

Evaluation of Recombinant Inbred Lines (RILs) for Yellow Rust Resistance, Grain Yield and its Components

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Abstract—The present investigation was conducted to evaluate 210 recombinant inbred lines of bread wheat to identify Yr genes using SSR markers, estimate variability and associations among the various traits. Medium to high values of GCV, PCV, heritability and genetic advance as percent of mean for grain yield per plant and biological yield in both years indicating a high scope of selection for these traits followed by 100-grain weight, number of spikelets per ear, harvest index, days to heading and days to maturity. Fifteen, out of 70 SSR markers used were found polymorphic in parental genotypes and in RILs. The gene Yr7, Yr18, Yr26, Yr29, Yr36, Yr47 and Yr53 were linked to yellow rust resistance in the present investigation. The RIL No. 52 with 4 Yr genes (Yr7, Yr36, Yr47, Yr53) had better performance for the traits loaded on PC-2, namely grain yield per plant, biological yield and number of tillers per plant and showed 4 Yr genes (Yr7, Yr36, Yr47, Yr53). This line was also better than overall mean for grain yield and its components. The lines viz, RIL No. 13, 24, 31, 120, 121, 134 showed a desirable combination of the traits loaded on PC-1 and PC-2, namely grain yield per plant, biological yield and number of tillers per plant and complemented with disease resistance. Among these lines, RIL No. 24, 121 had 2 Yr genes (Yr18, Yr26, Yr7, Yr47). The RIL No. 117, 25, 12, 15 had better performance for the traits loaded on PC-1, namely grain yield, biological yield and ear length and showed 2 Yr genes out of Yr7, Yr47, Yr18, Yr36, Yr26, Yr29, Yr26, Yr29 observed in the present study. The RIL Nos. 12, 15, 25 were also showed better performance than mean values in terms of grain yield and its components.

Keywords: Bread wheat, diversity, yellow rust, SSR markers, Yr genes.