Capsicum annum L.

(Bell Pepper)

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Bell Pepper

Scientific classification

Scientific Name : *Capsicum annum L.*

Family : Solanaceae

C.N : 2n=24

Origin : Mexico

Common name : Shimla Mirch

Introduction

- *Capsicum* is a genus of Solanaceae family.
- Its species are native to the Mexico and Guatemala. where they have been cultivated for thousands of years.
- In modern times, it is cultivated worldwide, and has become a key element in many regional cuisines.
- In addition to use as spices and food vegetables, capsicum has also found use in medicines.
- The generic name is derived from the Greek word κάπτω (*kapto*), meaning "to bite" or "to swallow."

Importance

- Capsicum have important role in our daily diet.
- They are used to increased the palatability and taste of cooked vegetables.
- They are used to prepare pickles, soups, Sauce etc. and it is also cooked as a vegetable and also mixed with potato.

Nutritive value

Nutrient	Amount per 100 gm
Proteins	860 mg
Carbohydrates	4.6 g
Fat and Fatty acid	170 mg
Vitamin C	80 mg
Fe	340 mg
Ca	10 mg

Climatic Requirements

Day Temperature (^{0}C)	21-28
Night Temperature (^{0}C)	18-20
Humidity (%)	60-65

Area and Production

Total area under capsicum cultivation in India is 30 thousand hectares with production of 167 thousand metric tonnes. In Punjab bell pepper covers an area of 0.31 thousand hectares with production of 4.64 thousand metric tonnes (National Horticulture Board, 2013-14).

Varieties

- Open-pollinated capsicum still dominate the market but more recently a number of hybrids are becoming popular among the growers. Hybrids are superior in yield and quality fruits.
- Open-pollinated varieties are Arka Mohini, Arka Gaurav, Arka Basant, California Wonder and Pusa Deepti.
- Bharat, Indra, Sun 1090 and Green Gold are popular hybrids.

Raising Seedling

- The seeds should be treated with Thiram or Bavistin @ 2g/kg.
- About **100-150 g** seed required for 500 sq.m area.
- Seedlings are ready for transplanting 4-5 weeks after sowing.

Seed germination

- Germination and emergence of Capsicum is slow at room temperature and further delayed by cooler conditions.

- At 25^0C Capsicum requires 3.5 days for radical emergence, while at 15^0C, 9 days.

- Emergence from 1.2 cm soil depth takes 8-9 days at temperature from 25-35^0C.

Planting material

- Disease free seedlings of three to four weeks old are used for transplanting, with ideal seedling height of 16-18cm

Planting method

- Two rows of Capsicum seedlings are planted in a zigzag method on the bed.

Planting Distance

- 40 cm between two plants
- 50 cm between two rows
- 60 x 60 cm also used.

Steps in plantation of Capsicum

- Pebbles, clods etc. should be removed from bed surface.
- Adequate moisture must be available in the soil at the time of plantation.
- The seedlings should be dipped in Bavistin (0.2%) solution at the time of plantation.
- Planting should be avoided during the hottest period of the day/year & should normally be done during morning hours or late in the evening.

Planting of seedlings

Care after plantation

- The soil around the plants must be kept humid but not soaking wet.
- Irrigate the plant immediately after plantation.
- During periods with strong sunshine or high temperature, the young plants must frequently be given an over head spray of water to assist establishment & reduce post planting losses.
- For first three weeks the irrigation should be done only by using sprayer & later on irrigation should be done by drip system.

Mulching

- The mulch reduces evaporation of water from the soil and prevents compaction of the soil surface.
- White (reflective) plastic mulches are recommended to control weeds, conserve moisture, reduce humidity and improve light conditions and also to avoid soil contact and prevent diseases.
- The most common straw mulch to be applied to soil when capsicums are about 2 feet height.

Irrigation

- Frequent irrigation is essential for plant growth, fruiting and yield.
- The crop should be irrigated at 3-6 days interval.
- However during summer more irrigation is required due to higher surface evaporation.
- Now a days Drip method of irrigation is practiced.
- Drip system is highly economical and produces quality capsicums.

Manures and Fertilizers

- **1 tonnes** of FYM or compost are applied at the time of field preparation for 1000 sq.m. area.
- In capsicum **10 kg N, 5 kg P & 5 kg K** should be applied per 1000 sq.m. area.
- Fertilizers are applied in four equal doses.
- First applied at the time of transplanting, remaining doses are applied at 4th, 11th & 13th week after transplanting.

Cultural Practices

Capsicum is a nine months to one year crop and production starts after 60 to 75 days from the date of plantation. The different cultural practices to be carried out are as below:

- Hoeing
- Weeding
- Earthing up

Fruit thinning

- When there are too many fruits on the plant, it is necessary to remove some fruits, to promote the development of remaining fruits. This operation is called as fruit thinning.

- Fruit thinning is done when the fruit is of pea size.

- This practice is normally followed to increase the size of fruit.

Maturity indices

- Harvesting of capsicum is done at green, breaker and coloured stage.
- It depends upon the purpose for which it is grown and distance for the ultimate market.
- In India fruits are harvested at breaker stage for long distant markets.
- For local market, it is better to harvest coloured stage.

Harvesting

- Harvesting starts after 60 to 75 days after transplanting & should be done with the help of sharp knife.
- Harvesting at the proper stage of maturity, careful and minimal handling of the produce will help in maintaining better fruit quality and reduce storage losses.
- Harvesting is generally done during morning and evening hours.
- Avoid harvesting immediately after fogging to check the disease and pest under control and to maintain better keeping quality of fruit.

Post harvest

1) **Cleaning and Grading:**

- All damaged and malformed capsicums should be removed.
- Those with dirt adhering to their surface can be cleaned by wiping the surface with a moist soft cloth.
- The capsicums should be graded into same size and colour lots according to market requirements.

2) **Sorting:**

- Sorting is done on the basis of shape and weight of capsicum.

Post harvest

3) Packing

- Capsicum is packed in cartons and should hold about 10 kg or 12 kg of capsicum.
- Mostly farmers use apple boxes (used ones) for packaging capsicum for local market.
- Crates are also used for local market transportation.

4) Storage

- Capsicum can be stored in a cool room at a temperature of 7–10 °C for up to 3 weeks if required.

Insect-Pest and its control

1) **Chilli Thrips**

- Thrips is the common pest which affects the crop throughout its life cycle. But they are more severe when plants begin to flower. These small insects suck the sap from the foliage and lacerate the leaf tissue, which result in curling of leaves and fall down of flowers prematurely.

❖ **Control Measures**

- Thrips can effectively be controlled by spraying carbaryl 50 W @ 3 gm or Zolene @ 3 ml or Dimethoate (Rogor 30 EC) or Monocrotophos (Monocil) 1 ml per litre of water at fortnightly interval

Chilli thrips

Insect-Pest and its control

2) Pod Borer

- The caterpillar eat leaves and later on bores the pod, which result in the deterioration of quality and market price of the product.

❖ **Control Measures**

- The control measures are timely spraying the crop with Quinalphos (Exalux-25 EC) @ 4 ml or carbaryl 50 W, (Sevin 50 W) @ 3 gm per litre of water, starting from flower bud formation.

Pod borer

Disease and its control

1) **Damping Off:**

- It is a serious disease of Capsicum seedlings and mainly occurs in nursery bed. The disease infected seedlings rot at ground level and then the plants fall over ground. The seedlings die in patches.

❖ **Control Measures:**

- The seed bed should be treated with Formalin before sowing of seeds.
- The seeds should be treated without water (30 minutes at 52 ^{0}C) Cerasan or Agrosan before sowing of seed.
- The seedlings in the nursery should be sprayed with any fungicides at a regular interval.

Damping off

Disease and its control

2) Bacterial Leaf Spot:

- Small dark, greasy spots are formed on leaf, petiole and tender parts, of the plant.
- Water soaked spots appear on green fruits.
- In severe cases the leaf may drop off arid cause considerable loss to the crop.

❖ **Control Measures:**

- Spraying Agrimycin at 200 ppm plus copper oxychloride 0.3 per cent controls the disease effectively.

Bacterial leaf spot

Physiological Disorders

1) Pepper Stippling

- Associated with Ca deficiency. Small (0.25 inch) spots occur inside the fruit wall as the pepper reaches maturity.
- These spots are brown or black and result in green or yellow spots occurring on the fruit surface.
- Potassium deficiency may also play a role in this disorder.

Physiological Disorders

2) Sunscald:

- Occurs when ripening fruit is not adequately shaded by leaf cover.

- Large sections of the exposed fruit can develop gray or brown paper-thin areas. These areas render the fruit unsalable

Physiological Disorders

3) Abnormal fruit shape:

- The development of abnormal shaped fruit is generally associated with sub-optimal growing conditions at flowering and pollination which result in poor flower development or poor pollination

References

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Questions


Thank You