



## Authent-Net: Food Authenticity Research Network

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696371: Horizon 2020 Coordination & Support Action

### Deliverable: D4.3

Title: **Final version of the FARNH with maps, links and other content**

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CO	Confidential, only for members of the consortium (including the Commission Services)	



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## 1 Description of deliverable

Deliverable 4.3 is the documentation of the "Food Authenticity Research Network Hub", the "FARNHub"<sup>1</sup>. This report is based partly on two previous deliverables: D4.1 "Requirement specification of the FARNH", and the interim deliverable D4.2 "Functional prototype of the FARNH". Note that the actual deliverable is the web based knowledge hub itself; this report simply documents the work process and the functionality.

The FARNHub can be accessed either through the link <http://farnhub.authent.cra.wallonie.be/>, or through the Authent-Net project website.

In the following, different aspects of the FARNHub are described in detail. These include the country interface, the search functionality, procedures for populating the database, a description of the current content, and lastly, administrative procedures, and plans for maintaining the tools beyond the project lifetime.

We wish to acknowledge the work of all those who have contributed to the development of the FARNHub, and its associated content.

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<sup>1</sup> Note: the acronym of the knowledge hub was during the development process changed from "FARNH" to "FARNHub". The original acronym "FARNH" is only used when quoting from the Description of Action (DoA) or similar documents written before the name change.

## 2 Achievement of deliverable

### 2.1 General overview and work process

The FARNHub has been developed as part of work package 4, with the primary goal being:

*"To develop, provide (initial) content for, and maintain the FARNH. WP4 aims to bring together various project outputs and other available information in the area of food authenticity and develop the FARNH, although initially for funding body use the aim eventually is to facilitate future open access to this information for funding bodies, industry, regulatory authorities, research organisations and other stakeholders."*

The "FARNHub" is an online knowledge hub pertaining to food authenticity-related resources. The portal is open access and enables sharing and accessing of relevant information. The FARNHub contains information on:

- Publications (scientific or other, including National Status Reports and Commodity reports)
- Projects
- Online resources (databases, web based tools, etc.)
- Funding bodies
- News stories
- Regulations
- Analytical methods (through the "FoodIntegrity Knowledge Base"<sup>2</sup>)

As well as the knowledge hub itself, a country interface in the form of a clickable map has also been developed, which provides statistics on content related to a specific country, including links to National Status Reports and Commodity Reports developed in Authent-Net.

The FARNHub is open access, entailing that no registration or other prior approval is needed in order to search- and view content on the web portal. This ensures access to an as wide array of possible users as possible. However, while the FARNHub is open access, it might contain entries where the content itself is not open access, e.g. scientific publications or news stories behind a paywall, databases requiring registration, online resources with a region lock or other similar restrictive measures.

While no registration is needed to simply view content on the FARNHub, users will still have to register in order to submit content (see section 2.4 for details on submitting content).

As a first step in the process of creating the hub, a requirement specification was written. This document described the desired functionality, content and user interface of the hub. Mock-up screenshots were created in order to provide more tangible examples, and these were accompanied by in-depth written explanations. The requirement specification was distributed among the project participants in order to collect feedback from future end-users, and their feedback was incorporated into the final document.

Prototypes of the FARNHub have been showcased and demonstrated in stakeholder workshops, with the feedback from these workshops providing input to later iterations of the hub. In total, there have been three workshops with representatives from both funding bodies and other stakeholders. The FARNHub is thus the result of a highly participatory process, ensuring a product responding to the needs of future end-users.

### 2.2 Map application: country and commodity resources

For the purpose of showcasing what kind of information can be accessed via FARNHub, a map application providing statistics on the number of funding bodies, publications, projects, databases, regulations, and news stories in contributing EU countries has been developed.

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<sup>2</sup> Developed as part of the Horizon 2020-project "FoodIntegrity" (Grant agreement No. 613688). See "Work Package 2: Knowledge base" for more information on the "FoodIntegrity Knowledge Base" - <https://secure.fera.defra.gov.uk/foodintegrity/index.cfm?sectionid=21>

The layout of the map has been discussed with CRA-W and UNIBO, and created by VSCHT. The map is an interactive resizable vector map template built in HTML5 code and runs with JavaScript based on the technique of Scalable Vector Graphics. It is responsive and fully resizable, mobile friendly and compatible with all major browsers. From the purchase files an interactive map was developed; colours, links, shape, position, hover content, URL, etc. have been modified, clickable pins on the map have been added, clickable country/city have been linked and then the map was embed on the Authent-Net webpage.

The interactive map is a static source of information; any updates (e.g. addition of new National status reports or updates of figures for individual countries) need to be done manually. Currently, the webpage with the map includes links to the 14 National status reports (pdf) and 4 Commodity status reports (pdf) developed by groups of experts from the resources stored in the FARNHub tool; summaries from individual NSRs are accessible from the interactive map.

The map application can be accessed from the Authent-Net website on:

- [http://www.authent-net.eu/AN\\_FARNH\\_click\\_map.html](http://www.authent-net.eu/AN_FARNH_click_map.html).

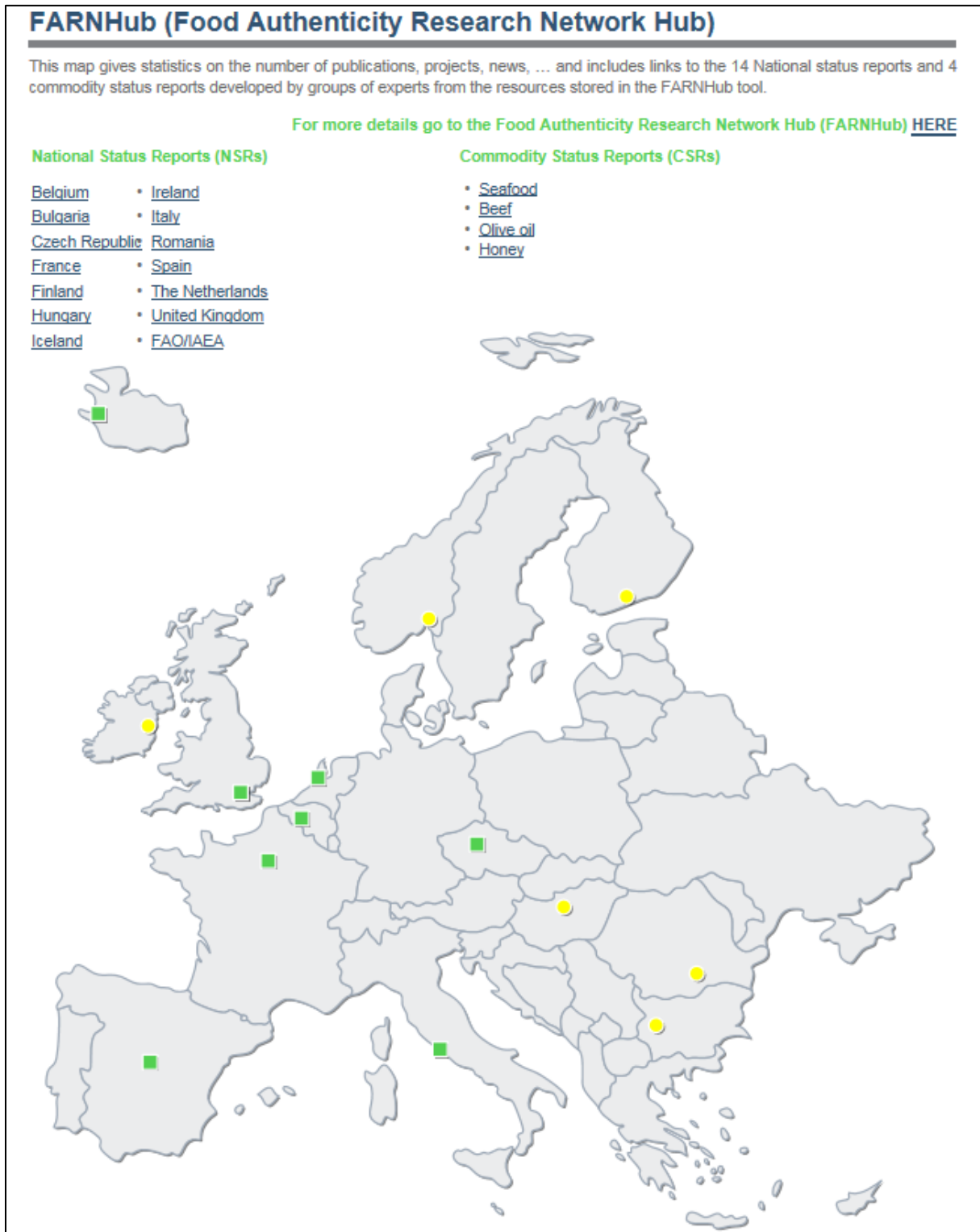


Figure 2.1 Webpage with the interactive map and links to the National status reports and Commodity reports

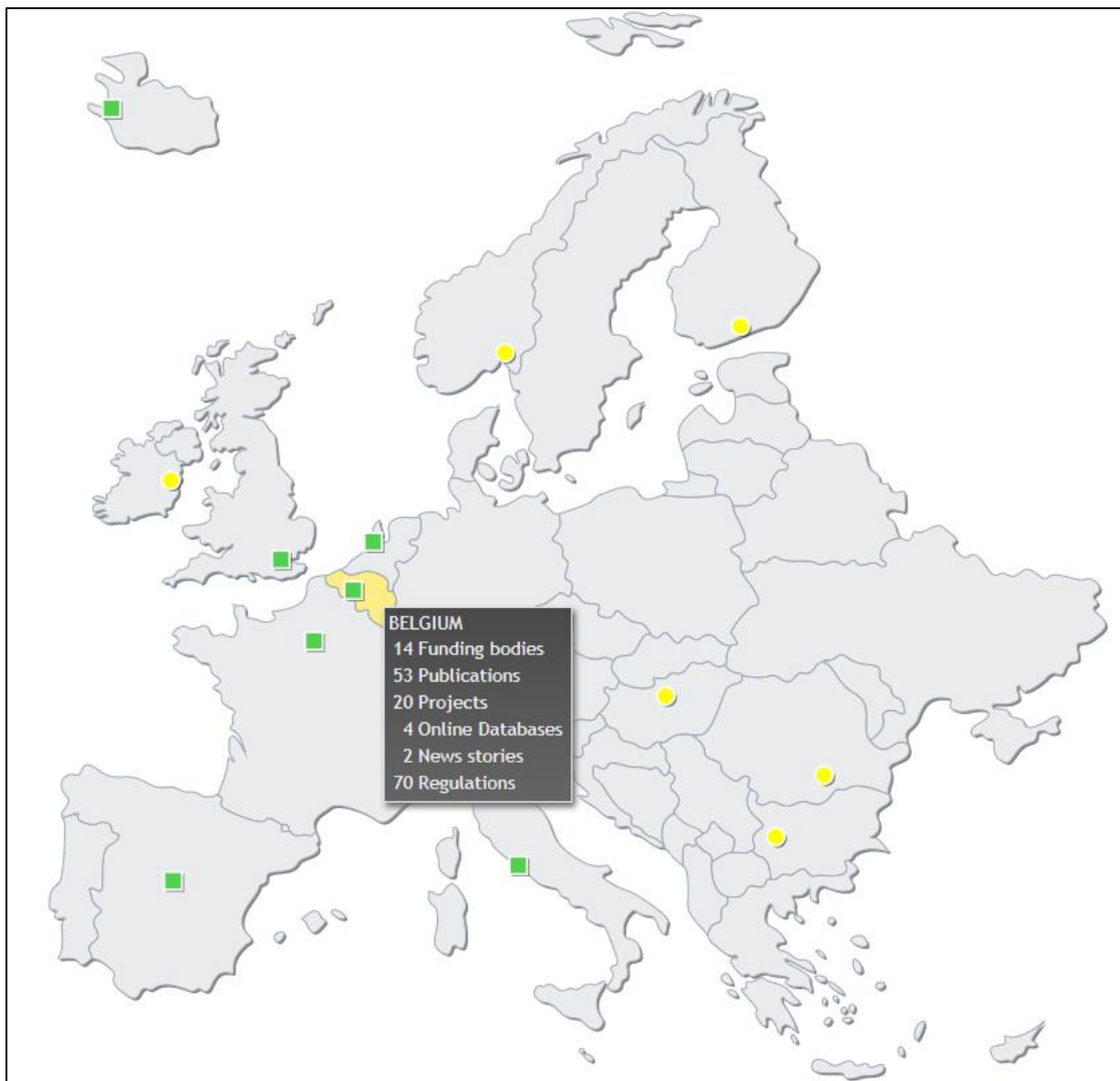
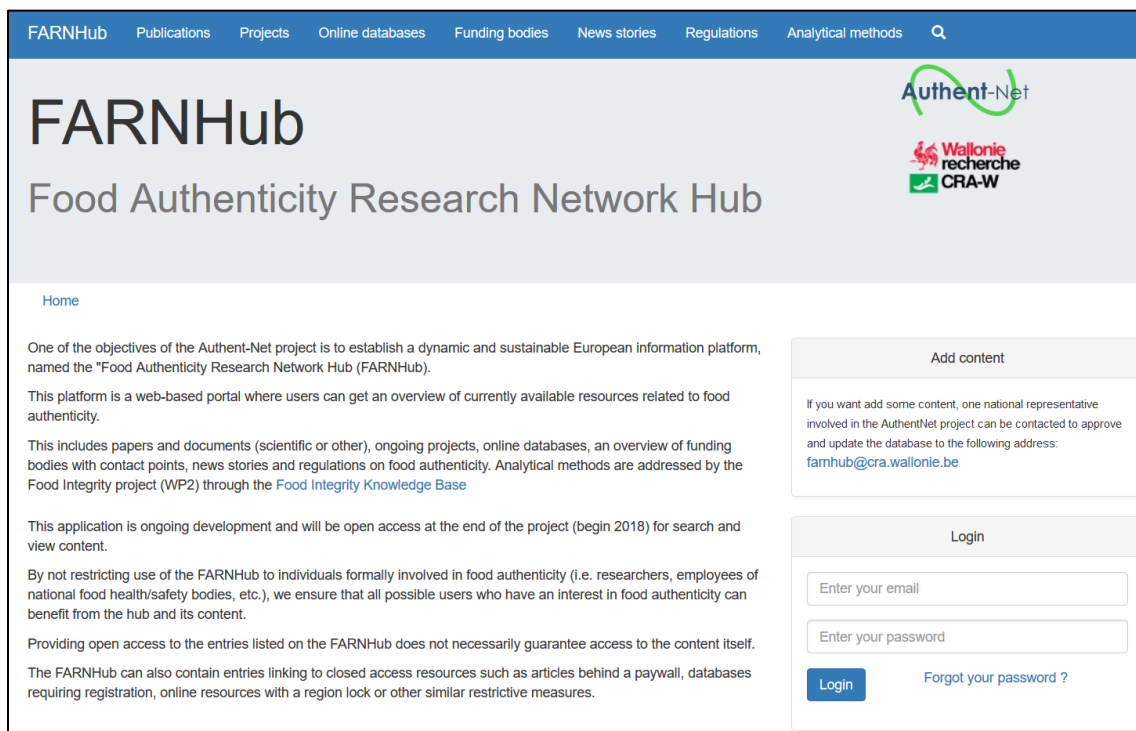


Figure 2.2 Example of statistics for Belgium

### 2.3 Search functionality

From the homepage (Figure 2.3), the user can access to seven topics: Publications (Figure 2.4), Projects (Figure 2.6), Online databases (Figure 2.8), Funding bodies (Figure 2.10), News stories (Figure 2.12), Regulations (Figure 2.14) and Analytical methods (Figure 2.16). For each topic, the user can filter the records and display an overview of the results or display the results individually showing all the data fields recorded. The application also propose to the user a general search tool using the magnifying glass in the menu bar and a specific search tool for each topic using the keywords filter.

### 2.3.1 Home page



The screenshot shows the FARNHub homepage. At the top, there is a navigation bar with links: FARNHub, Publications, Projects, Online databases, Funding bodies, News stories, Regulations, Analytical methods, and a search icon. The main header features the FARNHub logo and the text 'Food Authenticity Research Network Hub'. On the right, there are logos for Authent-Net, Wallonie recherche, and CRA-W. Below the header, there is a 'Home' link and a paragraph explaining the project's objectives. To the right, there is an 'Add content' section with contact information for national representatives. Below that is a 'Login' section with input fields for email and password, a 'Login' button, and a 'Forgot your password?' link.

Figure 2.3 FARNHub homepage

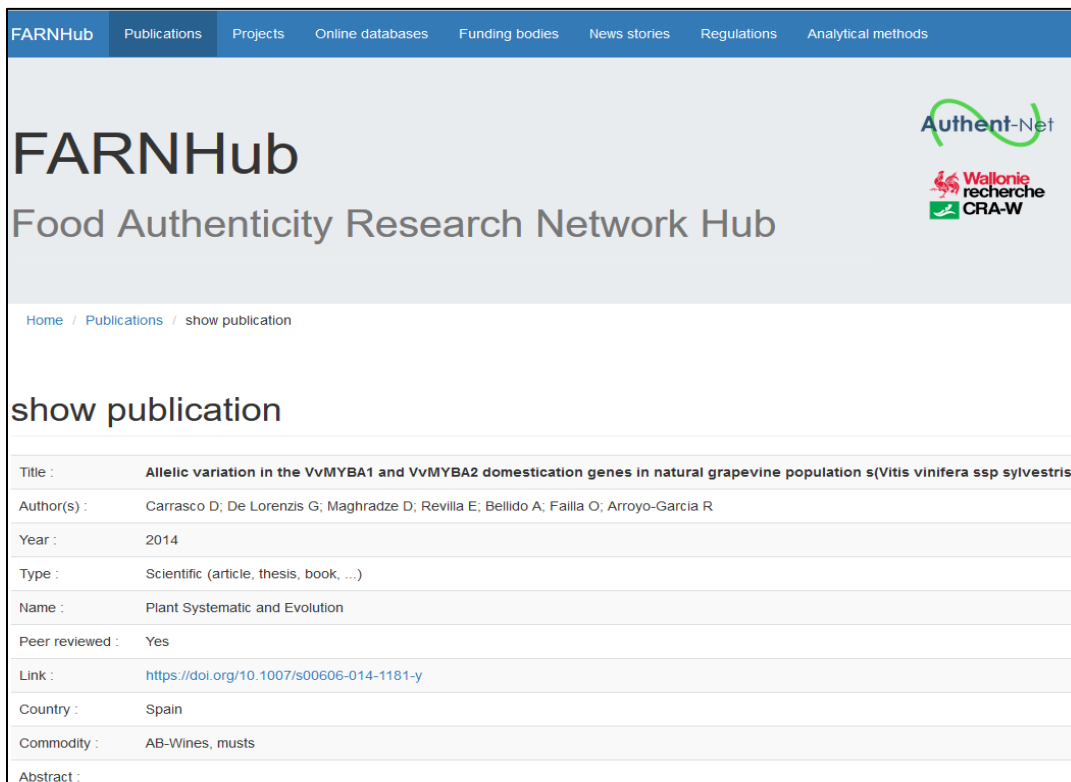
### 2.3.2 Publications



The screenshot shows the FARNHub Publications page. The navigation bar is the same as in the previous screenshot. The main header is identical. Below the header, there is a 'Home / Publications' breadcrumb. The page displays a list of publications. The first publication is 'Allelic variation in the VvMYBA1 and VvMYBA2 domestication genes in natural grapevine population s(Vitis vinifera ssp sylvestris)' by Carrasco D, De Lorenzis G, Maghradze D, Revilla E, Bellido A, Failla O, Arroyo-Garcia R, published in Plant Systematic and Evolution 2014. The second publication is 'Genetic and in situ characterization of the last wild grapevine populations in Castilian and Leon region (Spain)' by Ocete Rubio R, Valle JM, Perez Izquierdo MA, Lopez MA, Failla O, Vargas A, Santana JC, Hidalgo E, Arroyo-Garcia R, published in Journal International des Sciences de la Vigne et du Vin 2014. The third publication is 'Identification of Vitis vinifera L. grape berry skin color mutants and polyphenolic profile' by Ferreira V, Fernandes F, Pinto-Carnide O, Valentao P, Falco V, Martin JP, Maria Ortiz J, Arroyo-Garcia R, Bandrade P, Castro I, published in Food Chemistry 2016. A '3 row(s)' indicator is shown below the list. On the right, there is a 'Search filters' section with input fields for Keywords, Country(ies) (set to Spain), Commodity(ies) (set to AB-Wines, musts), Year from, Year to, and Peer-reviewed (set to Any). A 'Start search and display results' button is at the bottom of the search filters.

Figure 2.4 Overview of selected publications



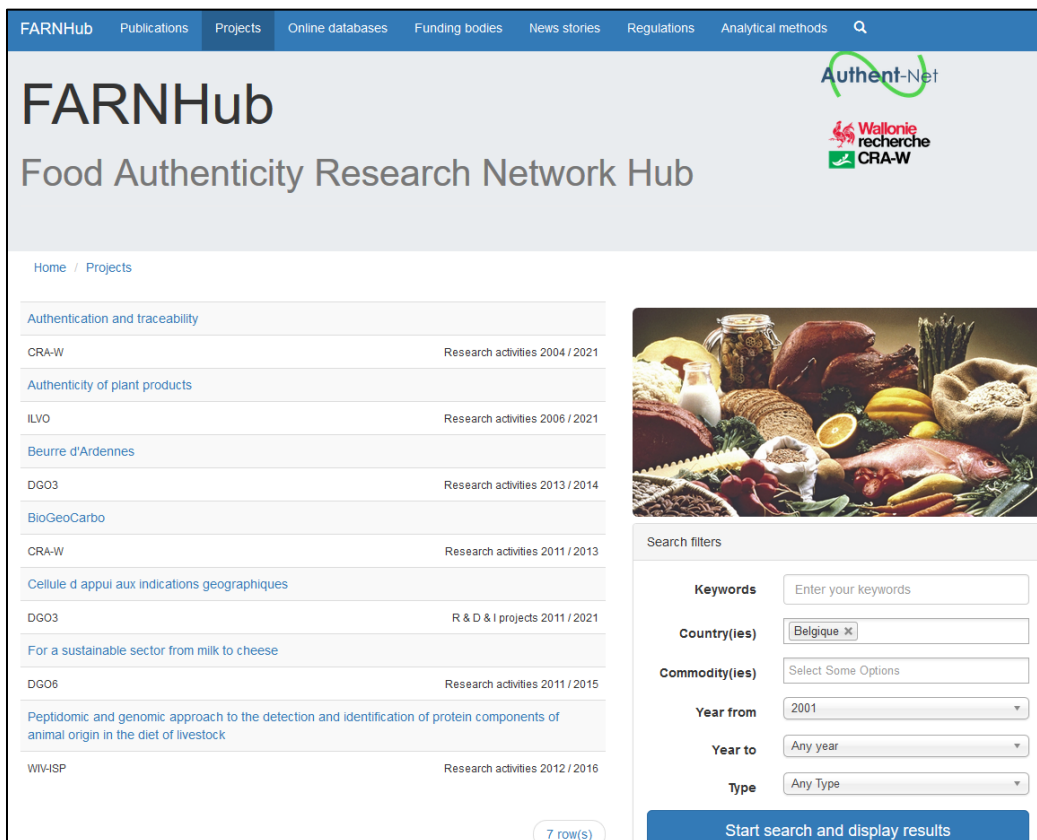


The screenshot shows the 'show publication' page on FARNHub. The navigation bar includes 'FARNHub', 'Publications', 'Projects', 'Online databases', 'Funding bodies', 'News stories', 'Regulations', and 'Analytical methods'. The page title is 'FARNHub Food Authenticity Research Network Hub'. The breadcrumb trail is 'Home / Publications / show publication'. The main content area displays the following publication details:

Title :	Allelic variation in the VvMYBA1 and VvMYBA2 domestication genes in natural grapevine population s(Vitis vinifera ssp sylvestris)
Author(s) :	Carrasco D; De Lorenzis G; Maghradze D; Revilla E; Bellido A; Falla O; Arroyo-Garcia R
Year :	2014
Type :	Scientific (article, thesis, book, ...)
Name :	Plant Systematic and Evolution
Peer reviewed :	Yes
Link :	<a href="https://doi.org/10.1007/s00606-014-1181-y">https://doi.org/10.1007/s00606-014-1181-y</a>
Country :	Spain
Commodity :	AB-Wines, musts
Abstract :	

Figure 2.5 Edition of one publication

### 2.3.3 Projects



The screenshot shows the 'Projects' page on FARNHub. The navigation bar includes 'FARNHub', 'Publications', 'Projects', 'Online databases', 'Funding bodies', 'News stories', 'Regulations', 'Analytical methods', and a search icon. The page title is 'FARNHub Food Authenticity Research Network Hub'. The breadcrumb trail is 'Home / Projects'. The main content area features a list of projects on the left and a search filter section on the right.

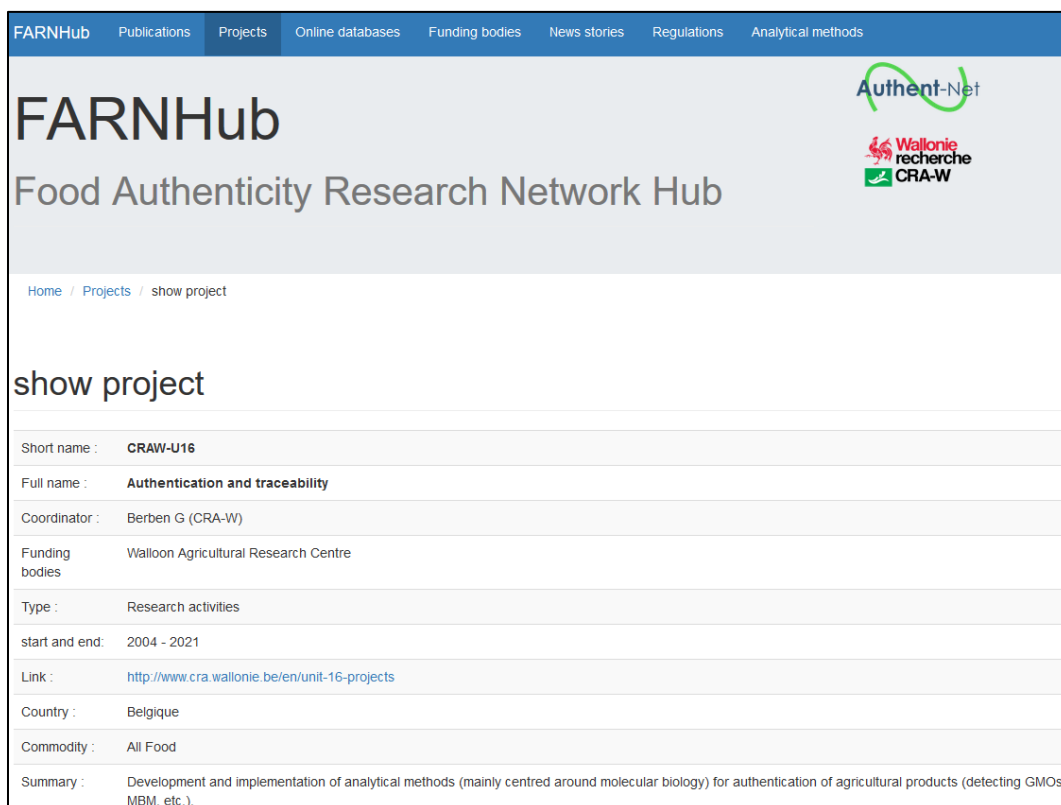
Authentication and traceability	
CRA-W	Research activities 2004 / 2021
Authenticity of plant products	
ILVO	Research activities 2006 / 2021
Beurre d'Ardennes	
DGO3	Research activities 2013 / 2014
BioGeoCarbo	
CRA-W	Research activities 2011 / 2013
Cellule d appui aux indications géographiques	
DGO3	R & D & I projects 2011 / 2021
For a sustainable sector from milk to cheese	
DGO6	Research activities 2011 / 2015
Peptidomic and genomic approach to the detection and identification of protein components of animal origin in the diet of livestock	
WIV-ISP	Research activities 2012 / 2016

The search filter section includes the following fields:

- Keywords:
- Country(ies):
- Commodity(ies):
- Year from:
- Year to:
- Type:

At the bottom of the project list, there is a button labeled '7 row(s)' and a blue button labeled 'Start search and display results'.

Figure 2.6 Overview of selected projects

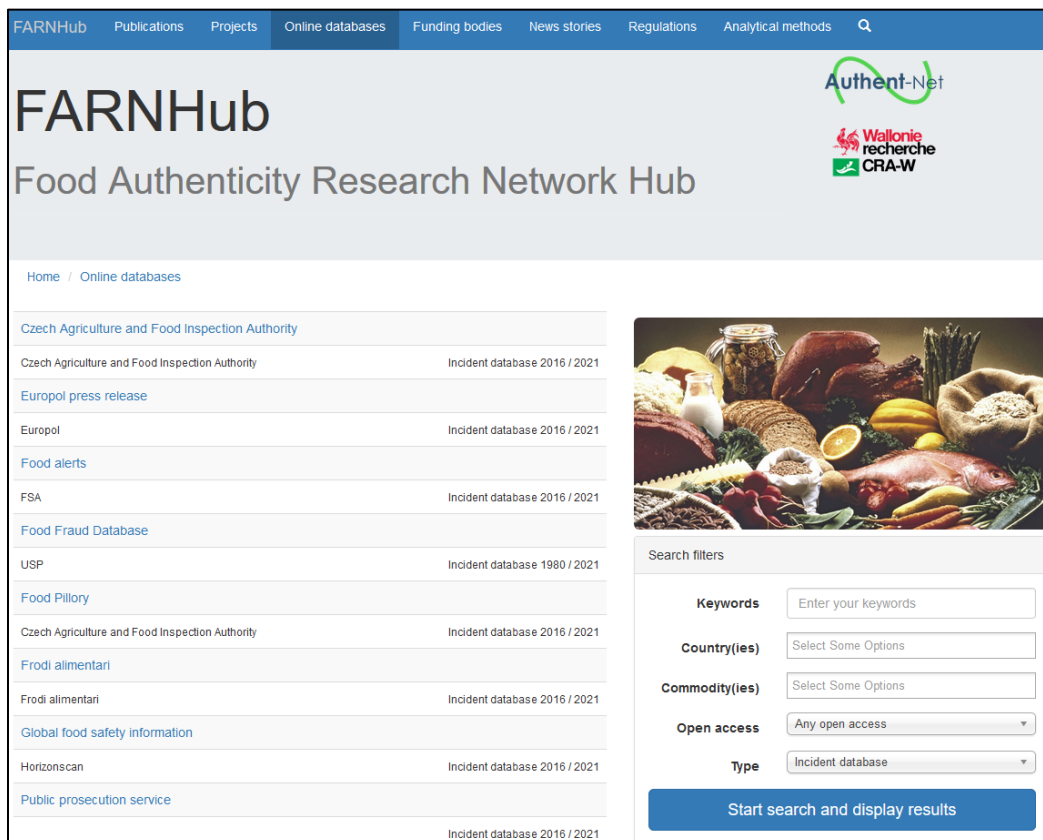


The screenshot shows the 'show project' page for project CRAW-U16. The page includes a navigation menu at the top with options like 'FARNHub', 'Publications', 'Projects', 'Online databases', 'Funding bodies', 'News stories', 'Regulations', and 'Analytical methods'. The main header features the 'Authent-Net' logo and the 'Wallonie recherche CRA-W' logo. Below the header, there is a breadcrumb trail: 'Home / Projects / show project'. The project details are as follows:

Short name :	<b>CRAW-U16</b>
Full name :	<b>Authentication and traceability</b>
Coordinator :	Berben G (CRA-W)
Funding bodies :	Walloon Agricultural Research Centre
Type :	Research activities
start and end :	2004 - 2021
Link :	<a href="http://www.cra.wallonie.be/en/unit-16-projects">http://www.cra.wallonie.be/en/unit-16-projects</a>
Country :	Belgique
Commodity :	All Food
Summary :	Development and implementation of analytical methods (mainly centred around molecular biology) for authentication of agricultural products (detecting GMOs, MBM, etc.).

Figure 2.7 Edition of one project

### 2.3.4 Online databases



The screenshot shows the 'Online databases' overview page. It features a navigation menu at the top and the same header as Figure 2.7. Below the header, there is a breadcrumb trail: 'Home / Online databases'. The page displays a list of online databases on the left and a search filter section on the right. The search filter section includes a search bar and several dropdown menus for filtering results.

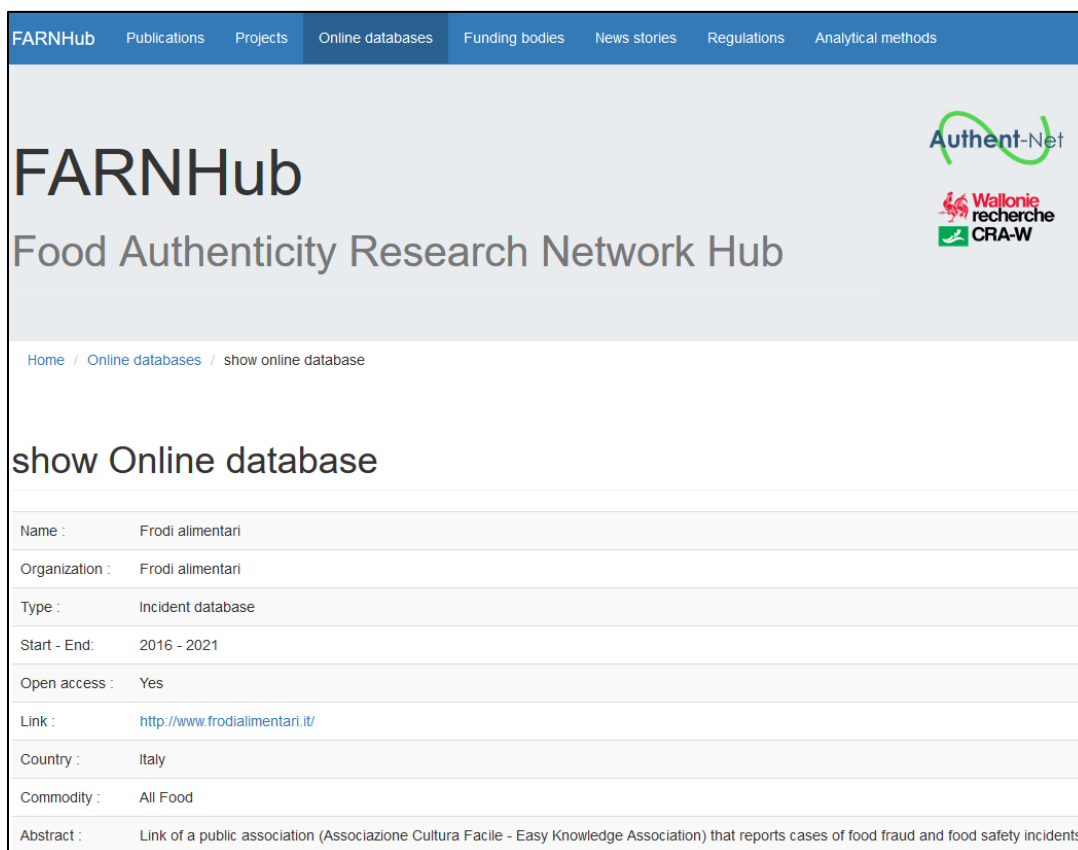
Database Name	Incident Database Period
Czech Agriculture and Food Inspection Authority	Incident database 2016 / 2021
Europol press release	
Europol	Incident database 2016 / 2021
Food alerts	
FSA	Incident database 2016 / 2021
Food Fraud Database	
USP	Incident database 1980 / 2021
Food Pillory	
Czech Agriculture and Food Inspection Authority	Incident database 2016 / 2021
Frodi alimentari	
Frodi alimentari	Incident database 2016 / 2021
Global food safety information	
Horizonscan	Incident database 2016 / 2021
Public prosecution service	
	Incident database 2016 / 2021

**Search filters:**

- Keywords:** Enter your keywords
- Country(ies):** Select Some Options
- Commodity(ies):** Select Some Options
- Open access:** Any open access
- Type:** Incident database

**Start search and display results**

Figure 2.8 Overview of selected online databases



Navigation: FARNHub | Publications | Projects | Online databases | Funding bodies | News stories | Regulations | Analytical methods

Authent-Net  
Wallonie recherche  
CRA-W

# FARNHub

## Food Authenticity Research Network Hub

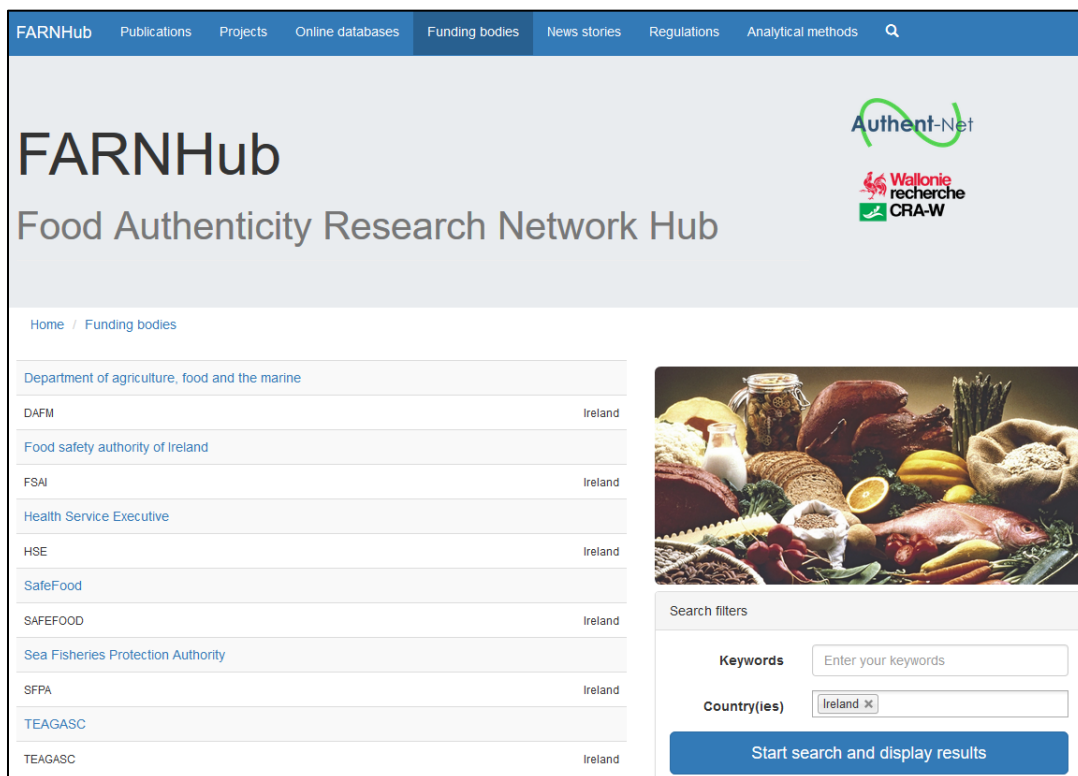
Home / Online databases / show online database

### show Online database

Name :	Frodi alimentari
Organization :	Frodi alimentari
Type :	Incident database
Start - End:	2016 - 2021
Open access :	Yes
Link :	<a href="http://www.frodialimentari.it/">http://www.frodialimentari.it/</a>
Country :	Italy
Commodity :	All Food
Abstract :	Link of a public association (Associazione Cultura Facile - Easy Knowledge Association) that reports cases of food fraud and food safety incidents.

Figure 2.9 Edition of one online database

### 2.3.5 Funding bodies



Navigation: FARNHub | Publications | Projects | Online databases | Funding bodies | News stories | Regulations | Analytical methods

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Wallonie recherche  
CRA-W


# FARNHub

## Food Authenticity Research Network Hub

Home / Funding bodies

Department of agriculture, food and the marine

DAFM	Ireland
Food safety authority of Ireland	
FSAI	Ireland
Health Service Executive	
HSE	Ireland
SafeFood	
SAFEFOOD	Ireland
Sea Fisheries Protection Authority	
SFPA	Ireland
TEAGASC	
TEAGASC	Ireland



Search filters

Keywords:



Country(ies):

[Start search and display results](#)

Figure 2.10 Overview of selected funding bodies

FARNHub Publications Projects Online databases Funding bodies News stories Regulations Analytical methods

**FARNHub**  
Food Authenticity Research Network Hub

Home / Funding bodies / show funding body

### show a funding body



Funding body name :	Food safety authority of Ireland
Funding body shortname :	FSAI
Contact name :	
Phone :	
E-mail :	
Link :	<a href="http://www.fsai.ie">www.fsai.ie</a>
Country :	Ireland
Abstract :	Government Agency coordinating the implementation and enforcement of food law in Ireland.

Figure 2.11 Edition of one funding body

### 2.3.6 News stories


FARNHub Publications Projects Online databases Funding bodies News stories Regulations Analytical methods

**FARNHub**  
Food Authenticity Research Network Hub

Home / News stories

'Crisis of confidence' in food supply ch...	FarmingUK 2017
Complaints about dirty restaurants and f...	Daily Mail 2017
Europe-wide police operation busts horse...	BBC News 2017
Fighting Food Fraud	Manchester Policy Blogs 2015
Fish speciation analysis	Emma Ridley FoodQuality news.com 2016
Food fraud dents consumer confidence in ...	FarmersWeekly 2017
Food Fraud: a challenge for the food and...	NewFood 2016



Search filters

Keywords

Country(ies)

Commodity(ies)

Year

**Start search and display results**

Figure 2.12 Overview of selected news stories

FARNHub Publications Projects Online databases Funding bodies News stories Regulations Analytical methods

# FARNHub

## Food Authenticity Research Network Hub

Home / News stories / show news story

### show news story

**Title:** 'Crisis of confidence' in food supply chain as two imprisoned over horse meat

**Author(s):**

**Source:** FarmingUK

**Year:** 2017

**Link:** [https://www.farminguk.com/news/-Crisis-of-confidence-in-food-supply-chain-as-two-imprisoned-over-horse-meat\\_47098.html](https://www.farminguk.com/news/-Crisis-of-confidence-in-food-supply-chain-as-two-imprisoned-over-horse-meat_47098.html)

**Country:** United Kingdom of Great Britain & Northern Ireland

**Commodity:** AP-Meat and edible offal

**Abstract:** Two men have been sent to prison for defrauding consumers by labelling horse meat as beef. The Food Standards Authority said the sentence 'sends out a clear signal' that food crime will not be tolerated. Andronicos Sideras, owner of Dinos and Sons Ltd, and Ulrich Nielsen of Flexi Foods were sentenced to four years and six months and three years and six months imprisonment respectively at Inner London Crown Court yesterday. A third man, Alex Ostler-Beech, also of Flexi Foods was given an eighteen month suspended sentence. On a number of occasions Mr Sideras, Mr Nielsen and Mr Ostler-Beech had conspired to mix consignments of beef with horsemeat, falsely labelling it as beef and thereby inflating their profits as a result.

Figure 2.13 Edition of one news story

### 2.3.7 Regulations

FARNHub Publications Projects Online databases Funding bodies News stories Regulations Analytical methods

# FARNHub

## Food Authenticity Research Network Hub

Home / Regulations

D. lgs. 175/2011	
Dried milk for human	National law
DM 185/1991	
Fresh pasteurized milk	Ministry of Health
Legge 169/1989	
Food cows milk	National law

3 row(s)

**Search filters**

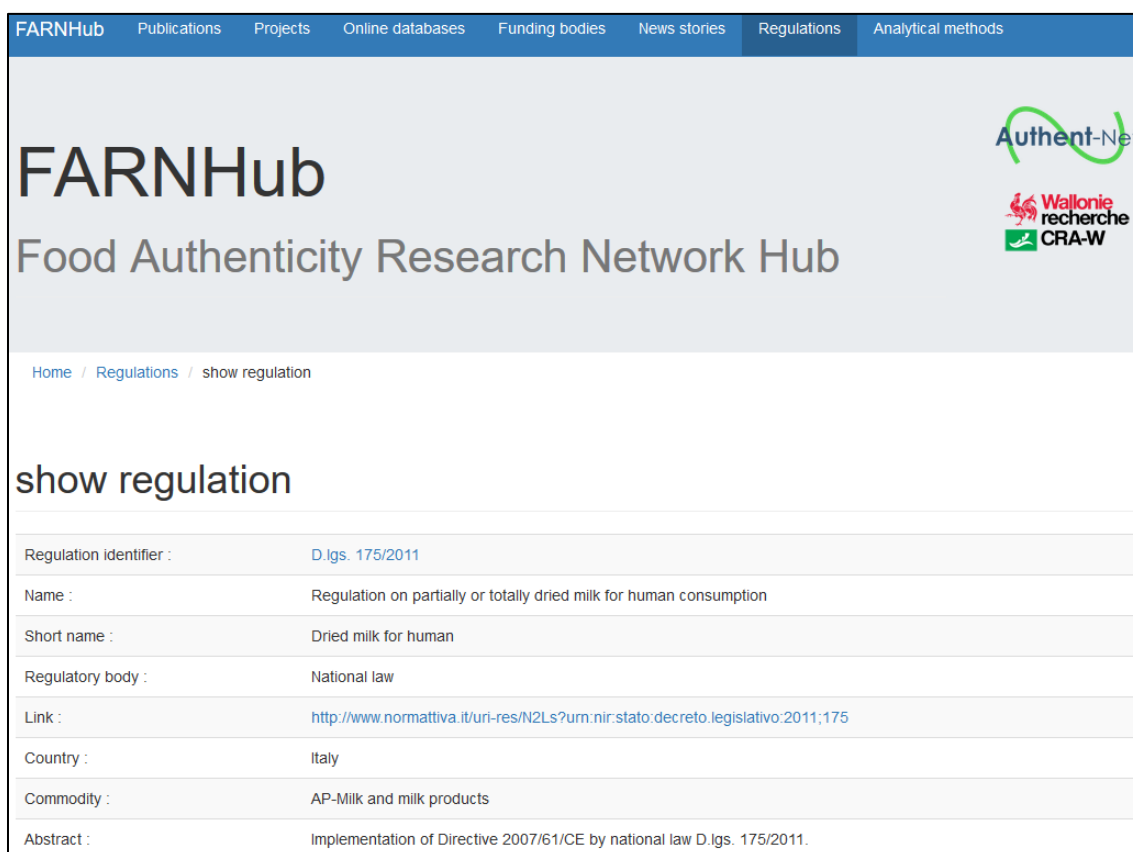
**Keywords**

**Country(ies)**

**Commodity(ies)**

**Start search and display results**

Figure 2.14 Overview of selected regulations



Navigation: FARNHub | Publications | Projects | Online databases | Funding bodies | News stories | **Regulations** | Analytical methods

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Wallonie recherche  
CRA-W

# FARNHub

## Food Authenticity Research Network Hub

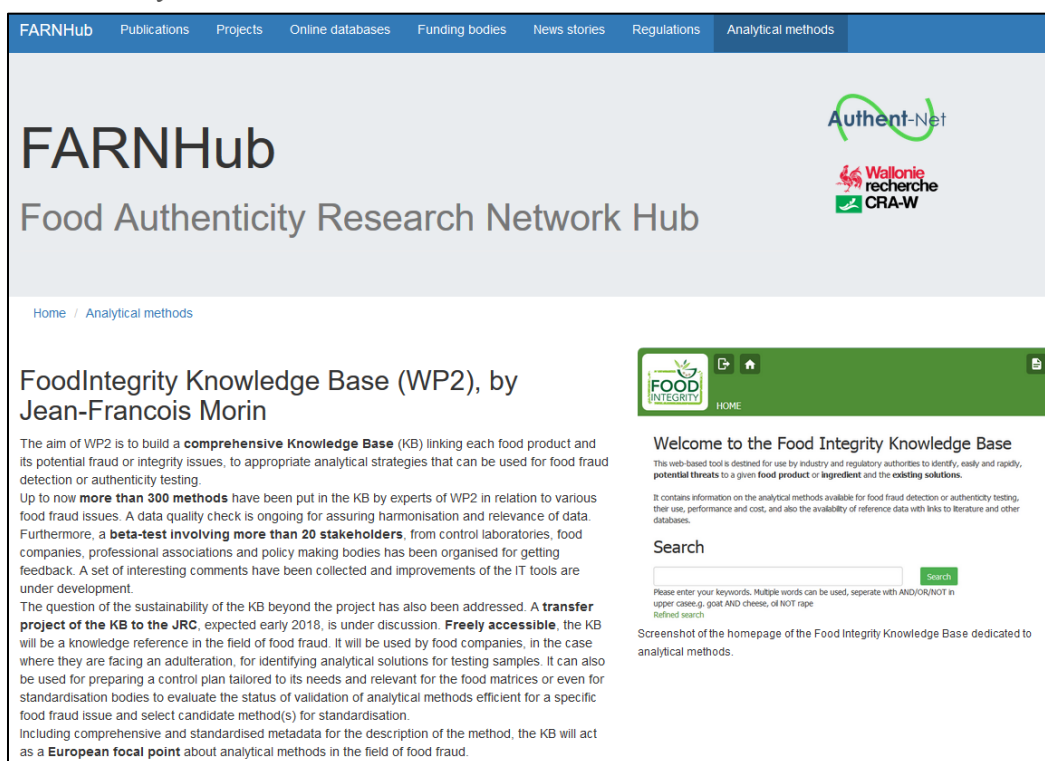
Home / Regulations / show regulation

### show regulation

Regulation identifier :	D.lgs. 175/2011
Name :	Regulation on partially or totally dried milk for human consumption
Short name :	Dried milk for human
Regulatory body :	National law
Link :	<a href="http://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:decreto.legislativo:2011;175">http://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:decreto.legislativo:2011;175</a>
Country :	Italy
Commodity :	AP-Milk and milk products
Abstract :	Implementation of Directive 2007/61/CE by national law D.lgs. 175/2011.

Figure 2.15 Edition of one regulation

### 2.3.8 Analytical methods



Navigation: FARNHub | Publications | Projects | Online databases | Funding bodies | News stories | Regulations | **Analytical methods**

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Wallonie recherche  
CRA-W

# FARNHub

## Food Authenticity Research Network Hub

Home / Analytical methods


### FoodIntegrity Knowledge Base (WP2), by Jean-Francois Morin

The aim of WP2 is to build a **comprehensive Knowledge Base (KB)** linking each food product and its potential fraud or integrity issues, to appropriate analytical strategies that can be used for food fraud detection or authenticity testing.

Up to now **more than 300 methods** have been put in the KB by experts of WP2 in relation to various food fraud issues. A data quality check is ongoing for assuring harmonisation and relevance of data. Furthermore, a **beta-test involving more than 20 stakeholders**, from control laboratories, food companies, professional associations and policy making bodies has been organised for getting feedback. A set of interesting comments have been collected and improvements of the IT tools are under development.

The question of the sustainability of the KB beyond the project has also been addressed. A **transfer project of the KB to the JRC**, expected early 2018, is under discussion. **Freely accessible**, the KB will be a knowledge reference in the field of food fraud. It will be used by food companies, in the case where they are facing an adulteration, for identifying analytical solutions for testing samples. It can also be used for preparing a control plan tailored to its needs and relevant for the food matrices or even for standardisation bodies to evaluate the status of validation of analytical methods efficient for a specific food fraud issue and select candidate method(s) for standardisation.

Including comprehensive and standardised metadata for the description of the method, the KB will act as a **European focal point** about analytical methods in the field of food fraud.

 HOME

#### Welcome to the Food Integrity Knowledge Base

The web-based tool is destined for use by industry and regulatory authorities to identify, easily and rapidly, **potential threats** to a given **food product** or **ingredient** and the **existing solutions**.

It contains information on the analytical methods available for food fraud detection or authenticity testing, their use, performance and cost, and also the **availability of reference data** with links to literature and other databases.

#### Search

Please enter your keywords. Multiple words can be used, separate with AND/OR/NOT in upper case: g. goat AND cheese, or NOT ripe

Refined search

Screenshot of the homepage of the Food Integrity Knowledge Base dedicated to analytical methods.

Figure 2.16 Homepage to access to the FoodIntegrity Knowledge Base about analytical methods

## 2.4 Populating the database

All sections in the FARNHub relies on manual data entry using the FARNHub administration tool or the csv file import process. In order to approve new references and update the database, a network of national representatives has been created (Figure 2.17).

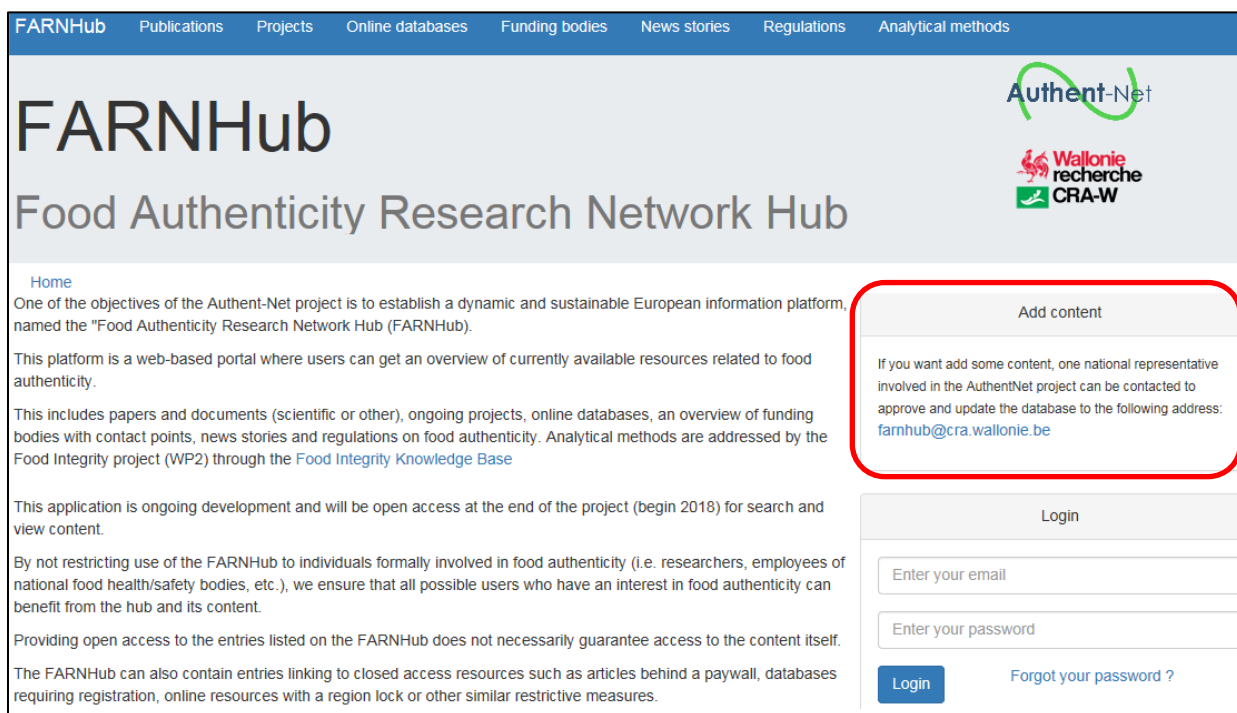
Name	First name	Institute	Email address	Access rights	Country representative	Role
Vermeulen	Philippe	CRAW	<a href="mailto:p.vermeulen@cra.wallonie.be">p.vermeulen@cra.wallonie.be</a>	super administrator	Begium	All data compilation
Baeten	Vincent	CRAW	<a href="mailto:v.baeten@cra.wallonie.be">v.baeten@cra.wallonie.be</a>	administrator	Belgium	BE data (NSR + Farnhub)
Mikova	Violeta	BNSF	<a href="mailto:v.milkova@mon.bg">v.milkova@mon.bg</a>	administrator	Bulgaria	BG data (NSR + Farnhub)
Tomaniova	Monika	VSCHT	<a href="mailto:Monika.Tomaniova@vscht.cz">Monika.Tomaniova@vscht.cz</a>	administrator	Czech Republic	CZ data (NSR + Farnhub)
Anthoni	Minna	EVIRA	<a href="mailto:minna.anthoni@evira.fi">minna.anthoni@evira.fi</a>	administrator	Finland	FI data (NSR + Farnhub)
Guyon	François	SCL	<a href="mailto:Francois.GUYON@scl.finances.gouv.fr">Francois.GUYON@scl.finances.gouv.fr</a>	administrator	France	FR data (NSR + Farnhub)
Nagy	Attila	NEBIH	<a href="mailto:NagyAttila@nebih.gov.hu">NagyAttila@nebih.gov.hu</a>	administrator	Hungary	HU data (NSR + Farnhub) + CSR honey
Vidarsson	Jonas	MATIS	<a href="mailto:jonas@mat.is">jonas@mat.is</a>	administrator	Iceland	IS data (NSR + Farnhub) + CSR fish
Kelly	Simon	IAEA	<a href="mailto:S.Kelly@iaea.org">S.Kelly@iaea.org</a>	administrator	International	IAEA data (NSR + Farnhub)
Murphy	Sinead	FSAI	<a href="mailto:smurphy@fsai.ie">smurphy@fsai.ie</a>	administrator	Ireland	IE data (NSR + Farnhub)
Valli	Enrico	UNIBO	<a href="mailto:enrico.valli4@unibo.it">enrico.valli4@unibo.it</a>	administrator	Italy	IT data (NSR + Farnhub) + CSR beef
Bozzetta	Elena	IZSTO	<a href="mailto:Elena.Bozzetta@izsto.it">Elena.Bozzetta@izsto.it</a>	administrator	Italy	IT data (NSR + Farnhub) + CSR beef
Sordhal	Patrick	NOFIMA	<a href="mailto:patrick.sordahl@nofima.no">patrick.sordahl@nofima.no</a>	administrator	Norway	News stories data
Syed	Shaheen	NOFIMA	<a href="mailto:shaheensyed15@gmail.com">shaheensyed15@gmail.com</a>	administrator	Norway	News stories data
Asanica	Adrian	UEFISCDI	<a href="mailto:asanica@gmail.com">asanica@gmail.com</a>	administrator	Romania	RO data (NSR + Farnhub)
Rodriguez	Elena	INIA	<a href="mailto:rodriguez.elena@inia.es">rodriguez.elena@inia.es</a>	administrator	Spain	SP data (NSR + Farnhub) + CSR olive oil
Haasnoot	Willem	RIKILT	<a href="mailto:willem.haasnoot@wur.nl">willem.haasnoot@wur.nl</a>	administrator	The Netherlands	NL data (NSR + Farnhub)
Furmage	Andrew	DEFRA	<a href="mailto:Andrew.Furmage@defra.gsi.gov.uk">Andrew.Furmage@defra.gsi.gov.uk</a>	administrator	UK	UK data (NSR + Farnhub)

**Figure 2.17 List of national representatives**

The role of national representatives is:

- To centralize the new data from institutions of their country
- To translate in English possible title or summary written in other language
- To check the possible duplicates and validate the new data
- To record these new data using the FARNHub administration tool or using the excel sheets
- To update incomplete or wrong information using the FARNHub administration tool
- To maintain the up to date information after the project (after March 2018)

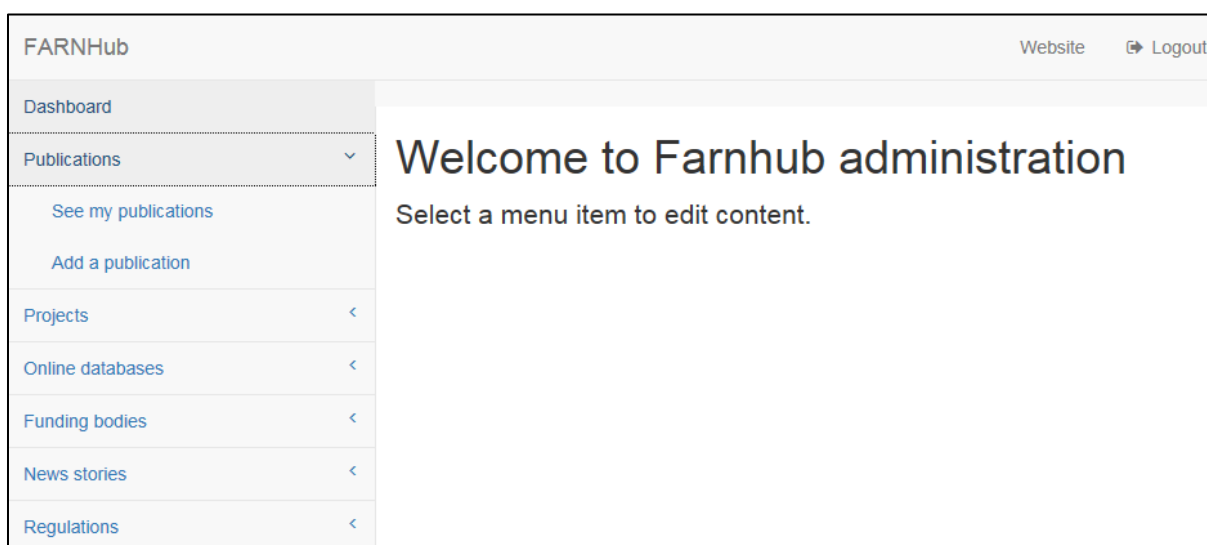
Registered users who wish to add content to the FARNHub must log in and use the administration functionality. Users who do not have a user account, but who wish to register an entry to the FARNHub can contact a national representative through the email address: [farnhub@cra.wallonie.be](mailto:farnhub@cra.wallonie.be) (Figure 2.18).



**Figure 2.18 FARNHub homepage - Instructions on how to add content for non-registered users highlighted in red**

When logged in, users can add content for six of the seven FARNHub categories (Publications; Projects; Online databases; Funding bodies; News stories; Regulations). While the FARNHub contains a section on "Analytical Methods", it does not contain any entries pertaining to available methods, as this is handled through the "FoodIntegrity Knowledge Base". For this reason, no content can be added directly.

By clicking on either of the menu items on the left-hand of the screen, the users will get the option either to see their previous entries, or to add a new entry (Figure 2.19).



**Figure 2.19 FARNHub administration homepage**

By clicking on the option for adding a new entry (a new publication, in the example used here), users will see a list of information that must be filled in (Figure 2.20). The requested information will vary



depending on the type of entry, e.g. whether it is a new publication, funding body, regulation, etc. Mandatory fields are marked with an asterisk (\*). The fields consists of both free text fields and dropdown lists.

After all mandatory fields have been filled out, an entry is saved by clicking on the "Insert-button" in the lower right corner.

The screenshot shows the 'Insert a publication' form in the FARNHub interface. The form is titled '< Insert a publication' and includes a note: '\* Please complete these mandatory fields'. The fields are as follows:

- Title \***: A text input field.
- Author**: A text input field with a placeholder 'Name1.P1 ; Name2.P2 ; Name3.P3'.
- Date \***: A dropdown menu with '1980' selected.
- Type \***: A dropdown menu with 'Commodity report' selected.
- Name**: A text input field.
- Link \***: A text input field with 'http://www.cra.wallonie.be' entered.
- Peer-reviewed \***: Radio buttons for 'Yes' and 'No', with 'No' selected.
- Country \***: A dropdown menu with 'Africa' selected.
- Commodity \***: A dropdown menu with 'All Animal Feed and Food' selected.
- Abstract**: A large text area for entering the abstract.

A red 'Insert' button is located at the bottom right of the form.

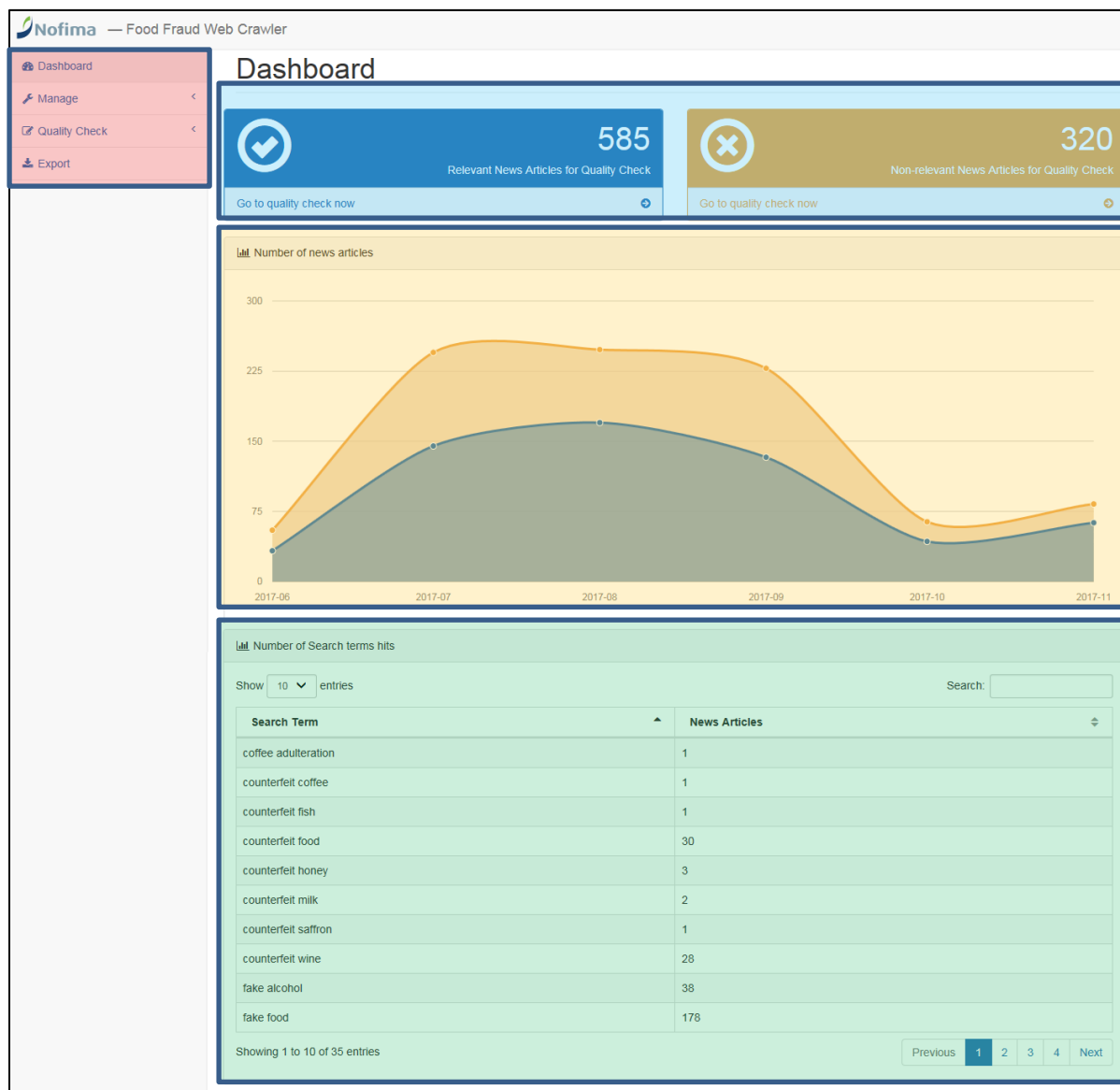
**Figure 2.20** Web page for adding a new publication

For the news stories sections, while manual entry is still possible, the process has been automated as well. Through a collaboration with the EU-funded projects Food Integrity<sup>3</sup> and SAF21<sup>4</sup>, a web crawler that automatically retrieves new stories pertaining to food fraud-related incidents has been developed, along with a parsing tool. A web crawler is an automated software that scours the internet and replicates manual searches by using a set of defined key words (see Appendix 1 – Food fraud keywords). The list of keywords can be updated at any time, and words can be added or removed. The search is executed once a day, at midnight, ensuring that the news registry is up-to-date. Any changes made to the crawler will take effect on the following run.

<sup>3</sup> Ensuring the Integrity of the European food chain – <https://secure.fera.defra.gov.uk/foodintegrity/index.cfm> – Grant agreement No. 613688 – Funded under FP7-KBBE

<sup>4</sup> Social Science Aspects of Fisheries for the 21st Century – <https://www.saf21.eu/> – Grant Agreement No. 642080 – Funded under Horizon 2020

All news articles are classified as either "Relevant" or "Not relevant" (Figure 2.21). For each article that the search returns, the news title, source, date, and link are extracted, a process called parsing. These bits of information, along with "Country" and "Commodity" are inserted into the relevant fields (see Appendix 2 – Commodity categories for a list of available commodities).



**Figure 2.21 Food Fraud Web Crawler interface - Main functions "Manage", "Quality Check" and "Export" (red), quick access to quality check (blue), graph showing the number of hits over time (yellow), and the number of hits per search term (green).**

While the process is fully automated, a manual quality check must be done. A user has to verify that the news articles are correctly classified as "Relevant" or "Not relevant", and that the extracted information is correct. For this purpose, a user friendly web interface has been developed (Figure 2.21). The quality check can be accessed either by clicking on the "Quality check-tab" in the left hand menu (red area in Figure 2.21) and then choosing to see either Relevant or non-relevant articles, or by using the quick access buttons on the top of the screen (blue area in Figure 2.21).

When viewing an entry, the user can edit the country, commodity, author and abstract. The title, source, publication date and link are fixed, however, and cannot be edited (Figure 2.22).

After verifying that a news article is relevant, and that the extracted information is correct, the entry is saved by clicking the green "Save-button" at the bottom of the screen. If an article is not relevant, it can be discarded by clicking the red "Not relevant-button". The process is the same for entries classified as non-relevant, with the exception of the two bottom command buttons, which are labelled "Not relevant" and "This is relevant". Clicking "Not relevant" will in this case discard the article, whilst choosing "This is relevant" saves the article.



Figure 2.22 Results page for entries classified as "Relevant"

After the news articles have been verified, a CSV-file is exported, which can then be imported to the FARNHub (Figure 2.23). The export function is accessed through the "Export-button" in the top left menu. The user can search for verified articles published over a given time period. After selecting the desired start- and end-date, clicking the preview-button will show all news articles from the designated period. The results can be sorted alphabetically, or the user can search for articles using the free text search filter. The results are then exported and a CSV-file generated by clicking the "Export-button". The file can then be saved locally.

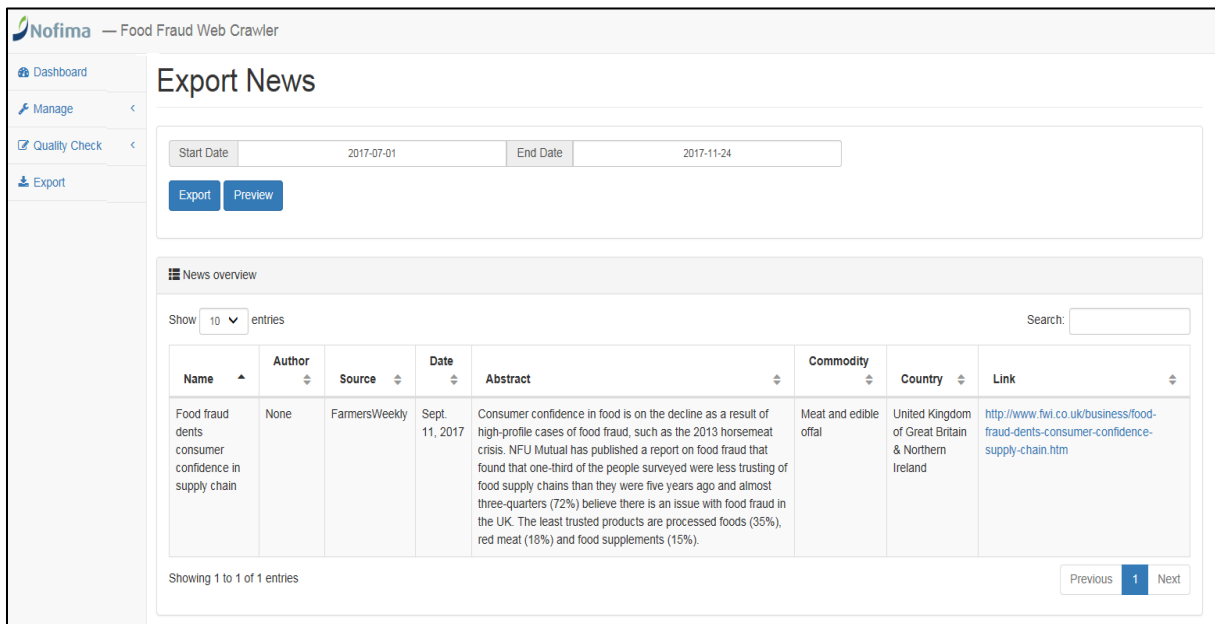


Figure 2.23 Export function

The web crawler is hosted on a separate server, i.e. it is not an integrated part of the FARNHub. It requires a log in, which at this point is restricted to Nofima project partners only.

### 2.5 Content

Up to now, 1557 references have been recorded in the FARNHub tool. 164 funding bodies have been identified as well as 513 publications, 215 projects, 43 online databases, 421 news stories and 201 regulations have been collected so far. The figures below give an overview of the number of references recorded by country (Figure 2.24) as well as an overview of the research contribution (projects and publications) by country (Figure 2.25) and by commodity (Figure 2.26).

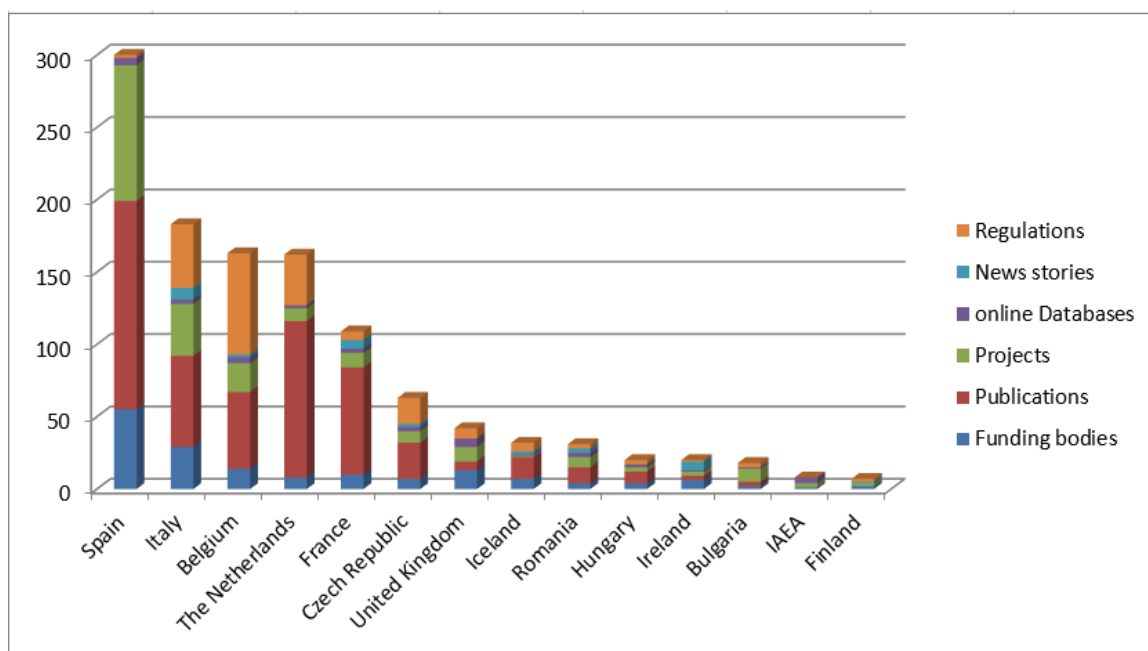


Figure 2.24 Number of references recorded by country

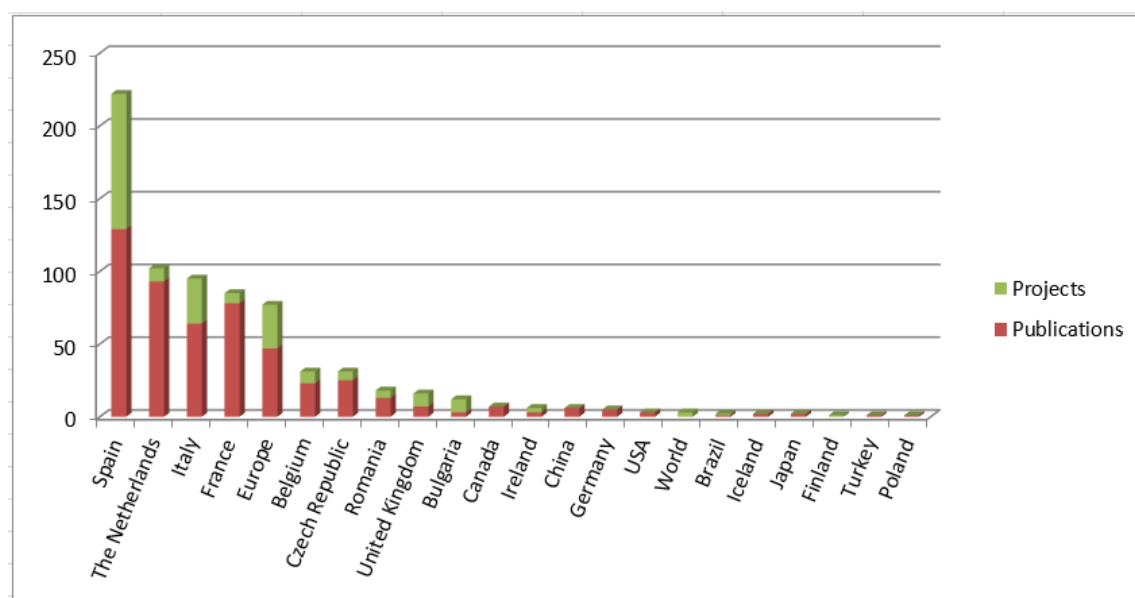
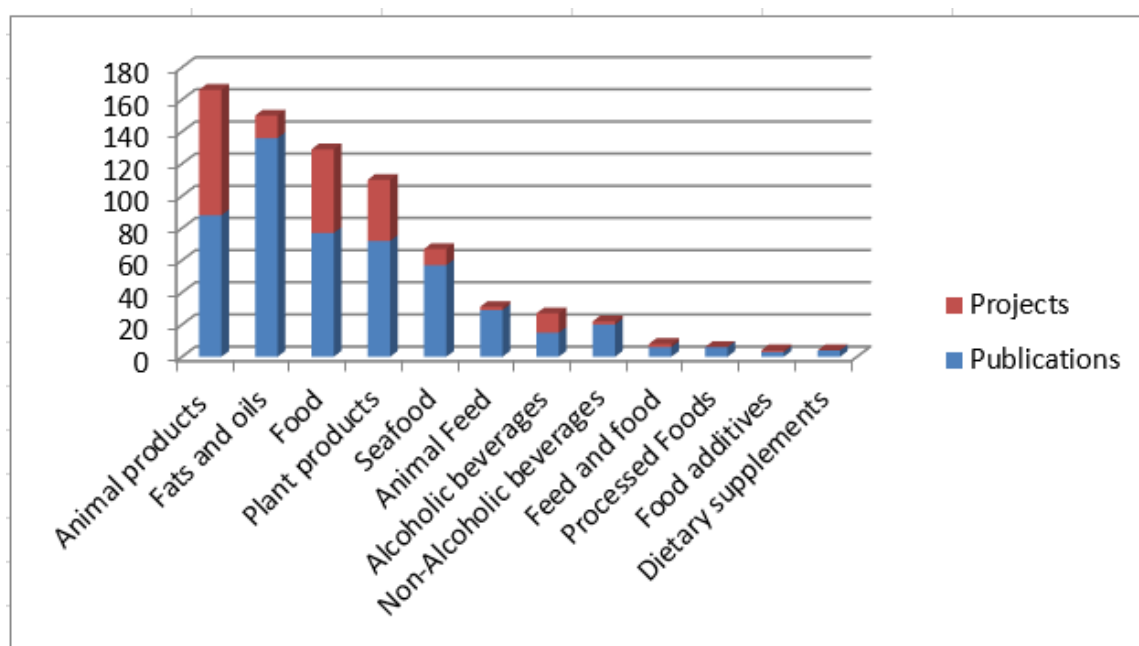


Figure 2.25 Research contribution (projects and publications) by country

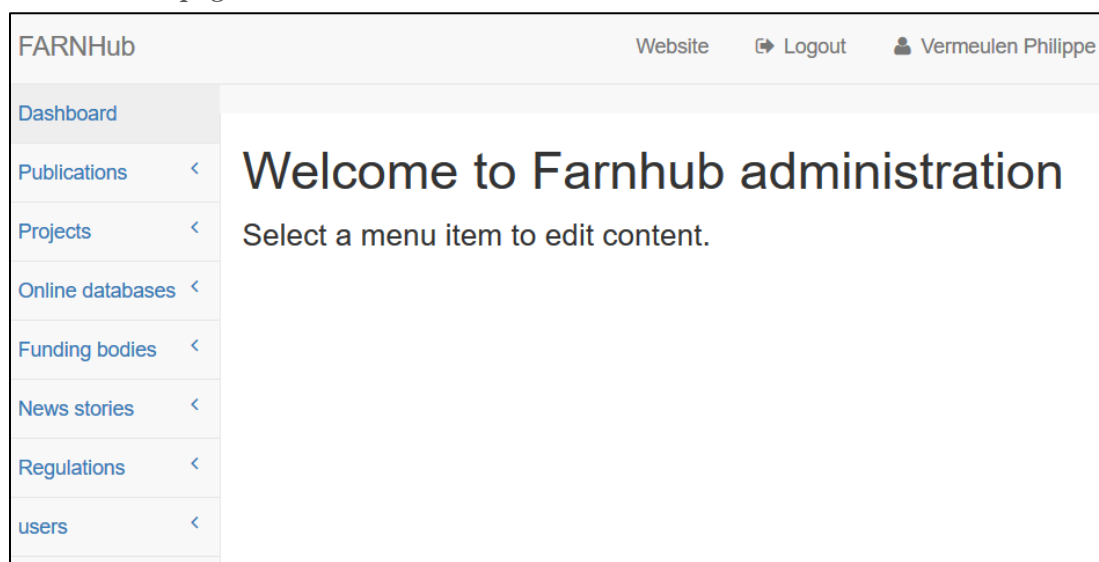


**Figure 2.26** Research contribution (projects and publications) by commodity

## 2.6 FARNHub administration tool

Once logged in, the administrator is directed to the homepage (Figure 2.27) where he can access to 7 topics: Publications (Figure 2.28), Projects (Figure 2.30), Online databases (Figure 2.32), Funding bodies (Figure 2.34), News stories (Figure 2.36) and Regulations (Figure 2.38). For each topic, the administrator can display an overview of the records or edit the records individually showing all the data fields. The super administrator can also manage the access rights of the national representatives (Figure 2.40). The application propose a specific search tool for each topic using the keywords filter.

### 2.6.1 Home page



**Figure 2.27** FARNHub administration homepage

## 2.6.2 Publications

FARNHub Website Logout Vermeulen Philippe

Dashboard

Publications

See my publications

Add a publication

Projects

Online databases

Funding bodies

News stories

Regulations

users

## My publications

+ Add a publication

Enter your keywords

Edit Delete

**Authentication and traceability of agric...**

Vermeulen P; Fernandez Pierna JA; Abbas O; Dardenne P; Baeten V  
Applications of Vibrational Spectroscopy in Food Science 2010  
Encoded by Philippe Vermeulen

Edit Delete

**Authentication and traceability of agric...**

Vermeulen P; Rogez H; Fernandez Pierna JA; Abbas O; Davrieux F; Dardenne P; Baeten V  
Food Traceability and Authenticity: Emerging Analytical Techniques 2017  
Encoded by Philippe Vermeulen

Figure 2.28 Overview of selected publications

FARNHub Website Logout Vermeulen Philippe

Dashboard

Publications <

Projects <

Online databases <

Funding bodies <

News stories <

Regulations <

users <

## < Update a publication

\* Please complete these mandatory fields

**Title \***  
Authentication and traceability of agricultural and food products using vibrational spectrosc

**Author**  
Vermeulen P; Fernandez Pierna JA; Abbas O; Dardenne P; Baeten V  
Name1.P1 ;Name2.P2 ; Name3.P3

**Date \***  
2010

**Type \***  
Scientific (article, thesis, book, ...)

**Name**  
Applications of Vibrational Spectroscopy in Food Science

**Link \***  
https://doi.org/10.1002/0470027320.s8969  
http://www.cra.wallonie.be

**Peer-reviewed \***  Yes  No

**Country \***  
Belgique

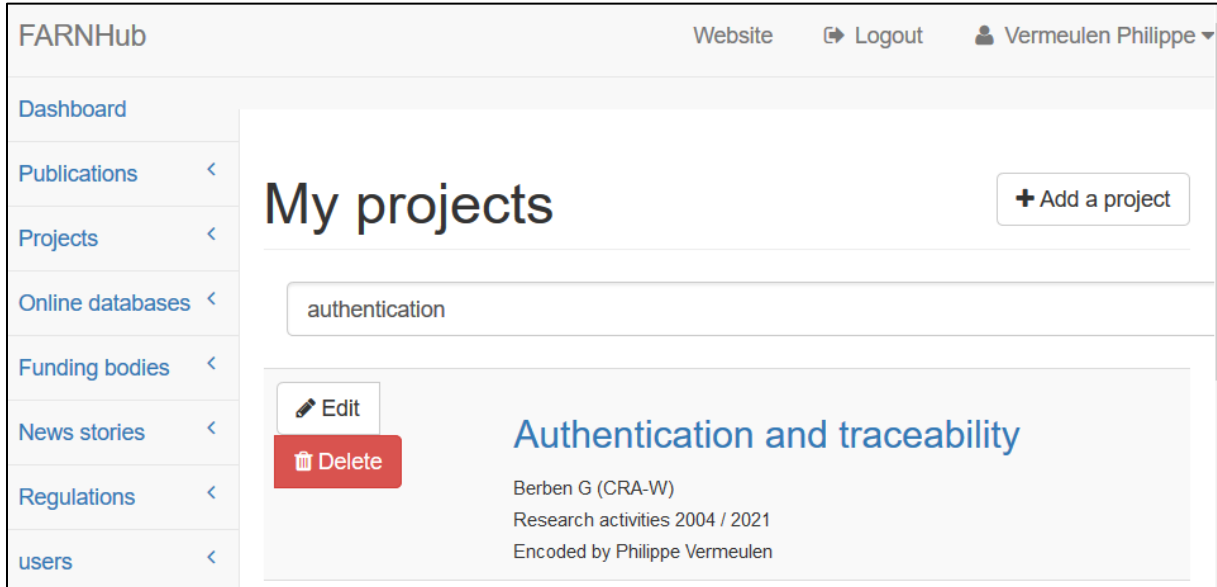
**Commodity \***  
AF-Feed materials, compound feed

**Abstract**

Update

Figure 2.29 Edition of one publication

## 2.6.3 Projects



The screenshot displays the FARNHub interface. At the top left, the logo 'FARNHub' is visible. On the top right, there are links for 'Website', 'Logout', and a user profile for 'Vermeulen Philippe'. A left-hand navigation menu includes 'Dashboard', 'Publications', 'Projects', 'Online databases', 'Funding bodies', 'News stories', 'Regulations', and 'users'. The main content area is titled 'My projects' and features a search bar containing the text 'authentication'. Below the search bar, a project card is shown with the title 'Authentication and traceability' in blue. To the left of the title are 'Edit' and 'Delete' buttons. The project details listed are: 'Berben G (CRA-W)', 'Research activities 2004 / 2021', and 'Encoded by Philippe Vermeulen'.

Figure 2.30 Overview of selected projects



FARNHub Website Logout Vermeulen Philippe

Dashboard

Publications <

Projects <

Online databases <

Funding bodies <

News stories <

Regulations <

users <

## < Update a project

\* Please complete these mandatory fields

**Short name**

**Name \***

**Coordinator**

  
Name1.P1 (Institution)

**Funding bodies \***

**Start year \***

**End Year \***

**Type \***

**Link \***

  
http://www.cra.wallonie.be

**Country \***

**Commodity \***

**Abstract**

Update

Figure 2.31 Edition of one project

## 2.6.4 Online databases

FARNHub Website Logout Vermeulen Philippe

Dashboard

Publications <

Projects <

Online databases <

See my online databases

Add an online database

Funding bodies <

News stories <

Regulations <

users <

## My online databases

+ Add an online databases

Enter your keywords

Edit Delete

**Administrative assistance and cooperation system**

EU  
Experts database 2015  
Encoded by Elena Rodriguez

Edit Delete

**Agro-food inter-branch organizations**

Information website 2016  
Encoded by Elena Rodriguez

Figure 2.32 Overview of selected online databases

FARNHub Website Logout Vermeulen Philippe

Dashboard

Publications <

Projects <

Online databases <

Funding bodies <

News stories <

Regulations <

users <

## < Update an online databases

\* Please complete these mandatory fields

**Name**

Administrative assistance and cooperation system

**Organization \***

EU

**Start year \***

2015

**End Year \***

2021

**Database Type \***

Experts database

**Open Access \***  Yes  No

**Link \***

https://ec.europa.eu/food/safety/official\_controls/food\_fraud\_en  
http://www.cra.wallonie.be

**Country \***

Europe

**Commodity \***

All Food

**Abstract**

Update

Figure 2.33 Edition of one online database

## 2.6.5 Funding bodies

The screenshot displays the FARNHub interface. At the top, the user is logged in as 'Vermeulen Philippe'. The main heading is 'My funding bodies', with a '+ Add a funding bodies' button. A search bar contains the text 'agency'. Below the search bar, there is a list of funding bodies. The first entry is 'Agency for Innovation and Entrepreneurship' (VLAIO), with an 'Edit' button and a red 'Delete' button. The text 'Encoded by Philippe Vermeulen' is visible at the bottom of the list. The left sidebar contains navigation links: 'Dashboard', 'Publications', 'Projects', 'Online databases', and 'Funding bodies' (which is expanded to show 'See my funding bodies' and 'Add a funding body').

Figure 2.34 Overview of selected funding bodies

FARNHub Website Logout Vermeulen Philippe

Dashboard

Publications <

Projects <

Online databases <

Funding bodies <

News stories <

Regulations <

users <

## < Update a funding body

\* Please complete these mandatory fields

**Funding body name \***

**Funding body shortname**

**Contact name**

**Phone**

**E-mail**

**Country \***

**Link \***

**Abstract**

Flanders Innovation & Entrepreneurship (in Dutch: Agentschap Innoveren & Ondernemen) is a government agency, charged with implementing the economic, innovation and enterprise policy in Flanders, the Dutch speaking northern part of Belgium. The Agency supports companies with the startup of their activities, the grow and continuity of their business, but also with the search for the right location, information on permits, financing, investments in innovation and ecological technologies, and other topics. , in close cooperation with many partners that aim at stimulating entrepreneurship, one of which is Flanders Investment & Trade. Together they aim at helping foreign entrepreneurs and investors to establish or expand a business in Flanders. In short, the Flanders Innovation & Entrepreneurship confidentially guides entrepreneurs throughout the government landscape.

Update

Figure 2.35 Edition of one funding body

## 2.6.6 News stories

FARNHub Website Logout Vermeulen Philippe

Dashboard

Publications <

Projects <

Online databases <

Funding bodies <

News stories ▾

See my news stories

Add a news story

Regulations <

users <

## My news stories

+ Add a news stories

sausages

Edit Delete

### 1 in 5 sausages tested had meat not on l...

Revelstoke Review 2017  
Encoded by Shaheen Syed

Edit Delete

### 20 per cent of sausages tested in Canada...

Nadin Ramadan  
Varsity 2017  
Encoded by Shaheen Syed

Figure 2.36 Overview of selected news stories

FARNHub Website Logout Vermeulen Philippe

Dashboard  
Publications <  
Projects <  
Online databases <  
Funding bodies <  
News stories <  
Regulations <  
users <

## < Update a news stories

\* Please complete these mandatory fields

**Title \***  
1 in 5 sausages tested had meat not on label: Study

**Author**  
Name1.P1 ;Name2.P2 ; Name3.P3

**Date \***  
2017

**Name**  
Revelstoke Review

**Link \***  
https://www.revelstokereview.com/buzz/one-in-five-sausages-tested-across-canada-had-m  
http://www.cra.wallonie.be

**Country \***  
Canada

**Commodity \***  
AP-Meat and edible offal

**Abstract**  
A federally funded study has found that 20 per cent of sausages sampled from grocery stores across Canada contained meats that weren't on the label. The study, published this week in the journal Food Control, was conducted by researchers at the University of Guelph and commissioned by the Canadian Food Inspection Agency. It examined 100 sausages that were labelled as containing just one ingredient — beef, pork, chicken or turkey. "About one in five of the sausages we tested had some off-label ingredients in them, which is alarming," said Robert Hanner, lead author of the study and an associate professor with the Biodiversity Institute of Ontario at the University of Guelph. The CFIA reached out to Hanner for the study after the European horse meat scandal in 2013, where food labelled as beef was found to have horse meat — in some cases beef was completely substituted by horse meat.

Update

Figure 2.37 Edition of one news story

### 2.6.7 Regulations

The screenshot shows the FARNHub interface. At the top left is the 'FARNHub' logo, and at the top right are links for 'Website', 'Logout', and a user profile for 'Vermeulen Philippe'. A left-hand navigation menu includes 'Dashboard', 'Publications', 'Projects', 'Online databases', 'Funding bodies', 'News stories', 'Regulations', 'See my regulations', 'Add a regulation', and 'users'. The main content area is titled 'My regulations' and features a search bar with the placeholder 'Enter your keywords' and a '+ Add a regulation' button. Below the search bar, two regulation entries are displayed. Each entry has an 'Edit' button (pencil icon) and a 'Delete' button (trash icon). The first regulation is titled 'A framework law that regulates safety pr...' and is associated with 'Federal Public Service', 'Several reg Id Safety prescriptions', and 'Encoded by Philippe Vermeulen'. The second regulation is titled 'Act on Food Chain Safety No 46 of 2008' and is associated with 'NEBIH', 'Several reg Id Food chain safety', and 'Encoded by Attila Nagy'.

Figure 2.38 Overview of selected regulations



FARNHub Website Logout Vermeulen Philippe

Dashboard

Publications <

Projects <

Online databases <

Funding bodies <

News stories <

Regulations <

users <

## < Update a regulation

\* Please complete these mandatory fields

**Name \***  
A framework law that regulates safety prescriptions of products and services

**Short Name \***  
Safety prescriptions

**Regulatory body**  
Federal Public Service

**Regulation identifier \***  
Several reg Id

**Link \***  
http://www.ejustice.just.fgov.be/cgi\_loi/loi\_a1.pl?language=nl&la=N&cn=2013022819&table  
http://www.cra.wallonie.be

**Country \***  
Belgique

**Commodity \***  
All Food

**Abstract**

Update

Figure 2.39 Edition of one regulation

## 2.6.8 Users

The screenshot shows the 'My users' page in the FARNHub application. The page has a sidebar on the left with navigation options: Dashboard, Publications, Projects, Online databases, Funding bodies, News stories, Regulations, users, See my administrators, and Add an administrator. The main content area is titled 'My users' and includes a '+ Add a user' button. Three user profiles are listed:

- Minna Anthoni**: +358 40137 9854, EVIRA, minna.anthoni@evira.fi
- Adrian Asanica**: +40, UEFISCDI, asanica@gmail.com
- Vincent Baeten**: +32 81 620355, CRAW, v.baeten@cra.wallonie.be

Figure 2.40 Overview of selected users

The screenshot shows the 'Update users' form in the FARNHub application. The form is titled '< Update users' and includes a note: '\* Please complete these mandatory fields'. The form fields are:

- Name \***: Baeten
- First name \***: Vincent
- Email \***: v.baeten@cra.wallonie.be
- Phone**: +32 81 620355
- Institute \***: CRAW
- Level \***: Administrator

An 'Update' button is located at the bottom right of the form.

Figure 2.41 Edition of one user

## 2.7 *Sustainability beyond project lifetime*

After the end of the project (31/3/2018), the FARNHub (<http://farnhub.authent.cra.wallonie.be>) will be hosted on CRA-W server and maintained during 3 years. During this time, the network of national representatives will continue to populate the database. The interactions with FoodIntegrity project will be consolidated, in particular with FoodIntegrity WP2 for the analytical methods and FoodIntegrity WP6 for the Wiki news stories.

The interactive map ([http://www.authent-net.eu/AN\\_FARNH\\_click\\_map.html](http://www.authent-net.eu/AN_FARNH_click_map.html)) hosted on VSCHT server will be updated manually in collaboration with CRA-W. Additional national status reports (NSR) and commodity status reports (CSR) can be added and statistics on the number of funding bodies, publications, projects, databases, regulations, news in contributing EU countries can be updated according to the FARNHub content at regularly frequencies.

The transfer on the CRA-W server, of the food fraud crawler to collect the News stories, is under discussion. Other software are used to run this application. Nofima staff involved in the project will maintain the crawler, quality check articles and provide import files for the FARNHub. More specific routines and responsibilities for regularly exporting news stories will be set up.

### 3 Appendix

#### 3.1 Appendix 1 – Food fraud keywords

**Table 3.1 Keywords used to identify news stories pertaining to food fraud**

Keywords (1-20)	Keywords (21-40)	Keywords (41-56)
caviar fraud	fish fraud	mislabeled olive oil
coffee adulteration	food adulteration	mislabeled saffron
coffee fraud	food fraud	mislabeled wine
counterfeit coffee	formaldehyde fish fraud	misleading of food
counterfeit fish	honey fraud	mozzarella fraud
counterfeit food	honey mislabeling	olive oil dilution
counterfeit honey	intentional substitution of food	olive oil fraud
counterfeit meat	juice adulteration	saffron adulteration
counterfeit milk	juice fraud	saffron fraud
counterfeit olive oil	meat adulteration	salmon fraud
counterfeit orange juice	meat fraud	seafood fraud
counterfeit saffron	melamine in milk	smuggling food
counterfeit wine	milk adulteration	spices fraud
economic adulteration food	milk fraud	tampering of food
fake alcohol	mislabeled coffee	wine adulteration
fake food	mislabeled fish	wine fraud
fake juice	mislabeled food	
fake milk	mislabeled juice	
fake saffron	mislabeled meat	
false food	mislabeled milk	

### 3.2 Appendix 2 – Commodity categories

**Table 3.2 Commodity categories**

<b>ID</b>	<b>Commodity Name</b>	<b>Commodity Category</b>
1	All food and animal feed products	All Animal Feed and Food
2	All food products	All Food
3	All alcoholic beverages	AB Alcoholic Beverages-All
4	Beers	AB-Beers
5	Cider, Perry	AB-Cider, Perry
6	Other alcoholic beverages	AB-Other alcoholic beverages
7	Spirits	AB-Spirits
8	Wines, musts	AB-Wines, musts
9	All animal feed products	AF Animal Feed-All
10	Feed additives, premixtures	AF-Feed additives, premixtures
11	Feed materials, compound feed	AF-Feed materials, compound feed
12	Other animal feed	AF-Other animal feed
13	All animal products	AP Animal Products-All
14	Eggs and egg products	AP-Eggs and egg products
15	Honey and royal jelly	AP-Honey and royal jelly
16	Meat and edible offal	AP-Meat and edible offal
17	Milk and milk products	AP-Milk and milk products
18	Other animal products	AP-Other animal products
19	All food additives	FA Food additives-All
20	Colourings (natural & synthetic )	FA-Colourings (natural & synthetic )
21	Flavourings (natural & synthetic)	FA-Flavourings (natural & synthetic)
22	Other food additives	FA-Other food additives
23	Protein based ingredients	FA-Protein based ingredients
24	Sweeteners	FA-Sweeteners
25	All fats and oils	FO Fats and Oils-All
26	Animal fat (excluding butter)	FO-Animal fat (excluding butter)
27	Fish oil	FO-Fish oil
28	Olive oil	FO-Olive oil
29	Other fats and oils	FO-Other fats and oils
30	Vegetable fats and oils (excluding olive oil)	FO-Vegetable fats and oils (excluding olive oil)
31	All non-alcoholic beverages	NA Non-Alcoholic beverages-All
32	Fruit and vegetable juices, concentrates, nectars, purees, smoothies	NA-Fruit and vegetable juices, concentrates, nectars, purees, smoothies
33	Other non-alcoholic beverages	NA-Other non-alcoholic beverages

34	Soft drinks, sodas	NA-Soft drinks, sodas
35	Sports, energy drinks	NA-Sports, energy drinks
36	Water (including mineral, aerated, flavoured or sweetened)	NA-Water (including mineral, aerated, flavoured or sweetened)
37	All processed foods	PF Processed Foods-All
38	Chocolate and chocolate-based confectionery	PF-Chocolate and chocolate-based confectionery
39	Condiments and sauces	PF-Condiments and sauces
40	Jams, jellies and marmalades and other processed fruit-based foods	PF-Jams, jellies and marmalades and other processed fruit-based foods
41	Other processed foods	PF-Other processed foods
42	Sugar-based confectionery	PF-Sugar-based confectionery
43	Sugars - as defined in Directive 2001/111/EC, treacle, molasses and other sugars	PF-Sugars - as defined in Directive 2001/111/EC, treacle, molasses and other sugars
44	Vinegar	PF-Vinegar
45	All plants and plant products	PP plants and plant products-All
46	Cereals and cereal products	PP-Cereals and cereal products
47	Cocoa and cocoa preparations	PP-Cocoa and cocoa preparations
48	Coffee	PP-Coffee
49	Fruits (fresh, dried,...)	PP-Fruits (fresh, dried,...)
50	Herbal infusions	PP-Herbal infusions
51	Herbs and Spices	PP-Herbs and Spices
52	Nuts, nut products and seeds	PP-Nuts, nut products and seeds
53	Other plants and plant products	PP-Other plants and plant products
54	Tea (including flavoured tea)	PP-Tea (including flavoured tea)
55	Vegetables (fresh, dried,...)	PP-Vegetables (fresh, dried,...)
56	All infant foods, health foods, supplements	SF Infant foods, health foods, supplements-ALL
57	All seafood	SE SeaFood-All
58	Dietary supplements	SF-Dietary supplements
59	Fish and fish products	SE-Fish and fish products
60	Functional food ingredients	SF-Functional food ingredients
61	Infant formula	SF-Infant formula
62	Other diet and specific nutrition products	SF-Other diet and specific nutrition products
63	Other seafood (crustaceans, bivalve molluscs, cephalopods)	SE-Other seafood (crustaceans, bivalve molluscs, cephalopods)