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GENETIC REGULARITIES GOVERNING THE EXPRESSION AND THE INHERITANCE OF RESISTANCE TO PATHOGENS IN GRAPEVINE FROM A STANDPOINT OF CO-EVOLUTION OF BIOLOGICAL OBJECTS

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Regularities governing the expression of resistance to Plasmopara viticola, Uncinula necator and Botrytis cinerea, the causing agents of mildew, oidium and gray rot, respectively, and the inheritance of this character in the F1 progeny were established in grapevine. The nature of the inheritance of resistance to these pathogens in grapevine seems to be identical despite the fact that they differ in the eco-geographical origin, biological characteristics and the form of host-pathogen relations (obligate/facultative, pathogenic/saprophyte types). The inheritance of resistance obeys the principle of hypothetic heterosis, which means that the progeny does not contain forms with resistance superior to that of the more resistant parent but does contain forms with resistance surpassing the average level of resistance of the two initial forms. Evidence was also gained in support of the theory suggesting that forms of grapevine with resistance to pathogens emerge only in the course of long-term co-evolution of the biological objects. Basic principles of grape breeding were established and confirmed by the findings arising from the search of initial forms of grapevine and by the highlighted regularities governing the inheritance of resistance to pathogens in the crop. Breeding for resistance to pathogens was viewed as a specific target without respect to other desired characters since this issue was tackled with an aim to determine breeding and genetic regularities of the process and, for the first time, in terms of the interaction of two biological objects, the host plant and the pathogen, each with its own variation and evolutionary patterns.

Keywords: F1 hybrids of grapevine, populations, hybridological analysis, obligate pathogen, saprophyte, polyphage, cosmopolite