



Crop Water Requirement of Strawberry under Different Protected Cultivation Structure

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Abstract

Strawberry is a commercial crop with high added value, which was extended to new cultivation zones of India. Therefore, it is important to know the suitability of climate condition for growing strawberry in Indian condition. Protected cultivation structures are used to cultivate crops under partial controlled climatic condition to get higher yield and better quality harvest. There are different kinds of protected cultivation structure normally adopted in India such as greenhouse, shadenet house and low tunnels. Exact of amount water and nutrients required to applied to get higher yield through minimizing loss of quality. The objective of the study is to assess the effect of protected cultivation structure on ambient temperature, relative humidity and crop water requirement of strawberry with drip irrigation system grown during winter season (November-February). Reference evapotranspiration was calculated using the FAO-56 Penman-Monteith equation considering the locally recorded weather parameters. Monthly average of daily reference evapotranspiration values are ranging between 1.3 to 3.3 mm day, 1.4 to 3.7 mm day and 2.0 to 4.9 mm day for polyhouse, shadenet house and open field respectively. The total water requirement of drip irrigated straw berry in protected cultivation structure is reduced by about 35.2 % under polyhouse and 25.5 % under shade net house in comparison to open field cultivation.

Keywords: Straw berry, low tunnel, shadenet house, reference evapotranspiration

Straw berry (*Fragaria ananassa*) is fruit of great commercial importance with high added value in the horticultural sector (Stewart and Folta, 2010). Strawberry is normally cultivated in the states of Himachal Pradesh, Uttar Pradesh, Maharashtra, West Bengal and Rajasthan. Strawberry cultivation during winters in north Indian plains and hills, the temperature and solar radiations available less in comparison to the other places of India. Therefore it is strongly recommended to adopt protected cultivation structures to cultivate strawberry during winter season.

Polyhouse is made up of galvanized iron structure covered with 200 micron UV stabilized transparent linear low density polyethylene (LLDPE) which partially control the micro climatic parameters of

structures (Santosh et al, 2017). Shadenet house is made up of galvanized iron or bamboo materials and covered with LLDPE net made up of 100% polyethylene thread with UV stabilized facility. It partially control the entry of light in to the structure. Therefore year round cultivation is possible under these structures (Kittas *et al.*, 2012). Cladding materials like greenhouse film and shadenet both reduces water requirements and increases irrigation water use efficiency (Moller and Assouline, 2007).

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