

Evaluation of efficiency of fan and pad cooling system in Mahallat region

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Abstract

For production of cut roses, as the most favorable and profitable crop in floriculture industry, optimization of growing conditions, especially temperature, is very important in all year round. This study was carried out to evaluate the efficiency of fan and pad cooling system of a cut rose research greenhouse with plastic tunnel structure, as a sample of arid and semiarid greenhouses of Iran. The main effective factors in efficiency of greenhouse cooling system including solar radiation, received light, and inside and outside temperature were measured from 9:00 am to 6:00 pm in 10 warmest days of summer of 2009. Then, the warmest day was selected for final analysis. Based on the past research results, the efficiency of pad–fan cooling system was calculated at different locations of the greenhouse, at different hours of the day, and the cooling efficiency at the hottest hour was considered as the final potential of the system. The results showed that efficiency of fan-pad system in Mahallat conditions was about 50-100 percent depending on the location in the greenhouse (distance to pad) and climatic conditions at data-gathering time (received light, air temperature and relative humidity inside the greenhouse). However, cooling efficiency at the warmest hour of the hottest day of the year was estimated as 75% at air entrance of the pad.

Keywords: Greenhouse, Cut rose, Outside temperature, Evaporative cooling system.

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