

**MONITORING OF *OROBANCHE CUMANA* WALLR RACES IN
SUNFLOWER FIELDS OF NORTH EAST GREECE**

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ABSTRACT

Weeds and especially the holoparasite *Orobanche cumana* (broomrape) are a serious problem in sunflower crop in Greece and worldwide, while the use of herbicide-resistant hybrids (HRC) dominates as a production system offering a valuable solution to the problem. The objectives of this work were, a) to assess the spatio-temporal spread of broomrape and the most important weeds in the main sunflower cultivation zone in Evros (NE Greece) and b) to evaluate the effectiveness of the new sunflower production system through the technologies Clearfield®, Clearfield® Plus, and ExpressSun®. Surveys were conducted in August 2022 in 71 fields in the aforementioned crop zone in order to, a) record the degree of broomrape infestation and the emergence of new noxious weeds, b) determine the effectiveness of the three applied technologies, and c) derive information on the farming practices followed by the farmers based on a questionnaire. The results were compared with those of surveys carried out in 2012 and 2015 where the abundance of broomrape and major weeds had been recorded in the same crop zone. The weed flora was recorded using sampling frames of 1m², in a W pattern routes inside the fields and the population density of each species was estimated using the visual estimation according to Braun Blanquet methodology. The Abundance Index of broomrape and other important weeds was calculated and the data were saved in a geodatabase along with the data of farming practices and the use of applied herbicides. The spatial distribution of broomrape and important weeds in sunflower crop was mapped based on GIS as well as the prediction of their potential emergence in the surveyed zone. According to the records during 2022 survey, the species *Chenopodium album*, *O. cumana*, *Convolvulus arvensis*, *Echinochloa crus-galli*, *Xanthium strumarium* and *Cannabis sativa* were recorded in higher abundance. The applied technologies Clearfield® Plus, and ExpressSun® proved to be effective in broomrape control, while special attention needs to be paid to the use by the producers of the recommended hybrids by each technology and the correct application of herbicides. Importantly, a significant change in the weed flora was detected during the three reporting years of the surveys.

Key words: Broomrape, weeds, sunflower, spatio temporal dispersal, GIS

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