

## PERSPECTIVES OF STUDYING OF SPECIES OF FAMILY *CRASSULACEAE* DC. IN KRYVYI RIH AREA WITH REFERENCE TO PHYTOREMEDIATION AND PHYTOMINING

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To search plants-hyperaccumulators is one of the most promising directions of biological methods for removing of toxic compounds from ecosystems. Screening acquires special importance for species, which will be used to create phytocoenoses in large industrial centres of Ukraine. The results of model experiments in Kryvyi Rih Botanical garden revealed some arboreal and fruticous as well as ornamental plants, which are resistant to combined effect of heavy metal compounds; among them – *Sedum rupestre* L.

Given the relevance of further researches along this line, we paid attention to the members of the family *Crassulaceae* DC. In particular, this is because that *Sedum alfredii* Hance is one of the most effective absorbers of Cd, Zn and Pb among the 400 known hyperaccumulators species.

The family *Crassulaceae* is represented by over 30 genera and 1500 species of world flora. The most of its members grow in dry open places, often in rock cracks. The representatives of this family belong to the ecologic group of arid regions – succulent plants. All the representatives of this family are characterized by extraordinary ability to breed vegetatively. Easiness of forming of adventitious roots on the stalks, of buds on leaves, of new rosettes on creeping sprouts determines the outstanding viability of species of the family.

For Kryvyi Rih area, the native species are *Hylotelephium polonicum* (Blocki) Holub, *Sedum acre* L., *S. borissovae* Balk., *Sempervivum ruthenicum* Schnittsp. et C.B. Lehm. About 30 cultivars are used in landscaping; particularly, in Kryvi Rih Botanical Garden – 24 ones. In 1990s, the possibility to use plants of genera *Sedum* L. and *Hylotelephium* H. Ohba for reclamation of iron ore dumps was studied. The investigations were carried out in a dump of Pershotravnevyi quarry of Northern ore-dressing combine. In some sites, which had been backfilled by ferruginous quartzites, chlorite-biotite-amphibole and amphibole-kaoline shales, the seedlings of such species as *S. aizoon* L., *S. album* L., *S. hybridum* L., *S. kamtschaticum* Fisch., *S. pallidum* M. Bieb., *S. sexangulare* L., *S. spurium* M. Bieb., *Hylotelephium ewersii* (Ledeb.) H. Ohba, *H. spectabile* (Boreau) H. Ohba were planted. These plantings do not at present exist.

Instead of them, there are 3 species of *Crassulaceae* in technogenous landscapes of Kryvyi Rih area. *Sedum acre* occurs only in old dumps (Ternivsky, Burshchytsky) in small sites with stabilized small-rubbed substrates. *Hylotelephium polonicum* often prevails in petrophyte communities of 40–60-year-aged dumps; these communities are similar to natural ones. Monospecific “patches” of *Sedum rupestre* L. occupy enough great areas not only in rock substrates, but also in loams and limestones, however, they are limited to the dumps, which are adjacent to places where this species is cultivated, e. g. garden plots or cemeteries. Although the latter species is susceptible to natural invasion and therefore needs control over its distribution, the positive point is its high adaptive ability to survive under extreme ecotopic conditions.

Thus, aboriginal and cultured representatives of the family *Crassulaceae* may be of interest in the perspective of phytoremediation studies. Considering the fact that the rocks of the Kryvyi Rih iron ore suites, which fall into industrial waste dumps, contain rare metals – Ge, Mo, Nb, Pt, V, etc., the using of these plants for phytomining is not excluded.

**Key words:** Kryvyi Rih, *Crassulaceae* DC., *Sedum* L., Phytoremediation