UNIT 1
Lesson 1.

PLANT IDENTIFICATION

LESSON AIM

Know the plant naming system and how plants are classified

This first lesson sets the stage, so to speak, for the remainder of the course. As such, it has considerably more reading than most of the other lessons. Read the material thoroughly and understand what you are reading, but do not get bogged down in trying to remember every detail. Spend about 4 or 5 hours doing this lesson.

Horticulture deals with living things and is somewhat unpredictable and variable. The ways you treat a plant differ from place to place, time to time and according to what you are trying to get from the plant. When referring to a book or magazine article, always look at where it was written and who wrote it. E.g. A gardening writer from the temperate region will usually talk about gardening suitable for temperate climates. If you are from a tropical area these recommendations on temperate gardening may be quite misleading for you! There can be great variations over relatively small distances in such factors as rainfall, wind and soil type. A certain type of tree might very well grow twice as tall in the Eastern suburbs of a city as it grows in the Western suburbs of the same city.

In horticulture there are different ways of tackling any job, each just as correct as the other. Never consider that a particular technique is the only way of doing something! You should try to be aware of the advantages and disadvantages of all of the alternatives. They all have their pros and cons, so you may have your own preferences as to how something may be done.

This subject has been written to teach horticulture in a way that is relevant to any place in the Southern or Northern hemisphere. It puts aside regional techniques and tries to teach principles and concepts which can be applied to anywhere. Keep this in mind as you study; try to see the principles, not just black and white facts.

PLANT NAMES

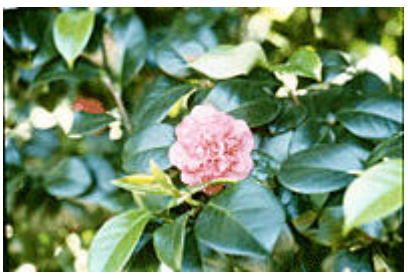
Plants are given two kinds of names: common and scientific.

Common Names

These are English language names usually given to plants by amateur gardeners as a descriptive, easy-to-remember tag. Many plants have more than one common name and sometimes the same common name is given to several quite different plants. This and the fact that there is no real control over common names make them inaccurate and unreliable for plant identification.

Scientific Names

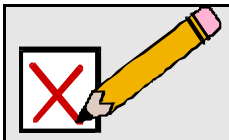
Based on Latin language, these names seem more complex than common names; however they have a logic to them that actually makes plant identification easier. The system of scientific naming is strictly controlled and coordinated by botanists throughout the world. Scientific names (e.g. *Camellia japonica)* should always be used in preference to common names.



In the scientific system, plants are classified by dividing them into groups with similar characteristics. These groups are divided into smaller groups with shared characteristics. These may be divided again and again into sub-groups, each with shared characteristics, until you finally have only one type of plant in each group. There are many different levels of division, although the main ones that we use are a couple at the bottom end of the scale.

The plant names which you see in books or on plant labels in a nursery will usually consist of two words:
* The first word is the "genus" name of the plant. Genus should always be capitalised.
* The second word is the species name of the plant. This should never be capitalised.

The main levels of division are as follows: -
Phyla are divided into CLASSES
Classes are divided into ORDERS
Orders are divided into FAMILIES
Families are divided into GENERA (singular: Genus)
Genera are divided into SPECIES
Species are sometimes divided into VARIETIES.



SELF ASSESSMENT.

Perform the self assessment test titled ‘test 1.1.1’.
If you find yourself getting the answers wrong, go over the notes from this lesson and repeat the test until you are able to get the correct answers.

The main plant phyla we are concerned with in horticulture are:

ANTHOPHYTA (Angiosperms) this group includes all of the plants which produce flowers (e.g. eucalypts, roses, lettuce, grasses etc.)

Angiosperm (Rose)

CONIFEROPHYTA (Conifers). This includes all plants which produce cones (i.e. pines, cypress etc)

Conifer (Pine)

PTEROPHYTA (Ferns)

Other phyla include such plant groups as mosses, fungi, bacteria and algae.

Anthophyta (Angiosperms)
These are divided into two classes:

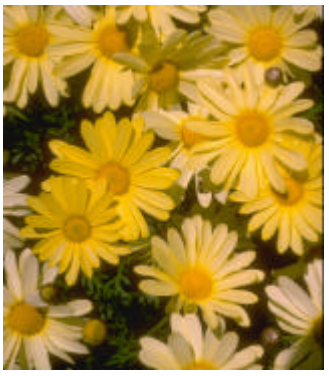
a/ DICOTYLEDONAE - In these plants the first leaves to appear from a germinating seed are in a pair (i.e. two leaves appear at once). The veins in the leaves are not parallel in these plants (e.g. pea, eucalypt etc).

b/ MONOCOTYLEDONAE - In these plants, the first leaf to appear when a seed germinates is a single leaf. Veins in the leaves are parallel to each other (e.g. grass, iris, orchid etc)

As you can see, you can distinguish between dicotyledons and monocotyledons by a couple of very simple characteristics. In the same way, we can usually distinguish which family a plant belongs to by a few basic characteristics. For example:

Lamiaceae (Labiatae) Family – Stems are four sided (i.e. square shaped), foliage is perfumed and flowers have two distinct lips.
Araceae Family - leaves are usually heart shaped (e.g: philodendron) and plants are commonly tropical/indoor plants.

Asteraceae (Compositae) - have daisy type flowers.



Apiaceae (Umbelliferae) - flowers occur in an umbrella like head on a single stalk.

You can usually distinguish a family name from other types of names by the ending: "**aceae**". Students sometimes confuse family name and genus. Note that a genus name rarely ends in "aceae".

Example: For plant name Calodendrum capense, Calodendrum = genus; capense = species.
Note that the genus name begins with a capital letter. The species name is usually written beginning with a small letter.

Sometimes a third word (and perhaps a fourth) is added to follow the species. These words refer to the variety of that particular species.

Example: Acer palmatum dissectum atropurpurea. Acer = genus; palmatum = species.
*dissectum tells us that this variety of Acer palmatum has dissected leaves.
*purpureum tells us that this variety of Acer palmatum has purple foliage.

HYBRID AND VARIETY

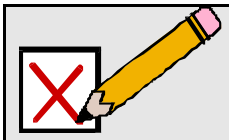
You may be confused about the difference between hybrid and variety:

A hybrid plant results from the cross breeding of two different species. The hybrid has a combination of characteristics from the two different species, characteristics bred or selected out of nature by man (though hybrids can sometimes occur without human intervention).

A variety is a particular type of plant within one species. Both parents are from the same species. A variety does not have parents from two different species; a hybrid does.

Example: Eucalyptus "Torwood" is a cross between Eucalyptus torquata and Eucalyptus woodwardii.

Sometimes the two plants which have been cross bred are both mentioned in the name and an "x" is placed between them to signify the parentage.



SELF ASSESSMENT.

Perform the self assessment test titled 'test 1.1.2'.
If you find yourself getting the answers wrong, go over the notes from this lesson and repeat the test until you are able to get the correct answers.

What Genus belongs to What Family?

Use the following lists as a guide to labelling your plant collection specimens with plant family names.

Dicotyledons

Family: Asteraceae (Daisies)

- Araceae: Allocasia, Arum, Calla, Anthurium, Philodendron, Caladium, Diffenbachia, Monstera.
- Asteraceae (Compositae): Brachycome, Helichrysum, Olearia, Dahlia, Chrysanthemum, Aster, Zinnia, Ageratum, Sunflower, Dandelion.
- Brassicaceae (Cruciferae): Cabbage, Cauliflower, Broccoli, Brussels Sprouts, Kale, Turnip, Wild Turnip, Mustard.
- Epacridaceae : Astroloma, Epacris, Leucopogon.
- Goodeniaceae: Dampiera, Goodenia, Leschenaultia, Scaevola.
- Lamiaceae (Labiatae): Mint, Thyme, Sage, Lavender, Prostanthera, Coleus, Hemiandra, Westringia, Salvia.
- Leguminosae: Acacia, Bauhinia, Cassia, Cercis, Chorizema, Clianthus, Davesia, Erythrina, Genista, Hovea, Hardenbergia, Lotus, Pultenaea, Sophora, Swainsonia, Brachysema, Goodia, Kennedya, Wisteria, Indigofera, Pea, Bean, Clover, Lupin, Peanut, Mimosa. (NB: Strictly speaking, Leguminosae has now been split into three different families. At this stage in your study you can, for simplicity, classify all plants in the families Mimosaceae, Caesalpinaceae, Papilionaceae as legumes.)
- Malvaceae: Hibiscus, Abutilon, Gossypium (Cotton).
- Myrtaceae: Astartea, Agonis, Beaufortia, Callistemon, Calytrix, Calothamnus, Eucalyptus,

Family: Lamiaceae (Lavender)

Eugenia, Kunzea, Leptospermum, Melaleuca, Tristania, Thryptomene, Micromyrtus, Chamaelaucium, Hypocalymma, Angophora, Feijoa, Myrtus.

- Pittosporaceae: Billardiera, Pittosporum, Hymenosporum.
- Primulaceae: Primula, Polyanthus.
- Proteaceae: Banksia, Conospermum, Dryandra, Grevillea, Hakea, Isopogon, Macadamia, Stenocarpus, Telopea, Protea.

Family: Proteaceae (Protea)

- Ranunculaceae: Delphinium, Aquilegia, Ranunculus, Paeonia, Anemone, Clematis.
- Rutaceae: Boronia, Correa, Crowea, Eriostemon, Citrus, Diosma.
- Rosaceae: Cydonia, Pyracantha, Geum, Spirea, Rosa, Apple (Malus), Prunus, Strawberry (Fragaria), Berry Fruit (Rubus).

Family: Rosaceae (Fragaria)

Family: Rosaceae (Malus)

- Solanaceae: Petunia, Browallia, Cestrum, Solanum, Henbane, Tomato, Potato, Capsicum, Egg Plant, Tobacco.
- Verbenaceae: Verbena, Lantana, Clerodendrum.
- Apiaceae (Umbelliferae): Actinotus, Carrot, Parsnip, Parsley.

Monocotyledons

- Amaryllidaceae: Anigozanthus, Hippeastrum, Nerine, Daffodil.
- Poaceae (Graminae): The grasses, bamboos, corn, cereals.
- Iridaceae: Freesia, Iris, Sparaxis, Watsonia.

Family: Poaceae (Grasses)

- Liliaceae: Asparagus, Xanthorrhoea, Chlorophytum, Agapanthus, Crocus, Onion, Lily of the Valley, Hemerocallis, Hyacinth, Dracaena, Kniphofia, Lachenalia, Lilium, Liriope, Phormium, Tulip, Aloe, Aspidistra, Sanseviera.
- Orchidaceae: The orchids.
- Arecaceae (Palmae): The Palms.

Family:
Arecaceae
(Palms)

Sometimes family names that have been in common usage have been replaced. This may lead to confusion as to which family some plant genera belong to. The eight families have been known for so long by other names that either name can be used: Compositae = Asteraceae
Umbelliferae = Apiaceae
Labiatae = Lamiaceae
Palmae = Arecaceae
Graminae = Poaceae
Cruciferae = Brassicaceae
Leguminosae = Fabaceae
Guttiferae = Clusiaceae

SET TASK

Visit a nursery or plant shop (or if you are in an isolated area, obtain some nursery catalogues). Look closely at the names on the plant labels and try to work out which part of the name is the "genus", which names "species" and which names "variety".

Pick out one of the plant families listed under the heading 'What Genus Belongs to What Family?' Find as many plants in that family as you can in that nursery (or catalogue). Make a note of the family and write down all of the plants you find in that family.

MULTIMEDIA
Watch the video 'Plant identification' in the online training system