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REDISCOVERING OF HISTORIC IVY CULTIVAR 'RUGOSA' IN NIKITSKY BOTANICAL GARDEN

Andriy Vasilyevich Yena[1], **Rosalyn Marshall**[2]

[1] Academy of Bioresources and Life Management, V.I. Vernadsky Crimean Federal University, Simferopol
295000, Republic of Crimea, Simferopol, Agrarnoye
E-mail: an.yena@gmail.com
[2] Department of Horticultural Taxonomy, The Royal Horticultural Society Garden Wisley, Woking, GU23 6QB, UK
E-mail: rosalynmarshall@rhs.org.uk

The old English ivy cultivar 'Rugosa' is found as a relic of cultivation in Nikitsky Botanical Garden. Authors revealed that 'Rugosa' together with a few ivy cultivars introduced by early heads of the Garden has survived since the 19th century where the layout of the park had not been changed. At the same time 'Rugosa' has disappeared from key collections in UK and probably from mainland European collections as well. The clone from Nikitsky Garden fits the unique set of characters of 'Rugosa' having heterophylly, mostly deltoid leaves, large palmate leaves with shield-shaped central lobes, gold, dust-like coloration of the palmate leaves, wrinkled surface in three-lobed leaves, at least in some cases. The structure of trichomes shows 'Rugosa' belongs to *Hedera helix*, not to *H. hibernica*. The rediscovery of the lost historic English cultivar 'Rugosa' is an important event in the history of horticulture and for those that are concerned about the preservation of garden plant diversity.

Key words: *Hedera helix; historic cultivar; 'Rugosa'; relic of cultivation*

Introduction

There are around 600 cultivars of *Hedera* known today and half of them are considered to be threatened in cultivation (McAllister, Marshall, 2017). Cultivars should be treated as a part of culture and correspondingly they can disappear like old paintings or ancient manuscripts. But they are even more fragile than a piece of art. Their existence is extremely vulnerable to changes in gardening trends, their ease of care or the interests of collection holders. Like in other ornamental plants, early ivy cultivars are often displaced with more decorative new ones or commercially more successful clones.

The history of early introduction of *Hedera* cultivars in the Nikitsky Botanical Garden is obscure. The first director of the Nikitsky Botanical Garden, Christian Steven, is known to have ordered many plants from European nurseries, and twice – in 1813 and 1816 – he received some "varieties" of ivy (Малеева, 1931). No list of the names has been found yet and information about further enrichment or cultivation of an ivy collection in the garden is poorly documented, but as long ago as 1912 more than 10 ivy cultivars were still grown in the garden (Путеводитель, 1912). All these old cultivars were, until recently, considered to have been lost, and ornamental forms of *Hedera* have been collected in Nikitsky Botanical Garden anew from the 1980s (Улейская, 1999).

Material and methods

The object of the investigation are relics of cultivation, old ivy cultivars that have been undetected since XX century. Our hypothesis was that some ivy cultivars introduced by early heads of Nikitsky Botanical Garden could survive where the layout of the park had not been changed. We surveyed *Hedera helix* L. grown in Nikitsky Botanical Garden to reveal clones with unusual morphology with the aim of their further identification. We identified such

clones using specimens from herbariums K, CSAU and YALT, re-reading original historic descriptions available and comparing them with morphologically similar modern cultivars in Royal Botanical Gardens, Kew, and in the private ivy collection "Hederena" of the first author in Simferopol.

Results and discussion

There are several sprawling ivy plants still covering ground between old trees where the pattern of the park has not been changed in Nikitsky Botanical Garden for two centuries. Because the native *H. helix* grows in abundance in and around the Garden, no one has ever thought to look more closely at these neglected ivies. In 2018, a rather unusual clone grown close to square marble basin in Nizhny Park drew the attention of the first author. The leaves showed traits different to the local wild type *H. helix* or cultivars known; visibly large, deep-palmately dissected and bright green, slightly dusted with yellow powder (fig. 1). A comparison with descriptions made by distinguished 19th century British horticulturist Shirley Hibberd in his classic monograph "The Ivy" (Hibberd, 1872) led to the conclusion that this clone completely fits the characters of the old cultivar called 'Rugosa'.

Fig. 1 Close-up of leaves of ivy 'Rugosa' in Nikitsky botanical garden

This cultivar has disappeared from key collections in UK and probably from European collections as well. Today there is no record of this cultivar in the collections of the Royal Botanic Gardens, Kew, Royal Botanic Garden, Edinburgh, the UK's National Collection at Fibrex, Warwickshire, or as an entry to the Royal Horticultural Society 1976–1979 ivy trial. Even one of the most experienced collectors and ex-head of the German Ivy Society, Andreas Hönemann, informed us (pers. comm.) he had never seen 'Rugosa' before and did not know of anyone who ever cultivated this cultivar.

In literature 'Rugosa' has been mentioned only twice since Hibberd's work, by Friedrich Tobler in 1927 (Tobler, 1927) and by McAllister & Marshall (McAllister, Marshall, 2017) with practically no new data.

Hibberd described this variety in detail (Hibberd, 1872: 69):

"**Rugosa**, The wrinkled-leaved ivy (syn. Helix major, Jersey helix). – A distinct but scarcely beautiful variety It grows freely and produces large leaves, which are various in form, the majority being deltoid with a rounded base. But scattered about the plant will be found two kinds of leaves peculiar to this variety and none other. One of these has five rounded lobes,

the front lobe being shield shaped; the other is three-lobed, the lobes rounded in outline, and the whole surface puckered and blistered, and so peculiarly tinged with yellow as to appear as if slightly powdered with gold-dust. Interesting and curious."

The drawings of 'Rugosa' that follow Hibberd's description (Hibberd, 1872: 71) depict two rather different leaves (fig. 2) that mirror the inherent variability in the cultivar morphology. Both in outline look like typical of Crimean specimens.

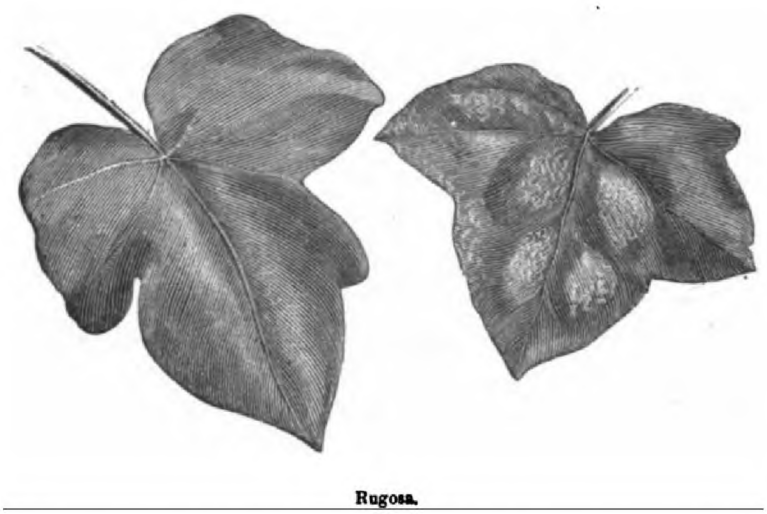

Fig. 2 Drawings from the S. Hibberd's monograph (1872) with two different leaves of ivy 'Rugosa'

This clone has indeed little if any attraction, and that is why it has long been unnoticed. Its leaves reach (8)9 × 10(12)cm, deltoid ones do prevail in the clone, though their bases are rather cordate, and three or five lobed, gold-dusted leaves appear in some places only, not evenly distributed. A puckered and blistered leaf surface is less pronounced in specimens from Nikitsky Garden.

Thus the clone from Nikitsky Garden fits the unique set of characters of 'Rugosa' having (1) heterophylly, (2) mostly deltoid leaves, (3) large palmate leaves with shield-shaped central lobes, (4) gold-dust-like coloration of the palmate leaves, (5) wrinkled surface in three-lobed leaves, at least in some cases. This is sure to be the long lost 'Rugosa'.

We should note that variable leaf shape can be seen in some modern ivy cultivars as well. A true heterophylly within the juvenile age is known for 'Eva', 'Melissa', 'Spetchley', 'Tamara', 'Wilco' etc. (Ена, Улейская, 2015). As to variegation appearing in some, not in all leaves, it is necessary to note that, similar to 'Rugosa', some modern ivy cultivars e.g. 'Kaleidoscope', 'Milky Way', 'Schaefer Three', 'Snow Cap' etc., can loose their coloration on many branches, especially when grown in the open ground. A puckered and blistered surface is seen in modern cultivars such as 'Dragon Claw' or 'Perkeo', and this character is rather stable so can disappear only in rare instances. And moreover, some cultivars with smooth leaves can produce puckered and blistered ones from time to time (e. g. 'Lucida', 'Sally', 'Silver King', 'Quantum' etc.). That is why we suppose that the last character is not obligate in 'Rugosa' despite its name and this is why Hibberd decided to show two different palmate leaves in his description.

Further examination of the Nikitsky Garden plant found the gold-dusted leaf colouring to be a result of very small, dot-like yellow-coloured pieces of leaf tissue gathering unevenly on the surface. There is no similar variegation among cultivars known today.

A microscopic study of the leaf surface showed that the leaves bear multiangulate stellate trichomes that are not adpressed to the surface of the leaf as they are in *H. hibernica*

(G.Kirchn.) Bean. Consequently, basing on known specific morphological characters of *Hedera* species (McAllister et al., 1990, Valcárcel, Vargas, 2010), we state this cultivar belongs to *H. helix*, not to *H. hibernica* as was supposedly listed earlier (McAllister, Marshall, 2017).

It is necessary to note that *H. helix* 'Rugosa' is the third old ivy cultivar rediscovered in Nikitsky Botanical Garden in the last few years, as well as 'Angularis' and 'Scutifolia' (Ена, 2016). All this suggests there can be other relicts of ivy cultivation in Nikitsky Garden to be rediscovered.

Conclusions

The rediscovery of the lost historic English cultivar 'Rugosa' is an important event in the history of horticulture and for those that are concerned about the preservation of garden plant diversity. This finding serves as evidence that numerous old parks in different parts of Europe can preserve forgotten, or taken as lost cultivars that may be recognized with careful observations. Like the heritage of wild flora, we must study the diversity of cultivated plants more attentively to conserve our horticultural heritage.

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Ена А.В., Маршалл Р. Открытие утраченного исторического сорта плюща 'Ругоза' в Никитском ботаническом саду // Plant Biology and Horticulture: theory, innovation. 2019. № 1 (150). P. 39-43.

В Никитском ботаническом саду обнаружен как реликт культивирования старинный английский сорт плюща 'Rugosa'. Авторы выяснили, что 'Rugosa' вместе с некоторыми другими сортами плюща, интродуцированными ещё первыми директорами Сада, сохранилась с XIX в. в тех местах, где планировка парка не подвергалась изменениям. В то же время 'Rugosa' исчезла из основных коллекций в Великобритании и, вероятно, также во всей континентальной Европе. Клон, обнаруженный в Никитском саду, соответствует уникальному набору признаков сорта 'Rugosa', включая гетерофиллию, преобладание дельтовидных листьев, наличие крупных пальчатых листьев со средней долей, по форме напоминающей геральдический щит и покрытых мелкими жёлтыми точками, словно «золотой пылью», а также трёхдольные листья со сморщенной поверхностью, по крайней мере, в некоторых случаях. Структура трихом листа у сорта 'Rugosa' свидетельствует о его принадлежности к *Hedera helix*, а не к *H. hibernica*. Находка потерянного исторического английского сорта 'Rugosa' является важным событием в истории декоративного садоводства и для тех, кто занимается проблемами сохранения разнообразия садовых растений.

Ключевые слова: *Hedera helix; исторический сорт; 'Rugosa'; реликт культивирования*