

Cultivation of Strawberry (*Fragaria ananassa*) Under Greenhouse Condition

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SUMMARY

Strawberry (*Fragaria ananassa*) belong to Rosaceae family. This plant that is cultivated worldwide; famous for its sweet fruits that have a characteristic aroma, juicy texture, and attractive red color. People all over the world consume strawberries in large quantities either as fresh fruits or in processed foods such as fruit juice, ice cream, cakes, milkshakes or chocolates. Currently 80% of UK strawberry production for supermarkets is grown under polythene tunnels. Protected cultivation has made possible the expansion of the harvest season, particularly in the earlier period, allowing an increase in the consumption of domestic strawberry in competition with imports from the Mediterranean areas. In India, strawberry cultivated in areas like Punjab, Haryana, Himachal Pradesh and the north east of India.

INTRODUCTION

Strawberry can be produced in any season by protected conditions. We can produce according to its demand in the market. Several types of varieties have been developed in India based on the weather. Strawberry farming is generally done in the hill area in India (Awasthi, 2010). But through protected cultivation, it can be cultivated in any state. Greenhouses are mainly used in protected cultivation. Under which moisture and fertilizers are provided in time. The farmer can get more income by producing strawberries at a lower cost. Subsidy is also being given by the government to do protected cultivation.



Figure: 1 Strawberry plants with mature fruits

Climate

Strawberry grows well under temperate climate. some cultivars grown in sub-tropical climate. But also strawberry grown in protected structure its required day light period 12hrs and Rh 50-80%.

Soil

Strawberry can be grown in sandy loam soil. In soil organic matter and drainage is present. soil with ph. 5.7-6.5 is ideal for strawberry cultivation.

Varieties

Pajaro, Chandler, Tioga, Torrey, Selva, Belrubi, Fern, Local Jeolikot, Bangalore, Florida 90, Katrain Sweet, Pusa Early Dwarf.

Propagation

Strawberry is commercially propagated by runners plants. Generally, one plants produces 7-10 runners but under proper management 15 runners / plant. Runners formation can be stimulated with the application of IBA 1000ppm.

Planting Time: Sept-Oct is ideal time for planting.

Bed Preparation

Two-row system used in strawberry cultivation.

- Bed width: 60 cm
- Pathway: 50 cm
- Height: 45 cm

Plant Spacing

Two rows planted on one bed having the distance between 30 cm x 30 cm. Total plant population in 24,000 per acre plants.

Mulching

Unless plants are established through polythene, crops should be strawed down to ensure the developing fruits are prevented from coming into contact with the soil. Plastic mulching sheet mostly black and silver mulching arrest weed growth and keep the root temperature well for fast growth and prevent the loss of fertilizer nutrients through vaporisation. Keeping the inter row areas mulched with straw helps to reduced fruit decay, clean fruits, soil moisture conservation, saving irrigation water, preventing weed growth and lowering soil temperature during hot weather and protecting flower from frost.

Irrigation

Plants are irrigated with a drip tape with 5 cm emitter spacing and 9.45 ml discharge per minute per emitter. Plants receive nutrients with every irrigation and each plant receives about 140 ml nutrient solution per day.

Fertilization

Macronutrients (ppm in final solution)

N: 85 ppm P: 60 ppm, K: 90 ppm Ca: 100 ppm, Mg: 50 ppm, S: 60 ppm.

Training

Four different types of training systems viz. spaced row, matted row hill and plastic mulch are used to train the strawberry plants. Mated Row System is commonly used in India.

Weed control

Land should, where possible be free from perennial weeds either by use of herbicide or by cultivation to dry out roots or the use of stale seedbed techniques. Weeds can hamper harvesting and cause uneven ripening. In the plasticulture system, the greatest concern for weed control is to be the bare soil areas between the rows of plastic. Polyethylene sheeting can be laid up to 4 weeks before planting to encourage weed seedlings to emerge and die under the covering. Weeds growing between the rows compete with the strawberries for water or nutrients, reduce air flow which results in problems with plant diseases (Mohan,1999). Planting low growing grasses or legumes is another option for weed control.

Pollination

Strawberry is mostly self-pollinated under greenhouse conditions, the activity of these natural agents is highly restricted by the protective structure and the use of bumble bees is absolutely essential to ensure good pollination. One beehive containing approximately 50 bumblebees is sufficient for pollinating about 4,000 strawberry plants (500 m² greenhouse area).

Cooling systems: Thermal and shade screens, forced ventilation, cooling systems or fog system are used.

Heating

Diesel heaters are operated to maintain a base minimum temperature of 3-5°C on days with sub-zero temperatures.

Harvesting

Strawberries are harvested when half to three –fourths of skin develops colour. Picking should be done every second or third day. Berries should be picked along with a small stem portion attached. picking should be done in the morning.

Yield

The yield varies according to season. A yield of 20 to 25 tons per hectare is excellent, though yields upto 50 tons per hectare have been reported under protected conditions.

Plant Protection Management

Pests: Strawberries are susceptible to several common problems such as garden pests. Some of these are Aphids, Red spider mite, Vine weevil, Tarnished Plant Bug. Adult sap beetles, Spider mites.

Control: Application of malathion (0.05%) on appearance of caterpillars has been found to be effective in most cases.

Diseases

Diseases such as Anthracnose (*Colletotrichum* spp.), powdery mildew, Red core, Crown rot and gray mold may cause serious losses as well. Root Rot-Many root-rotting diseases including *Verticillium* wilt, Red stele, *Fusarium*, *Rhizoctonia*, and *Pythium* root rots affect planting of strawberries.

Control

To avoid diseases use an important cultural practice is to rotate crops. Application of carbendazim has been found to be effective in most cases.

CONCLUSION

Strawberries occupy a prominent place in temperate fruits. It contains a lot of vitamins and nutrients. The demand for strawberry fruits is also high in the market. Strawberry farmers can get more income by doing scientific cultivation. By doing this type of farming, strawberry fruit is available throughout the year.

REFERENCES

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