

THE STUDY OF BROOMRAPE DIVERSITY IN DIFFERENT SUNFLOWER CULTIVATING COUNTRIES BASED ON MORPHOLOGICAL PARAMETERS OF PARASITE SEEDS

Steliana CLAPCO¹, Angela PORT¹, Chao Wang¹, Maria DUCA¹

e-mail: clapcostela@gmail.com

Abstract

The root holoparasite *Orobanche cumana* Wallr. produces a very high number of extremely small seeds, which remain viable in the soil for decades and could be easily disseminated through the use of machinery or contaminated seeds. Due this fact and considering the global scale of sunflower seeds exchange, the control of parasite is extremely difficult. Currently broomrape is present in the majority of sunflower cultivation countries and spreads very quickly to new areas. In this context, it is of interest to analyze and highlight distinctive morphological features of *O. cumana* seeds collected from different European and Asian countries, such as the Republic of Moldova, Romania, Bulgaria, Ukraine, Serbia, Spain, Turkey and China. The morphometric analysis (seed length, width and length/width ratio) of broomrape samples did not show significant differences in their size. *O. cumana* seeds ranged between 0.316-0.393 mm x 0.148-0.176 mm, with a L/W ratio of 2.022-2.596. A moderate positive correlation ($r=0.485$) between length and width of broomrape seeds has been revealed. The mean value of L/W ratio in all investigated populations (38) was around 2.3, being in agreement with the results obtained by other authors and showing that *O. cumana* has preferentially elongated shape of seeds comparative to other broomrape species. Comparing to other studies, the mean value of L/W ratio was higher than 2.0 (2.18) even in Chinese populations. The coefficients of variation indicated low values, especially in the case of seed length (6.73-19.56%), which suggests a moderate level of intrapopulation variability, all studied populations being relative homogenous. The analysis of Euclidean distance showed small distances (0.001-0.577) between broomrape populations, the most distant being those collected from Seville (Spain), Tulcea (Romania), Xin Jiang (China), ORSR11 (Serbia), Popeasca and Sarata Mereseni (Republic of Moldova) and Edirne, Kesar (Turkey) in different combinations.

Key words: broomrape, *Orobanche cumana*, populations