POTATO
(Solanum tuberosum)

Potato is one of the major cash crops that form an important part of the various crop sequences practiced in the region particularly in the high altitude areas. Meghalaya ranks second in terms of the total area under its cultivation and is the second largest producer of potato in the North Eastern Region.

Recommended cultivars

Kufri Jyoti ,Kufri Megha and Kufri Giriraj

Soil and climate

Well-drained, sandy-loam, friable soil rich in organic matter is suitable for potato cultivation.

Seed size and Seed rate:

Seed tubers should be 30-50g each in weight, having 3 - 4 healthy eye buds. The recommended seed rate is 30-35q, however if small size tubers (30-40g) are planted, the seed rate should range from 20-25 q/ha.

Planting time

For high altitudes, the main crop i.e. summer crop should be planted during February mid March while the autumn crop/winter crop should be planted in mid July to mid August. or mid and low altitude the crop is planted during October-November.

Method of planting

Only well sprouted seed tubers should be used for planting. Seed tubers should be planted in furrows made against the slope to avoid soil erosion. The row-to-row spacing should be 50 cm and plant -to-plant spacing should be 20-25 cm. However, the plant -to-plant spacing between tubers could be adjusted as per the seed size. With smaller tubers the plant-to-plant distance of 15 cm should be maintained.

Manures and fertilizers

Well decomposed FYM @ 10-15 t/ha should be applied in furrows opened for potato planting evenly. 60 kg N, 120 kg P_2O_5 and 60 kg K_2O per ha should be applied at the time of planting. A second dose of N should be applied @ 60 kg/ha as top dressing during the earthing up operation.

Intercultural operations

Three to four weeding may be required during the crop period and these may be carried out just prior to earthing up or as per requirement and intensity. Use of post emergence herbicide like Paraquat @ 0.5 kg/ha (Gramaxone @ 2.5 l/ha) in 800-1000 litres of water at about

5 % emergence of potato or pre-emergence herbicides like Metribuzin @ 0.70 kg/ha within 3-5 days after planting could be used effectively to control the weeds in potato crop.

Earthing up should be done when the crop attains a height of 10-15 cm. Sufficient soil cover should be used to cover the tubers.

Plant protection measures

Cutworm: Dirty greenish gray caterpillars cut and feed young plants at ground level during night time. They also cut damage and feed on tender leaves and shoots. Larva remain hidden in the soil or in surrounding debris during the day. Thiodan 4% dust should be applied @ 17 kg/ha at the time of final land preparation. For management of heavy infestation, drenching of foliage and ridges with Chloropyriphos (DursbaniDanuban) 20EC @ 2.5 l/ha in 1000-1200 litters of water is recommended.

White grubs: The grubs are creamy white/off white caterpillars that feed on root Iets/ roots initially and later on damage the tubers. These grubs make large, shallow and circular holes in tubers and render them unfit for marketing. 2-3 deep ploughing of the field in autumn season should be done to expose pests for natural mortality and predation. Spraying of the host trees/shrubs with contact insecticides like Endosulfan or Quinalphos 0.1-0.2% and soil application of Phorate l0G or Carbofuran 3G @ 2.5-3.0 kg a.i./ha in furrows at the time of planting and 50 days after planting in areas having enough soil moisture is recommended.

Potato Tuber Moth: The moths are very small, grayish brown in color with fringed hind-wings. The caterpillars are brownish-white in colour. Lar ae mine the \ea es, damaging the tubers in field as well as in storage. Tubers should not be kept exposed under field conditions. Slightly deeper planting (l0 cm) of healthy tubers and collection of left over tubers at harvest should be done for control of damage in field. Spraying of Monocrotophos 40EC @ 1.5 I in 1000 I of water on the standing crop is recommended. All infested tubers in storage should be collected and destroyed. Tubers meant for seed purpose should be treated with Sevin 5% dust or Malathion 5% dust @ 475 g /sq. m. The treated tubers are then covered with a thick layer of dry sand or clean paddy straw to prevent the adult moths from laying eggs on the eyes of the tubers.

Aphids and Jassids: The nymphs and adults suck sap from leaves and tender part of the plant. Aphids cause severe losses by transmitting viral diseases. Spraying with methyl Demeton 25 EC or Dimethoate 30 EC @ 0.03% should be done soon after appearance of 1-2 aphids /l00 compound leaves. This happens usually in the first week of May. Subsequent sprayings at 10-15 days interval up to dehaulming should be given.

Late Blight: The disease is regular and appears usually during second fortnight of May in the summer season. In autumn crop, the attack is with a lower severity. Growing of Late blight resistant culIivars like Kufri Megha, Kufri Jyoti, Kufri Giriraj should be done. Spraying of the crop with Dithane-M-45 @ 35-43 g in 18 litre water or Blue Copper @ 55-60 g in 18 litre of water is to be done. The spraying can be repeated at intervals of 10-15 days depending on weather conditions.

Bacterial Wilt or Brown Rot: It appears in summer as well as in autumn crop. The affected plant suddenly shrivels and wilts. This is followed by yellowing of leaves. White bacterial exudates ooze when tubers are cut and squeezed. Cultural practices like use of healthy disease free seed, early planting of crop between second to third week of February and harvesting before second week of June, crop rotation with non-solanaceous crops like maize, garlic, cabbage, cauliflower, knol khol and collection and burning of the diseased

plants and infected tubers are to be followed for effective management of the disease. Application of bleaching powder @ 12 kg/ha mixed with fertilizers in furrows at planting also helps in reducing of the bacterial wilt incidence.

Early Blight: The disease first appears in the form of dark brown necrotic, angular or oval shaped spots on the leaves that bear concentric rings. These spots are dry and brittle. Control is similar to late blight.

Mosaic: It is a viral disease that causes great loss to the crop. The infected plants show light green to yellowish patches on leaves which is the result of yellowing of green tissues referred to as "mottling", The plants so affected exhibit a general stunting. Affected leaves show necrotic symptoms followed by the death of the entire leaf.

Leaf Roll: It is another serious viral disease of potato where the infected plants produce only a few, small to medium sized tubers. The top portion of the plant becomes more erect, growth is retarded and under-sized tubers develop. Management of these viral diseases mainly lies in planting of healthy disease free stock purchased form approved or reliable source. The strict sanitation in field and stores right from harvest to planting helps prevent spread of viruses.

Haulm Cutting

Haulms should be cut at the ground level in the beginning of June. At this time, the crop also starts maturing. The cut haulms should not be left in the field. Haulm cutting should also be done if foliage is killed by late blight.

Harvesting and Yield

Harvesting should be done after 15 days of haulm cutting for allowing hardening of skin of potato tubers. Marketable tubers should be graded in different sizes as mentioned:
Extra Large: l50g, Large: 80-150g, Medium: 30-80g, Small: 1O-40g.
The average yield of potato in the region ranges from 8-10 t/ha.

Seed treatment

The produce that is to be kept for seed purpose should be first thoroughly cleaned with water, then treated with 1 % bleaching powder solution and again washed with water. Then the tubers are treated with 3% commercial grade boric acid for 20-30 minutes for control of surface borne diseases. This solution can be used 20 times for maintaining its affectivity and economics. The treated tubers are dried in shade for two days.

Storage

Storage can be done in wooden crates or plastic trays or in bamboo baskets in cool and dry place. Provision for proper aeration should be made to avoid rotting. Seed potato should not be stored in gunny bags as it encourages development of etiolated and lanky sprouts. Storing of potato seeds in heaps should be avoided. Potatoes are best stored in cold storage at a temperature of 2.2 to 3.3°C and at a relative humidity of 75-80%.