RAMA UNIVERSITY

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FACULTY OF AGRICULTURAL SCIENCES & ALLIED INDUSTRIES

Classification of fruits

Classification is the system of grouping or placing of an individual according to nomenclature. It is very useful to the pomologist.
It helps to:

- To identify and naming the crop.
- To study the close relationship.
- To know their hybrids and crossing behavior.
- To know their compatibility & inter grafting ability.
- To know their adaptability to soil & climate.

***Pomology*:** Pomology is a branch of horticulture which deals with various aspects of fruits starting from rising of saplings, growing them properly and providing various intercultural operations, the term pomology is a combination of two Latin words pome-fruits and logos-culture. "Poma" in Greek means fruits later subsequently transfer in to 'Pome" in Latin word means fruits, logos-study.

- Basic Pomology: Study of basic aspects of fruit production like training, water management, use of PGR's.
- Commercial Pomology: It is concerned with commercial production of fruits.
- Systematic Pomology: It may be concerned with classification and nomenclature like kingdom, order, class, genus and species.

Classification of fruits based on climatic adaptability

In this classification, the fruits trees are categorized into three recognized groups.

Temperate fruits

- Temperate fruit plants are exacting in their climate requirement.
- They are grown only in place where winter is distinctly cold, require as exposure of specific chilling temperature for certain period without which they do not flower
- These fruit plants are generally deciduous and stand frost. E.g. apple, almond, peach, pear, plum, strawberry, apricot, persimmon, cherimoya, pecan nut, walnut, hassle nut, cherry, pistachios and kiwifruits etc.

Tropical fruits

- Tropical fruit plants are generally evergreen and are extremely sensitive to cold.
- The plants are generally grown in climatic conditions prevailing in the region between the tropic of cancer (230 (27) N latitude) and the tropic of Capricorn (230 (27) S latitude).
- They do well under lesser fluctuations of diurnal temperature, light and dark periods they require a moist warm climate but are capable of withstanding dry weather in some cases e.g; mango, banana, papaya, sapota, etc.,

Sub-tropical fruits

- The fruit crops grown under a climatic condition between temperate and the tropical are known as subtropical fruit crops.
- They may be either deciduous or evergreen and are usually able to withstand a low temperature but not the frost.
- They are also quite adoptive to fluctuations of light and dark period during day and night. Some subtropical fruit plants require chilling for flower bud differentiation. Example; grape, citrus, durian, jackfruit, etc.,

Classification based on bearing habit

On the basis of bearing habit, fruit trees are classified in to six categories to facilitate cultural operation like pruning, skiffing, heading back etc.

- Fruit buds bore terminally and giving rise to inflorescence without leaves. e.g. Mango, Cherry, etc.
- Fruit buds borne terminally and unfolding to produce leafy shoots which terminate in flower clusters. e.g. Apple
- Fruit buds borne terminally and unfolding to produce leafy shoots with flower or flower clusters e.g Guava

- Fruit bud borne laterally containing flower parts only and giving rise to inflorescence without leaves or leaves present, they are reduced in size., e.g. Citrus
- Fruit bud borne laterally and unfolding to produce leafy shoots terminally in flower clusters this type of flowering is noticed in grapes and cashewnut.
- Fruit buds borne laterally and unfolding to produce leafy shoots with flower clusters in leafy axils.

Classification based on fruit morphology

Based on Fruit morphology

1) Simple fruit - Berry : Banana, Papaya, Grape, Sapota, Avocado

2) Modified berry

Balusta	Pomegranate
Amphisarca	Woodapple, Bael
Pepo	Water melon
Pome	Apple, Pear, Loquat
Drupe (Stone)	Mango, Pear, Plum
Hesperidium	Citrus
Nut	Cashew, Litchi, Walnut, Rambutan
Capsule	Aonla, Carambola

3) Aggregate fruits: Etario of berries –Custard apple, Raspberry

4) Multiple fruit : Syconus- Fig; Sorosis- Jackfruit, Pineapple, Mulberry

Classification based on rate of respiration

Fruits classified based on rate of respiration

Climacteric	**Non-climacteric**
Mango, Banana, Sapota, Guava, Papaya, Apple, Fig, Peach, Pear, Plum, Annona, Tomato	Citrus, Grape, Pomegranate Pineapple Litchi, Ber, Jamun, Cashew, Cucumber, Cherry, Strawberry.

(Climacteric fruits produce much larger amount of ethylene than non climacteric fruits)

Classification based on photoperiodic responses

Based on photoperiodic responses the fruits are classified as

Long day	***Short day***	***Day neutral plant***
Passionfruit, Banana, Apple	Strawberry, Pineapple, Coffee	Papaya, Guava

Classification based on relative salt tolerance

Based on relative salt tolerance fruits are classified as

Highly tolerant	***Medium Tolerant***	***Highly sensitive***
Datepalm, Ber, Amla, Guava, Coconut, Khirni	Pomegranate, Cashew, Fig, Jamun, Phalsa	Mango, Apple, Citrus, Pear, Straw berry

Classification based on relative acid Tolerance

Based on relative acid Tolerance

Highly tolerant	***Medium tolerant***	***Highly sensitive***
Stawberry, Raspberry, Fig, Bael, Plum	Pineapple, Avocado, Litchi	-

Classification of fruits based on longevity

Based on longevity fruits are clasified as

Very Long longevity	>100 yrs	Datepalm ,Coconut, Arecanut
Long longevity	50-100 yrs	Mango, Tamarind
Medium longevity	10-50 yrs	Litchi, Guava,Pomegranate
Short longevity	-	Pineapple, Banana

Classification based on consumers preference

Based on consumer preference or weight of fruits

Very light	50-100gm	Grape,Ber,Banana
Light	100-150gm	Sapota,Pomegranate
Light medium	150-300gm	Mango

Medium	300-350gm	Avocado
Medium to heavy	800-1000gm	Mango
Heavy	1-5kg	Bread fruit, Pineapple
Very heavy	>5kg	Jack Fruit

Botanical classification

Botanical classification based on botanical relationship with genomes.

Angiosperms

Common name	Botanical name	Family	Type of fruit	Chromosome No
Monocotyledanae				
Banana	*Musa paradisiaca*	Musaceae	Berry	22,33,44
Pineapple	*Ananas comusus*	Bromeliaceae	Sorosis	50
Panargh Palm	*Borasus flabellifera*	Palmae	Drupe	
Date palm	*Phoenix dactylifera*	Palmae	Drupe	36
Dicotyledanae				
Mango	*Mangifera indica*	Anacardiaceae	Drupe	40
Pistachionut	*Pistachia vera*	Anacardiaceae	Nut	
Cashew	*Anacardium occidentale*	Anacardiaceae	Nut	
Custardapple/Seetaphal	*Annona squamosa*	Annonaceae	Aggregate of berry	

Hanumanphal	*Annona reticulata*	Annonaceae	Aggregate of berry	
Lakshmanphal	*Annona muricata*	Annonaceae	Aggregate of berry	
Ramphal	*Annona cherimoya*	Annonaceae	Aggregate of berry	
Karonda	*Carissa carandus*	Apocyanaceae	Berry	
Kiwi fruit	*Actinidia chinensis*	Actinidaceae	Berry	
Durian	*Durio zibethinus*	Bombaceaceae	Berry	28
Guava	*Pisidium guajava*	Myrtaceae	Berry	22
Jack fruit	*Atrocarpus heterophyllus*	Moraceae	Sorosis	56
Bread fruit	*Artocarpus altilis*	Moraceae	Sorosis	56
Papaya	*Carica papaya*	Caricaceae	Berry	18
Aonla/Nelli	*Emblica officinalis*	Euphorbiaceae	Berry	28
Mongosteen	*Garcinia mangostana*	Guttiferae	Berry	24
Avacado	*Perisa americana*	Lauraceae	Berry	24
Tamarind	*Tamarindus indica*	Leguminosae	Pod	

West Indian cherry	*Malphigia puncifolia*	Malphigiaceae	Drupe	
Fig	*Ficus carica*	Malphigiaceae	Berry	
Guava	*Psidium guajava*	Myrtaceae	Berry	22
Jamun	*Syzygium cumini*	Myrtaceae	Drupe	
Roseapple	*Syzygium jambos*	Myrtaceae	Drupe	20
Olive	*Olea europaea*	Oleaceae	Drupe	
Carambola/ Star fruit	*Averrhoa carambola*	Oxalidaceae	Berry	24
Passion fruit	*Passiflora edulis*	Passifloraceae	Berry	18
Pomegranate	*Punica granatum*	Punicaceae	Balasta	
Ber	*Ziziphus jujuba*	Rhamnaceae	Drupe	
Loquat	*Eriobotrya japonica*	Rosaceae	Pome	34
Sweet orange	*Citrus sinensis*	Rutaceae	Hesperidium	18
Mandarin	*Citrus reticulata*	Rutaceae	Hesperidium	18
Mandarin	*Citrus unsu*	Rutaceae	Hesperidium	18
Rough lemon	*Citrus jambheri*	Rutaceae	Hesperidium	18
Lemon	*Citrus limon*	Rutaceae	Hesperidium	18

Bael	*Aegle marmelos*	Rutaceae	Amphisarea	
Wood apple	*Feronia limonica*	Rutaceae	Amphisarea	
Litchi	*Litchi chinensis*	Sapindaceae	Nut	30
Rumbutan	*Nephelium lappaceum*		Berry	
Sapota	*(Achras zapota) Manilkara achras*	Sapotaceae	Berry	26
Phalsa	*Grewia subenaequalis*	Tiliaceae	Drupe	
Grape	*Vitis vinifera*	Vitaceae	Berry	38