

## ABSTRACT

*Short mustard or Pak Choy (*Brassica chinensis* L.) is one of the most consumed plants. According to the Central Statistics Agency, the production of vegetable crops, especially green mustards, reached 667,473 tons in 2020. In the cultivation of Pak Choy, many factors can affect plant growth, one of which is soil moisture. The standard of appropriate soil moisture for plants ranges from 50% - 70%. However, excessive soil moisture actually produces poor results and has a negative impact on plant growth.*

*In this final project, a system has been designed that can control stable soil moisture values (50%-70%) using fuzzy logic control, as well as control and monitoring based on IoT (Internet of Things). The system was implemented by a prototype that consist of 4 polybags with soil as a planting media. By utilizing a pump actuator that aims to increase the value of soil moisture through a drip irrigation system and a heating actuator that aims to reduce soil moisture. In addition, the system can also be monitored and controlled in automatic mode or manual mode through an Android-based smartphone application.*

*The system has an actuator operating duration that affects the input soil moisture and air temperature values in the prototype. The longer duration of the pump actuator, the more air volume will be produced, and the longer duration of the actuator heater, the higher the temperature on the prototype will be. The system reaches the setpoint value for approximately 9 seconds when the soil moisture content is 19% and when the soil moisture content is 73%, the system can reach the setpoint in approximately 155 seconds with the soil moisture limit value that the system can control is not more than 73%.*

**Keywords:** *Control System, Fuzzy Control, Soil moisture, Internet of Things, Pak Choy Cultivation*