

JOB ROLE – GARDENER

Sector – Agriculture

(Qualification Pack Code: AGR/Q0801)

PPT's for Class XI



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UNIT 5: SOIL MANAGEMENT AND FIELD PREPARATION

Session 3: Field Preparation and Special Practices

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Session Objectives

The student will be able to :

- Select site for cultivation of ornamental crops.
- Describe the optimum conditions for the cultivation of flower crops
- Describe Preparation of Field
- Demonstrate special practices in flower cultivation

Introduction

Before starting growing flower plants in a garden, there are some important activities that are needed to be done for the sustainability of land and other resources. These activities involve primary land preparation and various cultural operations, which must be done prior to the sowing or transplanting of flower plants. The main purpose of field preparation is to provide the necessary soil conditions and escape to the plant from biotic and abiotic stress. This will be helpful in the successful establishment of ornamental plants in the garden.

Selection of Site

Climate, soil and location are the prime natural components in choosing a site on which the future of flowers depends. Climate includes several factors, such as temperature, rainfall, atmospheric humidity, altitude, wind and hailstorms, which are mostly encountered.

The location of the site determines its distance from the market, exposure of the Sun, nearness to the road, availability of irrigation water, topography, etc. The land with a gentle slope is more suitable for successful and profitable flower cultivation.

Optimum Conditions for the Cultivation of Flower Crops

Most of the commercial crops grow comfortably at a temperature from 15 to 30° C, such as rose, carnation, gerbera, gypsophila, statice, marigold, chrysanthemum, heliconia, bird of paradise, amaryllis and hippeastrum, and so on. Other ornamentals flower crops grow at or above 40° C, such as celosia, amaranth, *kochia*, gaillardia, gomphrena, zinnia, torch lily, cosmos, etc.

Sandy loam soils with ample humus and a pH range of 5.5–7.5 and roughly EC 1 is preferred usually for flower crops.

Preparation of Field

Tools and equipment used in field preparation

Harrow, cultivator, plank, spade, *khurpi*, etc., are required for field preparation. The equipment may be used either manually or with the help of a tractor or may be animal-driven.

Preparation of field

For the cultivation of flowers, the field must be first made free of weeds, roots and stubs of previous season crops. Before the second ploughing of the field, light irrigation must be done in order to provide optimum moisture for the germination of weed seeds. The third ploughing may be done at the optimum stage of moisture by hand with a traditional hoe in a small area or by a tractor or animal-drawn cultivator, plough, etc.

Preparation of Field

The depth of ploughing must be kept at 20–25 cm as superficial ploughing will not favour plant development, whereas, ploughing too deep will bury nutrients beyond the reach of the roots of the crop plant. After every ploughing, planking is carried out, and then, finally, the levelling of field is done two phases:

- The first levelling is done to lower the higher parts of the field, from where the soil is spread out over the lower areas.
- The second and more precise levelling is carried out after ploughing for sowing.

Preparation of Field

The main objective of land preparation is to create a favourable environment for growing flowering ornamentals. Adequate land preparation will help in

- Irrigating the field and keeping it well -drained.
- Improving the soil structure
- Minimising the growth of weeds.

Preparation of Field

Harrowing

An operation carried out for breaking up and smoothening the hard surface in order to provide tilth of the soil structure, which is more suitable for the sowing of seeds. Harrow can be used to remove weeds from the field and cover the seeds after sowing.

Purpose of harrowing

- To make the soil of the seedbed friable in nature
- To remove grasses and weed seeds from the field by pulling
- To cut and mix weeds and crop residues into the soil
- To make the field surface levelled by breaking the clods
- To break the capillaries to retain the moisture present in the soil.

Special Practices in Flower Cultivation

Weeding

It refers to the removal of all unwanted plants from the field, other than those planted or sown. Periodical removal of weeds is beneficial for the growth and development of crop as this prevents competition of weeds with the main crop for sunlight, water, air and nutrients.

Mulching

Mulching is a protective layer of material spread on the top of the soil. It consist of organic wastes like straw, hay, dry grass or leaves, saw dust and crop residues, etc., or synthetic material like plastic sheets. Mulching is a cultural method that preserves the soil moisture, checks soil erosion and protects weeds. It also helps in maintaining the soil temperature.

Special Practices in Flower Cultivation

Staking

It is a practice to support plants growing straight and saving them from bending or lodging. It saves the plants from being blown over by winds, rains and due to the weight of their stems when in bloom or in fruiting. Bamboo stakes are most common, and other than this, branches of shrubs and trees, i.e., *neem*, *subabool*, *phalsa*, *eucalyptus*, etc., can also be used effectively for this purpose.

Special Practices in Flower Cultivation

Earthing up

It is refers the digging and pulling the soil in between the rows and heaping it around the stem of plants.

This encourages the development of additional underground food storage structures, such as bulbs, corms, rhizomes or tubers as in case of tuberose, gladiolus, canna, begonia and dahlia.

Special Practices in Flower Cultivation

Des-hooting

It is the removal of all side shoots (offshoots/offsets) emerging from the base of the plant. The main purpose of de-shooting is to divert the energy of the plant towards the development of shoots or buds.

Pinching

It is removal of the growing tips of the vegetative buds to promote bushy growth for more flowering in case of chrysanthemum. It is the removal of 3–5 cm growing tips when the plants are 8 –10 cm tall. Pinching is also a common practice in carnation and marigold.

Special Practices in Flower Cultivation

Disbudding

It is the removal of floral buds when a large flower on a plant is desired, as in chrysanthemum and dahlia.

Generally, it is followed in large-flowered varieties for the energy saved is diverted towards the development of retained bud so the flowers become large and vigorous. In carnation, disbudding is practised to obtain long stalk with larger blooms.

Special Practices in Flower Cultivation

Training

This gives the plant a desired height, shape and strong framework with desired number of properly distributed branches and eliminates weak crotch development.

Pruning

Pruning is the process to remove unproductive or diseased or dead branches and roots to improve plant health or the quality of flowers, fruit and foliage.

Special Practices in Flower Cultivation

Pruning

Objectives of pruning

- Reduce the apical dominance of the plant so that the lateral branches are encouraged for quality blooms.
- To give a definite direction and shape to the plant
- To develop a strong framework.
- To utilise the available space effectively
- To impart dwarfing in the plant and invigorating its growth
- To influence productiveness and quality of the produce
- To penetrate necessary light and air to inner portion of the plant
- To remove all dead, diseased and interlacing twigs or branches

Special Practices in Flower Cultivation

Pruning

Time of pruning

1. The plant bearing flower on last season's growth is, generally, pruned immediately after flowering.
2. Those plants flowering on current season's growth are pruned sufficiently ahead of the flowering season.

Special Practices in Flower Cultivation

Methods of pruning

- 1. Clipping or shearing of hedge-** Regular pruning is carried out in hedge plants in order to maintain their shape-cum-beauty, symmetry and health and encourage branching from the base so that they become impenetrable to cats and dogs. Square-cut, round-top, wavy-top, columns, etc., are given through training and pruning.
- 2. Topiary-** The art of clipping and shearing climbers, shrubs, small trees and herbaceous perennials into artistic shapes is known as 'topiary'. Plants with small dark green foliage amenable to frequent clippings and shearing are selected for topiary making.

Summary

In this session you have learnt about the selection of site, optimum conditions for the cultivation of flower crops, tools and equipment, preparation of field and special practices in flower cultivation.

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