

SOURCES OF RESISTANCE TO PREDOMINANT PATHOTYPES OF LEAF RUST OF WHEAT

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ABSTRACT

One hundred genetic stocks of breadwheat were screened for seedling resistance to four widely prevalent pathotypes of leaf rust in India. Twelve of these stocks may serve as good source of resistance to these pathogens.

Key words: Leaf rust, pathotype, sources of resistance, wheat.

Breeding of rust resistant wheat (*Triticum aestivum* L. em Thell.) requires a continuous vigil on the rust races prevalent in the country and identification of new sources of resistance to the widely prevalent and predominant races. In India, wheat leaf rust (*Puccinia recondita* f. sp. *tritici*) race 77 has been predominant in virulence surveys (conducted and reported annually under the All-India coordinated Wheat Improvement Project) since 1980, when it became the most frequent pathotype [1]. In the crop season 1989–90, one of its biotypes, 77A-1, became most predominant, followed by 104B [2]. Keeping this in view, one hundred genetic stocks of wheat were tested for their resistance to these two predominant biotypes, at the seedling stage since the type races of these two biotypes, i.e., races 77 and 104, are still prevalent in India, the entries were tested against them as well.

Seeds of five test entries and the susceptible check Agra Local were sown in a plastic tray containing decomposed farm yard manure and loam soil in 1 : 2 ratio. The trays were kept in a spore-proof glasshouse. When the first leaf of the seedlings was fully unfolded, the seedlings were inoculated with uredospores of single isolates of leaf rust as per the method described by Vasudeva et al. [3]. The inoculated seedlings were automatised with water and kept in a humid chamber for 48 h before transferring them to glasshouse benches. Seedling reactions were recorded 15 days after inoculation, according to the key developed by Mains and Jackson [4]. The scores were converted to resistant and susceptible categories as follows:

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Scores 0, 0; and 2 were classified as resistant, while 3 and 4 were regarded as susceptible. Two to three tests were conducted to confirm the seedling reactions of each entry against each pathotype.

Out of the 100 genotypes tested, 18 were resistant to both the predominant biotypes, i.e., 77A-1 and 104B (Table 1); 12 genotypes were resistant to the type races 77 and 104 as well.

Table 1. Wheat stocks showing seedling resistance to the two most predominant biotypes, 77A-1 and 104B, and the type races 77 and 104 of *Puccinia recondita* f. sp. *tritici*

Stocks resistant to 77A-1 and 104B	Reaction to type race	
	77	104
E 8667, CPAN 1429, CPAN 1444, CPAN 1946, CPAN 1967, CPAN 1973, CPAN 1990, CPAN 1994, CPAN 2004, CPAN 2009, CPAN 2024, CPAN 2039	R	R
VL 490, CPAN 1992, CPAN 1959, CPAN 2005, CPAN 2010	R	S
CPAN 1885	S	R

R — resistant; S — susceptible.

Testing for seedling resistance helps to identify the lines with effective major genes or vertical resistance, which has been useful in the breeding of successful rust resistant varieties. The 12 entries resistant to the four widely prevalent races of leaf rust may serve as good sources of resistance in breeding programmes. These strains should be further studied to determine if they possess different leaf rust resistance (*Lr*) genes.

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