MALT QUALITY AND STEM RUST RESISTANCE OF SELECTED BARLEY GENOTYPES IN KENYA

K. E. MWANDO[1], I. M. TABU[*1], O. D. OTAYE[2], AND P.N.NJAU[3]

[1]Department of Crops Horticulture and Soils, Egerton, University P.O. Box 536, Egerton,

[2]Department of Biological sciences, Egerton, University P.O. Box 536, Egerton

[3]Department of Plant Breeding Kenya Agricultural Research Institute, P.O. Box Private bag Njoro

[*] Corresponding Author. Tel.: +254 733939181. E-mail address*:* immtabu@yahoo.com

ABSTRACT

Stem rust, caused by (*Puccinia graminis* f.sp. *tritici)* is a major disease of wheat in Kenya. The disease was previously contained by the rpg1, sr31, 24 and 36 genes for resistance that were incorporated in the genotypes of barley and wheat grown in Kenya. In 1999, a new race Ug99 was detected in Uganda; is now virulence to these genes. The new race spread rapidly and in 2001, stem rust monitoring in Kenya detected isolates of Ug99. Most of the work on wheat shows susceptibility. Although barley is an important crop affected by stem rust limited work has been done to it. Twenty barley cultivars locally Kenya and imported from International Centre for Agriculture Research in Dry Area (ICARDA) were screened in controlled greenhouse environment and in the field with isolate of *Puccinia graminis* f.sp. *tritici*. The germplasms showed varying levels of resistance to stem rust. At seedling stage, the infection levels ranged from 0 to 2, except in ICARDA- 09 and ICARDA- 11 that showed infection types 3 and 3,4 respectively. At adult plant stage, genotypes ICARDA- 01, Nguzo and Karne were moderately resistant while the rest were susceptible or moderately susceptible. In the field, the new line 1512-5 showed the highest severity of 93% in season 1, with Sabini having the highest severity of 30% in the second season; Nguzo had the lowest disease severity of 16% and 5% in season 1 and 2 respectively. The highest reduction in percent germination (54.1% and 38.3%) was recorded in 1385-13 and ICARDA- 10 in season 1and 2 respectively. The highest loss (9.00 %) in protein content was observed in Sabini in season 1 and a loss of 4.0 and 16.3% in zeleny content was noted in season 1 and 2 respectively. From the results in this experiment most of the Kenyan grown cultivars were susceptible to the new race of stem rust. This emphasizes the need for regular monitoring of the stem rust pathogen, in particular isolates in the variable Ug99 lineage, as well as continued resistance breeding. The study has demonstrated the pathogenicity of PgtUg99 to barley despite the fact that it poses a great threat to wheat production in the world.

KEY WORDS: Stem rust, Barley, Resistance, Ug99, *Puccinia graminis* f. sp. *tritici*, infection type.