

## INTRODUCTION

### What are Temperate Fruit Plants?

- Temperate fruit plants are specific in the climatic requirement.
- They can tolerate both diurnal and seasonal wide fluctuation of temperature and are grown only in place where winter is distinctly cold.
- They require exposure of specific chilling temperature for certain period to break bud dormancy and initiate bud break.
- These fruit plants are generally deciduous and suitable of higher elevation as they can withstand frost.
- Examples are: apple, pear, plum, apricot, almond, peach, strawberry, walnut, pecan nut and cherry.

### Horticultural classification of temperate fruits

Classification is a system of placing an individual or a number in various groups, or to categorizes them according to a particular plan or sequence which is in conformity with the nomenclature

#### Classification helps:

- (i) To identify and name them
- (ii) to find some idea of the closeness of their relationship
- (iii) to suggest with what other kind they possibly may or may not be interbred or crossed
- (iv) to suggest the kind with which they possibly may or may not be inter-grafted
- (v) to suggest soil and cultural requirements and climatic adaptations.

Fruit can be classified on several basis but their classification on the basis of climatic adaptability and morphological features seems to be more relevant from the horticulture point of view.

## CLASSIFICATION

### 1. Classification on the basis of plant stature:

**a. Temperate tree fruits:** Fruits borne on the trees growing in the temperate climates such as apple, pear, stone fruits etc.

**b. Temperate small fruits:** Fruits generally borne on the vines, brambles or herbaceous plants grown under temperate climate like strawberry, cranberry, blackberry, blueberry etc.

**c. Temperate nuts:** Nuts are characterized by the hard shell outside, separating the kernel and husk of the fruit. Pecan nut, hazel nut and walnut are good examples of temperate fruit plants producing nuts.

### 2. Classification based on fruit morphology

Depending on number of ovaries involved in fruit formation, fruits are classified into three groups.

- (i) Simple fruits
- (ii) aggregate fruits
- (iii) multiple (composite) fruits

**i. Simple fruits:** Simple fruits are derived from a single ovary of one flower. Simple fruits are further classified as fleshy and dry fruits.

**A. Fleshy fruits:** These are those fruits whose pericarp (ovary wall) becomes fleshy or succulent at maturity. The temperate fleshy fruits may be either pome or drupe.

**a. Pome:** The pome is an inferior, two or more celled fleshy, syncarpous fruit surrounded by the thalamus. The fruit is referred to as false fruit as the edible fleshy part is not derived from the ovarian tissues but from external ovarian tissue thalamus. Examples of temperate pome fruits are apple, pear and quince).

**b. Drupe (stone):** This type of fruit derived from a single carpel, however, the olive is an exception in that the flower has two carpels and four ovules but one carpel develops. Two ovules are borne in most of drupes but one seed develops. In this type of fruit, the pericarp is differentiated into three distinct layers; thin exocarp or peel of the fruits, the mesocarp which is fleshy and hard and stony endocarp, enclosing seed. Examples of temperate drupe fruits are cherry, peach, plum and apricot.

In almond at maturity exocarp and mesocarp get separated as leathery involucre and are removed before marketing, only endocarp containing the edible seed is used hence it is nut.

**B. Dry fruits:** This type of fruit has been classified on the basis of pericarp (ovary wall) at maturity. The entire pericarp becomes dry and often brittle or hard at maturity.

They are dehiscent (in which the seeds are dispersed from fruit at maturity) and indehiscent (not split open when ripe) Nuts are typical example of indehiscent dry fruits.

**a. Nut:** A fruit in which carpel wall is hard or bony in texture. Fruit is derived from an hypogynous flower (filbert) or an epigynous one (walnut) and is enclosed in dry involucre (husk). It is only one seeded, but in most cases is derived from two carpels. Examples are walnut, almond, chestnut, hazelnut and pecan nut. Dry fruits are not juicy or succulent when mature and ripe. When dry, they may split open and discharge their seeds (called dehiscent fruits) or retain their seeds (called indehiscent fruits).

### **3. Classification based on bearing habit:**

The flower bud is either terminal or lateral. Based upon the location of fruit buds and type of flower bearing structure to which they give rise, the temperate fruits are classified as under.

#### **1. Terminal bearer:**

(a) Flower buds mixed, flowering shoot with terminal inflorescences. Examples are apple, pear, walnut (pistillate flowers) and pecan (pistillate flowers)

#### **2. Lateral bearer:**

(a) Flower bud containing flower parts only e.g. peach, apricot, plum, cherry, almond, walnut (staminate catkin) and pecan (staminate catkin)

(b) Flower buds mixed, flowering shoot with terminal inflorescences e.g. blackberry, raspberry, blueberry, apple and pear (occasionally)

(c) Flower buds mixed, flowering shoot with lateral inflorescences e.g. persimmon, chestnut, pistachio nut, cranberry.