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Research Article

Genetic Profiling of Neck Blast Isolates of *Pyricularia oryzae* from Basmati Rice in Punjab, India

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Abstract

Neck blast, caused by *Pyricularia oryzae*, poses a significant threat to basmati rice production in Indian Punjab. Understanding the genetic diversity of *P. oryzae* populations is crucial for developing effective resistance strategies. In this study, twenty nine *P. oryzae* isolates collected from diverse agroecological zones were analyzed using simple sequence repeat (SSR) markers. Genetic analysis revealed a high degree of polymorphism, with polymorphic information content (PIC) values ranging from 0.27 to 0.96. The 10 polymorphic SSR markers detected a total of 44 alleles, with the number of alleles per locus ranging from 2 to 7. Cluster analysis grouped the isolates into two major genetic clusters, indicating significant genetic differentiation. These findings provide valuable insights into the genetic variability of *P. oryzae* populations and can aid in designing durable resistance strategies against neck blast in basmati rice.

Key words: Genetic diversity, *Magnaporthe grisea*, molecular characterization, pathotypic variability, simple sequence repeats (SSR)

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