

ABSTRACT

Melon is a favorite fruit for the majority of Indonesian people but requires sufficient sunlight so that the fruit produced is large, sweet and fresh. Greenhouse Telkom University Surabaya Campus cultivates melon plants, because the uncertain climate of Surabaya can affect the intensity of light received by the leaves and cause plants to lack light for photosynthesis. In addition, the selection of color percentages for the melon growth phase also affects plant growth. Dominant blue light is good for maintaining the vegetative process of plants and dominant red light is good for increasing the generative process of plants. Greenhouse Telkom University Surabaya Campus already has purple LED lights but can only be controlled manually. Therefore, the purpose of this Final Project is to create a VeGe Light module, a monitoring and regulation system for light intensity in a greenhouse based on the percentage of color of the melon plant growth phase for the growth and development of melon plants. The Fuzzy Mamdani method was chosen to determine the rules for the percentage of light color according to the light intensity and growth phase of melon plants. Fuzzy input is light intensity and growth phase and Fuzzy output is the percentage of red, blue and white LED light colors. Fuzzy rules if the light intensity is dark and the plant growth phase enters the vegetative phase, the blue LED will be more dominant, while if the generative phase, the red LED is more dominant. Based on the test results, the average system accuracy with MATLAB simulation for blue LEDs is 99.86%, red LEDs 99.86% and white LEDs 99.49%. All data is monitored via an online website so that it can be accessed anywhere.

Keywords: *Greenhouse, Light Intensity, VeGe Light*