

Plant Nomenclature Syntax

by Mike Short, 2021-09-06

A layman's shot at demystifying the latin naming conventions used in botany. I am by no means a botanical expert, nor do I have any botanical qualifications. What follows is information I've put together from the web and from books. My definitions below are by no means incontrovertible and may be over-simplified, although having botanists agree about taxonomy (the naming of plants) is like having politicians agree about taxation. The world of taxonomy is constantly changing, plants are being re-categorized regularly.

The system of binomial nomenclature in use today was started by Carl Linnaeus in 1753 with his book *Species Plantarum*. It is now governed by the *International Code of Nomenclature for algae, fungi, and plants* (ICN).

The term "binomial" indicates that there are two names (in Latin) to describe a species, although many plants have extra names to describe their divergence from the base species. These extra (a.k.a. infraspecific) names include subspecies, variety, form, and cultivar.

The heirarchy of binomial nomenclature is, in order of rank [See below for cultivars and hybrids]:

genus -> subgenus -> species -> subspecies -> variety -> subvariety -> form -> subform

DEFINITIONS

Genus (plural **genera**):

A subdivision of Family (example Cactaceae) including plants of similar nature especially in their sexual characteristics. The genus name forms the first part of the binomial species name for each species within the genus. Examples: *Sedum*, *Opuntia*.

Subgenus (plural **subgenera**):

Rarely used, can be used to separate plants within a genus that will eventually be moved to another new genus. Notable example is *Pachysedum* containing the well known *nussbaumerianum* and *rubrotinctum*, although both are usually called just *Sedum*.

Species (abbreviated **sp.**) More properly named the **Specific Epithet** or the **Specific Name**.

"The major subdivision of a genus, regarded as the basic category of biological classification, composed of related individuals that resemble one another, are able to breed among themselves, but are not (usually) able to breed with members of another species". A special epithet can have two names which must be hyphenated, example *castello-paivae*. It's confusing that the word species is often used to refer to either the special epithet or the full binomial name, the latter being the correct usage. When the genus is known but not the species plants are often written as *Genus* sp.

Subspecies (abbreviated **subsp.**)

A subdivision of a species, grouping plants that have an appearance distinct from other plants within the same species especially due to the geographical region or ecological conditions in which they grow. Plants in a subspecies are able to breed with other plants from the same species, including those in a subspecies or variety of that species. It is common to see the special epithet left out when there is also a subspecies name, this is not good practice because the subspecies name may not be unique among the species within the genus. Note that the abbreviation ssp. is only used in zoology.

Variety (abbreviated **var.**)

A subdivision of a species or subspecies, grouping plants that have an appearance distinct from other plants within the same species even though they grow in the same geographical region or ecological conditions. Plants in a variety are able to hybridize with other plants from the same species, including those in a subspecies or variety of that species. There are several opinions as to the difference between variety and subspecies, although it is mostly agreed that variety should be subordinate to subspecies. It is not common to have both.

WORD ENDINGS

Latin epithets (Specific, Variety, Form, etc.) are often adjectives in which case they should if possible use the same latin gender as the Genus name, -a -us, or -um. Examples: *Crassula ovata*, *Cereus peruvianus*, *Conophytum bilobum*. Many plants have genus names derived from greek, in which case gender is more complicated.

RANK

The above dissertation only covers binomial naming which is just a part of the ranking of a plant. The principal ranks of taxa for plants in descending sequence are: kingdom, division (or phylum), class, order, family, genus and species, of which the species is usually considered the basic rank. Only the final three ranks are in general use for the nomenclature of cultivated plants.

In addition there are subdivisions of the principle ranks which, apart from subfamily, are too complex for this document, examples are superkingdom, subclass, infratribe. Another complication is that there are differences between the plant kingdom and the animal kingdom.

More information at https://en.wikipedia.org/wiki/Taxonomic_rank

Ranking of *Crassula ovata* (Jade):

Kingdom	Plantae
Division (Phylum)	Tracheophyta (always ends with "ophyta")
Class	Magnoliopsida (always ends with "opsida")
Order	Saxifragales (always ends with "ales")
Family	Crassulaceae (always ends with "aceae")
Subfamily	Crassuloideae (always ends with "oideae")
Genus	Crassula
Species	ovata

Clades

Many publications replace the ranking 'Class' with 'Clades' which are defined as a group of organisms that are composed of a common ancestor and all its direct descendants. A single plant can be a member of multiple clades and a clade can itself contain multiple clades, therefore clades are not considered heirarchical. The main use of clades is to indicate the evolutionary history of a plant.

The clades shown in Wikipedia for *Crassula ovata* are:

Tracheophytes	- vascular plants
Angiosperms	- flowering plants
Eudicots	- having two seedling leaves

Confused yet?