



Effect of different soilless culture systems on growth, yield and quality of strawberry cv. STRAWBERRY FESTIVAL

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Abstract : The study was carried out to investigate the effect of different soilless culture systems (Open-trough, Lay-Flat-Bag and Verti-Gro) on growth, yield and fruit quality of strawberry cv. STRAWBERRY FESTIVAL. Good growth and performance in terms of yield and quality was better with Open-trough as compared to either Lay-Flat-Bag system and/or Verti-Gro system. Maximum leaf area (2478.66 cm²), largest crown diameter (33.75 mm), highest shoot fresh weight (60.97 g) and root fresh weight (16.50g), highest shoot dry weight (21.10 g) and root dry weight (5.74 g) was observed in Open-trough grown plants. Earliness in flowering (43 days) and highest TSS (10.61 °B) was also achieved in these plants as well as, highest number of flowers (37.00) and fruits (22.66) and total fruit weight per plant (281.83 g) along with higher marketable fruits (78.33 %). Lower titratable acidity (0.80 %) was observed in the fruits produced from the plants grown in Lay-Flat-Bag and Open-trough (0.83 %) systems. The better performance of the plants grown in open-trough and Lay-Flat-Bag systems were reflected by higher light incidence on leaf surface and photosynthesis rates as compared to those grown in Verti-Gro system.

Key Words : Strawberry Festival, Soilless culture

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INTRODUCTION

Strawberry (*Fragaria ananassa* Duch.) is a perennial, low-creeping, stoloniferous herb belonging to the family Rosaceae. It is basically a temperate fruit crop, widely distributed due to its genotypic diversity, high heterozygous nature and broad range of environmental adaptations (Sharma and Sharma, 2004). The cultivated strawberry of today's commercial market is result of cross between scarlet (*Fragaria virginiana* Duch.) and the chilean (*Fragaria chileonsis* Duch.) in early seventeen century in France (Galletta and Bringhurst, 1990). It has a unique, highly desirable taste and flavour and is one of the most popular fruits around the world (Sturmm *et al.*, 2003).

Soilless plant production has been practiced for several millennia and it permits crops to be grown where no suitable soil exists or where the soil is contaminated in some manner or other. Maximum yields are possible and this makes the system

economically feasible in high-density and expensive land areas. According to Takeda (2000), future growth of soilless culture will depend on the development of production systems and substrates that are competitive in costs and returns with conventional agriculture

Strawberry plant growth and fruit yield are dependent on the type of growing container used and the configuration or arrangement of the containers. The volume and dimensions of containers not only affect the physical characteristics such as aeration and water holding capacity of soilless media and plant growth, but also affect the cost, which may impact production costs (Cantliffe *et al.*, 2001). The decision to choose a growing system depends on its cost, ease of use, and ability to enhance fruit quality and yields. Growing containers should be arranged in such a way that sunlight is distributed evenly throughout the plant canopy and plant population density and yield are maximized.

Greenhouse structures are very expensive to set up, that

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