BROOMRAPE (*OROBANCHE CUMANA* WALLR.), THE MOST IMPORTANT PARASITE IN SUNFLOWER CROP IN ROMANIA

Luxiţa RÎŞNOVEANU[1], Maria JOIŢA-PĂCUREANU[2], Florin Gabriel ANTON[2]

e-mail: luxita_risnoveanu@yahoo.co.uk

Abstract

Broomrape (*Orobanche cumana* Wallr.) is a parasitic angiosperm that has been causing a great deal of damage to sunflower production for more than a century. There has been a constant tug-of-war between sunflower breeders and *Orobanche cumana*, with frequent changes in which side has the upper hand. Almost as soon as the breeders find a source of resistance to the latest race of the parasite, broomrape responds by evolving another virulent race. Russian researchers identified the first two races of this parasite (A and B), after that, being identified other four races (C, D, E and F) as well as the sunflower differentials carrying the dominant genes for resistance, by the researchers in Romania and Spain. In the last years, some authors have communicated the appearance of the new, very virulent populations of broomrape, in different regions cultivated with sunflower, over the world.

Sunflower selection for broomrape resistance makes use of different methods for testing breeding materials (in the field or in greenhouse), looks for resistance sources and has so far produced significant results. Dominant genes for resistance to races A, B, C, D, E and F have been found and incorporated into cultivated sunflower genotypes. The resistant hybrids having resistance to the broomrape populations more virulent than race F have been produced by incorporating genes of resistance, coming specially from wild *Helianthus* species.

The aim of our investigation was to compare the virulence of broomrape samples collected in different areas cultivated with sunflower and infested with broomrape, from Romania. The same, we studied the dissemination of these populations in time and territory, in relation with different sunflower resistant genotypes. It was evaluated the influence of the parasite populations on the sunflower hybrids seed yield.

Ten populations of broomrape collected from different locations in Romania have been used in the artificial infestation conditions, for establishing the presence of different broomrape (*Orobanche cumana* Wallr.) races in these areas. The broomrape samples were stored in saved conditions and used for artificial infestation in the green house and phytotron. There have been tested sunflower differentials for the broomrape races until the sixth one and, different hybrids with different resistance to the newest virulent populations of the parasite.

Results of evaluation of sunflower differentials for different races or populations of the parasite *Orobanche cumana* have demonstrated that in Romania, the three more spread broomrape populations in the largest area cultivated with sunflower, are very different regarding the virulence and dissemination of the parasite.

The influence of the parasite on sunflower seed yield was very high, depending by the hybrid type of resistance.

Key words: sunflower, broomrape, races, resistant genotypes