

SHORT COMMUNICATION

Information System on Agronomic Practices for Wet-seeded Rice in Cantho-Vietnam

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ABSTRACT

The dynamic of agricultural systems include complex biological, social and economic processes. Future possibilities are affected by many different factors that influence their biological and economic efficiency. A proper tool to support rational decisions can facilitate successful management of these systems. Such a tool should follow the logic of the decision making process, and include the capacity to support management activities.

The purpose of present study was to develop a web-based "Information system on agronomic practices for wet-seeded rice in Cantho province - Vietnam" (ISAPWER), which would help the users to be more informed about decisions related to rice production in the region. The ISAPWER contains the information of agronomic practice on wet-seeded rice in the form of text and pictures on agronomic aspects from the land preparation up to post-production activities.

The ISAPWER is developed using the concepts of web-based client-server 3rd tier model. The user interface layer is constructed using HTML and JavaScript. The application layer is implemented in Java Server Pages and JDBC. The database layer is built in Microsoft Access 2000. The ISAPWER can run at any computer that connects to the Internet through the Java-enabled browser.

The ISAPWER, with a user-friendly interface, allows any user who has access to the Internet to quickly get the desired information. It can be implemented as a web application, which allows simultaneous access to many users. There is a provision to insert, delete and update the information at the remote computer. The ISAPWER was developed in response to the recognition that many farmers do not have access to information on how to grow the rice. Information technology offers new ways to present information to these farmers through present package.

IMPORTANCE OF RICE PRODUCTION IN VIETNAM

Vietnam is basically an agricultural country with 33 million ha of land, out of which 10 million ha is used for agricultural production. Agriculture continues to play a dominant role in the economy, accounting for about 53% of employment and 33.6% GDP.

The 1998 population of Vietnam was about 80 million with an average density of 215/km². The population is basically rural and

concentrated in the two rice-growing deltas: the Red River Delta in the North and the Mekong River Delta in the South.

Here rice is the single most important crop. It is planted on 82% of the total farm area i.e. 6.3 million ha, and it accounts for more than 85% of food grain output. In 1989, Vietnam became a net rice exporter, and reached the second position among rice exporting countries with 3.7 million tons in 1997. Rice production influences all aspect of rural life, social and economic, and it accounts

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for 43% of the gross value of agricultural product.

CANTHO PROVINCE AND ASPECTS OF RICE PRODUCTION

Cantho province is located in the center of the Mekong Delta, South of Vietnam with a total area of 2,962 square kilometers and about 2 million population. The province has seven districts comprising of 73 villages, 15 wards and 6 towns (according to the administrative map), and has become the center of economic development in the Mekong delta. This province is moving towards agricultural modernization and industrialization.

Total agricultural land in Cantho province is over 250,000 ha or 84.4% of the total land area. Rice is the most important crop of the province and accounts for 63% of the total area. Double rice cropping is most popular (34%), but now farmers are also attempting triple rice cropping (23.5%). Rice is also grown in rotation with upland crops. Average cropping intensity is about 224%, or 2.24 crops per year. Rice production of the province ranks second in the country with total production of 1.9 million tons (1998). It continues to be the main source of income for the province.

CONSTRAINTS IN RICE PRODUCTION

There are several constraints to rice production in Vietnam like flooding, drought, small farm size and lack of timely information on cultivation techniques. Traditionally, much of the information in agronomic practices, new varieties, fertilizers, etc. have been recorded and delivered to the farmers in the form of written documents, radio talks, television

displays, etc., but these are time consuming, costly and difficult to update.

Herein, taking into account the problems of information of rice production in Cantho province of South Vietnam an "Information system on agronomic practices for wet-seeded rice in Cantho province, Vietnam" has been developed.

OBJECTIVES OF ISAPWER

ISAPWER has been developed with the following objectives:

- To design a relational database for management of information about various recommended agronomic practices for direct wet-seeded rice in Cantho province.
- To design and implement a web-based information system on agronomic practices for wet-seeded rice in Cantho province.

ARCHITECTURE OF ISAPWER

ISAPWER has been implemented using the concepts of web-based client-server architecture:

- The down most layer is the database layer using Microsoft Access 2000.
- Second layer is application layer, implemented in a server machine through the use of Java Server Page and Java Database Connectivity (JDBC).
- The upper most layer or client is constructed using Hyper Text Markup Language (HTML) and JavaScript language. Details of these layers will be presented in the later chapters.

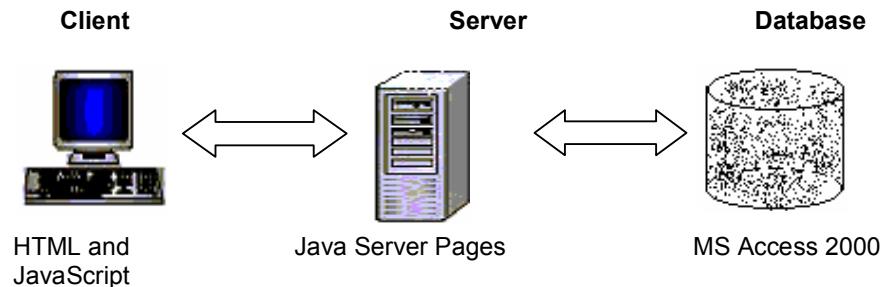


Figure 1. Layers and their associated technologies

FEATURES OF ISAPWER

ISAPWER is an information support system wherein decisions related to rice production have been recorded for users to view and implement. The information has been hyper-linked so that user can view the information in an easy manner.

ISAPWER is site and region-specific information system, which may need modifications, if used for different places in the world. The present system is aimed at irrigated rice in Cantho environment. As

improved systems on component technologies will become available, they will replace or be linked to the system. Collaborators would modify for their environments.

ISAPWER is aimed at intermediary technology transfer agents and is simple to use.

When a user accesses the index page of ISAPWER through a web browser, the web server will return the requested pages on the user screen (figure 2).

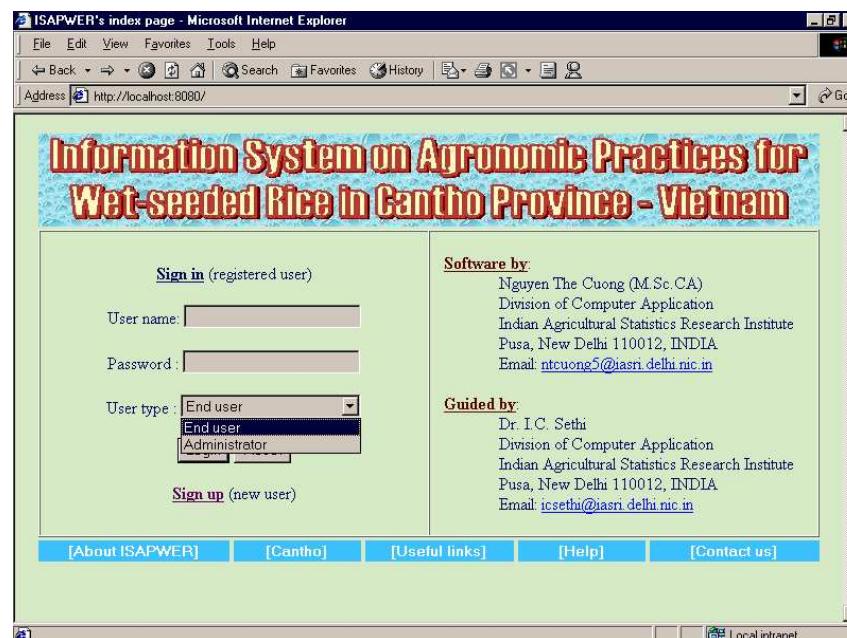


Figure 2. ISAPWER user interface.

ISAPWER being a web-based information system, there is a need for user authentication. The authentication has two levels, viz. End user and Administrator. End users can access the information only. Administrators can access, update, insert and delete the information in the database. The operations will be described later in detail.

MAJOR ADVANTAGES OF THE ISAPWER

- The ISAPWER, with a user-friendly interface, allows any user who has access to the Internet to quickly get the desired information.
- The ISAPWER can be implemented as a web application, which allows simultaneous access to many users.
- There is a provision to insert, delete and update the information at the remote computer.

REFERENCES

- Karl A et al 2001. JSP professional. Wrox Press Ltd.
 Vietnam National Bureau of Statistics (VNBS) (1995). Statistical Year Book 1995.

- The ISAPWER was developed in response to the recognition that many farmers do not have access to information on how to grow the rice. Information technology offers new ways to present information to these farmers through present package.

RECOMMENDATION

While some information here is generic, other information is site or region-specific. The ISAPWER is meant as a template that may need to be modified for different agricultural environments. The present system is aimed at irrigated rice in Cantho. As improved systems on component technologies become available, they can be linked to the present system. Collaborators would modify the present system for their environments.

- Luy VV. 1998. Strategy of agricultural development in Cantho province for the year 2000. SysNet Research Paper Series No. 1, 1998; IRRI.

Summary in vietnamese

Hệ Thống Thông Tin Hỗ Trợ Canh Tác Lúa Nước ở Tỉnh Cần Thơ

Hệ thống thông tin hỗ trợ canh tác lúa nước ở Tỉnh Cần Thơ (ISAPWER) được xây dựng dưới dạng trang web nhằm mục đích cung cấp thông tin nhanh chóng và tiện lợi cho người trồng lúa về những vấn đề liên quan đến sản xuất lúa trong vùng khi việc sử dụng internet được phổ biến rộng rãi.

Mô hình của ISAPWER dựa trên nguyên lý mạng chủ khách gồm 3 lớp gồm: (1) lớp giao diện người dùng được viết bằng ngôn ngữ siêu văn bản (HTML) và ngôn ngữ kịch bản (JavaScript); (2) lớp ứng dụng được phát triển bởi ngôn ngữ lập trình Java; và (3) lớp cơ sở dữ liệu được xây dựng bởi phần mềm cơ sở dữ liệu Microsoft Access 2000. ISAPWER có thể được dùng trên bất kỳ máy tính nào có trình duyệt web hỗ trợ ngôn ngữ Java.

Giao diện của ISAPWER tiện lợi cho người sử dụng và nó cho phép nhiều người dùng internet truy cập và xem thông tin cùng một lúc. Đồng thời nó cho phép người quản lý hệ thống có thể cập nhật, chỉnh sửa, thêm vào hoặc loại bỏ thông tin một cách nhanh chóng và dễ dàng.

Tuy nhiên hệ thống thông tin này chưa được hoàn chỉnh và chỉ phù hợp cho canh tác lúa của Tỉnh Cần Thơ. Vì vậy nó cần phải được sửa đổi và bổ sung để có thể phổ biến rộng rãi.