

Identification of resistant sources in chickpea against *Fusarium* wilt under greenhouse condition

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ABSTRACT: Wilt caused by the fungus *Fusarium oxysporum* f. sp. *ciceri* is devastating disease of chickpea in Iran. To identify genetic sources of resistant against wilt under greenhouse conditions, 18 genotypes/cultivar were obtained from the Agricultural Jihad Research Center. Disease observations were recorded at seedling stage and reproductive stage. A considerable variation between genotypes and cultivars was observed in both stages. Disease incidence ranged from 0% to 46.6% at seedling stage and it varied from 0% to 100% at reproductive stage. At seedling stage 2 genotypes (FLIP03 - 110C, X98TH75K1-83) were highly resistant. 3 cultivar (Hashem, Azad and Bivanij) and 7 genotypes (SAR79J87K1-85, SAR79J38K8-85, SAR79J61K1-86, SAR79J18K1-86, SAR79J15K3-86, SAR79J15K3-86, SAR79J78K5-85) were resistant. 2 genotypes (SAR79J78K3-86 and FLIP98-55C) were moderately resistant and 4 cultivar (ILC482, Arman, Gerite and blackchickpea) were susceptible, whereas at reproductive stage 2 genotypes (FLIP03 - 110C, X98TH75K1-83) were resistant, Azad cultivar was moderately resistant, Hashem cultivar and 2 genotypes (SAR79J61K1-86, SAR79J18K1-86) were susceptible, 5 cultivar (ILC482, Arman, Gerite, blackbean and Bivanij) and 7 genotype (SAR79J61K1-86, SAR79J38K8-85, SAR79J15K3-86, FLIP98-55C, SAR79J78K5-85, SAR79J78K3-86, SAR79J710K2-85) were highly susceptible. Two genotypes showed steady resistance at both stages. These genotypes may be exploited for the development of resistant cultivars against wilt.

Keywords: Wilt, *Fusarium oxysporum* f. sp. *ciceri*, chickpea, resistance

INTRODUCTION

Chickpea (*Cicer arietinum* L.) is one of the most important crops growing in the Lorestan of Iran. It is an important source of human food and animal feed that also helps in the management of soil fertility particularly in dry lands (Ansar Ahmad, 2010). But the yield and quality of chickpea are influenced by *Fusarium* wilt disease caused by the *Fusarium oxysporum* f.sp. *ciceris* (Padwick) Sato & Matuo (Dueby, 2007). *Fusarium* wilt is one of the most important and destructive vascular disease of chickpea (Dileep kumar, 1999). Yield losses of chickpea due to *Fusarium* wilt are estimated at 10% in India and Spain, 40% in Tunisia and 17% in Iran (Bousslama, 1980; Jamali, 2004). There are eight races of *F. oxysporum* f. sp. *ciceri* (0, 1A, 1B/C, 2, 3, 4, 5 and 6) which are identified by reaction on a set of differential chickpea cultivars (Jimenez-Gasco and Jimenez-Diaz, 2003; Haware and Nene, 1982) and consists of two pathotypes (yellowing and wilting) (Jimenez-Gasco and Jimenez-Diaz, 2002) The most efficient method for the management of disease is using resistant cultivars (Karimi, 2012), The cheapest, economical and the most ideal way of managing chickpea wilt, is the use of resistant cultivars. Chemical control of wilt is not feasible and economical because of the soil as well as seed-borne nature of the pathogen. Fungal chlamydospores can survive in soil up to 6 years in the absence of the host plants (Haware, 1996). The most