PLANT CLASSIFICATION

I. GENERAL TERMINOLOGY

1. By growth habit:

   **Succulent** plants - herbaceous or herbs (succulent seed plants possessing self-supporting stems)
   **Vine** - a climbing or trailing herbaceous plant
   **Liana** -
   **Trees** - having a single central axis
   **Shrub** - having several more or less upright stems

2. By leaf drops:

   **Deciduous** -
   **Evergreen** -

3. By life span:

   **Annuals** -
   **Biennial** -
   **Perennial** -

   Vegetative (often rosettes) during the first growing season. The winter following the first growing season provides the low temperature necessary to stimulate to 'bolt' or to send up a seed stalk during the second growing season. Carrots, radish and beets are harvested as annuals at the end of the first growing season after they develop over-wintering storage organs.

   **Perennial** -

   Unlike annuals and biennials, the perennial does not necessarily die after flowering (fruit trees; asparagus, rhubarb whose above ground parts are killed each year (in temperate regions) but roots remain alive to send up shoots in the spring; subtropical perennials such as tomato and eggplant are considered annual in temperate regions; *Rubus* (raspberries) has perennial roots and biennial shoots)

4. By temperature tolerance:

   **Tender** plant - damaged or killed by low temperature
   **Hardy** plant - withstands winter low temperatures
   **Wood-hardy** - a whole plant is winter hardy
   **Flower-bud hardiness** - ability of flower buds to survive low winter temperatures (peach, ginkgo tree)

5. By temperature requirements:

   **Cool-season crop** -
   **Warm-season crop** -

6. By habitat or site preference:

   **Xerophyte** -
   **Shade plants** -
   **Acid loving** -
   **Halophyte** -
II. HORTICULTURAL PLANT CLASSIFICATION

1. Edibles

A. Vegetables

Plants grown for aerial portions

**Cole crops**

**Legumes**

**Solanaceous** fruit crops (Capsicum pepper, eggplant, tomato)

**Cucurbits** or vine crops (cucumber, melon, squash, pumpkin)

**Greens** or pot herbs (chard, dandelion, spinach)

**Mushrooms** (Agaricus, Lentinus)

Other vegetables (asparagus, okra, sweet corn)

Plants grown for underground portions

**Root crops**

Temperate (beet, carrot, radish, turnip)

Tropical (cassava, sweet potato, taro, yam)

**Tuber crops** (Jerusalem artichoke, potato)

**Bulb and corm crops** (garlic, onion shallot)

B. Fruits

**Temperate (Deciduous)**

Small fruits

**Berries** (blueberry, cranberry, strawberry)

**Brambles**-

**Vines** (grape, kiwifruit)

Tree fruits

**Pome** fruits-

**Stone** fruits-

**Subtropical and tropical (Evergreen)**

Herbaceous and vine fruits (banana, papaya, passion fruit, pineapple)

Tree fruits

**Citrus**-

Non-citrus (avocado, date, fig, mango, mangosteen)

C. Nuts

**Temperate** (almond, chestnut, filbert, pecan, pistachio)

**Tropical** (Brazil nut, cashew, macadamia)

D. Beverage Crops

**Seed** (cacao, coffea)

**Leaf** (tea, mate)

E. Herbs and Spices
Culinary herbs (dill, rosemary, sage)
Flavorings (peppermint, spearmint)
Tropical spices (cinnamon, clove, nutmeg, pepper)

2. Ornamentals

A. Florist Crops
   Cut flowers -
   Flowering pot plants-
   Foliage plants-
   Bedding plants-
   Cut greens-

B. Landscape Plants

   Trees
   Deciduous (maple, elm, aspen, oak, willow)
   Evergreen (pine, juniper, spruce)

   Shrubs
   Deciduous (lilac, azalea, privet)
   Evergreen (juniper)

   Vines (ivy, bougainvillea, pyracantha)

   Herbaceous perennials-

   Ground covers (ivy, vinca, juniper)

C. Lawn and Turf Plants

   Bermudagrass, bluegrass, fescue, perennial ryegrass, buffalograss

3. Industrial Crops

   Drugs and Medicinals (digitalis, quinine, opium poppy)
   Oil Seeds (oilpalm, jojoba, tung)
   Extractives and Resins (Scotch pine, Para rubber tree)
   Insecticides (pyrethrin, neam plant)

III. NOMENCLATURE (SCIENTIFIC PLANT CLASSIFICATION)

   Early classification started by the Greek philosopher Theophrastus who classified all plants into annuals, biennials, and perennials according to life spans, and into herbs, shrubs, and trees according to their growth habits.

   The modern taxonomy for plant classification is based on Linnaeus (an 18th century Swedish physician, now considered "father of taxonomy") who revolutionized the fields of plant and animal classification.

1. The Plant Kingdom
Horticulture deals with mostly family, genus, species, and cultivars.

- Botanical names are binomial.
- Underline or italicize genus and species: 
  \[ \text{Genus species} \] (or \text{Genus species})
- Do not underline the family and cultivar names:
  Rosaceae, ‘Golden Delicious’
- Variety names may be underlined.

Examples:

- \text{Juniperus communis var. depressa}  (Prostrate Juniper)
- \text{Malus domestica cv. Red Delicious}  (Red Delicious Apple)
- \text{Malus domestica ‘Red Delicious’}  (Red Delicious Apple)
- \text{Malus domestica ‘Red Delicious’}  (Red Delicious Apple)

2. Some frequently used terms

\textbf{Variety} -

\textbf{Cultivar} -

\textbf{Ecospecies} - a subdivision of species that are formed by ecological barrier. i.e., \textit{Cercis canadensis}  (Redbud)

\textbf{Clone} -

\textbf{Clonal cultivar} -

\textbf{Pure line cultivar} -

\textbf{Hybrid cultivar} - a cultivar composed of hybrids between genetically diverse parental lines (uniform phenotype, genetically heterozygous)

\section*{IV. SOME HORTICULTURALLY IMPORTANT FAMILIES}

1. \textbf{Rosaceae} (Rose Family)

- About 100 genera, 3000 species
- Rose, raspberries, blackberries, strawberries, prunus (peach, cherry, apricot, almond, plum), apple, pear quince

Examples

- \textit{Rosa hybrida cv. Royalty}  Royalty Rose
- \textit{Pyrus communis cv. Bartlett}  Bartlett Pear
- \textit{Malus domestica cv. Red Delicious}  Red Delicious Apple
2. **Solanaceae** (Nightshade Family)

- About 90 genera, 2200 species
- Mostly native of South America
- The genus *Solanum* has 1700 species
  - Many species contain alkaloids, solanine, nicotine, atropine

Examples

- *Solanum tuberosum* 
  - potato
- *Solanum tuberosum* ‘Russet Burbank’ 
  - Russet Burbank potato
- *Petunia hybrida* cv. Red Cascade 
  - Red Cascade petunia
- *Lycopersicon esculentum* 
  - tomato
- *Capsicum frutescens* ‘Red Bell’ 
  - Bed Bell pepper

3. **Cucurbitaceae** (Gourd Family)

- About 100 genera, 559 species from both the old and new worlds
- Mostly vines with tendrils

Examples

- *Citrullus lanatus* 
  - watermelon
- *Cucumis sativus* 
  - cucumber
- *Cucurbita pepo* 
  - squash
- *Cucumis melo* 
  - muskmelon
- *Cucurbita maxima* 
  - pumpkin

4. **Brassicaceae** (formerly Cruciferae, Mustard Family)

- About 350 genera, 3200 species
- Cole crops such as cabbage, broccoli, radish

Examples

- *Brassica oleracea* 
  - cabbage, kale, kohlrabi, broccoli, cauliflower
- *Brassica rapa* 
  - Pak choi, Chinese cabbage, turnip
- *Brassica juncea* 
  - mustard
- *Raphanus sativa* 
  - radish, Daikon radish

5. **Apiaceae** (formerly Umbelliferae, Carrot Family)

- Annual or biennial herb
- About 250 genera, 2500 species
- Umbel shape inflorescence

Examples

- *Daucus carota* 
  - carrot
- *Apium graveolens* 
  - celery
- *Coriandrum sativum* 
  - coriander

6. **Liliaceae** (Lily Family)

- About 240 genera, 3000 species
- Specialized food storage organs such as rhizomes, bulbs, fleshy roots)
- Many ornamental plants

Examples

Asparagus officinalis  asparagus
Lilium longiflorum  Easter lily
Aloe vera or Aloe barbadensis  aloe vera
Tulipa spp.  tulips

7. Orchidaceae (Orchid Family)

- 800 genera, 30,000 species
- Mostly native to tropical and subtropical regions
- Epiphytic as well as terrestrial growth habits

Examples

Vanilla planifolia  Vanilla orchid
Cattleya spp.  Cattleya orchids
Dendrobium spp.  Dendrobium orchids
Phalaenopsis spp.  Phalaenopsis orchids
Cymbidium spp.  Cymbidium orchids