

**RAMA UNIVERSITY, KANPUR, UTTAR  
PRADESH**

**Faculty of Agricultural Sciences & Allied Industries**



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**Course: Production Technology of Ornamental Crops, MAPs, &  
Landscaping ( HOR-221)**

## Lecture 6

### Carnation

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**Introduction:** Commercial cut flower with excellent vase life and sweet fragrance, very light in weight and regain its shape after placing in vase solution, commercially utilized for extraction of oil and perfumes. The carnation is a native to the Mediterranean region and belongs to family Caryophyllaceae.

#### Varieties

**Standard varieties:** Corleone, Lipstick, Design, Empire, Romana, Dark Tempo, White Tundra, Ariane, Cobra, Papaya, Monopole, Peterson Red, Scania Red, Scania White Sim, Nora, Red Diamond, Peppermint Lace, Pink Ice.

**Spray varieties:** Rony Anony, Rhodes, Light Pink, Barbara, Bagatel, Silvery Pink, Natila, Celins, White Barbara, Furove, Star Dust, Krystie.

**Climate:** Standards carnation perform well in cooler climate, whereas spray types can grow better at higher temperature. Carnation is a long day plant. Early flowering can be taken during long day than short days. Optimum night temperature during winter, spring and summer is 10°C to 11°C, 12.7°C and 13.0°C to 15.4°C respectively. Plants grows well when relative humidity is 50-60%.

**Soil:** Sandy loam soils with proper drainage and rich in organic matter content with a pH of 6.0- 6.5 are most ideal.

#### Propagation

**Terminal cuttings:** NAA treated (250 ppm) cuttings (10-15 cm long) having 4-5 pairs of leaves are broken from the mother plant and planted in sand or in coco-peat in mist chamber.

**Micropropagation:** Propagation of carnation in large scale through tissue culture has been standardized.

## **Cultural operations**

**Weed control:** Weeding of beds needs to be done regularly. Application of [fluchloralinherbicide@0.96kg/ha](#) or [pendimethalin\(30%EC\)](#) at 0.90kg a.i./ha were found very effective to control the weeds of carnation.

**Pinching:** There are three ways of pinching in carnation.

**Single pinch:** It is done once at 5 node stage by retaining 4-5 shoots for obtaining an early crop. Usually done to get early crop.

**Pinch and a half:** It is done to provide steady production of flowers but reduces the amount of first crop. In this type of pinch, the main stem is pinched and later when the resulting shoots are long enough, half of largest shoots on each plants is pinched.

**Doublepinching:** It is done first by doing single pinch followed by an other pinching of all the shoots when they are 6-8 cm in length. It is done to delay flowering.

**Deshooting:** Unwanted shoots on the flowering stems are removed with the hands when they are about 2-3 cm long. This is done to get an healthy growth of a single plant.

**Disbudding:** Important operation in standard varieties. The side buds to be removed just after appearance without damaging the leaves and the stems.

**Calyx banding:** The problem of calyx splitting can be reduced by placing a band around the calyx of the flower bud when they have just started opening.

**Manure and fertilizers:** At the time of land preparation sufficient quantity of organic manure must be added. A basal dose of N, P, K, at the rate of 20: 20: 10 g/ m<sup>2</sup> is applied three weeks after planting. Fertigation is done with N at 100 ppm and K at 140 ppm twice in a week along with other macro/micronutrients like Ca, Mg, Fe, B, Mn, Cu and Zn.

## **Diseases**

Fungal: Wilt, Alternaria leaf spot and blight, Stem rot and Grey mould.

Insect pests: Variegated cutworm, Green peach aphid, Caterpillars, Thrips, Red spider mite and Nematodes.

## **Physiological disorders**

**Calyx splitting:** Calyx may split down either half or completely. A number of factors like genetic, environmental, nutritional and other cultural practices are responsible.

**Slab side:** This disorder may arise during cooler period and buds do not open evenly, so that petals protrude on one side only.

**Harvesting:** The best time for harvesting is in the morning. The flowers are harvested by either cutting off the stem with a sharp knife or small shears. The cut flower should be immediately placed in sodium hypochloride solution (15% a.i.) at 1 ml/10 litre water.

**Grading and packaging:** The fully opened flowers of standard cultivars may be protected by

inserting the individual flowers in polyethylene sleeves. The bunches are precooled at 2-3 °C and packed in fibre board boxes (30 cm height x 50 cm width x 122 cm length) for transport.

**Yield:** Generally, 200 flowers/m<sup>2</sup> can be obtained from standard type, while 250 flowers/m<sup>2</sup> can be taken from spray type.