The problem of Orobanche in Tunisia: current state, specificity and main results of the national Faba bean breeding program to improve tolerance/resistance to Orobanche foetida and Orobanche crenata

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Abstract

In Tunisia legume crops suffer from several problems mainly broomrape attacks (Orobanche spp. and Phelipanche spp.) causing severe damages and important yield losses mainly on faba bean. Among the several species reported in Tunisia only Orobanche crenata and Orobanche foetida were found frequently parasitizing some grain legume crops. Actually, O. foetida is considered as the most important agricultural problem of faba bean production in the North West regions of Tunisia, causing yield losses of 70 - 95%. In Tunisia, this parasite was reported parasitizing Faba bean (Vicia faba), Chickpea (Cicer arietinum), Vetch (Vicia sativa), Narbon vetch (Vicia narbonensis), Medics (Medicago truncatula, Medicago scutulata), Grass pea (Lathyrus sativus), Lentil (Lens culinaris), Fenugreek (Trigonella foenum graecum) and many other crop and wild species. Recent studies revealed a genetic variability between Tunisian, Moroccan and Spanish O. foetida populations and showed that the Tunisian ecotype seems to be more pathogenic, virulent and aggressive. In order to limit the devastating effects of these parasitic plants, several strategies have been used for controlling broomrapes including chemical, cultural biological methods but without full satisfaction. An integrated control method based essentially on the genetic tolerance/resistance seems to be t to control broomrapes. In Tunisia, within the food legume breeding program at the field crop laboratory, research activities on Orobanche were inte since the 1990s mainly on faba bean. The main missions of this program were (i) to select high yielding faba bean genotypes locally adapted to Tu grown areas and tolerant/resistant to both O. foetida and O. crenata and (ii) to explore the different mechanisms of tolerance/resistance and conti in order to limit the devastating effect of these parasitic plants. As result of this program many tolerant/resistant genotypes were selected from sp ICARDA trials (FBION) and mainly from crosses done in Tunisia. Recently, one small seeded faba bean variety “Najeh” were registered in 2009 in th

Tunisian catalogue of plant varieties. In 2012, the program had submitted another small seed faba bean variety “Chourouk” shown better tolerance than “Najeh”.

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Project

Faba bean Breeding

Moez Amri
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January 2013

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