

Impact Of Ventilations In Electronic Device Shield On Micro-climate Data Acquired In A Tropical Greenhouse

ABSTRACT

The greenhouse which is a building used to manipulate the micro-climate is an essential building for plant growth. Greenhouses have one or more devices that are used to monitor their internal environments against changes in micro-climate. The problem is that some devices are metal-based devices and plastics that can be deformed, such as electronic devices, one of which is a micro-climate monitoring device, so a shield that can protect the device but does not interfere with the sensor readings is needed. The purpose of this study was to make and test a plastic-based container called Duradus Junction Box, which has six removable ventilation openings to measure the micro-climate data. This study uses five Duradus Junction Boxes with different numbers of ventilation openings, a micro-controller connected to the air temperature and relative humidity sensor, and a MicroSD module to record all micro-climate data, all devices being then tested simultaneously for 30 days. Statistically, after using One Way ANOVA, this study found that micro-climate measurements result for actual devices data can be considered similar because the P-value for temperature (0.886) and relative humidity (0.917) is greater than alpha level of 0.05. However, when reading the recorded data for both parameters, it can be seen that micro-climate data inside all shields are slightly higher than actual microclimate data ranging from 1 to 2 °C for air temperature and 1 to 3% for air relative humidity.