

## Genetic analyses and identification of gliadin coding locuses in interspecific hybrid of bread wheat cultivars

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**Abstract:** The research work focus on identification of Gld 1A4 allele component block belonged to *T.aestivum* L. of gliadin coding locuses through electrophoreses of storage proteins in  $F_2$  grains obtained by interspecific hybridization of bread wheat varieties Akinchi-84 with Birlik. Genetic analyses is detected through hereditability and identification of allele component blocks of gliadin coding locuses in  $F_2$  grains obtained through hybridization and by hereditability of electrophoreses spectrum as free trait in gliadin electrophoregrams.

**Keywords:** wheat, gliadin, Gld 1A4 + Gld 1B3, electrophoresis, hybrid

### INTRODACTION

It is known that the most useful method is hybridisation which analysed through the hereditability [1].

Bread quality of hexaploid wheat is a complex feature which depends on many elements. However, the water-insoluble glutenin proteins encoded by the group 1 homoeologous chromosomes of the wheat A, B and D genomes are mainly responsible for the elasticity and extensibility of dough, which contribute to breadmaking quality.

The use of molecular markers significantly supplements various classic methods for genetic analyses. Mostly protein markers were used earlier, whereas DNA markers are increasingly applied at present. The most important method of current molecular biology is protein marker of gliadin. Most methods for the study and detection of DNA markers are derived from the standard PCR. The results of the detection of DNA polymorphism can be successfully used similarly to HMW and LMW glutenin subunits for the prediction of wheat breadmaking quality [5-6].

### MATERIALS AND METHODS

The seed of the analysed varieties was obtained from the collection of the Genetic Resources Institute of ANAS. Investigation materials are to concerned *T.aestivum* L. species to kind of Birlik and Ekinchi-84 bread wheat variety. Therefore the hybridization works were conduct at the experiment field on the local and imported bread wheat cultivars and their genetic analyzes were explored. By this hybridization method new 26 hybrid varieties were obtained.

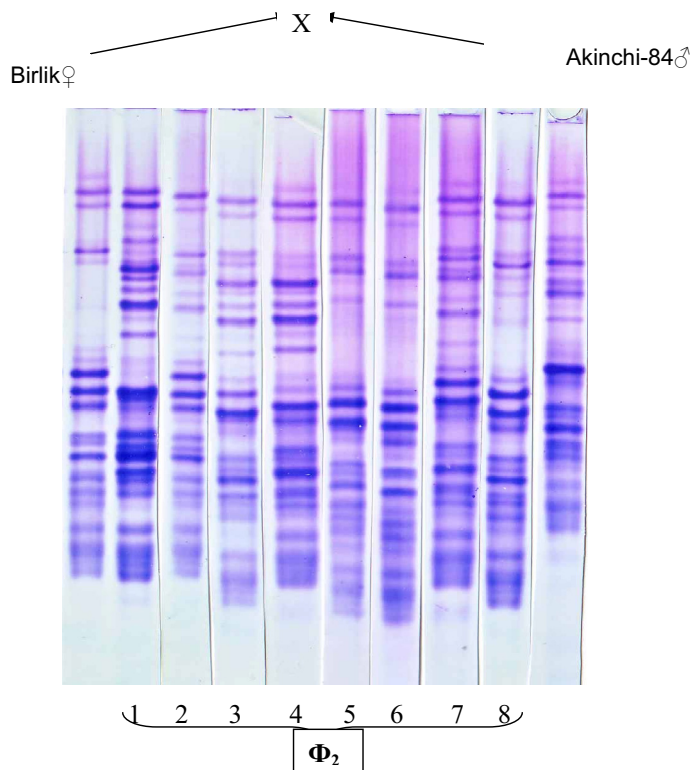
This of cultivars received than of hybridizing of the  $F_2$  grains in endosperm storage protein of gliadin analysis carried out with electrophoresis method in glisin-asetat buffer (pH 3.) poliacrilamid gel [3-4].

### RESULTS AND DISCUSSIONS

The hybridization carried out between the cultivars Birlik and Akinchi-84 in a result gained the  $F_2$  grains of reserve gliadin coding which control the gliadin synthesis Gld 1A and Gld 1B of locus genetic analysis was done with electrophoreses method and gliadin electrophoregrams was investigated as well (Photo 1).

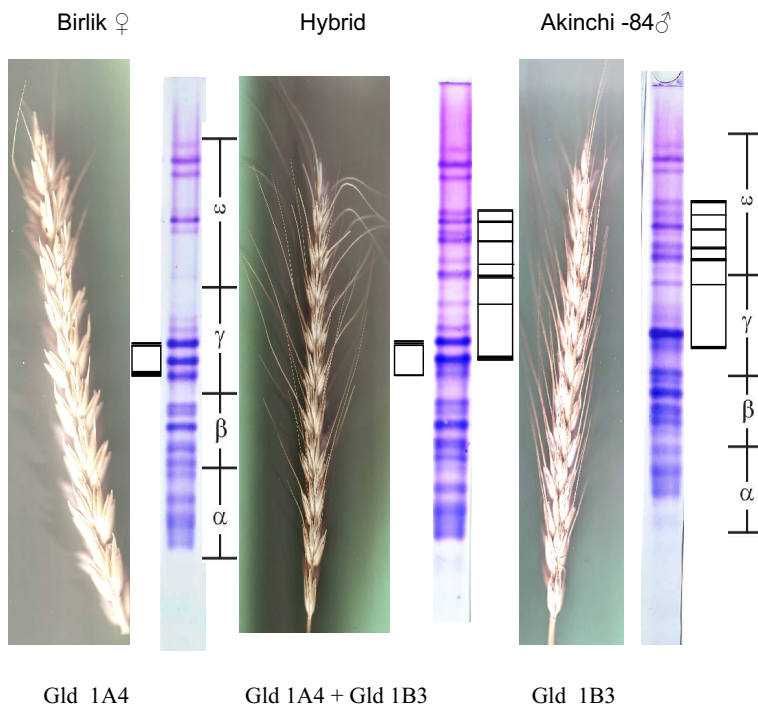
The gained  $F_2$  grains gliadin coding locuses have been determined allele components blocs with heritable group form during the hybridization process [2].

The Gld 1A10, Gld 1B3, Gld 1D1, Gld 6A1, Gld 6B1, Gld 6D1 and Gld 2-1A3 allele components blocs have been determined as taken father form of Akinchi-84 soft wheat as a variety gliadin coding locus in the analysis of the F<sub>2</sub> hybrid grains.



**Photo 1.** The acquisition of reserve protein of F<sub>2</sub> hybrid grains gliadin electrophoregrams from the Birlik and Əkinçi-84 varieties.

This has more simplified the identification as taken form of mother variety Birlik of the gliadin coding locus's of allele components blocs in the hybridization. In a time of analysis of electrophoresis the hybridization analysis of 102 F<sub>2</sub> hybrid grains gliadin coding Gld 1A locuses alleles components identification was carried out according to the homozygote and heterozygote situation (Photo 2).



**Photo 2.** The heritable regularity of allele components blocs in the soft wheat varieties

The gliadin component blocs heritably passing to the hybrids according to the law has been observed naturally and heredity coefficient of the hybrids was counted as well. Theoretical relativity of gained results  $P > 0.50$  because of importance of factual accounting criterion  $X^2 = 0.86$  is valid (Table 1).

The acquisition of F2 Gld A4 and Gld 1B3 alleles during the hybridology analys in a crossing process from the Birlik and Akinchi-84 soft wheat varieties  $X^2$  splitting

Table 1.

№	Gld 1A and Gld 1B for lokuses genotype	Quantity of the theoretical grains expected 1:2:1 (number)	Number of factual grains	$X^2$	P
1	Gld 1A4	25	26	0,04	0,50
2	Gld 1A4 + Gld 1B3	50	47	0,18	
3	Gld 1B3	25	29	0,86	

Such as, Gld 1A4 and Gld 1B3 allele components blocs according to monofactorial Mendel law 1:2:1 relatively passed heritably.

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**Докладът е рецензиран.**