IMI HERBICIDE RESISTANCE STUDIES IN SUNFLOWER IN TURKEY

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Abstract

Sunflower grows many parts of world because of higher adaptation capability in different climates, less labor use and most preferable vegetable oil especially Eastern Europe, Asia and other parts of the world. However, sunflower grows in summer then mostly influenced more from environmental conditions especially from severe drought in hot summer season. Weeds and broomrape (*Orobanche cumana* Wallr.) parasite are the most limiting factors in sunflower growing areas in especially in Eastern Europe and Black Sea Region which have more than 60% of world sunflower planted areas. Clearfield technology with Imidazolinone (IMI) resistant hybrids and IMI herbicide (Imazomox) as post emergence application has been used commonly to control broomrape and common weeds. Both classical IMI originated by USDA and also other IMI tolerance source known as CL Plus and developed by seed mutagenesis and selection types are commonly in the sunflower seed market commonly both in Turkey and also in other sunflower growing countries. Furthermore, recent trends are combined both two types IMI genes with broomrape resistance to new races and also new races of downy mildew which are the most devastating disease with broomrape in sunflower. Now, these types hybrids increase selling and other than sunflower hybrids are not covering these three combined genes will not have market share in near future. Our study is conducted in Edirne, Turkey to develop these types of sunflower hybrids plus higher seed yield and oil content with larger adaptation capability. On the other hand, higher oleic acid types will be also valuable so combining this gene to new hybrids will be promising ones in the next years too. Furthermore, MAS selection and other molecular studies are using commonly in the breeding program to accelerate and apply precise selection breeding program in our study. Similarly, other tolerant genes to such as drought, some diseases and stay green trait etc. will be combined to this breeding lines utilizing molecular tools such as QTL etc.

Keywords: sunflower, Imidazolinone, herbicide resistant, hybrid breeding