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Seed Production of Brinjal

Land Requirement: There is no specific land requirement to previous crop but the land should be free from volunteer plants. The soil should be fertile, rich in organic matter sandy loam and well drained.

Isolation Requirements: Brinjal is partially self and cross pollinated but self pollination is more common. The extent of natural cross pollination depends on insect activity and has been recorded from 0-48%. For pure seed production seed fields must be isolated from other variety and fields of same variety not conforming to varietal purity requirements of seed certification at least 200 m for foundation seed production and 100m for certified seed production.

Brief cultural practices:

Source: obtain appropriate class of seed from the source approved by seed certification agency

Seed Rate : 375 – 400 g per hectare

Sowing of seed in nursery: sowing time varies with the region and it should be adjusted in such a way that maturity should not coincide with rains. The winter crop needs special protection from frost. Seeds are sown on raised nursery beds 15-20 cm high from ground level in rows of 2-3 cm apart. Twenty five beds of 2-2.5 m long and 1-1.25 m wide will raise enough seedlings to plant one hectare.

Transplanting: The seedlings should be transplanted when they are of 12-15cm height.

Spacing : for non spreading type 60 x 60 m Spreading type 75 x 60 cm

Field inspection: A minimum of three field inspections are required. First inspection should be done at vegetative stage so as to verify isolation distance, presence of volunteer plants and other requirements. The offtypes at this stage can be identified by morphological characters. Second and third inspection should be done at flowering and fruiting stage. At this stage offtypes can be identified by colour of the flower, fruit shape , size etc.

Roguing: At least three roguings should be done. First roguing should be done at vegetative stage. Offtypes at this stage can be identified by plant type, leaf shape, leaf colour, presence of thorns etc. second and third roguing should be done at flowering and fruiting stage. Remove all the diseased plants at each stage of the crop growth.

Harvesting: Brinjal fruits are allowed to mature beyond the edible stage before harvesting for seed purpose. Seeds obtained from the fruits harvested at completely yellow color stage recorded the highest fruit seed yield per hectare and germination.

Seed Extraction: Usually the fruits are cut and crushed and seed is extracted by washing and sieving. Extraction should be started in the morning hours so that the seed is at least half dried till evening; else there is danger of germination in the process.

Seed yield: 100 – 120 kg/ha

Hybrid Seed Production: In brinjal hybrid seed is produced by manual emasculation and pollination technique. The variety which gives large fruits and more number of seeds per fruit should be taken as female parent. The male and female parent should be planted in separate blocks by following the same management practices. Before hybridization program starts remove all the offtypes from both male and female parental lines. During hybridization select a flower bud in female parent which opens next day morning and the emasculation should be done in the evening time between 3.00 to 6.0 PM. After emasculation the flower buds should be bagged with a butter paper bag to avoid contamination. Next day morning bring the male flowers and pollinate the emasculated flower buds between 7.0 to 11.00 AM. After pollination the crossed flower bud should be bagged and a tag should be attached at the pedicel. At the time of harvesting collect all the crossed fruits along with the tag and extract the seed.

Seed Production of Chilli (*Capsicum annuum* L. & *Capsicum frutescens* L.)

Land Requirement: There is no specific land requirement as to previous crop but the land should be free from volunteer plants. The soil should be fertile, well drained and aerated.

Isolation requirement: Chilli is self and cross pollinated. Cross pollination is mainly done by insects. The extent of cross pollination is from 7-36 per cent has been recorded. The seed fields must be isolated from other varieties of pepper (both hot and sweet pepper/chilli) and fields of

same variety not conforming to varietal purity requirements of certification by at least 400 m for foundation seed production and 200m for certified seed production.

Brief Cultural Practices:

Source: Obtain appropriate class of seed from the source approved by seed certification agency.

Seed Rate : 1-2 kgs /ha

Sowing of Nursery: Nursery should be raised on raised beds of 15-20cm high. Each bed should be of 2-2.5 m in length and 1-1.25 m width. The seeds should be broadcasted or sown in lines on the raised beds. Approximately 25 beds are required for planting one hectare of main field. The seedlings should be transplanted when they are of 15-20 cm height.

Transplanting: After 4-5 weeks the seedlings grow about 15-20 cm tall are ready for transplanting.

Spacing: Hot pepper 60 x 45 cm; Sweet pepper 45 x 45 cm

Field Inspection: A minimum of three field inspections are required. First field inspection should be done at vegetative stage, second at flowering stage and the third at post flowering or fruiting stage.

Rouging: Removal of the offtype plants has to be done at various stages of crop growth. First rouging should be done at vegetative stage. The offtypes can be identified based on morphological characters like plant types, leaf shape, leaf color etc. second rouging should be done at flowering stage and the offtypes can be identified based on earlier described characters and flower color and shape. Final rouging should be done at fruiting stage. Remove all the diseased plants from time to time.

Harvesting and extraction of seed: Chilli fruits are picked at red ripe stage. The fruits are either dried and crushed and the seed is separated by winnowing or the seed is extracted manually from the freshly harvested fruits. An axial flow vegetable seed extracting machine can also be used for extracting the seeds from chilli fruits. Mechanical extraction is more quickly cheaper and had no adverse effect on seed quality.

Seed yield: the average seed yield of sweet pepper is 105 kg/ha where as hot chilli yields 400 – 750 kgs/ha. There is lot of varietal variations.

Seed Production of Onion

Land Requirement: Select fields in which an onion crop was not grown in the previous year unless it is the same variety and certified by seed certification agency for its purity. The soil should be rich in organic matter and have good water holding capacity.

Isolation requirement: Onion is largely cross-pollinated crop with up to 93 per cent natural crossing. It is chiefly pollinated by honeybees. For pure seed production the seed fields should be isolated by at least 1000 m for foundation seed production and 400 m for certified seed production.

Methods of seed production

There are two methods of seed production

1. Seed to seed method
2. Bulb to seed method.

1. Seed to seed method: The bulbs of first season crop are left to over winter in the field so as to produce seed in the following season

2. Bulb to seed method: The bulbs produced in the previous season are lifted selected stored and replanted to produce seed in the second year. Mostly the bulb to seed method is used for seed production because of the following advantages over the seed to seed method.

- a. It permits selection of true to type and healthy bulbs for seed production
- b. Seed yields are comparatively very high. The seed to seed method however can be practiced for varieties having a poor keeping quality.

Brief cultural Practices:

Sowing time (Nursery): Mid of October to Mid of November. Around 2000 square meters of nursery is sufficient to plant one hectare.

Seed rate: 8-10 kgs /ha

Transplanting: 8-10 weeks old seedlings are planted in small seed beds in well prepared fields by following a spacing of 10-15cm depending upon the bulb size.

Field Inspection: A minimum of two field inspections shall be made as follows;

1. The first inspection shall be made after transplantation of seedlings in order to determine isolation, volunteer plants, offtypes including bolters and other relevant factors.
2. The seed inspection shall be made after the bulbs have been lifted to verify true characters of bulbs.

Harvesting and curing of bulbs: well-matured bulbs should be harvested. Maturity is indicated by the tops drooping just above the bulb, while the leaves are still green. After harvesting the bulbs should be topped leaving an half-inch neck. Before storage a through selection and curing of bulbs should be done. The length of time required for curing depends on weather conditions and may take 3-4 weeks.

Storage : The essentials of successful storage are

1. The bulbs should be well matured dried and cured before storage.
2. Storage should be well ventilated.
3. Storage should be done in shallow trays with perforated bottoms
4. Storage temperatures should be 0-4.5oC until three to 4 weeks prior to planting.

Then it is increased to 10oC.

Planting of bulbs and seed Production (Second Year)

1. Time of planting bulbs : second fortnight of October
2. Seed Rate: bulb size 2.5 3.0 cm diameter – 15 q of bulbs /ha

Bulb size 3.0 – 4.0 cm diameter – 40 - 50 q of bulbs /ha

3. Spacing: 8-10 cm deep at 45 x 30 cm

Field Inspection: a minimum of four inspections shall be made. The first inspection should be made before flowering to determine isolation distance, volunteer plants, offtypes including bolters and other relevant factors. The second and third inspection shall be made during flowering to check isolation, offtypes and other relevant factors.

The fourth inspection shall be made at maturity to verify the true nature of plant and other relevant factors.

Rouging of seed crop:

First year: It is desirable to begin rouging in the field before bulbs are harvested, look for plants having different foliage or plant type or late maturing bulbs. After harvesting, the bulbs should be rouged for color and such offtypes a thick necks, doubles, bottlenecks or any other type.

Second Year: Plant only selected true to type bulbs and remove plants not confirming to varietal characters before flowering.

Harvesting and threshing : seed is ready for harvest when first formed seed in the heads get blackened. 2-3 pickings are necessary to harvest the heads. Seed heads after harvest are thoroughly dried with sir circulation. Heads are threshed when seeds separate easily. Before storage seed must be dried to 6-8% moisture.

Seed Yield: 850-1000 kg/ha.