ABSTRACT

The development of technology is very fast at this time, including in the agricultural sector, one of which is about paddy fields, most of which are planted with rice because the main food commodity in Indonesia. In this study, the main issues raised were farmers who could not easily measure temperature and soil pH parameters and the lack of measuring instruments due to relatively expensive prices, difficulties in knowing and monitoring soil parameters, the lack of precise provision of subsidized fertilizers provided by the government to meet the needs of farmers. farmers, as well as significant temperature changes that are difficult to predict can affect the yield and quality of rice plants. One way to overcome this is by using the Internet of Things which integrates pH and temperature sensors. ESP32 is used as a microcontroller which allows remote control and historical data collection. The data that has been processed by the microcontroller is then sent to Thingspeak using a WiFi network. However, measurements can still be made even if there is data loss because the LCD will display the results. The purpose of this study is to calculate the level of accuracy and precision of conventional measuring instruments on sensors and to find out the results of the comparison of the two parameters in different sample areas. The results of research on measuring temperature and pH parameters obtained an accuracy rate of 98.54% for pH and 99.56% for temperature. While the precision level of the Gaby Rapid Soil Meter measuring instrument is 94.72%, the DS18B20 temperature sensor is 100%, and the pH sensor is 88.15%. In addition, the difference in the measurement area affected the temperature parameters while the pH parameters tended to be stable.

Keywords: ESP32, *Internet of Things* (IoT), *Potensial Hidrogen* (pH)*,* Suhu, *Thingspeak*