

THE ARBORETUM AT PENN STATE

# Writing Plant Names



## Nomenclatural Codes and Resources

There are two international codes that govern the use and application of plant nomenclature:

1. *The International Code of Nomenclature for Algae, Fungi, and Plants*, Shenzhen Code, 2018. International Association for Plant Taxonomy. Abbreviation: ICN
  - Serves the **needs of science** by setting precise rules for the application of scientific names to **taxonomic groups** of algae, fungi, and plants
  - Available online at <https://www.iapt-taxon.org/nomen/main.php>
2. *The International Code of Nomenclature for Cultivated Plants*, 9<sup>th</sup> Edition, 2016. International Association for Horticultural Science. Abbreviation: ICNCP
  - Serves the **applied disciplines** of horticulture, agriculture, and forestry by setting rules for the naming of **cultivated plants**
  - Available online at [https://www.ishs.org/sites/default/files/static/ScriptaHorticulturae\\_18.pdf](https://www.ishs.org/sites/default/files/static/ScriptaHorticulturae_18.pdf)

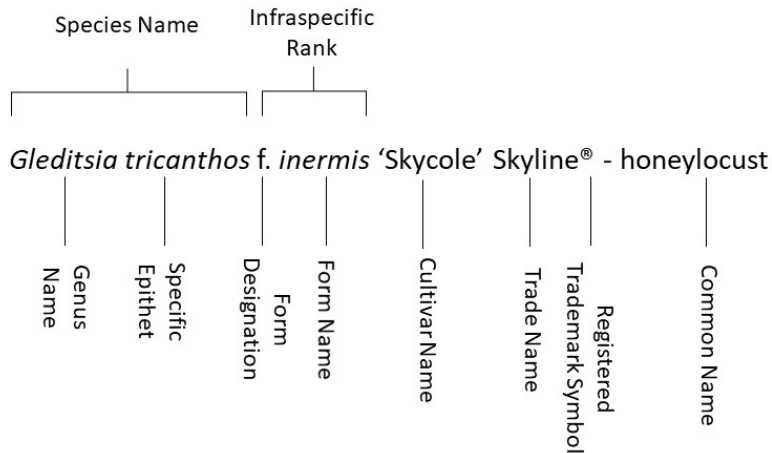
These two resources, while authoritative, are very technical and are not easy to read. Two more accessible references are:

1. *Plant Names: A guide to botanical nomenclature*, 3<sup>rd</sup> Edition, 2007. Spencer, R., R. Cross, P. Lumley. CABI Publishing.
  - Hard copy available for reference in the Overlook Pavilion office
2. *The Code Decoded*, 2<sup>nd</sup> Edition, 2019. Turland, N. Advanced Books.
  - Available online at <https://ab.pensoft.net/book/38075/list/9/>

This document summarizes the rules presented in the above references and, where presentation is a matter of preference rather than hard-and-fast rules (such as with presentation of common names), establishes preferred presentation for the Arboretum at Penn State.

## Parts of a Name

The diagram below illustrates the overall structure of a plant name. Each component, its variations, and its preferred presentation will be addressed in the sections that follow.



## Family Name

Family name should be written in plain type (not italicized) with first letter capitalized.

Example: Pinaceae

## Genus Name

Genus name should be written in italics with first letter capitalized.

Example: *Pinus*

## Specific Epithet

Specific epithet should be written in italics and in lower case.

Example: *strobis*

## Species Name

The species name is comprised of the genus name followed by the specific epithet. It should be written in italics, with the first letter of the genus capitalized. A species name comprised of a genus name and specific epithet is also known as a **binomial**.

Example: *Pinus strobis*

## Rank Designations Below Species (Intraspecific Rank Designations)

Subspecies, variety, and form are three possible rank designations below the level of species. A plant name comprised of a genus name, specific epithet, and one of these additional rank designations is also known as a **trinomial**.

- A **subspecies** is a grouping within a species describing a naturally-occurring, geographically isolated variant population.
- A **variety** is a grouping within a species that differs from the species in a recognizable way but is not necessarily genetically or geographically isolated from it or from other varieties.
- A **form** is a grouping within a species that differs from that species in a recognizable way but may occur sporadically throughout the species' range.

### Subspecies Designation and Name

A subspecies is designated by the abbreviation “subsp.” This abbreviation should be in plain type (not italicized) and in lower case, and should be presented after the specific epithet. The name of the subspecies itself should be presented in italics and in lower case.

Example: *Sambucus nigra* subsp. *canadensis*

### Variety Designation and Name

A variety (Latin: *varietas*) is designated by the abbreviation “var.” This abbreviation should be in plain type (not italicized) and in lower case, and should be presented after the specific epithet. The name of the variety itself should be presented in italics and in lower case.

Example: *Viburnum opulus* var. *americanum*

### Form Designation and Name

A form (Latin: *forma*) is designated by the abbreviation “f.” This abbreviation should be in plain type (not italicized) and in lower case, and should be presented after the specific epithet. The name of the form itself should be presented in italics and in lower case.

Example: *Gleditsia tricanthos* f. *inermis*

## Hybrids

Hybrid status is indicated by the hybrid symbol “×.” A multiplication sign should be used to write the hybrid symbol. If a multiplication sign is not available, a lowercase letter “x” may be used. However, this is not preferred and should be done only when necessary. The hybrid symbol should be presented in plain type (not italicized).

### Interspecific Hybrids

An interspecific hybrid is a cross between two plant species.

If a **naturally-occurring hybrid** has been described according to the ICN in the same way as a new species, the hybrid symbol should precede the specific epithet without a space.

Example: *Quercus ×benderi* is a naturally-occurring hybrid of *Quercus coccinea* and *Quercus rubra*.

If an interspecific hybrid is **the result of human-led breeding**, and is not naturally-occurring, the hybrid symbol should be presented with a space before and after it.

Example: *Magnolia × loebneri* is a hybrid of *Magnolia kobus* and *Magnolia stellata* first developed by horticulturist Max Loebner, who made controlled crosses of the two species.

A hybrid identity may also be presented by inserting the hybrid symbol between the names of the two parent plants. A single space should be left before and after the hybrid symbol. The parents should be listed in alphabetical order unless the female parent is known, in which case it is presented first.

Example: *Quercus coccinea × Quercus rubra*

### Intergeneric Hybrids

An intergeneric hybrid is a cross between plant species in two different genera. Naturally-occurring intergeneric hybrids are often assigned to a new hybrid genus whose name combines the names of the two parent genera.

The hybrid symbol should be presented in plain type (not italicized) before the name of the hybrid genus, without any spacing.

Example: ×*Cuprocyparis leylandii* (Leyland cypress) is an intergeneric hybrid of *Cupressus macrocarpa* (Monterey cypress) and *Xanthocyparis nootkatensis* (Alaska cedar).

## Graft-Chimeras

Graft-chimeras are also sometimes referred to as graft hybrids. They may develop in a grafted plant at the junction of the rootstock and the scion tissue. They contain tissue from both rootstock and scion, and display characteristics of both graft-parents. These characteristics are stable, and graft-chimeras may hence be propagated vegetatively.

Graft-chimeras are often assigned to a new genus whose name combines the names of the two graft-parents' genera.

Graft-chimera status is indicated by the symbol "+." An addition sign should be used to write this symbol.

The "+" symbol should be presented in plain type (not italicized) before the name of the graft-chimera genus, without any spacing.

Example: +*Laburnocytisus* 'Adamii' (broom laburnum) is a graft-chimera of *Cytisus purpureus* (purple broom) and *Laburnum anagroides* (golden chain tree).

The identity of the graft-chimera may also be presented by inserting the "+" symbol between the names of the two graft-parent plants. A single space should be left before and after the "+" symbol. The parents should be listed in alphabetical order.

Example: *Cytisus purpureus* + *Laburnum anagroides*

## Cultivars

The term “cultivar” is a contraction of the words “cultivated variety.” By definition, human selection and/or breeding is involved in the development of a cultivar. The term “cultivar” describes “an assemblage of plants that has been selected for a particular character... and remains distinct, uniform, and stable in these characters when propagated by appropriate means” (ICNCP, 2016).

The cultivar name should be presented after the species name, in plain type (not italicized) and within single quotes. The first letter of each word in the cultivar name should be capitalized.

Example: *Diervilla rivularis* ‘Troja Black’

## Cultivar Names in Languages Other than English

### Latin Cultivar Names

Prior to 1959, it was acceptable practice for cultivar names to be assigned in Latin. Therefore, many older cultivars bear Latin names, which should be presented in the original untranslated Latin. As with English-language cultivar names, Latin cultivar names should be presented after the species name, in plain type (not italicized) and within single quotes. The first letter of each word in the cultivar name should be capitalized.

Example: *Galanthus nivalis* ‘Flore Pleno’

### Cultivar Names in Other Roman-Alphabet Languages

Cultivars developed in other countries are often named in the language of the country of origin. Where the language uses the Roman alphabet, these names should be presented in a way consistent with the language of origin.

Example: *Salvia nemorosa* ‘Ostfriesland’

In some cases, it may be helpful to English-speaking visitors to present an English-language translation of the cultivar name. However, this translation should not be presented in single quotes as an official cultivar name. Rather, it should be presented in plain type, without additional punctuation, following the cultivar name.

Example: *Astilbe chinensis* var. *taquetii* ‘Purpurlanze’ Purple Lance

### Cultivar Names Transcribed from Non-Roman Alphabets

Sometimes a cultivar name is in a language, such as Chinese or Japanese, that does not use the Roman alphabet. In these cases, it may not be possible to present the cultivar name in its original written language. In such cases, the original cultivar name should be transcribed into the

Roman script, preserving the original pronunciation. Rules of transcription should also be followed – for example, many Japanese compound words are hyphenated when transcribed.

Example: *Paeonia × suffruticosa* (Botan Group) ‘Shima-nishiki’

### Cultivar Groups

An assemblage of similar cultivars may be designated as a Group. This designation is based upon observable characteristics of the cultivars, and is a formal category recognized by the ICNCP.

The Group name should be in plain type (not italicized), with the first letter of each word capitalized, and should be enclosed within parentheses. It should be presented just before the cultivar name and should be followed by a single space.

Example: *Brassica oleracea* (Botrytis Group) ‘Graffiti’

### Nonsense Cultivar Names

In an effort to gain a marketing advantage, it has become increasingly common for introducers of new plant varieties to assign nonsense cultivar names to these varieties while assigning them flashy – and legally-protected – trade names. In some cases, assigned cultivar names may even defy the clear cultivar-naming conventions set by the ICNCP. The result, both intended and achieved, is that consumers will often know and recognize a plant by its trade name rather than by its official cultivar name.

At the Arboretum at Penn State, it is our practice to record both cultivar names and trade designations in our collections management database.

On labels and in publications, it is our practice to present the cultivar name immediately following the botanic name, and to present any trade designations afterward. The cultivar name is presented irrespective of whether it is a name commonly recognized by the public.

Example:	<i>Hydrangea arborescens</i> ‘Ncha1’ Invincibelle® Spirit	<b>CORRECT</b>
	<i>Hydrangea arborescens</i> Invincibelle® Spirit ‘Ncha1’	<b>INCORRECT</b>
	<i>Hydrangea arborescens</i> Invincibelle® Spirit	<b>INCORRECT</b>

### Unknown Cultivars

Sometimes we grow and display cultivated plants whose cultivar names are unknown. We note this status by presenting the phrase “unknown cultivar” in parentheses where the cultivar name would ordinarily be presented – immediately following the botanic name, and prior to any trade designations.

Example: *Lantana* (unknown cultivar) Landscape Bandana® Gold



## Trade Names and Trade Designations

Trade designations are not part of the true plant name, but are marketing appellations intended to “brand” a plant variety, support sales and marketing efforts, or establish and protect intellectual property rights.

### Trademarks

In the context of plant names, a trademark is “a letter, number, word, phrase... or combination of these used to distinguish” a plant variety from other varieties (*Plant Names*, 2007).

Trademarks may be registered or unregistered, and may be applied to a single plant variety or to a group of varieties, usually with shared characteristics, being marketed as a “series.”

The trademark designation protects the intellectual property rights associated with the trademarked name, such that the trademark holder has the exclusive legal right to use the trademarked name.

Trademarks may not be applied to common names or to any portion of the botanic name or cultivar name.

A major difference between cultivar names and trademark names is that cultivar names, if applied properly, remain valid in perpetuity. Trademarks, in contrast, are valid for an initial period of 10 years and may be renewed for additional 10-year terms thereafter. Non-renewal renders the trademark “abandoned.” A trademark may also be considered abandoned if the holder does not use it for 3 consecutive years.

A trademarked name should be presented after the cultivar name. If the cultivar name is unknown, the trademarked name should be presented after the parenthetical phrase “(unknown cultivar)” which itself follows the botanic name.

### Unregistered Trademarks

Unregistered trademarks are designated by the <sup>™</sup> symbol, which is presented in all-caps, in superscript, immediately following the trademarked term. There is no space between the trademarked term and the <sup>™</sup> symbol.

Example: *Berberis thunbergii* ‘Monlers’ Golden Nugget<sup>™</sup>

If it is not possible to present the trademark symbol in superscript, it is acceptable to use the letters TM, in all caps, enclosed within parentheses.

Example: *Berberis thunbergii* ‘Monlers’ Golden Nugget (TM)

## Registered Trademarks

Registered trademarks are established via a process involving submission of the trademark to the US Patent and Trademark Office.

Registered trademarks are designated by the ® symbol, which consists of an upper-case letter “R” enclosed within a circle and presented in superscript. The symbol immediately follows the trademarked term, with no space between the term and the symbol.

Example: *Geranium* ‘Gerwat’ Rozanne®

If it is not possible to present the registered trademark symbol in superscript or enclosed within a circle, it is acceptable to use an upper-case “R” enclosed within parentheses.

Example: *Geranium* ‘Gerwat’ Rozanne (R)

## Trademarked “Series” of Cultivated Plants

Sometimes trademarks, either registered or unregistered, are applied to an entire group of plant varieties that a grower or seller wishes to market together. These varieties may share some defining characteristic such as height or habit that makes them distinguishable as a series, while differing in some other characteristic, such as color.

In such cases, the trademark designation may apply to the name of the series. If this is so, the trademark symbol should be presented immediately following the series name.

Example: The following are marketed as members of the Archangel™ series of *Angelonia* varieties:

*Angelonia* ‘Balarcasp’ Archangel™ Raspberry

*Angelonia* ‘Balarcher’ Archangel™ Cherry Red

*Angelonia* ‘Balarclipi’ Archangel™ Light Pink

It is important to note that trademarked cultivar series are not the same as formal cultivar Groups. Whereas Groups are recognized by the ICNCP and may include cultivars developed at different times and by different breeders, trademarked series are a marketing designation applied by a specific breeder or seller to secure exclusive use of the trademarked series name.

Sometimes, both a plant’s series name and its individual variety name have trade designations. In such cases, each trademarked term should be presented with its individual designation symbol.

Example: *Plectranthus scutellerioides* (unknown cultivar) ColorBlaze®  
Sedona Sunset™

## Trade Names and Name-Parts of Dubious Validity

It has become increasingly common for breeders and sellers to append name-parts of dubious validity and trademark status to the sold-as names of plant varieties. For example, descriptors that are neither part of the cultivar name nor covered by any trade designation may “float” in the sold-as name as a descriptor, often for flower color.

While these names have no true legal or nomenclatural standing, they are nevertheless used in marketing efforts and frequently become the most recognizable name the public sees.

Because the public is likely to encounter such names in commerce, it is our practice at The Arboretum at Penn State to present each plant’s full sold-as name, even when portions of the name are of dubious validity. These name-parts should be presented in plain type following the cultivar name and, if applicable, following the trademarked series name.

Example:        *Verbena* ‘Balendluim’ EnduraScape™ Blue Improved  
                      *Zinnia elegans* (unknown cultivar) Zowie!™ Yellow Flame

## Plant Patents and Plant Patent Numbers

Plant patent numbers are not part of the plant name, but are mentioned here for two reasons.

First, although we do not typically present plant patent numbers on labels or in publications, plant patent numbers are recorded in our accession records for any applicable plant specimens in our collections.

Second, we wish to draw attention to an important difference between patents and trademarks. A trademark, discussed earlier, is an intellectual property protection conferring upon the holder **exclusive use of the trademarked term**. A plant patent, in contrast, protects the holder’s **exclusive right to asexually propagate or sell the plant itself**. In sum, trademarks apply to names while patents apply to plants.

Plant patents are issued by the US Patent and Trademark Office and are valid for a period of 20 years, after which they expire. Following expiration, the plant enters the public domain and may be propagated and sold by anyone.

## Common Names

While there are some generally-accepted professional standards concerning the writing of common names, there is no international code equivalent to the ICN or ICNCP governing their presentation. We at the Arboretum at Penn State have developed the following guidelines, which are in keeping with the practices of many other horticultural institutions.

Common name may be applied at the level of the plant family, genus, or species.

Example:

Family: <i>Fagaceae</i>	the beech family
Genus: <i>Quercus</i>	oak
Species: <i>Quercus alba</i>	white oak

## Common Name Presentation

When applied at the level of species, a common name applies to all that species' horticultural varieties and cultivars. Terms describing characteristics of individual cultivars (i.e., foliage or flower color), or repeating parts of the cultivar name, should never be included in the common name.

Example 1:

<i>Liriope muscari</i>	lilyturf	<b>CORRECT</b>
<i>Liriope muscari</i> 'Variegata'	lilyturf	<b>CORRECT</b>
<i>Liriope muscari</i> 'Variegata'	variegated lilyturf	<b>INCORRECT</b>

Example 2:

<i>Geranium</i> 'Johnson's Blue'	cranesbill	<b>CORRECT</b>
<i>Geranium</i> 'Johnson's Blue'	Johnson's Blue cranesbill	<b>INCORRECT</b>

Trade designations, or repetitions of parts of trade names, are also excluded from the common name.

Example:

<i>Pelargonium</i> 'PEQZ0004' Calliope® Burgundy	geranium	<b>CORRECT</b>
<i>Pelargonium</i> 'PEQZ0004' Calliope® Burgundy	Calliope geranium	<b>INCORRECT</b>

Common names should be presented in plain type (not italicized), and should never be enclosed in either single or double quotation marks.

In general, common names should be presented in lower case. The major exception to this rule is when a common name includes a proper noun, such as a person's name, the name of a nationality, or the name of a specific geographic location. In such cases, the first letter of the proper noun should be capitalized.

Example:

<i>Aralia cordata</i> 'Sun King'	Japanese spikenard
<i>Malus sargentii</i> 'Tina'	Sargent crabapple
<i>Rudbeckia triloba</i>	brown-eyed Susan

Some plants do not have widely-used common names, but are instead simply known by their genus name. In such cases, the genus name may be presented as a common name would be – in plain type and, typically, in lowercase.

Example:

<i>Lantana camara</i>	lantana
<i>Fothergilla</i> × <i>intermedia</i>	fothergilla

### Presenting Botanically-Misleading Common Names

Common names can be misleading when they suggest botanical relationships that do not exist. For example, plants in the genus *Abutilon* are commonly referred to as flowering maples because their palmate leaves resemble those of maple trees. Although the common name gives the impression that *Abutilon* are "a type of maple that flowers," the genera *Abutilon* and *Acer* are actually members of completely different plant families!

There are three primary options for presenting such botanically-misleading common names so as to minimize the confusion they cause.

#### Contracting the Common Name

The first of these options is to present the misleading common name as a contraction, rather than as two separate words. Where possible, this is the preferred option.

Example 1: Plants in the genus *Nymphaea* are known by the common name **daylily**, not **day lily**. While the flowers resemble those of lilies, *Nymphaea* is not in the family Liliaceae.

Example 2: Plants in the genus *Liriope* are known by the common name **lilyturf**, not **lily turf**. While the leaves resemble those of grass blades, *Liriope* is not in the family Poaceae.

## Hyphenating the Common Name

While contracting the common name works when each original word is short, it can become unwieldy when one or both of the original words is long. In such cases, a hyphen may be inserted between the terms to create a compound word.

While this approach has been popular historically, it is not a preferred practice at The Arboretum at Penn State. In practice, we have seen that it can lead to a proliferation of unnecessary hyphen use.

Example: *Magnolia acuminata* is sometimes known by the common name **cucumber-tree magnolia**. Cucumbers do not grow on trees! However, the ripening fruit of *M. acuminata* does look a bit like a gherkin cucumber.

## Leaving It Alone

The third option when dealing with a botanically-misleading two-word common name is to leave it alone. In cases where contraction is not practical, this is the preferred option at The Arboretum at Penn State. While this approach does raise the possibility of confusion, we feel that it reflects the contemporary trend in American English to avoid the use of hyphens when they are not strictly necessary. Because common name presentation should reflect prevailing use, we feel justified in our approach.

Example: The Arboretum at Penn State uses the common name **witch hazel** (not **witchhazel** or **witch-hazel**) to refer to plants in the genus *Hamamelis*.

## Selecting Among Multiple Common Names

One of the challenges with common names is that a single plant species may have a number of different common names, each prevalent in a different cultural context or geographic region. For example, the species *Nyssa sylvatica* is known by the common names black gum, sour gum, tupelo, and pepperidge.

While we record all broadly-used common names in our collections database, we typically present only one common name in publications.

In selecting which of several possible common names to present, we employ the following rules of thumb:

- If the plant is native to Pennsylvania and/or widely known in our geographic region, we use the common name most familiar and in broadest use in this region.

Example: The Arboretum at Penn State uses the common name **sweet potato** to refer to *Ipomoea batatas*. While the common name **yam** is used in other regions, most central Pennsylvanians refer to the plant as **sweet potato**.

- If the plant is unfamiliar to people in our region and does not have a regionally-used common name, we use the common name most broadly-used in the horticultural literature (see list of references in the Selecting Common Names section of the Plant Records Handbook).

### **Derogatory Terminology in Common Names**

The fields of botany and horticulture have not been immune to the biases and prejudices of the greater culture. This sad and frustrating fact becomes immediately evident when we are confronted with blatantly racist or pejorative common names for plants.

- For an excellent essay on this subject, see Melvin Hunter’s “Racist Relics: An Ugly Blight on our Botanical Nomenclature” (The Scientist, November 1991), available at:

<https://www.the-scientist.com/opinion-old/racist-relics-an-ugly-blight-on-our-botanical-nomenclature-60358>

Such pejorative terminology is inconsistent with Penn State’s values, as well as with the professional standards of the public horticulture field. **The Arboretum at Penn State will not knowingly use or promote derogatory, biased, or racist common names in any of its publications or educational materials.**

Since common names are discretionary, we follow the current practice at many other horticultural institutions of identifying and employing alternate common names.

- In cases where a derogatory common name is one of many common names for a plant, it is relatively straightforward to simply select another moniker from those in use.
- Where the derogatory name appears to be the only option for a given species, it may be necessary to use the common name more typically applied at the genus level.
- A third option, frequently employed when a plant has no widely-used common name, is to simply use the name of the genus itself.