

## **ABSTRACT**

*Soil fertility is critical to the success of farmers in planting. Farmer task is to identify all of the factors limiting the results, and eliminate or minimize them so that the business profitable. In general, the nutrients will be easily absorbed by plants at pH 6-7, since the pH of the majority of the nutrients will be readily soluble in water. The degree of pH in the soil also showed the existence of elements that are toxic to plants. If the acid soils will be found elements of aluminum (Al) that besides poison plants also bind phosphorus that can not be absorbed by plants. In addition it is also quite determine soil moisture, soil moisture scale agriculture is usually indicated by the sensor with a value of 0-300 to dry soil, 300-700 for humid soil, and 700-950 for in water.*

*In this final ADC value was created in percent moisture to the lower limit value of 28% and the upper limit of 69%. To calibrate the pH sensor are used acid is vinegar with pH = 2 and alkaline substances such as soap with pH = 10, both substances are measured with pH Universal Indicator. In this final assignment device control pH and soil moisture to soil moisture sensor and pH sensor are used as the main plant, the sensor will be controlled by a microcontroller minimum system. the output of the microcontroller will trigger a relay circuit which will activate the watering pump in accordance with the decision of the sensors.*

*From the results of testing this system works well in accordance with the design. Pump lit by a decision made that, a lot, a little, and being. This decision is based on the concentration of lime or sprinkling water. After the soil reaches a neutral pH as defined is between 5.5 to 8 and humidity between 30% - 67%, then the pump will die. The pump will turn on again when the soil is dry or acidic state.*