

# SHORT TERM SCIENTIFIC MISSION (STSM) REPORT

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**COST ACTION:** FP1203

**STSM TITLE:** Non-Wood Forest Products (NWFPs) Database Development

**HOST INSTITUTE:** Instituto Superior de Agronomia, Universidade de Lisboa, Portugal

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## ATTACHMENTS:

- ✓ NWFPs Database User Guide
- ✓ Database questionnaire

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## INTRODUCTION

The European non-wood forest products (NWFPs) network intends to make an available online database of European NWFPs. A prototype of the database was already available to provide an idea of what this database might look like and it was the starting point for this STSM. To develop such database offers challenges both for the variety of products that are included within NWFP and by the heterogeneous information available amongst those products. NWFPs diversity might imply that, despite a common structure is aimed for each product across the database, specific fields might be required depending on NWFP type. Concerning the unbalanced distribution of knowledge amongst NWFPs it is expected that a minimum of information to be defined will be necessary so that a product might be listed in this database. In addition, some products have already too much information to be presented in a single NWFP database description. In such cases link will be provided for other pages within NWFP network or for external sources as well as a list of relevant publications about it.

## BACKGROUND

Several databases are already developed and available in the internet which deal with some kind of information concerning non-wood forest products (NWFPs). Their information cover findings about the taxonomy, ecology, morphology, phenology, and economics (or possibilities for rural development) from NWFPs worldwide. Their structure varies, although in some cases might be similar to the one we need. However none of these databases offers a structure exactly as we need since such structure shall reflect the information that will be needed to include which is connected with the Action Working Groups (WGs) and Task Forces (TFs) structure. In addition the database to be developed will include targeted European NWFPs and there will be no database that surely will include all these NWFPs. A brief description of existing NWFPs databases is important and was carried out to minimize the possibility from creating duplicated information in the new database.

### **Food and Agriculture Organization of the United Nations**

<http://www.fao.org/forestry/nwfp/78836/en/>

Food and Agriculture Organization of the United Nations has provided a NWFPs database for all those countries where UN fights the poverty and hunger. Mainly, these countries are situated in Africa and Asia (41 country). Data are collected from literature every two years and are divided into two groups: production (in tons) and trade (in tons). The database is basically just a list of NWFPs with charts of production for each product and amount of trade for each product presented in five year steps. It doesn't cover the ecology of products, just the economic possibilities. It also contains a table on food production (edible NWFPs) in ton per year.

### **NTFP Info.us**

<http://www.ntfpinfo.us/cgi-bin/ntfp/db/dbsql/db.cgi?db=prod&uid=default>

### **Non-timber Forest Products Resources for Small Forestland Owners and Businesses**

This database is designed to show the many possible commercial non-timber forest product species that occur in each state us the United States of America, the various common names used to describe a species, and the different parts of a species that may be marketable. The database is not intended as a

substitute for expert experience and professional guidebooks to understand if a species is safe for human handling, consumption, or application.

The database contains 1401 record and information on NTFPs are divided into several groups:

1. Scientific Name
2. Common Name
3. Family
4. Product Use(s) – ex. is the specie decorative or used for crafts, landscaping, medicinal, etc.
5. Parts used - bark, flowers, fruits, roots or bulbs, wood ash, whole organism, etc.
6. State Range & Distribution – Just the short names of states from the USA (AZ, AR, FL, etc.)
7. Currently Commercially Harvested? – Just Yes or No
8. Image

These information are displayed in a simple table and amount of information is very small.

### **FOREST HARVEST: non-timber forest products in Scotland**

<http://www.forestharvest.org.uk/speciesdir.php>

This database does not provide any search module, just a list of NTFPs directory divided into 6 categories: Food&Drink, Craft materials, Extracts, Medicines, Moss, Foliage and Horticulture. Those products are also subdivided into 4 sub-categories: Animals, Plants, Fungi, Mosses and Lichens.

If we click on each product we can see only the products common name, Latin binomial name, and just a few sentences about products, like description, habitat and uses. The website provides links to other external sources, which is very useful because the database itself lacks much information on products to be considered relevant.

### **FUNGAL DATABASES – Nomenclature and Species Banks**

<http://www.mycobank.org>

This is a database of fungi (mushrooms & truffles) which only provide nomenclature (taxonomy) information from the class of kingdom to sub-specie. It contains also the DNA sequences (sequence alignment) and links to scientific articles dealing with a fungal specie. It does not contain any ecology, morphology or economy data. It serves mainly for specie identification and it also contain an option to register a new specie. It is used worldwide as a legitimate source of fungal information.

### **EUROPEAN FOREST INSTITUTE – Mediterranean Forest Database**

[http://www.efi.int/portal/virtual\\_library/databases/mediterranean\\_forest\\_database/](http://www.efi.int/portal/virtual_library/databases/mediterranean_forest_database/)

This database contains just the production (quantity in tons) and value (in \$) of non-wood forest products and wood forest products. The search can be queried only by country and state of forest (protected forests, percentage of forests, other wooded land, and total area). The results are very similar to United Nations database, because it only provides data regarding economics in a structure of a table.

### **UNIVERSITY OF CONNECTICUT – Plant Database**

<http://www.hort.uconn.edu/plants/>

This database provides very thorough information about trees, shrubs and vines. The search can be queried by Latin name, common name or by plant attributes. Once a plant selected, only horticulture information is provided like habitat, habit, landscape use, fruit, flowers, cultivars. This database should only be used in horticulture field, it does not contain any information regarding possible social and economic impacts.

### **ThisForest and ThisFish**

<http://www.thisforest.info>

It is a product traceability database. It uses many options needed for developing a database on NWFPs, but the only preoccupation is the price of the database because it was custom created.

### **Plants For A Future**

<http://pfaf.org/user/default.aspx>

This database contains the information's on ecology and use (medicinal, culinary, etc.) which are displayed in a list, with a list of suppliers where a plant can be bought. The amount of information is very large, and the plants are connected with other based on usage similarity. It also provides links to researches made on those plants. The website is designed as a scientific platform, but the main purpose is just to advertise plant resellers and suppliers.

### **The African Plant Database**

<http://www.gbif.org/resources/2932>

The African Plants Database is a useful generic resource to obtain information about plants occurring in Africa. It is a compilation of literature and other digital resources and it only provides links to external sources.

### **Buy BC Wild**

<http://www.buybcwild.com/>

The Buy BCwild Directory is a unique resource guide to products from British Columbia's non-timber forest product (NTFP) sector. The Directory is comprised of over 200 listings of mainly small-scale NTFP-based businesses and service providers. The NTFPs are divided into 6 categories: (i) Arts and Culture, (ii) Body, Mind and Spirit, (iii) Education and Resources, (iv) Holiday and recreation, (v) Homes and Gardens, (vi) Wild Foods.

### **Food Plants International**

<http://foodplantsinternational.com/plants/>

The FPI database provides accessible information about undervalued and overlooked food plants in the world to support production of locally relevant and nutritious food, and enable people to appropriately value their local foods. The searchable database has information on scientific name, genus, common

names, synonyms, plant description, production and use notes, nutritional value, pictures and references.

### **PhytoTrade Africa**

<http://phytotrade.com/>

PhytoTrade Africa was established in 2001 as the trade association of the natural products industry in Southern Africa. The purpose was to promote natural products harvesting and the production of various products used in medicine and gastronomy. The database provides some basic ecology information's, traditional uses and known properties, links to suppliers and resellers, product application and links to scientific literature.

### **PROTA4U – Plant Resources of Tropical Africa**

<http://www.prota4u.info/>

The database provides comprehensive information on: Origin and geographic distribution, Uses, Production and international trade, Properties, Description, Other botanical information, Growth and development, Ecology, Propagation and planting, Management, Diseases and pests, Harvesting, Yield, Handling after harvest, Genetic resources and breeding, Breeding, Prospects and references to literature. It also provides an image gallery, map of distribution and YouTube links to various videos.

### **NTFP – Exchange Programme for South and South-East Asia**

[http://www.ntfp.org/index.php?go=ntfp\\_db](http://www.ntfp.org/index.php?go=ntfp_db)

Citation from their website: “This database aims to become a comprehensive source of data on non-timber forest products in the South and Southeast region. It showcases those NTFPs in the six countries where EP partners have a presence, namely India, Indonesia, Philippines, Malaysia, Vietnam and Cambodia.

The database is more than just an online profile of NTFPs. Other interesting and lesser known information in relation to socio-cultural roles, management practices, and specific are recognised. “

This database contains also the list of plant parts that are used and which can be searched, which is a very interesting feature that could be implemented into nwfps.org database.

Although a large number of online databases exists, there is no database that is covering all fields demanded from COST Action FP1203 (except PROTA4U). Each one mentioned above have something that could be useful, so having a single database that will use good examples from other websites is crucial.

DATABASE	TOPICS	NWFPS TYPE	NO. OF RECORDS	DATA DISPLAY	TYPE OF SEARCH	IMAGES UPLOAD	MAP
fao.org	2, production and trade	not categorized, every product from the country is listed	2 records × product × country (but can be unlimited)	in form of tables and charts	simple, just by countries	not possible	no
ntfpinfo.us	8 (taxonomy - 3 fields, products use, parts used, US state distribution, if it is commercially harvested and image)	21, but only from trees and mushrooms	currently 1401, but more can be added	in form of a table	advanced, by taxonomy, usage and distribution	possible, but no image uploaded	no
forestharcvest.org.uk	4, description, habitat, uses, gathering	4 – animals, plants, mushrooms, lichens	unlimited	in form of text	none	only one possible	no
mycobank.org	2 – taxonomy and DNA sequence	mushrooms	unlimited	in form of text	advanced	no	no
efi.int	2 – quantity and value	animal origin, mushrooms, tree products, understory plants	few, not all are known	in form of a table	advanced	no	no
hort.uconn.edu	ecology, habitat, habit and morphology	trees and shrubs	possibly unlimited	text	simple	yes	no
woodyplants.cals.cornell.edu	ecology, morphology, insect disease	trees and shrubs	possibly unlimited	text	simple, just by name	yes	yes
<b>WHAT WE NEED?</b>	Ecology, data&models, production, economy	animal origin, mushrooms & truffles, tree products, understory plants	unlimited	text	advanced	yes	yes

## DATABASE PLATFORM COMPARISON

As it was suggested in the informal Action meeting in Neuberg apart from a more conventional database format it will be also explored the option to make the development based on a semantic wiki. This work was carried out:

[http://www.fazana.com.hr/wiki/index.php?title=Main\\_Page](http://www.fazana.com.hr/wiki/index.php?title=Main_Page)

Main difficulties found from the exploration work with the Wikimedia platform:

1. Each front-end user can submit changes to articles,
2. Long term database maintenance: simple changes might imply touch in .php code so might bring additional difficulties for future updates;
3. Editing articles requires the user to understand the basics of html programming;
4. Difficulty to set up a database advanced search system for users to find the information they want;
5. There is less knowledge on this platform (overall and by the STSM candidate for database development).

The same issues are already visible on Wikipedia.org site, which is widely known, but hasn't still come up with possible solutions.

Databases related with NWFPS developed with Wikimedia:

- [http://practicalplants.org/wiki/Practical\\_Plants](http://practicalplants.org/wiki/Practical_Plants)
- [http://opensourceecology.org/wiki/Plants\\_For\\_A\\_Future\\_Database](http://opensourceecology.org/wiki/Plants_For_A_Future_Database)

Other possibilities to develop the database are the following content management systems: Drupal or Joomla, Python using Django, Ruby on Rails, phpBB forum, E-commerce, WordPress.

*Drupal or Joomla:* These are open source content management systems that were suggested by the IT section of the Instituto Superior de Agronomia in Lisbon. They offered their help to maintain the database after the end of the STSM. Drupal or Joomla could be possibly good solutions, but at the back-end, where users will input data on NWFPS, are too many commands which are dedicated to maintain the integrity of the database. These commands can't be hidden, so the risk of crashing down the database exists.

Databases developed with Drupal:

- <http://about.jstor.org/content/global-plants-formerly-jstor-plant-science>
- <http://www.gbif.org/resources/2932>
- <http://www.buybcwild.com/>
- <http://www.kew.org/>

*Python using Django:* This is a new programming language that is still in the phase of development and it's intended to create content management systems. Although new, it is widely used by professional web developers, and by so, the final result can be very expensive. A lack of knowledge on Python exists by the STSM candidate.

*Ruby on Rails:* Also a development systems, but it's becoming outdated and the author are slowly abandoning its development, so it's unreliable for long-term solutions.

*phpBB forum:* Forums are widely used to discuss topics. There is no way to present the information on NWFPs, but a forum can be integrated into database as a standalone solution to comment and share links and knowledge.

*E-commerce:* Possibly a good solution. This is a tool used to develop online shopping stores and can be used to disseminate data on NWFPs just by removing the order form, shopping basket and payment process. E-commerce is copyrighted under common rights license, which mean that credentials to e-commerce producers should not be removed. Removing the options from its script is also questionable because the whole system (or script) might crash.

The test on *Magento* E-commerce platform was made. The idea was to make it look like a catalog and not as a web shop. Adding custom fields like ecology and usage is possible, but removing the price field of the product, quantity in stock, order form and cart crashes the system. An example can be found on <http://www.fazana.com.hr/magento>

*WordPress:* revealed to be the most interesting option:

1. Is a flexible CMS with several plugins already developed for database implementation;
2. There is considerable knowledge about the platform by who is carrying out the STSM in this CMS;
3. Existing prototypes have been all developed in this solution. It will be suggested that work will follow in this platform.

Various solution available on the market have also been tested. A suggested Templatic directory press plugin is exactly the same like the PremiumPress one that is already installed on the [nwfps.org](http://nwfps.org) website.

The PremiumPress plugin have some issue: custom fields must all be the same for all categories (or WG); for example, the Animal origin workgroup will have to deal with fields like soli type, soil pH and other soil ecology fields. Although the plugin provides a front-end form to enter a new NWFP, because it displays all possible fields for all categories, it looks endless and discourages the user to input new posts.

A possible solution is given with the "Advanced custom fields" plugin. The fields can be designed for each NWFP category separately, so the user won't have to deal with too many unnecessary fields. The biggest issue is with changing the allocation of these fields on the front-end of the webpage. This can be easily done by the candidate, but it will be a hard work for all of those who doesn't understand the .php



and .css script. A support from the candidate will be needed if any changes should be made, even after the end of the STSM.

Several databases related with NWFPs have been developed with WordPress:

- <http://foodplantsinternational.com/plants/>
- <http://www.ansab.org/market-information/resources/>
- <http://phytotrade.com/>
- <http://www.analogforestry.org/resources/database/>

OTHER DATABASES THAT ARE USING SOME OTHER PROGRAMMING LANGUAGES (these databases are custom made – the system was specially developed based on user needs):

- <http://www.ars-grin.gov/duke/>
- <http://herb.umd.umich.edu/>
- <http://www.pfaf.org/user/plantsearch.aspx>
- [http://www.ibiblio.org/pfaf/D\\_search.html](http://www.ibiblio.org/pfaf/D_search.html)
- <http://proseanet.org/prosea/>
- <http://www.rain-tree.com/plants.htm#.U3nm4tJdVju>
- [http://www.ntfp.org/index.php?go=ntfp\\_db](http://www.ntfp.org/index.php?go=ntfp_db)
- <http://www.beetlemoose.com/PlantDB/charSelect.php>
- <http://www.prota4u.info>
- <http://plants.usda.gov/java/> (programmed using Java script)

## DATABASE DEVELOPMENT

WordPress platform has been selected among the others and the development of the database will be adjusted to possibilities the platform provides.

### *STEP 1: Creating the child theme*

Before starting with the development, a *child theme* should be registered. Child theme is basically a folder which contains all files that shouldn't be altered with the possible platform updates. WordPress is an open-source content management system that is improving from time to time and those improvements should be installed on the server. While customizing the layout of the platform, we have to extract some files that should always remain the same. Those files are extracted to a different folder called *child theme*.

The files that were extracted are: *author.php, functions.php, content.php, category.php, single.php, footer.php, header.php* and *style.css*. They are extracted because all of them were altered by the candidate to suit the need of integrating the database into WordPress. The *.php* files are basically the engines that run the platform and the *.css* file contains orders how the database will look like. Why are they selected will be explained in later steps.

## STEP 2: Advanced custom fields

*Advanced custom fields* is a free plugin that allows the user to create custom fields for data input. This plugin was selected because it provides something that other similar plugins do not: conditional logic. Conditional logic uses IF, THAN and ELSE statements.

For example: IF the region is North Europe -> THAN Sweden, Norway, Finland... will appear -> ELSE will be hidden.

This logic is functional in many ways: for instance WG4 might not focus information on soil types from TF1, therefore users will be able to edit only the fields that matches their TF and WG... What this logic really does, is setting the amount of data to be entered to a minimum (or just the needed one). In this way, future users will not have to deal with extra fields that are not relevant their topic of interest.

Apart from the mentioned advantages there are disadvantages. Where should the fields appear on the frontend after inputting data, should be set-up in *single.php* file. This is just one little sample of the code that was implemented into *single.php* file:

```
<?php
$field_name = "product_name";
$field = get_field_object($field_name);
{
    echo '<div>';
        if( $field['value'] )
    echo
        '<h9>' . $field['label'] . ' ' . '</h9>' .
        $field['value'];
    echo '</div>';
}
?>
```

All of the custom fields plugins have the same problem, even the pre-developed ones, like PremiumPress which was installed on the server. Also, some extra <divs> and <tabs> were created in *style.css* to make a table for the data display. Using the command <div class="tabs"> we are able to set-up a table-like content which will be very user-friendly for reading.

Four topics for each product is provided: ID & Ecology, Data & Models, Co-Production and Economics in accordance to the existing Action Task Forces. Additional information is a field for where references and external links will be placed.



Image 1. Tabs based on Task Force's topics

For first topic a draft of potential fields to be included has been provided. Using conditional logic they will appear differently depending on the type of NWFPs which relates to the Action WGs. For other 4 topics a simple text editor will be provided to user in which he can input images, files (like .pdf), links to external sources and graphs and charts in excel format or just copy/paste text. Each user that is familiar with Microsoft office Word will find this kind of custom field easy to use.

### *STEP 3: Advanced custom fields search*

This is also a free plugin that allows us to search through the custom fields. It is needed, because WordPress stores custom fields in a different table than the basic (out-of-the-box) fields, so the basic search plugin won't work. The advanced search will include several fields: product search, Latin name and local name in form of text field and category, usage and country search in form of drop-down menu. This fields can be combined, more fields can be added and the others can be subtracted.

For the search result, *header.php*, *category.php* and *content.php* had to be altered in a way the search result display only the main fields of interest: name of the product, product category, country of the product and what is it used for. Potential users will be able to see straight away a product and decide whether this product belong to their field of interest or not.

### *STEP 4: Map search*

This solution was suggested by the supervisor as a simple, but effective search. After selecting a country from the map, all products from that country appear. The map will display the whole world, and COST Near Neighbor Countries and COST International Partner Countries will be displayed.

### *STEP 5: Assigning User roles*

Before explaining this step, we should be informed more on user roles in WordPress.

- Administrator: top user role – can change each post and even the database structure. This role should not be widely assigned - one or two users at max can have this role;
- Editor: can add, publish and edit posts and even if they are not his own posts;
- Author: can add, publish and edit only his posts;
- Contributor: can add and edit posts but cannot publish them without the supervision of Editor or Administrator.

One might ask, howmany roles should be assigned in this database? A possible scenario could be as following:

- ✓ If we have one user per Task Force and we have four TFs plus one user from WG as a supervisor we end up with a total of five users per WG.
- ✓ As there are four WGs and five users per WG we end up with a total of twenty users.

In this scenario, twenty would be the minimum number of users that should be assigned to NWFPs database in order to function in a structured way. If we then combine this number with the number of COST countries in this Action, we end up with a problem:

5 users per category × 29 countries = 145 users × 4 categories = 580 users!

Well, this number is not entirely the truth: we will have only 4 supervisors (1 super. per WG) so this means we will have 468 possible users.

This is only a theory, but it is a problem that may occur, because even if we have 100 users, someone should supervise the information provided on the website and that would be a full-time job.

This is the main reason why we have abandoned the idea of developing the database in a Wiki platform.

To avoid a large number of users, it was decided that every country will have only one person which will input information's on NWFPS, or more than one, that will share only one username and password. In this way, the user roles defined to the database are as following:

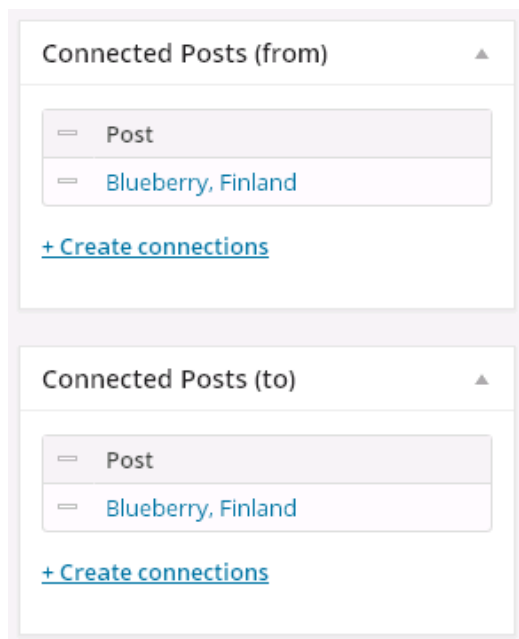
**Contributor:** Country representative which can add products to the database but cannot publish them without the Reviewer. Whenever a product is prepared for publishing, a Reviewer receives an automatic e-mail request for revision and publishing. Contributor has the username which is the same as the name of his country (for ex. username: Portugal). If there will be more than user from Portugal, they will all share the same username and they will be considered as a single body (single entity). In this way, we will have only 29 contributors.

**Reviewer:** Work Group representative which is able to publish posts on-line. His main task is to review the information on products provided by Contributor and publish them on-line. If the Reviewer thinks that NWFPS information should be upgraded, he can send the product back to Contributor to make upgrades. This is done automatically and is explained in chapter 'Guide for Reviewers'. We will have only 4 Reviewers.

**Administrator:** Has all the abilities that Contributors and Reviewers have and can add new users.

### STEP 6: Product relations

When we have a situation where we can find the same product in different countries, a *Post-2-post* plugin provides the ability to connect posts.



Products can be connected in 3 ways:

1. Connect post from another post: On given product the link to another product won't be displayed, but on another product the link will be displayed;
2. Connect post to another post: On given product the link to another product will be displayed, but on another product the link won't be displayed;
3. Connect post from and to another post: Two-way connection, the only one should be used in order to display connections on given and another post.

Image 2. Product connection

A field beneath the product content will be displayed if the connection exists, with the list of countries that will connect same products:

## SAME PRODUCT FROM:

[Finland](#)

Image 3. Field that displays countries with connected products

This plugin originally had the ability to connect posts only to pages, but the .php code of the plugin was altered in order to suit our needs. This was done in *function.php* file.

### ORIGINAL CODE :

```
<?php
function my_connection_types() {
    p2p_register_connection_type( array(
        'name' => 'posts_to_pages',
        'from' => 'post',
        'to' => 'page'
    ));
}
?>
```

### ALTERED CODE :

```
<?php
function my_connection_types() {
    p2p_register_connection_type( array(
        'name' => 'posts_to_posts',
        'from' => 'post',
        'to' => 'post'
    ));
}
?>
```

## QUESTIONNAIRE ANALYSIS

During this STSM, a questionnaire was produced together with the remain members from the database task force, in order to see what abilities would the Action members like to have in this database.

Four questions were given:

1. Information of which species would you like this database to contain?
2. How would you like to input data?
3. Who will use this database in your country?
4. Provide examples of existing databases.

Question 1 & 3: The database will have the ability to input information on any product in any country.

Question 4: WordPress platform is already chosen and the list of fields to input information will be ordered accordingly to Action's Task Forces. Analysis of suggested platform were given in *Background* and *Database platform comparison* chapters.

Question 3: Till the end of the STSM, only 10 users provided their responses. An analysis is given below:

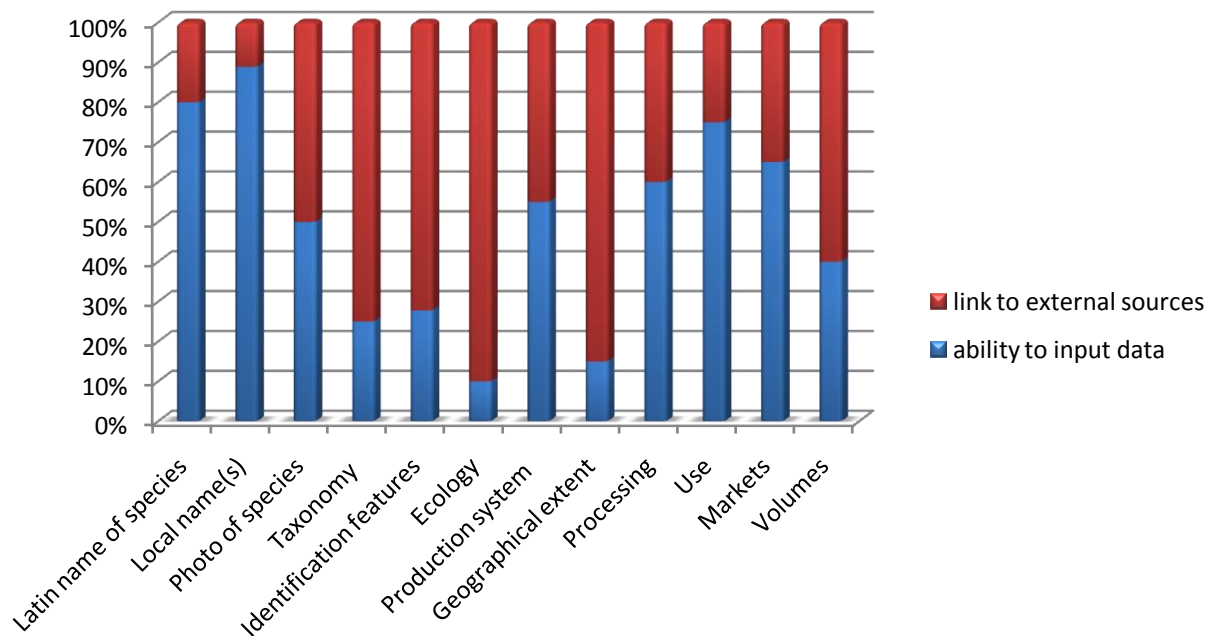


Chart 1. Question 3 analysis from the Questionnaire shows in percentage how many users want to have the ability to input their information's or to have the ability to connect fields to external sources.

From the above chart we can see that some users wish to have the ability to input their own information, some want just to connect the fields with external sources. To clarify what features will be provided by the database, additional meetings should be held. Until then, the database will be designed to contain both form of information's.

## DATABASE LAYOUT

Newer versions of WordPress have some compatibility issues with older versions of Microsoft's Internet Explorer (IE). Older versions of IE don't display correctly the .html layout so the database tends to crash. The database was tested with the current IE(version 11) and it works without any problem. Upgrading IE it is easy and free. In addition, the older IE versions are not supported by Microsoft. On other explorers, like Google Chrome, Mozilla Firefox and Opera everything displays correctly.

After visiting the NWFPs Database web address (<http://www.nwfps.org>), to end-user a map of world will be presented. This is the map that displays COST Action Participating Countries, Near Neighbor Countries and International Partner Countries.

# NWFP DATABASE

COST Action FP1203 | European non-wood forest products (NWFPs) network

[HOME](#) [ABOUT](#) [SEARCH](#) [NWFPs CATEGORIES](#) [CONTACT](#)



Image 4. NWFPs Database homepage

End-user has the ability to select a COST Action participating country (green color) in order to see the list of all non-wood forest products from that country, and also a link to external source with the list of institutions that work with NWFPs in that country listed in the other Action database [www.nwfps.com](http://www.nwfps.com).

## Portugal

University of Lisbon - School of Agronomy (ISA)

Institutions working with NWFPs: <http://www.nwfps.org/portugal>

PRODUCT NAME	LOCAL NAME	CATEGORY	COUNTRY	USAGE
<a href="#">Stone pine nuts</a>	Nozes de pinheiros	Tree products	Portugal	Culinary

Image 5. Result after selecting a country from the map

If the end-user wants to search directly for a product, a search form is provided in top menu. End user can search a name of the product, its Latin name, local name, country, usage and category, and even combine those fields.

Non-Wood Forest Product:

Latin Name:

Local Name:

Product Type:

Usage:

Country:

Image 6. Search form

Search results are displayed in a table in alphabetical order.

**SEARCH RESULTS FOR: ALL ENTRIES**


PRODUCT NAME	LOCAL NAME	CATEGORY	COUNTRY	USAGE
<a href="#">Blueberry</a>	Bilberry	Understory plants	United Kingdom	Culinary, Cultural, Industrial, Medicinal, Other
<a href="#">Perigord black truffle</a>	Crni zimski tartuf	Mushrooms & Truffles	Croatia	Culinary, Cultural, Edible fungi for people and livestock
<a href="#">Red deer</a>	Rotwild	Animal origin	Germany	Culinary, Cultural, Industrial, Medicinal, Other
<a href="#">Stone pine nuts</a>	Nozes de pinheiros	Tree products	Portugal	Culinary

Image 7. Search results



The image below displays how the information's are displayed.

**Perigord black truffle, Croatia**




Cultivation of black truffle, *Tuber melanosporum* Vitt., has become an important agricultural alternative in rural Mediterranean regions due to its success in relatively harsh conditions, its high market value and diminishing production in natural areas. In addition, truffle cultivation requires relatively low agricultural inputs, promotes reforestation and economic restoration of rural lands and land-use stability (Bonet et al., 2006).

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**ID & Ecology**   Data&Models   Co-Production   Economics&Policy   Additional information

<p><b>PRODUCT NAME:</b> Perigord black truffle</p> <p><b>COUNTRY:</b> Croatia</p> <p><b>LOCAL NAME OF THE PRODUCT:</b> Crni zimski tartuf</p> <p><b>PRODUCT TYPE:</b> Mushrooms &amp; Truffles</p> <p><b>SPECIES DERIVATIVE (ENGLISH NAME):</b> Perigord black truffle</p> <p><b>SPECIES DERIVATIVE (LATIN BINOMIAL):</b> <i>Tuber melanosporum</i> Vitt.</p> <p><b>ORDER/FAMILY:</b> Pezizales, Tuberales</p> <p><b>REGION:</b> South-East Europe</p> <p><b>CLIMATE:</b> Csb - Coastal mediterranean, mild winter, warm dry summer</p> <p><b>USAGE:</b> Culinary, Cultural, Edible fungi for people and livestock</p> <p><b>DETAILS OF USAGE:</b> First class of the prized truffle can cost up to 700€/kg, which involves that this specie of truffle can have a significant economic role for the region.</p> <p><b>COMMERCIAL:</b> Yes</p> <p><b>DEMAND:</b> Increasing</p> <p><b>INNOVATIVE USE:</b> Yes</p> <p><b>EXAMPLE OF INNOVATIVE USE:</b> Used for the tourism development, could help with the development of myco-tourism.</p>	<p><b>FOREST CATEGORY:</b> Thermophilous</p> <p><b>FOREST SUB-TYPE:</b> Turkey oak, Hungarian oak and Sessile oak forest</p> <p><b>SOIL TYPE:</b> Calcisol</p> <p><b>SOIL DEPTH:</b> Deep</p> <p><b>SOIL PH:</b> 7.0 - 8.0</p> <p><b>SOIL NUTRIENT CONTENT:</b> High</p> <p><b>SOIL ASH/TON:</b> High</p> <p><b>SOIL MOISTURE CONTENT:</b> Low</p> <p><b>MEAN ANNUAL AIR TEMPERATURE (°C):</b> 14</p> <p><b>MEAN ANNUAL PRECIPITATION SUM (MM):</b> 1000 - 1200</p> <p><b>MEAN ANNUAL PRECIPITATION SUM DURING GROWING SEASON (MM):</b> 290</p> <p><b>LIGHT REQUIREMENT:</b> High</p> <p><b>EXPOSURE:</b> South-East</p> <p><b>TREE AGE:</b> Older than 5 years</p> <p><b>REQUIRED COHABITING / SYMBIOTIC SPECIES:</b>  <i>Tuber melanosporum</i> can be found living in mycorrhizal associations with <i>Quercus robur</i>, <i>Quercus pubescens</i>, <i>Quercus petraea</i>, <i>Q.ylex avellana</i>...</p>
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**GALLERY:**



More products from: [Croatia](#)

NAME OF THE PRODUCT

HIGHLIGHTS (a field that displays the most important information on NWFPs)

TABLE with 5 tabs – information's grouped accordingly to TF topics + additional information's with resources and external links

IMAGE GALLERY

LINKS to same product from other countries, or to a list of all products from this country.

Image 8. Layout of product information's

## CONCLUSION

During this STSM an analysis was made on other existing databases which deal with non-wood and non-timber forest products. Some databases that include only medicinal plants or only mushrooms were also included in the review. The review was based on type of information the databases include and platforms they were developed on. The product that was produced during this STSM (the database) is similar to other databases and it includes fields for inputting information's on ecology, usage, production, markets, economy – all accordingly to COST Action's FP1203 Task Forces. Main goal was to produce a database which will display information's in a simple and user-friendly way.

It was decided that WordPress platform will be the platform on which the database will be developed on. It is an free, open-source content management system, that provides constant updates to stay up-to-date with today's IT development. Some of existing databases are also developed on WordPress, the other ones use other open-source systems, but the main majority of them is custom developed, which demands higher funds for development, which wasn't possible during this STSM.

A Questionnaire was sent to future users (members of Action's Work Groups) to see what kind of information's they want this database to include. Only 10 responses were given, so additional information is required for having sound results. Also, an invitation to test the database was sent to the Action Database Task force, but there were no replies at the moment this report was written. It will be important to test the User Guide and the database. If users find the User Guide difficult to follow, adjustments will be carried out on it. The tests from using the database show difficulties created by the database itself then by just upgrading the existing User Guide won't solve possible issues with using the database.

The methods that were used to develop the database are highly customizable, so making additional changes won't be difficult to do. This will be done, if needed, after the COST Action members gather their opinions and state possible issues. Those changes can be easily done by the candidate, but since this work will be done over the internet, user credentials for accessing the Database server should be shared.

The NWFPs Database is highly customizable and highly versatile, it will fit all the demands the user have, but getting familiar with options that database provide is essential. This can take few minutes for some users, for other few hours, depending on user's level of IT knowledge.