



USEFULNESS OF MORPHOLOGICAL CHARACTERS IN DETERMINATION OF INTRA- AND INTERSPECIFIC DIVERSITY OF VIOLETS (*VIOLA* L., VIOLACEAE)

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The genus *Viola* L. with more than 500 species is difficult taxonomic group due to great intraspecific morphological variability resulted from the influence of environmental conditions but also from hybridization. Interspecific hybrids form hybrid swarm or introgressants, therefore species discrimination still remains a problem in this genus. To analyze intra- and interspecific variability the species from two sections were studied. Intraspecific (intra- and interpopulation) differentiation were analyzed in *V. tricolor* L. (section *Melanium*) from non-polluted and polluted with heavy metals sites. Intra- and interspecific variability with the influence of hybridization were studied in *V. reichenbachiana* Jord. ex Boreau – *V. riviniana* Rchb. group (section *Viola*).

V. tricolor is a species very differentiated morphologically (intra- and interpopulation variability). It occupies metalliferous (Zn, Pb, Cd, Cu) and non-metalliferous sites in its geographic range. We analyzed morphological and anatomical features in metallicolous and non-metallicolous populations to determine the differences influenced by environmental conditions. In field observations, plants within both population types were quite variable, but interpopulation differences in some characters were evident (plant height, stem branching,

number of flowers per plant, hairiness of whole plant and leaf, leaf shape and color, petal color, plant height, spur length, seed length). Correspondence analysis (CA) based on a data matrix of 12 selected qualitative and quantitative characters indicated that in terms of morphological variation the metallicolous populations did not possess common characters separating them from the non-metallicolous populations (SŁOMKA *et al.* 2012).

V. reichenbachiana and *V. riviniana* are closely related species and due to a lack of prezygotic isolation mechanisms they hybridize in nature and easily produce interspecific hybrids and introgressive forms which occur sympatrically. Multivariate statistical analyses (MSA) based on 50 morphological characters of vegetative and generative organs showed significant differences between *V. reichenbachiana* and *V. riviniana* from non-polluted by heavy metals areas, high level of its intra- and interpopulational variability and the occurrence of interspecific hybrids. Plants from metal-polluted sites were very viable and formed a cluster of intermediate morphotypes between *V. reichenbachiana* and *V. riviniana* with some individuals included into *V. riviniana* range (MIGDAŁEK *et al.* 2013, in press).

References

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