APPLICATION OF ZIGBEE TECHNOLOGIES IN MONITORING TEMPERATURE AND HUMIDITY OF TISSUE CULTURE

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ABSTRACT

Among a wide offer of technologies, Zigbee is one of the most attractive for connecting with sensor. The application of ZigBee is being carried on at tissue culture laboratory, Malaysian Palm Oil Board (MPOB). The goal of this project is to develop a prototype of Zigbee sensor network for temperature and humidity of tissue culture monitoring by database. Comparing the system which uses ZigBee technologies with cable or wired system, it is showed ZigBee technologies is better efficiencies of the cost and in the time installation and maintenance. ZigBee is a low-cost and low-power consumption in wireless mesh networking standard [1]. The low cost allows the technology to be applied in wireless control and monitoring applications, the low power-usage allows longer life with smaller batteries, and the mesh networking provides high reliability and larger range. ZigBee has been developed to meet the growing demand for capable wireless networking between low power devices. In industry ZigBee is being used for next generation automated manufacturing, with small transmitters in every device, allowing for communication between devices to a computer.

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CHAPTER 1

INTRODUCTION

1.1 OVERVIEW

Tissue culture is a tool or mechanism used for plant propagations to speed up the production of certain plants, as well as to create the desired type of growth. Tissue culture is also referred to as micropropagation, clonal propagation, in vitro propagation or rapid propagation *(Lord, April 2004)*. For Malaysian Palm Oil Board (MPOB) provide tissue culture of oil palm industry with innovations for the production of improved planting materials and information on the molecular biology of tissue culture processe *(Noor Hafizah Abdul Aziz, 2010)* s. In MPOB, facilities vary from low technology equipment through off the shelf incubators to state of the cabinets and rooms. Many current tissue culture producers face problems with mantling. The cloning protocol for oil palm needs to be perfected prior to mass replication. Subsequently, with high technology in engineering can be applied to improve oil characteristics. From the research and development (R&D) before this, using wired network was considered a sign of technological advancement. The growth of Telecommunication in the world has brought about the need for regular update, research and findings, to meet the demands of the global world. With the rising demand of home automation and sensor network, the ZigBee protocol has been identified to target on low power devices and sensor nodes. Wireless wearable systems crave room for new user interface components. This fosters the ease of mobility and availability of devices, in order to accomplish things when necessary. Since the technology of the global world is fast changing, it therefore