Introduction
Cauliflower is among the most widespread winter vegetables produced globally. Cauliflower is predominantly produced for its small, white, tender, and edible curd, which is both eaten fresh and processed. Cauliflower is a rich source of vitamins, minerals, and antioxidants and plays an essential role in human nutrition. India is among the world's largest producers of cauliflower, and the crop significantly contributes to the farmers' livelihood, particularly during the rabi season.

Origin & Significance
Cauliflower is a member of the family Brassicaceae and is considered to have originated in the Mediterranean region. It is said to have been introduced in India during the Mughal era, after which it gained wide acceptance based on its ability to adapt to various agro-climatic conditions. The crop is of very high economic significance in Indian agriculture as it is among the leading winter vegetables cultivated on large scales that not only contribute largely to domestic consumption but also to exports. Cauliflower farming generates income and employment for millions of marginal and small farmers throughout the nation.

Nutritional Value (per 100 g edible portion)
Cauliflower is very nutritious and is a part of a well-balanced diet. One 100 g serving contains approximately 25 kilocalories of energy, along with 1.9 g of protein, 5.0 g of carbohydrate, 2.0 g of dietary fiber, and 0.3 g of fat. It is particularly rich in Vitamin C (48 mg), which supplies nearly 80 percent of the daily need.

It is also rich in Vitamin A (20 IU), Folate (57 µg), Calcium (22 mg), Phosphorus (44 mg), Iron (0.4 mg), Potassium (299 mg), and Magnesium (15 mg). Other than these nutrients, cauliflower is very rich in antioxidants like glucosinolates and isothiocyanates, which possess anticancer activity.
The nutritional advantages of cauliflower are tremendous. Daily intake facilitates strengthened immunity, bone health by virtue of its calcium and vitamin K properties, enhanced digestion owing to dietary fiber, and prevention of chronic diseases because of its antioxidant compounds. As a low-calorie vegetable, it is also excellent for weight control and is commonly suggested in balanced diets.

Climate and Soil Requirement
Cauliflower is a cool-season crop that prefers to grow in an optimum temperature gradient of 15–20°C. Both excessive heat and frost are extremely harmful to the crop and have negative impacts on curd development and quality. Well-drained loamy soil with organic matter is suitable for successful cultivation. The ideal soil pH for cauliflower growth is between 5.5 and 6.5, because too acidic or alkaline soils decrease growth and production.

Better Varieties
Cauliflower varieties are categorized into early, mid-season, and late based on maturity. Early varieties like Pusa Katki and Pusa Early Synthetic are ideal for early harvest. Mid-season varieties like Pusa Sharad and Pusa Snowball-16 are well-suited to moderate conditions. Late varieties like Pusa Snowball K-1 and Pusa Himjyoti are suited to cooler temperatures and yield good quality curds.

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एग्रीकल्चर फ़ोरम फॉर टेक्निकल एजुकेशन ऑफ़ फार्मिंग सोसायटी

कोटा, राजस्थान

Cauliflower

संकलन

Subhash Verma, Anil kumar, Rajnish Kumar, Manjul Jain
Assistant Professor, School of Agriculture,
Eklavya University, Damoh- (M.P.)-470661

Cultivation Practices

For proper cultivation of cauliflower, the land should be well prepared to a fine tilth with well-levelling raised beds that allow proper drainage. Sowing time differs from June to November based on the variety of cauliflower being cultivated. A seed amount of approximately 400–500 g/ha will be enough for growing proper seedlings. The seedlings become ready for transplanting at an age of 4–6 weeks. Early ones are normally transplanted at 45 × 45 cm spacing and late-maturing ones at 60 × 60 cm spacing to fit their wider sizes.

The crop is well responsive to manuring and fertilization. Farmyard manure applied at the level of 20–25 tonnes per hectare of land adds organic matter and structure to the soil. 120:60:60 kg NPK balanced fertilizer application per hectare is suggested, of which the nitrogen shall be in split doses for more efficient utilization. Adequate irrigation for healthy curd formation is necessary, but due precautions shall be taken for avoiding waterlogging, which has a detrimental effect on growth. Timely earthing up and weeding as intercultural measures are required to maintain the health of the crop and provide support to the forming curds.

Pest and Disease Management

Cauliflower is attacked by many insect pests and diseases. Of the insect pests, diamondback moth is one of the most damaging, and its infestation may be controlled well by foliar spraying of biopesticides like Bacillus thuringiensis (Bt) or neem extracts. Aphids also inflict serious damage by sucking sap from the plant, and aphid infestation may be brought under control by sprays of insecticides like Imidacloprid or Dimethoate according to recommended levels.

The important diseases of cauliflower are damping off, black rot, and downy mildew. Damping off is a seedling disease and can be controlled by treating seeds with fungicides like Captan or Thiram. Black rot due to Xanthomonas campestris can be reduced by sowing disease-free seed and adopting crop rotation. Downy mildew is also a severe disease and can be controlled by sprays protective fungicides like Mancozeb at regular intervals.

Harvesting and Yield

Cauliflower should be harvested when the curds are tight, well-developed, and white. Over-maturity has to be avoided since the curds become loose and yellow, thus affecting both the quality and market price. Under optimal management practices, the crop can produce about 200–300 quintals per hectare.

Post-Harvest Handling

Following harvesting, the curd needs to be trimmed and also 4–5 wrapper leaves to safeguard it during transport and handling. For storage, cauliflower needs low temperatures of 0–5°C with high relative humidity of 90–95 percent that enable it to remain fresh for 3–4 weeks. Curds need to be packed in perforated bamboo baskets or crates for proper ventilation and minimizing post-harvest losses.

Uses and Value Addition

Cauliflower is largely eaten fresh in many forms of culinary dishes like curries, soups, pickles, and fried foods. Cauliflower also has great scope for value addition in the form of frozen florets, dried products, and pickles. With very high demand both at home and abroad, cauliflower has great export potential and is thus a commercially remunerative crop for farmers.