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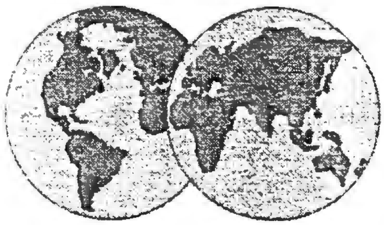

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NEW SOURCES OF RESISTANCE TO KARNAL BUNT

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Introduction

Tilletia indica Mitra, is the causal agent of karnal bunt of wheat. Control of this pathogen is difficult because teliospores are resistant to physical and chemical factors. Chemical control can be accomplished by applying fungicides during flowering (Fuentes-Dávila *et al*., 2005); however, this measure is not feasible when quarantines do not allow tolerance levels for seed production. Resistant wheat cultivars are the best mean to control this disease. The susceptibility of bread wheat has been documented reaching infection levels above 50% under artificial inoculations; there also are reports of bread wheats which consistently have shown low infection levels (Fuentes-Dávila and Rajaram, 1994). It has been reported about the resistance shown by advanced lines and cultivars of durum wheat and triticale artificially inoculated (Bedi *et al*., 1949; Fuentes-Davila *et al*., 1992). Villareal *et al*. (1994) reported that 49% of the synthetic hexaploids (SH) evaluated during three agricultural cycles under artificial inoculation, were inmune to the disease; also, Villareal *et al*. (1996) registered four SH as inmune to the disease. The resistant reaction appears to be conferred by the genetic base of *Triticum tauschii* and *T. turgidum*. The objective of this work was to evaluate synthetic hexaploids and synthetic hexaploid derivatives for resistance to karnal bunt under artificial inoculation during six years on two or three planting dates.

Materials and Methods

Eight synthetic hexaploids (SH) wheat germplasm lines and two SH wheats derived from *Triticum tauschii* and *T. turgidum* (Table 1) were evaluated for resistance to karnal bunt during six years on two (the first year) and three (the following five years) planting dates. Planting dates were November 8, 18 and 28, on a 1 m bed with two rows. A mist irrigation system was used to provide high relative humidity in the experimental area. Inoculations were carried out by injecting 1 ml of an allantoid sporidial suspension (10,000/mL) during the boot stage on 10 heads per genotype. Harvest was done manually and the evaluation by visual inspection, counting infected and healthy kernels to calculate the percentage of infection. A susceptible check was included in this work.

Results and Discussion

All genotypes evaluated showed infection levels below 5% during six years of testing, and should be considered resistant (Fuentes-Dávila and Rajaram, 1994). The lowest mean percentage of infection (0.27) was obtained with genotype ALTAR 84/ *T. tauschii* (198), while the highest (1.47) with CROC_1/ *T. tauschii* //FCT (Table 1). The overall percent range of infection during the six years of testing was 0-4.64. The susceptible bread wheat check WL-711 showed a mean range of infection during the years of testing from 56 to 86.34%, and an overall mean of 76.38%. The results obtained corroborate previous reports of resistance shown by synthetic hexaploid wheat germplasm lines and synthetic hexaploid wheats; these genotypes can be used as sources of resistance in wheat breeding programs where karnal bunt is a problem.

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Table 1. Synthetic hexaploid (SH) wheat germplasm lines and SH wheats derived from Triticum tauschii and T. turgidum evaluated for karnal bunt (Tilletia indica) resistance during six years (1996-97 to 2001-02) in the Yaqui valley, Sonora, Mexico.

	Mean infection (%)	Range
DOY1/*T. tauschii* (188)	0,3	0-2.44
CIGM88.1175-0B		
YUK/ *T. tauschii* (217)	0,34	0-2.21
CIGM90.561		
68112/WARD// *T. tauschii* (369)	0,46	0-2.7
CIGM88.1313		
ALTAR 84/ *T. tauschii* (193)	0,66	0-2.86
CIGM87.2775-1B-OPR-OB		
ALTAR 84/ *T. tauschii* (198)	0,27	0-1.8
CIGM87.2768-1B-0PR-0B		
ALTAR 84/ *T. tauschii* (198)	0,83	0-4.1
CIGM87.2768-1B-OPR-OB		
ALTAR 84/ *T. tauschii* (211)	0,85	0-3.84
CIGM87.2771-1B-0PR-0B		
ALTAR 84/ *T. tauschii* (221)	0,34	0-1.6
CIGM87.2761-1B-0PR-0B		
ALTAR 84/ *T. tauschii* (221)//YACO	1,12	0-3.61
CIGM90.462-1Y-3B-8Y-0B		
CROC_1/ *T. tauschii* (205)//FCT	1,47	0-4.64
CIGM90.257-3Y-2M-2Y-2B-0B		
WL-711, susceptible check	76,38	56-86.34