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HARVEST INDEX AND COMPONENTS OF YIELD IN WINTER WHEAT CULTIVARS (*Triticum aestivum* L.)

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Abstract

Variability of grain harvest index (GHI) and some components of yield (plant height, thousand grain weight) were studied in 20 winter wheat cultivars which selected in different selection centers. Wheat cultivars were grown in the experimental field in 5 replication. Samples of 100 wheat plants (20 plants in 5 replications) were analyzed in full maturity stage during two seasons. Harvest index was computed as a ratio of grain yield and a total above ground part of the plant. The values of GHI varies depending from cultivars and environment. The obtained values for all analyzed traits were significantly different among wheat cultivars. The highest harvest index in first year had cultivar Lasta (41.3%) and the lowest had Zastava cultivar (35.1%). In second years, the highest HI had cultivar Pobeda (42.6%) and the least GHI had cultivar Ljubičevka (33.2%). Wheat cultivar Zastava had the highest height in both year of investigation, 98.32cm in the first year and 78.84cm in the second year of analysis. The lowest plant height had Gruža cultivar in both year, 70.56cm in the first year and 57.10cm in the second year. Thousand grain weight (TGW) in the first year variate from 38.33g in Gružanka cultivar to 51.12g in Zadruga cultivar. In second year the highest value of TGW had Zadruga (52.85g) and the least value 38.84g had the Ljubičevka cultivar.

Key words: *wheat, cultivar, grain harvest index (GHI), stem height, thousand grain weight (TGW)*

Introduction

In the wheat breeding program breeders have aim to improve all characteristic, what is not simple because of different genetic control of traits, and very complex relationship among the traits. For the successful breeding process is necessary use the knowledge of characteristics of genotypes as well interaction of genotypes and environments. The breeding of wheat is directed to creation the cultivar for high grain yield or for any other desirable traits need to express genetic potential in different environment with low value of variance in different environmental factors of growing (Knežević, 2014). The genetic yield potential of a wheat cultivar may be dependent on favorable conditions and good agronomy for its expression. The traits as height of plants, length of spike, number of spikelets per spike are in positive correlation with grain yield (Zečević et. al, 2013). The harvest index (HI) of wheat plants can use as reliable parameters in wheat breeding which varies from 5-17% in the wild diploids to 51% in modern cultivars. GHI has increased over time due to breeding for higher yield which achieved 0.015 for Australian cultivars, and 0.02 percent per year for United Kingdom cultivars (Turner, 1997). The harvest index represents the ratio between economical yield and biological yield i.e. ratio between grain yield and yield of r straw + grain. In mostly modern cultivars, the proportion of total mass to grain yield is more than 2:1 which indicates excessive consumption of nutrients for straw formation instead of grain. The high HI value can achieve through decreasing vegetative part of wheat and increase grain filling by application of mineral nutrition and increasing efficiency of utilization and translocation

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