

## SEDUM SARMENTOSUM BUNGE A NEWCOMER IN CROATIAN FLORA

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In the course of ten years, the Eastasiatic species *Sedum sarmentosum* BUNGE, has been found growing in Croatia. It grows in antropogenous gravelled and sandy habitats and in old walls. It always appears alone, and not inclined to join other plant species. The plant was introduced in Europe as an ornamental plant cultivated in gardens, but escaping from culture, it expanded as a wildgrowing plant, probably carried by animals (such as birds or ants) or transported with building materials. In Croatia the fructification of this species has not been noticed.

**Key words:** *Sedum sarmentosum*, cultivated plant, wildgrowing plant, Croatia, fructification, vegetative propagation

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Tijekom zadnjih deset godina, istočnoazijska vrsta *Sedum sarmentosum* utvrđena je na većem broju nalazišta u Hrvatskoj. Obraštava antropogena šljunkovita i pjeskovita staništa te stare zidine. Uvijek se javlja sama ne pokazujući sklonost zajedništvu s drugim biljnim vrstama. U Europu je unesena kao uresna biljka koja se uzgaja u vrtovima, ali se, odbjegavši iz kulture širi kao podivljala vrsta vjerojatno posredstvom nekih životinja (npr. ptica ili mrava) ili pak transportom građevnog materijala. Na području Hrvatske u te vrste nije primijećena fruktifikacija.

**Ključne riječi:** *Sedum sarmentosum*, kulturna biljka, podivljala vrsta, Hrvatska, fruktifikacija, vegetativno razmnožavanje.

### INTRODUCTION

The genus *Sedum* L. (*Crassulaceae*) which is naturally distributed in the northern hemisphere, except for one species in Peru (HEGI 1923), includes about 180 species.

*Sedum sarmentosum* BUNGE is autochthonous in East Asia. It was introduced in Europe and America as an ornamental plant. Sometimes it escapes culture and spreads as a wildgrowing plant. According to floristic literature the species *Sedum sarmentosum* is autochthon in China and Japan (FOERSTER 1956, SIEBERT et VOSS 1896, RÜMPLER 1892, HASS, LANDOLT et HIRZEL 1970). In horticultural literature China and Japan are indicated as

the original habitat of this species (PRAEGER 1921; SILVA TAROUCA et SCHNEIDER 1943; JACOBSEN 1954; ENCKE 1958; JELITTO et SCHACHT 1963), but KITAGAWA (1939) recorded Manchuria, Korea and China.

In a series of older and more recent standard European floras the species *Sedum sarmentosum* is generally not recorded, except in the book *Flora der Schweiz* in which it is mentioned as a not rare garden plant, frequently planted on steep slopes in order to hold the ground. As a wildgrowing plant it has been noted in southern Tessin and lower Misox (HESS, LANDOLT et HIRZEL 1970).

In America it escapes from culture to roadsides, waste ground and open woods (FERNALD 1950).

*Sedum sarmentosum* is a perennial plant of characteristic, loose and pulvinate growth, consisting of a number of procumbent sterile and fertile shoots. FOERSTER (1956) says that it is a "Zauberisches Rankengewirr" - magic confusion of stolons.

Its whole habit looks extraordinary, and can very easily be differentiated from other species of the genus *Sedum* (FOERSTER 1956; JELITTO SCHACHT 1963). Characteristical, adventive rootlets appear on most of the nodes (Fig. 1.), and the leaves are conspicuously arranged mostly 3 in each whorl. It survives unfavourable condition as a hemicryptophyte.



Fig. 1. *Sedum sarmentosum* BUNGE

## DISTRIBUTION AND HABITAT

The appearance of the species *Sedum sarmentosum* in Croatia has been monitored for over 10 years. *Sedum sarmentosum* was found as a wildgrowing plant in a number of localities in continental and coastal parts of Croatia. In the continental region these are: Zagreb, Zabok, Stara and Nova Gradiška, Požega, also Suza and Zmajevac in Baranja, and in the coastal part of Croatia, Novi Vinodol, Bribir, Crikvenica, Jadranovo, Kraljevica, Bakar, and on the islands of Cres and Lošinj (Fig. 2).

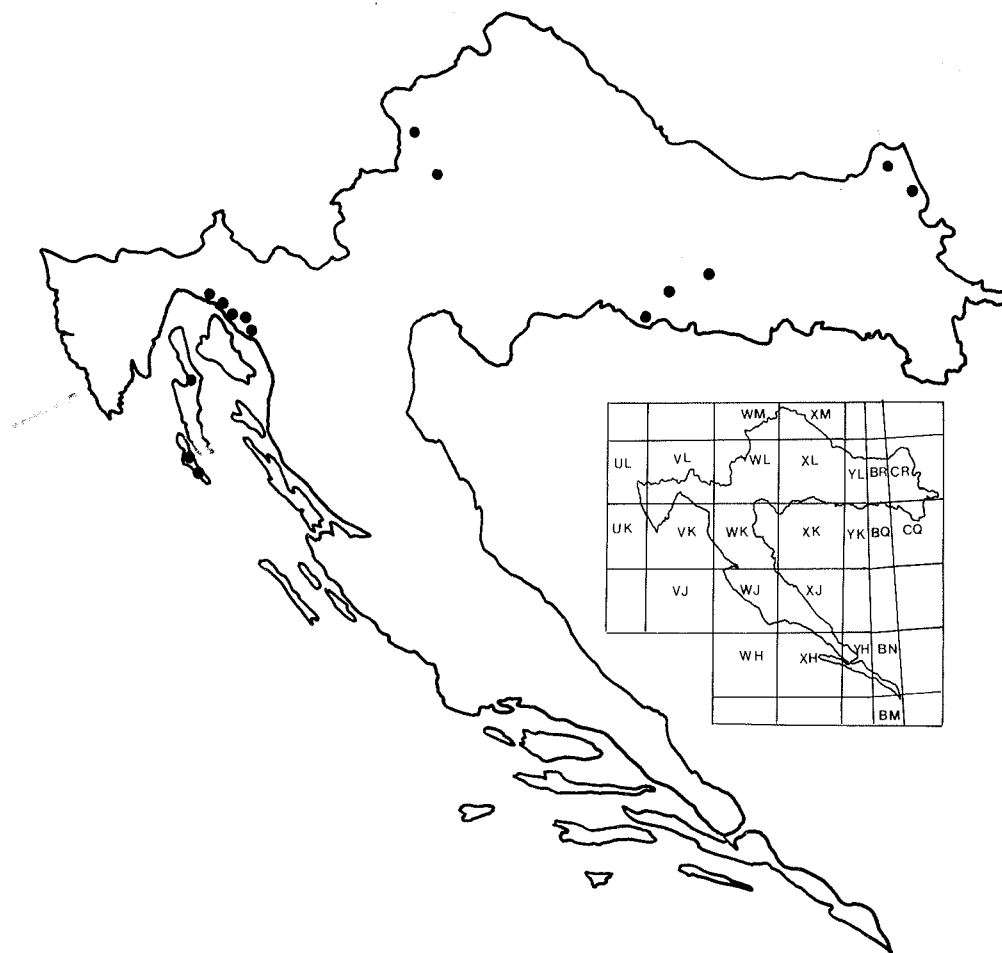


Fig. 2. Distribution of the species *Sedum sarmentosum* BUNGE in Croatia (UTM net after TOPIĆ, 1993): Zmajevac CR37; Suza CR27; Požega YL02; Nova Gradiška XL81; Stara Gradiška XL81; Zagreb WL77; Zabok WL69; Novi Vinodol VK89; Bribir VK80; Crikvenica VL70; Jadranovo VL70; Kraljevica VL61; Bakar VL61; Cres VK57; Mali Lošinj VK53; Veli Lošinj VK63.

In these places the plant grows over antropogenous habitats such as old walls and stone garden walls, metal eaves, terraces and balconies, gravelled ditches and the like. Remarkable and interesting is its quick expansion in inhabited places though fructification has not been observed. Consequently, until now, it has been established that in Croatia this species spreads only in a vegetative way.

The question therefore is where from and how this plant is expanding as wildgrowing all over Croatia?

So far its cultivation as an ornamental plant is known only in Karlovac (ANONYMUS 1936), and the Botanical Garden of the Faculty of Science in Zagreb.

More recently the plant has been found in private gardens in Zagreb (Nova Branimirova ulica, Čulinečka cesta, Dubravačka cesta, Pantovčak), Požega and Crikvenica.

#### DISCUSSION

In the publications *Delectus seminum* (which the Botanical Garden in Zagreb receives from other Botanical Gardens in the world for purposes of seed exchange) it is recorded that *Sedum sarmentosum* is periodically at disposal for exchange.

The Botanical Garden of the Faculty of Science in Zagreb, obtained this species from Antwerp for the first time in 1965, and it was cultivated in greenhouse. There is no evidence as to whether seeds or cuttings arrived from Antwerp. It is known that it existed until 1971.

Today, in the Botanical Garden the plants are cultivated from an original cutting obtained from Wageningen in 1967 but under the incorrect name of *Sedum winkleri*.

According to *Delectus seminum*, available at the Botanical Garden in Zagreb, *Sedum sarmentosum* is or was bred in the following Botanical Gardens of Europe: Budapest (1987, 1989, 1990), Bordeaux (1950), Karlsruhe (1985), Kiev (1987, 1988, 1990), Liege (1985, 1991), Oldenburg (1988, 1989), Pecs (1972), San Bernardino di Trana (1974) and Uppsala (1978). In the Botanical Garden of Liège this plant is cultivated for sale.

The low temperature resistance of this plant in the above mentioned Botanic Gardens is not known. These data are mentioned only for the Botanical Garden in Kiev, where this plant is greenhouse cultivated.

According to BAILEY (1953) *Sedum sarmentosum* is a greenhouse plant, and it is necessary to keep it in light and dry places without frost in winter at temperatures from +3° to 10°C (RÜMPLER 1890, 1892; SIEBERT et VOSS 1896); contrary to this PRAEGER (1921) and ENCKE (1958, 1968) pointed out that it is a frost tolerant species.

In the Botanical Garden of the Faculty of Science, the University of Zagreb it spends the wintertime in the open as it does in all private gardens in Zagreb, Karlovac, Požega and Crikvenica.

How this species has spread into the coastal and continental parts of Croatia can now only be guessed. As mentioned earlier, during the ten years of observation fructification has not been noticed, so the only possibility is its vegetative reproduction i.e. expansion, by means of parts of shoots bearing leaves and small adventive rootlets.

Because it grows on gravel and other building material it may be supposed that it spreads through transport of this material or that these parts of plants are carried by certain animals (for instance birds or ants). It is known from the literature that *Sedum sarmentosum* is tasty to eat (BAILEY 1953). In the case of the private garden in Karlovac the owner wrote that ants colonized close to *Sedum sarmentosum* and subsequently the plants died. The owner then propagated new plants from the remains and planted them in another place, but ants appeared again. The ants did not attack other species of this genus which grew in the same garden.

The way of spreading the species *Sedum sarmentosum* will be the subject of further investigations. For the time being our intention was only to draw attention to *Sedum sarmentosum* as a new adventive plant in Croatian flora.

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#### SAŽETAK

##### *Sedum sarmentosum* BUNGE nova pridošlica hrvatske flore

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Rod *Sedum* L. (*Crassulaceae*) obuhvaća oko 180 vrsta autohtono rasprostranjenih na sjevernoj hemisferi, izuzev jedne koja je raširena u Peruu (HEGI 1923). *Sedum sarmentosum* BUNGE je autohtona vrsta istočne Azije. U Europu i Ameriku introducirana je kao uresna biljka. Ponekad odbjegne iz kulture pa se širi kao podivljala vrsta.

U nizu standardnih europskih flora starijeg i novijeg datuma vrsta *Sedum sarmentosum* uopće nije registrirana osim u djelu *Flora der Schweiz* (HESS, LANDOLT u.HIRZEL 1970) u kojem se spominje kao rijetka vrtne biljka koja se često sadi na strminama zbog učvršćivanja tla. Kao podivljala vrsta zabilježena je za južni Tessin i donji Misox. U Americi, odbjegavši iz kulture, raste na rubovima putova, zapuštenim površinama i u otvorenim šumama (FERNALD 1950).

Tijekom zadnjih desetak godina, istočnoazijska vrsta *Sedum sarmentosum* BUNGE, utvrđena je na velikom broju nalazišta u Hrvatskoj (Zmajevac, Suza, Požega, Nova i Stara Gradiška, Zagreb, Zabok, Novi Vinodol, Bribir, Crikvenica, Jadranovo, Kraljevica, Bakar, Cres, Mali i Veli Lošinj, (Sl. 2). Obraštava antropogena šljunkovita i pjeskovita staništa te stare zidine. Uvijek se javlja sama ne pokazujući sklonosti zajedništva s drugim biljnim vrstama. Odbjegavši iz kulture širi se kao podivljala vrsta, vjerojatno posredstvom nekih životinja (npr. mrava, ptica) ili pak transportom građevnog materijala. Na području Hrvatske u te vrste nije primjećena fruktifikacija.

*Sedum sarmentosum* je biljka trajnica karakterističnog, rahlog, jastučastog rasta kojeg čine brojni, puzajući, sterilni i fertilni izdanci (Sl. 1). FOERSTER (1956) kaže da je to "čarobni metež vriježa". Cjelokupni habitus je izuzetnog izgleda i vrlo se lako može razlikovati od ostalih vrsta roda *Sedum* (FOERSTER 1956, JELITTO SCHACHT 1963). Značajno je da se adventivni korjenčići javljaju na većini nodija (Sl. 1), a listovi su smješteni po tri u pršljenu.