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Package of practices for organic farming in okra [*Abelmoschus esculentus* (L.) Moench]

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Okra [*Abelmoschus esculentus* (L.) Moench] is one of the major vegetable crops of India. It is also called Lady's finger in English, gumbo in French, quimgombo source in Spanish, bhindi in Hindi. It is grown from tropical to sub-tropical and warmer part of temperate zone of the country. In North India it is mainly cultivated during the spring- summer (March- June) and rainy (July-September) seasons while in temperate zones, it is cultivated during summer.

Varieties:

Green fruited: Pusa Sawani, Kiran, Salkeerthi, Susthira, Arka Anamika

Red fruited: Co-1, Aruna

Yellow vein mosaic resistant /tolerant varieties : Arka Anamika, Arka Abhay, Susthira, P7, Varsha Uphar (all green fruited).

Seed rate: The seed rate is 20 kg/ha for the summer crop sown in January -February and 8-10 kg/ha for *Kharif* crop.

Storage of seeds : Packaging of okra seeds in polythene cover (700 gauges) increases the storage life up to 7 months. Seeds treated with *Trichoderma* and *Pseudomonas* can be stored up to 5 months.

Sowing: Sow the seeds at a spacing of 60 cm between rows and 45 cm between plants for *Kharif* crop and 60cm x 30cm for summer crop. 45cm x 45cm spacing is also found ideal. Seed soaking in double the volume of water (Hydro priming) for 2 hours improved germination and vigour of the seeds. For the summer crop, soaking time can be prolonged for 16 hours before sowing. Seed treatment with *Pseudomonas* (8g/kg of seed) improves germination and vigour of seedling. Ensure sufficient moisture in the field right from the time of sowing of seeds.

Manuring: Apply lime @500 kg/ha based on the acidity of soil 15days before sowing. Apply FYM or compost @25t/ha as basal dose. *Trichoderma*, PGPR mix 1 @ 2.5 kg /ha each is mixed with the FYM and keep for 15 days at cool atmosphere. These are applied to the soil as basal along with *Pseudomonas* @ 2 kg/ha.

Top dressing: Top dressing can be done at 10-15 days interval with any one of the following :

– Soil application of fresh cow dung slurry @ 1 kg/ 10 litres (50 kg/ha)
– Application of biogas slurry @ 1 kg/10 litres (50 kg/ha)
– Application of cow's urine 500 litres/ha (8 times dilution)
– Application of vermiwash-500 litres/ha (8 times dilution)
– Application of vermicompost - 1 t /ha
– Application of groundnut cake1 kg/10 litres (50 kg/ha)

Foliar spray can be given with supernatant solution of cow dung slurry/vermiwash/ cow's urine up to flowering.

Mulching: Give pre-sowing irrigation, if the soil is not moist enough. Provide mulch in the field throughout the crop period with materials like green leaves, plant residues, decomposed coir pith, straw etc. During summer, irrigate the crop at intervals of 2 to 3 days. Conduct weeding regularly and earth up rows during rainy season.



Plant protection:

Pests: The important pests are jassids, fruit and shoot borer and root knot nematode.

Jassids: Use neemoil-garlic mixture (2%) / nimbicidine (2ml/litre) / econeem(2ml/litre) / uneem(2ml/litre). Lemon grass suspension (10%) can also be used for the control.

Fruit and shoot borer:

– Remove and destroy affected shoots and fruits

– Spray with neem kernel suspension (5%)/ ginger suspension (10%)/ neem leaf extract(4%)

– Use *Trichogramma chilonis* and *Trichogramma japonicum* @1 card each/5 cents followed by *Bacillus thuringiensis* spray (Delphin/ Bioasp/Halt 0.7ml/litre)

– Apply *Beauveria bassiana* 10 per cent WP

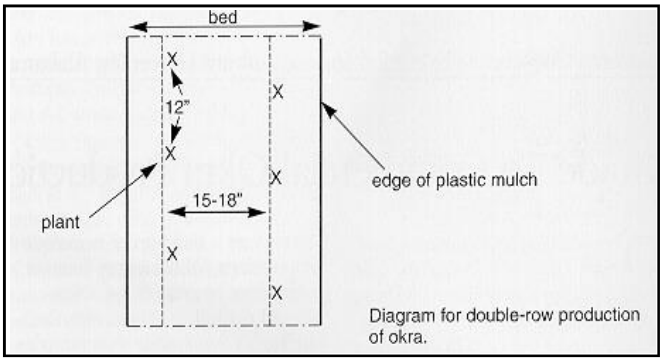

Diagram for double-row production of okra.

Bhindi leaf roller:

– Collect and destroy the leaf rolls

– Apply *Beauveria bassiana* 10 per cent WP.

Root knot nematode:

– Apply neem leaves or *Eupatorium* leaves @ 250 g/plant in basins one week prior to planting and water daily. The effect of this treatment persists upto 75 days after sowing in summer season.

– Apply neem cake/castor cake @ 1 t/ha or growing of marigold (trapcrop) in between okra plants.

– Seed treatment with *Bacillus macerans* @ 3% w/w (2.5 kg/ha) and in heavily infested area, seed treatment with *B. macerans* @ 3 per cent w/w and drenching with *B. macerans* @ 3 per cent solution 30 days after sowing.

Diseases:

Yellow vein mosaic:

Vein clearing and vein chlorosis of leaves are the characteristic symptoms. The yellow network of vein is very conspicuous and veins and veinlets are thickened. Fruit become small and yellowish green in colour. Whitefly (*Bemisia tabaci*) and leaf hopper (*Amrasca biguttula*) are the vectors of this virus. Spraying neemoil-garlic mixture (2%)or nimbicidine/ econeem/ uneem (2ml/litre). Use of disease resistant varieties (Arka Anamika, Arka Abhay and Susthira) and destruction of host weeds (*Croton sparsiflora* and *Ageratum* sp.) are also effective.

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