Assessment Of Grade And Biochemical Composition Of "Chillaki" Wheat Grain, Grown In Salted Fields.

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Annotation: Quality and basic physical-chemical, technological characteristics of wheat grain of "Chillaki" variety have been studied in this work. Quality indicators and physical-chemical characteristics of the new wheat grain of "Chillaki" variety have been established, which allowed determining the possibilities and recommendations for its cultivation in the salted soil-climatic conditions.

Keywords: "Chillaki" wheat grain, biochemical composition, quality indicators, growing, saline soil.

1. INTRODUCTION

In connection with the development of selection and seed farming in agricultural production, lately much attention has been paid to the creation of new breeds and varieties of wheat grains, which are stable in cultivation in saline soil-climatic conditions (Bebyakin, 1995; Golovochenko, 1999; Lopatovskaya, 2010).

Varietal features are one of the important factors determining the seed, technological and nutritional merits of grain and its products (Belousova, 1990; Vinokurova, 2004; Dashkevich, 2008). Grain as a raw material for the industry of grain processing, as well as for the industry that consumes grain-processing products must be studied with the mandatory consideration of its variety. (Zverev, 2007; Abdullaev, 1975)

In frame of the general concept of varieties, the local and selective varieties are distinguished (Kazakov, 1997; Kolmakov, 2004).

Local variety is a selection variety that have cultivated for a long time in concrete area. Selective variety is a variety created by certain methods of selection, a variety zoned or passed the station variety testing (Kretovich, 1991; Sandukhadze et.al, 2005; Sapega, 1993).

"Chillaki" variety is one of these wheat grain varieties (Khujakulova et.al, 2019). The cultivation of local varieties of grain is expanding in conditions of grain fields of Bukhara region.

"Chillaki" variety of wheat is characterized by a complex of morphological, biological and economic attributes and properties, which consist of productivity, frost resistance, resistance to disease and pest damage, requirements to soil and its composition, requirements to moisture, light and temperature, early maturation, non-falling, resistance to lodging, grain size, shape and color, characteristic features of the chemical composition and storage stability, flour yields, required energy consumption for grinding, baking, macaroni and other technological features, etc. (Egorov, 1999; Egorov, 2000). The new variety has more value than the optimal, and it combines the most important biological, economic and technological properties at the higher level.

Important properties inherent in "Chillaki" variety may show up only under certain growing conditions, on agricultural background providing the widest disclosure of potential possibilities of the variety. The correlation between genetic and external factors is such that under optimal growing conditions, the genetic factor (variety) has a decisive influence on the result – yield and grain quality.

In this regard, the study of the quality and technological properties of this wheat variety has both scientific and practical interest.

The purpose of the work is aimed at assessing the grade and biochemical composition of "Chillaki" variety of wheat grain

2. METHODS AND ACKNOWLEDGE

Standard methods and modern ways of physical-chemical research were used to assess the quality and biochemical composition of wheat grain (Berkutova, 1991; Shepelev, 2004).

Quality and basic physical-chemical, technological characteristics of "Chillaki" wheat grain were studied. Grain samples for research were obtained at "Kogon don makhsulotlari" JSC.

In nutritional terms, the most valuable part of the grain is endosperm, from which the best grades of flour are obtained (Trisvyatsky, 1992).

Table 1.
Chemical composition of studied "Chillaki" grain variety

Crop	**Water, g**	**Proteins, g**	**Fats, g**	**Mono-and disaccharides**	**Starch, g**	**Fiber, g**	**Ash, g**	**Energy value, kcal**
soft winter	14.4	10.2	1.7	1.0	52.0	3.4	2.2	270
soft spring	14.6	11.5	1.8	0.6	50.5	3.7	2.4	261
Solid	14.8	11.8	1.9	0.4	51.5	3.9	2.6	251

The data on the chemical composition of grain for the constituent parts of the corn seed are given in table 2.

Table 2.
Chemical composition of the constituent parts of "Chillaki" wheat grain, % dry matter

Item	Ratio of parts	Protein	Carbohydrates, %					Lipids, %	Ash content, %
			Total	Including					
				starch	sugar	cellulose	pentosans		
Whole grain	100.0	15.26	81.77	62.47	3.72	3.16	7.8	1.04	3.58
Endosperm	76.6	12.01	85.23	77.62	2.84	0.75	2.32	…..	2.05
Fetus	5.24	40.3	37.32	-	24.32	3.26	9.24	13.64	8.02
Shells with aleuronic layer	18.16	27.55	57.03	-	3.28	15.0	36.05	6.18	12.31

From the data in Table 2 we can see that the protein content of wheat varies widely – from 9.2 to 25.8% (average 13.5). Durum wheat contains more protein than soft grain.

Protein substances are unevenly distributed over separate tissues of wheat grain (Table 3). Aleuronic layer is richest in protein substances. High content of protein is also in the fetus. Protein content in the endosperm is less than in whole grain. Sub-aleuronic layer of durum wheat contains 45% protein, and the inner layer contains protein 11%.

Table 3.
Protein content in the morphological parts of "Chillaki" wheat grain

Item	In each part of the grain, %	Ratio of quantity by parts of grain
Whole grain	15.67	100
Endosperm	10.91	65
Aleuronic layer	54.16	22
Fetus cyme	38.83	8
Pericarp shell	10.56	5

3. RESULT

Gluten is the most important factor in the baking merit of wheat flour. The gas-holding ability of the dough, and therefore, the volume and porosity of the bread depends on it. The strong gluten in normal flour gives too tight dough, which is difficult to stretch with carbon dioxide. The weak dough weakly holds carbon dioxide, since its inherent weak gluten cannot create protein framework of the required strength in the dough. During fermentation, strong gluten more persistently retains its inherent physical properties (Table 4).

Table 4.
Composition of gluten of "Chillaki" variety of wheat grain

Protein substances, %				**Lipids, %**			**Carbohydrates, %**				**Ash content, %**
Gliadin	Glutenin	Albumin and globulin	Total	Free	Bound	Total	Starch	Sugar	Cellulose	Total	
∑ 80.91				∑4.02			∑ 11.46				
39.09	35.07	6.75	80.91	4.20	-	4.20	9.44	-	2.02	11.46	2.48
-	-	-	72.67	0.75	6.30	7.05	-	-	-	18.82	0.63
-	-	-	82.60	0.12	8.38	8.50	8.79	-	-	8.79	0.71
50.20	34.85	3.35	88.40	2.12	-	2.12	6.72	1.20	-	7.92	0.92
43.02	39.10	4.41	86.53	2.80	-	2.80	6.45	2.13	-	8.58	2.00
-	-	-	90.00	-	8.00	8.00	0.01	-	-	0.01	0.50
-	73.7	5.3	79.0	2.91	4.19	7.10	7.28	1.20	1.08	9.56	2.80
Average											
43.5	36.0	4.0	83.5	1.0	6.0	7.0	6.0	1.3	1.3	8.6	0.9

4. CONCLUSION

Defined indicators of chemical composition of "Chillaki" wheat grain allow using this variety for the production of flour with high technological properties of gluten, which provide best baking properties.

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