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PACKAGE OF PRACTICES FOR TABLE AND SEED POT A TO PRODUCTION IN WESTERN INDO -
GANGETIC PLAINS

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TABLE POTATO PRODUCTION

1. Hot weather cultivation

Plough the fields during the summer months. Keep the land open in May and June, plough one or two turnings to the soil during the

Hot summer days to reduce incidence of soil borne diseases and control perennial weeds.

2. Green manuring

Practice green manuring with *dhaincha* before potato planting can reduce N.Y.K doses by 20 to 30 per cent and improve the potato yield by 3 t/ha.

3. The following high yielding varieties are recommended for the region:

<i>Maturity Class</i>	<i>Variety</i>	<i>Maturity period</i>
Early	<i>Kufri Chandramukhi</i>	80-90 days
	<i>(White tuber)</i>	
	<i>Kufri Alankar</i>	
Medium	<i>(White tuber)</i>	90-110 days
	Kufri Jyoti (white tuber)	
	Kufri Lalima (red tuber)	
	Kufri Sheetman (<i>White tuber</i>)	
Late	Kufri Badshah (white tuber)	110-120 days
	Kufri Sindhuri (red tuber)	
	Kufri Bahar (white tuber)	

4. Seed source Obtain seed from a reliable source preferably from a government seed producing agency.

Replace the seed stock every 3-4 years because the field is reduced progressively if the same seed is used year after year.

5. Field preparation

After green manuring, prepare the field for planting. The field should be levelled and provide good drainage.

The potato does not thrive on wet and undrained soil. Well-drained sandy loam and loamy soils are most suitable for potato cultivation. Plough the fields with a mouldboard plough or disc harrow followed by one or two tilling with a tiller or a desi plough. It is better to plank the soil after each round of tilling.

6. Seed size and rate

Use well sprouted tubers weighing 40-50 gm each. The seed rate may vary from 30-40 q/ha depending upon the seed size.

7. Seed preparation

Remove the seed potato from the cold store at least 10 days before the planting date. Keep the seed bags in precooling chamber of the cold 24 hours. Bringing cold tubers from the cold store directly out result in condensation of moisture and promote rotting. Do not expose seed tubers in the bag to the sun. Spread the tubers in shade for sprouting. Remove unsprouted and rotted tubers.

Carry sprouted tubers to the field in seed trays or baskets for planting.

For spring planting use autumn harvested potatoes after breaking their dormancy. This may be done by dipping the tubers in a mixture of 1% thiourea and 1ppm gibberellic acid for one hour followed by treatment with

ethylene chlorhydrin (3%) in airtight chambers for 72 hours.

8. Planting time

Plant the early crop in the last week of September or first week of the main crop in the last week of October or in the first week of November and the late crop after paddy in the last week of November week of December. In the plateau region of Chhota Nagpur (Bihar) plant the *Kharif* crop in the second or third week of July.

9. Manuring

a). Apply 15-30 t/ha well rotten FYM in furrows at the time of planting. 30t/ha FYM can take care of phosphorus and potassium needs of potato crop. If FYM is applied at 15 t/ha, then half the dose of phosphorous and potassium is to be applied through fertilizers.

b). Apply 75-90 Kg nitrogen (3.5-4.5 q ammonium sulphate), 80 kg phosphate (5.0 q single super phosphate) and 120 kg potash (2.0 q muriate of potash) per hectare at the time of planting and another 75-90 kg nitrogen (3.5-4.5 q ammonium sulphate) per hectare at the time of earthing-up, when the crop is 30 days old. Apply the fertilizers in the furrows so that the tubers do not come in direct contact with the fertilizers.

10. Planting method

Place the seed in the furrows already made for the application of fertilizers. In planting with tractor, keep spacing between the rows at 60 cm and between the tubers at 20 cm. In case of manual planting, distance between the rows can be kept at 50 cm and between the tubers 15 cm. Cover the tubers with soil after planting using a ridger.

11. Mulch

Mulching of the fields helps in conserving soil moisture and reducing temperature of the soil. Farm refuses like paddy or wheat straw can be used as mulch.

12. Interculture

Weeding in the crop may be done as soon as weeds emerge, but preferred when the potato are about 8-10 cm tall. Earthing up is done 25 days after planting.

13. Irrigation

Give a preplanting irrigation (palewa) to promote uniform germination. If preirrigation has not been given then the first irrigation may be given day after planting. The first post-planting irrigation should be light.

The second may be given after about a week. Subsequent irrigations are given as and when required.

Lights are better than heavy irrigations less frequently given. Stop irrigation 10 days before harvesting.

14. Plant protection

- (i) Normally early blight, *phoma* and late blight diseases start appears from mid November. To control them, spray 0.2% solution of mancozeb @ 2 Kg/ha in 1000 litres water at 10 days intervals should be given beginning from the second week of November. Ensure that all parts of the plant including the lower surface of the age are completely covered with the spray solution.
- (ii) If leaf eating caterpillars damage is noticed, spray the crop with endosulfan 35 EC @ 1.5 lit/ha or with carbaryl 50 WP @ 2.5 kg/ha in 1000-1200 litres water.

15. Harvesting and marketing

The crop should be harvested as soon as it matures. The time of harvesting can be adjusted to suit market price. Early autumn crop of Kufri Chandramukhi can be harvested 70 days. Harvest the spring crop after mid-April or as soon as the temperature rises beyond 28 degree c to avoid tuber rot. After harvest, surface-dry and keep the tubers in heaps for 10-15 days in shade for curing of skin. Remove all damaged and rotten tubers. In order to get better returns, the produce should be graded and packed in gunny bags. Do not expose the tubers to direct sunlight. Store the bags in shade before sending to the market.

SEED POTATO PRODUCTION

If the seed is meant for sale, consult the state seed certification agency about the choice of variety, seed source and seed certification standards of seed production..

1. Hot weather cultivation

Plough the field during the summer months. Keep the field open in May and June, plough one or two times to reduce incidence of soil borne diseases and pests, also control perennial weeds.

2. Green manuring

Green manuring with *dhaincha* before planting can reduce N, P & doses by 20-30 per cent and improve the potato yield by 3 t/ha.

3. Variety

Grow the following high yielding varieties:

<i>Maturity class</i>	<i>Variety</i>	<i>Maturity period</i>
Early	Kufri Chandramukhi (white tuber)	80-90 days
Medium	Kufri Jyoti (white tuber) Kufri Lalima (red tuber)	90-110 days
Late	Kufri Badshah (white tuber) Kufri Sindhuri (red tuber) Kufri Bahar (white tuber)	110-120 days

4. Seed source

Obtain the seeds from a reliable source, preferably from a govt. seeds producing agency. Use only foundation or certified seed. It is better to replace the seed stock after 3-4 years.

5. Field preparation

After green manuring, prepare the field for planting. Level the field and provide good drainage. Plough the fields with a mouldboard plough or disk harrow followed by one or two tillings with a tiller or a *desi* plough. Plank the soil after each round of tilling.

6. Seed size

Use well sprouted tubers weighing about 35-45 g having multiple sprouts. The seed rate should vary from 35-40 q per ha depending upon seed size. Tubers having multiple sprouts produce more number of seed size tubers.

7. Seed preparation

Remove the seed potato from the cold store for at least 10 days before planting. Keep the seed bags in precooling chamber of the cold store for at least 24 hours. Do not bring the seed bags outside directly from cold stores as it will result in rotting due to immediate exposure to high temperature. Do not expose the seed tubers to the sun. Spread the tubers in shade or a cool place for pre sprouting. Remove unsprouted and rotten tubers. Carry the sprouted tubers to the field in seed trays or baskets for planting to avoid sprout damage.

8. Planting time

Plant the crop between 1-10 October.

9. Manuring

- (i) Apply 15-30 t/ha well rotten FYM in furrows at the time of planting. 30 t/ha FYM can take care of phosphorus and potassium needs of potato crop. However, if FYM is applied at 15 t/ha, then half the dose of phosphorus and potassium is to be applied through fertilizers.
- (ii). Apply 75-90 kg nitrogen (3.5-4.5 q ammonium sulphate), 80 kg phosphate (5.00 q single super phosphate) and 120 kg potash (2.00 q muriate of potash) at the time of planting and 75-90 kg nitrogen (3.5-4.5 q ammonium sulphate) per hectare at the time of earthing up when the crop is 30 days old. Apply the fertilizers in furrows, then cover the furrows partially with soil so that the do not come in direct contact with fertilizer. .

10. Planting method

Keep the seed in furrows already made for the application of fertilizer .In planting with tractor, keep spacing between the rows at 60 cm and between the tubers at 20 cm. In planting manually, keep spacing between the rows at 50 cm and between the tubers at 15 cm. cover the tubers with soil after using a ridger. Apply a granular systemic insecticide, Phorate 10G @ 10kg/ha at the time of earthing up to prevent infestation of aphid vectors which generally appear in the first week of November.

11. Interculture

Weed out the crop as soon as weeds emerge, but preferably when the potato plants are 8-10 cm high Earthing up should be done 25-30 days after planting.

12.Irrigation

One irrigation before planting (Palewa) is advantageous for ensuring uniform germination. If pre-irrigation has not been given, then the first irrigation be given soon after planting. It should be light to avoid damage to the ridges. The second should be given after a week. Subsequent irrigations are given as and when required. Light and frequent are better than heavy less frequent given. Stop irrigation about 10 days before haulm killing.

13. Roguing

During crop season, examine the seed plots at least thrice to remove off types and diseased plants, e.g. those showing mottling, mosaic, veinal necrosis, crinkling, rolling of leaves, marginal flavesence and purple top roll. Complete first roguing 25-30 days after planting and immediately before earthing up. Do the second roguing 45-50 days after planting, and third roguing just 3-4 days before haulm killing. Ensure that all the tubers of the diseased

14. Plant protection

- (i) *Control of insect pests:* For aphids and leafhoppers, apply granular systemic insecticides such as phorate 10G @ 10 kg/ha at the time of planting and a second dose at the same rate at the time of earthing up. If necessary spray the crop with dimethoate 35 EC or methyl demeton 25 EC @ 1.0 l/ha in 1000-1200 litres water by first week of December or as soon as the aphid count reaches 3 nos/100 compound leaves. Repeat the spray after 10-15 days interval, if required. If leaf eating caterpillar damage is noticed, spray the crop with endosulfan 35 EC @ 1.5 l/ha in 1000-1200 litres water.
- (ii) *Control of fungal diseases:* Normally early blight, phoma and late blight diseases start appearing in mid November. To control them, 0.2% solution of mancozeb may be sprayed at 10 days intervals beginning from the third week of November. While spraying, it should be ensured that all parts of the plant including the lower surface of the foliage are completely covered with the fungicidal spray solution.

15. Haulm killing

Cut the haulms between 5th to 12th January when 3-5 green peach aphids/100 compound leaves are observed. For killing the haulms, paraquat dichloride @ 2.5 l/ha in 1000 litres water has also been found to be effective. In varieties having excessive foliage, a second spray of paraquate dichloride may have to be applied. Ensure that regrowths do not appear on the stumps after dehauling as tender and succulent leaves are even more

attractive to the aphid vectors.

16. Harvesting and grading

Harvest 10-15 days after haulm killing when the skin of the tubers become firm. Do not delay harvesting under and circumstances. Keep the freshly harvested tubers in heaps in cool place for about 10 days. The size of the heap should be 1.5 mts high and 3-5 mts broad. Cover the heaps with paddy or wheat straw to protect them from direct sunlight. If it rains during the period, cover the heaps with tarpaulin.

Grade the tubers according to their sizes preferably in four grades i.e. small(below 25 gm), medium(25-50 gm), large(50-75 gm) and extra large(above 75 gm). At the time of grading sort out the cut and cracked tubers.

17. Seed treatment

After grading, wash the tubers in water and then dip in 1 % chlorocin solution followed by rinsing in water and treating in 3% solution of boric acid for 30 minutes to control surface-borne diseases. The solution for treatment can be used 20 times if the tubers have been thoroughly washed. After treatment, ensure that the tubers are dried properly. Pack seed tubers in gunny bags with proper labelling for marketing as seed.

Treated tubers being poisonous should not be used for table purposes.

18. Seed storage

Store the seed bags in a cold store latest by 5th March, as otherwise the rising temperature will adversely affect the seed potatoes. Label the seed bags as “treated”, so that they do not get mixed up with table potatoes stored in the same cold store. The stored bags should be inspected periodically.

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