

Model Answer

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B.Sc. (Rural Tech.) 5th Semester Exam - 2014

Sub: Introductory Horticulture

AU-7030

Answer ① Multiple choice questions

① (d) Pomology

② (b) Cultivation

③ (d) ~~Wholesale~~ Wholesale nursery

④ (b) Sandy loam soil

⑤ (b) Guava

⑥ (d) seedling

⑦ (a) Ambe Bahar

⑧ (d) Sesbania

⑨ (a) 1 mm

⑩ (c) Rhizome

Answer ② Sub branches of Horticulture:

① Plantations & medicinal plants:

② Ornamental Gardening:

③ Land Scaping gardening:

④ Nursery plant production / Plant propagation /

Management of Poor Quality Water for Irrigation:

- 1) Dilution with good quality irrigation water.
- 2) Flooding with good quality water once or twice to flush out salts beyond root zone.
- 3) Gypsum mixing with water to reduce Sodium salt hazards and also to improve soil structure.
- 4) Providing drainage to remove salts.
- 5) Using poor quality water in sandy soils.
- 6) Growing salt tolerant crops.
- 7) Adopting drip irrigation for poor quality water.

Incorporating a crop demand-dependent irrigation schedule saves water without affecting crop yields. In order to efficiently apply water to the root zone, estimate the water demand based on soil type, precipitation, crop needs and soil moisture retention.

The process for developing an irrigation schedule is described below.

- Determine your soil type. Soil characteristics help determine effective irrigation application rates, durations and frequencies. For instance, sandy soils may require more frequent but shorter-duration applications.
- Determine weekly precipitation amounts. Install a rain gauge in a central location. Although local radio and TV weather services can give you general precipitation rates for the week, site-specific information is more accurate.
- Monitor soil moisture to determine whether irrigation is necessary. If the soil moisture content is adequate for the crops water quantity needs, no additional water application is required. Soil moisture can be measured with tension meters, electrical resistance blocks (gypsum, ceramic or moisture blocks) or neutron probes.
- Measure the output from your irrigation devices. Use flow meters or gauged water pans to measure the output of sprinklers and drip irrigation heads.
- Combine the information above to determine a week-by-week irrigation schedule. Update the schedule as weather and soil moisture conditions change.
- Recheck soil moisture 1-2 days after irrigation to determine depth of applied water and uniformity. If water penetration is too deep, too shallow, or spotty adjust your irrigation schedule to correct it.

(A) Sexual Plant Propagation

Sexual plant propagation involves the union of the pollen (male organ) with the egg (female organ) in plants to produce a seed. The seed is made up of three parts: the outer seed coat, which protects the seed; the endosperm, which is a food reserve; and the embryo, which is the young plant

itself. When a mature seed is exposed to favorable environment, it germinates and begins its active growth.

Advantages of Sexual Plant Propagation

1. It is the easiest and least expensive method of plant propagation.
2. Seedling trees are hardier and have longer life span.
3. Plants which are difficult to propagate by vegetative method e.g. papaya, phalsa, coconut etc. can only be propagated by seed.
4. The rootstocks on which the fruit varieties are budded or grafted are usually obtained by means of sexual propagation.
5. Sexually propagated plants are more resistant to pests and disease.
6. Large number of plants can be produced at a time by this method.
7. Polyembryonic varieties (give rise to more than one seedling from one seed) can be propagated by seed eg. Nucellar Embryo in Nucellar Mosambi (Sweet Orange)

Disadvantages of Sexual Plant Propagation

1. Seedlings take more time to bear fruits (late bearing).
2. Quality of existing plants cannot be improved by sexual propagation.
3. Plants propagated sexually are large in size, thus the cost of manuring, pruning and spraying increases.
4. In case of sexually propagated plants, there is no assurance about genetic purity of the offspring or seedling.

Answer (5)

Importance of Green Manuring

- Increase the organic matter in soil.
- Increase the Nitrogen percent in the soil
- It absorbs the nutrients from depth of soil.
- It improves the soil texture.
- It prevents the water evaporation
- It improves aeration in soil

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- It prevents soil erosion.
- It maintains the pH value of soil
- It maintains soil Temp.
- It prevents the adverse effect by inorganic fertilizers.
etc....

Answer ⑥ Tumeric crops disease

① Leaf spot

② Leaf blotch

Control: The seed to be sown should be healthy i.e. disease free.,

- The seeds should be treated with DM-45 @ 3 gm or Bavistin @ 1 gm/liter of water should be dipped for 30 minutes in the solution before sowing.
- Spraying DM-45 @ 2.5 gm or Bavistin 1 gm/l. of water, 2-3 times
- The leaf blotch can be effectively controlled by spraying Blitose or blue copper @ 3 g/l of water.

③ Rhizome rot: Rhizomes should be treated with 0.25% Agallol for 30 minutes prior to sowing as well as storing. when the disease is serious in the field. The beds should be drenched with chestnut Compound 0.3% and Agallol 0.1%.

Answer (7) Intercropping: While the trees are young and non bearing. They do not need all the ground space in the orchard. Therefore, it is advantageous to grow seasonal between rows of fruit trees.

Objectives:

- To get substantial income:
- To keep clean the orchard:
- To enrich the soil fertility:
- To utilization of wast land etc.:

Principles:

- To provide extra incomes:
- Do not compete to main crops:
- Do not spread disease & pest:
- Do not affect the main crops:
- To keep the orchard clean:
- To utilize the wast land. etc...

Answer (8) Scope of Horticulture

- Need to increase production to meet Dietary Requirement:
- Increase irrigation facilities:
- Scope for increasing area under dry land fruits:
- Increase Urbanization and change in food habits
- Increase transport facilities:
- Increase cold storage facilities and pre-cooling centre:
- Increase agro-based industries:

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- Development new techniques:
- Evaluation of new HYV and introducing new crops:
- Availability of loan facilities:
- Government incentives:
- Scope for horticultural Export units
- Scope for employment etc...

Answer (9) The factors affect the nursery site selection:

- Land :
- Climate :
- Soil :
- Vegetation:
- Water resources :
- Power :
- Labour :
- Marketing:
- Availability of inputs :
- Storage facility :
- Processing facilities :
- Transportation facilities :
- Credit/banking facilities :
- Cooperation support etc.:

Answer (10) Guava

(a) Soil Management :

Heavy clay to very light sandy soil having pH between 4.5-8.2 are suitable for cultivation. Crop is sensitive to water logging. Land is prepared during summer season by ploughing, harrowing, leveling and removing weeds. Pit of $1 \times 1 \times 1 \text{ m}^2$ size are dug before the monsoon and filled with a mixture of FYM and soil.

Age of tree	FYM kg/plant	Urea g/plant	SSP g/plant	MOP g/plant
1-3	10-20	150-200	0.5-1.5	100-400
4-6	25-40	300-600	1.5-2	600-1000
7-10	40-50	750-1000	2-2.5	1100-1500
10 & above	50	1000	2.5	1500

(b) Training & Pruning :

- Training of plants in young stage is essential in order to build a strong framework.
- The plants are trained as low headed trees to facilitate multiple hand pickings.
- Fruiting trees are pruned to check over crowding in the orchard.
- The ~~post~~ pruning is usually recommended after harvesting or in spring.
- Summer pruning is generally avoided as the plant get damage due to sun burn.

Answer Coconut

(a) Propagation by seedlings.

(b) Planting : Coconut is propagated through seedlings raised from selected seednuts. Generally 9-12 month old seedlings are used for planting. Select seedlings, which have 6-8 leaves and 10-12 cm collar girth when they are 9-12 month old. Early splitting of leaves is another criteria in the selection of coconut seedling.

Spacing depends upon planting systems, soil types etc.

Planting system	spacing
1. Triangular	7.6 m
2. Square	7.6 x 7.6 m ² ; 8 x 8 m ² , 9 x 9 m ²
3. Single	6.5 m in rows - 9 m between row
4. Double hedge	6.5 - 6.5 m in rows - 9 m between pairs of rows.

Seedlings are transplanted in the beginning of the South-west monsoon. etc ...

(c) Pest management

① Rhinoceros Beetle : Place 10.5 g naphthalena balls in the leaf axils and cover it with fine sand. spraying 0.01% Carbaryl (sowp) in the breeding sites of the beetle help destroy the larva.

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② Red Palm weevil :

- Use pheromone trap for attracting weevils and kill ~~the~~
- Inject attacked palms with 1% Carbaryl (20gm/liter)

③ Black headed Caterpillar :

Biological control : Gorsizus nephantidis

Elasmus nephantidis and Brachimeria mosatoi

- Spray : the under surface of leaves with 0.02% Dichlorvos 100 EC). etc. . . .

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