

3rd International Summit on **GMP, GCP & Quality Control** September 25-26, 2014 Valencia Convention Centre, Spain

Variability and stability of bread and durum wheat for phytic acid content

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Nutrition rich in phytic acid can substantially decrease micronutrients absorption as calcium, zinc, iron, manganese, copper due to salt excretion by human and non-ruminant animals as poultry, swine and fish. They have in common the lack of the phytase enzymes and consequently the ability to digest and utilize phytic acid. It can lead to micronutrients deficiencies, anemia, tissues hypoxia, heart failure, insufficient immuno-competency, poor attention spans, impaired fine motor skills and less memory capacity, hypogonadism and dwarfism in men, growth retardation in infants and children, orificial and acral dermatitis, diarrhea, alopecia, impaired reproductive performance and difficulties in parturition, especially for populations in developing countries and poor people with inadequate nutrition. The research was conducted during 2010-2011 and 2011-2012 years at three sites: Rimski Sancevi, Zemun Polje and Padinska Skela. The tested accessions consisted of 15 genotypes of bread wheat (*Triticum aestivum* L. ssp. *vulgare*) and of 15 genotypes of durum wheat (*Triticum durum* Desf.). The experiment was set up in a randomized complete block design with four replications. Phytic acid grain content was determined by the method of Latta and Eskin (1980) modified by Dragicevic et al. (2011). Objectives of this study were to determine: i) variability and stability of the phytic acid content among selected genotypes of bread and durum wheat, ii) predominant source of variation regarding genotype, environment and genotype $\times$ environment interaction in the factorial experiment, iii) influence of climatic variables on the genotype $\times$ environment interaction for the phytic acid content in bread and durum wheat. Based on the analysis of variance it had been determined that the variation of phytic acid content was predominantly influenced by environment in durum wheat, while the genotype $\times$ environment interaction prevailed for the variation of the phytic acid content in bread wheat. Average-environment coordination view of the GGE biplot was used for the selection of the most desirable genotypes for breeding for low phytic acid content in the sense of good stability and lower level of phytic acid content. The most desirable genotypes of bread and durum wheat for breeding for phytic acid were Apache and 37EDUYT /07 No. 7849.

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