I. INTRODUCTION

Apart from running a business, farming is a hobby for some people. By pursuing vegetable cultivation in addition to distribution, it is possible to produce edible vegetables with retail value. Limited land in urban areasis a barrier to normal agriculture [1]. The use of IoT technology provides convenience because maintenance canbe done by the system itself and Monitoring and control of hydroponic systems can be done anywhere [8]. In agriculture, hydroponics offers benefits such as improved quality and quantity of production, cleaner harvests,water and fertilizer efficiency, easier pest control, and more efficient land use [9]. Appropriate models of hydroponics are becoming more prevalent, especially in urban areas, due to more efficient land use.

The main key to plant nutrition in a hydroponic system is EC (Electrical Conductivity). EC determines whether nutrients are suitable for plants; successful production depends on the quality of nutrients, while the quality of nutrients depends on concentration[2]. High EC means high salt concentration. High salt concentration. Usually, maintaining the quality of hydroponic plants is done by manually monitoring their nutrients such as acidity or alkalinity (PH), total dissolved solids (TDS), EC and water temperature [11]. In a nutrient solution can damage plant roots and interfere with the absorption of water and nutrients by plant roots[3]. The need for EC solutions varies depending on the type and age of the plant. The EC needs are adjustedto the growth phase. If the plants are still small, the EC needs are also small, and the need for EC increases as the plant ages[4]. Once the EC value is known, PH and TDS can be adjusted. Nutrients in hydroponic plants come from a mixture of liquid formulas A and B, known as AB Mix fertilizer. PH level of hydroponic nutrients can affect the consumption of nutrients by the roots of hydroponic plants. The ideal pH for hydroponic plants is, on average, 5,5-6,5 [13]. Likewise, when the hydroponic TDS is unstable, it causes yellow and wilted leaves,stunted plants, and slow plant growth[5]. So by monitoring the PH value and TDS value based on the EC valueof the hydroponic nutrient concentration, it is expected to be able to maintain the nutrients in the specified conditions.

Previous studies have used various tools and software to monitor multiple nutritional values. The Ec value affects the pH and TDS values which are very important for the growth of hydroponic plants [5]. Therefore, due to some problems, a program was developed to regularly monitor TDS based on EC values in hydroponic nutrient solutions, which can then maintain nutrient concentrations at nominal optimal values as required. Recording all data entered in this monitoring tool for several days aims to monitor, so that nutrient consumptionis adjusted to the nutritional needs of plants.

In this study, the authors used the VegTrug Grow Care Sensor, which can monitor light, temperature, humidity, and EC; they can find data via a Bluetooth connection via the ESP33 WROOM microcontroller Wi-Fi module and program it in Thonny using python language, every value obtained will be recorded in csv andpH paper and digital pH are used to measure pH water. This research will use one type of vegetable plant, waterspinach, and will take data records in 2 days, totaling -+3,000 data. Results There are 6 table columns containingPH, temperature, light,moisture, EC and TDS values. The EC unit is µS/m (micro siemens per meter), and the TDS value unit is ppm (Parts Per Million). The results of PH and TDS values based on EC will be compared and can be seen based on the values in the diagram. From the results, the value obtained aims to provide nutritionaccording to the nutritional needs needed by plants.

The following are the section for this paper. Section 2 introduces the method used in this paper. Section 3 is the result and discussion which talked about the data analyzed. Finally, Section 4 summarized the informationgiven by this paper.