

**DETERMINING THE YIELD PERFORMANCES AND THE RESISTANCE  
TO BROOMRAPE AND DOWNY MILDEW OF IMI TYPE SUNFLOWER  
(*HELIANTHUS ANNUUS* L.) HYBRIDS IN DIFFERENT LOCATIONS**

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**ABSTRACT**

Sunflower (*Helianthus annus* L.) is the most grown oil plant due to its suitability to agricultural mechanisation and it is the most preferred vegetable oil for consumers in Turkey. One of the main challenging factors in sunflower cultivation is broomrape (*Orobanche cumana*) and downy mildew (*Plasmopara halstedii*). Additionally, some weeds such as *Xanthium strumarium* L. and *Cirsium arvense* also cause a problem. Sunflower hybrids which are resistant to imazamox (IMI) herbicides, play an important role to tackle broomrape and the other weeds. In this study, the yield performances of the hybrids, which are resistant to IMI herbicides and are developed within the scope of TARI's National Sunflower Project, have been investigated in different locations (Vakıflar, Ahmetbey and Edirne) in 2022. The resistance of the varieties to broomrape and downy mildew were evaluated under the natural conditions and also through the artificial inoculation. The experimental design was a Randomized Complete Block Design with four replicates. The four rows plots were 7,50-m long with the 70 x 30 cm plant spacing. 4 commercial hybrids, which are widely cultivated in Turkey, took place as checking varieties. Weed control was with IMI herbicide (Imazamox (40 g/l) with 1.25 l / ha dose after 6-8 leaf stage. Statistical analysis was performed with JMP statistical program. As a result, some varieties of the experiments have shown high resistance to broomrape and downy mildew under the field conditions. The results of artificial inoculation tests display that there were a number of varieties determined as highly resistant to broomrape and downy mildew. Some of the selected varieties are promising and are ready to be nominated for the registration in Turkey.

**Keywords:** Sunflower, broomrape, downy mildew, breeding for resistance, IMI herbicides, hybrid breeding