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

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Table and seed potato production in central Indo-Gangetic plains

TABLE POTATO PRODUCION

1. Hot weather cultivation 11 Plough the fields during the summer months. Keep the land open in May and June to reduce incidence of soil borne diseases and control perennial weeds.

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

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

Maturity Class	*Variety*	*Maturity period*
Early	*Kufri Chandramukhi*	*70-80 days*
	(White tuber)	
Medium	Kufri Jyoti (white tuber) Kufri Lalima (red tuber)	90-100 days
Late	Kufri Badshah (white tuber) Kufri Sindhuri (red tuber) Kufri Bahar (white tuber)	110-120 days

4. Seed source
The seed should be obtained from a reliable source preferably from a government seed-producing agency. It is better to replace the seed every 3-4 years.

5. Seed size

Use well sprouted tubers weighing 30-40 gm.

6. Seed preparation

Seed potato should be removed from the cold store at least 10 days before planting. Keep the seed bags in pre-cooling chamber of the cold Store for at least 24 hours. Do not bring the bags directly from the cold store as this will result in rottage due to sudden exposure to high temperature. The tubers should be spread in thin layers under shade in dif- fused light for sprouting. Unsprouted and rotted tubers should be removed from the lot Sprouted tubers should be taken to the field in seed trays or baskets for planting to avoid sprout damage.

7. Planting time
Planting should be done during 2nd to 3rd week of October depending upon the prevailing temperature.

8. Manuring

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. If FYM is applied at 15 t/ha, half the dose of phosphorus and potassium is to be applied through fertilizers. Apply 90 kg nitrogen (3.6 q calcium ammonium nitrate), 80 kg phosphate (5 q single super phosphate) and 100 kg potash (1.7 q muriate of potash) per hectare at the time of planting and 90 kg nitrogen (3.6 q calcium ammonium nitrate) per hectare at the time of earthing up. Apply fertilizers in furrows, and then cover it with soil, so that the tubers do not come in direct contact with the fertilizers.

9. Planting method

Keep the seed in the furrows already drawn for the applicatio~1 of fertilizers. The spacing between the rows should be kept at 60 cm and between the tubers at 20 cm. Efforts should be made to complete the planting in the morning hours to avoid covering of tubers with heated soil during mid-day. Tubers are then covered with soil using a ridger.

10. Mulch

Mulch helps in conserving soil moisture, reducing soil temperature and inducing quick germination. If plant material such as paddy straw, wheat husk. Or farm refuse is available with the farmers; they should be spread on ridges as mulch.

11. Interculture

Earthing and weeding of the crop should be done as soon as weeds emerge, preferably when the potato plants are about 8-10 cm high. The final earthing up after weeding should be done at 25 days of planting.

12. Irrigation

First irrigation before planting is advantageous for uniform germination. If pre-irrigation has not been given the irrigation may be given on the next day of planting. To avoid damage to-the ridges, the first irrigation should be light. Second irrigation should be given after about a week. Subsequent irrigations are given as required. Too much or too little irrigations should be avoided. Stop irrigation about 10 days before harvest

13. Plant protection

In the plains, early blight, *phoma* and late blight diseases may start Appearing from November and onwards. To control them, periodic sprays with 0.2% solution of mancozeb at 10 days interval should be given as required starting from the first week of December. While spraying, it should be ensured that the lower surface of foliage is thoroughly drenched, with the fungicidal spray. If any damage is noticed at any stage due to leaf eating caterpillars, spray the crop with endosulfan 35 EC @ 1.5 litre/ha or with carbaryl @ 2.5 kg/ha in 1000-1200 litres of water.

14. Harvesting and marketing

The crop should be harvested as soon as it matures. In case it is to be marketed earlier, it may be harvested whenever the market prices are remunerative. The crop of Kufri Chandramukhi may be harvested 70 days after planting. Potatoes after harvest should be surface-dried and kept in heaps for 10-15 days in shade. All damaged and rotted tubers should be periodically removed. Grade the potatoes in appropriate grades/sizes and pack in gunny bags. Care should be taken to avoid greening of potatoes. Such potatoes are bitter in taste and difficult to cook. The bags should be kept in a cool place before sending to market.

SEED POTATO PRODUCTION

If the seed is meant for sale as certified, the State Seed Certification Agency may be consulted about their prescribed standards of seed production.

1. Hot weather cultivation

Plough the field during the summer months. Keep the land open during May-June to reduce incidence of soil borne diseases and control the
Perennial weeds.

2. Green manuring

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

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

Maturity class	*Variety*	*Maturity period*
1. Early	Kufri Chandramukhi (White tubers)	70-80 days
2. Medium	Kufri Jyoti (white tuber) (Kufri Lalima (red tuber)	90-100 days
3. Late	Kufri Badshah (white tuber) Kufri Sindhuri (red tuber) Kufri Bahar (white tuber)	110-120 days

4. Seed source
The seed should be obtained from a reliable source, preferably from a government seed-producing agency. It is better to replace the seed every 3-4 years.

5. Seed size
Use seed tubers each of 40-45 gm, having multiple sprouts. Such well sprouted tubers having multiple sprouts produce larger number of seed- size tubers.

6. Seed preparation

Seed potato should be removed from the cold store at least 10 days before the planting date. Keep the seed bags in pre-cooling chamber of the cold store for at least 24 hours. Do not bring the bags directly outside as it will result in rottage due to sudden exposure to high temperature. The tubers should be spread in a shed or in a cool place for sprouting. Unsprouted and rotted tubers should be sorted out the seed tubers in bags should never be kept exposed to sun. Sprouted tubers should be taken to the field in seed trays or baskets for planting.

7. Planting time
Plant the crop preferably by 15th October. Avoid earlier planting, as this produces plants with lanky stems and deformed leaves. Seed crop should not be planted after 25th October.

8. Manuring (a) 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. If FYM is applied at 15 t/ha, half the dose of phosphorus and potassium is to be applied through fertilizers.

(b) Apply 90 kg nitrogen (3.6-q calcium ammonium nitrate), 80 kg phosphate (5q single super phosphate) and 100 kg potash (1.7-q muriate of potash) per hectare at the time of planting and 90 kg nitrogen (3.6-q calcium ammonium nitrate) at the time of earthing up. Apply the Fertilizers in furrows then cover it partially with soil so that tubers do ~ not come in direct contact with the fertilizers.

9. Planting method.
1 Keep the seed in the furrows drawn already for the application of Fertilizers. The spacing between the rows should be kept 60 cm and between the tubers 20 cm. Planting may be done preferably in the early morning so that tubers are covered with cool soil. Tubers are then covered with soil using a ridger.

10. Mulch
Mulching will help to conserve soil moisture and get quick germination. If farm wastes such as paddy straw, wheat husk, or farm refuse is available with the farmers these could be used as mulch on the ridges. Mulching will also reduce soil temperature.

11. Interculture

Weeding should be done as soon as weeds have emerged, usually when the potato plants are 8-10 cm tall. Earthing up is done soon after weeding preferably after 25-30 days of planting. Weeds in seed crop are better controlled by spraying paraquat dichloride @ 2.5 l/ha dissolved in 1000 litres of water. The weedicidal spray is given when the plant emergence is about 5%.

12. Irrigation

Irrigation before planting is advantageous for ensuring uniform germination. If this has not been given then the first irrigation should be given the day after planting. To avoid damage to the ridges, first irrigation should be light. The second irrigation may be given a week later. Subsequent irrigations should be given as required both excess and under irrigations should be avoided Stop irrigation about 10 days before haulm cutting.

13. Roguing

During crop season, examine the seed plot thrice to remove off-type and diseased plants showing mottling, mosaic, veinal necrosis, crinkling, Rolling of leaves, marginal flavescence and purple top roll. First roguing is done 25-30 days after planting and immediately before earthing up. Second roguing should be done 50-55 days after planting. Care should .be taken to ensure that all the tubers along with the diseased and off-type plants are also removed. Third roguing should be done 3-4 days before haulm cutting.

14. Plant protection

(i) Control of insect pests: Apply a granular insecticide such as phorate 10G @ 10kg/ha at the time of earthing up to prevent infestation of Aphid vectors which generally appear in the last week of December. The actual appearance will depend upon the prevailing atmospheric conditions. Spray the crop with dimethoate 30 EC or methyl demeton 25 EC @ 1.0 litre/ha in 1000 litres water by the end of December to control leafhoppers and aphids. Repeat this spray at 10-15 days intervals. Occasionally, the cutworms and other defoliators also appear on the seed crop. For controlling cut worms, drench the ridges with chlorpyriphos 20 EC @ 2.5 litre/ha in 1000-1200 litres water when 2% damage to the plants due to cut worms is noticed. For controlling defoliators, spray the crop with endosulfan 35 EC @ 1.5 litre/ha or with carbaryl 50 WP @ 2.5 kg/i1a in 1000 litres water. If needed, a second spray may be given.

(ii) Control of fungal diseases: In the plains, fungal diseases such as early blight, *Phoma* and late blight damage the potato crop. To control them, periodic sprays with 0.2% solution of mancozeb at 10-12 days intervals may be given from about the last week of November. While spraying, it should be ensured that the lower surface of the foliage gets drenched with the spray solution.

15. Haulm killing

Cut the haulms of seed crop when 3-5 aphids/l00 compound leaves are observed. This occurs between 5th to 12th January. Cut the plants at the ground level to prevent regrowth. Ensure that no regrowth appear on the stumps after dehaulming as tender and succulent leaves attract the aphid vectors. If and when they appear they should be periodically removed.

16. Harvesting and grading

Harvesting should begin 10-15 days after haulm killing, when the skin of the tubers has become firm. Harvesting should not be delayed until March under any circumstances. Keep the freshly harvested tubers

in heaps in a cool place for about 10 days. The size of the heap should be about 1.5 meters high and 3.5 metres broad. Cover the heaps with paddy or wheat straw to protect them from direct sunlight. If it rains, the heaps should be provided with tarpaulins. Grade the tubers according to their sizes preferably in four groups, small (below 25 gm), medium {25-50 gm), large (50-75 gm) and extra large (above 75 gm). At the time of grading, cut and crack tubers should be again sorted out

17. Seed treatment

After grading, wash the tubers in water. Then dip the tubers 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 this treatment can be used 20 times if the tubers have been thoroughly washed. After treatment, ensure that the tubers are dried properly. Pack the seed tubers in gunny bags with proper labelling for Marketing as seed. Treated tubers should not be used for table purposes.

18. Storage

Store the seed bags in a cold store. Label the seed bag as treated so that it does not get mixed up with the table potatoes stored in the same cold store. Send the seed potatoes to the cold store by 15 March otherwise the rising temperature will adversely affect the seed potatoes.

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