

Lec. 10 plant taxonomy third grade 2015

Dicotyledon

Apiaceae (Umbelliferae) - Carrot family

It is family of dicot plant that include about 67 genera in Iraq with 167 species, it is aromatic family with number of common plants like Parsley, coriander and poisonous hemlock. The main characters

- 1- It is usually in herbs specially in Iraq.
- 2- The leaves are compound which are pinnate, ternate etc with **broad sheathing base**, rarely simple as in *Buplerum*.
- 3- The stems are usually, but not always hollow.
- 4- The **inflorescence** usually **compound** (at the end of each of these flower stems there is another umbrella of even smaller stems) with subtending involucre bracts.
- 5- Flowers are small, bisexual.
- 6- Calyx is usually absent or reduced if found, it is aposepalous with 5 lobes.
- 7- The stamens are 5 while gynoecium is syncarpous.
- 8- Fruits are schizocarps of mericarps.

Apiaceae usually included within Apiales order which returned to campanulids (Euasterids II). From the famous genera which found widely in Iraq are: *Apium*, *Ammi* and *Coriandrum*

2- Asteraceae (Compositae)- Sunflower family

It is from the biggest families in Iraq with an accurate number of species and genera as it is not published in flora of Iraq volumes till now but roughly it is about with 23600 species in the world.

- 1- It consists of herbs, trees.
- 2- The leaves are simple or compound, spiral or opposite.
- 3- The inflorescence consists of one or more heads (**capitula**) subtending by one or more series of **bracts** or **phyllaris**.
- 4- **The calyx** known as **pappus, is modified** as awns, scales, or capillary bristles, sometimes pappus is absent.
- 5- Flowers either bilabiate, disk or ray- ligulate (heads of many taxa a mixture of central disk flowers and peripheral ray flowers).
- 6- The stamens are 5
- 7- The androecium is syngenesious with inferior ovary.
- 8- The fruits are **achenes**.

Asteraceae has been recently classified into at least 10 subfamilies.

Economic importance of the family includes:

- 1- Food plants as in sunflower *Helianthus annuus*.
- 2- It has industrial and ornamental importance as in Chrysanthemums.

3- Fabaceae (Leguminosae)- Bean family

It is very large group in the world and the largest one in Iraq with many dominant species, economically, legumes are one of the important plants being the source of numerous pulses such as Peanut, favoring plants as in Ceratonia , fodder in Trifolium etc.

- 1- It consists of trees, shrubs and herbs.
- 2- The root of many members specially in Faboideae have a symbiotic association with nitrogen-fixing bacteria.
- 3- Leaves usually compound but could be simple as in Scorpio
- 4- Flowers are pentamorous or absent with papilionoids like structure in Faboideae.
- 5- Calyx is 5 (3-6), apsepalous or synsepalous.
- 6- The stamens 5 or 10 or indefinite.
- 7- The fruit is generally legume.

The fabaceae are traditionally classified into three subfamilies:

Caesalpinioideae, Mimosoideae and faboideae (papilionoideae).

*****Nomenclature** is the assignment of names utilizing a formal system. The criteria for formally naming land plants, algae, and fungi are based on the rules and recommendations of the **International Code of Botanical Nomenclature** or **ICBN**.

The ICBN governs the rules both for the specific names assigned to taxa and for the name endings that denote taxon rank. The ICBN is utilized in two basic activities: **(1)** naming new taxa, which were previously unnamed and often not described.

(2) determining the correct name for previously named taxa, which may have been divided, united, transferred, or changed in rank.

*****The Principles of the International Code of Botanical**

1- Botanical nomenclature is independent of zoological and bacteriological nomenclature.

2- The application of names of taxonomic groups is determined by means of nomenclatural types.

3- The nomenclature of a taxonomic group is based upon priority of publication.

4- Each taxonomic group with a particular circumscription, position, and rank can bear only one correct name, the earliest that is in accordance with the Rules, except in specified cases.

5- Scientific names of taxonomic groups are treated as Latin regardless of their derivation.

6- The Rules of nomenclature are retroactive unless expressly limited.

*****Nomenclatural type:** A nomenclatural type is almost always a specimen, e.g., a standard herbarium sheet specimen, but it may also be an illustration. There are different types of types.

1- Holotype is the one specimen or illustration upon which a name is based, originally used or designated at the time of publication.

2- Isotype is a duplicate specimen of the holotype, collected at the same time by the same person from the same population.

3- Lectotype is a specimen that is selected from the original material to serve as the type when no holotype was designated at the time of publication, if the holotype is missing, or if the original type consisted of more than one specimen or taxon.

4- Neotype is a specimen derived from a nonoriginal collection that is selected to serve as the type as long as all of the material on which the name was originally based is missing.

5- Syntype, which is any specimen that was cited in the original work when a holotype was not designated; alternatively, a syntype can be one of two or more specimens that were all designated as types.

6- Paratype, a specimen cited but that is not a holotype, isotype, or syntype

****Terms related to Nomenclature

1- Legitimate names are those that are in accordance with the rules of the International Code of Botanical Nomenclature. Any name that violates one or more rules of the ICBN is known as an **illegitimate name**.

2- Valid name is one that is **validly published**.

Valid Publication

According to the ICBN, in order for a scientific name to be formally recognized, it must be **validly published**. There are four general criteria for valid publication of a name.

1- The name must be effectively published, which means that it must be published in a journal commonly available to botanists (not, say, in the local newspaper or *National Enquirer* magazine).

2- The name must be published in the correct form, i.e., properly Latinized

3- The name must be published with a Latin description or diagnosis or with a reference to such. The Latin description may be brief, e.g., listing how the new taxon is different from a similar, related taxon.

4- For taxa of the rank of genus and below, a nomenclatural type must be indicated; the location of this type is also indicated (using the acronyms of Index Herbariorum).

3- Synonym is a rejected name, by a particular author or authors. Synonyms are rejected for either of two reasons:

- 1- Because they are illegitimate, i.e., contrary to the rules of the ICBN; or
- 2- Because of taxonomic judgment, i.e., a particular author rejects the classification represented by the synonym.

******Types of plant names:**

1- Common names (also called vernacular names), which are generally used by people within a limited geographic region. Common names are not formally published and are governed by no rules. For example, *Daucus carota* of the Apiaceae is known by at least four common names, **wild carrot, bird's nest, bishop's lace, and Queen Anne's lace**. Alternatively, a single common name may refer to more than one taxon. Hemlock may refer to two quite different plants, either a species of *Tsuga*, a coniferous tree of the Pinaceae, or *Conium maculatum*, an herb of the Apiaceae.

2- Scientific names: They are **binomials** composed of two names which is used by Carolus Linnaeus. The first name of the binomial, is the **genus name** and is always capitalized. The second name of the binomial, *styraciflua* in this example, is the **specific epithet**.