

## AGRICULTURAL INFORMATION SYSTEM OF SWEET CORN IN LABANAN VILLAGE

Syafei Karim<sup>1)</sup>, Adelia Adelia Juli Kardika<sup>2)</sup>, Andi Lisnawati<sup>3)</sup>, Husmul Beze<sup>4)</sup>,  
Reza Andrea<sup>5)</sup>, Eva Nurmarini<sup>6)</sup>, Wardatul Hidayah<sup>7)</sup>, Diepa Febriana  
Wulandari<sup>8)</sup>

<sup>1,4,5</sup>Software Engineering Technology, State Agricultural Polytechnic of Samarinda

<sup>2</sup>Forest Management, State Agricultural Polytechnic of Samarinda

<sup>3</sup>Plantation Product Technology, State Agricultural Polytechnic of Samarinda

<sup>6</sup>Wood Engineering, State Agricultural Polytechnic of Samarinda

<sup>7,8</sup>Environmental Management, State Agricultural Polytechnic of Samarinda

E-mail: adeliajk@politanisamarinda.ac.id

### Abstract

Monitoring of sweet corn farming in Labanan village is still done conventionally, where landowners must go to the land to do fertilization, weed removal, and harvesting, as well as delivery of crops to collectors. The condition of the land from one land to another which is quite far apart and the non-uniformity of planting corn makes it difficult for land owners to monitor. To use to overcome this problem, it is necessary to create an information system that can help land owners manage land sweet corn farm. System development begins with identifying problems for know the flow of the system, design using Entity Relationship Diagram (ERD) and Data Flow Diagram (DFD), then continued with the implementation of the system using the PHP programming language with MySQL database. The information system that has been successfully built can be accessed by 4 users, namely admins, land owners, farmers, and collectors. This system can help manage user data, farmer data, land owner data, collector data, supply demand data, land data, and land detail data. The information system that has been successfully built is then carried out functional testing using black box. The test results show that all functions on the system have been running well .

**Keywords:** *Application, Distribution of Seeds, Web, PHP, MySQL*

## INTRODUCTION

Berau District is one of the District in East Kalimantan Province which designated as the national corn granary in 2017 by the central government. This award awarded for the success of the Land of the Deep Sea increase corn production which reached 115 thousand tons in 2016 (60% of corn production South Kalimantan). Corn agribusiness in this district is the best in Kalimantan because Tanah Laut has a corn market, wide planting and production, and animal feed factories as many as two factories. Labanan is one of the sub-districts in Tanah District the Sea with the main commodity of palawija is corn plant. Total production of this plant in 2017 was 32,727 tons with the planted area reaches 4,270 ha (Jastra, 2015). A study on agricultural experience corn by farmers in West Pasaman District to obtain information for development increase in corn

production through the approach potential centers and development areas. This research will improve corn farming through an information systems approach by prioritizing previously conducted interviews with farmers in Labanan (Siregar *et al.* 2012; Oktianto *et al.* 2014).

Based on interviews with corn farmers sweet in Labanan, farm owner corn can have a lot of agricultural land that separated from one land to another, where each land is managed by several farmers hired for his services. There are even cases separated lands have a large distance quite far from each other. Even though the owner land must always carry out monitoring of the lands they cultivate are related to cleanliness of weeds, application of fungicides and insecticides, fertilization to harvesting.

Monitoring will be sufficient troublesome if you have a lot of land. Non-uniform maize cultivation system between one lands to another land increasingly complicate the monitoring process. An owner the land must look at its records at all times to knowing when to monitor land certain done. No records or not doing the stages of checking records at any time causes the monitoring carried out to be not efficient.

Corn harvesting stages also require monitoring. A land owner must know which land is being harvested so that can be picked up quickly. The harvested corns is then collected in the owner's place to be delivered to collector. The purchase price of corn by collectors usually different and only known after corn delivery. Distance between land and collector which reaches 60 km makes the land owner receive the corn price determined by the collector.

Problems in agriculture can overcome by utilizing information technology (Nugroho & Siswanti, 2015; Apriadi & Saputra, 2017). In his study it was stated that the use of Information technology in agriculture includes: information dissemination, mapping, governance management, data analysis, and learning (Sukamto & Salahuddin, 2010; Anhar, 2010). So that governance management problems that have been previously described can be solved by agricultural information system development. System information on corn farming that is built can be used by many agricultural land owners sweet corn so the owner can manage their respective farms. Information Systems it also provides information on the price of sweet corn offered by collectors.

Develop information systems using PHP programming language with MySQL database has been used by previous researchers because capable of producing dynamic

web systems that able to store, process, search data, and facilitate the dissemination of information) (Cholifah, Yulianingsih & Sagittarius, 2018). Based on the problems described and problem solving plan, then this research aims to build information system sweet corn farming. This information system is expected to help agricultural land owner's corn to manage sweet corn farming and owners were access to information on corn prices offered by collectors.

## **RESEARCH METHOD**

### **1. Identification of problems**

At this stage, problem identification is carried out regarding sweet corn farming in the District Trainee, then the needs of the system that will be built and analyzed in order to obtain system requirements (Hajar, 2017).

### **2. Data collection**

Data collection stage regarding system flow sweet corn farming information is done through the interview process with the perpetrator corn farming, i.e. land owners and collector (Apriadi & Saputra, 2017).

### **3. System planning**

Sweet corn farming information system designed using Entity Relationship Diagrams (ERD) and Data Flow Diagrams (DFD) (Febiharsa, Sudana & Hudallah, 2018).

### **4. System development**

The system is built with a programming language PHP and MySQL database reference (Khan, 2011).

### **5. System testing**

The test that will be carried out is testing blackbox to test system functionality (Nidhra, Srinivas & Dondeti, 2012; Sharmila & Ramadevi, 2014).

## **RESULTS AND DISCUSSION**

Corn farming information system can used by 4 users, namely admin, landowners, farmers and collectors. Every Users have different access rights. Right each user's access is described as follows. Admin can manage corn fields, manage users, manage collectors, manage owners land, manage farmers, manage demand inventory, and

manage land details. Management includes viewing, adding, and editing. Managers can view data on land, collectors, land owners, land details. Land owners can manage land including view, add and edit; view data collectors; managing land owners includes performing and edits; managing farmers includes performing, adding, and edits; display request data supplies; and displays land details. Farmers can display land data and land owners, managing farmers includes performing and edits; manage inventory requests includes view, add, and edit; manage land details include view, add, and edit.

## 1. Running System Analysis

Based on interviews with land owners, monitoring the development of agricultural land conducted face-to-face, where the land owner go directly to the land and get reports from farmers. This running system illustrated in Figure 1.

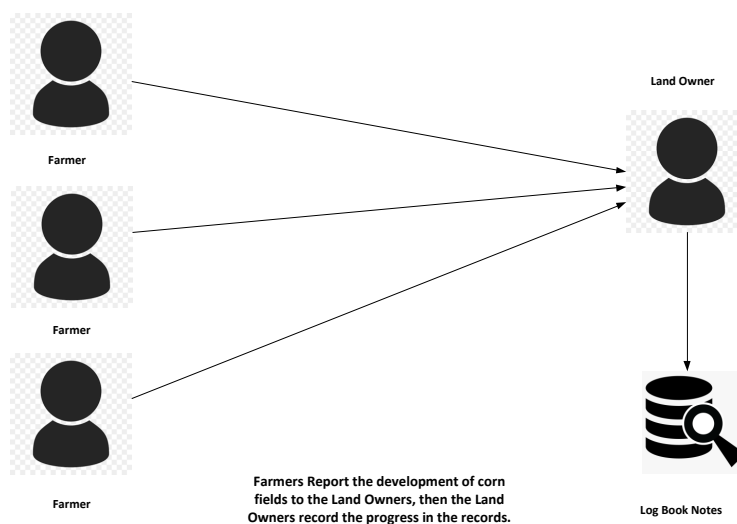


Figure 1. Analysis of the Running System

## 2. Proposed System Analysis

System analysis proposed by the author in the form of a system that uses information for corn field monitoring reporting in Labanan. Farmers just fill in the data development of corn fields provided in corn field form on the application. Automatic application processing data and reporting to owner the land for the development of the corn field without having to down to the field to meet face to face with farmer. The application also accommodates land owners to communicate with collectors. The proposed system is illustrated in Figure 2.

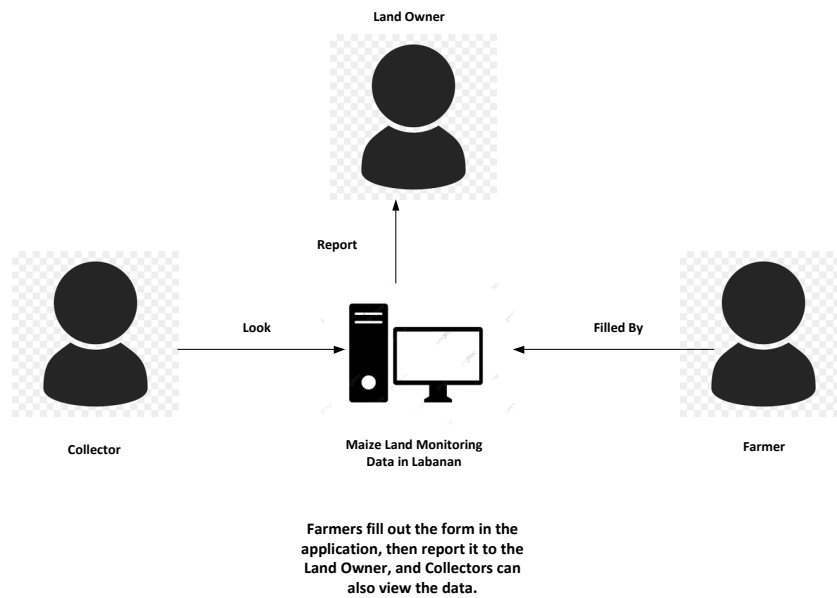


Figure 2. Analysis of the Proposed System

### 3. System planning

#### a. Entity Relationship Diagram (ERD)

The ERD design in this system has eight entities or eight interrelated tables related tables, namely Users, owners, collectors, farmers, land, land, type of supply, and demand. The ERD design can be seen in Figure 3.

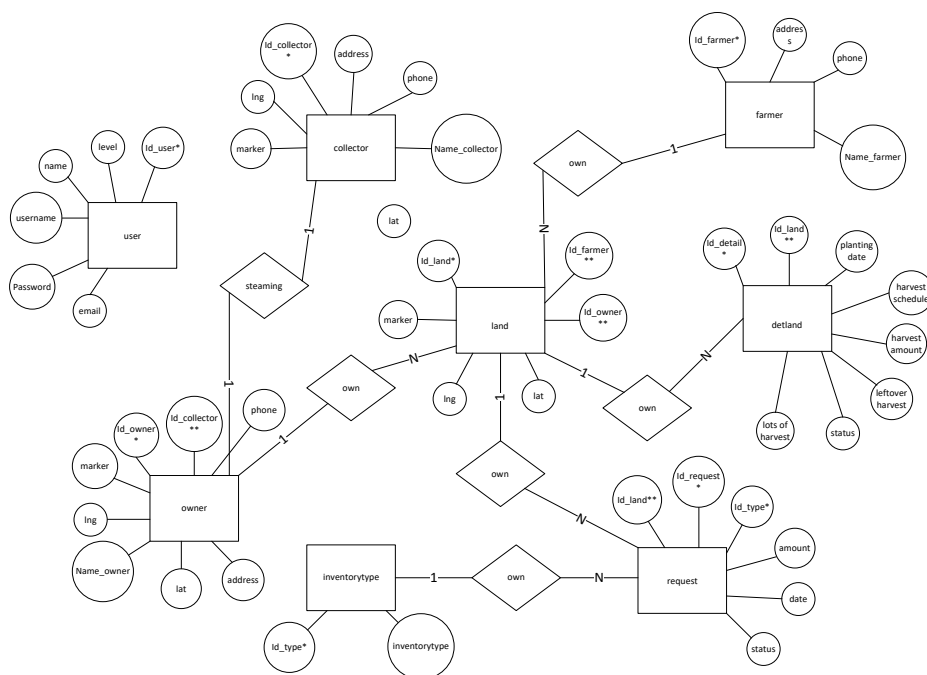


Figure 3. Entity Relationship Diagram

b. Data Flow Diagram (DFD)

Context diagram which is the highest level of DFD to describe the whole Sweet Corn Agricultural Information System can be seen in Figure 4.

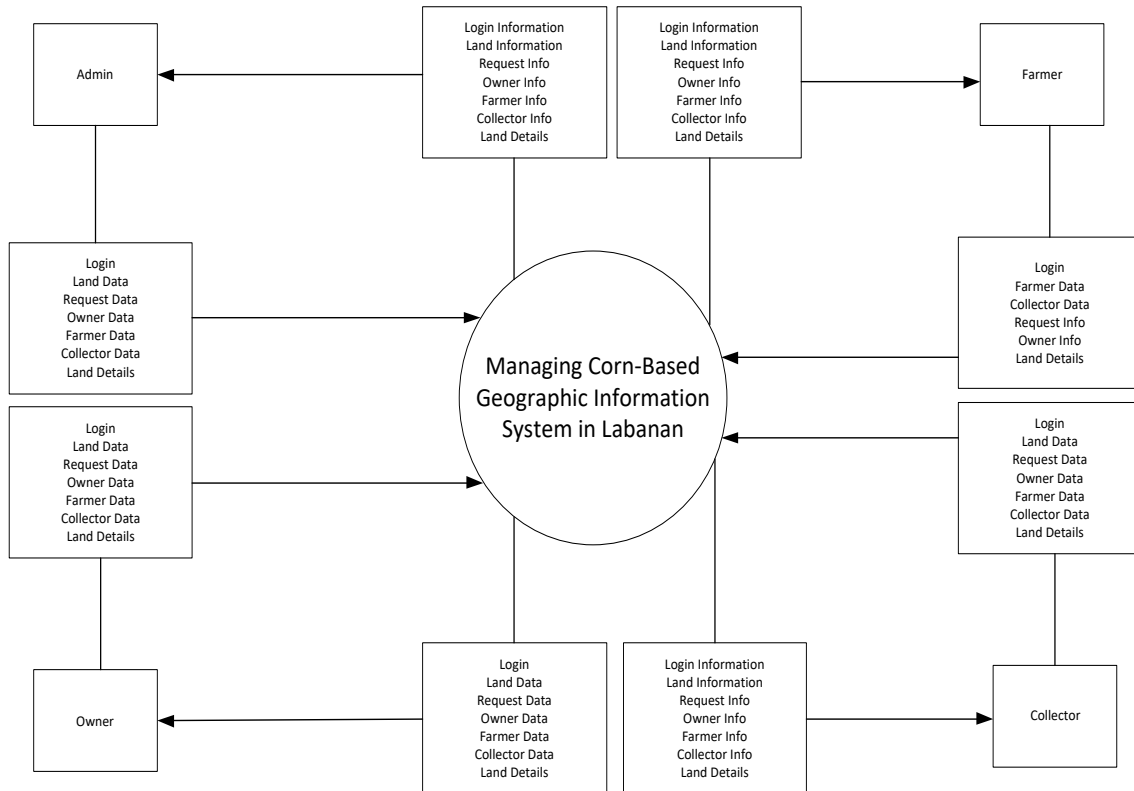


Figure 4. Context Diagram

**System Implementation**

a. Home Page Implementation

Implementation of the Information System home page Sweet Corn Farm contains congratulations comes according to the logged in user. Appearance can be seen in Figure 5.

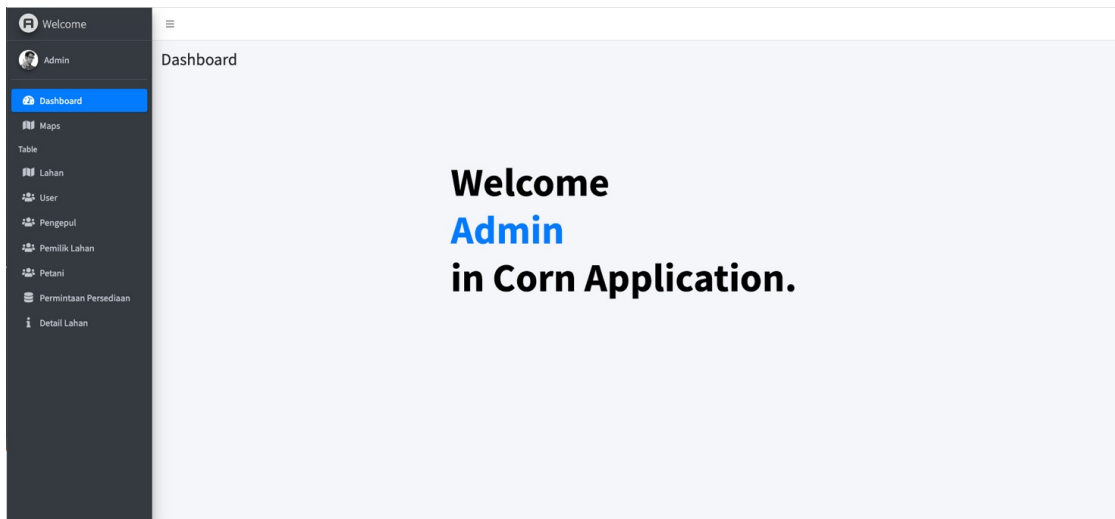


Figure 5. Home Page

b. Implementation of the Land Show Page

Land view page provides data view land that has been added, added data features, search feature, as well as edit and delete features for land data that already exists. Add land data containing is land, farmer id and latitude coordinates and longitude which will then appear if it has been saved. The implementation view of this page can be seen in Figure 6.

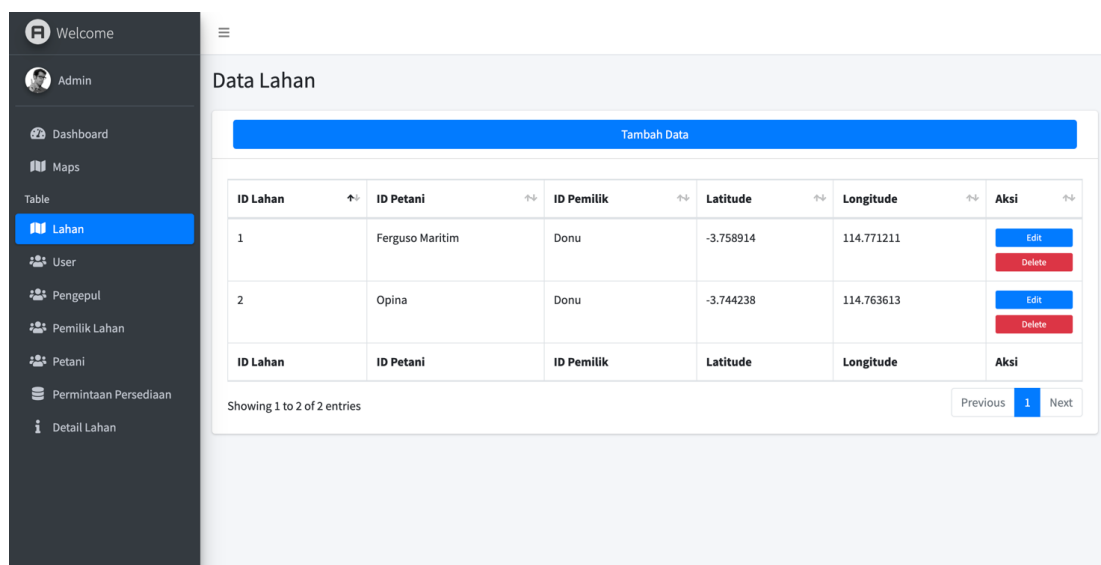


Figure 6. Land View Page

### c. Implementation of User Display Pages

User display page provides data view added users, added data features, features search, as well as edit and delete features for user data there has been. Add user data containing ID, username, password, email, level and last name will appear if it has been saved. Appearance implementation can be seen in Figure 7.

| ID | Username | Password | Email                 | Level    | Nama     | Aksi   |
|----|----------|----------|-----------------------|----------|----------|--|
| 1  | admin    | admin    | admin@admin.com       | Admin    | Admin    | <a href="#">Edit</a><br><a href="#">Delete</a> |
| 6  | pemilik  | pemilik  | pemilik@pemilik.com   | Pemilik  | Pemilik  | <a href="#">Edit</a><br><a href="#">Delete</a> |
| 7  | pengepul | pengepul | pengepul@pengepul.com | Pengepul | Pengepul | <a href="#">Edit</a><br><a href="#">Delete</a> |
| 9  | petani   | petani   | petani@petani.com     | Petani   | Petani   | <a href="#">Edit</a><br><a href="#">Delete</a> |

Showing 1 to 4 of 4 entries

Previous 1 Next

Figure 7. User Display Page

### d. Implementation of the collector's page

The collector's display page provides a view data collector that has been added, added features data, search features, and edit and delete features for data existing collectors. Add collector data contains the collector ID, name, address, telephone, and latitude and longitude which will then appear if it has been saved. Page implementation view this can be seen in Figure 8.



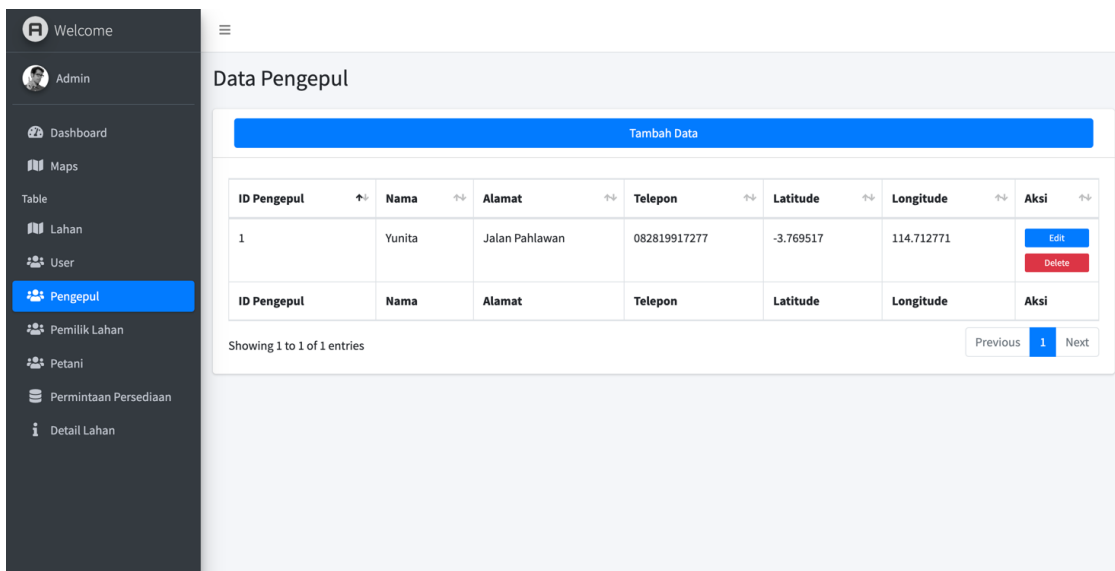


Figure 8. Collector Display Page

e. Implementation of the Land Owner's Show Page

The land owner's display page provides data added landowner view, features add data, search features, and edit and delete features for existing land owner data. Add data owner of the land containing the owner ID, owner's name, address, telephone, collector's name, and latitude and longitude which will then appear if it has been saved. The implementation view of this page can be seen in Figure 9.

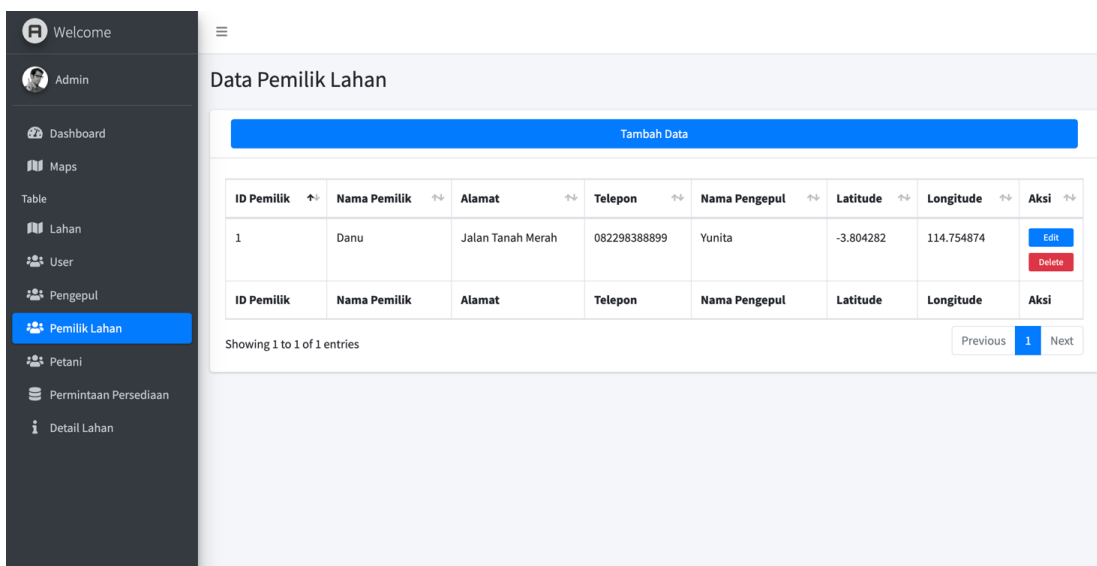
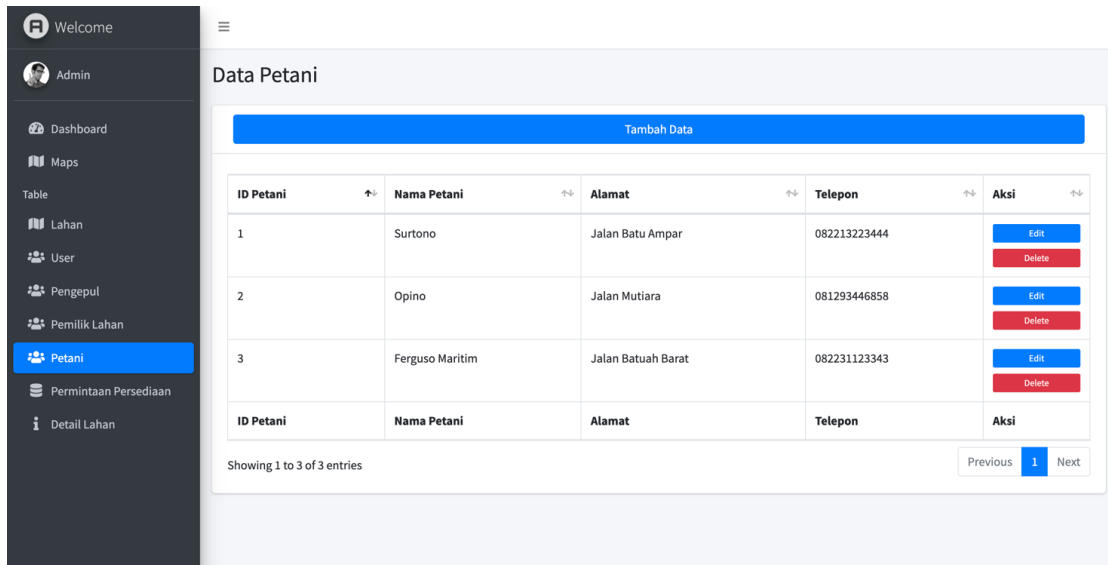


Figure 9. Land Owner's Page

## f. Farmer View Page Implementation

Farmer display page provides data view added farmers, add data feature, search feature, as well as edit and delete features for farmer data that already exists. Add farmer data containing ID farmer, farmer name, address and telephone will then show if it has been saved. Appearance implementation of this page can be seen in Figure 10.



The screenshot shows a web application interface for managing farmer data. On the left is a dark sidebar menu with options: Welcome, Admin, Dashboard, Maps, Table, Lahan, User, Pengepul, Pemilik Lahan, **Petani** (highlighted), Permintaan Persediaan, and Detail Lahan. The main content area is titled "Data Petani" and features a blue "Tambah Data" button at the top. Below it is a table with the following data:

| ID Petani | Nama Petani     | Alamat             | Telepon      | Aksi   |
|-----------|-----------------|--------------------|--------------|--|
| 1         | Surtono         | Jalan Batu Ampar   | 082213223444 | <a href="#">Edit</a><br><a href="#">Delete</a> |
| 2         | Opino           | Jalan Mutiara      | 081293446858 | <a href="#">Edit</a><br><a href="#">Delete</a> |
| 3         | Ferguso Maritim | Jalan Batuah Barat | 082231123343 | <a href="#">Edit</a><br><a href="#">Delete</a> |
| ID Petani | Nama Petani     | Alamat             | Telepon      | Aksi   |

At the bottom of the table, it says "Showing 1 to 3 of 3 entries" and includes pagination controls: "Previous", "1" (selected), and "Next".

Figure 10. Farmer's Page

## g. Farmer View Page Implementation

Testing on applications that have been made to test whether the application is running properly with the desired. The test results using the black box testing method can be found in the following table. The testing table can be seen on Table 1.

Table 1. The Result of Black Box Testing

| Test  | Input   | Output   | Result  |
|---|---|--|---------|
| Test Admin  | Enter email and password admin                  | Admin start page                                   | fail    |
| Testing land show   | See the location data input from the user       | Location visible                                   | success |
| Testing collector page                                      | Turn off  | Sweet corn location sign (process blackout)        | success |
| Testing farmer page   | Finish  | Green fire location sign (fire extinguished)       | success |
| Testing owner page  | Delete corn data                                | Data deleted from database                         | success |
| Test button function go out                                 | Go out  | Move to Login page Admin                           | success |
| Testing User Apps   | Register and login into the application         | Get an account and move to home user               | success |
| Testing the Register menu function on the login page user   | Enter full name, note, email, password          | User registration is stored in database            | success |
| Testing the Forgot Password menu function on the login page | Enter email                                     | Send a message to email user in the form of a link | success |
| Testing the function of the hotspot input button            | Input date, time, note, cause of fire, location | Submit fire data                                   | success |
| Testing the dot menu function fire                          | View location area input fire from user         | Location visible                                   | success |

## CONCLUSION

Corn farming information system development sweet using the PHP programming language and MySQL database has been successfully built. System sweet corn farming information can be used by 4 users, namely admin, owner landowners, farmers and collectors. This information system assist in land management, users, collectors, landowners, farmers, supply demand, and land details, each user has access rights different in this management. Test using black box has also been done and shows the result that all functions in the system has been running well.

## REFERENCES

- Anhar (2010). *Guide to Mastering PHP & MySQL Self-taught*. Jakarta: Mediakita.
- Apriadi, D & Saputra, A.Y. (2017). E-Commerce Marketplace Based in Effort Shorten the Distribution of Sales Results Agriculture, *RESTI Journal (System Engineering and Information Technology)*, 1, 131-136.
- Cholifah, W.N., Yulianingsih, & Sagittarius, S.M. Black Box Testing on Applications Android Based Action & Strategy with Phonegap Technology. *String Journal*, 3, 206-210.
- Febiharsa, D., Sudana, I.M & and Hudallah, N. (2018). System Functionality Test (Blackbox Testing) Information on Professional Certification Institutions

- (SILSP) Batik with Appperfect Web Test and Test Users. *Joined Journal*, 1,117-126.
- Hajar, S. (2017). Design and Build a Monitoring System Web-Based Farmer Group Activities in Pattallassang District, Gowa Regency South Sulawesi, UIN Alauddin Makassar.
- Jastra, Y. (2015). Production Systems and Potential Corn Development in Pasaman District West. *Journal of Bina Praja*, 7, 271-278.
- Khan, M.E. (2011). Different Approach to Blackbox Testing Technique for Finding Error, International. *Journal of Software Engineering & Applications (IJSEA)*, 2.
- Nidhra, S & Dondeti, J (2012). Blackbox and Whitebox Testing Techniques. *International Journal of Embedded Systems and Applications (IJESA)*, 2.
- Nugroho, D & Siswanti, S. (2015). Study of Utilization of Information Technology in the Field of Agriculture Supports Sustainable Development Sustainability. *Sine Scientific Journal*, 13, 25-32.
- Oktianto, E., Daulay, S. B & Rindang, A. (2014). Pre-harvest Technology Information System in Deli Serdang Regency. *Journal of Engineering and Pert*, 3, 80-86.
- Sharmila, S & Ramadevi. (2014). Analysis of Performance Testing on Web Applications. *International Journal of Advanced Research in Computer and Communication Engineering*, 3.
- Siregar, J. M. N., Munir, A.P., & S. B. Daulay. (2012). Plant Commodity Information System Web-Based Coal District Food Using PHP and MySql. *Journal of Engineering Food and Pert*, 1, 102-106.
- Sukamto, R.A & Salahuddin, M. (2013). *Engineering Structured and Oriented Software Object*. Bandung: Informatics.