ENDURE

European Network for Durable Exploitation of crop protection strategies

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First draft of the QuantiPest Platform

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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   European Network for Durable Exploitation of crop protection strategies

INRA   French National Institute for Agricultural Research

MySQL   An RDBMS programme which runs as a server allowing multi-user to access to multiple databases

PHP   Server-side scripting language used to produce dynamic WebPages

VL   ENDURE Virtual Laboratory

Definitions

Document:

According to QuantiPest definition, documents can be Website links, article/book references, pictures, video-clips, documentation on sampling methods, examples of methodological studies and methodological tools, protocols, scales for pest pressure characterisation, useful software and numeric applications, computer aided programs for training purposes.

Summary

This deliverable presents the first draft of the QuantiPest platform, with a detailed description of its structure and its functionalities.

QuantiPest was developed as one of the VL research platforms. The platform will provide relevant information to help design protocols adapted to specific objectives, in order to characterise pests or pest injuries in field experiments or in commercial fields. The objective IS NOT to list all available protocols that are used to characterise pest populations at the field level in an exhaustive way, but rather to provide references, methods and tools to help the development of protocols adapted to specific objectives. By facilitating the sharing of methods and protocols between ENDURE members, the platform will facilitate the sharing of data and the implementation of an experimental network across the field facilities described in the Virtual Laboratory.

The QuantiPest platform is structured in three main parts: "Knowledge", "Document management" and "Training programs". "Knowledge" consists in educational pages which present information on (i) pest and pest injury identification, (ii) pest and pest injury quantification and (iii) tools and methods for sampling. These pages allow users to navigate in a tree in order to find an answer to their questions. The "documentary management" section allows user to search, by keywords, for relevant documents in the document database. Specific functionalities have been implemented. The platform permits interactivity as users can participate to the feeding of the platform and allows users to add comments or suggestions on topic pages.

"Training programs", consisting of a set of multiple-choice questions based on pictures, can be easily designed using the platform. The development of computer aided training programs is one of the main features of QuantiPest. This offers a good opportunity to give value to existing sets of images and, for example, to facilitate the training of a scoring scale used across an European network.

The platform is mainly targeted at technicians and researchers and less to advisors or farmers. QuantiPest can include information on all crops and pests studied by ENDURE partners. The platform has been developed using a Content Management System, called OCVC, developed by an INRA team from Bordeaux. The first draft of the platform was mainly implemented by INRA. Some ENDURE Members (RRES, AU, JKI and the technical task force) have contributed through discussions on the project and sharing useful advice. The platform is now ready to gather any contribution from ENDURE members.

1. QuantiPest aims and objectives

The characterisation of pest populations and injuries due to pests is required for many activities related to crop protection, for example in research programs aimed at developing innovative chemical, biological, physical, genetic and cultural control methods, the development of IPM and ICM programs and the effective assessment of famers' fields in order to rank the main pest problems within a given region. Many references and tools have been produced in order to help identify and quantify pest injuries and pest populations. However, much of this information is dispersed and is therefore somewhat difficult to focus on the appropriate information when one wants to characterise specific injury profiles.

In addition, the Virtual Laboratory (VL) of ENDURE is one of the main tools of the network that aims at ensuring the durability of the network and facilitates the sharing of resources and facilities. To complete the facilities and resources databases, it was decided that a modular approach should be used to develop 'research platforms' in order to focus on key priorities.

In this context, QuantiPest was proposed to provide information to help design protocols adapted to specific objectives, in order to characterise pests or pest injuries in field experiments, or in commercial fields.

The three main aims of QuantiPest are:
- to facilitate the sharing of methods and elements of protocols for field experiments and thus, the sharing of data and the implementation of experimental networks across Europe.
- to facilitate the sharing of expertise and provide access to 'grey' literature not readily available through standard searches
- to facilitate interactive exchange between QuantiPest users

QuantiPest will complement very well the inventory of field experiment sites in Europe (already done in the VL). It will facilitate the implementation of field experiment networks between ENDURE members through standardisation of pest injury scores for data collection.

2. QuantiPest structure, functionalities and development

2.1. QuantiPest structure

The QuantiPest platform is structured in three main parts: "Knowledge", "Documentary management" and "Training programs".

2.1.1. Knowledge
This section consists in educational pages containing information on the following topics:
- Pest and pest injury identification
- Pest and pest injury quantification
- Tools and methods for sampling

These pages allow users to navigate in a tree (Figure 1) in order to find an answer to their questions.
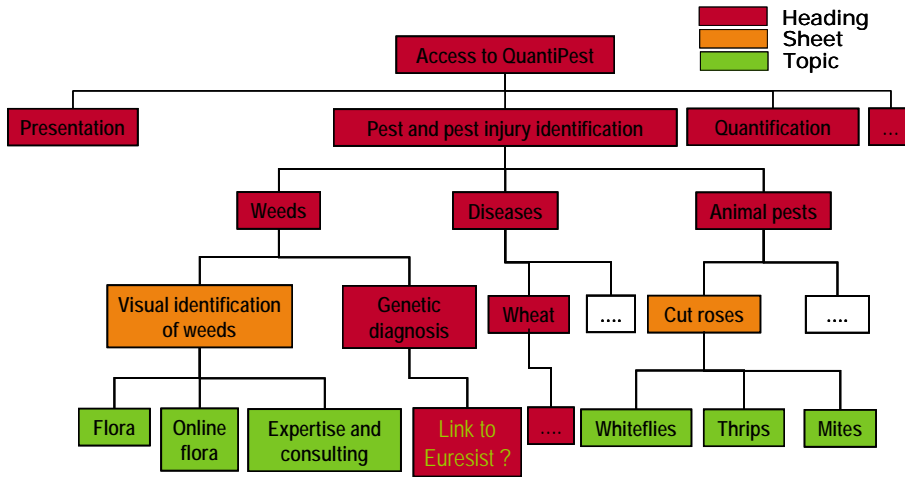
Figure 1: An example of the tree structure of the knowledge section for pest and pest injury identification.

Headings are a way to navigate in the tree, in order to select the relevant information. These guide the user toward sheets which present detailed information contained in the topics. Headings and sheets can contain text and one general picture whereas topics can contain text and several pictures which can be enlarged by a simple click (Figure 2).

At the bottom of each page, a list of relevant documents can appear and each document can be downloaded by the user.

Figure 2: Screen shot showing a "knowledge" page that includes text and pictures. Related documents are listed at the bottom of the page

2.1.2. Documentary management

This section allows user to search, by keywords, for relevant documents in the documentary database (Figure 3). This section is more efficient if the user is looking for precise information.

Figure 3: Screen shot showing the result of a research with the keyword « phoma ». Documents are available by clicking on « follow the link » or « download »

This area also permits users to upload documents to the platform. Users are required to fill in a submission form (Figure 4) describing the content of the document to be submitted. This information will allow the administrators of QuantiPest to upload the document to the right location in the platform. Submitted documents need to be validated by an administrator. The documentary management functionality permits interactivity as users participate to develop the platform. This feature ensures that QuantiPest is truly a collaborative platform.

Figure 4: Screen shot showing the submission form in the documentary database

2.1.3. Training programs

This area provides information and access to training programs, which aim to help users to improve their abilities in pest/pest injury identification or pest/pest injury quantification. A specific functionality was implemented to create new training programs using material available from ENDURE members. In addition, training programs developed with other technologies are also listed in the platform.

2.2. QuantiPest functionalities

2.2.1. Tool to design training programs

This functionality allows the design of new training programs. A training program consists of a set of multiple-choice questions based on pictures. Questions are randomised at each new session of evaluation. Results are presented by categories in order to indicate for which type of questions or severity classes the user has to improve his/her skills.

This functionality offers a good opportunity to give value to pictures and to facilitate the training of a scoring scale used across a European network (an example is provided in Figure 5).
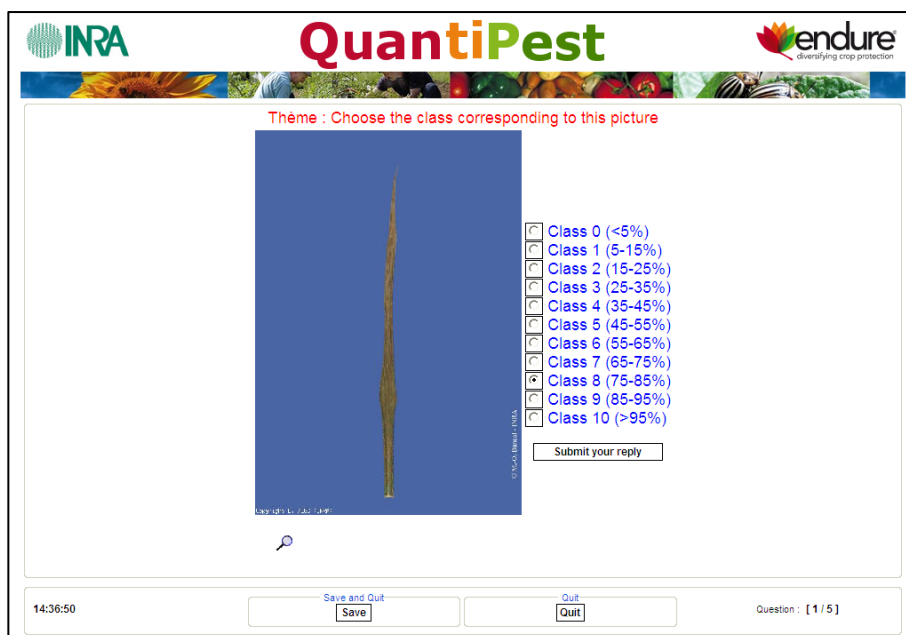
Figure 5: Screen shot showing a part of a training program developed to learn assessing wheat senescence.

2.2.2. Comments and suggestions

This functionality allows users to add comments or suggestions on topic pages (Figure 6). Comments can be read by all users but they have to be signed to be published.

Figure 6: Screen shot showing the window used for posting a comment

2.2.3. Management of user rights

Different types of users, with different rights, are defined for QuantiPest. Public and restricted areas could be defined in order to guarantee data safety, and dissemination inside or outside the network. Such questions with regard to information access still have to be discussed, in correspondence with the IPUDC.

2.3. QuantiPest development

2.3.1. Technical issues

The platform has been developed using a Content Management System, called OCVC, developed by an INRA team from Bordeaux. The tool was developed using PHP scripts that interact with a MySQL database which is used to store the information. The platform is hosted on a server of INRA in Bordeaux.

The first draft of the platform was mainly implemented by INRA. However, some ENDURE Members (RRES, AU, JKI and the technical task force) have contributed to discussions in order to insure the complementarities and to avoid redundancy of ENDURE platforms in terms of end-users and content, and to insure the interoperability between ENDURE tools.

2.3.2. Access to QuantiPest platform

There is a link to QuantiPest from the Virtual Laboratory as there is for the other research platforms. At the moment, access is through a portal from INRA Bordeaux: http://147.100.108.242/ (Figure 7). Without signing in, users can only view a few introductory pages that present what QuantiPest is and the types of information that the platform holds. If the user signs in, this provides access to the whole site:
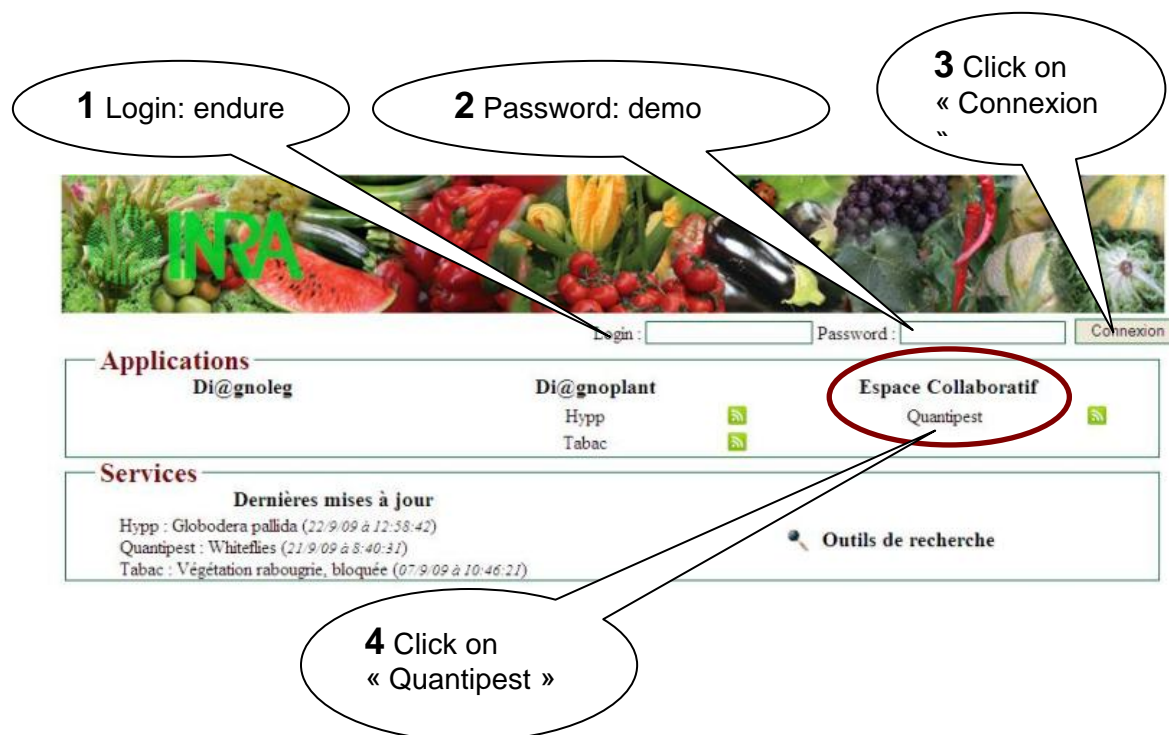

Figure 7: Screen shot showing the portal from INRA of Bordeaux and how to connect to QuantiPest

3. QuantiPest content

The types and the sources of information available in the platform can be diverse. For example, documents could be website links, article/book references, pictures, documentation on sampling methods, examples of methodological studies and methodological tools, protocols, scales for pest pressure characterisation, useful software and numeric applications, computer aided programs for training purposes…

For this deliverable, a few documents are available through the platform. Examples were provided just to illustrate the potential of the platform. This first draft was presented during a workshop in September 2009, and at the ENDURE Annual Meeting (workshop and poster) in Wageningen (October 2009). At these meetings, some contacts were made that will be useful with respect to the "population" of QuantiPest.

4. Conclusion

All the functionalities of QuantiPest are now implemented and the platform is ready to welcome data from ENDURE members. The last year of ENDURE funding will be mainly devoted to populating the platform. This will require a significant contribution from the research teams involved in the Network, and we will be encouraging ENDURE members to share useful methodological information relating to their own research activities and interests.