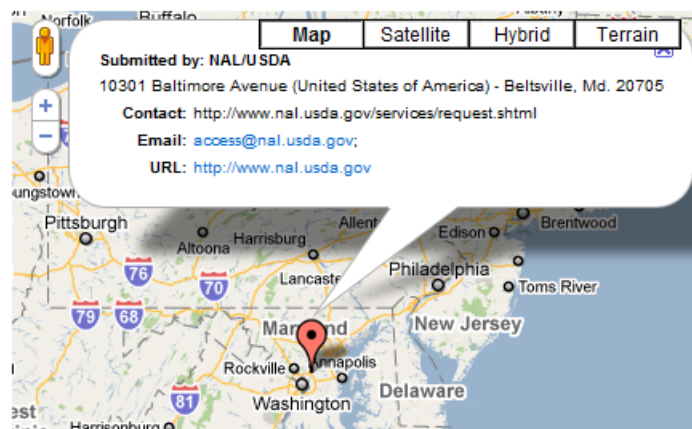
- ▶ [Bibliographic notice](#)

▶ **22010D0065**

Decision of the EEA Joint Committee No 65/2010 of 11 June 2010 amending Annex II (Technical regulations, standards, testing and certification) to the EEA Agreement

*OJ L 244, 16.9.2010, p. 15-16 (BG, ES, CS, DA, DE, ET, EL, EN, FR, IT, LV, LT, HU, MT, NL, PL, PT, RO, SK, SL, FI, SV)*

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Download File	<a href="#">English(154.5K)(WORD6)</a> , <a href="#">French(161K)(WORD6)</a> , <a href="#">Russian(262K)(WORD6)</a> , <a href="#">Spanish(182K)(WORD6)</a> , <a href="#">Arabic(241.5K)(WORD6)</a>
Title	REPORT OF THE SPECIAL RAPPORTEUR ON THE ADVERSE EFFECTS OF THE MOVEMENT AND DUMPING OF TOXIC AND DANGEROUS PRODUCTS AND WASTES ON THE ENJOYMENT OF HUMAN RIGHTS, OKECHUKWU IBEANU
Publication date	5/7/2010
Symbol	A/HRC/15/22
Session/Year	15
Agenda Items	3
Subjects	SHIPS RECYCLING OCCUPATIONAL HEALTH HUMAN RIGHTS HEALTH HAZARDS HAZARDOUS WASTES ENVIRONMENTAL HEALTH ENVIRONMENTAL LAW TREATIES TOXIC WASTE MANAGEMENT FACT-FINDING MISSIONS CHEMICAL SAFETY CONFERENCES DEVELOPING COUNTRIES SOUTH ASIA TOXIC SUBSTANCES ENVIRONMENTALLY HAZARDOUS SUBSTANCES OCCUPATIONAL SAFETY

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Hazardous Wastes and Hazardous Materials, Washington, DC

About the Title

[Hazardous and industrial solid waste minimization ... of Waste Management Alternatives," Proceedings of the 10th International Conference on Hazardous Waste Management, Washington, DC](#)

[http://aims.fao.org/aos/agrovoc/c\\_7825](http://aims.fao.org/aos/agrovoc/c_7825)

books.google.com

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Hazardous Wastes and Hazardous Materials, Washington,

Research Institute Silver Spring, Md. (USA)

ances; Environmental impact

ance toxique; Impact sur l'environnement

a; Desechos; Substancias toxicas; Im

le: Hazardous wastes and hazardous materials  
tion Agency ... [et al.]

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52010DC0514

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/\* COM/2010/0514 final \*/

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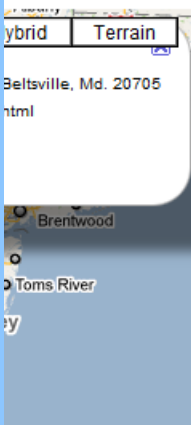
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on Hazardous Wastes and Hazardous DC

About the Title

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es Languages and formats available Classifications

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http://agclass.nal.usda.gov

/v/nalt/2011.xml#1780

✓ Creator	Geological Survey (U.S.)	x
✓ Record Origin	AGRICOLA (NAL)	x
✓ Keyword	Toxic Waste-Ground-Water Contamination Program (U.S.)	x

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Title: U.S.Geological Survey Program on Toxic Waste-Ground-Water Contamination : : proceedings of the second technical meeting, Cape Cod, Massachusetts, October 21-25, 1985

Keyword: Toxic Waste-Ground-Water Contamination Program (U.S.)

Format: Book

Creator: Ragone, Stephen E. ; Geological Survey (U.S.) ; Toxic Waste-Ground-Water Contamination Program (U.S.)

Source: Open-file report / U.S.Geological Survey ;86-481

Date: 1988

Record Origin: AGRICOLA (NAL)

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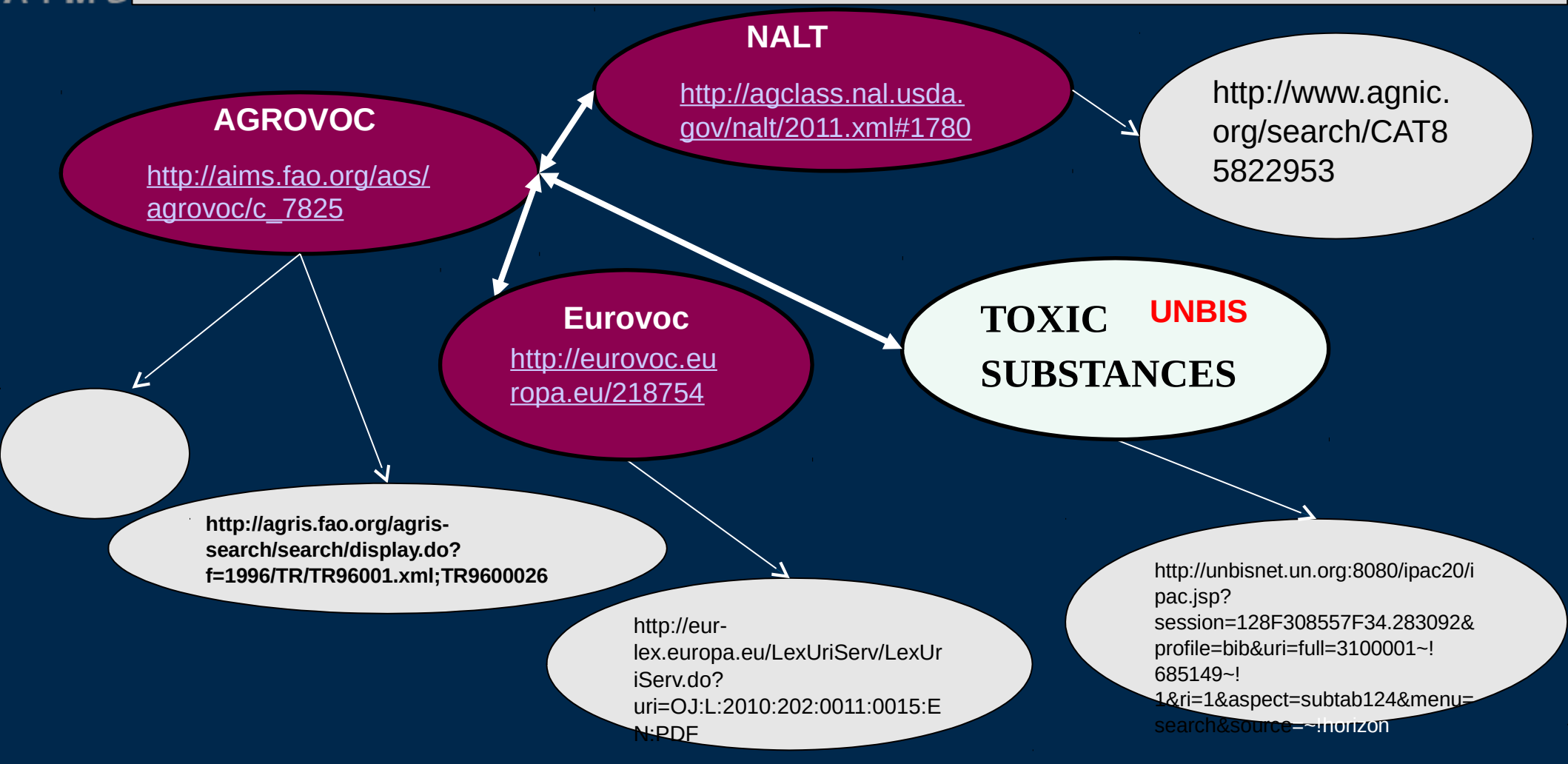
Germany  
Agricolastraße 10  
Freiberg/Sachsen D-09599  
Distance: 3981.38 Miles

ENVIRONMENTALLY HAZARDOUS SUBSTANCES  
OCCUPATIONAL SAFETY





# Linking data through common URIs



[http://aims.fao.org/aos/agrovoc/c\\_12332](http://aims.fao.org/aos/agrovoc/c_12332) owl:sameAs <http://eurovoc.europa.eu/219871>  
skos: exact match UNBIS: Toxic Substances





If all institutions, which publish about toxic wastes would:

- - Index their publications with URIs from AGROVOC, GEMET, NALT, LCSH or EUROVOC
- (many do – low hanging fruit!)
- - Publish their metadata as LOD
- (quite easy to do, bibData map well to RDF)

Then

Everyone who knows to write Sparql Qeries could get all these publications with one shot for a new website on toxic wastes





# Vocabularies and LOD

AIMS

- Simply publishing your data as RDF does not link them to other data sets □
- Creating this links by humans is interesting in detail, but unrealistic as mass processing
- Linking 2 standard vocabularies can link 200 datasets which use these standard vocabularies





# AgroTagger And OpenCalais



AIMS



IN THE NEW MEDIA LANDSCAPE,  
SOMEONE WILL WIN

0:32 blip.tv

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# AgroTagger

AIMS

- Does Concept identification in unstructured texts
- Uses Agrovoc as a controlled vocabulary
- Prototype under testing with excellent results (entire repository of ICARDA indexed)
- Will produce in future Structured RDF files that can be used to link data like



# Southern Green Stink Bug, *Nezara viridula* (L.), Injury to Macadamia Nut<sup>1</sup>

WALLACE C. MITCHELL, ROBERT M. WARNER, AND EDWARD T. FUKUNAGA  
UNIVERSITY OF HAWAII

(Submitted for publication December, 1964)

## INTRODUCTION

The kernel spotting of macadamia (*Macadamia ternifolia* F. Muell.) was first noticed on October 8, 1962, in nuts harvested from trees in Nuuanu Valley, Oahu. Additional reports of kernel damage were received from Waipahu and Ewa a few days later. The injury appeared very similar to kernel spot of pecan reported by Turner (1918), Demaree (1922), Weber (1933), Moznette (1940) and Phillips et al (1964).

The feeding damage of the southern green stink bug, *Nezara viridula* (L.), on nut crops has been known since 1917 when Turner reported that kernel spot of pecan was caused by the feeding of this stink bug. Demaree was able to reproduce the spotting of pecan kernels in the laboratory by allowing stink bugs to feed on undamaged nuts. Demaree and Weber were primarily interested in the micro-organisms associated with the feeding punctures. They isolated a number of bacteria and fungi but none were consistently found in each spotted kernel. Weber isolated the fungus *Nematospora coryli* Pegl. from spots on the pecan kernels. Dr. Rutschky, a visiting professor from Pennsylvania State University, did some preliminary investigation of the micro-organisms and factors associated with the kernel spot of macadamia in Hawaii. He reported one bacterium and three fungi were isolated from macadamia kernel spots.

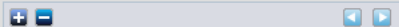
## MACADAMIA INJURY

Stink bug injury to plants is caused by the feeding of the second to fifth instar nymphs and adults (Fig. 1). The first nymphal instar does not feed on plant



Show RDF

Entry Page



Topics:

Environment 66%

Social Tags:

- Food and drink ★★★★★
- Pentatomidae ★★★★★
- Agriculture ★★★★★
- Environment ★★★★★
- Linux kernel ★★★★★
- Pecan ★★★★★
- Orchard ★★★★★
- Nut ★★★★★
- Green stink bug ★★★★★
- Nezara viridula ★★★★★
- Macadamia ★★★★★
- Hawaii ★★★★★
- Botany ★★★★★

Entities:

- City
- Facility
- Industry Term
- Natural Feature
  - island of Hawaii
  - Nuuanu Valley
- Organization
  - Hawaiian Entomological Society
  - U.S.D.A.
  - UNIVERSITY OF HAWAII
- Person
  - Florida Agric
  - Robert M. Warner
  - Rutschky
  - Wallace C. Mitchell
- Position
  - Director of the Hawaii Agricultural
  - visiting professor
- Province Or State
  - Hawaii,United States

Events & Facts:

- Generic Relations

Vol. XIX, No. 1, June, 1965 103

Southern Green Stink Bug, *Nezara viridula* (L.),  
Injury to Macadamia Nut1

**Wallace C. Mitchell, Robert M. Warner, and Edward T. Fukunaga**  
**UNIVERSITY OF HAWAII**

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MACADAMIA INJURY

Stink bug injury to plants is caused by the feeding of the second to fifth instar nymphs and adults (Fig. 1). The first nymphal instar does not feed on plant tissue but may ingest water. The insect will feed on macadamia in any stage of development. Though all stages in the life cycle of the insect have been observed in the field on macadamia, only one egg mass has been collected on macadamia foliage to date, which indicates other plant hosts are more favorable for egg deposition.

The kernel injury (Fig. 2) usually is not recognized until the nuts have been shelled and the spotting of the kernels is evident. The stink bug is able to  
1 Published with the approval of **the Director of the Hawaii Agricultural Experiment Station** as Technical Paper No. 742.

Table 1. Percentage\* of stink bug damaged macadamia kernels from samples taken at four orchards on Oahu in 1963 and 1964

Orchard	Location	Nutridge	Poamoho	Waialua	Waimanalo
Orchard					
(Feet)					
900-1000					
500-600					

Reset

## Agrotagger

# An automatic keyword assignment system under development at IITK in collaboration with FAO and ICRISAT

Paste your Text Here:

Southern Green Stink Bug, *Nezara viridula* (L.),  
Injury to Macadamia Nut1  
Wallace C. Mitchell, Robert M. Warner, and Edward T. Fukunaga  
UNIVERSITY OF HAWAII  
(Submitted for publication December, 1964)

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### Agrotags

Orchards | Nuts | Sampling | Pilot farms | Electrophoresis | biological interaction | Sexual reproduction | Animal developmental stages | Weeds | Lucerne







# AGRIS



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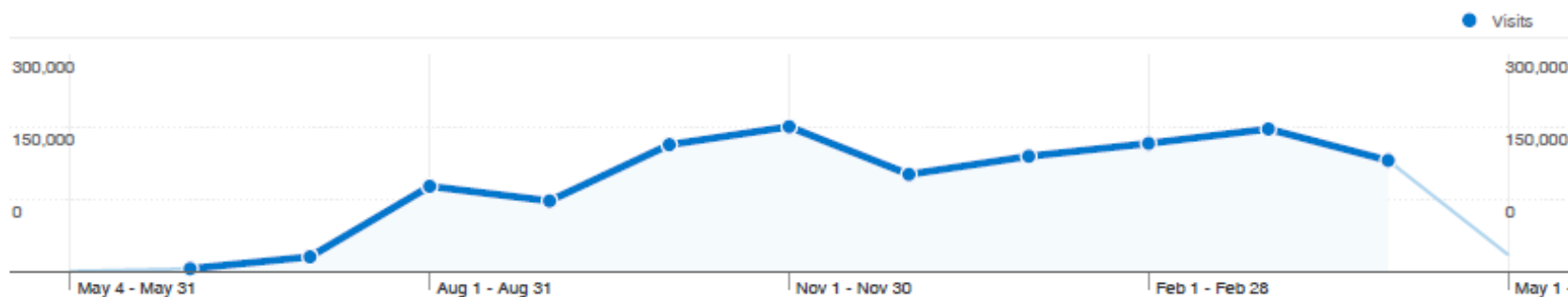


AIMS

One year

# agris.fao.org Dashboard

May 4, 2010 - May 4, 2011  
Comparing to: Site



## Site Usage

1,458,275 Visits

67.88% Bounce Rate

4,237,231 Pageviews

00:02:22 Avg. Time on Site

2.91 Pages/Visit

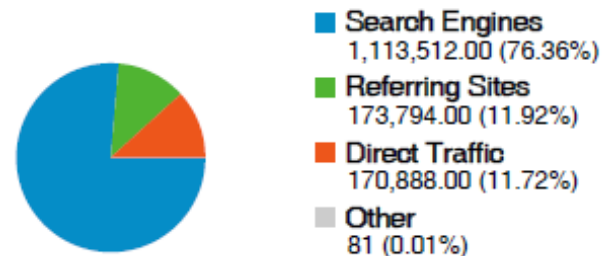
80.04% % New Visits

## Visitors Overview



Visitors  
1,168,591

## Traffic Sources Overview



AGROVOC and the VocBench, NAL, 2011, May 19

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AIMS





# AGRIS repository

## Data aggregation in the last 5 years

2005-2011

Total records	Full-text
316,888	54,209

Country	Records	Full-text	Citations
Japan	70,045	0	70029
Korea Rep.	27,833	339	27832
Scielo - BR	25,955	25815	25955
China	17,225	0	17224
Spain	14,421	3205	12129
Thailand	11,460	487	3177
FAO	9,578	5523	4791
Serbia	8,903	1322	5834
Brazil	8,380	18	6519
Italy	7,500	0	7500





# AGRIS Contributions 5 years

AIMS

Name	N0.citations
Japan	70029
Korea Rep.	27832
Scielo - BR.	25955
China	17224
Spain	12129
Italy	7500
Poland	6966
Brazil	6519
Pakistan	6345
Serbia	5834
Cuba	5188
Belarus	5144

India	4935
Czech Rep.	4891
FAO	4791
Philippine	4424
Uruguay	3373
Bulgaria	3178
Thailand	3177
Latvia	2718
Turkey	2507
Slovak	2174
Switzerland	1937
Ghana	1646
Serbia/Montenegro	1532
Finland	1248
CIHEAM - France	1241

Argentina	1170
Indonesia	1067
South Africa	1067
Russia	922
Egypt	850
Iran	837
Hungary	819
Colombia	772
Perú	690
Nicaragua	573
Venezuela	503
Slovenia	476
Vietnam	453

Ukraina	435
Portugal	401
Norway	396
Chile	391
Dominican Republic	384
Sudan	379
Moldavia	368
Somalia	363
Ethiopia	318
Ecuador	311
Syria	269
Cymmit	255
CIFOR	249
IRRI	244
ILRI	230



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# Thank You!

<http://www.ciard.net>

<http://ring.ciard.net>

<http://aims.fao.org>

<http://agris.fao.org>



AIMS