Introduction to Horticulture

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Horticulture Defined
- hortus (garden) + colere (to cultivate)
- Culture of Gardens vs. Fields of Crops
- Fruits, Vegetables, Ornamentals, Herbs, Specialty Crops

Taxonomy
Botanic Nomenclature
Purpose, Pronunciation & Format
What is a Plant?

- Member of the kingdom Plantae
- Living, immobile, no conscious
- Rigid cell walls made of cellulose
- Can regenerate lost tissues and organs
- Carry out photosynthesis
- They are able to make their own food (autotrophs)
Why use Scientific Names?

- Scientific names use the same language worldwide: Latin
- Unique name for each plant, often multiple common names
- Many scientific names have specific meaning or descriptors
Common Name
Snow-in-Summer

Cerastium tomentosum
Melaleuca linariifolia

Phlomis fruticosa
Jerusalem Sage

Digitalis purpurea
Foxglove
Lady’s Glove

Agapanthus africanus
Blue Lily
Cape Agapanthus
Fynbos Lily
Lily of the Nile
African Lily

What’s in a Latin name?

- alba – white
- alpestris - alpine
- bellus – beautiful
- broccolo – flowering top
- caerule – dark blue
- candicans – hairy or wooly
- cereus - waxy
- coccinea – scarlet
- cordata – heart shaped
- crassu – fleshy, thick
- dulcis – sweet
- edulis – edible
- ferox – very thorny
- flavens – yellowish
- glaber – smooth; without hairs
- heli – sun
- imbricata – overlapping, like scales
- ingens – enormous
- obesus – fat
- phylla – leaves (pertaining to)
- repens – creeping, crawling
- ericeus - silky
- serpens – creeping, snakelike
- vulgaris - common
Pronunciation Facts

- Horticulturists don’t always agree on pronunciation
- Individual botanists rarely are completely consistent in pronunciation
- People tend to pronounce names the way they first learned them
- Website to try: davesgarden.com

Hierarchy of Scientific Classification

- Kingdom
- Phylum
- Class
- Order
- Family
- Genus
- Species

General Format

- **Family**: 640 Families
  - Suffix of: -aceae; pronounced Aa-Cee-Ee

- **Genus**: 17,000 Genera
  - Genus is Capitalized & in Italic or underlined

- **Species**: 1,064,400 species
  - Species is lowercase & in Italic or underlined

- ‘hybrid’, var., x
  - Countless hybrids, sub-species, variations, trade names, etc.
Plant Family: Euphorbiaceae

Euphorbia pulcherrima
Euphorbia ingens
Bryophyllum

PHYLUM
KINGDOM
CLASS
FAMILY
ORDER
GENUS
SPECIES
CULTIVAR

Plantae (Plant)
Magnoliophyta (Flowering Plant)
Magnoliopsida (Dicotyledon)
Lamiales (Euasterid I group – 24 families)
Lamiaceae (Mint Family)
Rosmarinus (Dew of the Sea)
officinalis (of official/medicinal use)
‘Tuscan Blue’

Common Abbreviations

Lavandula stoechas, Lavandula canariensis, Lavandula dentate
or..... Lavandula stoechas, L. canariensis, L. dentate

Lavandula sp. – Used when referring to one unknown species of Lavandula

Lavandula spp. – Used when referring to many unknown species of Lavandula
Another Helpful Web Site

Tropicos.org
A Web Site of Missouri Botanical Garden

Search for Botanic Names...
all Genera within a Family,
all Species within a Genus, etc.

Botany Basics

PLANT STRUCTURE
**MERISTEMS**

**Apical Meristems**
- Primary growth
- Occurs in roots and shoots
- Increase in length

**Lateral Meristems**
- Secondary growth
- Occur in cambium & similar tissue
- Common in trees (wood and bark)
- Increase in girth (width)

**Primary vs. Secondary Growth**

**ROOTS**

[Images of plants and tree roots]
Function of Roots

- Take up water and nutrients
- Store excess food
- Anchor the plant
- Synthesize essential compounds
- Reproductive organ

Root Anatomy

Types of Roots

Taproot – absorbs water deep in the ground (root vegetables, trees)

Fibrous roots stay close to the top of the soil (bedding plants, tomato)

Adventitious roots help anchor plant or help plant climb (strawberries, ivy, some grasses)
Structure of a Seed Plant

- **Herbaceous** - flexible stems; leaves and stems die down to soil level at the end of every growing season.
- **Woody** - form a new layer of woody tissue each year, increasing the diameter of the stem.
- **Vine** - growth habit of trailing or climbing stems, lianas or runners
- **Shrub** - woody plant this is smaller than a tree and has several main stems at or near the ground
- **Tree** - woody perennial plant having a single stem or trunk growing to considerable height and bearing lateral branches at some distance from the ground.
Xylem tissue conducts water & dissolved mineral nutrients from the roots upward.

Phloem tissue conducts photosynthetically produced food & other compounds from the leaves to other plant parts – up & down.

Plant Vascular Tissue

Monocot

Herbaceous

Woody

Lily's, grasses, palms, etc.
Stem Modifications

- Stolon or Runner
- Corm
- Tuber
- Rhizome

LEAVES

Parts of a Leaf

1. Simple Leaf
   - Lamina
   - Petiole
   - Stamens
   - Axillary Bud

2. Compound Leaf
   - Leaflet
   - Petiole
   - Petiolule
   - Axillary Bud
Leaf Arrangements

Leaf Key

Leaf Retention

• Evergreen
• Deciduous
• Semi-deciduous
Flowers

**Flower Forms**

- single spike
- raceme
- corymb
- umbel
- cyme
- panicule
- spadix
- composite

**Why Do Plants Have Flowers?**

- Aristolochia gigantea
  - Dutchman's Pipe
- Platycerium
  - Staghorn fern
A Perfect flower has the Pistil & Stamen on the same flower.

An Imperfect flower has a Pistil or Stamen, but not on the same flower.

Sex and the Zucchini

Female - Pistillate    Male - Staminate

Pistil
Ovary
Style
Petal
Receptacle
Sepal
Filament
Anther
Ovules
Pedicle (or Pedicel)
Petal
Sepal
Ovary
Stamen
Stigma
Pollen
Stigma
Stamen
Pistil
Pollen
Stamen
Sex and the Zucchini
4 Common Situations

- **Flower Type:** Perfect
  - **Plant Type:** Bisexual/Hermaphroditic

- **Flower Type:** Imperfect
  - **Plant Type:** Monoeccious
    - **Male Plant:** Staminate
    - **Female Plant:** Pistillate

- **Flower Type:** Imperfect
  - **Plant Type:** Dioecious

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Flowers & Their Fruit

- **Macadamia sp.**
- **Solanum lycopersicum**
  - **Tomato**
- **Kigelia africana**
  - **Sausage Tree**
- **Musa sp.**
  - **Banana**
- **Pisum sativum**
  - **Garden Pea**

SEEDS
Plant Characteristics

Growth Habit
- Annual
- Perennial
- Biennial

Climatic Adaptation
Classification – Use

- Ornamental
- Edible
- Medicinal
- Native
- Economic Importance