



SNS COLLEGE OF TECHNOLOGY

Coimbatore-35
An Autonomous Institution

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DEPARTMENT OF FOOD TECHNOLOGY

19FTT305-FRUIT AND VEGETABLE TECHNOLOGY

UNIT 1- INTRODUCTION TO PROCESSING OF FRUITS AND VEGETABLES



- Fruit and vegetables have many similarities with respect to their compositions, methods of cultivation and harvesting, storage properties and processing.
- Fruits are sweet and flashy products of plant or tree that contains seed and the vegetables are plant or derived from various parts of plant.

All fruits may be classified into three major groups on the basis of the number of ovaries and the number of flowers involved in their formation.

1)**Simple Fruits:** Simple fruits develop from a single matured ovary in a single flower.

a) Fleshy Fruits include drupes, pomes and berries.



- I. Drupes have a single seed enclosed by a hard, stony pit.
 - II. In pomes, the flesh comes from the enlarged receptacle that grows up around the ovary, and the endocarp around the seeds is papery or leathery.
 - III. Berries develop from a compound ovary and usually contain more than one seed. The three types of berry are true berries, pepos and hesperidiums
- b) Dry Fruits, pericarp dry at maturity.
- I. Dehiscent fruits, those which dehisce or split open when fully mature



Indehiscent fruits, those which do not split open at maturity

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2) **Aggregate Fruits:** Aggregate fruits consist of a number of matured ovaries formed in a single flower and arranged over the surface of a single receptacle. Individual ovaries are called fruitlets.

3) **Multiple Fruits:** Multiple fruits consist of the matured ovaries of several to many flowers more or less united into a mass. Multiple fruits are almost invariably accessory fruits.

4) **Accessory Fruits.** Fruits that develop from tissues surrounding the ovary are called accessory fruits.



Mango



- **Region:** Tropical and subtropical regions, primarily India, Southeast Asia, and Central America.
- **Season:** Late spring to summer (May to September in many regions).
- **Morphology:** Oval or kidney-shaped, with a smooth, leathery skin that can range from green to yellow, red, or orange when ripe. The flesh is yellow and contains a large, flat pit.
- **Texture:** The flesh is juicy, fibrous, and soft, while the skin is smooth. The pit is hard and not edible.
- **Composition:** Rich in Vitamin C, A, and dietary fiber. Mangoes also contain carbohydrates (sugars), and small amounts of protein and fat. They are also high in antioxidants like beta-carotene and polyphenols.



Strawberry



- **Region:** Native to temperate regions of North and South America, now cultivated worldwide, especially in the U.S., Mexico, and parts of Europe and Asia.
- **Season:** Typically late spring to early summer (May to June), depending on the region.
- **Morphology:** Small, red, heart-shaped fruit with tiny seeds on the outside. It has a green leafy calyx at the top.
- **Texture:** The flesh is soft, juicy, and tender. The skin is smooth and slightly firm, while the seeds add a slight crunch.
- **Composition:** Rich in Vitamin C, folate, potassium, and antioxidants like anthocyanins. Strawberries are low in calories, high in dietary fiber, and have a moderate amount of natural sugars and carbohydrates.



Guava

- Region:** Native to tropical and subtropical regions of Central and South America, widely grown in India, Southeast Asia, and parts of Africa.
- Season:** Varies by region but typically harvested from late summer to fall (June to September in many areas).
- Morphology:** A round or oval-shaped fruit with a thick, green, or yellow skin when ripe. The interior ranges from white to pink or red, containing numerous small edible seeds.
- Texture:** The flesh is soft, juicy, and grainy, with a slightly gritty texture due to the seeds. The skin is somewhat tough but can be eaten.
- Composition:** High in Vitamin C, fiber, and antioxidants. Guavas also provide Vitamin A, folate, potassium, and small amounts of iron. They are low in calories but contain natural sugars and some carbohydrates.



BANANA



Region: Native to Southeast Asia, now cultivated in tropical and subtropical regions worldwide, particularly in countries like India, the Philippines, Ecuador, and Brazil.

Season: Available year-round, with peak harvest times depending on the region.

Morphology: Elongated, curved fruit with a thick peel that ranges from green when unripe to yellow or brown when ripe. The inside is pale yellow and soft.

Texture: The flesh is soft, smooth, and creamy when ripe. The peel is thick and fibrous but not edible.

Composition: Bananas are rich in potassium, Vitamin B6, Vitamin C, and dietary fiber. They are high in carbohydrates (mainly natural sugars and starches) but low in fat and protein. Bananas are a good source of quick energy.



Carrot (Vegetable)

- **Region:** Grown worldwide, especially in temperate regions like North America, Europe, and parts of Asia.
- **Season:** Available year-round, but peak harvest in spring and fall.
- **Morphology:** Cylindrical, tapering root, typically orange, although other varieties exist (purple, yellow, red). The green, feathery top is also edible.
- **Texture:** Crisp and crunchy when fresh, with a smooth skin. The inner flesh is dense and moist.
- **Composition:** High in Vitamin A (from beta-carotene), dietary fiber, Vitamin K, and potassium. Carrots are low in calories and contain small amounts of carbohydrates, proteins, and fats.



Tomato



Region: Native to western South America, but now grown worldwide, especially in warmer climates.

- **Season:** Summer to early fall.
- **Morphology:** Round or slightly oval-shaped with smooth, thin skin. The color ranges from green to yellow, orange, red, or purple, depending on the variety. The interior is filled with watery pulp and seeds.
- **Texture:** Juicy and tender, with a smooth skin. The flesh is firm but softens as it ripens.
- **Composition:** High in Vitamin C, potassium, and lycopene (an antioxidant). Tomatoes are low in calories, carbohydrates, and fats, and contain a small amount of protein. They also provide fiber.



Ladies Finger (Okra)

- **Region:** Native to North Africa, but widely cultivated in tropical, subtropical, and warm temperate regions worldwide, particularly in parts of Africa, Asia, the Middle East, and the southern United States (e.g., Louisiana, Texas).

- **Season:** Okra is typically grown in the warm months, from late spring to early fall. In tropical regions, it can be harvested year-round.

- **Morphology:**

- **Shape:** The vegetable is a long, slender, green pod that typically measures 4 to 6 inches in length.
- **Color:** It is green when ripe but can also come in red varieties.
- **Structure:** The pod has a distinctive ribbed texture with a tapered shape. Inside, it contains small, white seeds and a mucilaginous (slimy) substance when cut open.



•Texture:

- The skin of the okra pod is smooth but firm when raw.
- The interior is soft and sticky due to the mucilage, which becomes more pronounced when the vegetable is cooked.
- When cooked, okra can be tender, slightly crunchy, and slimy, depending on preparation methods (e.g., frying or stewing).

•Composition:

- **Nutrients:** Okra is a low-calorie vegetable rich in Vitamin C, Vitamin A, folate, and Vitamin K. It also provides dietary fiber, especially soluble fiber, which is important for digestion.
- **Minerals:** Okra contains potassium, magnesium, and calcium.
- **Macronutrients:** Okra has a modest amount of carbohydrates, with some natural sugars and fiber, but is low in fat and protein



Thank You