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Website as an information system for distance learning how to build hydroponics with a greenhouse

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Website as an information system for distance learning how to build hydroponics with a greenhouse

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Abstract. Demand for vegetable commodities expected continue to increase from year to year as the population and welfare increases. Hydroponic vegetable technology in greenhouses is an alternative vegetable cultivation that can improve the quality and volume of vegetables needed. But now the public's need for information on hydroponic vegetable cultivation in greenhouses is still not fulfilled. While it has been known to the internet media where everyone can get various information easily, not limited to distance and time. Information about the hydroponic vegetables in the greenhouse can be obtained through this internet media. The purpose of this study is to design and develop hydroponic vegetable cultivation in a web-based greenhouse. The benefit of this research is to make it easier for people to find information about hydroponic vegetables in a greenhouse, also makes it easier for people who will start a business. This research is carried out through six stages which are a modification of the stages of the System Development Life Cycle (SDLC).

1. Introduction

Food is one of the important needs in our lives, the need of food continue increase from year to year along the human growth. People's awareness of the importance healthy food becomes a market opportunity for vegetable food commodities. Based on this, efforts must be made to increase the volume of vegetable production.This is the reason for increasing vegetable production. Currently, many people have known how to grow crops without using soil media, otherwise known as hydroponics. Hydroponic farming is very suitable because the nutrient in the soil decreases. Hydroponic technology has a system of providing nutrients to plants directly to the roots, in addition to creating an optimal growing environment for plant growth. (Chadirin, 2007). Hydroponics is also used as an alternative to agriculture on limited   land and allows the cultivation of vegetables in less fertile areas or narrow areas that are densely populated. Hydroponics will be maximized if in a closed room or commonly called a greenhouse. Lately, greenhouse users in Indonesia are increasing because hydroponics can be an export opportunity. Budi Luhur University has taken advantage of this opportunity by creating a greenhouse as a protective building in hydroponics that has long been built. This research is intended to design and build a hydroponic vegetable cultivation information system in a web-based greenhouse equipped with a system of use of greenhouse. This research will make it easier to find information about hydroponic cultivation methods in a greenhouse.

2. Materials and Methods

2.1. Materials

The problem is the specification of user needs (including systems), program package specifications (classical program package functions and expert system functions) and knowledge structuring.

System Identification

The system to be developed generally has many elements. In this case the identification of interrelated elements begins to be carried out along with the linkages between these elements

Development Phase

Expert system development stage consists of expert selection, knowledge acquisition, knowledge representation, development of inference engines, implementation and testing.

WEB

The World Wide Web, also known as the Web or WWW, is information that can be accessed via internet where hypermedia documents (computer files) are stored and then retrieved in ways that use unique address determination methods (Raymond and George, 2008) According to Sidik and Pohan (2002), Web Information is stored in documents called web pages,

2.2. Method

The development of information systems for cultivation of hydroponic vegetables in a greenhouse with this web-based not only contains information. Therefore, the development of this information system is carried out through six stages which are a modification of the stages of the System Development Life Cycle (SDLC). The following stages of this research:

System Investigation

At this stage, identification of problems faced by vegetable farmers on information about greenhouses and hydroponics. The identification is in the form of : Identification is in the form: the difficulty of getting information about greenhouse and hydroponic, the farmers need information system. After this stage is carried out, then proceed to the feasibility study, namely technical feasibility studies, economic feasibility studies and operational feasibility studies. For this feasibility study, a questionnaire was distributed to vegetable farmers.

System analysis

The system analysis phase is analyzing how the system developed, with the aim of knowing the functional needs of the user and used as the basis of the design of the system being developed. At this stage the information needs of the user are reviewed so that they can analyze the database design so that users can get what they need as easily as possible.

Expert system development

Expert system development stage consists of expert selection, knowledge acquisition, knowledge representation, development of inference engines, implementation and testing.

a. Expert selection, carried out from various sources including books, journals, scientists and practitioners.

b. Knowledge acquisition, which collects all information and knowledge needed in expert systems. Sources of knowledge include experts or experts, books and others.

c. Knowledge representation is transferring the knowledge to a computer program for expand the knowledge base. Knowledge bases consist of a knowledge collection which very important for formulation and problem solving.

d. Development of an inference engine is the ability of an expert system to analyse a problem so that a suitable solution is obtained

System design
The system design stage is designing the system, both information systems and expert systems so that users can easily get the information

System implementation
At this stage the system that will be built is implemented and tested. Implementation and testing will involve direct users.

System maintenance
The system built is still a prototype so that system maintenance just monitoring when testing and evaluating. After that, it is only modified to suit the user's wishes

3. Results and discussion

3.1. Result
The first step in this information system is investigation by analyzing the feasibility study of the system developed. Feasibility study analysis is carried out on 3 (three) important things, technical feasibility, economic feasibility and operational feasibility.

3.1.1 Technical Feasibility Study
Basically the community needs information in the field of agriculture completely, accurate, easily accessible and quickly available. Meanwhile, nowadays technology is increasingly developing and more people are using the internet because this internet media has expanded throughout Indonesia. Information needed by the community can be accessed easily and quickly through this internet media. This reason shows that this information system is feasible to be developed, because this system is built with a web- based use of computer technology which in general the community has known the operation of computers and the introduction of internet media. This information system was developed using Mozilla Firefox 3.0 as a web browser, PHPMyAdmin 2.9.1.1 as a database storage, Apache as a local server, PHP as a database management system. In terms of the software, this system deserves to be developed because it can be obtained easily and for free

3.1.2. Economic Feasibility Study
Development of information systems and expert systems does not require expensive equipment investment. All devices, whether software or hardware used can be obtained easily and cheaply. This system can provide economic benefits where the cost of

accessing the internet is not too expensive compared to information search costs directly and through libraries.

3.1.3. Operational Feasibility Study
Operationally, this system deserves to be developed by considering the following aspects

1. Information users find it easy to use internet services
2. The developed system is easily accessible and displayed in the form of an HTML page on a computer screen connected to the internet.
3. The system developed is easy to update and easy to maintenance, the components are well prepared

3.2. Discussion

3.2.1. Identification
Farmers, students and people who want to start doing hydroponic vegetable cultivation in a greenhouse need alternative information systems. They are willing to use information systems regarding hydroponic in the greenhouse that will be provided. The following are the farmers' answers to the questions asked, can be seen in Table 1.

Table 1 The results of system analysis questions

No.	Question	Answer		
1.	Knowing the Internet Media	Yes = 10	No = 0	
2.	Often to search for information from the internet.	Yes = 6	No = 4	
3.	Knowing about greenhouses	Yes = 10	No = 0	
4.	Knowing about hydroponic technology	Yes = 7	No = 3	
5.	If you want to set up a greenhouse, how do you know the material and the estimated cost	estimate yourself = 2	ask the farming = 7	other ways = 1
6.	If you want to apply hidropponik technology, how to find out the material and its estimated cost.	estimate yourself = 1	ask the farming = 9	other ways = 0
7.	Requires automatic calculations to determine the material and estimated costs of establishing greenhouses and hydroponics	Yes = 10	No = 0	
8.	Are you interested in using information systems to find out hydroponic technology and build greenhouses	Yes = 10	No = 0	

Thus, from table 1 it can be concluded that this system will be very useful for all people, especially those engaged in greenhouse, hydroponics and vegetables. This system will be easy to use because this system can be accessed via internet, where most people already know and can operate it.

4. Conclusion
In this study a vegetable technology information system has been developed hydroponics in a greenhouse. Hydroponic vegetable technology information system in a greenhouse present information about vegetables that are usually cultivated with hydroponic technology, the hydroponic system used, the type of greenhouse tailored to the needs and other related information with hydroponics and greenhouses. The information is presented in the menu options found in the navigation frame. This system has been tested on ten respondents is a vegetable farmer and vegetable supplier by accessing directly through localhost and the results show that this system easy to use, complete and clear contents are also quite a lot of new things respondents got from this system. Nevertheless there are still shortcomings in this system, there is still a lack of multimedia display facilities such as images and videos, so that the information delivered is still lacking illustrated.

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