

## **YIELD TRIALS, FIELD PERFORMANCE AND QUALITY INVESTIGATIONS OF ANCIENT HEXAPLOID, TETRAPLOID AND DIPLOID WHEAT GENOTYPES**

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In line with the commercial wheat production of conventional agriculture, recently there is an increasing need for new resources to produce health-promoting products by modern food industry. Due to their special ingredients, lines of ancient wheat species might be valuable resources for these purposes. Agronomical practices and the productivity of these lines grown by the current technology is widely unknown.

The goal of this 4 years experiment was to select proper lines or biotypes from the *T. spelta*, *T. sphaerococcum*, *T. vavilovii*, *T. dicoccon*, *T. turgidum*, *T. polonicum*, *T. turanicum*, *T. persicum* and *T. monococcum* ancient wheat genotypes which may be produced economically by farmers using currently usual agronomical processes and their high quality grains are adequate for the above goals. Based on the results of four years experiments at two locations, and phytopathology tests under provocative conditions one promising line of *T. spelta* was selected for further studies and breeding efforts. Also other candidates with special composition performance were found among *Triticum persicum* and *Triticum turgidum* species.

According to several studies, the ancient *Triticum* species show healthier nutritional profiles than the modern cultivars of bred species, some of them have remarkable functional features. We have tested the milling and flour quality of 30 strains (9 hexaploids 19 tetraploids and 2 diploids) and 2 spelt variety candidates which were grown in a series of field trials for 2 years in Szeged. We have found significant difference in thousand kernel weight, hardness index, and protein content, falling number value and wet gluten content between the genotypes, where the values were sometimes quite extreme. The year effect was significant in case of grain physical properties and falling number, and slightly effected the quantity and quality of proteins as well. Significant variability between species also manifested in *farinograph* properties. In the case of soluble and insoluble dietary fiber content, similarly to common wheat, we measured high values and found some species where low *fructan* content values were obtained. This proved that among these ancient species consists a potential for healthier food production. The results provide-with agronomic properties as well- information for the breeders, which genotypes are suitable and worthy to include them in breeding programs.

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