

## Nomenclature of the nothogenous names $\times$ *Graptophytum* Gossot, $\times$ *Graptoveria* Gossot, and $\times$ *Pachyveria* Haage & Schmidt (Crassulaceae)

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**Summary:** Cultivars established in the three nothogenera  $\times$ *Graptophytum* Gossot,  $\times$ *Graptoveria* Gossot, and  $\times$ *Pachyveria* Haage & Schmidt (Crassulaceae) have entered specialist and general horticulture, and are increasingly and widely cultivated, especially in mild-climate parts of the world. However, uncertainty has existed regarding the place of valid publication and authorship of two of these nothogenous names  $\times$ *Graptophytum* Gossot and  $\times$ *Graptoveria* Gossot. We show that both names were validly published in a little-known book, *Liste des Plantes Grasses sauf Cactées du Jardin Botanique des Cèdres*, which was published by J. Marnier-Lapostolle in 1949. Both names should be attributed to [Pierre] Gossot.  $\times$ *Pachyveria* was validly published by Haage & Schmidt in 1926. Notes are included on the author attribution ‘Haage & Schmidt’.

**Zusammenfassung:** Die in den drei Hybridgattungen  $\times$ *Graptophytum* Gossot,  $\times$ *Graptoveria* Gossot und  $\times$ *Pachyveria* Haage & Schmidt (Crassulaceae) etablierten Sorten haben den spezialisierten sowie allgemeinen Gartenbau erobert und werden zunehmend und weit kultiviert, besonders in den milden Klimaregionen der Welt. Jedoch waren Ort und Autorschaft der gültigen Publikation von zwei dieser Hybridgattungen,  $\times$ *Graptophytum* Gossot und  $\times$ *Graptoveria* Gossot, bisher ungeklärt. Wir zeigen, dass beide Namen in einem wenig bekannten Buch gültig publiziert wurden, in „*Liste des Plantes Grasses sauf Cactées du Jardin Botanique des Cèdres*“, das 1949 von J. Marnier-Lapostolle veröffentlicht wurde. Beide Namen sollten [Pierre] Gossot zugeschrieben wer-

den.  $\times$ *Pachyveria* wurde von Haage & Schmidt 1926 ungültig publiziert. Die Autorenangabe „Haage & Schmidt“ wird kommentiert.

### Introduction

Representatives of several genera of the Crassulaceae have been deliberately or incidentally



**Figure 1.** The flowers of  $\times$ *Graptoveria* are intermediate between those of their parents; *Graptopetalum* species have star-shaped flowers, while the petals of *Echeveria* species are erect. The flowers of the hybrid have ascending petals and, as in *Graptopetalum*, the filaments are outcurved between the petals. Flowers of  $\times$ *Graptoveria* ‘Galathea’ are shown here.

Photograph: Margrit Bischofberger.

**Table 1.** Nothogenus names included in Marnier-Lapostolle (1949) that involve the three crassuloid genera *Echeveria*, *Graptopetalum*, and *Pachyphytum*. Information is transcribed verbatim, except that the use of upper case typescript for genus names, and first-letter upper case in epithets honouring a person was standardised to lower case in line with current practice.

#	Nothogenus name	Authorship recorded for nothogenus name	Comment after nothogenus name	Hybrid formulae applied to included hybrids	Authorship recorded for hybrid formulae	Comment after hybrid formula
1.	× <i>Echepetalum</i>	Gos.	n. nud.	<i>Echepetalum</i> × <i>haworthioides</i> <sup>1</sup>	Gos.	-
				<i>Echepetalum</i> × <i>serpens</i>	Gos.	n. nud.
2.	× <i>Echephytum</i>	Gos.	-	<i>Echephytum</i> × <i>albo-mucronatum</i> <sup>2</sup>	Gos. Jacobs.	Hyb.
				<i>Echephytum</i> × <i>paradoxum</i> <sup>3</sup>	Gos.	Hyb.
				<i>Echephytum</i> × <i>perpusillum</i>	Gos.	n. nud. Hyb.
				<i>Echephytum</i> × <i>scheideckeri</i> <sup>4</sup>	-	n. nud. Hyb.
				<i>Echephytum</i> × <i>sebaceum</i>	Gos.	n. nud. Hyb.
				<i>Echephytum</i> × <i>sempervivoides</i> <sup>5</sup>	Gos.	Hyb.
3.	× <i>Graptophytum</i>	Gos.	-	<i>Graptophytum</i> × <i>marnieri</i> <sup>6</sup>	Gos.	n. nud. Hyb.
4.	× <i>Graptoveria</i>	Gos.	-	<i>Graptoveria</i> × <i>calva</i> <sup>7</sup>	Gos.	n. nud. Hyb.
5.	<i>Pachyveria</i> <sup>9</sup>	-	-	<i>Pachyveria</i> × <i>clavifolia</i>	(Bgr.) Jacobs	Hyb.
				<i>Pachyveria</i> × <i>clavifolia</i> var. <i>cristata</i>	hort.	-
				<i>Pachyveria</i> × <i>fusifera</i>	hort.	Hyb.
				<i>Pachyveria</i> × <i>glauca</i>	Haage et Schmidt.	Hyb.
				<i>Pachyveria</i> × <i>glossoides</i>	Gos.	Hyb.
				<i>Pachyveria</i> × <i>guionettii</i>	Gos.	n. nud. Hyb.
				<i>Pachyveria</i> × <i>pachyphytoides</i> <sup>8</sup>	Guill.	-
				<i>Pachyveria</i> × <i>pachyphytoides</i> var. <i>muelleriana</i>	Guill.	-

<sup>1</sup>Parents given as *Echeveria agavoides* × *Graptopetalum weinbergii*.

<sup>2</sup>= *Urbinia purpusii* Rose.

<sup>3</sup>Parents given as *Echeveria setosa* × *Pachyphytum oviferum*.

<sup>4</sup>= *Pachyveria* ×*scheideckeri* (hort.) E.Walth.

<sup>5</sup>Parents given as *Echeveria perelegans* × *Pachyphytum linguaefolium*.

<sup>6</sup>Parents given as *Graptopetalum amethystinum* × *Pachyphytum uniflorum*.

<sup>7</sup>Parents given as *Graptopetalum arizonicum* × *Echeveria pulvinata*.

<sup>8</sup>Parents given as *Pachyphytum bracteosum* × *Echeveria gibbiflora*.

<sup>9</sup>Note omission of '×', or an equivalent, in front of the nothogenus name. However, '*Pachyveria*' was clearly treated as a nothogenus by Gossot as he included eight nothospecies in it with '×' inserted before the nothospecific epithets.

hybridised with the aim, at least partly, to produce, multiply, and distribute plants that have horticulturally superior characteristics (see for example Rowley, 2017: 131). Examples of such crossing experiments include the use of species from the three New World genera *Echeveria* DC., *Graptopetalum* Rose, and *Pachyphytum* Link, Klotzsch

& Otto. The nothogenus names ×*Graptoveria* Gossot [not G.D.Rowley; see below] (Figures 1 and 2) for hybrids between representatives of *Echeveria* and *Graptopetalum*, and ×*Graptophytum* Gossot (Figures 3 and 4) for hybrids between representatives of *Graptopetalum* and *Pachyphytum*, are in wide use. However, there has been uncertainty as



**Figure 2.** Vegetative variability in *×Graptopoveria*. **A** *×G.* ‘Margarete Reppin’; **B** *×G.* ‘Spirit of ‘76’; **C** an unnamed *×Graptopoveria*; **D** *×G.* ‘Iona’. Photographs: Margrit Bischofberger.

to the authorship and place of valid publication of the two nothogenus names.

We show that both *×Graptopoveria* and *×Graptophytum* must be ascribed to [Pierre] Gossot, who established the two names in Marnier-Lapostolle (1949) in identical ways, on pp. 23 and 27, respectively. In the past “G.D.Rowley” was regarded as having been the author of *×Graptopoveria* (Jacobsen & Rowley, 1958: 75), while *×Graptophytum* is apparently sometimes regarded as not having been validly published, and it is omitted from, *inter alia*, The International Plant Names Index (IPNI). Up to the late-1940s, and over the preceding more

or less 20 years, Gossot had done considerable work on the hybridisation and selection of crassuloid species (see for example Gossot, 1938).

The nomenclature of *×Pachyveria* Haage & Schmidt, for hybrids between *Echeveria* and *Pachyphytum* (Figures 5 and 6), is also discussed, with notes on the author attribution ‘Haage & Schmidt’.

### Background

Marnier-Lapostolle (1949) is a published list of succulents, excluding cacti, grown at Les Cèdres on the Côte d’Azur (see Smith & Figueiredo,



**Figure 3.** The flowers of  $\times$ *Graptophytum* are characterised by fairly big sepals, inherited from the *Pachyphytum* parent, and spreading petals as well as outcurving filaments recalling the *Graptopetalum* parent. At left:  $\times$ G. 'Anita'; at right an unnamed  $\times$ *Graptophytum*. Photographs: Margrit Bischofberger.



**Figure 4.** Two contrasting hybrids of  $\times$ *Graptophytum*. At left:  $\times$ G. 'Amphitryon'; at right:  $\times$ G. 'Anita'. Photographs: Margrit Bischofberger.

2013: 68–79). In the “PRÉFACE” to his work, Marnier-Lapostolle (1949) states that: “Nous avons à remercier les diverses personnes qui nous ont aidé pour établir cette liste, entre autres MM. GUILLAUMIN, JACOBSEN et GOSSOT.” [“We have to thank the various people who helped us to draw up this list, among others, Messrs Guillaumin, Jacobsen and Gossot.”] Gossot, as well as [Prof. André] Guillaumin and [Dr Hermann J.H.] Jacobsen, for that matter, therefore assisted Marnier-Lapostolle with compiling the list, and Gossot, perhaps inadvertently, validly published some nothogenus names in the Crassulaceae. No descriptions aimed at validating novel plant names are included the work.

Table 1 provides a list of the nothogenus names as included in Marnier-Lapostolle (1949) that involve the three crassuloid genera *Echeveria*, *Graptopetalum*, and *Pachyphytum*, with which we are concerned in this paper.

All hybrids between the same parent taxa must bear the same name, regardless of which parent is male or female. From Table 1 it is clear that Gossot provided two names for each of the genus combinations possible between *Echeveria* and *Graptopetalum*, and *Echeveria* and *Pachyphytum*, perhaps depending on whether he had knowledge of which genus representative was the pollen donor, and which one was the seed parent. Therefore, for *Echeveria*  $\times$  *Graptopetalum* he cat-

alogued both:

×*Echepetalum* and,  
×*Graptoveria*.

For *Echeveria* × *Pachyphytum* he catalogued both:

×*Echephytum* and,  
×*Pachyveria* (in the latter case with ‘×’, or an equivalent, omitted in error).

In the case of *Graptopetalum* × *Pachyphytum* he catalogued only one nothogenus name, namely: ×*Graptophytum*.

One of these five nothogenus names, ×*Echepetalum*, is followed by the statement “n. nud.” (Marnier-Lapostolle, 1949: 23, and see Table 1, first row), an abbreviation that is not elaborated on in Marnier-Lapostolle (1949). In the absence of an explanation of what Gossot in Marnier-Lapostolle (1949) meant by “n. nud.”, we take it to have meant “nomen nudum”, as is common practice. This is generally used as an expression of taxonomic doubt by an author, or reflects the advance-use of the name, which is intended to be validated at a later date. This would then make this ‘name’ (×*Echepetalum*) not validly published, as it was simply included in the book in anticipation of later validating the name; Gossot himself therefore did not accept the publication in that work (Marnier-Lapostolle, 1949: 23) of ×*Echepetalum*. For the combination *Echeveria* × *Graptopetalum* only ×*Graptoveria* should therefore be assessed to determine whether it was validly published, as ×*Echepetalum* evidently was not.

Gossot also used the abbreviation “n. nud.” in various other places in the list of Crassulaceae included in Marnier-Lapostolle (1949), notably after the hybrid formulae and their authorships (see Table 1, last column). Gossot therefore listed the names of the nothospecies cultivated at Marnier-Lapostolle’s garden in 1949, but expressly did not want to validate those that he regarded as new and undescribed.

#### Nomenclatural notes on ×*Graptoveria* Gossot

On p. 27 of Marnier-Lapostolle (1949), the name ×*Graptoveria* is ascribed to “Gos.”, without a reference to where the name might have been previously published. The single entity that was included under this nothogenus name, “*Graptoveria* × *calva*” was noted as “Gos. n. nud. Hyb.”; the parentage of the hybrid was given as *Graptopetalum arizonicum* and *Echeveria pulvinata*. To validly publish a nothogenic name “...a statement of the names of the parent genera or subdivisions of genera...” is sufficient (see the *International Code of Nomenclature for algae,*



**Figure 5.** The majority of the hybrids between representatives of *Echeveria* and *Pachyphytum* involve species of *P.* sect. *Pachyphytum*. The sepals of the flowers of such hybrids are quite large—less so than those of the *Pachyphytum* parent, but much larger than the sepals of most *Echeveria* species. Photograph: Margrit Bischofberger.

*fungi, and plants (ICN):* 149, Article H.9.1.; McNeill *et al.*, 2012). When Gossot therefore gave the parents of the included *Graptoveria* × *calva* as *Graptopetalum arizonicum* and *Echeveria pulvinata*, the nothogenus name ×*Graptoveria* was validly published and should be ascribed to Gossot.

We were unable to find whether, and where, Gossot, or anyone else for that matter, may have validly published the name ×*Graptoveria* before the appearance of Marnier-Lapostolle’s booklet in 1949. In Marnier-Lapostolle (1949: 27) the nothogenus name ×*Graptoveria* appeared without a description.

Rowley in Jacobsen & Rowley (1958: 75) republished the nothogenus name ×*Graptoveria* G.D.Rowley as a name for a “gen. hybr. nov.” for

hybrids between *Graptopetalum* and *Echeveria*, and furnished it with the following brief Latin statement: “*Hybridae inter Graptopetalum Rose et Echeveria D.C.*”. Note that the ICN states that for a nothogeneric name to be validly published “...no description or diagnosis is necessary...” (McNeill *et al.*, 2012: 149, Article H.9.1.). It seems that Jacobsen & Rowley (1958) were unaware that Gossot earlier published the nothogenus name  $\times$ *Graptoveria* in Marnier-Lapostolle (1949), as they did not reference this publication. Rowley in Jacobsen & Rowley (1958: 75) included  $\times$ *Graptoveria calva* (Gossot) G.D.Rowley and  $\times$ *G. haworthioides* (Gossot) G.D.Rowley in the nothogenus, and additionally stated that a further nothospecies “Probably also referable here is *Echeveria caerulescens* Gossot” (see also Van Keppel, 1964: 180, 1980: 29, 1981).

Rowley (1980: 153), following Jacobsen (1974: 245), corrected his earlier work in Jacobsen & Rowley (1958) and gave the author and place of publication of the name  $\times$ *Graptoveria* as Gossot in Marnier-Lapostolle (1949: 27).

Van Keppel (1980: 29) cites the authority of the nothogenus  $\times$ *Graptoveria* as “Gossot ex van Keppel”. We can see no reason why Van Keppel’s name should be added to the author citation, given that Gossot validly published the name  $\times$ *Graptoveria* in Marnier-Lapostolle (1949). Further, Van Keppel’s statement (Van Keppel, 1980: 28) that “I [Van Keppel] first described and characterised this artificial genus, based on the four cultivars I was able to identify” seems superfluous, as Gossot first published the name some 30 years earlier and characterised it by unambiguously listing a cultivar, with parentage stated, under the nothogenus name.

IPNI attributes the nothogenus name  $\times$ *Graptoveria* to Rowley (in Jacobsen & Rowley, 1958: 75), with the statement “sine descr.”, a view with which Eggli (2003a: 134) concurred.

#### **Nomenclatural notes on $\times$ *Graptophytum* Gossot**

In the case of hybrids between representatives of *Graptopetalum* and *Pachyphytum*, Gossot catalogued a single nothogenus name only, namely  $\times$ *Graptophytum*. For this nothogenus *Graptophytum*  $\times$ *marnieri* was listed, with its parents given as *Graptopetalum amethystinum* and *Pachyphytum uniflorum*. This nothogeneric name was therefore also validly published. Based on Marnier-Lapostolle (1949: 27), the nothogenus name  $\times$ *Graptophytum* is ascribed to Gossot by Eggli (2003b: 134). Gossot, in Marnier-Lapostolle (1949: 27), established this name in a way identical to how he [Gossot] established the name

$\times$ *Graptoveria*. The nothogeneric name  $\times$ *Graptophytum* has to date not been included in IPNI.

#### **Nomenclatural notes on $\times$ *Pachyveria* Haage & Schmidt**

The firm Haage & Schmidt was founded in 1861 by Johann Nicolaus Haage (1826–1878), with Ernst Schmidt joining the firm as a partner in 1862. After the death of J.N. Haage, Carl Schmidt (not a son of Ernst Schmidt) became the owner; Carl Schmidt died in 1919. His son Curt Werner Schmidt took over the business, and after he died in 1921, his widow, Martha Luise Schmidt carried on with the business activities. In 1922 she married Horst Leopold Ratz and henceforth was known as Martha Luise Ratz. In 1926, when  $\times$ *Pachyveria* was described, Ms M.L. Ratz was therefore the owner of the firm (see Schalldach, 2011; Wikipedia, 2017). However, there is no indication that she or her husband [H.L. Ratz] contributed in any way to the entries in the 1926 and 1928 Haage & Schmidt catalogues. Rather, it is very likely that these catalogues were anonymously compiled by staff of the firm. We therefore conclude that the authorship of any novelties validly published in the 1926 catalogue (as well as the 1928 catalogue for that matter) should be attributed simply to “Haage & Schmidt”, as has been done in IPNI, rather than to “Hort. Haage & Schmidt”. Inclusion of “hort.” or “Hort.”, with the “h” capitalised, in an author citation most often refers to a name used in horticulture that was not initially validly published, and only validated later, which is usually indicated by inclusion of the word “ex” followed by the name(s) of the validating author(s) after “h(H)ort.”.

For *Echeveria*  $\times$  *Pachyphytum*, Gossot in Marnier-Lapostolle (1949) catalogued both his own  $\times$ *Echephytum* (p. 24), as well as [ $\times$ ] *Pachyveria* (p. 29–30), in the latter case with ‘ $\times$ ’, or an equivalent, omitted in error before the nothogenus name (see Footnote <sup>9</sup> to Table 1). Significantly, Gossot did not list himself [as ‘Gos.’] as the author of  $\times$ *Pachyveria*, as he did for all the other nothogeneric names (see Table 1, third column), as he was aware that  $\times$ *Pachyveria* had been published earlier (see next paragraph). He therefore did not publish a superfluous name, ‘ $\times$ *Pachyveria* Gossot’. Both  $\times$ *Echephytum* Gossot and  $\times$ *Pachyveria* Haage & Schmidt refer to hybrid material obtained from the same genus parentage (see ‘Conclusion. Nomenclature of  $\times$ *Pachyveria* Haage & Schmidt’, below).

The nothogenus name  $\times$ *Pachyveria* was validly published earlier by Haage & Schmidt (1926: 193; Eggli, 2003c: 196) when they stated under the entry for “***Pachyveria glauca* (H. &**



**Figure 6.** Vegetative variability in  $\times$ *Pachyveria*. **A**  $\times$ *P.* ‘Elaine’; **B**  $\times$ *P.* ‘Dr. Cornelius’; **C**  $\times$ *P.* ‘Glauca’; **D**  $\times$ *P.* ‘Mrs. Coombes’.

Photographs: Margrit Bischofberger.

S.)”, “Kreuzung zwischen *Pachyphytum* und *Echeveria*” (English: “Hybrid between *Pachyphytum* and *Echeveria*”). Eight years later Walther (1934: 53) noted that the name *Pachyveria* was first used by Haage & Schmidt in “...one of their last published catalogs...”, without indicating which one, and proceeded to “...legitimize[-d]...” this nothogenus name. However,  $\times$ *Pachyveria* did not require “...legitimiz[e]-ing...” by Walther (1934: 53). Furthermore, four years before Walther (1934) appeared, Berger (1930: 481, 482) had already referenced this nothogenus name indicating *Echeveria* and *Pachyphytum* as the parents, an act that would have established the nothogenus name, had Haage & Schmidt (1926: 193) not done so earlier. Interestingly, Walther (1934) also omitted an ‘ $\times$ ’, or an equivalent, before the nothogenus name,

consistently referring to it as “*Pachyveria*”.

### Conclusion

#### 1. Nomenclature of $\times$ *Graptoveria* Gossot

$\times$ *Graptoveria* Gossot in Marnier-Lapostolle (1949: 27). Jacobsen (1974: 245); Eggli (2003a: 134).

#### Parentage:

*Echeveria* DC., *Prodr. syst. nat. regni veg.* **3**: 401 (1828).

*Graptopetalum* Rose in *Contrib. US Nat. Herb. Smithson. Inst.* **13**: 296 (1911).

#### Synonyms:

$\times$ *Graptoveria* G.D.Rowley in [Rowley & Jacobsen] *Nat. Cact. & Succ. Journ.* **13**: 75 (1958). Jacobsen (1986: 496).

$\times$ *Echenesia* P.V.Heath in *Calyx* **4**(4): 132 [*Byrnesia* Rose (1922) as *Brynesia*, sic] (1994).

### Nomenclatural note:

The nothogenus designation '×*Echepetalum*' for the combination *Echeveria* × *Graptopetalum* is not a "name" in the sense of the ICN; see McNeill *et al.*, 2012: 7, 32, Articles 6.3. and 12.1, respectively) as it was not validly published (see above).

### **2. Nomenclature of ×*Graptophytum* Gossot**

×*Graptophytum* Gossot in Marnier-Lapostolle (1949: 27).

#### Parentage:

*Graptopetalum* Rose in *Contrib. US Nat. Herb. Smithsonian. Inst.* **13**: 296 (1911).

*Pachyphytum* Link, Klotzsch & Otto in *Allg. Gartenzeitung* **9(2)**: 9 (1841). Britton & Rose (1903: 11).

### **3. Nomenclature of ×*Pachyveria* Haage & Schmidt**

×*Pachyveria* Haage & Schmidt in *Haupt-Verzeichnis Samen Pfl., Erfurt* **1926**: 193 (1926). Haage & Schmidt (**1928**: 205); Egli (2003c: 196).

#### Parentage:

*Echeveria* DC., *Prodr. syst. nat. regni veg.* **3**: 401 (1828).

*Pachyphytum* Link, Klotzsch & Otto in *Allg. Gartenzeitung* **9(2)**: 9 (1841). Britton & Rose (1903: 11).

#### Synonyms:

×*Echephytum* Gossot in Marnier-Lapostolle (1949: 24). [See Jacobsen 1974: 616, 1986: 348.]

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