

**E-PRACTICAL MANUAL**

# **Potato and Tuber Crops**

(Course No. HVS 302)

Credits: 2 (1+1)

[For B. Sc. (Hons.) Horticulture V<sup>th</sup> Semester Students]



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**2023**

**Department of Vegetable Science**

**College of Horticulture**

**Banda University of Agriculture and Technology**

**Banda, Uttar Pradesh**

**Syllabus:**

Identification and description of potato and tropical, sub-tropical and temperate tuber crops; plantingsystems and practices; field preparation and sowing/planting. Top dressing of fertilizers and inter- culture and use of herbicides and growth regulators; identification of nutrient deficiencies, physiological disorders; harvest indices and maturity standards, post-harvest handling and storage, marketing. Seed collection, working out cost of cultivation, project preparation of commercial cultivation.

**Name of Student** .....

**ID. No.** .....

**Batch** .....

**Session** .....

**Semester** .....

**Course Name:** .....

**Course No:** .....

**Credit** .....

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**CERTIFICATE**

This is to certify that Shri. /Km. ....ID No.....  
has completed the practical of course. .... course  
No. .... as per the syllabus of B.Sc. (Hons.) Horticulture ..... semester  
in the year. ....in the respective lab/field of college.

Date:

Course Teacher

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## Exercise- 1

**Objective: To study the importance and Origin of potato and tuber crops**

S. No	Name	Origin	Importance
1.	Potato		
2.	Sweet potato		
3.	Tapioca		
4.	Elephant foot Yam		
5.	Yams		
6.	Arrow Root		
7.	Tannia		
8.	Jerusalem artichoke		
9.	Horse radish		
10.	Alocasia		
11.	Yam bean		

**Exercise- 2**

**Objective: To study the identification and description of potato and tuber crops.**

<b>Sl. No.</b>	<b>Common Name</b>	<b>Scientific Name</b>	<b>Family</b>	<b>Edible part(s)</b>	<b>Description</b>
1					
2					
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15					
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**Differentiate between white yam, greater yam, and lesser yam.**

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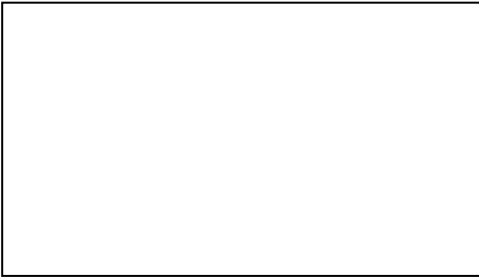


**Objective: To study the method of planting in potato and tuber crops.**

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**Ridge and Furrow Method:** .....

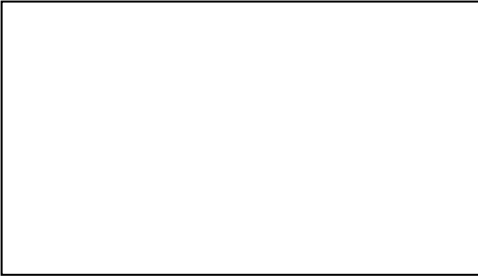
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**Flat Bed Method:** .....

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**Exercise: 4**

**Objective: To study the inorganic fertilizer application in tuber crops.**

**Artificial fertilizers:** .....

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**Nitrogenous fertilizer:** .....

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**Phosphorus fertilizers:** .....

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**Potassium fertilizers:** .....

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**Methods of application of fertilizers:** .....

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**Recommended dose of fertilizers (per hectare) in tuber crops:**

<b>Sl. No.</b>	<b>Name of Crop</b>	<b>Recommended dose FYM &amp; N:P: K</b>	<b>Time of application</b>
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2			
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**Significance of inorganic fertilizers:** .....

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**Exercise-5**

**Objective: To study the application of growth regulators in Potato and other important tuber crops.**

**Potato:**

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**Sweet Potato**

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**Tapioca**

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**Elephant Foot Yam**

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**Exercise-6**

**Objective: To study the inter-cultural operations and application of herbicides in Potato and other important tuber crops**

**Potato:**

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**Sweet Potato**

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**Tapioca**

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**Elephant Foot Yam**

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**Objective: To study the nutrient deficiencies and physiological disorder in potato.**

**Nitrogen Deficiency:** .....

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**Phosphorus Deficiency:** .....

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**Potassium Deficiency:** .....

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**Sulfur Deficiency:** .....

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**Magnesium Deficiency:** .....

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**Manganese Deficiency:** .....

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**Molybdenum Deficiency:** .....

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**Zinc Deficiency:** .....

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**Boron Deficiency:** .....

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**Calcium Deficiency:** .....

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**Copper Deficiency:** .....

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**Exercise: 8**

**Objective: To study the harvest indices and maturity standards of potato.**

**Harvest Index:** .....  
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**Physiological Maturity:** .....  
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**Horticultural Maturity:** .....  
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**Maturity Sign:** .....  
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**Lower Maturity:** .....  
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**Higher Maturity:** .....



**Objective: To study the postharvest handling and storage of potato.**

**Postharvest Handling:** .....

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**Harvesting:** .....

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**Drying**.....

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**Curing**.....

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**Sorting and Grading:** .....

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**Benefits: .....**

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**Practices for grading of potatoes**

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**Storage**

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Exercise-11

**Objective: To study the harvest indices and maturity standard of Sweet Potato**

**Harvest Index:** .....

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**Physiological Maturity:**.....

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**Horticultural Maturity:**.....

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**Maturity Sign:**.....

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**Objective:** To study the post-harvest handling, curing and storage of sweet potato.

**Harvesting:** .....

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**Harvesting method:**

**Manual Harvesting:** .....

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**Mechanical Harvesting:** .....

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**Objective: To study the post-harvest handling, curing and storage of elephant foot yam.**

**Harvesting:** .....  
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**Harvesting method:**

**Manual Harvesting:** .....  
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**Mechanical Harvesting:** .....  
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**Exercise-14**

**Objective: To study the harvest indices and maturity standard of Cassava**

**Harvest Index:** .....

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**Physiological Maturity**.....

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**Horticultural Maturity**.....

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**Maturity Sign:**.....

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Exercise: 15

Objective: Estimation of cost of cultivation and B: C ratio of sweet potato.

Sl. No.	Particulars	Quantity	Rate (Rs.)	Value (Rs.)	% to TC
<b>A.</b>	<b>Variable cost</b>				
1	Seed (no. of cuttings)				
2	FYM (q)				
3	Fertilizers				
i.	IFFCO mixer (Kg.)				
ii.	Urea (Kg)				
4	Plant protection				
5	Tractor hours/Bullock charges				
6	Human labours (man days)				
i.	Field preparation				
ii.	Sowing				
iii.	Manuring				
iv.	Interculture				
v.	Irrigation				
vi.	Spraying				
vii.	Harvesting (Dehaulming, digging & filling in bags)				
7	Total human labour of which				
i.	Family labour				
ii.	Hired labour				
8	Sub total (1-7)				
9	Interest on working capital @8% p.a. (3 months)				
<b>10</b>	<b>Total variable cost (A=8+9)</b>				
<b>B</b>	<b>Fixed cost</b>				
i.	Rental value of land				
ii.	Interest on fixed capital @8% p.a. (3 months)				
iii.	Depreciation				
	<b>Total fixed cost</b>				
<b>C</b>	<b>Total cost (A+B)</b>				
<b>D</b>	<b>Returns</b>				
	Yield (q)				
<b>E</b>	Gross returns				
<b>F</b>	<b>Net returns</b>				
	<b>Benefit cost ratio (B:C ratio)</b>				

Exercise: 16

Objective: Estimation of cost of cultivation and B: C ratio of cassava.

Sl. No.	Particulars	Quantity	Rate (Rs.)	Value (Rs.)	% to TC
<b>A.</b>	<b>Variable cost</b>				
1	Seed (no. of setts)				
2	FYM (q)				
3	Fertilizers				
i.	IFFCO mixer (Kg.)				
ii.	Urea (Kg)				
4	Plant protection				
5	Tractor hours/Bullock charges				
6	Human labours (man days)				
i.	Field preparation				
ii.	Sowing				
iii.	Manuring				
iv.	Interculture				
v.	Irrigation				
vi.	Spraying				
vii.	Harvesting (Dehaulming, digging & filling in bags)				
7	Total human labour of which				
i.	Family labour				
ii.	Hired labour				
8	Sub total (1-7)				
9	Interest on working capital @8% p.a. (3 months)				
10	<b>Total variable cost (A=8+9)</b>				
<b>B</b>	<b>Fixed cost</b>				
i.	Rental value of land				
ii.	Interest on fixed capital @8% p.a. (3 months)				
iii.	Depreciation				
	<b>Total fixed cost</b>				
<b>C</b>	<b>Total cost (A+B)</b>				



**Exercise: 17****Objective: To study the uses of Potato and tuber crops**

<b>Sl. No.</b>	<b>Crops</b>	<b>Uses</b>
<b>1</b>	<b>Potato</b>	
<b>2</b>	<b>Sweet potato</b>	
<b>3</b>	<b>Tapioca</b>	
<b>4</b>	<b>Elephant foot Yam</b>	
<b>5</b>	<b>Yams</b>	
<b>6</b>	<b>Arrow Root</b>	
<b>7</b>	<b>Tannia</b>	
<b>8</b>	<b>Jerusalem artichoke</b>	
<b>9</b>	<b>Horse radish</b>	
<b>10</b>	<b>Alocasia</b>	
<b>11</b>	<b>Yam bean</b>	







