

Genetic variation for grain yield and quality in durum wheat released in Turkey from 1991 to 2002

Nurdilek Gülmezoğlu Atılgan¹, Ayşegül Aşkın²

¹ Eskişehir Osmangazi University, Faculty of Agriculture, , 26480 Eskişehir, Turkey, dgulmez@ogu.edu.tr

² Eskişehir Osmangazi University, Faculty of Engineering, 26480 Eskişehir, Turkey, aaskin@ogu.edu.tr

Abstract

The objective of this study was to identify the changes produced by durum wheat breeding in Turkey from 1991 to 2002. Five released cultivars of durum wheat (Kızıltan 91, Cesit 1252, Selçuklu 97, Yılmaz 98 and Meram 2002) registered in Turkey were examined for their grain yield and quality (thousand grain yield, protein, hardness, test weight and ash). The field experiments were conducted during two growing seasons (2004/2005 and 2005/2006) in Eskişehir, the main cereal producing region in Turkey. The results regarding the grain quality Selçuklu-97 reflected an appreciable pasta-making quality of protein.

INTRODUCTION

Developing crop cultivars with high grain yield has been the principal aim of durum wheat breeding programs worldwide.

In Turkey, durum wheat is a important crop because the country is also one of the gene centers of wheat species (Gökçöl, 1939).

After 1990, a new project supported by World Bank was implemented and many cultivars were developed, such as Kızıltan-91, Selçuklu-97, Yılmaz-98, Çeşit-1252, and Meram-2002.

This work represented the changes in grain yield and grain quality of the most cultivated durum wheat cultivars between 1991 and 2002 in Turkey.

MATERIALS and METHODS

Five winter durum wheat cultivars released and cultivated in Turkey during 1991-2002 were studied (Table 1) Field trials were conducted on clay-loam soil at ESOGÜ research land, Eskişehir, Turkey, where the climate is warm and dry during the spring.

Experimental trials were conducted over two growing seasons (2004-2005 and 2005-2006) in a field with an average content of total 80 kg N/ha and 60 kg P₂O₅/ha in a randomized complete block design with four replications.

To determine historical effect of breeding on the raw material characteristics important for pasta production such as analysis of grain were carried out thousand grain weight, hardness, total protein of grain, test weight, and ash and grain yield.

Table 1.Registration year and country origin of the durum wheat genotypes used in this study

Genotype	Year of release	Country of Origin
Kızıltan-91	1991	Central Res. Ins. for Field Crops -Ankara
Selçuklu-97	1997	Bahri Dağdaş International Agricultural Res. Ins. -Konya
Yılmaz-98	1998	Central Res. Ins. for Field Crops -Ankara
Çeşit-1252	1999	Central Res. Ins. for Field Crops -Ankara
Meram-2002	2002	Bahri Dağdaş International Agricultural Res. Ins. -Konya

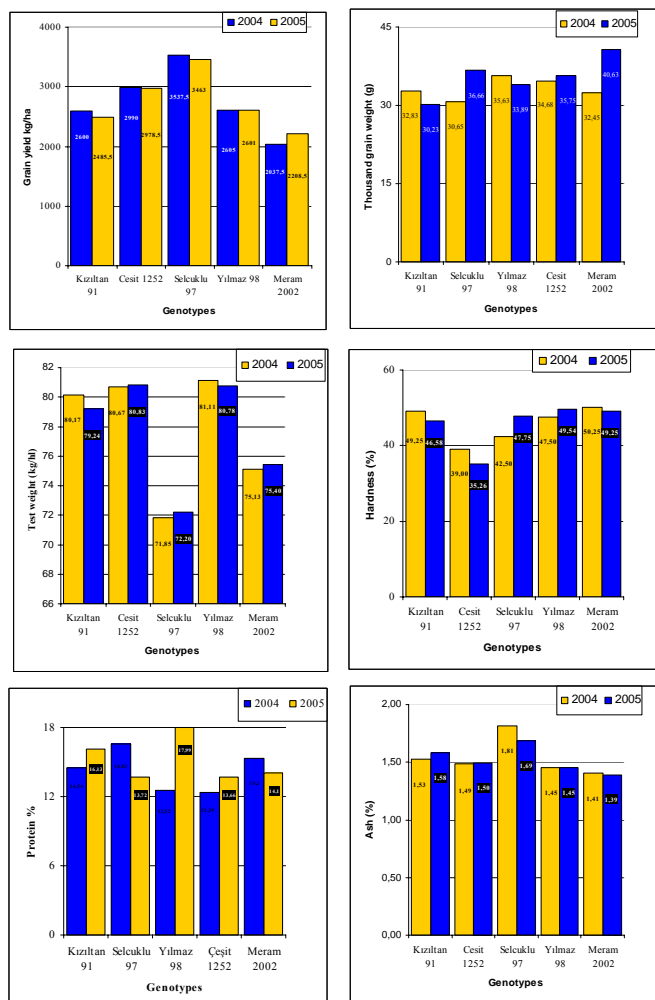
RESULTS and DISCUSSION

Table 2 summarized the mean squares of grain yield and quality. In the second year, expect for grain yield and ash, all characters were statistically significant.

Table 2. Mean squares from the analysis of variance for grain yield, thousand grain weight, test weight, hardness, protein, ash.

Growing period	Grain yield	Thousand grain weight	Test weight	Hardness	Protein	Ash
2004-2005						
Genotypes	1228857.5*	15.36*	67.39**	91.68*	12.85**	0.10**
2005-2006						
Genotypes	945928.3ns	58.08*	57.13**	141.32**	14.38**	0.053ns
2004/05-2005/06						
Year	448.9ns	47.66*	0.09ns	0.001ns	7.41**	0.003ns
Genotypes	2150873.2**	28.31*	123.94**	206.06**	7.39**	0.147**
YearxGenotypes	23912.7ns	45.09**	0.57ns	26.93ns	19.83**	0.009ns

Grain yield Fig.1, thousand grain yield Fig. 2, test weight Fig. 3, hardness Fig. 4, protein Fig 5, and ash Fig. 6 showed.



CONCLUSION

Regarding the grain quality Selçuklu-97 reflected an appreciable pasta-making quality of protein. Future improvement of the durum wheat cultivars is expected breeding should continue to take attention of the genetic increases in wheat yield and pasta- making quality.

REFERENCES