

Introduction

In the framework of the European project STRATFEED, the building of a sample bank was a key point into development and validation of analytical methods for the detection of animal meals in feedingstuffs. To manage all the samples, another main objective was the building of a database to store all the data in a specific structure that allows the easy retrieval of specified parts of the data via the applications. The MS Access platform has been selected to implement the database and to manage both numbers and text as well as figures and files. In order to have maximum flexibility for development, updating and dissemination, different tables have been created to suit each topic in the project. The formulae of samples gathered in the sample bank have been described according to the EC guidelines of the Commission Directive 98/67/EC which amended Council Directive 96/25/EC. The incorporation of data and the updating of the database, is facilitated by the STRATFEED manager which is a management tool dedicated to the database administrator. It provides forms to input the data and reports to check the data. In order to valorise this first reference database gathering so much information on feed samples adulterated or not with animal tissue, an internet based data explorer was developed to give to each lab or manufacturer working in the feed sector the opportunity to request the database.

Concept

The development of this tool is based on client-server architecture using the Internet to provide the linkage between the two sides (Figure 1). The client side supports the user interface which is a web browser (Internet explorer or Netscape). The server side supports the web server, the database and the query tool. The query module receives the request from the client (HTML pages), accesses the database, depending on the request, and returns the answer to the client by means of the web server software and Internet protocol.

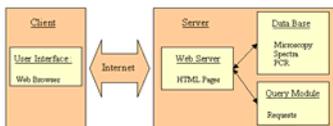


Figure 1: The Internet-based architecture of the STRATFEED explorer.

With this application, on the one hand, the user can quickly get an overview of the "STRATFEED database" through predefined queries and, on the other hand, a user with more expertise can build his own query using different query modules which correspond to the different techniques or topics studied in the project (Figure 2).



Figure 2: The modular concept of the STRATFEED explorer.

The exploring process (Figure 3) can be divided in 4 main steps. After the choice of one predefined query from the overview module (step 1 A) or after building of a query from one of the query modules, by selection of value(s) for one or several criteria proposed (step 1 B) (Figure 11), the system searches in the database the samples answering to the query defined in step 1 (Step 2). If the result of the search is not refined enough, the user can refine his query by executing again the step 1B (Step 3). If the result is refined enough, the sample information, the analyses results as well as the conclusions are displayed (Step 4).

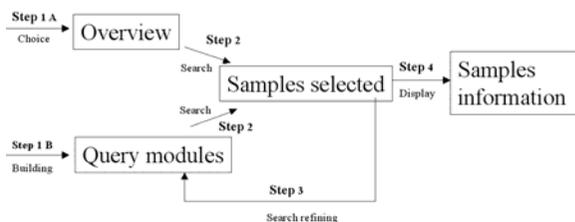


Figure 3: The exploring process of the STRATFEED explorer.

Queries modules

For each method, criteria have been defined by the respective work packages. Those criteria including text, pictures or graphs have been defined to identify the laboratory and to describe the analyses. Queries modules for each topic, based on those criteria were developed. The Figure 4 shows the query module on general information on sample.

Figure 4: The Query module on sample information of the STRATFEED explorer.

Results display

The results of each analysis are displayed by sample, by method and by laboratory. The conclusions are presented according to those 3 levels: the laboratory level, the method level and the sample level. Those conclusions are expressed for each taxon or species detected, by a result and by the reliability of this result.

The legend of the result is the following:

- + Clearly positive on the presence of the taxon or species studied
- +/- Slightly positive on the presence of the taxon or species studied
- Negative on the presence of the taxon or species studied
- ? No clear result

The legend of the reliability is the following

- Yellow: Single result (only one result is provided in this field)
- Green: High reliable result (all results provided are identical)
- Orange: Most results provided have the same tendency
- Red: Results provided are contradictory

The Figure 5 gives to the user, for one sample, a summary of the analyses produced for each taxon or species and for each technique studied in the frame of the project.

This picture indicates for example that the presence of mammal meal in the sample 112 was clearly detected by classical microscopy (high reliable result), by PCR (single result) and by NIRM (single result). In this case, the different techniques gave the same positive results (green color). By clicking on the method link, the detailed results regarding the method selected are displayed for the current sample.

| Taxon or species detected | Analyse by | | | | Conclusion Result - Reliability |
|---------------------------|---------------------------------|--------------------------|---------------------------|---------------------------|---------------------------------|
| | Microscopy Result - Reliability | PCR Result - Reliability | NIRS Result - Reliability | NIRM Result - Reliability | |
| Animal | + | | | + | + |
|Fish | + | + | | - | + |
|Terrestrial | | | + | + | + |
|Poultry | - | + | | + | + |
|Mammal | + | + | | + | + |
|Pig | | + | | | + |
|Ruminant | | + | | | + |
|Bovine | | + | | | + |
| Vegetal | | | | + | + |

Figure 5: Results summary for on sample provided by the STRATFEED explorer.

Conclusion

Today, the STRATFEED explorer can be run from the public website <http://stratfeed.cra.wallonie.be> on a database reduced to the sets of samples used by the different work packages for the development of the methods. On the private part, the STRATFEED partner can explore the complete database including 2500 samples of feedingstuffs. To help the user in the exploring, each webpage is described by a help file. The modular structure of the system, according to the different topics of the project, facilitates updating and favours the development of further tools for others techniques. The concept developed for the STRATFEED project can be used for the samples management of any other project and can easily be adapted to meet new requirements.

Acknowledgement

This work was funded by the European Community, under the 5th EC FP, DG RTD, Measurement and testing activity, within the framework of the STRATFEED project – G6RD-2000-CT00414 – entitled "Strategies and methods to detect and quantify mammalian tissues in feedingstuffs". This project was carried out by a consortium coordinated by CRA-W – Walloon Agricultural Research Centre (Belgium) and including 9 partners and 3 invited partners in Europe.

Reference

Vermeulen, Ph., Baeten, V., Dardenne, P., van Raamsdonk, L.W.D., Oger, R., Monjoie, A.S. and Martinez, M. (2003). Development of a website and an information system for a EU R&D project: the example of the STRATFEED project. BASE, Biotechnol. Agron. Soc. Environ. Vol 7 (3-4) 161-169.