Meruvambayi M.U.P School

Teaching Manual

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Subject: Basic Science(Eng. medium)
Std: VII

Unit-1

Reaping gold from soil

Learning Outcomes:

- Practice activities like layering grafting and budding.
- Explain how quality seeds can be produced through hybridisation.
- Provide suggestions related to crop management.
- Explain the importance of organic farming.
- Prepare biopesticides.
- Identify the way of agriculture that adversely affect the soil and suggest remedial measures.

- Scientifically nurture vegetable gardens at home and school.
- Identify the possibilities of integrated farming.

Time: 19 periods.

Module 1:

Able to recognise and produce quality seeds and seedlings.

Time: 8 periods

Ideas:

- Factors to be considered for getting good yield.(fertile soil, favourable climate, quality seeds/planting materials, pest control)
- Factors to be considered while selecting seeds from a plant.
- Sexual reproduction.
- Vegetative propagation.
- Layering.
- Grafting.
- Budding-
  Observation,classification,application.

Topic 1:

Factors to be considered for getting more yield.

Materials required:

Pictures of garden (ICT)

Activities:

- Discussion-School vegetable garden(slide [1]) paddy field, banana plantation, coconut farm.
- Group discussion-The reason for not producing more fruit in babu's pumpkin vine.(slide[4])
- Asks much questions to the students and reaches the factors to be considered for getting good crops.
- Factors to be considered for getting more yield.(slide[5])
- Nurturing, fertile soil, favourable climate, quality seeds and planting materials controlling pests.

Topic 2:

Factors to be considered while selecting seeds from a plant.

Materials required:

Pictures(ICT)

Activities:

- Discussion-By observing lady's finger plant pictures(ICT)(slide[1])
- Factors to be considered while selecting seeds from a plant -Fruits form in the midspan, more productivity, free from disease etc.
- Provides work sheet.(slide[3])
- Shows the slides for getting the information-(Hyperlink)while selecting seeds and planting material.

Topic 3:

Classify the plants based on the formation of seedlings from sprouting seeds and from other parts of the plant.

Materials required:

Specimen plants, pictures of the plants (ICT).

Activities:

- Gives the list of some plants by showing the pictures(ICT)
- Discussion-Asks how will you select good quality seeds from plants that have small seeds?Gives examples: In this case good seedlings are transplanted after sprouting.

- Shows the pictures of some plants(slide[2])and asks them to classify the seedlings that are transplanted and seedlings that are not.
- Asks them to find more examples for the same.(slide[3])
- Discussion-Plants that germinate from seeds and that sprout from other parts.
- Explains sexual reproduction and vegetative propagation in plants with examples.(slide[5,6])
- Gives worksheet-Sexual reproduction and vegetative propagation.(slide[7])

Topic 4:

Practices the activities like layering.

Materials required:

Videos of layering(ICT), branch of the plant, like hibiscus or guava.

Activities:

- Shows the videos of layering(ICT).
- Prepares the notes.
- *Field trip.*

Topic 5:

Practices the activities like layering-Merits and demerits.

Materials required:

Pictures and videos of layering done in some plants (ICT).

Activities:

- Gives the examples of plants in which layering is done.(slide[1])
- Discussion-information related to layering(hyper link).
- Discusses the merits and demerits of layering(slide[4,5])
- Gives hyperlink (ICT) of layering.

Topic 6:

Practice the activities of grafting.

Materials required:

Pictures and videos of grafting.

Activities:

- Shows the videos of grafting.(slide[2])
- Prepares notes.
- Discusses the merits and demerits of grafting.(slide [10,11])
- Discusses the plants used for grafting.(slide[9])
- Field trip.

Topic 7:

Practices the activities like budding.

Materials required:

Pictures and videos of budding.

Activities:

- Shows the videos of budding.(slide[2])
- Discusses the budding with example plants. (slide[4])
- Prepare notes.
- Field trip.
- Discusses the merits and demerits of budding.(slide[5,6])

Topic 8:

Practices the activities like layering, grafting and budding.

Materials required:

Pictures(ICT)

Activities:

- Discusses the properties of stock and scion. (slide[1])
- By using the table given in text book asks some questions.
- Gives as a group activity.

- Discusses the peculiarities of both the varieties.(slide[2,3])

Module 2:

Time : 3periods.

Ideas:

- Hybrisation.
- Hybrid varieties of plants.
- Agricultural Research Institutes – Collecting and recording informations.

Topic 1:

Explain how quality seeds can be produced through hybridisation.

Materials required:

Hybrid coconut tree(ICT)pictures, agriculture magazine.

Activities:

- Gives a worksheet, for showing by hybridisation, can produce seeds of high quality,(slide[1])
- Explains hybridisation.
- Shows the videos of hybridisation of coconut tree.

Topic 2:

Hybrid varieties of some plants.

Materials required:

Pictures(ICT) of hybrid varieties of plants, agriculture magazine.

Activities:

- Conducts picture exhibition of the hybrid varieties of seeds and agricultural products.
- Good quality varieties of coconut, paddy, pea, green chilly, lady's finger, brinjal, tomato, etc. are shown through projector(ICT).
- Explains the bitter gourd variety- priyanka with pictures.(slide[9])
- Shows agriculture magazine.

Topic 3:

Agricultural Research Institutes and tissue culture.

Materials required:

Pictures of Agriculture research institutes(ICT), videos of tissue culture(ICT).

Activities:

- Discussion-Functions of agricultural research institutes.(slide[1,2])

- Discusses some of the agricultural research institutes in our state.(slide[3])
- Shows the videos of tissue culture (ICT).
- Discusses the services of Krishi bhavan.
- Assignment- Collect information from agricultural officer.
- Make groups- Asks each groups to prepare questions for the quiz competition related to agriculture.

Module 3

Crop management and organic farming.

Time : 5 periods

Ideas:

- Inter crops.
- Crop rotation.
- Nitrogen fixation.
- Biofertilizers.
- Biopesticides.
- Crop management -pest control,irrigation.
- Other crops -observation,alternative ways,application.

Topic: 1

Explain the importance of organic farming. Identifies the ways of agriculture that adversely affect the soil and suggest remedial measures.

Materials required:

Pictures(ICT), the root of pea plant, hand lens.

Activities:

- Discussion- Importance of good quality soil, rather than the good quality planting materials for good yield.
- Discussion- deposition of plant debris in the field after cultivation.
- Discussion- some of the methods followed by farmers to ensure maximum diversity in agriculture- Inter crop, crop rotation.(slide[3-10])
- Observation- The root of pea plant using hand lens.
- Leguminous plants- benefits of cultivating leguminous plants, examples of leguminous plants.(slide[13,14])

Topic 2:

Prepares bio-pesticides.

Materials required:

Pictures(ICT),materials of making biopesticide.

Activities:

- Discussion- the thoughts of the farmers in the text book. The harmful effects of the artificial fertilizers and pesticides.
- Discussion – Bio fertilizers with examples. (slide[5])
- Makes bio fertilizers like neem cake, tobacco decoction, neem oil emulsion etc.(slide[4])
- Discussion- Importance of making it a habit to use bio fertilizers and bio-pesticides.
- Assignment- makes some groups and each group is asked to prepare a bio-pesticide and record the method of preparation, materials used and the mode of application.
- Hyperlink(ICT)- methods of controlling pests using some insects and preparation of acetobacter
- Hyperlink(ICT)- Preparation of bio pesticides.(slide[6])

Topic 3:

Provides suggestions related to crop management.

Materials required:

Questionnaire to interview a farmer or agricultural officer

Activities:

- Conducts an *interview* with a farmer or agricultural officer.
- Before that the students should prepare the questionnaire.
- They should record the information gathered from the interview.

Topic 4:

Scientifically nurture vegetable gardens at home and school.

Materials required:

Pictures(ICT)

Activities:

- Discussion and picture observation- cultivation of crops like cotton, jute, coir etc. and prepares reading notes. (ICT)
- Discusses the importance of vegetable garden at home and school.
- Hyperlink(ICT)- shows the information related to propagation of vegetable garden.

Topic 5:

Organic farming.

Meterials required:

Seminar papers.

Activities:

- *Seminar*- Conducts a seminar on organic farming.
  Selection of seeds and seedlings, modern techniques, vegetable and their periods of cultivation, control of pests and weeds, integrated farming, hybrid varieties and agricultural research institutes.

Module 4:

Inegrated farming.

Time*:* 3 periods

Ideas:

- Integrated farming – cattle rearing, duck farming, fish farming.

Topic 1:

Identify the possibilities of integrated farming.

Materials required:

Pictures(ICT), Agriculture magazine, reading notes.

Activities:

- Observes the pictures given in the text book.
- Discussion- The relation between cattle raring and paddy cultivation.
- The way of utilising organic wastes from homes and agricultural fields is discussed.
- Discussion- use of slurry formed after the production of bio-gas.
- Advantages of integrating more than one field of agriculture.(ICT)
- Examples of integrated farming.
  a) Fish farming in the pond from which the water is used for watering coconut tree, banana plantation, paddy etc.
  b) Duck coop placing above fish pond.
  c) Honey bee hive in coconut farm.
  d) Cattle rearing and paddy cultivation.

Topic 2:

Identify the possibilities of integrated farming.

Materials required:

Pictures(ICT).

Activities:

- Shows the pictures of duck coop above the fish pond.(ICT)

- Discussion- The interrelations in feeding between the ducks and the organisms in the pond.
- Discussion- Honeybee hive in the coconut farm.
  -Honeybee gets honey and in return the pollination occurs in the farm easily.
- Shows the videos of integrated farming.

Topic 3:

Agriculture and cattle rearing.

Materials required:

Pictures(ICT), Agricultural magazine, news paper cutting.

Activities:

- Shows the pictures of agriculture and cattle rearing.
- Discussion- The rearing of cows and buffaloes in the paddy field.
  -Cultivation of fodder grass in the coconut fields and rubber plantations.
  -Goats, Cows, Hens etc. can be reared in coconut field

-The straw and the bran from husking paddy fields can be given to cattle.

- Prepares *agriculture album.*