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**Evaluation of relative resistance parameters in a number of cold
climate wheat lines and cultivars to yellow rust**

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Abstract

Wheat yellow rust (*Puccinia striiformis* Westend. f. sp. *tritici*) is one of the most damaging diseases of wheat in the world and Iran. Finding sources of resistance and planting resistant cultivars is the most economical and effective way to reduce damage caused by stripe rust. However, the lifespan of race – specific resistance genes can be extended by combining effective genes, the alternative method is to use cultivars that have partial resistance controlled by minor genes. In order to evaluate the partial resistance, the reactions of 29 wheat genotypes at the seedling stage and the adult plant stage were evaluated in field conditions along with the susceptible control. At the seedling stage in the field conditions, the characteristics of the infection type (IT) and at the adult plant stage, the parameters of the final rust severity (FRS), the coefficient of infection (CI) and the relative value of the area under the disease progression curve were evaluated. According to the parameters measured at the seedling stage, the genotypes C-99-1, C-99-3, C-99-5, C-99-6, C-99-7 and cultivars Heydari, Hor and Zarineh were resistant. Genotypes; C-99-8, C-99-9, C-99-14, C-99-18, C-99-22 and Jam variety also showed moderately resistant to moderately susceptible infection type. Also, genotypes C-99-4, C-99-10, C-99-11, C-99-12, C-99-13, C-99-15, C-99-16, C-99-17 and cultivars Hiran, Azar 2, Baran and Check (Bolani) had susceptible reaction. According to the measured parameters at adult plant stage, genotypes C-99-1, C-99-2, C-99-3, C-99-4, C-99-5, C-99-6, C-99-7, C-99-9, C-99-10, C-99-11, C-99-13, C-99-14, C-99-15, C-99-16, C-99-17, C-99-18, C-99-19, C-99-20, C-99-21 and cultivars; Hor, Jam, Zarineh and Heydari had adult plant resistance or a good level of partial resistance. C-99-12 had moderate level of partial resistance, and cultivars Azar2, Baran and Check were included in the susceptible group. According to the reaction of the genotypes at both seedling and adult plant stages and their pedigrees, the studied genotypes showed various reactions to yellow rust, which ranged from completely resistant to susceptible. Most of the evaluated genotypes under high pressure of infection conditions, showed a good reaction (resistant to moderately resistant) to the disease. Among the studied genotypes, resistance types of complete resistance and partial resistance (non race-specific) were observed. Based on the results of this research and genotypes pedigree, lines C-99-2, C-99-11, C-99-13, C-99-15, C-99-16, C-99-17, C-99-19, C-99-20 and Hiran variety seem to have different levels of partial resistance (non-race specific or durable) to the disease.

Key words: wheat stripe rust, seedling resistance, partial resistance, durable resistance