

S.Y. B.Sc. CBCS 2019 pattern  
Sem. III Paper I  
Taxonomy of Angiosperm  
and Plant Ecology

# ch. 4 .Botanical Nomenclature

Dr. K. M. Nitnaware

Assistant Professor

Department of Botany

Hutatma Rajguru Mahavidyalaya

# Concept of nomenclature

- What is there in name?
- Life become strange and chaotic without names.
- Naming of object is must.
- Plants and animals also given name
- Nomenclature means system of naming
- After determination of new taxon it becomes essential to give a scientific name based on some important characteristics.
- Earlier names were polynomial
- E.g. Presently *Sida acuta*- *Althaea coromandelina angustis prolongis folis semine folloies ovalis caule inerme*.

# Binomial nomenclature

- **Casper Bauhin – first to implement binomial system**
- **Later on Carolus Linnaeus who used binomial for the plants in his book *Species palntarum*.**
- **To give name to plant is called nomenclature.**
- **Local names create confusion and not accepted throughout the world.**

# Binomial nomenclature

- **This names are in Latin**
- **Scientific names are stable and donot change with geographical area.**
- **Giving scientific names to the plant is known as botanical nomenclature.**
- **This system consist of two names (bi) for each plants**
  - **One is generic name**
  - **Other is specific epithet**

**Generic names are usually nouns**

**Written with Capital initial letter**

*Eg - Magnifera indica*

*Ranunculus tripartitus* D.C. – D.C stand for de Candole author who coined the name

# Binomial nomenclature

- ICBN- International code of Botanical Nomenclature
- ICBN divided into
  1. Principles- foundation of rules and recommendation
  2. Rules- govern with names or nomenclature
  3. Recommendation- greater uniformity and clearness in nomenclature

# Principles of ICBN

- Botanical nomenclature is not dependent of Zoological nomenclature and is different.
- The code of botanical nomenclature applies equally to all names of taxonomic groups.
- The names are determined by nomenclatural types.
- When a species is described as new, the author must indicate the type of specimen on which new species is based.
- The nomenclature of taxonomic group is based on priority of publication.
- Each taxonomic group bear only one correct name that is in accordance with the rules except in specific cases.
- Scientific names are treated as Latin irrespective of their derivation.
- The rules of nomenclature are retroactive unless expressly limited.

# ICN Principles

- The *International Code of Nomenclature for algae, fungi, and plants*
- ICN is the set of rules and recommendations that govern the scientific naming of all organisms traditionally treated as algae, fungi, or plants, whether fossil or non-fossil, including blue-green algae (*Cyanobacteria*), chytrids, oomycetes, slime moulds, and photosynthetic protists with their taxonomically related non-photosynthetic groups (but excluding *Microsporidia*).
- Before 2011 it was called the *International Code of Botanical Nomenclature* (ICBN).

# ICN

- XIX International Botanical Congress (IBC), which took place in Shenzhen, China in July 2017.
- This *Shenzhen Code* supersedes the *Melbourne Code* (McNeill & al. in *Regnum Veg.* 154. 2012), published after the XVIII IBC in Melbourne, Australia in 2011.
- The rules of the *Shenzhen Code* became effective immediately upon acceptance of the resolution at the closing plenary session of the XIX IBC on 29 July 2017, that the decisions and appointments of its Nomenclature Section be approved.
- The *Shenzhen Code* in its final form was published on 26 June 2018.



# Shenzhen Code

- Appendix I- suppressed work
- Appendix IIA- it gives the list of conserved, protected and rejected names of families of algae, fungi, pteridophytes and fossils
- Appendix II B- conserved and rejected names of families of bryophytes and spermatophytes.
- Appendix III: conserved, protected and rejected names of genera and subdivision of genera.
- Appendix IV: conserved, protected and rejected names of species and intraspecific taxa.
- Appendix V: suppressed names
- Appendix VI: binding decisions on descriptive statements.

# 6 principle

- Principle I: the nomenclature of algae, fungi, and plants is independent of zoological and prokaryotic nomenclature.
- Principle II: the application of names of taxonomic group is based is determined by means of nomenclature types.
- Principle III: the nomenclature of a taxonomic group is based upon priority of publication.
- Principle IV: each taxonomic group can bear one correct name.
- Principle V: scientific names treated as Latin
- Principle VI: the rules of nomenclature are retroactive.

HOLDTYPE: Original ✓

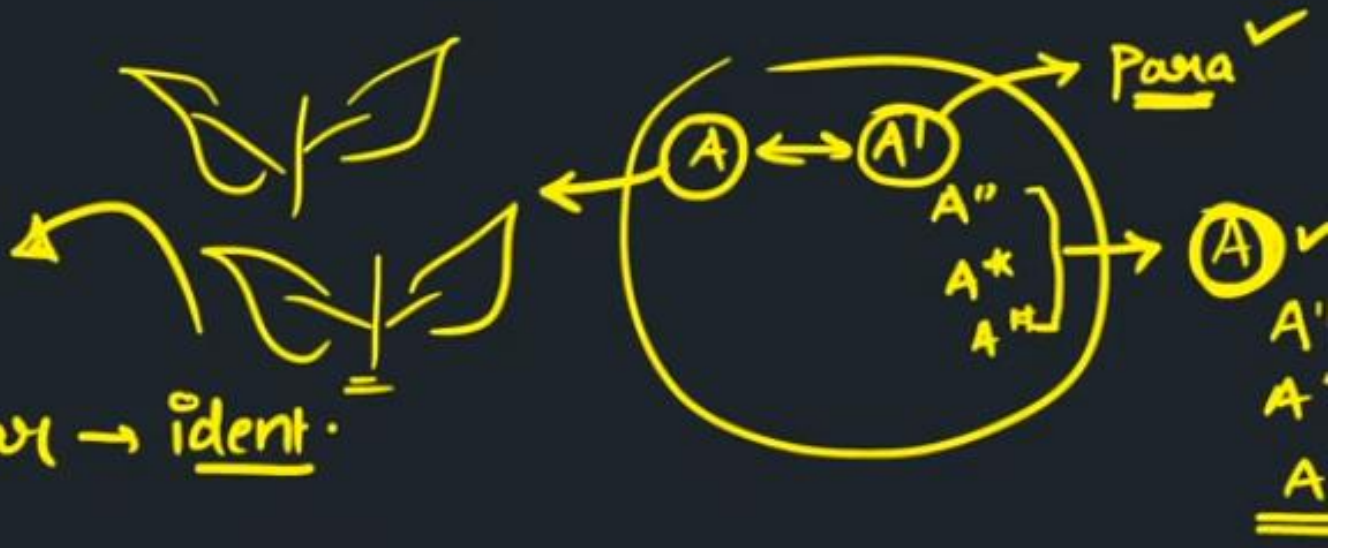
ISDTYPE: 100%, backup ✓

LECTTYPE: holo → similar → ident.

NEOTYPE: destroy (new) ✓ holo

PARATYPE: Along with ✓ → A'

SYNTYPE: (city) ✓ ↔ A'', A''', A⊕



## Types of Specimen

<b>Holotype</b>	Nomenclature type.
<b>Isotype</b>	Duplicate of holotype.
<b>Paratype</b>	Any other specimen described along with holotype.
<b>Syntype</b>	Any one of the two or more specimens cited by author, when there is no holotype.
<b>Lectotype</b>	Specimen selected from original material to serve as nomenclature type, where there is no holotype.
<b>Neotype</b>	New nomenclatural type, when the original material is missing.
<b>Topotype</b>	A specimen collected from the same locality from which the holotype was originally collected.

# Type specimen and its types (concept of typification)

- Holotype: the original type of specimen of a species which has been indicated by the author is known as holotype.
- Isotype: any duplicate specimen of the holotype..
- Lectotype: fresh herbarium made from original plant material when holotype is missing
- A specimen or illustration designated as the type when no holotype was indicated at the time of publication. If possible, the lectotype should be selected from the syntypes or original material.
- Neotype: fresh herbarium material made after publication
- Syntype: one of the herbarium specimen of a species used by author when no holotype is designated
- any one of two or more specimens cited in the protologue when no holotype was designated, or any one of two or more specimens simultaneously designated as types in the original description. Monographers are urged to select a lectotype from among the syntypes whenever possible.

# Rank and ending of taxa names

Category	Ending of names	examples
Division	phyta	Magnoliophyta
Class	opsida	Magnoliopsida
Sub-class	ideae	Magnoliidae
Order	ales	Malvales
Sub-order	ineae	Chenopodineae
Family	aceae	Polygonaceae
Sub-family	oideae	Panicoideae
Tribe	eae	Phyllantaeae
Sub-tribe	ineae	Rutineae

# List of families conserved and alternative names

Conserved name of the family	Alternative name of the family	Type genus
Cruiciferae	Brassicaceae	Brassica
Compositae	Asteraceae	Aster
Gramineae	Poaceae	Poa
Guttiferae	Clusiaceae	Clusia
Leguminosae	Fabaceae	Faba
Palmae	Arecaceae	Areca
Umbelliferae	Apiaceae	Apium
Labiatae	Lamiaceae	Lanium

# Coining generic names and specific epithet

- Generic name should be latinised noun.
- Written as initial capital letter.
- Species name should be small.
- It should be italic or underline
- Scientific botanical names should be short, easy to pronounce, distinctive in meaning, easy to remember and rank indicative.
- Scientific botanical names should be coined according to the most recent rules of ICN
- Genus comes first
- Species follows next
- The name relates the plant



# Specific epithet

- Indica (common in India)
- Cordifolia (heart shaped leaf)
- Racemosa (racemose inflorescence)
- Terrestris (land plant)
- If name of some species composed of two words then it is hyphenated e.g. *Hibiscus rosa-sinensis*

# Single, double and multiple authority

- The name of the person following the genus and specific epithet indicate the author.
- The author citation is usually abbreviated eg L. for Linnaeus
- Some times two or more authors
- **use of et al** – when the name is published by more than three authors. Eg *Delphinium viscosum* Hook et al
- **Use of parenthesis**: when taxon of lower rank is altered
- eg *Citrus aurantium* var. *grandis* (L).
- *Citrus grandis* (L) Osbeck

# Single, double and multiple authority

- Use of ex – the name of two authors linked by ex when first author had proposed name but was **validly published only by second author**
- Use of in- when first author published a new species in **publication of another author** *Carex kashmirensis* Clarke in Hook. Clarke published this new species in flora of British India
- Use of Emend: the name of authors is linked using emend. When **second author makes some change** in diagnosis of a taxon.