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# Open Field Farming Practices for Red Okra

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***Abstract***

As the population rises day by day demand of food inclined rapidly. Vegetables are the major source of daily food consumed by humans. In today's world a new trend emerges in vegetable cultivation practices that is the production of coloured vegetables. Red okra is a coloured vegetable grown on a large area around the world. It is accepted in market due to its delicious taste after cooking. Red pods become more tasty than green pods. But sometimes farmer follows irrelevant cultivation practices which causes loss in yield. It can be grown in open field with few management practices and results in rise of farmer's income as it provides higher yield and high market potential. Due to its attractive colour, it offers high market value.

**Keywords:** Red okra, Plant protection, Higher yield, Low cultivation cost, Quality

## INTRODUCTION

Red okra is annual, erect, herbaceous and fast-growing plant cultivated as vegetable crop throughout the world. It is a flowering plant which withstand in warm season. Fresh okra fruits are important and consumed as raw vegetable, salads, soups and stews, fresh or dried, boiled or fried. It possesses antidiabetic, anti-cancerous, anti-inflammatory, antimicrobial and anti-obesity properties and also prevents cardiovascular diseases. It is a rich source of minerals, vitamins and dietary fibres. Colour of red lady finger is due to presence of anthocyanin and phenolics. Anthocyanins are pigments present in vascular parts of plants. India is the largest producer of okra in the world with an area of 509 thousand hectares and production of 6095 thousand metric tonnes and productivity 12 metric tonnes. In India, leading okra growing states are West Bengal, Bihar, Odisha, Jharkhand, Andhra Pradesh, Chhattisgarh, Madhya Pradesh, Haryana, Assam and Punjab (Kumar *et al.* 2019).



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**Common Name:** Lady Finger or okra (English), Bhindi (Hindi) and gumbo (USA)
**Botanical Name:** *Abelmoschus esculentus* L.
**Origin:** Ethiopia
**Family:** Malvaceae
**Chromosome number:** 2n=130
**Edible Part:** Mature Pod
**Breeding System:** Often Cross Pollinated

**Climate And Soil Requirements**

Okra can grow in both tropical and sub-tropical climate. Performance of plants is more vigorous in rainy season as compare to spring season. It needs long warm and humid season. Optimum temperature for seed germination is 29 $^0$C. Seeds fail to germinate if temperature falls below 20 $^0$C. Okra can be grown on all type of soils, but it performs best in sandy to loam soils. Light soil must be preferred for okra cultivation. Moreover, it can tolerate slightly acidic soils also. Don't grow on alkaline, saline and soils with inadequate drainage system. (Choudhary *et al.* 2022)

**Cultivar Selection**

preferences. Okra is warm season crop. Also, choose cultivar which have higher yield efficiency to get higher returns.

Recommended Cultivars: Kashi Lalima (VROR-157)

Hybrids: Red Velvet, Kumkum, Royal Burgundy

**Time of Sowing and Seed Rate**

- **Spring Season**: In February 40-45 kg seeds, while in March 20-25 kg seeds per hectare is recommended.
- **Rainy Season**: In June-July, use 10-15 kg seeds per hectare.
- **Optimum Time:** After 1$^{st}$ fortnight of June in Punjab region.

**Seed Treatment**

Soak the seeds in water for 24 hours before sowing to break the seed dormancy. Treat seeds with Imidacloprid @5 ml kg$^{-1}$ of seed which is followed by Trichoderma viride @ 4 g kg$^{-1}$. It helps seed for better germination as well as protection from soil borne diseases.


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**Field Preparation**

- Land should be ploughed twice or thrice properly. Add well rotten FYM @50-60 tonnes per hectare and mix properly.
- Plants possess deep tap root system so it is grown on ridges for spring season sowing and on flat beds sowing is done in June-July.

**Method Of Sowing and Spacing**

Seeds are sown manually through dibbling method at 1-2 cm depth. Optimum row to row spacing is 45 cm while plant to plant is 15 cm. In the case of late sown crop use wide spacing.

**Manures And Fertilizers**

- Apply N:P: K @100:50:50 kg per hectare.
- Full dose of Phosphorus and Potassium as a basal application.
- Nitrogen applied in 2 splits. 1$^{st}$ split along with P and K and 2$^{nd}$ split of N after first picking.

**Irrigation**

Sowing of seeds is done in adequate moisture. If 1$^{st}$ irrigation applied immediately after sowing, it leads to formation of hard pan results in poor germination of seeds. 1$^{st}$ irrigation shoul be applied after 4-5 days of sowing. Further irrigations should be given at 10-12 days interval.

**WEED MANAGEMENT**

- Spring season crop needs 2-3 hand weeding or hand hoeing at fortnight interval.
- If soil is at severe attack of weeds, then use pre-emergence herbicide viz. Pendimethalin @ 2.5 L ha$^{-1}$.

**Hoeing And Earthing Up**

Purpose of hoeing is to break hard pan of soil and removal of weeds from their roots and during hoeing loosen soil is used for earthing up the roots properly with help of hoe or spade, earthing up results in providing support to tackle high wind speeds in open field. It is done along with 2$^{nd}$ weeding.



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**Plant Protection Measures**

**Major Insect Pests**

| Name of Insect | Symptoms | Control Measures | Image |
|---|---|---|---|
| Jassid (*Amarsca biguttula*) | Premature defoliation along with yellowing and curling of margins in bronze color. | Spray 100 ml imidacloprid in 250-300 litres of water per hectare. |  |
| Whitefly (*Bemisia tabaci*) | Affected leaves become black due to sooty mould development. | Spray 200 ml Ecotin 5% in 250-300 litres of water per hectare |  |
| Spotted Bollworms (*Earias sp.*) | Infected fruits show number of holes. | Spray 125 ml chlorantraniliprole in 250-300 litres of water per hectare. |  |
| Fruit borer (*Helicoverpa armigera*) | Caterpillars and adult bores into fruit and make holes which cause reduction in economic yield. | Use of light traps. For chemical control use Emamectin benzoate 5 SG 220g $ha^{-1}$. |  |

**Major Diseases**

| Name of Disease | Symptoms | Control Measures | Image |
|---|---|---|---|
| Yellow Vein Mosaic (*Virus*) | Veins of plant leaves turn yellowish and reduction in yield | Grow resistant varieties i.e. Kashi Lalima. or Destroy infected plants or bury them out from field. |  |
| Damping off (*Pythium sp.*) | Seedlings are not able to germinate at its regular potential or die at initial stage. | Use treated and disease free seed. |  |



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| | | | |
|---|---|---|---|
| Cercospora leaf spot (*Cercospora hibisci*) | Small brown to blackish spots appeares on both surface of leaves | Spray @ 0.5% Mancozeb . |  |
| **Powdery mildew (*Erysiphe cichoracearun*)** | White coloured cotton like material appear on plant foliage, which abrupt photosynthesis. | Spray wettable sulphur @ 2 g per litre of water. |  |

**Major Deficiency**

| Deficient Nutrient | Symptoms | Correction | Image |
|---|---|---|---|
| Boron | Pod turns circular in shape from the end part.<br>Shape of pod is fully disrupted | Spray Borax @0.5% per litre of water. |  |

**Harvesting And Yield**

- Generally, first harvest is ready in about 40-45 days after sowing.
- From flowering to maturation, it takes about 7-8 days or when it attains about 8-10 cm height and fully developed red color. Red okra brings about 140-150 q $ha^{-1}$ yield.

**Storage And Shelf Life**

Okra acquires short shelf life at room temperature. It over matures within few hours and losses its colour and hardiness. For storage of okra needs 12.5 $^0$C temperature in ventilated packages to reduce decay, weight loss and provides long shelf life (Veazie and Collins, 1992).

**Conclusion**

Red coloured okra is most preferable vegetable in market. It brings maximum yield as well as maximum output returns with few management techniques. It can be easily sold in markets at Rs.60 $kg^{-1}$ which increases farmer's income as compare to green okra. Additionally, taste of cooked red pods is much better than common green pods.



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