THE EVOLUTION OF OROBANCHE CUMANA RACES IN SUNFLOWER CROP IN THE REPUBLIC OF MOLDOVA

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ABSTRACT

One of the most critical constraints for sunflower production in the majority of European countries, as well as in the Middle East and Asia is broomrape (*Orobanche cumana* Wallr.) – non-photosynthetic, obligatory, root parasitic plant. The continuous introduction of new resistant sunflower hybrids exerts a selection pressure on broomrape populations evolution and contribute to the development of new more virulent races that overcome sunflower genetic resistance. Thus, until now, eight races of *O. cumana*, A through H, have been identified. In this study, the chronology of broomrape races occurrence in sunflower crop in the Republic of Moldova was analysed. In Moldova sunflower broomrape was firstly attested at the end of the 19th century. In 1937 a more virulent race B was identified especially in the regions situated along the border with Romania. Later, at the beginning of 1970s, a new biotype that infested sunflower genotypes carrying genes of resistance to races A and B occurred. This new race was called the Moldovan race or race C and was found preferentially in the central part of the country. In early 2000s the presence of races D, E and F in Moldovan sunflower fields was reported. The most spread were the less virulent races A, B and D, which were found in all part of the country, followed by race E detected in the South and Centre and more virulent race F, which was identified only in the Central part. In few years, the study of racial status demonstrated the presence in the south of the country of a new highly virulent race G, which overcame all known genes of resistance. It has been established that the populations from the northern part of the Republic of Moldova belonged predominantly to race E, those from the central part of the republic – to race F and southern populations were attributed to the race G. Our greenhouse test carried out in 2014 revealed, for the first time, the presence in sunflower fields of the most aggressive race H. This pathotype was found especially in the south and centre and sporadically in the north. A research performed recently (2019-2020) showed the occurrence of new highly aggressive biotypes able to infest even the genotypes considered resistant to the most virulent race H. According to the results, in a short period of time new aggressive races of *O. cumana* occurred and spread rapidly over all Moldovan sunflower growing regions, the most virulent races G and H becoming dominant.

Keywords: Orobanche cumana, sunflower broomrape, races.

Acknowledgments: This study was supported by the national research project 20.80009.5107.01 „Genetico-molecular and biotechnological studies of the sunflower in the context of sustainable management of agricultural ecosystems", funded by the National Agency for Research and Development, Republic of Moldova.