

## Scientific Cultivation of Okra

Narendra Kumar<sup>1</sup>, Imatiyazahamed Teli<sup>2</sup>, Kishorkumar G K<sup>3</sup>, Yogesh M<sup>4</sup>, Pramod B S<sup>5</sup>

**Botanical name:** *Abelmoschus esculentus* (L.) Moench)

**Family:** Malvaceae

**Origin:** Ethiopia

### Importance and uses:

- ❖ Okra is rich in vitamins, Ca, K and other minerals.
- ❖ It is grown for its green, tender and nutritive fruits which are cooked in curry and are also used in soups besides being processed as canned and frozen.

**Soil:** Okra grows best on light soils, such as sandy loam and loam, yet it also produces well in heavy soils that have sufficient drainage during the wet season. Because it is susceptible to water logging, the soil needs to be well-drained. Its cultivation requires a pH range of 6.0 to 6.8.

**Climate:** It is a warm-season crop that responds to changing environmental conditions and thrives luxuriantly in hot, muggy weather. At least 18°C, and ideally 25–30°C, is the ideal temperature for improved seed germination. 24–27°C is the ideal temperature for its better growth, whereas

temperatures exceeding 42°C result in blossom drop. For better pollination and subsequent seed germination, a temperature range of 30–35 degree celsius is preferred. Varieties recommended for cultivation in different parts of India

### Open Pollinated varieties:

Parbhani Kranti, Punjab Padmani, Arka Anamika, Arka Abhay, Pusa A-4, Varsha Uphar, Hisar Unnat, Hisar Naveen, HBH-142 (Hybrid) Azad Kranti, Azad Bhindi1, Kashi Pragati, Kashi Vibhuti, Kashi Kranti, Phule Utkarsh, Gujarat Anand, Okra-5. Kerala: Kiran, Salkeerthi, Aruna, Susthira

- ❖ Pusa Sawani, Parbhani Kranti, Varsha Uphar and Pusa A-4 varieties find favour for export.

- ❖ **Cultivars suitable for growing in Himachal Pradesh-** Pusa Sawani, Prabhani Kranti, P-8, Arka Anamika and Palam Komal

### Agronomic practices

Narendra Kumar<sup>1</sup>, Imatiyazahamed Teli<sup>2</sup>, Kishorkumar G K<sup>3</sup>, Yogesh M<sup>4</sup>, Pramod B S<sup>5</sup>

<sup>1&2</sup>Ph.D. Scholar, Department of vegetable science, I. G. K. V. Raipur, Chhattisgarh 492012

<sup>3,4&5</sup>Ph.D. Scholar, Department of Vegetable Science, Univ. of Horti. Sciences, Bagalkot 587104

### Sowing times

Seed germination can be enhanced by soaking

Indo-Gangetic plains	<ul style="list-style-type: none"> <li>✓ Spring-summer crop: February-March</li> <li>✓ Autumn-winter crop: July- September</li> </ul>
Eastern India	✓ January-February
Western & South India	✓ November to March-April. and crop is over by February
Hilly regions	✓ April-June
Most parts of India	✓ Rainy season crop: June-July.

### Problems associated with Okra cultivation

- The poor seed germination and erratic crop stand are the major problems in spring-summer crop due to low temperature in early spring, which can be overcome by selecting fresh and vigorous seed. Another problem is of shoot and fruit borer or spotted worm fall.
- Similarly, in rainy season crop, the major problems are incidence of Yellow Vein Mosaic disease which can be overcome by growing resistant varieties. Crop stand may be affected if proper drainage is not provided. Problem of shoot and fruit borer is more serious during September.

**Soil preparation:** Okra should be planted in well pulverized field by ploughing first with soil turning plough and afterwards with 4 to 5 ploughings with country plough. Ploughing should be followed by levelling.

**Seed Rate (kg/ha):** 15-20 (Spring-summer crop) and 10-12 (Rainy season)

the seed in water for 12-24 hours or GA3 at 10 and 50 ppm or immersing the seeds for 5 minutes in pure acetone

**Spacing :** 30-45cm × 15 cm(Spring-summer) and 60cm × 20-30 cm (Rainy season)

**Manures and fertilizers:** FYM @200-250 quintals per ha should be applied at the time of field preparation. In addition, apply 60-75 kg N, 50-60 kg phosphorus (P<sub>2</sub>O<sub>5</sub>) and 50-60 kg potassium (K<sub>2</sub>O) kg per hectare depending upon the fertility status of the soil. Apply half of nitrogen and full dose of phosphorus and potassium at the time of sowing and remaining nitrogen can be top dressed after one month of sowing.

**Interculture and weed control:** Weeds cause more than 50% reduction in the marketable yield of okra. Frequent weedings are necessary to keep the crop weed free. First weeding may be done at 15-20 days and second at 40-45 days after sowing to keep the crop weed free at critical stages. Pre-emergence application of Pendimethalin @1 kg ai/ha or Alachlor @ 4litres/ha or

Fluchloralin @ 2.5 litres/ha + 1 hand weeding is effective to keep crop weed free.

**Irrigation:** Pre-sowing irrigation is necessary especially in spring-summer crop which ensures adequate germination and uniform crop stand. Then, next irrigation is to be provided after seed germination and the subsequent irrigations at 4-5 days interval during summer crop. Drainage of water is required as per frequency and intensity of rains during monsoon season.

**Harvesting:** The fruits attain marketable maturity in about 45-60 days after sowing. Only tender and small fruits (6-10cm long) should be harvested preferably in the evening or morning. Frequent pickings are necessary for getting better quality fruits and handsome prices in the market. Delayed harvesting though increase yield but reduce the quality and profit margin, and even sometimes the entire produce is rendered unfit for marketing. For export purpose, dark green fruits about 6-8cm long should be harvested.

**Yield:** 80-100q/ha (Spring-summer) and 120-150q/ha (Rainy season)

**Post-harvest management:** For local markets, fruits are cooled and packed in jute bags or baskets, covered or stitched and then water is sprinkled over the bags, which helps in cooling as well as maintaining the turgidity of fruits thereby saving the produce from bruises, blemishes and blackening. For export,

5-8 kg size perforated paper cartons are ideal wherein pre-cooled fruits are packed and transported preferably in refrigerated vans.

**Storage:** Fresh okra fruits can be stored at 7-9°C at 70-75% relative humidity for a couple of days without much loss of colour, texture or weight. Fruit can be stored for 2 weeks at 8-10°C at 90% relative humidity.

### **Disease Management:**

**1. Powdery Mildew:** White powdery growth on both sides of the leaf. The diseased leaves drop off from the plant.

#### **Management:**

✓ The disease can be controlled effectively by spray Sulfex (0.2%) or dinocap (0.05%) at 10 days interval.

**2. Cercospora Leaf Spot:** There is appearance of spots in the leaf with grey centers and red borders. When the disease is severe, complete defoliation occurs.

#### **Management**

✓ Seed treatment with is effective to manage the disease.

✓ Spray mancozeb (0.2%) or Captan (0.2%) or carbendazim (0.1%) at the appearance of the disease incidence to check the infection.

**3. Yellow Vein Mosaic Virus:** The veins of diseased leaves become yellow resulting in homogenous interwoven net work of yellow veins. In extreme cases, the infected leaves become totally yellow or

cream colour. Infected plants remain stunted and bear very few deformed and small fruits. The disease causes heavy loss in yield if the plants get infected within 20 days after germination. It is transmitted by white fly.



**Management:**

- ✓ Disease incidence can be reduced by checking the development of insect vector by the application of 4 to 5 foliar sprays of recommended insecticides.
- ✓ Infected plants must be removed from the field
- ✓ Grow resistant varieties like P-8, Varsha Uphar, Arka Anamika, and Parbhani Kranti.

**4. Root rot (*Fusarium solani*):** Severely infected plants die as their roots turn dark brown. The fungus perpetuates in the soil or in the infected plants debris.

**Management:**

- ✓ Seed treatment with carbendazim @ 3g/kg of seed
- ✓ Soil drenching with carbendazim @ 0.1%

- ✓ Follow long crop rotation

**Insect- pests:**

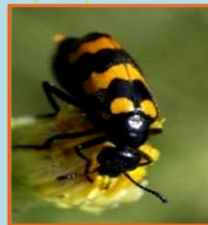
**1. Fruit borer:** The insect larvae are light yellow with black spots. They bore into the shoots during vegetative stage and feeds inside as a result of which the shoots droop down and dry-up. In the later stages, it infests the fruits which become disfigured and show holes.

**Management:**

- ✓ Grow tolerant varieties like Perkins Long Green, Varsha Uphar.
- ✓ Remove and destroy damaged shoots and fruits.
- ✓ Application of carbaryl (0.1%) and malathion (0.05%) is effective.



**Fruit borer**



**Blister Beetle**



**Whitefly**

**2. Flower feeding beetle/ Blister beetle:** Beetles feed on pollen, petals of flowers and flower buds, thus affecting fruit set adversely. Management

- ✓ Hand collection and destruction of beetles. Application of 0.1% carbaryl

or 0.05% malathion or 0.01% cypermethrin is effective.

- 3. White fly:** It causes chlorotic spots on leaves. The insects secrete a sticky substance known as honeydew, which covers leaves and flowers. As a result, the sooty mould develops and plant growth is reduced.

