

EVALUATION OF HYDROPONICS SYSTEM AND MICRO CLIMATIC PARAMETERS UNDER SHADE NET HOUSE

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Abstract: A study was taken up to determine the properties of the nutrient solution for the hydroponic system under shade net house and to study the micro climate parameters inside and outside the shade nethouse. EC and pH of the nutrient solution were observed for the hydroponics system. pH varies from 7.5 to 9.2 and EC varies from 1.14 to 1.43 ds/m. Temperature inside the shade net house was having slightly lesser value than outside atmospheric at range of 1.6 °C to 2.7 °C during the experiment period. Maximum and minimum temperature, relative humidity and light intensity were observed for the effective crop growth period.

Keywords: Hydroponics, Shade nethouse, Micro climatic parameters

REFERENCES

Abad, M., Noguera, P. and Bures, S. (2001). National inventory of organic wastes for use as growing media for ornamental potted plant production: Case study in Spain. *Bioresource Technology*, **77**(2):197-200. [10.1016/S0960-8524\(00\)00152-8](https://doi.org/10.1016/S0960-8524(00)00152-8)

Affandi, N.F.L., Rusli, S. H., Suhaini, A.M. and Baharulaz, N. (2018). Effect of pH on Growth Rate and Yield of Cucumis sativus. *Chemical Engineering Transactions*, **63**: 133-138.

Aikman, D.P. (1989). Potential increase in photosynthetic efficiency from the redistribution of solar radiation in a crop. *J. Exp. Bot.* **40**: 855-864.

Al-Helal, A. M., Abdel-Ghany, I. M. (2010). Responses of plastic shading nets to global and diffuse PAR transfer: Optical properties and evaluation. *NJAS - Wageningen Journal of Life Sciences*, **57**:125-132.

Bradley, P. and Marulanda, C. (2000). Simplified hydroponics to reduce global hunger. *Acta Hort.*, **554**:289-296.

Briassoulis, D., Mistriotis, A. and Eleftherakis, D. (2007). Mechanical behaviour and properties of agricultural nets - Part I: Testing methods for agricultural nets. *Science Direct. Polymer Testing*, **26**:822-832.

Goswamy, A. and Panwar, J.D.S. (2014). Impact of elevated temperature on growth, yield, grain quality in summer mung bean and its mitigation through use of biofertilizers. *Journal of Plant Development Sciences*, **6** (4) : 573-576.

Holcman, E. and Sentelhas, P.C. (2012). Microclimate under different shading screens in

greenhouses cultivated with bromeliads. *Agricultural Meteorology and Climatology. Rev. bras. eng. agríc. Ambient*, **16** no.8 Campina Grande.

Lee, Y.C. and Lee, W.S. (2006). Effect of culture solution formula and the reagent level to the growth in lettuce and Pak-Choi. *Horticulture NCHU*, **31**: 31-40.

Nangare, D.D., Singh, Jitendra, Meena, V.S., Bhushan, B. and Bhatnagar, P.R. (2015). Effect of green shade nets on yield and quality of tomato (*Lycopersicon esculentum* Mill) in semi-arid region of punjab. *Asian Journal of Advances in Basic and Applied Science*, **1** (1):1-8

Rajasekar, M., Arumugam, T. and Kumar, S. Ramesh (2013). Influence of weather and growing environment on vegetable growth and yield. *Journal of Horticulture and Forestry*, **5**(10):160-167.

Rosa-Rodriguez, R.D.L., Herrera, A.L., Trejo-Tellez, L.I., Padilla Bernal, L.E., Solis Sanchez, L.O. and Ortiz-Rodriguez, J.M. (2020). Water and Fertilizers use efficiency in two hydroponic systems for tomato production. *Hortic.Bras.*, **38**(1) Victoria da Conquista. <http://dx.doi.org/10.1590/s0102-053620200107>.

Shahak, Y., Lahav, T., Spiegel, E., Philosoph-Hadas, S., Meir, S., Orenstein, H., Gussakovsky, E., Ratner, K., Giller, Y., Shapchisky, S., Zur, N., Rosenberger, I., Gal, Z. and Ganelevin, R. (2002). Growing aralia and monstera under colored shade nets. *Olam Poreah*, **13**: 60-62.

Singh, H., Dunn, B. and Payton, M. (2019). Hydroponic pH modifiers affect plant growth and nutrient content in leafy greens. *Journal of Horticultural Research*, **27**(1): 31-36.

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Singh, J.V. (2018). An updates to Greenhouse effect and greenhouse gases. *Journal of Plant Development Sciences*. **10** (5) : 307-308.