SHORT COMMUNICATION

Evaluation of chickpea genotypes against *Fusarium* wilt for resistant sources

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ABSTRACT: Wilt caused by *Fusarium oxysporum* f. sp. *ciceris* is an important yield limiting disease of chickpea. Cultivation of resistant cultivars is an economical management option for the disease. Six hundred sixty eight genotypes of chickpea were screened against *F. oxysporum* f. sp. *ciceris* in sick field for three years from 2013-14 to 2015-16. The genotypes SCGP-WR 28, H 10-05, GL 10023, IPC 2006-77 and CSJK 72 were found to be resistant and the genotypes H 09-70, H 08-25, H 10-16, DCP 92-3, GNG 1936 and Pusa 212 were moderately resistant. The remaining genotypes showed susceptible reaction against the disease. These genotypes could be cultivated as such or used as resistance source in breeding programme.

Keywords: *Cicer arietinum*, *Fusarium* wilt, genotypes, screening

Chickpea (*Cicer arietinum* L.) is an important pulse crop widely cultivated in India as well as in other tropical, subtropical and temperate regions of the world. Susceptibility to diseases is one of the major causes for low productivity of chickpea. Among the diseases affecting chickpea, wilt caused by *Fusarium oxysporum* f. sp. *ciceris* (Padwick) Matuo and K. Sato causes severe losses to chickpea production throughout the world (Gupta *et al.*, 2009). In India, it is prevalent in all chickpea growing states (Dubey *et al.*, 2010) and causes an annual yield loss of 10-20 per cent (Vishwadhar and Chaudhary,

2001), but the losses varies depending on the stages of the crop infected and severity of the disease (Dubey, 2016). The disease is soil and internally seed borne (Haware *et al.*, 1978). For such diseases, use of resistant varieties is one of the most practical and cost effective management strategies. Therefore, evaluation of chickpea genotypes for *Fusarium* wilt resistant is highly imperative to ensure the availability of resistant varieties.

Wilt of chickpea is characterized by drooping of leaves, change of colour to a dull green and uneven shrinkage at the collar region. The disease can affect

Table 1. Reaction of genotypes of chickpea during 2013 to 2016 against *Fusarium* wilt

Genotypes	Type	Wilt incidence (%)			Mean	Reaction	ICAR-NBPGR Gene Bank Acc. No.
		2013-14	2014-15	2015-16			
SCGP-WR 28	Desi	4.3	7.0	8.0	6.4	Resistant	IC-621781
H 10-05	Desi	5.8	8.5	9.2	7.8	Resistant	IC-621782
GL 10023	Desi	9.6	8.4	7.5	8.5	Resistant	IC-621783
IPC 2006-77	Desi	9.0	8.5	10.0	9.2	Resistant	IC-616402
CCJK 72	Kabuli	8.1	10.0	9.7	9.3	Resistant	IC-621784
H 09-70	Desi	8.7	14.0	16.2	13.0	Moderately Resistant	IC-621785
H 08-25	Desi	9.3	16.2	15.2	13.7	Moderately Resistant	IC-621786
H 10-16	Desi	10.9	18.5	16.5	15.3	Moderately Resistant	IC-621787
DCP 92-3	Desi	13.1	14.6	15.5	14.4	Moderately Resistant	IC-405199
GNG 1936	Desi	15.7	16.0	19.5	17.1	Moderately Resistant	IC-621788
Pusa 212	Desi	19.6	18.5	17.4	18.5	Moderately Resistant	IC-405203
JG 62 (Susceptible check)	Desi	100.0	100.0	98.5	99.5	Highly Susceptible	-

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the crop at any stage of growth. Wilted plants when cut transversely in the collar region or splitted vertically from the collar region downwards, brown or black discolouration of both pith and xylem can be seen. Wilted plants did not show external signs of root-rot (Dubey and Singh, 2016). Six hundred and sixty eight genotypes of chickpea were screened in wilt sick field at the Research Farm of the Indian Agricultural Research Institute, New Delhi during winter season of three consecutive years 2013-14, 2014-15 and 2015-16. Each genotype was sown in 5 m long, two rows in two replications in the first week of November. Single row of highly susceptible cultivar JG 62 as check was also sown after two-test genotype. Wilt incidence was recorded at fortnight interval after germination up to the maturity of the crop. The genotypes were graded for their resistant based on the percent wilt incidence (Dubey *et al.*, 2010).

Out of 668 genotypes evaluated, 5 genotypes viz., SCGP-WR 28, H 10-05, GL 10023, IPC 2006-77 and CSJK 72 showed < 10 per cent wilt incidence were graded as resistant. Six genotypes viz., H 09-70, H 08-25, H 10-16, DCP 92-3, GNG 1936 and Pusa 212 were found to be moderately resistant (Table 1). The rest of the genotypes were found susceptible to highly susceptible against wilt disease. The seeds of resistant and moderately resistant genotypes have been deposited in the National Gene Bank, NBPGR, New Delhi and

obtained accession number (Table 1). These genotypes could be utilized further in cultivation as well as in resistance breeding programme of chickpea.

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