



Evaluation of Strawberry (*Fragaria × ananassa Duct.*) Runner Production in Different Growing Media under Semi Automated Polyhouse

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Strawberry (*Fragaria × ananassa Duct.*), a member of the family Rosaceae, is a soft fruited, short-day herbaceous perennial plant that can successfully be grown at optimum day temperatures of 22°C to 25°C and night temperatures of 7°C to 13°C (De and Bhattacharjee, 2012). Commercially grown strawberry (*Fragaria x ananassa Duct.*) is a monoecious octoploid (2n=56) hybrid of two dioecious octoploid species, namely, *Fragaria chiloensis* Duch. And *Fragaria virginiana* Duch. (Bowling 2000) with a basic chromosome number (x) of 7. Botanically, strawberry is an aggregate fruit having seeds on the surface of a red fleshy receptacle (Darnell, 2003). The last decade has witnessed the emergence of strawberry as the leading fruit in the category of soft berries. The area and production under strawberry in the world has increased logarithmically during the last two decades as much of the crop is being grown under protected structures. In India, strawberry is cultivated on a commercial scale in the states of Maharashtra, Punjab, Haryana, Delhi, parts of Himachal Pradesh, Jammu & Kashmir, Uttrakhand, Uttar Pradesh, West International Journal of Current Microbiology and Applied Sciences ISSN: 2319-7706 Volume 7 Number 04 (2018) Journal homepage: <http://www.ijcmas.com> Effect of different growing media on plant growth and fruit yield of strawberry (*Fragaria × ananassa Duch.*) cv. Chandler under protected conditions were conducted during the cropping seasons of 2015-16 and 2016-17. The studies concluded that perlite + FYM (1:1) media was most effective in improving plant growth and yield parameters than all other treatments. The studies have also revealed that perlite as a growing media was very effective in improving plant growth parameters even when it was used alone as indicated by various growth parameters such as number of leaves, root length and number of runners. The studies have conclusively proved perlite in combination with FYM to be an effective media that can be successfully used for producing elite planting material of strawberry under polyhouse. Key words Strawberry (*Fragaria × ananassa Duch.*) cv. Chandler Accepted: 23 March 2018 Available Online: 10 April 2018 Article Info Int.J.Curr.Microbiol.App.Sci (2018) 7(4): 2724-2730 2725 Bengal (Darjeeling hills) and Rajasthan (Rana and Chandel, 2003). Strawberry cultivation In Himachal Pradesh is in its infancy and has gained momentum in the recent past. The major drawback however lies with the non-availability of good and healthy planting material owing to soil borne pathogens, nematodes and the soil conditions. Soil-borne pathogens are often associated with severe production losses in strawberry culture. To eliminate soil borne diseases and pests, the use of soilless growing media is therefore of utmost importance and is gaining popularity. A wide variety of soilless media are currently in use in different parts of the world to act as suitable substitutes for soil (De-Rijck and Schrevels, 1998). Out of these growing media, the most commonly used soilless growing media for strawberries are peat moss, rockwool, perlite and

cocopeat. The properties of the constituents of different growing media are known to have direct and indirect effects on plant growth and productivity. Among all properties of growing media, pore space, water holding capacity, bulk density, pH, soluble salt content and distribution of the particles size are important physical and chemical properties.

Material

Soil: Soil is a material composed of five ingredients- minerals, soil organic matter, living organisms, gas, and water. Soil minerals are divided into three size classes- clay, silt, and sand. The percentage of particles in these size classes is diverse.

Vermicompost: Vermicompost is a natural process whereby earthworms convert waste material with rigid structure into compost. The compost produced in this green process is traditionally and popularly used as a natural fertilizer to enhance plant growth.

Poultry Manure: Poultry manure contains 13 of the essential plant nutrients that are used by plants. These include Nitrogen (N), Phosphorus (P), Potassium (K), Calcium (Ca), Magnesium (Mg), Sulfur (S), Manganese (Mn), Copper (Cu), Zinc (Zn), Chlorine (Cl), Boron (B), Iron (Fe), and Molybdenum (Mo).

Environmental Parameters

Temperature: Strawberry polyhouse temperature should therefore begin around 8°C (46°F) at night and 16°C (60°F) during the day. Over several weeks you should gradually increase temperature. Reaching 10-12°C (50-54°F) at night, and 20-24°C (68-75°F) during the day.

Relative Humidity: As a general guide, it is often recommended that polyhouse relative humidity be maintained between 65 to 75% during the night and 80 to 90% during the day for healthy plant growth.

Oxygen Level: While above 5mg/l OF dissolved oxygen is considered marginally accepted for plant growth, greater than 8mg/l is considered as healthy. However, it is a common problem in polyhouse for DO level is the irrigation feed to fall to hypoxic (<4mg/l) levels.

CO₂ Level: The daily CO₂ concentration changed depending on plant growth and polyhouse management, but the CO₂ concentration in CO₂ enrichment polyhouse maintain approximately 640ppm from 6:00 to 10:00. It was reported that CO₂ enrichment significantly increased the yield, shoot length and total number of flowers.

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