

PRACTICAL MANUAL

Potato and Tuber Crops

(Course No. HVS 302) Credits: 2(1+1)

[For B. Sc. (Hons.) Horticulture 5th Semester Students]

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and

Dr. Gaurav Sharma



2019

**College of Horticulture & Forestry
Rani Lakshmi Bai Central Agricultural University
Jhansi, Uttar Pradesh**

Syllabus:

Identification and description of potato and tropical, sub-tropical and temperate tuber crops; planting systems 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

Roll No.

Batch

Session

Semester

Course Name :

Course No. :

Credit

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Date:

Course Teacher

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| 3 | To study the nutrient deficiencies and physiological disorder in potato | | | |
| 4 | To study the harvest indices and maturity standard of potato | | | |
| 5 | To study the post-harvest handling of potato | | | |
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| 17 | Collection of potato and tuber crops sample and their description | | | |
| 18 | Project preparation of commercial cultivation of potato and tuber crops | | | |

Exercise- 1

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

| Sl. No. | Common Name | Scientific Name | Family | Edible part(s) | Description |
|---------|-------------|-----------------|--------|----------------|-------------|
| 1 | | | | | |
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| 3 | | | | | |
| 4 | | | | | |
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| 16 | | | | | |
| 17 | | | | | |
| 18 | | | | | |

Differentiate between white yam, greater yam and lesser yam.

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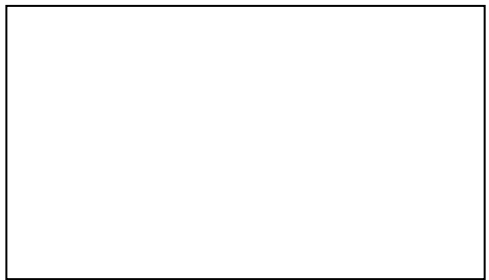
Exercise- 2

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

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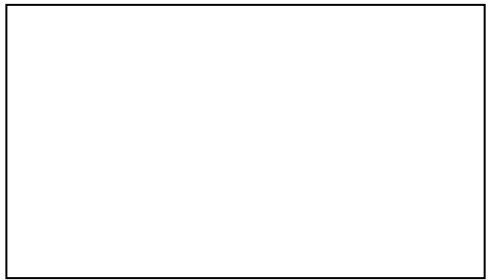
Ridge and Furrow Method:.....

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Flat Bed Method:.....

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Exercise- 3

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: 4

Objective: To study the harvest indices and maturity standard 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:.....

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Harvesting:.....

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Differentiate between physiological and horticultural maturity

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Maturity symptom of potato

Exercise: 5

Objective: To study the postharvest handling 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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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:

| Sl. No. | Name of Crop | Recommended dose FYM & N:P:K | Time of application |
|----------------|---------------------|---|----------------------------|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | |
| 11 | | | |
| 12 | | | |
| 13 | | | |
| 14 | | | |
| 15 | | | |

Significance of inorganic fertilizers:

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| Sl. No. | Particulars | Quantity | Rate (Rs.) | Value (Rs.) | % to TC |
|-----------|---|----------|------------|-------------|---------|
| A. | Variable cost | | | | |
| 1 | Seed (q) | | | | |
| 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 (Dehauling, 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 | Total variable cost (A=8+9) | | | | |
| B | Fixed cost | | | | |
| i. | Rental value of land | | | | |
| ii. | Interest on fixed capital @ 8% p.a. (3 months) | | | | |
| iii. | Depreciation | | | | |
| | Total fixed cost | | | | |
| C | Total cost (A+B) | | | | |
| D | Returns | | | | |
| | Yield (q) | | | | |
| E | Gross returns | | | | |
| F | Net returns | | | | |
| | Benefit cost ratio (B:C ratio) | | | | |

Exercise: 13

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

| Sl. No. | Particulars | Quantity | Rate (Rs.) | Value (Rs.) | % to TC |
|-----------|--|----------|------------|-------------|---------|
| A. | Variable cost | | | | |
| 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) | | | | |
| 10 | Total variable cost (A=8+9) | | | | |
| B | Fixed cost | | | | |
| i. | Rental value of land | | | | |
| ii. | Interest on fixed capital @8% p.a. (3 months) | | | | |
| iii. | Depreciation | | | | |
| | Total fixed cost | | | | |
| C | Total cost (A+B) | | | | |
| D | Returns | | | | |
| | Yield (q) | | | | |
| E | Gross returns | | | | |
| F | Net returns | | | | |
| | Benefit cost ratio (B:C ratio) | | | | |

Exercise: 14

Objective: Estimation of cost of cultivation and B: C ratio of elephant foot yam.

| Sl. No. | Particulars | Quantity | Rate (Rs.) | Value (Rs.) | % to TC |
|-----------|--|----------|------------|-------------|---------|
| A. | Variable cost | | | | |
| 1 | Seed (q) | | | | |
| 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 | Total variable cost (A=8+9) | | | | |
| B | Fixed cost | | | | |
| i. | Rental value of land | | | | |
| ii. | Interest on fixed capital @8% p.a. (3 months) | | | | |
| iii. | Depreciation | | | | |
| | Total fixed cost | | | | |
| C | Total cost (A+B) | | | | |
| D | Returns | | | | |
| | Yield (q) | | | | |
| E | Gross returns | | | | |
| F | Net returns | | | | |
| | Benefit cost ratio (B:C ratio) | | | | |

Exercise: 15

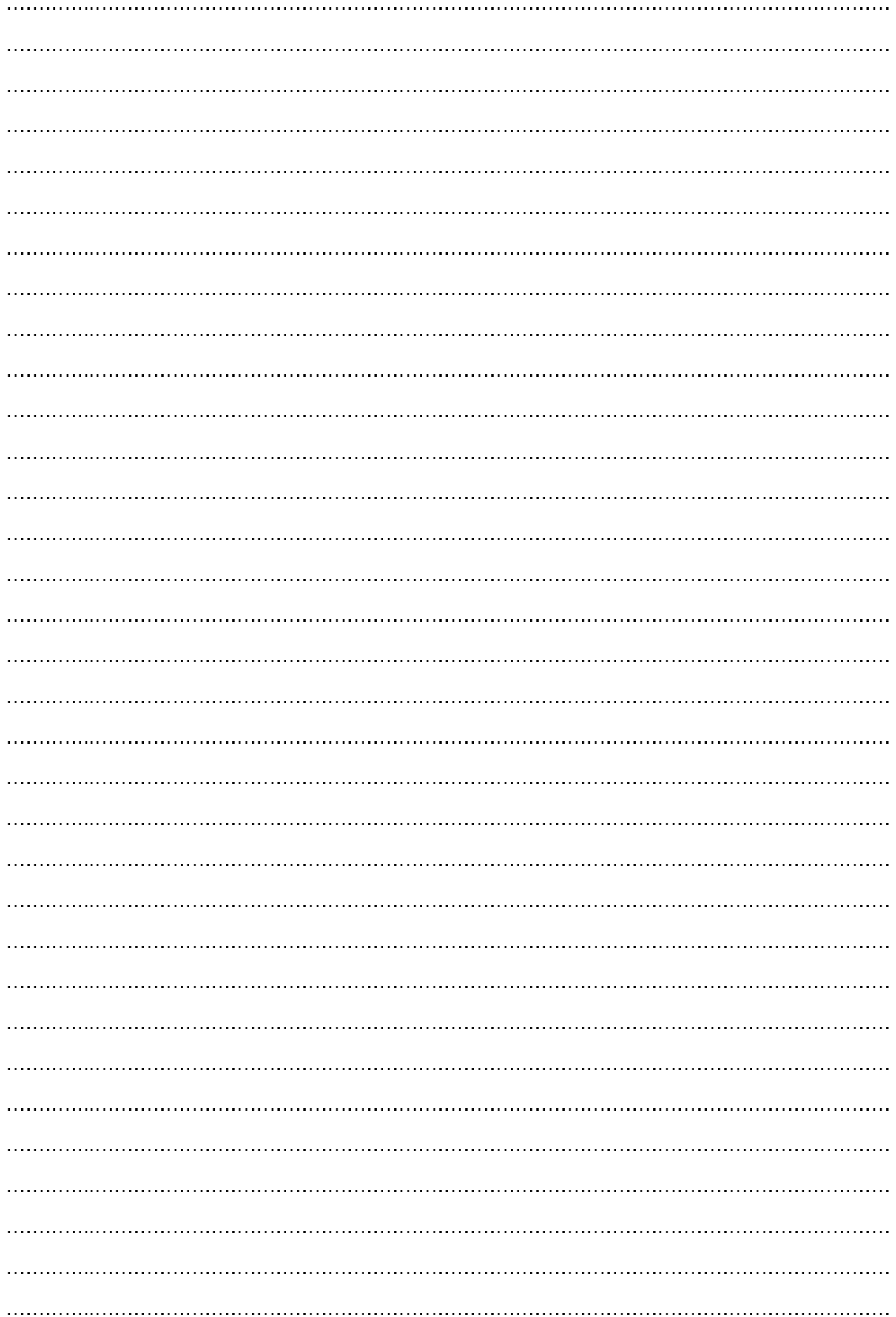
Objective: Estimation of cost of cultivation and B: C ratio of cassava.

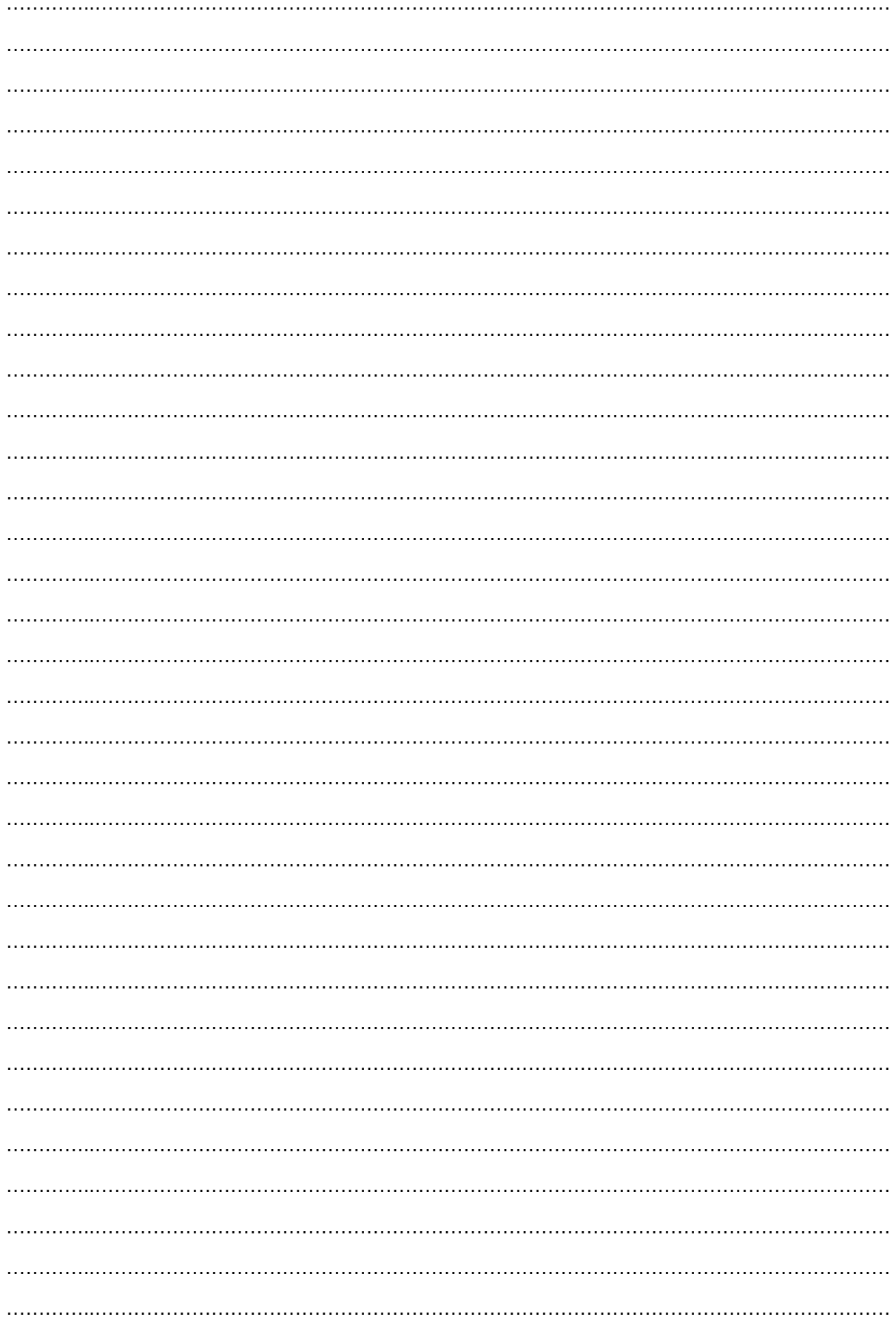
| Sl. No. | Particulars | Quantity | Rate (Rs.) | Value (Rs.) | % to TC |
|-----------|--|----------|------------|-------------|---------|
| A. | Variable cost | | | | |
| 1 | Seed (no. of setts) | | | | |
| 2 | FYM (q) | | | | |
| 3 | Fertilizers | | | | |
| i. | IFFCO mixer (Kg.) | | | | |
| ii. | 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 | Total variable cost (A=8+9) | | | | |
| B | Fixed cost | | | | |
| i. | Rental value of land | | | | |
| ii. | Interest on fixed capital @8% p.a. (3 months) | | | | |
| iii. | Depreciation | | | | |
| | Total fixed cost | | | | |
| C | Total cost (A+B) | | | | |

Exercise: 16

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

| Sl. No. | Particulars | Quantity | Rate (Rs.) | Value (Rs.) | % to TC |
|-----------|--|----------|------------|-------------|---------|
| A. | Variable cost | | | | |
| 1 | Seed (q) | | | | |
| 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 | Total variable cost (A=8+9) | | | | |
| B | Fixed cost | | | | |
| i. | Rental value of land | | | | |
| ii. | Interest on fixed capital @8% p.a. (3 months) | | | | |
| iii. | Depreciation | | | | |
| | Total fixed cost | | | | |
| C | Total cost (A+B) | | | | |
| D | Returns | | | | |
| | Yield (q) | | | | |
| E | Gross returns | | | | |
| F | Net returns | | | | |
| | Benefit cost ratio (B:C ratio) | | | | |





Notes

A series of 30 horizontal dotted lines for writing notes.