THE NON-STRUCTURAL COMPOSITION OF THE COTTON-MIXED WASTE BEING FED TO THE REGENERATOR

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Annotation: *The amount of cotton waste mixed with impurities from the impurities augers of the UXK cleaning flow is 66.33%, of which active impurities are 7.9% and passive impurities are 58.43%. After processing this cotton through the existing and recommended RX regenerators, the impurities in the cotton content are 11.49; 4.84% and the cleaning efficiency is 82.67; 92.7%.*

It is known that the impurities are divided into passive and active types in terms of their adhesion to cotton. Passive impurities are on the surface of cotton balls and are easily separated from cotton when shaken lightly [1]. Active impurities are more difficult to separate from cotton [2]. To separate active impurities from cotton, they must first be rendered passive. Therefore, when choosing cotton ginning machines, it is necessary to consider the characteristics of the mixtures and how they adhere to the cotton seed [3-4].

In the experiments below, the active and passive amounts of impurities in the cotton leaving the UFK cleaning flow augers and the impurities in the cotton cleaned in the regenerator were determined. The purpose of these studies is to determine how much of the impurities mixed with the cotton being fed to the regenerator are easily separated and how much is more difficult to clean [5-6].

Samples of 100 g each were taken from the cotton coming out of the UXK cleaning flow augers, existing and recommended RX regenerators at the Mustaqillik cotton ginning plant, and the amount of active and passive impurities in them was determined. The impurities separated from the sample by gently shaking it in the hand were added to the passive impurities. The impurities left by lightly shaking the cotton were cleaned in the LKM laboratory and the amount of active impurities was determined.

The studies used cotton of the Sultan and S6524 selections, class I, class 2 and class III, class 3, with an initial moisture content of 12.3% and a shrinkage of 13.1%. The experiments were repeated 5 times and the average results were recorded. The results of the studies are presented in table 1 and figures 1-2.

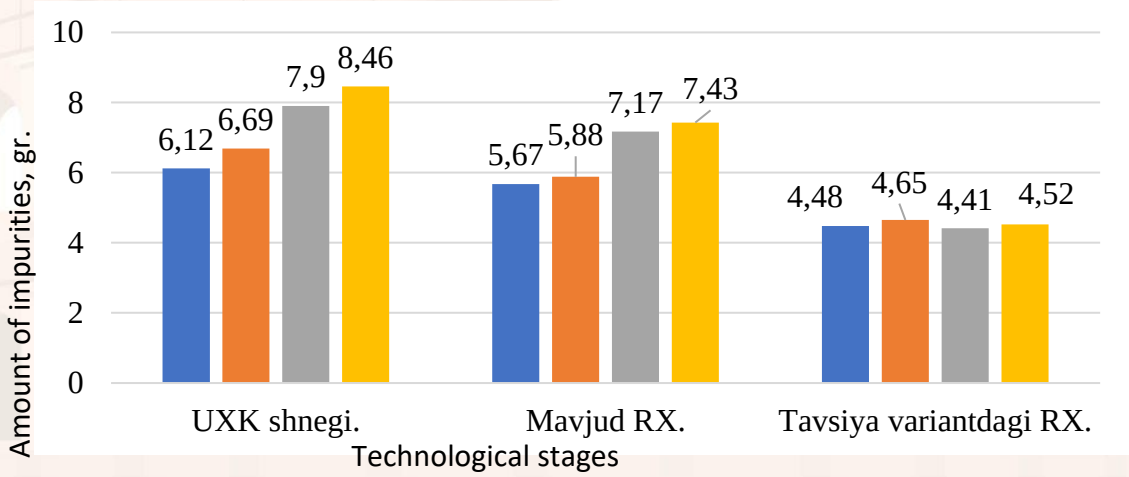
Amount of active and passive impurities depending on the type of impurities adhering to the cotton in the cleaning stream and the regenerator effluent

№	Cotton selection	The quantity of active impurities, %			The quantity of passive impurities, %		
		UXK screw	The available RX	RX in the recommended version	UXK screw	The available RX	RX in the recomm

							ended version
I – sort, 2 class cotton							
1.	Sulton	6,12	5,67	4,48	41,53	3,83	0,29
2.	S6524	6,69	5,88	4,65	42,36	4,21	0,36
III – sort, 3 class cotton							
1.	Sulton	7,9	7,17	4,41	58,43	4,32	0,40
2.	S6524	8,46	7,43	4,52	63,65	4,86	0,47

The results of the study show that when reprocessing grade 1 and 2 cotton raw materials at the Sultan selection, the amount of cotton waste mixed with the impurities from the impurities augers of the UXK cleaning flow is 47.65%, of which active impurities account for 6.12% and passive impurities account for 41.53%. As a result of reprocessing this cotton in the existing RX regenerator, the impurities in the cotton content are reduced to 9.5% and the cleaning efficiency is 80%.

When recycled in the recommended RX regenerator, the turbidity of this cotton is 4.47%, and the purification efficiency is 90.62%.



- Sultan selection I – sort, 2 class cotton; - S6524 I – sort, 2 class cotton; - Sultan selection III – sort, 3 class cotton; - S6524 selection III – sort, 3 class cotton.

Figure 1. Change in the amount of active impurities of cotton added to the impurities leaving the impurities screws of the UFK cleaning flow.

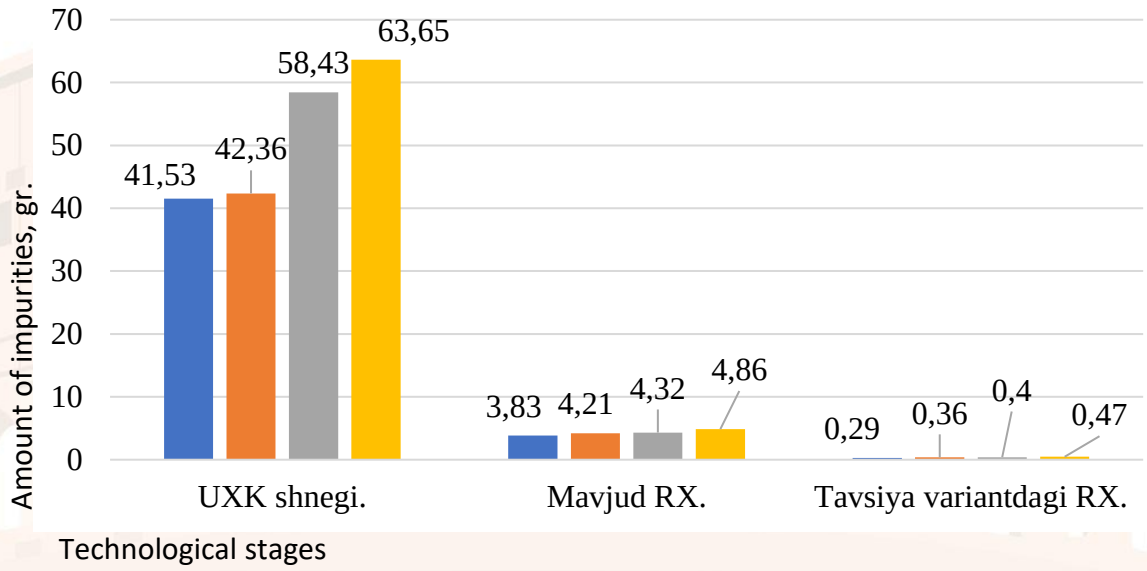
When reprocessing grade III grade 3 cotton raw material in the Sultan selection, the amount of cotton waste mixed with impurities from the impurities augers of the UXK cleaning flow is 66.33%, of which active impurities account for 7.9% and passive impurities account for 58.43%. Reprocessing this cotton in the existing RX regenerator results in a reduction of 11.49% of the cotton's impurities and a purification efficiency of 82.67%. When reprocessing this cotton in the proposed RX regenerator, the amount of impurities is 4.84% and the purification efficiency is 92.7%.

The efficiency of the existing RX regenerator in terms of cleaning active impurities is 7.35%, and the efficiency of the RX regenerator in the recommended version is 26.8%.

The efficiency of the existing RX regenerator for the removal of passive impurities when processing grade 1-2 cotton of Sultan selection is 90.77%, and the efficiency of the RX regenerator in the recommended version is 99.3%.

We can see that the cleaning efficiency of the regenerator in the recommended variant is 19.45% higher for active impurities and 8.53% higher for passive impurities compared to the existing regenerator.

It was found that the reprocessing of cotton raw materials of grades I and III of the S6524 selection yielded the same indicators as those recorded when reprocessing the Sultan variety.



- Sultan selection I – sort, 2 class cotton; - S6524 I – sort, 2 class cotton; - Sultan selection III – sort, 3 class cotton; - S6524 selection III – sort, 3 class cotton.

Figure 2. Change in the amount of passive impurities of cotton mixed with impurities leaving the impurities screws of the UFK cleaning flow.

Conclusion. Although the existing RX regenerator is designed to clean cotton 3-4 times, poor results are being obtained due to the fact that a certain amount of passive and non-cotton-attached impurities are transported from the inlet to the outlet of the equipment together with the air flow and are added to the cleaned cotton, increasing the cotton's turbidity. In the recommended regenerator, the cotton moves in a spiral-shaped pattern, achieving at least 5 cleaning passes through the saw-toothed drum and grate module.

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