ENDURE

European Network for Durable Exploitation of crop protection strategies

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ENDURE IC online available based on the data base structure of ENDURE-ALPS

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Dissemination Level	
PU Public	x
PP Restricted to other programme participants (including the Commission Services)	
RE Restricted to a group specified by the consortium (including the Commission Services)	
CO Confidential, only for members of the consortium (including the Commission Services)	

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Glossary

ENDURE IC	ENDURE Information Centre; merged application of the ENDURE ALPS and the first document data base EIC
EIC	first version of the ENDURE Information Centre; document data base
Database	Facility to persist structured data
EPPO	European and Mediterranean Plant Protection Organization
Report	Summarizes all the data inserted by an expert to describe a certain application of measure.
Use case	Defines an interaction between a user group and the system

Summary

This report is a documentation of the state of the art in the development of the ENDURE IC. The ENDURE IC is a dynamic web-application which disseminates information on IPM measures (including best practices and non-chemical alternatives) in crop protection. It is online available at: http://eic.endure-network.eu:8080/webui/.
ENDURE IC is a central point of reference for extending expert knowledge, recommendations and advice for extension services, advisors, farmers and researchers. For the users it provides a search of crop – pest/disease - region combination with IPM measures as the result. Currently the ENDURE IC contains about 230 reports about IPM in arable crops, fruits and vegetables.
The merge of two previously developed systems (ENDURE-ALPS and EIC) into the ENDURE IC required technical alterations and responded to results from user feedback. The functionality and improvements of user interfaces for search and upload are described and an outlook is given on functions concerning the maintenance of the tool and quality management.

Partners: JKI, IHAR, PPO, DAAS, RRES, AU, UdL, INRA

1. Introduction

This report is a documentation of the state of the art in the development of the ENDURE IC. It reflects the progress for implemented functionalities of the ENDURE IC compared to the previous technically more detailed reports (DI4.7, DI4.8, and DI4.9).

The ENDURE IC is an interactive website which disseminates a European quality selection of validated Integrated Pest Management (IPM) measures. It is a central point of reference for extending expert knowledge, recommendations and advice for extension services, advisers, teachers, trainers and researchers concerning all aspects of IPM, including prevention, chemical pest and disease control as well as non-chemical alternatives such as biological control measures. The ENDURE IC will provide advisors and farmers with knowledge on IPM based on a cross-European selection of national documents, summarised in English.

Users can search for a combination of crop-pest/disease-control measures and select information about a given problem from different European countries. The results provided are ready to use, this means scientifically sound, tested in the field, practical to adopt and cost-effective. Furthermore, experimental results, which have the potential to provide a solution for a given problem but cannot yet be recommended as best practice, are also provided. The content is uploaded by a group of dedicated experts from the partner institutions ensuring the upload of the quality selection of best European practices. ENDURE research activities are requested to provide information on the results of their activities. Currently the ENDURE IC contains about 230 reports about IPM in arable crops, fruits and vegetables.

The ENDURE Information Centre (ENDURE IC) is online available on: http://eic.endure-network.eu:8080/webui/search.xhtml with separate authorisations for reading access (log in: endure, password: demo) and for upload (personal log in and password).

2. Previous systems

The ENDURE IC combines the web applications ENDURE-ALPS (developed by JKI) and EIC (developed by WUR/PPO).

The development of the ENDURE ALPS prototype started in 2007 as an expert system for non-chemical alternatives in plant protection. ENDURE-ALPS was an searchable expert system relying on uploaded expert knowledge on specified crop-pest/disease combinations and the non-chemical measures to control the specific pest/disease problems. A number of documents about a specific combination are summarized by the expert and uploaded as one report in English. The practicability of the measures is evaluated by the expert, not all measures are necessarily ready to use. The application explicitly intended to provide expert knowledge about non-chemical alternatives in crop protection, facilitating an exchange of knowledge between researchers and informing advisors.

The former ENDURE Information Centre (EIC) was a document data base which provided an English summary is for each published document. The documents provided reflected the current best practice for pest/disease control in a certain crop including the use of pesticides providing ready-to-use information to advisors.

The merged web application ENDURE IC, combining the web applications ENDURE-ALPS and EIC combines the requirements of both systems and serves two target groups (advisors, scientists) and relates to these target groups services. The technical developments with regard to merging both applications and the further development of the EIC with respect to user needs and requirements as a result of feedback sessions with advisors are described in detail in the deliverable DI4.9 "Report about test phase of ENDURE-IC and fine tuning for the final version".

3. Technical Alterations

As a result of changed/extended requirements merging the ENDURE-ALPS application and the EIC, some modifications had to be done. These alternations concern the database layer as well as the application layer.

3.1. Database structure

Merging the applications consequently led to structural changes of the database. Beside the content of the former EIC and the Endure-ALPS, the new ENDURE IC includes additional types of content; the project database became part of the new ENDURE IC and for the future it is planned also to include Endure internal documents (back office). To support these different kinds of content, the ENDURE IC introduces an additional type flag for each kind of content (i.e. document summary, expert review, project, back office, etc.). Depending on the type, a content record offers different attributes.

Additionally the use case mapping was replaced. Now all criteria (crop, pest/disease, topic, and region) are mapped directly to each content record in order to obtain the number of results for a certain search request. The new use case structure as well as the additionally introduced type flag for knowledge was moved the Endure common scheme. The Endure common scheme is a data structure commonly shared by Endure tools. This allows to easily access the content of other Endure tools from ENDURE IC.

3.2. Application

In order to support the different types of content (document summary, expert review etc.), the search engine was rebuilt in a way, to allow defining newly introduced content type flag as optional search criteria. This new search procedure is used to represent the different types of results in different tabs (divided views of reports and projects) at the search view's result list. During upload the user now has additionally to define the type of content. Currently only expert reviews and document summaries are supported completely in the application. The support of projects is currently under way. The support of back office is planned. The input mechanism was redesigned allowing reuse of those parts of the input mask, which are similar for each type of content.

4. ENDURE IC online

The ENDURE information Centre was first hosted at the SSSUP "Test server". There the interaction with other applications of ENDURE, sharing meta-data tables, was tested. With the availability of the "Final Server" the ENDURE IC application was transferred to http://eic.endure-network.eu:8080/webui and was presented at the ENDURE Annual Meeting 2009.

4.1. ENDURE IC homepage

The multilingual (en, fr, de, es, nl, pl, da) introduction for the ENDURE IC is hosted at the Endure public web site at http://eic.endure-network.eu:8080/webui. It informs about the goal of the ENDURE IC, the search procedure and how to use the system. A duplicate of the introduction will be created is created at the ENDURE public website ensuring that users who visit ENDURE are provided with the relevant information.
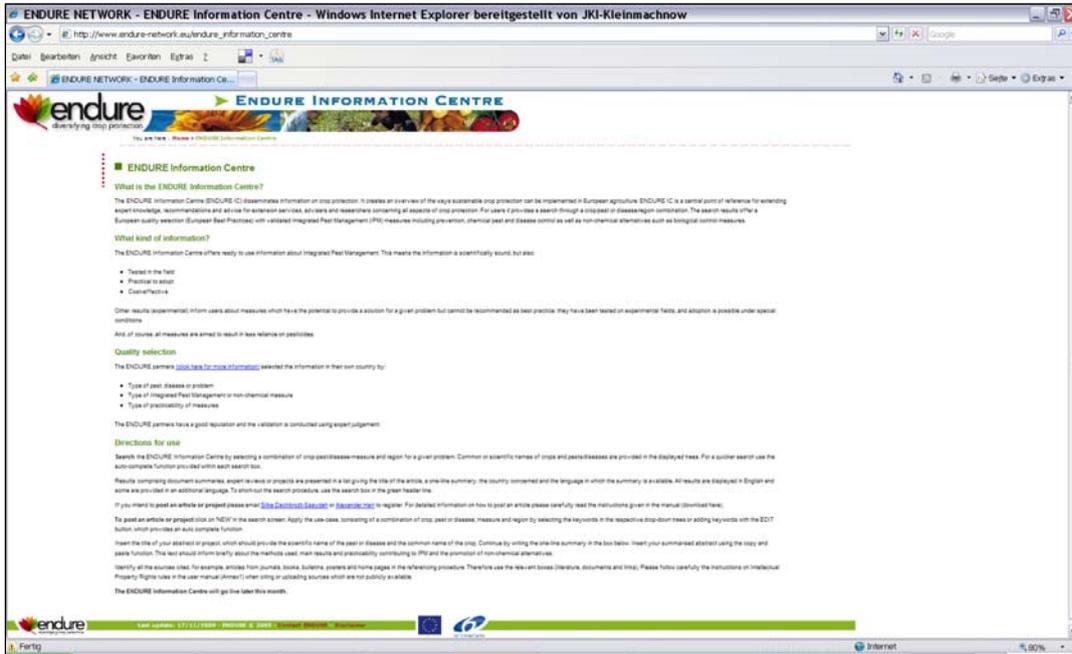
Figure 1: ENDURE IC homepage

4.2. Search functions

The search interface is directly accessible on http://eic.endure-network.eu:8080/webui/search.xhtml .

The search is divided into tables with crop, pest/disease, measure and region. The crop and pest/disease tables provide an auto-complete function presenting the respective entries. An increase of the user friendly performance of the search mechanism was achieved by the implementation of free text search.

The search screen and its functionalities have been improved several times. Improvements were implemented in October 2008, January, March, May, July and October 2009.
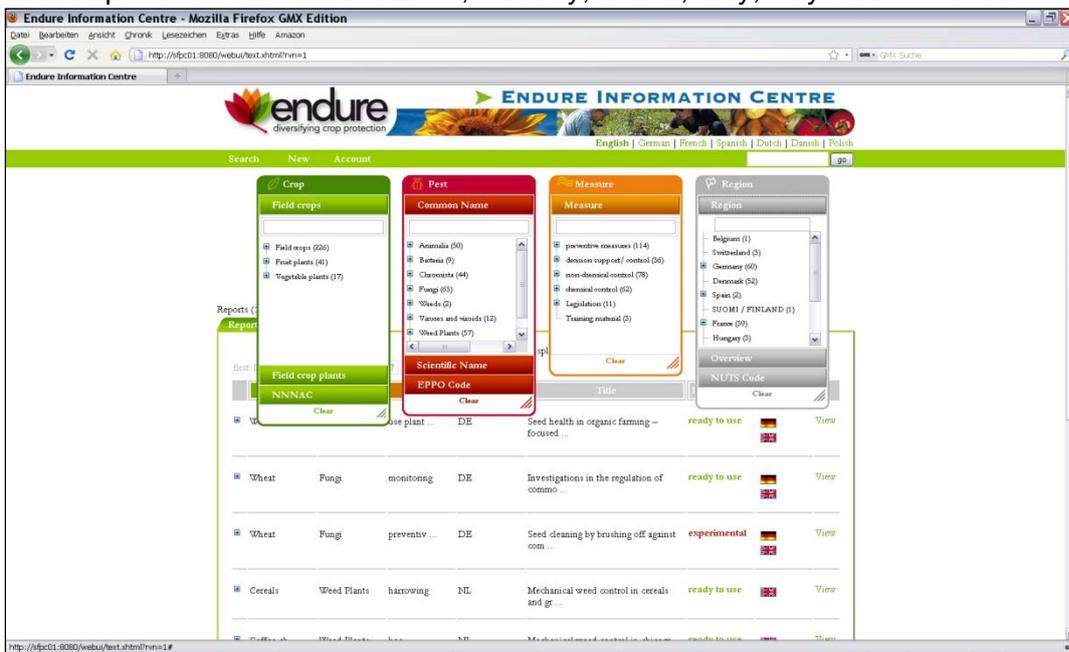

Figure 2: ENDURE IC search screen

After choosing the crop-pest/disease combination a preview of the matching results appears and provides a one-line summary for each entry.
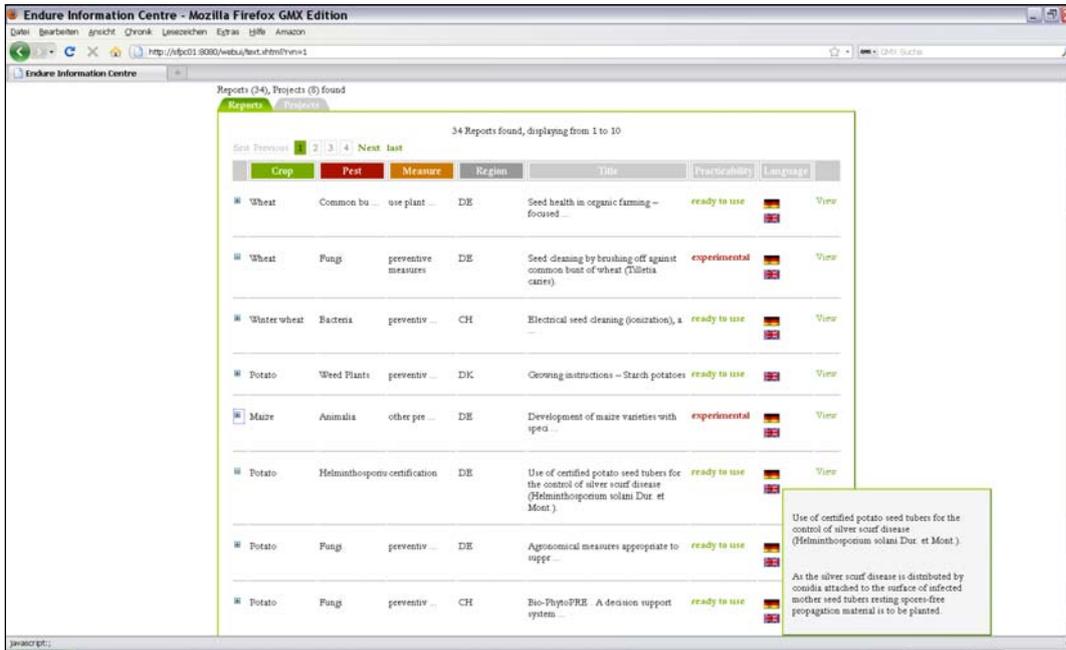

Figure 3: Preview of search results with one-line summary

Using the free text search a preview of the matching results providing the criteria (crop, pest/disease, measure and region), the title and the beginning of the abstract are displayed.
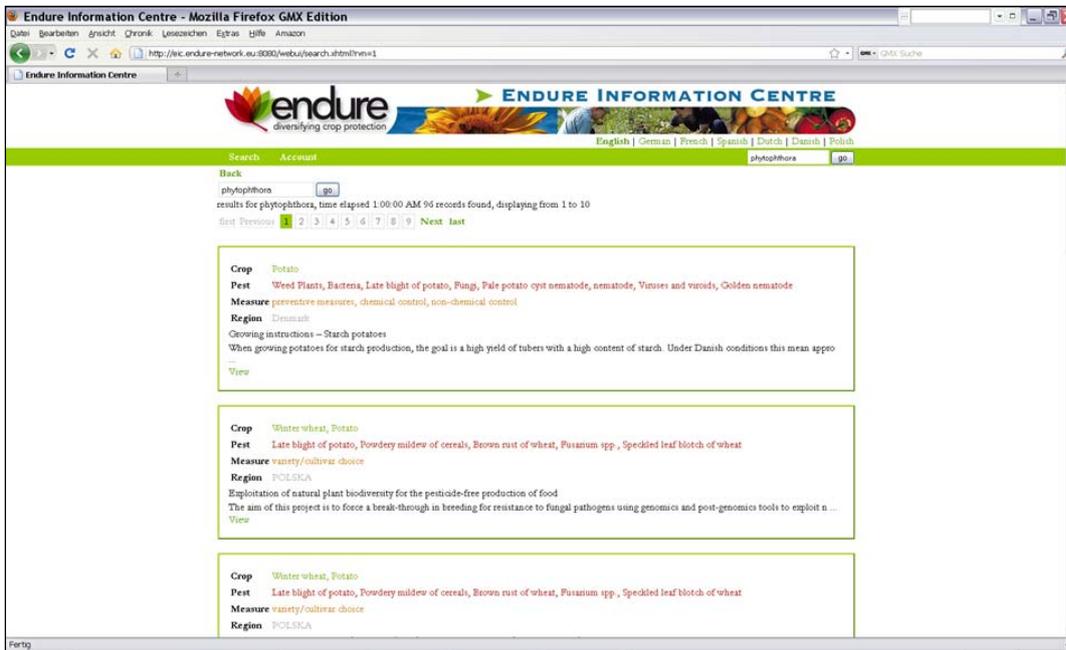

Figure 4: Preview free text search results

4.3. Search results

The detailed view of the search results displays the title, the expert who summarized and uploaded the abstract, the one-line summary and the search criteria.
The details about the sources of the information are presented as bibliographic information for literature, documents and URLs.
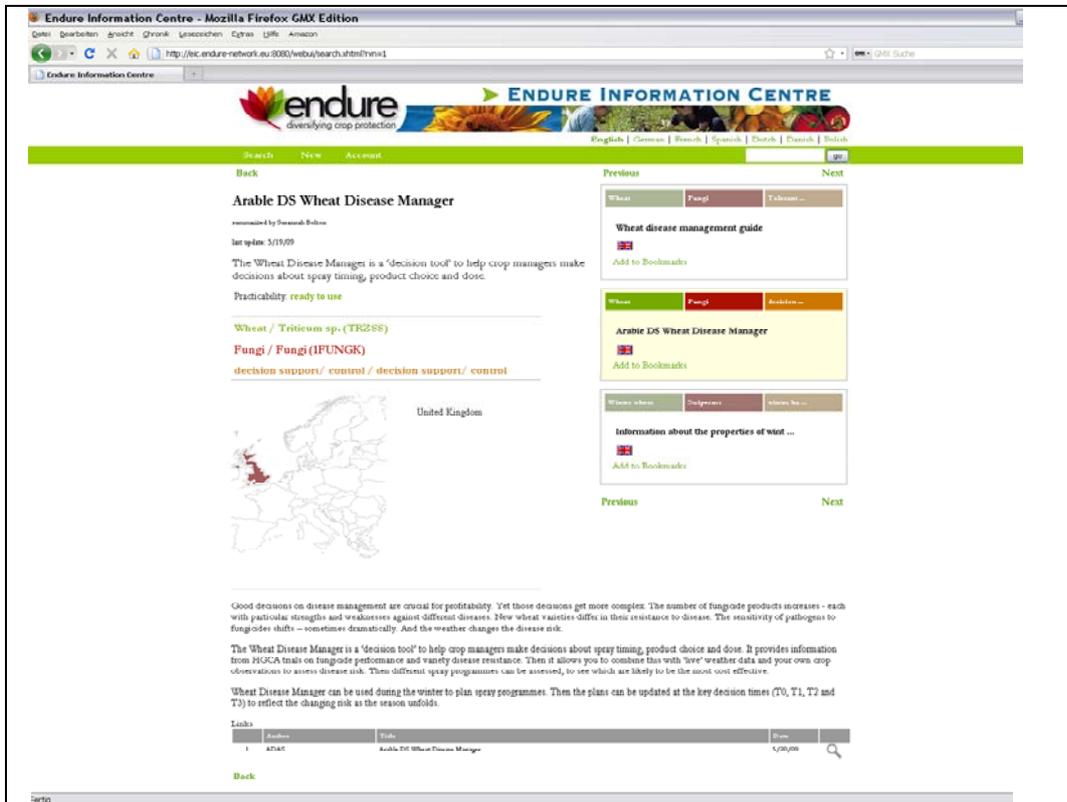

Figure 5: Search result

4.4. Upload functions

The upload of document summaries and experts reviews is done by registered authors.
The procedure conducted step by step were the relevant details, i.e. expert review/document summary and the use case, have to be selected and defined by the expert.
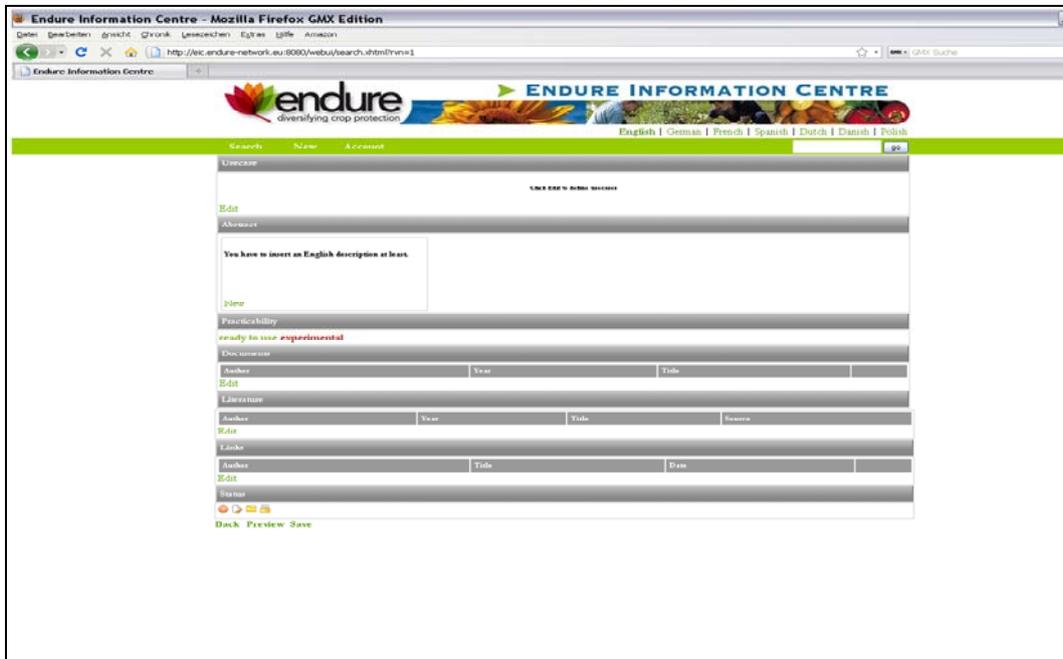The Manual is providing a detailed description of the procedure.

Figure 6: Upload screen

With the last update of the application the user friendliness was significantly increased by introducing an auto-complete mechanism for the choice of crop and pest/disease in the upload procedure; allowing the generation of an expert customized crop and pest/disease tree (see fig. 7).

Figure 7: Definition of use case and selection of crop and pest/disease

In the next steps are to include the title, the one line summary and the abstract; and defining the practicability of the measures, which helps users to judge the information for its readiness to be applied in the field. Following the logical procedure provided all sources for referencing are uploaded, this includes documents (e.g. pdf files, tables etc.) which can be uploaded, literature (e.g. publicly available journal articles and books) and URLs to websites. This will enable the user to find the original information and obtain detailed information from the original document. As soon as the upload procedure is finalised and saved it is searchable in the ENDURE IC.

5. Conclusion

The ENDURE IC has made considerable progress in its development and user friendliness of the search and upload mechanism. The application is dynamic and will be updated and improved continuously. Major improvements in the future will mainly concern the upload functionalities ensuring a permanent update and quality control of the content.
Currently the application is only accessible to a limited number of users due to the registration procedure but in the near future open access for reading will be implemented and only the upload and editing reports will require a registration procedure. This procedure will ensure a quality control of the content on one hand but allow the widespread use of the ENDURE Information Centre for searching IPM solutions in crop protection. Previous feedback sessions in the partner countries revealed a true interest of advisors in a system providing information across Europe.
The implementation of the ENDURE IC back end will ensure the safe handling of keywords and maintaining the functionalities beyond the EC funding period.