

ABSTRACT

Technological developments in agriculture have become increasingly sophisticated. Likewise with the farming system using hydroponics. From the data referring to the Central Statistics Agency for Bekasi Regency, the city of Bekasi has a land area of 21,049 hectares, of which only 500 hectares can still be planted with plants. This makes this hydroponic system very helpful for farmers and the general public who want to grow plants but don't have a large area of land. Different from hydroponic farmers who spend all their time caring for their hydroponic plants, many people in general are confused about caring for hydroponic plants because of their busy schedules. For this reason, a tool is made that can maintain the pH of the water in hydroponics at the ideal pH, which ranges from 5.5 to 6.5. The tool will be equipped with a PH-4502 sensor which will detect the pH level of the hydroponic plants. In addition, this tool will use PID control so that the response given by the tool is fast and accurate. The hope is that this tool can help hydroponic farmers and the general public so they don't have to monitor water pH regularly. The results of this study indicate that the PID parameters using the Ziegler-Nichols method are very influential in system response. With a Kp value of 6.6, Ki 8 and Kd 2, the system obtains a Steady State Error value of 1.5%, Overshoot of 12%, Time Rise of 4 s and Settling Time of 73 s.

Keyword : *Hydroponic, pH water, PID Control, PH-4502*