

## ABSTRACT

Green curly lettuce plants is one of horticultural crops. Green curly lettuce is a favorite food for Indonesian people. This is because green curly lettuce plants can be enjoyed raw (lalapan) or as a salad. Green curly lettuce demand is high enough, so that the Indonesian government still needs imported green curly lettuce. This happens because the weather in Indonesia is unpredictable, so the growth of lettuce is not optimal. Green curly lettuce plant has a characteristic grow at 15oC-20oC and humidity ranges from 60% -80%. If the temperature and humidity are above or below the growth characteristics of green curly lettuce, the seedling process will fail. Therefore, we need a tool or system that can control the temperature and humidity of the air. So in this research the authors has design a room that can retain the temperature and humidity in accordance with the characteristics of the plant. It is hoped that with this tool or system, the green curly lettuce plant house can be stable according to its characteristics. The results of the study showed that the system was able to make the air humidity in the plants house stable between 60% - 80%, but the temperature inside the plants house was stable in the range of 25°C - 38°C. The yield of green curly lettuce in the control plant house had an average height difference of 6.25 mm compared to the conventional plant house. In the length and width of the leaves in the conventional plant house, there was an average difference of 0.67 mm in length and an average width of 0.38 mm compared to the control plant house.

**Keyword:** *plants house, green curly lettuce, temperature and humidity*