

PACKAGE OF PRACTICES FOR GROWING OF POTATO CROP FROM TRUE POTATO SEEDS

The potato crop can be grown from True Potato Seeds (TPS). The three methods are as follows:-

- 1. Transplanted crop:** Seedlings are transplanted in the field after raising in the nursery. About 70% of the total produce is marketable and the remaining quantity of small sized tubers is used as seedling materials in subsequent seasons.
- 2. Tuberlet production:** TPS are sown in nursery beds and 70-80% is produced as tuberlets, which are used as planting materials.
- 3. Planting of Tuberlet:** Mainly commercial tubers are produced on planting of tuberlets, though tuberlets can be used as planting material during subsequent years.

Varieties:

Varieties	Transplanted crops (q/ha)	Tuberlet production From direct seeding (q/ha)	Tuberlets as planting Materials (q/ha)
HPS 1/13	229	265	314
HPS 7/67	251	276	282
HPS 11/13	220	231	294
TPS C-3	257	290	308

Characteristics of the varieties:

- Resistant to Late Blight disease
- Reduced pathogen transmission
- Higher yield potential
- Tuber shape may be round and oval
- Skin smooth with fleet and medium deep eyes.

1. Transplanted Crop:

Preparation of nursery bed for raising seedling:

- Make the nursery beds of one meter breadth and of convenient length (preferably 3 m)
- Prepare a raised nursery bed by filling 7-8 cm with soil, FYM substrate. Prepare the substrate for the seedbed by mixing sterilized soil and well rotten and dried FYM or compost or bio-gas slurry in 1:1 ratio. Apply fertilizer @ 4-5 g N, 6-8 g P₂O₅ and 10 g K₂O/ sq.m in the substrate and mix thoroughly. After 2-3 days, the bed is ready for sowing of TPS. The soil could be sterilized by drenching the soil with 4% formalin followed by covering with ploythene or locally available materials (like banana leaf/ straw etc.) for 72 hrs and then remove the cover.

III. Cover the top of the nursery beds with 2-3 cm thick layer of finely sieved FYM. Thus the nursery bed is raised to about 10 cm. from the field level.

Seedling Raising:

- a. Prepare the seeds for sowing in nursery during the 1st week of October (TPS germinate well when the daily minimum temperature touches 20°C and maximum temperature is 30°C)
- b. Soak the TPS in water for 24 hrs and then incubate in FYM + soil mixture (1:1) for 2-3 days. Pre-germinated seeds are to be sown in nursery bed.
- c. Lightly irrigate the nursery beds a day before TPS sowing to keep the bed in moist conditions.
- d. Sow the pre-germinated TPS in 0.5cm deep furrows drawn 10cm apart across the breadth of the bed @ 2 g seeds/sq.m and cover these with 0.5cm layer of finely sieved FYM. Seedling raised per 10 sq. m nursery can cover 1500-1600 sq. m area. About 120g TPS and a nursery bed area of 75 sq. m are required for raising seedlings for transplanting in one hectare. Sprinkle water on the seedbeds 2-3 times a day for about a week after sowing the TPS using a sprayer or a gardeners water can to keep the seedbed moist (avoid excess water). Care should be taken so that seeds are not distributed during irrigation and to avoid run-off waters. Subsequently sprinkle water once or twice a day.
- e. Protect the nursery beds from direct bright sun light by providing thatch grass shade during mid day for 10-12 days after sowing. Remove the cover in the late afternoon and put it by morning (8-10 am). However, shade should be provided to protect the seedlings from rain, whenever necessary.
- f. Nursery bed should be weed free.
- g. After the germination is completed and the leaves start emerging (around 10 days) spray on the seedlings every 4-5 days interval with 0.1% urea (prepared by dissolving 1g urea in 1 litre of water), till these are ready (4-5 leaf stage) for transplanting. The seedlings are ready for transplanting after 25-30 days of sowing.

Field preparation and seedling transplanting:

- a. Prepare the field as per normal recommended practice.
- b. Basal application (broadcasting) of N, P₂O₅ and K₂O (60:100: 100 kg/ha) at the last round of field preparation. Apply FYM @ 10 t/ha during field preparation.
- c. Prepare the ridge at 50 cm apart in the East-West direction. Irrigate the furrows one day before transplanting of seedlings. However, irrigation may not be applied if sufficient moisture (around field capacity) remains in the soil, particularly on ridges.
- d. Carefully uproot the seedlings from nursery beds and carry them to the field in a basket. Transplant one seedling per hill in north facing ridges at 10 cm. spacing. Transplanting should be done preferably in the afternoon.
- e. Irrigate the furrows after transplanting to keep the soil moisture in root zone (ridge) at

field capacity. While irrigating, care should be taken not to submerge the seedlings. Irrigate the crop every third/fourth day subject to the moisture condition of the soil, till the seedlings get established. Thereafter, frequency of irrigation can be restricted to one in 8-10 days.

- f. Gap filling should be done within a week of transplanting.
- g. Spray 0.2% dursban on the 4th day after transplanting to protect the seedlings from cutworms.
- h. Light manual interculture operation (using *khurpi*) to be performed at about 10 days to loosen the soils in the root zone.
- i. Earthing up should be done 20-25 days along with the application of 25 kg of N/ha. Care should be taken during earthing up so that seedlings come to lie in the center of the ridges and maximum nodes are covered with soil leaving open the top 5-6 upper leaves.
- j. Second earthing up should be done at tuborization stage (45-50 days). The remaining cultural operations to be followed are similar to standard cultivation practices for potato crop. However, fungicides should be applied only when disease symptoms are visible on the leaves.
- k. De-haulm the crop after 105-110 days of transplanting.
- l. Harvesting is done 10-12 days after dehauling.

2. Seedling Tuber Production:

To produce seedling tubers, the procedure to be followed for nursery bed preparation are identical to the methods recommended in raising seedling for transplanted potato crop, except the practices mentioned below :

- a) Add NPK fertilizers @ 60: 100: 100 kg/ha to the FYM substrate and mix properly.
- b) Irrigate the nursery beds a day before sowing of TPS.
- c) Mark the rows in the nursery beds at 10 cm. inter row distance. Sow 2-3 seeds at 10 cm intra-rows distance at a depth of 0.5 cm and cover them with 0.5 cm. thick layer of fine sieved FYM.
- d) Irrigate the seedbed twice or thrice a day or as needed for a week after sowing, using water cane or sprayer, ensuring that the soil is kept moist (field capacity) without any run-off water. Subsequently, irrigate once or twice in a day to keep the beds moist.
- e) Provide shade initially as mentioned in earlier methods to protect from rain, bright sunshine etc.
- f) After 10 days of emergence, spray the seedlings with 0.1% urea on every third or fourth day for boosting up the growth and vigour of the seedlings. Spraying of urea solution should be stopped when the seedlings become vigorous.
- g) When the seedlings attain a height of 15cm, cover the lower-most three internodes of the seedlings with additional quantities of substrate mixture and repeat the earthing up

three times at an interval of 7-8 days.

- h) Proper and timely weeding is essential. Follow the usual cultural practices like irrigation, plant protection etc.
- i) Cut haulm at the age of 90-95 days.
- j) Harvest the seedling tubers after 12-15 days of haulm cutting.

Cultivation of Potato crop from Tuberlets:

The seedling tubers produced either by direct seeding of TPS or from transplanted potato crop are planted in the field in the next season. The method is similar to the recommended conventional cultivation practices of potato crop, except the variation in spacing according to seed rate and seed size.

Tuberlet size (g)	Inter-row spacing (cm)	Seed rate (q/ha)
20-40	20	25
10-20	15	17
*5-10	10	12

In case of 5g two tuberlets should be planted. Moreover, seedling tubers (tuberlets) can be used for 3-4 successive years if seed plot technique is followed appropriately.