

Turkish Journal of Agriculture and Forestry



Turkish Journal

of

Agriculture and Forestry

GGE-Biplot Analysis of Multi-Environment Yield Trials in Bread Wheat

Yüksel KAYA, Mevlüt AKÇURA, Seyfi TANER
Bahri Dağdaş International Agricultural Research Institute, P.O. Box: 125, Konya -
TURKEY

 [Keywords](#)
 [Authors](#)



agric@tubitak.gov.tr

[Scientific Journals Home Page](#)

Abstract: Yield data of 25 bread wheat genotypes tested across 9 rain-fed environments during the 2002-2003 growing season were analyzed using the GGE (i.e. G, genotype + GEI, genotype-by-environment interaction) biplot method. E (environment) explained 81% of the total (G + E + GE) variation, whereas G and GEI captured 7.3% and 11.7%, respectively. The first 2 principal components (PC1 and PC2) were used to create a 2-dimensional GGE-biplot and explained 46.2% and 15.8% of GGE sum of squares (SS), respectively. Genotypic PC1 scores >0 detected the adaptable and/or higher-yielding genotypes, while PC1 scores <0 discriminated the non-adaptable and/or lower-yielding ones. Unlike genotypic PC1 scores, near-zero PC2 scores identified stable genotypes, whereas absolute larger PC2 scores detected the unstable ones. On the other hand, environmental PC1 scores were related to non-crossover type GEIs and the PC2 scores to the crossover type. Of the tested genotypes, G7, G19 and G24 were desirable in terms of higher yielding ability and stability. Nine test environments were sampled from the Central Anatolian Plateau and constituted 2 mega-environments (ME1 and ME2). The former included environments E1 (Konya), E3 (Obruk), E5 (Haymana) and E8 (Uşak), and the latter included E2 (Çumra), E4 (Ereğli), E6 (Ulaş), E7 (Eskişehir) and E9 (Altıntaş). On the other hand, E2 (Çumra) was the best representative of the overall environments and the most powerful to discriminate genotypes.

Key Words: Bread wheat (*T. aestivum* L.), multi-environment yield trials, GGE-biplot analysis

Turk. J. Agric. For., **30**, (2006), 325-337.

Full text: [pdf](#)

Other articles published in the same issue: [Turk. J. Agric. For.,vol.30,iss.5.](#)