

ABSTRACT

Hydroponics with nutrient film technique cultivation method has a fertilization process on a nutrition tank and it circulate throughout the plant. The hydroponic nutrient solution contains all the nutrients plant needed by plants to achieve a good growth. Nutrition required consists of macro and micro elements. The macro element required by hydroponic plants consists of N, K, Ca, and Fe while the micro elements consist of P, Mg, S, B, Mn, Cu, Na, Mo, and Zn elements. Nutritional levels will change along with the growth of hydroponics plants. Therefore it is necessary to create an automatic control system that can monitor the amount of nutrients of the hydroponic system. The amount of nutrients is represented as the value of electrical conductivity (ec).

In this research, automatic monitoring and controlling of hydroponics system by nutrient film technique is used. The control system that used on this research's based on fuzzy logic. The designed of fuzzy logic control system is tested by 2 tests, first is given the set point of EC value and the level below and above the actual condition, the second is by giving disturbance to the control system in the form of decreasing of EC value due to the absorption of nitrogen element by hydroponic tomato plant. The results of this research is the control system have done control system designed to reduce and increase the value of EC and level of set point provided with time respon such as the time rise and settling time parameters are not too far apart ± 2 minutes, then this control system can also maintain the value of the set point given at the time of the simulation process decreases the value of EC due to absorption of nitrogen elements by hydroponic tomato plants.

Keywords : Hydroponic, Nutrient Film Technique, Fuzzy Logic Control System, Electrical Conductivity