ABSTRACT

Ihab Ibrahim Sadek El-Sayed: Effect of Some Shading and Ventilation Treatments on Tomato Plants Grown in Perlit Culture. Unpublished Ph.D. Dissertation, Department of Horticulture, Faculty of Agriculture, Ain Shams University 2009.

The experiment was performed in the summer season of 2005 and 2006 at research greenhouse of the Central Laboratory for Agricultural Climate (CLAC), Dokki location. The study was conducted in single type unheated plastic house of 270 m^2 (9m width, 30m length and 3.2m height). Tomato El-Karnak F1 hybrid was used, to investigate the ventilation and shading of tomato plants under El-Dokki conditions. Four treatments were used i.e., side ventilation, 60% shading, side ventilation plus 60% shading and check, (common plastic house). Results indicated that the application of side ventilation plus 60% shading treatment was the most effective in reducing maximum and minimum of air temperature, relative humidity, radiation, solution and media temperatures followed by side ventilation, whereas, the highest value of maximum and minimum of air temperature, relative humidity, radiation, solution and media temperatures were observed in check treatment throughout the two growing seasons. In addition, side ventilation plus 60% shading treatment produced the tallest plants and the highest number of leaves per plant, leaf area per plant, root length and fresh and dry weight of leaves and stem, while, stem diameter and fresh and dry weight of root were increased by check treatment. Moreover, number of clusters/plant, chlorophyll in leaves and percent of nitrogen and potassium in leaves, stem and root were increased by application side ventilation plus 60% shading treatment, while, percent of phosphorus and total carbohydrates in leaves, stem and root increased with side ventilation treatment. Also, fruit characters such as average weight, volume and diameter were gave highest values with side ventilation plus 60% shading treatment except, firmness was not affected by tested factors. Chemical components of fruits, i.e., T.S.S, ascorbic acid, total, - reducing - and non-reducing

sugars and total carbohydrates were increased with side ventilation treatment except ascorbic acid content was not affected by all treatments. The highest productivity for both early and total yields were obtained when plants were grown under side ventilation plus 60% shading treatment, followed by side ventilation treatment, while check treatment gave the lowest values.

Key words: Greenhouse, Protected cultivation, Tomato, Shading, Side ventilation, Soilless culture, Climatic conditions, Flowering.

CONTENTS