

MOLECULAR AND FIELD BASED-SCREENING OF ADVANCE BREAD WHEAT LINES AGAINST STRIPE RUST RESISTANCE

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Introduction

Wheat is one of the most prominent cereal crop. Pakistan ranks 8th among wheat growing countries in acreage with production of 25.5 million metric tons (www.usda.gov). Its production is not matching with the increasing pace of human population and the changing circumstances in the country necessitate the breeders for further breakthrough in this food crop. The major breeding objectives comprise high grain yield, good quality, disease and pest or insect resistance and tolerance to biotic and abiotic stresses including mineral, moisture and heat tolerance.

Materials and Methods

A set of 93 bread wheat genotypes including three check cv. Kohat-2017, Pakistan-2013 and Morocco (susceptible check) were planted in augmented design as observational nursery with zero replications across three locations of Khyber Pakhtunkhwa i.e., Kohat (E-01), Nowshera (E-02) and Peshawar (E-03). The test sites are hot spot for stripe rust disease. Disease scoring was made at the peak of rust infection, mostly at the crop stage after heading. The severity was recorded as percent of rust infection on the plants according to the modified Cobb scale (Peterson et al., 1948). At harvest, data on various yield and yield associated traits were recorded.

Results and Discussions

Table 1. Disease severity (CI) at Kohat, Nowshera and Peshawar, 2018-19

Traits	Location			
	Kohat	Nowshera	Peshawar	Average
No disease (0)	5	6	11	7
Resistant (R)	11	1	11	8
Moderately resistant (MR)	39	10	11	20
Mod. Res. /Mod Susc. (MR-MS/M)	29	69	55	51
Moderately susceptible (MS)	3	6	4	4
Susceptible (S)	6	1	1	3
Total	93	93	93	

Conclusions

1. Both *Yr5* and *Yr10* are still effective provide adequate resistance to wheat
2. Four lines showing desirable lower ACI values without carrying *Yr5* and *Yr10* indicates the presence of unique/new resistance gene (s) in their genetic makeup.
3. Genotype KT-072, KT-007, KT-010 and KT-062 produced maximum grain yield coupled with desirable low ACI value for stripe rust.
4. These lines could be recommended for exploitation in future wheat breeding program.

References

Peterson, R.F., et al. 1948. *Can J. Res.* 26:496-500.

Presenter

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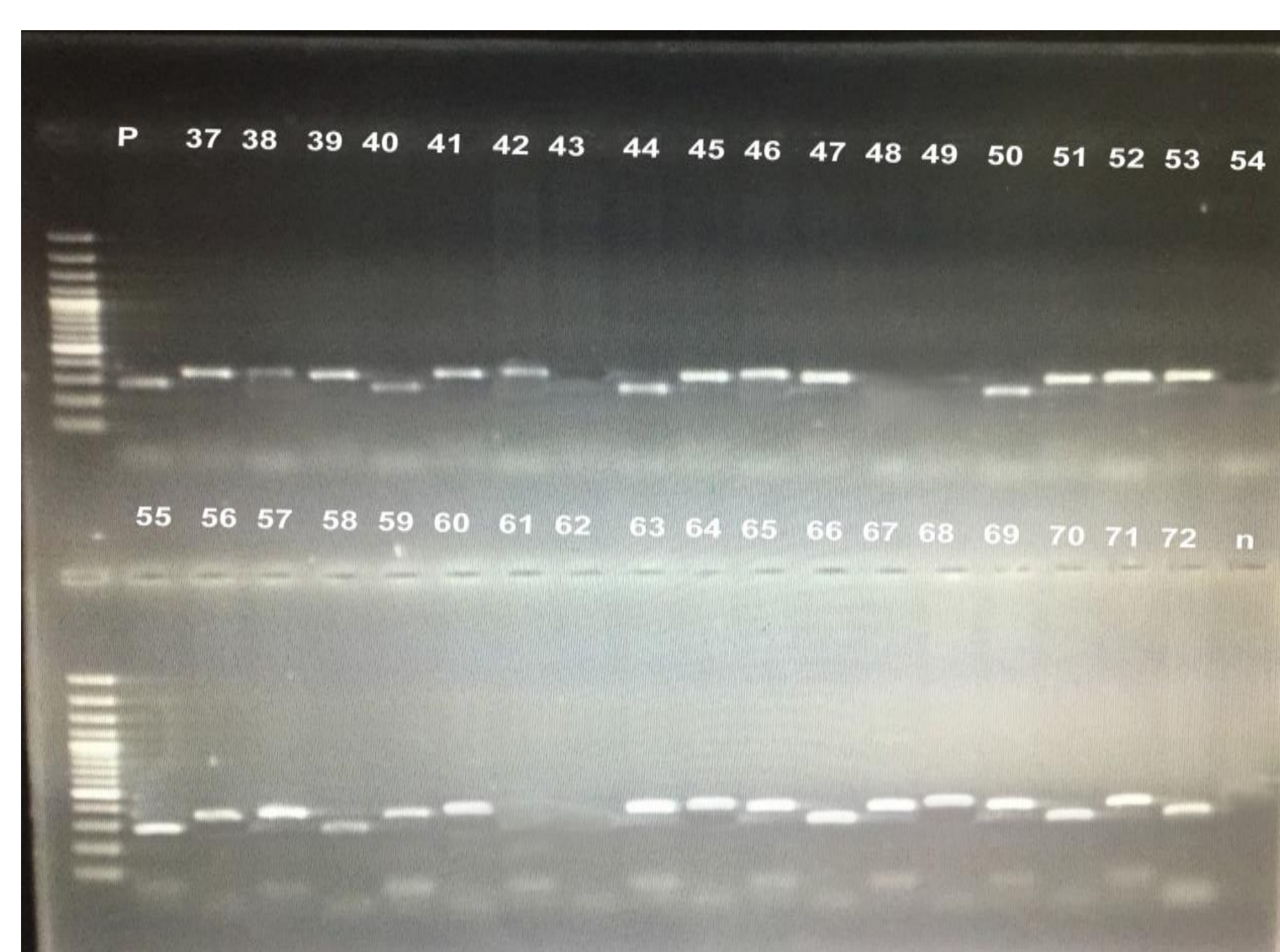
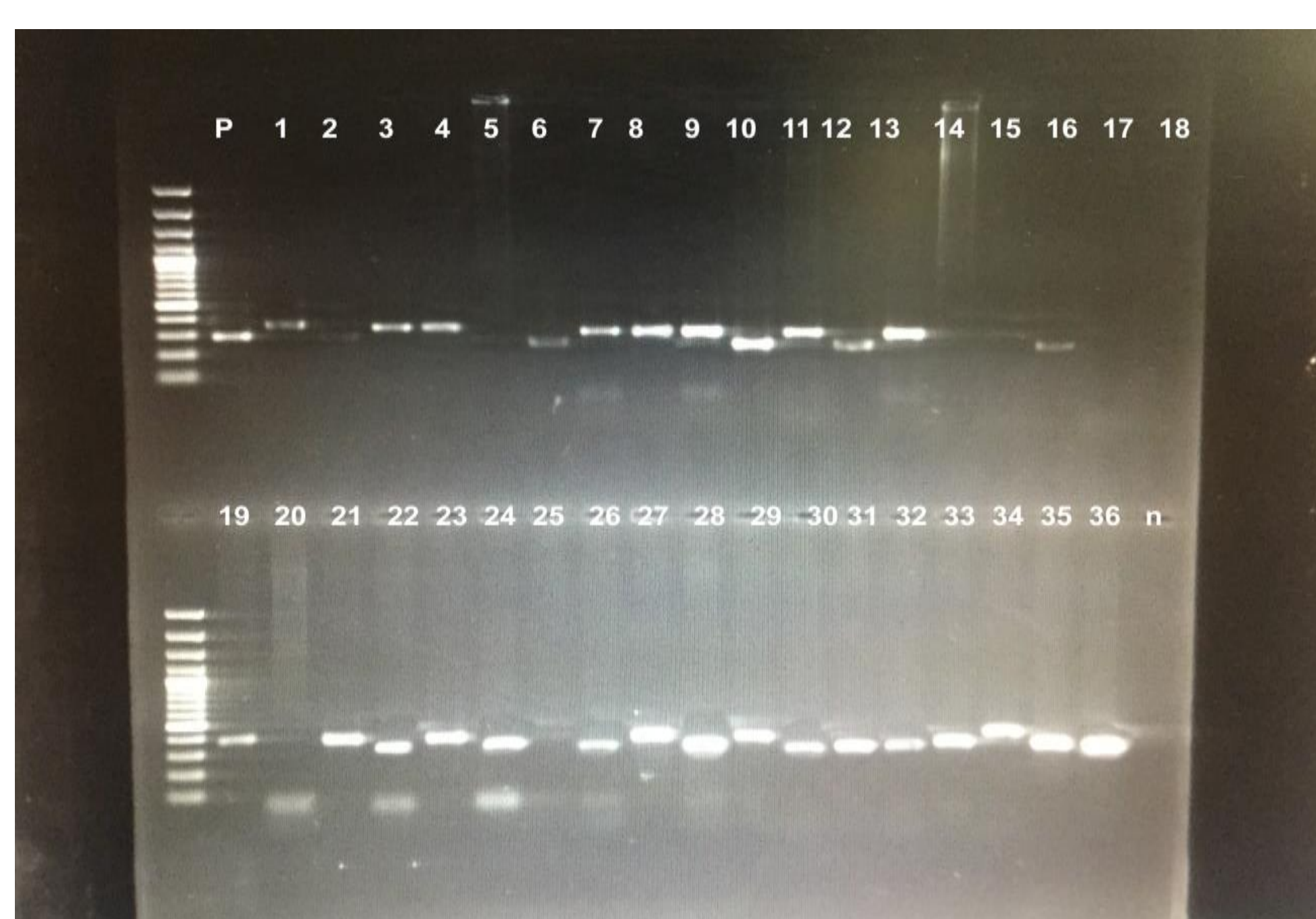


Fig. PCR amplification profile of *Yr5* and *Yr10* separated on 2% agarose gel. M:286 bp, DNA ladder: 50bp, P: positive, N: negative

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