Inheritance of stripe rust resistance in five Egyptian bread wheat cultivars crossed to four yrs.

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Abstract

The inheritance of resistance in 5 Egyptian bread wheat cultivars (Triticum aestivum, L.) crossed to 4 yrs’ was studied. These parents, F1’s and F2’s were tested under greenhouse conditions at seedling stage against pathotype (race) 230e18 of Puccinia striiformis westend. All of the tested parents and F1’s exhibited a susceptible phenotype. All crosses, F2’s plant populations were segregated into digenic pairs. The dominance was in the side of susceptibility while resistance genes were recessive. On the other hand, under field conditions, at adult plant stage against more virulent race mixtures of that pathogen, the tested (cv.) parents, Oxy (yr 6 +apr), yr18, Giza 168, Sakha 61 and Sids1 showed low rust severity, while yr 2, yr 9; Sakha 8 and Sakha 69 showed high rust severity. The F1’s showed that all of the crosses exhibited low rust severity except for four crosses i.e. yr 18 x Sakha 69, yr 2 x Sakha 69, yr 9 x Sakha 8 and yr 9 x Sakha 69 which possessed high rust severity. Seven crosses out of the F2 plant populations were segregated fitting the expected ratios 7(r):9(s), 1(r):15(s), 3(r):13(s) and 9(r):7(s). While the rest of crosses (yr 18 x Giza 168 and yr 2 x Sakha 61) showed no segregation and was directed to the side of dominance of resistance. The cultivar Giza 168 may have yr 18 and also Sakha 61 have yr 2 in adult plant stage under field conditions. These findings confirmed that this gene is effective under the Egyptian environmental conditions except for yr 2 which showed high rust severity. From these results, it could be concluded that the selection for slow rusting materials in the early generations was possible, but delaying it to late ones is more effective, due to the important role of dominance effect in the expression of this trait.

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