

## International Code of Botanical Nomenclature (ICBN)

It is an international code or deed for writing the name of world flora. The naming of plants are following according to the rule of ICBN after its establishment. The ICBN only deals and control to the naming of plants but does not do any work on taxonomy. The head office of ICBN is situated at Utrecht in the Netherlands. It has three departments namely, principles, rules and provisions for the governance of the code.

### A. Principles of ICBN

There are six principles of ICBN for naming of plants

**Principle 1:** Botanical nomenclature is independent of zoological and bacteriological nomenclature.

**Principle 2:** The application of names of taxonomic groups is determined by means of nomenclatural types.

**Principle 3:** The nomenclature of a taxonomic group is based upon priority of publication.

**Principle 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.

**Principle 5:** Scientific names of taxonomic groups are treated as Latin regardless of their derivation.

**Principle 6:** The rules of nomenclature are retroactive unless expressly limited.

### Department 2: Rules and recommendation of ICBN

1. **Rank of taxa:** The ICBN provides the series of rank with names which are the hierarchical categories. The ranks, in descending sequence, provided by the Code are shown in the following table:

#### Taxonomic Ranks and mode of ending

Rank	Mode of ending	Examples
Kingdom	-ae	Plantae
Division (Phylum)	-phyta	Magnoliophyta
Class	-opsida	Liliopsida, Magnoliopsida
Order	-ales	Liliales, Magnoliales
Family	-aceae	Liliaceae, Magnoliaceae

Genus	A noun	<i>Pinus, Lilium, Magnolia</i>
Species variety	Depends	<i>Oryza sativa</i>

## Rule 2 the Type Method

Names are established by reference to a nomenclatural type. Taxonomists use the type method as a legal device to provide the correct name for a taxon. The nomenclatural type of a species, a type specimen, is a single specimen or the plants on a single herbarium sheet.

### Type specimen (herbarium sheet) is of different type:

**Holotype:** Herbarium sheet on which the first description of plant is based.

**Lectotype:** In case of holotype is lost, second herbarium sheet prepared from the original plant is called lectotype.

**Neotype:** In case holotype and original plant is lost then herbarium sheet prepared from some other plant of same species is called neotype.

**Syntype:** In case holotype and original, plant is lost then many herbarium sheet prepared from many plants of same species is called syntype.

**Isotype:** Duplicate of holotype - In presence of holotype a second herbarium sheet prepared from the original plant is called isotype.

**Paratype:** Additional herbarium sheet used in the first description of plant is called paratype. It is prepared from some other plant of same species having some variations.

## Rule 3 Priority of Names

Priority is concerned with the precedence of the date of valid publication and determines acceptance of one of two or more names that are otherwise acceptable. A name is said to be legitimate if it is accordance with the rules and illegitimate if it is contrary.

## Rule 4 Effective and Valid Publications of Names

The names of taxa must meet the requirement of the Code when it is published. It is effective under this code only when the distribution of printed is performed properly. It should be effectively published i.e. in a journal commonly available to botanists and not in a local newspaper or in any other printed form. It should be published in correct form i.e. Latinized with rank indicated and with Latin description (may be in brief). More detailed description is

given in vernacular language. For the taxa of the rank of genus and below, nomenclature type must be indicated and location of the type also indicated. If the names are published effectively and validly using the rules of ICBN then the names are legitimate otherwise they are illegitimate. The name of the newly described taxon is usually indicated by words sp.nov (species nova); gen.nov.(genus novum).

### Rule 5 Citation of Author's Name

The botanical name is incomplete without author's name. According to article 46 it is necessary to cite the name of the author who first validly published the name.

**Single author citation:** When single author is involved in naming the plant. If the author's name is too long it should be abbreviated e.g. *Solanum nigrum*, L. for Carolus Linnaeus.

**Double author citation:** When more than one author is involved. If those authors are in different manner in different conditions.

When authors jointly published *Polyalthia longifolia* Bth & Hk

If a genus or taxon of lower rank is altered in rank or position but retains its name, first author's name is cited in parenthesis followed by the author who has changed

*Leucaenalisiliqua* (L) Gillis (1974)

When first author has proposed a name but second author has validly published the name e.g. *Cerasus cornuta* Wallex Royal.

When more than three authors are involved, citation is restricted to first author followed by et.al.

### Rule 6 Conserved name (Nomina Conservanda)

Some of the names of taxa are not followed the rule of ICBN but they are using since a long time, hence ICBN has decided to retain the popular in addition to valid name.

#### Conserved Family

Serial No.	Conserved/old name	Valid name	Generic holotype	Example
1	Graminae	Poaceae	Poa	Rice, wheat etc.
2	Cruciferae	Brassicaceae	Brassica	Mustard, cauliflower etc.
3	Leguminosae	Fabaceae	Faba	Lentil, pea etc.
4	Umbelliferae	Apiaceae	Apium	Carrot, coriandum etc.

5	Compositae	Asteraceae	Aster	Sunflower, marigold etc
6	Labiatae	Lamiaceae	Lamium	Tulsi, pudina etc.
7	Palmae	Areaceae	Areca	Oil pulm, date pulmetc
8	Guttiferae	Clusiaceae	Clusia	

### Rule 7 Priority of Publication

Preference will be given who will publish earlier and only a single name is accepted for a taxon.

### Advantages of using scientific name

- Avoid confusion concerning the names of plants.
- Scientific names of plants are expressed in Latin because it is a international language and was used by early scholars to express plant names.
- It breaks the language barrier for communication as because it is universal
- It is very much unique

### Latin names of plants are italicized:

- Because it is conventional to italicize words and phrases that are expressed in a different language.
- Example - The most commonly known cultivars of *Acer rubrum* (red maple) are “Red Sunset” and “Autumn Flame,” which are the most reliable for brilliant reds and a long-lasting display of foliage.

1. According to binomial system name of any species consists of two names i.e. generic and species name

2. In plant nomenclature (ICBN), tautonyms are not valid i.e. generic name and specific name should not be same in plants e.g. *Mangifera mangifera* But tautonyms are valid for animal nomenclature (ICZN-International Code of Zoological Nomenclature) & *Naja naja* (Indian cobra), *Rattus rattus* (Rat).

3. Length of generic name or specific name should not be less than 3 letters and not more than 12 letters e.g. *Mangifera indica*

**Exception:** *Ricciapainkantis* – More than 12 letters According to ICBN this name is not valid but this name was proposed before 1961, so it is valid.

4. First letter of generic name should be in capital letter and first letter of specific name should be in small letter. e.g. *Mangifera indica*. But if specific name is based on the name of some person, its first letter should be in capital letter e.g. *Isoetes pantii*.

5. When written with free hand or typed, then generic name and specific name should be separately underlined. But during printing, name should be Italized.

6. Name of scientist (who proposed nomenclature) should be written in short after the specific name e.g. *Mangifera indica* Lin.

7. Name of scientist should be neither underlined nor written in italics, but written in roman, letters (simple alphabets)

8. If any scientist has proposed wrong name then his name should be written in bracket and the scientist who corrected the name should be written after the bracket. e.g *Tsuga canadensis* (Lin.) Salisbury

**Note:** Linnaeus named this plant as *Pinus canadensis*

9. Scientific names should be derived from Latin or Greek languages because they are dead languages.

10. Type specimen (Herbarium Sheet) of newly discovered plant should be placed in herbarium (dry garden). Standard size of herbarium sheet is 11.5 × 16.5 inches

**ICNB** = International Code of Nomenclature for Bacteria

**ICVN** = International Code of Viral Nomenclature

**ICNCP** = International Code of Nomenclature for Cultivated Plants

### **Angiosperm**

The plants where seeds are enclosed by the ovary i.e. seeds are covered by the ovary wall.

#### **Characteristics of Angiosperm**

- i) Seeds are enclosed by the ovary
- ii) Generally mesophytic, hydrophytic and xerophytic in nature
- iii) Double fertilization is present
- iv) Endosperms are triploid

### **Gymnosperm**

Gymnos means naked and sperma means seed. Therefore, Gymnosperm means naked seed. Ovary wall is not produced i.e. ovule remains open thereby cannot produce fruit.

#### **Characteristics of Gymnosperm**

- i) Ovary wall is absent therefore cannot develop fruit and seeds are naked
- ii) They are generally meso and xerophytes but not hydrophytic in nature
- iii) The main parts of the plant body is sporophytic and are divided into root, stem and leaf
- iv) Stigma is absent

- v) Absent of double fertilization
- vi) Endosperms are haploid