

DEVELOPMENT OF TECHNOLOGY FOR PRODUCING HIGH-QUALITY FLOUR VARIETIES FROM LOCAL WHEAT GRAIN AND IMPROVING THEIR BIOLOGICAL PROPERTIES

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Annotation

In the technological evaluation and processing of finished products, it is necessary to deliver grain according to the required standards in bakery, cereal, pasta, confectionery, and other industries.

Based on the study of the bread-making properties of wheat varieties "Bezostaya-100," "Antonina," and "Andijan-2" grown in the Syrdarya region, the quality indicators of flour and bread obtained were determined. Comparative conclusions were made by analyzing the physical-chemical properties of these varieties to obtain comprehensive information about their characteristics. The varieties grown in our region mainly consist of climate-adapted and locally developed varieties from countries with similar climatic conditions.

Keywords

Bakery, cereals, pasta, legumes, vitreousness, ash content, lutescens, fructofuranosidase, yield.

Introduction In our country, the "Five Priority Areas Development Strategy" initiated and consistently implemented under the leadership of President Shavkat Mirziyoyev has begun a new stage of development.

Recently, the demand for high-quality flour products among the population of our Republic has been increasing. This is also evident from the rising imports of high-quality flour from neighboring countries such as Kazakhstan and Russia. Therefore, it has become a necessity to produce competitive local products and improve the quality of the flour produced domestically.

Enterprises must focus on improving the technological and bread-making qualities of locally grown wheat grains.



Research Objects and Methods The quality indicators of the grains used for research are presented in Table1.

Quality Indicators of the Studied Wheat Varieties							
Indicators	Unit of	Bezostay	Antonin	Andijan-2			
	Measurement	a-100	a				
Moisture content	%	9.4	9.8	8.6			
Vitreousness	%	71	78	80			
Test weight	g/1	760–780	750-770	780-800			
Thousand-kernel	g	40-44	44-46	42-44			
weight							
Ash content	%	1.61	1.71	1.62			
Wet gluten	%	30.0	28.0	29.4			
content							
IDK value (gluten	relative units	62	60	75			
quality index)							
Density	g/cm ³	1.28	1.35	1.20			
Foreign	%	2.2	1.8	2.1			
admixture							
Grain admixture	%	2.6	2.2	0.8			
Milling yield	%	94	92	96			

Results and Analysis The climatic and soil conditions of Syrdarya lead to wheat grain arriving at mills with a moisture content of about 9–10%. Compared to southern regions, this moisture is 3-4% higher, allowing processing without additional hydration.

In the study, grains with initial moisture content ranging from 8.6% to 10.2% were milled under identical conditions: first conditioning for 16 hours, second conditioning for 4 hours. The results are shown in Table 2.

Lifeet of Molistare on Houset field and Quanty							
Wheat Variety	Initial Moisture %	Final Moisture %	Product Yield %	Gluten %	Ash %		
Bezostaya-100	9.4	16.0	73.1	30.0	0.72		
Antonina	9.8	16.6	74.0	28.0	0.74		
Andijan-2	8.6	15.0	72.2	29.4	0.78		

Table 2 Effect of Moisture on Product Yield and Ouality

Wheat grains with moisture levels above 12.5–13.5% can be processed without additional hydrothermal treatment. For grains with moisture below 9.5%, additional treatment is recommended.

Bread Production Process Bread production involves five technological stages: raw material preparation, dough kneading, fermentation, baking, cooling, and storage.

The straight-dough method involves combining all ingredients (flour, water, salt, yeast) at once, with fermentation lasting 2–4 hours. Recent advancements focus on accelerating dough preparation through intensified mechanical treatment, increased yeast, and the use of chemical additives like cysteine, whey, potassium bromate, surfactants, lecithin, and emulsifiers.

Enzymatic Additives Enzymes such as α -amylase, β -amylase, β -fructofuranosidase, glucoamylase, glucose oxidase, and lactase are successfully used to improve dough properties.

Table 3

Dough	O 11a [†]	litv	Indi	cators
Dougn	Qua	IILY	mun	Laturs

Indicators	U	Control(1st	Bezosta	An	Andija
	nit	-grade)	ya-100	tonina	n-2
Initial Acidity	d	2.22	2.26	2.2	2.26
	egrees			6	
Final Acidity	d	3.42	3.54	3.5	3.54
	egrees			4	
pН	-	5.20	5.28	5.2	5.28
				8	
Dough Rising	m	8.4	9.0	8.6	8.9
Strength	in				
Gas Production	С	1350	1350	134	1349
Capacity	m ³			8	
Gas Retention	С	40	30	32	31
Capacity	m ³				
Dough	-	0.40	0.42	0.4	0.40
Extensibility				1	

Conclusion The quality indicators of dough prepared from first-grade flour and flour milled from "Bezostaya-100," "Antonina," and "Andijan-2" varieties are very close to each other. This confirms the "medium" bread-making quality classification.

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