Greenhouse cultivation of Rose

Course Number: UGE-313

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Highlights

- Introduction
- Temperature requirement
- Growth media
- Varieties
- Propagation
- Intercultural Operations
- Harvesting
- Preservatives
- Packing

Introduction

- ✓Normally one-year-old budded plants having at least 3 canes on rootstocks like
- ✓*Rosa indica var. odorata or R. canina or*
- ✓*R. manetti are most ideal for greenhouse cultivation.*

Temperature requirement

- The greenhouse temperature is generally maintained from 20˚ C or 21˚ C on cloudy days and 24˚ C – 28˚ C on sunny days.
- However, plenty of light, humid and moderate temperature ranging from 15˚ C to 28˚ C may be considered as optimum conditions for roses.
- Ideal humidity – 60-65 % and high RH results Powdery mildew and low RH causes desiccation and reduce flower quality,
- CO2 level 1000 – 1200 ppm is favourable.

Growth media

- Well drained soil rich in organic matter and oxygen is good for roses.
- Organic matter as high as 30 percent in the top 30 cm of the growing beds is preferred by many growers.
- The pH of the soil be around 6 to 6.5 with less EC.

Varieties

Golden Gates, Grand Galla, First Red, Kiss of fire , Konfetti, Mercedez, Ravel, Noblesse, ‘Vivaldi and Starlite. etc

Layout and Planting

- Raised beds are prepared, 5 beds each of 1.20 m width per 8 m bay.
- The width of path could be 0.40 m.
- The lower number of rows per bed and higher number of paths allow better air circulation.
- Row to row distance could be 30 cm and plant to plant distance 17 cm.
- Each row of 24 m length could contain 140 plants so that planting density of 70,000 plants per hectare (7-13 plants/m2).
- Planting may be done in the months of February to April and/or July to September in a phased manner

Manuring

- Organic manures can required to be added so that top 30 cms. Of the soil has 30 % organic matter content.
- A dose of 15 kg. FYM per square metre has been incorporate in to beds.

Fertilizer Application

- Application of nutrients should be based on analysis of soil and plant.
- Nitrogen and Potassium = 200 PPM
- No. of applications = Twice a week for 7 months along with irrigation.
- Phosphorus = Soil application @ 1.8 kg/m2

Irrigation and drainage

- Rose plants require a lot of water, at least 6 mm/day i.e. about 60 cum/ha/day.

- A drainage line may be laid below the beds for disposal of excess water.

Cultural practices

Initial plant development / mother shoot bending :

- If the young plant is allowed to flower immediately after planting there is serious risk that the important structural 28 frame work of the plant will be impaired.
- First flower is pinched after on month from the date of plantation so that 2 to 3 eyes bud will sprout on main branch to grow as branches and these branches in turn will form buds.
- When the plant attains this stage of growth, the mother shoot is to be bent towards the direction of path.
- This cultural operation in rose plants is done to be initiate bottom break ground shoot.
- The maximum leaf area is required to build up a strong root system. The mother shoot is bent nearer to the bud point.

Plant structure development

- To develop more growing point and plant structure development plays an important role.
- The weak ground shoot should be bent at ground level, for forming a basic and strong frame work of plant structure for production throughout their life cycle, the strong ground shoots should be cut at 5th five pair of leaves after four and half months from the date of plantation.
- The medium ground shoots should be cut 2nd or 3rd five of leaves.

Bending in roses

- Bending helps in maintaining enough leaf area on the plants.
- The maximum leaf area is required to build up a strong root system The mass of leaves is also known as the lungs of the plant.
- Only weak and blind shoots are selected for bending.
- Bending is done on 1st or 2nd five pair of leaves.
- One can also grow roses in green house without bending by keeping some blind shoots on plants in standing position for extra photosynthesis and uptake of water nutrients.

Disbudding

- The removal of these buds is known as disbudding. It should not be done too early or too late.
- If done too early it may harm leaves and if done too late then large wounds in the upper leaf axil can take place.
- When bud attain pea-size and show slight colour then it is right time to do disbudding. For most spray varieties, the centre crown bud is to be removed.
- Disbudding is generally done on weak stem so that it can convert itself to thick stem and in future cuts can be taken.
- Thick stem produce strong sprouts whereas then stem gives out weak sprouts.

Pinching

- Removal of unwanted vegetative growth from the axil of leaf below the terminal bud is called pinching.

- This helps to get good quality flowers and buds and avoids wastage of energy in the development of auxiliary bud if done at right stage and right time. It leads to apical dominance.

Pruning

- Stems are cut back leaving 4-5 nodes on the basic stock frame, removing all weak shoots and redirecting the wayward ones.

- This may be practised in a phased manner so that flowering takes place from September to March. Generally, flowering takes place 45 days after pruning.

Support of the plants

- The support system consists of bamboo/ GI pipes/ L' angles inserted on both sides of bed at the start and end of the bed.
- Post are placed at intervals of 3 m on both sides of 29 the bed, along the sides of bed, fastened at the posts at 30 – 40 cm intervals are 14 gauge GI wires or plastic string to support the plant.
- Between the wires across the bed, thin strings can be tied to keep the width of the bed constant.
- Support system makes intercultural operation easy and protects the buds from being damaged by not allowing the stems bend into the path.

Harvesting

- As such, roses should be cut just as the buds are opening, after the sepals have almost fully curled up and the colour is fully visible.
- In small flowered varieties and Floribundas, the flowers are cut just when they begin to open the cluster.
- The cutting may be done in the evening or early morning with long stem.
- The lower end of cut stems are immediately placed in clean plastic buckets containing a clean solution of 500 ppm citric acid or in chrysal – RVB. Thereafter, the buckets containing cut roses are brought to the grading and packing Shed/Hall.
- Flower yield of 250-350 stem/m2 is considered to be ideal. Flower yield can be increased by spraying BAP 50-100 ppm before flowering flush.

Preservatives

- The followers are removed from the citric acid after 30-60 minutes (or when the leaves and petals are fully turgid) and put in the preservative solution. Thereafter, the flowers are shifted to the cold storage at 0 to 20 C. Roses may be kept for 4-5 days in a preservative solution in cold store, after that longevity may suffer.

The composition of floral preservative is as under :

- Citric acid -100-700 mg/litre
- HQC/captan - 16 mg/liter
- Sucrose - 20 mg/litre
- Cytokinin-1.0 to 100.00 m.

Packing

- Packing comprises three steps : bunching, wrapping and packing. The head of roses are evened up and their stem tied with a rubber band into bunches in 10s, 20s, 25s, or 50s depending on the ultimate market.
- They are cut so that all the stems are of the same length. The bunches are placed in preservative solution and may be shifted to the cold store.
- They are brought back to the packing hall and the buds are wrapped and the bunches are sleeved in transport polyethylene.
- The wrap is a 15-20 cm. wide plastic strip which acts as a cushion for the buds.

- Many different cardboard boxes are used for packing. For long term transport it is best to use telescopic style boxes made of corrugated fibreboard.
- The size could be 100 cm x 45 cm x 22 cm. There may be 400 to 1000 stems per box and weight may vary from 14 to 18 kg/box.
- Depending on the market, the box is either filled with one variety, one grade, or mixed colour one grade.

Thank you