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Part II



AKADÉMIAI KIADÓ
MEMBER OF WOLTERS KLUWER GROUP

VARIABILITY OF HARVEST INDEX AND YIELD COMPONENTS IN WHEAT (*TRITICUM AESTIVUM* L.),

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Abstract. Variability of harvest index and some yield components (plant height, number of spikelets per spike, number of kernels per spike) were studied in 10 wheat genotypes. Wheat genotypes were grown during three years on the experimental field in 3 replication. Samples of 60 wheat plants (20 plants/replication at each year) were analyzed in full maturity stage. Harvest index was computed as a ratio of grain yield and a total above ground part of the plant. The differences in average values for all the studied parameters among investigated cultivars were determined. High variability of investigated traits was established. The highest variability for grain yield (CV=5.60%) and stem height (CV=4.84%) and the lowest variability for number of spikelets per spike (CV=2.66%) and harvest index (CV=3.66%) was found. The strongest correlation was found between grain No. or kernels/spike and grain yield (0.485) as well between harvest index and grain yield (0.435).

Key words: wheat, variability, grain harvest index, stem height, spike, yield.

Introduction

In successful breeding program wheat breeders has produced a series of cultivars with improved resistance to pests and diseases, wider adaptation to adverse soil and climatic conditions and better quality. The yield variability is less studied than yield itself. The genetic yield potential of a wheat cultivar may be dependent on favorable conditions and good agronomy for its expression (Agoston & Pepo, 2005; Drezner et al., 2006). The levels of water, fertilizer, pesticide and herbicide application have influence to wheat yields (Balogh et al., 2006; Németh, 2006; Jolánkai et al., 2006). The ideal 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 (Josipović et al., 2005). The grain yield of wheat is variable traits, which depends on numerous yield components and environmental factors (Pepo, 2005). The harvest index represents the ratio between economical yield (wheat grain yield) and biological yield (yield of grain and straw) Borjevic (1986). The proportion of total mass to grain yield in mostly modern cultivars is more than 2:1 which indicates excessive consumption of nutrients for straw formation instead of grain (Djokic et al., 1992; Užik & Žofajová, 2006). This is one reason for decreasing vegetative part of wheat to the optimal proportion in order to increase the harvest index to more than 50%. The characters as height of plants, length of spike, number of spikelets per spike are in positive correlation with grain yield (Zecevic & Knezevic, 1998). The aim of this paper is study of variability of harvest index and yield components (height of plants, number of spikelets per spike, number of kernels per spike, thousand grain mass) in genetically divergent wheat genotypes.

Materials and methods

The variability of harvest index and some yield components were studied in 10 Serbian wheat genotypes. For this investigation used cultivars KG-35265-1/94, KG-52, KG-3625/9, KG-3089/97, KG-3062/1-93, KG-4, KG-3617/98, KG-3517/94, KG-3517/94, KG-3419-