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Cultivar nomenclature exemplified by *Sansevieria*: a challenge...

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Abstract

The nomenclature of cultivars is a world of its own, governed by more than one set of nomenclatural rules. The choice of rules depends on whether a cultivar has been registered according to national or international law (statutory registration) or, as in many other cases is unregistered or registered under non-legal circumstances. For such cases nomenclatural rules are set out in a consensus document (ICNCP), that is applicable to most *Sansevieria* cultivars. Some of the most important general nomenclature rules are presented, as well as a proper way to look at what a cultivar actually is, and is NOT. Too often in classification, cultivars are mistaken to be evolutionary entities (for which nomenclatural and classificatory rules are set out in the ICN code). The essential difference between cultivars (as representatives of domestication activities by mankind) and natural occurring taxa is presented. Also the habit of applying trade names/designations to cultivars is illustrated and why this generates confusion as to correct cultivar identities.

1. Introduction

More than 10.000 years ago, *Homo sapiens* started to collect organisms from the wild and bring them into his direct sphere of influence. This influence has developed over time into a large scale effort to change such organisms in order for them to ever better support the requirements of *Homo* sapiens in his own "struggle" to survive. This behavior of *Homo sapiens* deciding which organisms serve his purpose and to what extent they must be forced to change in order to optimally play their servant roles, is called "domestication". Domestication has parallels in Darwinian evolution but Darwin himself separated it from his reading of what evolution is and how it produces species, primarily by natural selection (without a pre-determined direction). In the domestication context, there is no natural selection and there is no evolution leading to species. Domestication and its resultant change of organisms is driven by human-directed, artificial ("non-natural") selection. The resulting organisms can be classified but not as species. In the plant world the end product of an artificial selection (domestication) chain may be a cultivar (from "cultivated variety", see section 2). Such an entity is only a cultivar when it needs to be recognized as such (see sect. 2) and it is worth to be communicated about. It will also need a specific kind of name to use in communication. The languages (incl. terminology, concepts, classifications and nomenclature) of evolution and domestication are all too often confused (Hetterscheid & Brandenburg, 1995, Hetterscheid et al., 1996). Below I will briefly introduce the readers of this journal to a correct way of understanding what plant cultivars are, how they can be classified and how their nomenclature works (or SHOULD work......). Sansevieria will provide the examples of correct and incorrect application of names for cultivars and the influence of national and international laws on such names.

2. What is a cultivar?

The word cultivar derives from <u>CULTI</u>vated <u>VAR</u>iety (as opposed to natural varieties as found in the wild, but see sect. 4). It is defined in the nomenclature code for cultivated plants (Brickell et al. 2016, hereafter called ICNCP, **Fig. 1**) as follows:

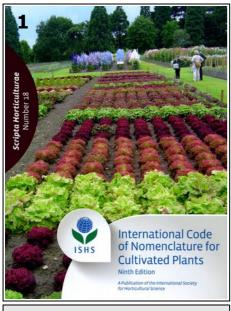


Fig. 1 – ICNCP – Cover (Source: Brickell et al. 2016)

"2.3. A cultivar, as a taxon, is an assemblage of plants that (a) has been selected for a particular character or combination of characters, and (b) remains distinct, uniform, and stable in these characters when propagated by appropriate means (but see Art. 9.1 Note 1).

Note 5. Although it is highly desirable that a plant to be designated as a cultivar should be propagated before being named, exceptionally it may be published when only one individual exists (but see Art. 2.5)."

Most important in this definition is the reference to three features that any cultivar must comply with, "Distinction, Uniformity & Stability, together referred to as the DUS-norm (note that the concept of "stability" is not easily bestowed on *Sansevieria* selections, especially not the variegated ones.......) This norm immediately illustrates why organismal groupings complying to DUS, cannot be free living, natural organisms classified under the laws of evolution. This

also implies that cultivars cannot be found in the wild. They are exclusively existent in the domestication context. They are a human construct, not an evolutionary one. And so a different theory of classification is needed to define cultivars, classify and name them. Ground laying texts on this can be found in Hetterscheid & Brandenburg, 1995 and Hetterscheid et al., 1996. Enough said on this subject here. We change over now to the nomenclature of cultivars.

3. Nomenclature codes and nomenclature rules for domesticated plants

Naming cultivars is not a procedure without rules, even though in *Sansevieria* it looks like not many people know this. Below a few examples are discussed, derived mainly from ICNCP.

3.1. A full name of a cultivar consists minimally of 2 parts. The first part is derived from the nomenclature of plant genera as laid down in the *International Code of Nomenclature for algae, fungi, and plants* (Turland et al., 2018 for the latest edition, hereafter called ICN). This first part must be at least an officially accepted scientific Latin name of a plant genus or its equivalent in a modern language. So in our case the name *Sansevieria* or *Dracaena*. However it IS also allowed to expand this first part to indicate that a cultivar has been derived directly from ONE species or infraspecific taxon (without hybridization with another species). Therefore the first part may be a full species name like *Sansevieria trifasciata* (or even longer as in *Sansevieria kirkii* var. *pulchra*). After that part, there must appear a so-called *cultivar epithet*, e.g. 'Coppertone' (cultivar epithets

must be enclosed within single quotation marks!). The full cultivar name *S. kirkii* var. *pulchra* 'Coppertone' (**Fig. 2**) indicates that the cultivar 'Coppertone' was once selected and clonally propagated from the wild living taxon *S. kirkii* var. *pulchra* (assuming this botanical variety IS indeed found in the wild and builds variable populations!!). Rules for the formation of acceptable cultivar epithets are laid down in the *International Code of Nomenclature for Cultivated Plants* (Brickell et al. 2016 for the latest edition, hereafter called ICNCP).



Fig. 2 - Sansevieria kirkii (Dracaena pethera) var. pulchra 'Coppertone' (Photo: Peter A. Mansfeld)

A more recent example of nomenclatural issues with a wild living taxon and a derived cultivar, concerns 'Slimmerette' (**Fig. 3+4**). It was presented by Chahinian (1986) as *S. trifasciata* 'Slimmerette' and apparently known only from cultivated plants. The picture Chahinian shows is a pot with both very narrow leaves and slightly wider ones. In 2019, Webb & Yinger published *S. trifasciata* subsp. *sikawae*, a new subspecies found in Tanzania, and mention the cultivar 'Slimmerette' in the following quote (p. 3.): "We believe that a cultivar named *Sansevieria trifasciata* 'Slimmerette' (Chahinian, 1986, p. 48) is likely to be subsp. *sikawae*." A bit of an unfortunate wording as it should have read "....... is likely to have been selected from subsp. *sikawae*." Yinger (2019) observed that subsp. *sikawae* has two leaf shapes (a very narrow one and a broader one) but they apparently never grow together in one population. Clearly 'Slimmerette' was once selected from a narrow leaved population. So we may indeed present 'Slimmerette' as *S.* 'Slimmerette', or as *S. trifasciata* 'Slimmerette', or as *S. trif* subsp. *sikawae* 'Slimmerette'. And as 'Slimmerette' was select-

ed from a narrow-leaved population of an otherwise morphologically broader and more variable wild living subspecies, the following quote from Webb & Newton (2022, p. 166), "Subspecies *sikawae* once had the cultivar name of 'Slimmerette,' which was described from a cultivated plant in Kenya.", is incorrect. The subspecies never had a cultivar name because the cultivar name represents only a part of the subspecies natural variation. Domestication and evolution and their "results" are mixed up in the previous quote.



Fig. 3 – Sansevieria (Dracaena) trifasciata 'Slimmerette' (Photo: Roderic Victoria)
 Fig. 4 – Sansevieria (Dracaena) trifasciata 'Slimmerette' (Photo: Kathrin Weiland-Klepzig)

Similar issues exist with e.g. the cultivar 'Sudwalla Caves' (provided THAT it is a cultivar! **Fig. 5+6**) and the taxon called *S. concinna* subsp. *sudwallensis* R.H. Webb (2020).

Last example of some confusion of concepts: Webb (2020) published a paper with the title "An old cultivar becomes a new subspecies of *Sansevieria concinna*". This is a title with a "contradiction in terms", as a cultivar is not part of natural plant populations and therefore can never "become" a

natural taxon, like a subspecies. A cultivar stays in existence and CAN NOT be equated with the subspecies taxon but is only selected from it.



Fig. 5 – *Sansevieria concinna (Dracaena spathulata)* 'Sudwalla Caves' (Photo: Mariusz Król) **Fig. 6** – *Sansevieria concinna (Dracaena spathulata)* 'Sudwalla Caves' (Photo: Heinz-Günter Budweg)

3.2. A most important ICNCP rule states that "a cultivar epithet may only be used ONCE in a plant genus". The reason is that the combination of a plant genus name and a cultivar epithet must be enough to uniquely pinpoint ONE particular cultivar in a genus and NO other. So the full cultivar epithet 'Laurentii' can only be used ONCE in the genus Sansevieria. This means that both the names Sansevieria 'Laurentii' (Fig. 7) and S. trifasciata 'Laurentii' pinpoint ONE particular cultivar and are equal. As a result NO other cultivar in Sansevieria is allowed to be named 'Laurentii'. This also implies that, for instance, a cultivar with the full name S. kirkii 'Laurentii' is NOT allowed because this particular cultivar CAN be written as Sansevieria 'Laurentii' as well (ICNCP ruling, see above) and then we would have TWO cultivars in Sansevieria that could be communicated with the name Sansevieria 'Laurentii' (one found in S. trifasciata and one in S. kirkii). That would be extremely confusing. For those who are now dismayed reading this, do not forget that in the nomenclature of species, an exactly similar principle is upheld, namely that in one plant genus, only ONE particular species epithet is allowed (the system of binomial nomenclature, as "invented" by Linnaeus). Most of us know and readily accept for instance that there cannot be two Sansevieria species with the name S. kirkii. The same principle goes with cultivar epithets in one genus. So this is actually a smart rule both for cultivars AND for species. A fine example summarizing the above items is this: the full cultivar names S. 'Coppertone', S. kirkii 'Coppertone' and S. kirkii var. pulchra 'Coppertone' all refer to the same cultivar and all are allowed to be used. But there may NOT be another cultivar with the epithet 'Coppertone' in Sansevieria.

And what happens when the merger of *Sansevieria* into *Dracaena* becomes a 100% accepted fact? In that case all cultivar epithets in *Sansevieria* are transferred to *Dracaena* and when a particular cultivar epithet exists in both genera, then one remains under *Dracaena* and the other has to be changed into a new epithet. The choice depends on which one of the two competing epithets was the first one to be correctly established according to existing nomenclatural rules. That one stays, the other one goes...........



Fig. 7 – *Sansevieria (Dracaena) trifasciata* 'Laurentii' (Photo: P. A. Mansfeld) – **Fig. 8** – Sansevieria (*Dracaena*) Star Canary (Photo: Annette Schätzlein)

3.3. Another typographical rule that is often broken in *Sansevieria* names is that in order to indicate cultivar status, the abbreviation cv. is not allowed. So the *name S. trifasciata* cv. Laurentii is not allowed. Neither is *S. trifasciata* hybr. Laurentii, as the word hybrid or its abbreviation is not allowed to be part of a full cultivar name and is not allowed to indicate cultivar status. The last is easy to explain: many cultivars are not hybrids at all. In fact the way in which a cultivar has been produced (mutation, hybridization, etc.) is irrelevant for the name and may not be used in the name. This means that the word "mutation, mutant" is also not allowed in the name, as is e.g. "clone".

On many internet sites *Sansevieria* cultivars are mentioned with the abbreviation "hybr." or the word "hybrid", as in e.g. *Sansevieria* hybr. Widuri, or just hybr. Widuri. If Widuri is a proper

cultivar then is should be S. 'Widuri', or just 'Widuri' when it is clear from the context that it is a Sansevieria cultivar.

- **3.4.** Latin names as cultivar epithets or as part of names of cultivar epithets: this was allowed until Jan. 1st 1959 but not after that. So the word "variegata" is not allowed in a new cultivar epithet or as cultivar epithet proposed after Jan. 1st 1959.
- **3.5.** Another often ignored rule is that a cultivar epithet may not be solely a descriptive word or words. So the well-known cultivar epithet 'Silver Blue' (a youth form of *S. bhitalae* but still often wrongly attributed to *S. kirkii*) is an illegitimate name. Combining some of the aforementioned rules indicates, for instance, that the well-known cultivar epithet 'Blue Clone' is not allowed (it is solely descriptive and it contains the word "clone').
- **3.6.** All parts of a cultivar epithet start with a capital letter. Example 'White Striped Giant' (note that the word "Giant" is here interpreted to indicate the substantive "giant" and not as an adjective.) Had the epithet be written as 'Giant White Striped' it would be an illegitimate epithet because it would contain solely descriptive terms because "Giant" is written so as to mean "gigantic/big" (see sect. 3.5.).

4. The word "variety" as a misnomer

To complicate matters, at some point in time lawyers have decided that the term "cultivar" may be supplanted in legal documents with the word "variety". A very badly informed decision, as the whole world of biology and other sciences use this term to indicate botanical varieties in general texts and as part of official botanical nomenclature. The ICNCP mentions this deeply unfortunate inaccuracy but cannot forbid the wrong use of "variety" in legal circumstances. Other than that, the word is banned in favor of the mandatory use of "cultivar" (or equivalents in other languages, like "Sorte" in German, or "ras" in Dutch, or "race" in English, etc.).

5. Synonymy: more confusion!

Some cultivars of *Sansevieria* are known to exist with more than one cultivar epithet. A well-known example is *S.* 'Gabriela', which was re-introduced more recently as *S.* 'Tough Lady'. In such cases, the oldest, properly established (see below) name is the correct one and the other (when properly established) becomes a synonym.

6. Trade names: the ultimate horror!

In the plant trade, many traders and breeders use additional words to offer their products. These so-called trade designations may or may not be formally registered and then often have legal status as e.g. trade marks or patent names. Such designations/names are not allowed to look like cultivar epithets and therefore must not be presented in single quotation marks. A good example is the designation Star Canary (**Fig. 8**), which is formally a trade designation used to sell a cultivar with the official name *Sansevieria* 'Supsan 1929' but many people will believe that Star Canary is a cultivar and wrongly write it as 'Star Canary'. Traders and breeders often prefer to use trade names

to sell their products because there are much fewer official rules for the formation of trade names than for cultivar epithets. But, if a breeder wants to have ownership of the actual plant material of a cultivar, he/she HAS to use a full cultivar name in the official trade. But this is not so in their catalogues or on websites, so there this plant will be presented as *Sansevieria* Star Canary only. For this reason it is a very unpleasant fact, that not many traders or breeders are strict in using correct representations of their products while others just don't know how it works. As a result, us plant hobbyists are mostly unaware of the fact that a particular name of a cultivar in *Sansevieria* is really a cultivar name or a trade name. The only solution is a correct use of the typescript rule that a cultivar epithet must be placed in single quotation marks. But we are far away from this ideal world.

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As an example, **Fig. 9** shows an excerpt from the Dutch database "Plantscope" with a list of Sansevierias sold through the Dutch flower auctions. In this list, cultivar epithets are correctly presented in single quotation marks and with several cultivars the trade names are given (in bold Face). The Star Canary example is also included. There are some other inaccuracies in this list but they are outside the scope of this paper.

Sansevieria bacularis Sansevieria cylindrica 'Boncel Sansevieria cylindrica 'Handshake Sansevieria cylindrica 'San201202' SANSIAM SHABIKI Sansevieria cylindrica 'Skyline' Sansevieria cylindrica 'Skyline' Sansevieria cylindrica 'Supsan1601' TIARA PLATINUM Sansevieria cylindrica 'Supsan1602' TIARA EMERALD Sansevieria cylindrica 'Supsan1604' TIARA DINO GREEN Sansevieria cylindrica 'Supsan1607' INTI I Sansevieria cylindrica 'Supsan1925' TIARA JUNGLE GREEN Sansevieria ehrenbergii 'Samurai' Sansevieria 'Fernwood' Sansevieria grandis Sansevieria kirkii 'Farah' FRIENDS Sansevieria kirkii 'Silver Blue' Sansevieria 'Supsan1301' COMET AMAZON GREEN Sansevieria 'Supsan1402' SANSIAM MOTO Sansevieria 'Supsan1605' TIARA GRAND GAZELLE Sansevieria 'Supsan1701' ALMOND JADE Sansevieria 'Supsan1926' STAR ROSE Sansevieria 'Supsan1927' STAR GREEN GRANITE Sansevieria 'Supsan1928' STAR CANYON GRANITE Sansevieria 'Supsan1930' ALMOND SILVER Sansevieria 'Supsan1931' COMET QUEEN MARBLE Sansevieria 'Supsan1931' COMET QUEEN MARBLE Sansevieria grandis Sansevieria 'Supsan1931' COMET QUEEN MARBLE Sansevieria 'Supsan1932' STAR IGUANA Sansevieria 'Supsan1934' COMET PIXEL GREEN Sansevieria 'Supsan1934' COMET JUNGLE SHADOWS Sansevieria 'Supsan1935' COMET ROCKY MOUNTAINS Sansevieria 'Supsan2001' STAR TAPPY GREEN Sansevieria 'Supsan2002' COMET GREEN PARROT Sansevieria trifasciata 'Bentel's Sensation' Sansevieria trifasciata 'Black Coral' Sansevieria trifasciata 'Black Dragon' Sansevieria trifasciata 'Black Gold' Sansevieria trifasciata 'Curly' Sansevieria trifasciata 'Futura Superba Sansevieria trifasciata 'Golden Hahnii Sansevieria trifasciata 'Hahnii' Sansevieria trifasciata 'Jade' Sansevieria trifasciata 'Jade Dwarf Marginated' BLACK STAR Sansevieria trifasciata 'Lady Finger' Sansevieria trifasciata 'Laurentii' Sansevieria trifasciata 'Moonshine' nsevieria trifasciata 'Natalie Sansevieria trifasciata 'Robusta' Sansevieria trifasciata 'Saadia Sansevieria trifasciata 'Silver Hahnii' Sansevieria trifasciata 'Yellow Stripe Sansevieria zeylanica

7. Publication of (new) cultivar epithets

In order to be an accepted cultivar epithet, it must be published according to two existing principles. The first is that an epithet is established when it is listed in a statutory register (as in the UPOV database Pluto, see below). Secondly, a cultivar epithet is established when it is published according to the rules in ICNCP. In the present edition, the rule states:

"25.1. Publication is effected under this Code only by distribution of printed or similarly duplicated material (including indelible autograph) through sale, exchange, or gift to the general public or at least to botanical, agricultural, forestry, or horticultural institutions with libraries accessible to botanists, mycologists, agriculturists, foresters or horticulturists generally. It is not effected by (a) communication of new names at a public meeting, (b) the placing of names on labels, (c) the issue of microform made from manuscripts, typescripts or other unpublished material, (d) publication via electronic media (but see Art. 25.1 Note 3, Rec. 25C.1 and Art. 26.2, Note 1), or (e) by publication in confidential trade lists that are not made generally available.

Note 1. For the purposes of this Article, printed material is defined as a publication reproduced by any mechanical or graphical process whereby a number of identical, legible, and indelible copies are made. The issue of microform and unpublished theses is not regarded as a means of effective publication.

Note 2. For the purposes of this Article, indelible autograph is handwritten material reproduced by some mechanical or graphical process (such as lithography, offset, or metallic etching).

Note 3. Where a trade catalogue, or a publication relating to an ICRA Register and/or Checklist, has been made available in electronic media, its formal publication may be effected by the printing and deposit of two copies in a designated library (see Rec. 25C.1 and Appendix IV)."

The exclusion of electronically published names will be deleted in the upcoming edition (probably this year) and replaced by ways on how to correctly publish epithets electronically. Whatever may come, names listed in catalogues or websites without the proper tools to indicate cultivar status of a name, are not accepted. And here we meet with the most disruptive situation in *Sansevieria*, where many names of mostly Asian cultivars are merely mentioned on sites without descriptions and without proper cultivar status indication. On that note, these names cannot be totally ignored, or we would have no tools at all to communicate about these possible cultivars. This is an unfortunate stand-off that we have to live with for now. The International *Sansevieria* Society could help us out by becoming an ICRA for *Sansevieria* and list the correct cultivars (see next section).

8. Cultivar registration: the route to a solution of chaos

Ignorance of facts can be remedied by a proper way of distributed relevant information. The world of domesticated plants knows millions of cultivars and their names, and quite a lot of these names are listed/registered nationally or internationally and statutorily (as part of national and international laws) or non-statutorily (as part of common agreements, often between NGO's). For registration of cultivar names, important, often publicly accessible, registers exist. The most important one is that of UPOV (Union Internationale pour la Protection des Obtentions Végétales, in English: the International Union for the Protection of New Varieties of Plants). This register is online under the name "Pluto" (https://www.upov.int/pluto/en/). It displays the official names of cultivars that are protected by Plant Breeder's Right against illegal propagation.

Another system of cultivar registration is that of the so-called International Cultivar Registration Authorities (ICRA at https://www.ishs.org/nomenclature-and-cultivar-registration/icra), organized as an activity of the International Society for Horticultural Science (ISHS). This is a typical non-statutory registration system. An ICRA registers all existing cultivars of one or a few plant genera and also informs about potentially confusing names, such as one cultivar known under more than one cultivar names (synonyms). It also distinguishes between true cultivar epithets and trade designations. Unfortunately for the genera *Dracaena* and *Sansevieria*, no ICRA exists! In my view, this would be an excellent activity for the International Sansevieria Society (ISS). It would provide its own membership and that of all other societies/groups involved with these genera a clear view on all existing correct and incorrect names in both *Dracaena* (not too many cultivars) and *Sansevieria* (many cultivars or potential cultivars...).

9. Summary and conclusions

The few important rules governing the formation of correct cultivar epithets as presented here is by far not the entire story. Legislation, more ICNCP rules and ongoing competition between plant breeders for commercial success will always be barriers to plain *Sansevieria* enthusiasts to cope with and may lead to confusion as to the true identity of our beloved plants. I hope this contribution provided some insight into this complicated world of plant names and keeps editorial boards of

Sansevieria-dedicated journals keen on trying to avoid making nomenclatural mistakes in their editions. But it won't be easy...... and I repeat my urgent call upon the International Sansevieria Society (ISS) to apply for ICRA status for *Dracaena* and *Sansevieria*. That would be a great relief and help for all us Sansevieria enthusiasts and journal editors and society boards.

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