

INFLUENCES OF POLY-GREENHOUSES SHADING RATIOS ON SEEDLINGS GERMINATION, GROWTH RATE AND PRODUCTIVITY OF CUCUMBER YIELD

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ABSTRACT

Eight similar experimental poly-greenhouse models with different shading rations and ventilation gaps were designed, constructed and used in this study, representing four treatments with two replicates for each treatment. Each pair of these poly-greenhouse models (two replicates) were covered only with black screen shade net sheets of 25%, 50%, 63% and 75% shading ratios during the summer season. The thermal performance of the poly-greenhouse models and their effects on seedlings germination, growth rate and yield of cucumber plants were investigated under Fayoum depression climatic conditions during the summer months (from 17st May to 31 July, 2015).

The obtained results indicated that, as shading ratio increases, the solar radiation inside the poly-greenhouse decreases. All trends of temperatures inside the poly-greenhouse models were below the ambient (outside) temperature curve during the period from 8:00 am to 8:00 pm (sunset). All shading ratios caused to increase the relative humidity inside the poly-greenhouse models compared to outside poly-greenhouse models. As shading ratio increases, the interior light intensity decreases, and thus, the light intensity was adequate when it decreased by 50%, 63% and 75% shading ratios, which is satisfactory for seedlings germination, seedling growth, chlorophyll A, B, total chlorophyll contents and carotenoids content. The poly-greenhouse covered with 63% gave the higher seedlings germination, chlorophyll A, B, total chlorophyll contents, carotenoids content, plant growth and yield of cucumber followed by the poly-greenhouse covered with 50% shading ratio as compared with the others poly-greenhouses (25% and 75%) in the summer months.