

## TUBER CROPS

### Potato (*Solanum tuberosum*)

**Varieties:**

Name	Duration (days)	Yield (q/ha)		Plant characters	Tuber characters	Tolerance to diseases
		Rainfed	Irrigated			
Kufri Chandramukhi	80-100	85-100	150-160	Medium tall, erect	Oval, slightly curved, skin white, eyes flat	Leaf roll & virus Y
Kufri Jyoti	110-120	85-100	150-160	Tall, erect	Oval, flat, skin white, eyes flat, flesh dull white	Late blight
Kufri Megha	100-120	120-150	175-200	Tall, erect	White round oval tubers of medium size, white eyes, Flesh dull white, good keeping quality & no tuber cracking	Late blight resistant
Kufri Pukhraj	60-75	145	200-250	Medium, erect	Easy to cook; Texture-waxy texture; Free from after cooking discolouration	Moderately resistant to Late blight & tolerant to viruses

Potato variety Kufri Megha can be grown late (up to Mid December) in Upper Brahmaputra Valley Zone.

**Soil Type:**

Well drained sandy loam and loam soils, rich in organic matter are suitable. A pulse crop should preferably be included in the rotation to improve the soil condition.

**Field Preparation:**

Field should be thoroughly ploughed to obtain a good tilth. It should be leveled for uniform distribution of irrigation water or to maintain soil moisture uniformly under rainfed situation. The furrows should be prepared at 50 cm apart.

**Time of Planting:**

The optimum time for planting is mid October to mid November. In case of Kufri Sindhuri planting may be extended up to middle of December.

The optimum planting time for white and red eyed local potato is 15-30<sup>th</sup> October in Assam.

**Method of planting:**

The sprouted tubers should be planted in furrows with sprouts facing upward. Care should be taken to avoid sprout damage handling the tubers.

**Seed Selection:**

Virus free, healthy, medium sized sprouted tubers are to be selected for planting. Ideal size is about 2.5 cm in diameter (25-40 g). Bigger sized tubers may be cut into pieces longitudinally with 2-3 eyes in each piece.

**Seed Sources:**

Certified seeds of the recommended varieties are to be procured from Govt. or other recognized agencies.

**Seed Treatment:**

In case of cut seeds, the pieces are to be dipped in carboxin @ 2g in 1 litre of water for about 10 minutes. After treatment, the seeds are to be spread thinly and dried under shade for 48 hours, or should be covered with moist gunny bags for 2-3 days for tuberization.

**Seed Rate:**

The seed requirement is 22.5-25 q/ha when size of the tubers are about 2.5 cm in diameter (about 25 g) and planted with an intra row spacing of 15 cm. Intra row spacing is increased with bigger sized tuber.

**Fertility Management:**

Ten tonnes or 5 truck loads or 20 cart loads of well decomposed FYM should be applied per hectare in the furrows before planting.

Nutrient	Requirement (kg/ha)	Form	Fertilizer requirement	
			kg/ha	kg/bigha
<b>Rainfed</b>				
N	60	Urea	133	19
P <sub>2</sub> O <sub>5</sub>	50	SSP	312	45
K <sub>2</sub> O	50	MOP	83	12
<b>Irrigated</b>				
N	60	Urea	133	19
P <sub>2</sub> O <sub>5</sub>	100	SSP	624	90
K <sub>2</sub> O	100	MOP	168	24

Entire quantity of fertilizers should be applied in furrows as basal application and be covered with a thin layer of soils so that tubers do not come into direct contact with the fertilizers.

The crop booster 'Green Harvest' is recommended @ 25 g/10 lit of water at 30 days after planting.

#### **Mulching:**

Adoption of mulching under rained situations increases tuber yield. Water hyacinth plant materials are applied to cover the entire field after planting of tubers under flat method. Of course, skin of the tubers may turn green due to exposure to sunlight or shrinkage of mulching materials on drying.

Tubers become unsuitable for consumption on greening, however, quantities may be reduced by applying mulching materials in furrows just after planting of tubers, immediately followed by light soil cover. Such practices also reduce rodent damage of tubers considerably.

#### **Irrigation:**

The furrow method of irrigation has to be adopted. Three irrigations should be applied, first at 25 days (stolon formation stage), second at 60 days (tuber formation stage) and third at 80 days (tuber development stage) after emergence of sprouts. In case of application of mulching materials in furrows, only two irrigations are to be applied at 25 and 60 days after emergence of sprouts. At the time of application of irrigation, care should be taken not to submerge the ridges completely.

#### **Weeding and Interculture:**

Earthing up is to be done just before first and second irrigation. Under rainfed condition, this should be done at stolon and tuber formation stages. One or two interculture operations may be necessary when weed infestation is high.

Apply metribuzine @ 0.75 kg/ha (100 g/bigha) at 10% plant emergence (about 10 DAP) to get optimum weed control.

#### **Plant Protection:**

##### **A). Insect Pests:**

In areas where infestation of red ant and other soil insects are common, application of thiamethoxam 25WG @ 26 g a.i./ha and clothianidin 50 WDG @ 80 g a.i./ha is effective.

Application of mustard oil cake @ 150 kg/ha at the time of earthing up reduces red ant and white ant infestation to a great extent.

##### **B). Diseases:**

- i). Against late blight, six spraying with copper oxychloride 50WP @ 2 g commercial formulation /lit at an interval of 12 days. Or Spraying with dimethomorph 50WP @ 1g commercial formulation per lit followed by copper oxychloride 50WP @ 2g commercial formulation per lit in alternate application (3 sprays with the dimethomorph & 3 with copper oxychloride) at an interval of 12 days give very good

control if used at the following rates with high volume sprayer.

**Early stage** (1<sup>st</sup> month): 600 lit of water/ha

**Mid stage** (2<sup>nd</sup> month): 800 lit of water/ha

**Late stage** (3<sup>rd</sup> month): 1000 lit of water/ha

The first spray should be given 40-45 days after planting (canopy closure stage). Use of sticker Triton (0.5 ml/lit) will be essential in the spray solution for spraying during rainy weather.

Depending upon weather conditions, particularly in cloudy weather, copper oxychloride should be sprayed as a prophylactic measure. If disease appears, spraying should be done at an interval of 7 to 10 days depending upon weather conditions. While spraying, care should be taken to ensure wetting of the lower sides of the leaves.

#### **Practices for On-farm storage of seed potatoes:**

- The seed tubers for preservation in on-farm storages should be harvested from fully matured potato crop.
- Among the different tuber grades, small sized (5-15g) tubers can be kept suitably in on-farm stores as compared to big sized tubers (>20g).
- Loading density of 75g/m<sup>2</sup> proved beneficial than higher loading density for stored tubers under traditional stores.
- Seed potatoes collected from the main field should be cured properly for 10-15 days in cool place and then treat the healthy tubers with 3% boric acid for 30 min followed by 0.2% copper oxychloride for 20 min. After shade drying, the tubers should be loaded in the bamboo rakes fitted in the store.
- Use 4cm thick layer of shade dried 'Neem' or *Eucalyptus* leaves under and over stored tubers help in controlling potato tuber moth.
- Stored potatoes should be covered with mosquito nets in PTM endemic areas.
- Frequent inspection of the tubers in the store is essential. Remove the rotten tubers periodically.
- Sprout breaking during August is essential in order to minimize over-shrinkage and shriveling of tubers.