

농작물 생육환경제어 모니터링 장치에 관한 연구

이현창*, 진찬용*, 김도관*, 이가배⁰, 신성윤**

*원광대학교 정보관리학과, 융복합창의연구소

⁰원광대학교 정보관리학과

**군산대학교 컴퓨터정보공학과,교신저자

e-mail: hclglory@gmail.com*, killua_54@hotmail.com⁰, syshin@kunsan.ac.kr**

Study on Monitoring and Controlling Device of Farm Produce Growing Environment

Hyun Chang Lee*, Chan Yong Jin*, Do Kwan Kim*, Lijiapai⁰, Seong Yoon Shin**

*Dept. of Information Management, Institute of Convergence Creativity, Wonkwang University

⁰Dept. of Information Management, Wonkwang University

**Dept. of Computer and Information Engineering, Kunsan University

● 요 약 ●

Owing to the development of information communication technology(ICT), there are many changes taking place in the agriculture sector. As an example, an effective agricultural activities with ICT have brought an increase in agricultural production. On the other hand, these technology investment activities are very costly. Until recently, the technology development has been made in agricultural technology development perspective. This view, however, has been changed to production increase in accordance with the crop growth conditions. In this paper, we propose a device which can maintain an optimal crop growing environment. It is economic by utilizing the existing facility of farmhouse and can reduce the cost of crop growth environment improvement.

키워드: 제어(Control), 작물(Crop), 장치(Device), 생산(Product)

I. Introduction

Since the industrial revolution, technology in agriculture sector has changed in the crop production improvement into the quality perspective of the crops. Recent researches in the agricultural sector have tried to introduce the new technologies such as sensor network and IT convergence services. As a result of these effects, industrial forms of agriculture are utilizing a lot of information and communication technologies.

One of most important technologies may be referred to as a wireless sensor network which is consisting of a number of low-cost sensors.[1][2] Functional components of a wireless sensor network are composed of handling the power and data transmission and reception function, and the execution of the application elements. These techniques are the fundamental

structure of the IoT(Internet of Things) and an important technical elements for monitoring and controlling the crop growing environment.

In these days, many IoT techniques have been attempted to increase the quality and productivity of crop. For this reason, the crop growing environment information needs to be collected in order to monitor and control the status of the crop. This paper deals with the device that can monitor and control the agricultural growth environment.

II. Control Technology

Temperature and humidity factors among the crop growth information are very important elements for the plant. However,

crop growth environment for small-scale farmers is harsh environments. These elements are being treated as passive in spite of important factor. Such passive administration form may result in reduced productivity and quality of the crops. To reduce the issues, collecting and controlling the crop status information are needed. And function for monitoring and controllable device are needed as well. Figure 1 shows a modeling for acquiring and controlling the crop growth information.[3][4]

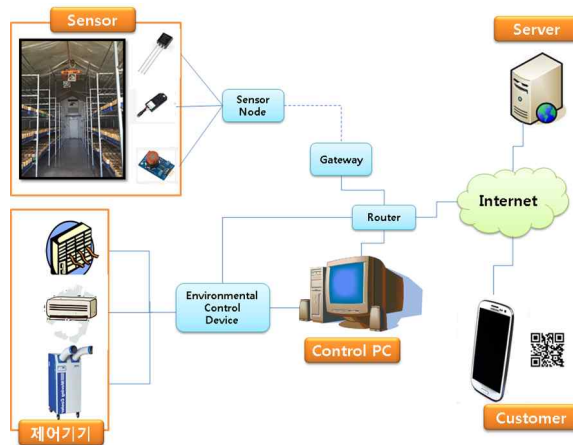


Fig. 1. Structure and components for acquiring and controlling the crop growth information

III. Conclusion

This paper mentioned the importance of acquiring and controlling the crop growth environment information. Also, structure and components are shown through figure 1. Furthermore, the goal of the future agriculture may be dealt with controlling and managing the best growth environment for the crops. Through these studies, it will be able to improve the quality and increase revenue for the crop.

References

- [1] XU Dan-Hua, DAI Jing-Shuang, "Development of Sensing Technology and Its Application in Modern Agriculture," *Agricultural Engineering*, Vol. 1, No. 3, pp. 33-36, September 2011.
- [2] YANG-Fan, LIAO Gui-Ping, LI Jin-Wei, LIU-Hang, "The application of wireless sensor network in monitoring the information of the environment of crop," *Agriculture Network Information*, No. 3, pp. 20-23, 2008.
- [3] LI Jian-Zhong, LI Jin-Bao, SHI Sheng-Fei, "Concepts, Issues and Advance of Sensor Networks and Data Management of Sensor Networks," *Journal of Software*, Vol. 14, No. 10, pp. 1717-1727, March 2003.
- [4] In-ku Kang, Jin-kwan Kim, Hee-chul Lee, "Fabrication of the Wafer Level Packaged LED Integrated Temperature Sensor and Configuration of The Compensation System for The LED's Optical Properties," *Journal of The Institute of Electronics Engineers of Korea*, Vol. 49-SD, No. 7, pp. 267-275, 2012.