

CLIMATE CONTROL IN GREEN HOUSES THROUGH RIDGE AND NET VENTILATION UNDER TROPICAL CONDITIONS

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One of the major constraints in protected culture in Sri Lanka is the excessively high internal temperature during the daytime. The principle method used in greenhouses to prevent excessive temperature is natural ventilation because it is less expensive. The most common vent type introduced to the greenhouses in Sri Lanka is the fixed top vent. However, movable ridge vents are more advanced when compared to the fixed top vents because ridge vents can be controlled under adverse weather conditions.

A venlo-type greenhouse was designed including alternate ridge vents for the experiment established at Kiribathkumbura in Kandy (Mid Country Wet Zone). Temperature and RH were monitored relevant to outside temperature during day and night at the ridge vent-opening angles of 24° and 0° (to the roof). The intensity of solar radiation intercepted inside and outside the green house was monitored throughout the day.

Fully opened ridge vent reduce the temperature difference between inside and outside (0.45° C) significantly compared to the temperature difference at fully closed situation. But opening of ridge vent did not significantly affect the RH difference in a sunny day with mild wind. Solar radiation interception of inside of the greenhouses can be successfully used under tropical humid conditions for intensive controlling of internal environment of the greenhouse. Ridge vents can be opened according to the direction of wind, and fully automation of greenhouse is also possible with movable ridge vent greenhouses. Therefore, movable ridge vent greenhouses can be suggested as a new generation of climate control greenhouses under humid-tropical conditions.