

CARNATION

GENERAL INFORMATION

Carnations are most important cut flowers of world. Most preferred flower for commercial purpose because of their excellent keeping quality, withstand in long distance transportation and remarkable quality to rehydrate. Europe and USA cultivated this crop on large area where as in India it is cultivated on smaller scale. Himachal Pradesh, Punjab, West Bengal, Jammu and Kashmir and Karnataka are major carnation producing states. Flowers come in different shades such as yellow, pink, lavender etc.

SOIL

It can be grown on any type of soil but soil with good drainage capacity gives best results. Rich sandy loam or loamy sand is most ideal soil for carnation cultivation. pH of soil for optimum growth of crop is about 5.5 to 6.5.

POPULAR VARIETIES WITH THEIR YIELD

Flowers are group into two major classes 1) **Standard type** 2) **Spray type**.

Varieties in 1) standard carnations are Ariane, Corso, Candy Master and Tanga, Solar, Star, Athena, Happy Golem, White Liberty, Emotion, White Dona, Lisa, Domingo, Master, Gaudina

2) spray carnations, the varieties include Rhodos, Alliance, Barbara, and West Moon. Estimade, Indira, Vera, Durago, Berry, Orbit Plus, Sunshine, Autumn, Rosa Bebe, Spur, Suprema.

LAND PREPARATION

Use raised bed for cultivation. Prepared raised bed of 15-20cm height, 1-1.2m width and of convenient length. Keep distance of 45-60cm between beds.

SOWING

Time of sowing

Under greenhouse controlled environment, it can be grown throughout the year. For northern plains, planting is generally done in month of September-November and flowers are harvested in February to April.

Spacing

For planting purpose suckers are used. Planting can be done on top of raised bed with spacing of 15cm x 15cm or 20cm x 20cm. Keep distance of 45-60cm between two beds.

Method of sowing

Direct sowing of suckers on raised bed.

SEED

Seed Rate

For one acre near about 75,000 suckers are required. Within 21 days, the cuttings normally develop good root system.

Seed Treatment

Before planting, treat suckers with NAA@1000ppm (1gm/Ltr of water) it will help to improve root formation.

FERTILIZER

Fertilizer Requirement (gm/plant)

UREA	SSP	MURIATE OF POTASH
67	125	17

Nutrient Requirement (gm/plant)

NITROGEN	PHOSPHORUS	POTASH
30	20	10

For good growth of crop, apply proper amount of fertilizer. Apply well decomposed cow dung@5-10kg at time of land preparation. Apply dose of N:P:K@30gm:20gm:10gm in form of Urea@67gm, SSP@125gm and MOP@17gm in green house.

WEED CONTROL

To control monocot weeds, use Glyphosate@300 g/acre and for dicot weeds, apply Oxyfluorfen@200 g/acre as pre-emergent treatment.

IRRIGATION

Frequent watering is needed for carnation crop. Apply water 2-3times in a week during summer whereas in winter apply water for 2-3times with 15days interval. Apply water immediately after planting.

PLANT PROTECTION



- **Pest and their control:**

Red Spider Mite: It is serious pest of carnation. They feed on leaves and suck sap thus causes yellowing of leaves.

If infestation is observed, take spray of wettable Sulphur@1.5gm per Ltr of water or Propargite@1ml or Fenazaquin@1ml or Dicofol@1.5ml per Ltr of water.



Bud Borer: It is also serious pest of carnation. On bud they lay eggs and larva bore into bud and eat bud, thus destroyed bud completely.

If Infestation is observed, take spray of Proclaim @ 0.2ml or Deltamethrin @ 0.5ml or Indoxacarb @ 0.5ml or Thiodicarb @ 0.4gm per Ltr of water.



Aphid and Thrips: They suck sap from leaves and causing yellowing of leaves. They secrete honey dew like substance and black sooty mould is developed on affected areas.

If infestation is observed take spray of Fipronil @1.5ml or Imidacloprid @0.5ml or Acetamiprid @0.4gm per Ltr of water.



- **Disease and their control:**

Fusarium wilt: Serious disease of carnation. Wilting of plant is observed along with rotting of stem below ground level. In severe condition plant die rapidly. Remove infected plant and do drenching of soil with Ridomil@2gm/litre of water.



Alternaria Leaf Spot: On leaves, stem, and some time on flower, small purple spots are observed. In severe infection plant get die.

If infestation is observed, spray crop with Zineb @1gm/litre or Mancozeb @1.5gm/litre or Hexaconazole @1ml/litre or Propiconazole @1ml/litre of water.



Rust: Reddish to dark brown powdery masses of spore observed on stem, leaves. In case of severe infection leaves get turn yellow and plant get die.

To avoid infestation of this disease, take preventive spray of Mancozeb @ 1.5gm/lit or Zineb @ 1gm/lit and sulphur @ 1gm/lit of water.

HARVESTING

When to harvest is depend upon bud size and petal growth. Carry out harvesting in morning. Cut should be given on stem with help of sharp knife with care to avoid injury to stem or mother plant. In production period, cut flowers every two days. After harvesting of flower, immediately keep them in water or in preservative solution (Citric acid + Ascorbic acid@5ml each/lit of water) for atleast 4hours. Avoid exposing harvested flower to direct sunlight.

POST-HARVEST

After harvesting complete grading operation and then bunch them properly. Flower are stored in cold storage at temperature of 2-4°C.

REFERENCES

1.Punjab Agricultural University Ludhiana

2. Department of Agriculture

3. Indian Agricultural Research Institute, New Delhi

4. Indian Institute of Wheat and Barley Research

5. Ministry of Agriculture & Farmers Welfare