THE STATISTICAL ANALYSIS OF DATA: STRUCTURAL AND FUNCTIONAL VARIABILITY OF BROOMRAPE POPULATIONS AND ITS GENETIC BASIS

Maria DUCA, Viorel MUNTEANU, Rodica MARTEA*

State University "Dimitrie Cantemir", Chişinău, Republic of Moldova
**Corresponding author: rodica.martea@gmail.com*

Abstract

The objective of this study was to evaluate the efficiency of different statistical analysis and different peculiarities in the classification of broomrape populations and, particularly, to demonstrate the benefits of the approach for races identifications.

The basic material of the study where the results of seeds morphology (length, width, length/width) of 39 populations of *Orobanche cumana,* collected from field expeditions on the Republic of Moldova and molecular data of two DNA-based fingerprinting techniques (SSR and ISSR) applied to its.

The cluster analysis of morphology data showed a clear distinction of populations in the North, Central and Southern region of the Republic of Moldova and a weak association in community clusters according to physiological breeds.

The results from cluster analyses using SSR and ISSR data by DendroUPGMA indicate that these two marker techniques provide similar but not identical phylogenetic information. In case, of ISSR, does not show a clear separation of the samples based on the races. However, the dendrogram revealed a clear genetic separation of the populations according to the geographical origin. Thus, these results confirm widely previous data based on morphological peculiarities.

In contrast to the previous results, the analysis of SSR molecular pattern showed medium association with races at the first and second level and did not reveal any direct relationship between genetic structure of populations and geographical distribution. In this analysis the races E, F, G and H form a distinct cluster and more aggressive and evaluated race H includes the genetic information characteristic to the precedent races.

This study illustrates that the application of different type of cluster analysis led to a different ranking of the genetic and environmental, which is important in identification of race composition and distribution of broomrape on the territory of Moldova - critical step for any breeding program.

Keywords: sunflower, broomrape populations, genetics, variability, statistical analysis