Practical-1

Visiting Vegetable Gardens, Identification of Vegetable Crops with Reference to Stage of Crop Growth, Flowering and Marketable Stage of the Vegetables

EXERCISE

1.1 Visit to a vegetable garden to study its features and to know about various agronomic practices to be followed to raise vegetable crops.

1.2 Identification of vegetable crops with reference to stage of crop growth, flowering and marketable stage of the vegetables.

OBJECTIVE:

- To study the features of an ideal vegetable garden.
- Acquaintance with different vegetable crops growing in a vegetable garden, their cultural practices and identification.

Delivery schedule: 03 periods.

Student's expectations/learning objective:

- To know about different vegetables crops grown in a vegetable garden.
- Cultivation practices adopted for growing vegetable crops.
- Identification of different vegetable crops on the basis of different morphological characteristics.

Pre-learning required: Knowledge about different vegetable crops.

Handouts/material/equipment's & tools required: Paper sheet and pen to note down the instructions, forceps, hand lens and pictures of different vegetables.

Introduction:

Cultivation of vegetables occupies an important place in agricultural development and economy of the country. Vegetable gardening is an important source of income. Vegetable farming gives higher yield per unit area within the shortest possible time which ultimately increases the income. Several vegetables are

exported to foreign countries which provide an opportunity for earning foreign exchange. The vegetables play an important role in the balanced diet of human beings by providing not only the energy-rich food but also promise supply of vital protective nutrients like minerals and vitamins that is why the vegetables have been reckoned as a protective food. It is indeed important for children to know about different vegetable crops, their nomenclature, at what time we grow them, how do we grow them, what are their important insect- pests and their control measures, what are the consumable parts of different vegetables and how do we harvest and market them.

Features of an ideal vegetable garden

1. **Proper sunlight:** Vegetables are sun loving crops and grow their best with 6-8 hours or more of direct sunlight. Leafy greens can manage to grow under less sun light while lettuce prefers cool weather and continue to grow throughout the summer if shaded by taller plants.
2. **Assured irrigation facility:** Ideal vegetable garden should be close to the source of water. Vegetables need water at regular intervals. If there is erratic water supply, vegetable crops exhibit various kinds of problems like poor crop stand, poor growth, fruit cracking, improper fruit setting or various cultural problems like blossom end rot.
3. **Soil with good fertility status:** Soil is the most important factor in any garden and perhaps more so in a vegetable garden. Vegetables are short duration crops and have very high yield potential. They complete their entire life cycle by producing flowers and fruits and hence, they are very heavy feeders. A rich soil not only supports them to grow strong but also protect them from disease and pest problems. Therefore, the soil in the vegetable garden should be rich in organic matter and fertility status. Compost and composted manure can be added in spring and/or in fall.
4. **Proper drainage:** One final consideration while selecting land for vegetable garden is that the area should have provision of proper drainage and run-off. Vegetables do not sustain under water logging conditions.
5. **Manure pit:** Manure pit is essential to dump the waste plant materials after the harvest of the produce and converting it to vermicompost or any other compost. This enables to supply considerable quantity of organic manure to the farm. The manure pit should be located in a corner of the vegetable garden.
6. **Protection from stray animals:** Proper fencing of the vegetable garden is essentially required to protect the crops from stray animals and also from theft.
7. **Store and packing house:** The store house and packing house should be in the centre of the vegetable garden for easy approach to the workers. The implements, tools or inputs like herbicides, pesticides, fungicides, fertilizers *etc.,* can be easly carried from the store house to the field and also bring back the harvested produce to the store house for hydrocooling, sorting and packing to the market. In the store room, racks

should be provided to keep the chemicals. Wooden plank (flat piece of timber) is arranged on the floor to keep fertilizer bags. The garden implements, tools and packing material *etc.* are arranged in the rack.

8. **Roads and foot paths:** These two components should occupy minimum space for the economy of transport. The metal road in the main areas is advantageous because it facilitates the movement of vehicles like tractor or lorry to carry fertilizers, pesticides and harvested produce *etc.*

9. **Cropping plan:** A comprehensive plan of different vegetables to be grown in the vegetable garden should be made well in advance keeping in view the principle that early the crop more shall be the price.

A planned vegetable garden

Ideal agronomic practices to be followed in vegetable garden:

You know the importance and necessity of different agronomic practices which are adopted to raise a healthy vegetable crop. So, it is imperative to understand the cultural practices which are adopted to raise different vegetable crops in the vegetable garden. You should have curiosity to inquire about the following aspects which determine the success of vegetable cultivation.

- Suitable variety/hybrids of different vegetable crops
- Reliable source for the procurement of vegetable seed
- **Optimum sowing or planting time:** It determines the environmental conditions at planting, flowering and fruit development stage and thus has direct impact on the successful cultivation of vegetable crops.
- **Proper spacing:** The closer planting results in overcrowding which ultimately hinder the access to proper sunlight and aeration and plants become more vulnerable to the attack of diseases and insect-pests.
- **Nutrient management:** The balance use of organic and chemical fertilizers enhance soil fertility and crop productivity.
- **Management of weeds, diseases and insect-pests at appropriate growth stages:** It is very essential as either of these may cause losses to crop yield to the tune of 30-60 per cent.

- **Optimum irrigation at critical growth stages:** Irrigation at critical growth stages like flower initiation, fruit set and fruit development *etc.* are very crucial to exploit maximum production potential of different vegetable crops as they cannot withstand prolonged dry conditions.
- **Harvesting at proper stage:** Appearance, colour, tenderness and crispness determines the harvesting stage of a particular vegetable crop to fetch high premium in the market.
- Post-harvest handling of vegetable crops.

You can ask the gardener about the cultural practices he is following to raise a particular vegetable crop, chemical fertilizers and plant protection measures he is adopting and the problems he is facing in managing the garden. **Make your observations in the data sheet (Exercise 1.1).**

Types of vegetable gardens: Vegetable gardening is of different types such as

1. Kitchen garden
2. Market garden
3. Truck garden
4. Vegetable forcing
5. Garden for processing.
6. Garden for vegetable seed production.
7. Organic vegetable garden

Vegetable gardening can be taken up as a hobby or as an enterprise. Once you are into the vegetable garden, you will feel yourself very close to the nature, the freshness, the mental peace it offers. You will be motivated to grow vegetables as they offer many health benefits and it can be taken up as an enterprise. Vegetables can be grown through out the year and assures year round income provided the vegetables are grown in a scientific manner. On your visit to a vegetable garden notice the aspect (direction) of vegetable garden and make a plan of the garden you visited and try to identify different vegetable crops based on their characteristic features.

Kitchen garden/Home garden: Kitchen or home gardening is growing of vegetable crops in residential houses to meet the requirements of the family all the year around. It has the following advantages:

- Efficient and effective use of land for growing essential vegetables for consumption by the family.
- Saves some money as fresh vegetables are quite costly in the market.

- Constitute a very healthy hobby and the spare time of the family is well utilized.
- Kitchen garden should provide a continuous supply of vegetables to a family throughout the year.
- The vegetables raised in the kitchen garden are pesticide residue fee.
- Training/education of children and it also develops a sense of co-operation.

Characteristic features of an ideal kitchen garden:

- South east aspect is preferred to have maximum sun light.
- For kitchen garden, land should be selected in the backyard of the house (easier to work and make use of kitchen waste water).
- The shape of kitchen garden should be rectangular and a size 25 x 10 m is sufficient to meet the daily demand of vegetables for a family of 5 persons.
- Layout of the garden should be such that it looks attractive and allow access to all the parts. The land should be laid out in small plots with narrow path borders.
- The most suitable vegetables for kitchen gardening are those which produce high yield per unit of area. Bean, cabbage, carrot, leek, lettuce, onion, parsley, pea, pepper, radish, spinach and tomato are desirable home garden crops.

Kitchen garden

- Climbing type vegetables like cucurbits, pea, beans *etc.* can be trained on the fence.
- Several sowings of one particular crop at short intervals should be done to ensure regular supply of vegetables.
- Quick growing fruit trees like papaya, banana, lime *etc.* should be located on one side of the garden, preferably on northern side so that minimum shading effect is there on the vegetables.
- Ridges which separate the beds should be utilized for growing root crops like radish, turnip, beet and carrot.
- Early maturing crops should be planted together in continuous rows so that the area is available for growing next crop.
- The inter-space of some crops which are slow growing and take long duration to mature like cabbage, cauliflower, brinjal *etc.* should be used for growing some quick growing crops like radish, turnip, palak and lettuce.

Market garden: This is a type of gardening which produces vegetables for local market. The cropping pattern of these gardens depend upon the demand of the local market. The land being costly, intensive methods of cultivation are followed. A market gardener likes to grow early varieties to catch the market early. He should be a good salesman as he may have to sell his own produce. He must be a versatile person as he has to grow a number of vegetables throughout the year.

Truck garden: Vegetable gardening in which specific vegetables are produced relatively in large quantities for distant markets. Truck gardens, in general, follow a more extensive and less intensive method of cultivation than market garden. The word truck has no relationship with a motor truck but it is derived from French word 'troquer' means "to barter". The commodities raised are usually sold through middle man. The truck gardener should be a specialized person in large scale production and handling of some special crops. With the development of quick and easy transportation system, the distinction between market and truck garden is continuously diminishing.

Vegetable gardens for processing: These gardens are more rapidly emerging with the establishment of processing industries by corporate sector. These are mainly responsible for regular supply of vegetables to factories. The varieties of vegetables grown in this garden should be suitable for processing like canning, dehydration or freezing.

Vegetable forcing: Vegetables are produced out of their normal growing season of outdoor production under forcing structures such as polyhouses, low poly tunnels *etc.*

Vegetable gardening for seed production: In this gardening, seeds of different vegetable crops are produced on large scale.

Exercise 1.1: Visiting vegetable garden and studying various agronomic practices to raise vegetable crops in data sheet.

DATA SHEET

1. Name of the owner of the garden: .....
2. Address: .....
3. Date of visit: .....
4. Cropping Season: .....

Name of the crop	Area sown under a particular crop	Date of sowing/ transplanting	Name of the variety/ hybrid	Spacing	Growth stage	Insect-pest & disease incidence	Expected harvest duration (days)	Expected yield (kg.)	Expected income (Rs.)	Remarks

Exercise 1.2: Identification of samples of vegetable plants on the basis of morphological characters and recording observations in data sheet.

Introduction

It is very important to identify different vegetable crop plants. The vegetable plants differ from each other in their morphological characters. The vegetative and reproductive parts of plant help in clear identification. Many plants are very distinct whereas some can be distinguished on the basis of some very specific characters only. Keen and frequent observations make the identification easy. It is essential to know the different parts of the plants before undertaking the identification as these forms the basis of distinguishing characters. Some crops are very similar in their morphological characters and it is difficult to identify them especially during early stages of their growth *e.g.* cole crops.

Procedure:

Step 1. Critically observe the different morphological characters of different crops such as stem, leaf, flower, fruit *etc.*

Step 2. Draw the sketch of each plant.

Step 3. Record the observations with respect to stem, leaf, inflorescence and fruit characteristics in the data sheet.

DATA SHEET

Crop	Leaf characteristics	Stem characteristics	Flower/inflorescence characteristics	Fruit characteristics
Summer Season vegetables				
Tomato				
Brinjal				
Okra				
Chilli				
Bell pepper				
Cow pea				
French bean				

Winter season vegetables				
Garden pea				
Cauliflower				
Cabbage				
Broccoli				
Spinach				
Radish				
Carrot				
Turnip				