

НЕ РЕЦЕНЗИРОВАНО · NOT PEER-REVIEWED — препринт, опубликован до завершения рецензирования

УДК 677,021

INFLUENCE OF COTTON SEED POLLUTION ON LINT QUALITY

Абдугаффаров Хусниддин Журабекович

Ташкентский институт текстильной и легкой промышленности

Абдугаффаров Хусниддин Журабекович: xusniddinas662@gmail.com

Abstract. The article presents research materials on the combination in the cotton ginning industry of technological processes for transporting cotton seeds and cleaning them from weeds using screw conveyors.

Keywords: technological process

Для цитирования: Абдугаффаров Х. Ж. INFLUENCE OF COTTON SEED POLLUTION ON LINT QUALITY // ARGО — научный журнал. — 2026. — URL: <https://www.robutpit.com/journal/article/2-influence-of-cotton-seed-pollution-on-lint-quality/>. (препринт, не рецензировано)

For citation: Abdugaffarov, X. J. (2026). INFLUENCE OF COTTON SEED POLLUTION ON LINT QUALITY. ARGО Scientific Journal. <https://www.robutpit.com/journal/article/2-influence-of-cotton-seed-pollution-on-lint-quality/> [Preprint, not peer-reviewed]

Поступила: 28.09.2026

© Авторы, 2026. Статья распространяется по лицензии CC BY 4.0 (<https://creativecommons.org/licenses/by/4.0/>).

INFLUENCE OF COTTON SEED POLLUTION ON LINT QUALITY

std. F.Xursandova., (PhD) Kh.Abdugaffarov

(Tashkent institute of textile and light industry)

The article presents research materials on the combination in the cotton ginning industry of technological processes for transporting cotton seeds and cleaning them from weeds using screw conveyors.

В статье приведены материалы исследований по совмещению в хлопкоочистительной промышленности технологических процессов транспортирования семян хлопка и их очистки от сорных примесей при использовании винтовых конвейеров.

Мақолада пахта тозалаш саноатида қўлланиладиган винтли конвейерларда пахта чигитини ташиида уни чиқиндилардан қўшимча тозалаш бўйича маълумотлар келтирилган.

In the technological process of processing raw cotton, an important place is occupied by the issues of increasing the efficiency of its purification. In this regard, a large amount of work has been done to study the process of cleaning raw cotton and fiber, improved technological equipment has been developed, the operation of which, in principle, meets the requirements of the cotton ginning industry for the quality of products.

At the same time, the issues of cleaning cotton seeds before linting, in our opinion, have not received enough attention from researchers recently. Increasing the efficiency of the cleaning process of cotton seeds before linting improves the quality of the resulting lint and reduces the content of weed impurities, which has been confirmed by numerous studies [1].

The principle of operation of the pneumatic seed cleaning plant is based on the separation of weeds and seeds according to the speed of soaring during their transportation by a suction air flow created by a centrifugal fan, and the operation of a mechanical seed cleaner is based on the separation of weeds from seeds due to their interaction with a rotating peg-slat and mesh surface, with the arrangement of cells "herringbone", with axial movement of seeds.

However, at cotton ginning plants, such seed cleaners are used very inefficiently, and often they are almost never used, which, of course, negatively affects the quality of the resulting lint and the content of weed impurities in seeds. According to the State Standard of Uzbekistan O'z DSt 645:2010 "Cotton lint. Specifications", for example, for type A and B lint of the 1st grade, the mass fraction of weed impurities and whole seeds, by class, for "Higher" should be no more than 4.5%, for "Average" - 6.0% and for "Weedy" - 8.5% according to the standard O'z DSt 599:2008 "Industrial seeds. Method for determining the mass fraction of mineral and organic impurities. the mass fraction of mineral and organic impurities should not exceed 0.5% [2]. Such requirements often, due to violation of the regulated technological process of cotton processing, are not met in the production conditions of the ginneries of the Republic.

Based on the foregoing, we set a goal to find ways to improve the efficiency of cleaning cotton seeds before linting, and as an object of research, a screw conveyor was chosen, which is widely used in cotton gins to transport cotton seeds from saw gin to linter machines.

A special place in the technological process of the cotton plant is occupied by screw conveyors, which are a highly efficient and economical means of transporting and distributing raw cotton through the batteries of production lines for cleaning cleaners in the drying-cleaning and cleaning shops, as well as through the batteries of the main technological gin machines.

They are also widely used for transporting cotton seeds from gin to a battery of linters and distributing seeds among linters, diverting seeds from linters to storage and shipment sites. It should be noted that a significant amount of work on the disposal of cotton gin waste is carried out by screw conveyors.

Increasing the efficiency of the cleaning process of cotton seeds before linting improves the quality of the resulting lint and reduces the content of weed impurities, which has been confirmed by numerous studies.

It should be noted that in the oil and fat industry, the quality of the oil obtained and its yield are also greatly influenced by the contamination of seeds after the cotton gin. In the oil and fat industry, they are forced to resort to additional cleaning of cotton seeds from weeds by various methods and technological machines, spending huge amounts of money and time on this. Therefore, in order to study the effect of contamination of cotton seeds on the quality of the resulting

lint, an analysis was made of the operation of technological equipment in the production conditions of the “Mustakillik cotton gin” in the Tashkent region. For this, within three months, during the processing of raw cotton of variety C-6524 of various varieties, weediness of seeds was determined, then the quality of the lint obtained from it and the oil content of the processed seeds were determined. Samples of cotton seeds, to determine their contamination and oil content, were taken after the saw gin before they entered the screw conveyor.

The results of the analyzes are shown in table 1.

Table 1.

Analysis of the operation of technological equipment

№	Variety	Var	Seed contamination %	Lint quality (weed impurities)%	Seed oil content %
1	C-6524	I	2,4	5,0	21,70
2	C-6524	II	6,4	5,3	20,3
3	C-6524	III	9,9	9,3	18,3

As can be seen from the table above, the content of weed impurities in the lint is directly proportional to the weediness of the seeds, for example, with a weediness of the initial seed of grade II of 6.4%, the weediness of the lint is 5.3%, and with a weediness of the seed of grade III of 9.9%, it increases to 9.3% [3].

It also follows from the table that the infestation of the initial seed strongly affects the oil content of the seeds. For example, if with an initial seed contamination of 2.4%, their oil content is 21.70%, and with a seed contamination of 9.9%, their oil content decreases to 18.3%.

Based on the study, it can be concluded that the issue of reducing the weediness of cotton seeds is also, of course, an urgent task, the solution of which contributes to improving the efficiency of the cotton ginning industry.

List of used literature:

1. Kh.J.Abdugaffarov. “Experimental studies of the screw conveyor to transport the cotton seeds” international journal of advanced research in science engineering and technology. of ijarset, volume 6, issue 6 , june 2019y. P. 125
2. O'z DSt 596:2014 Technical cotton seeds. Specifications. Uzbek agency for standardization, metrology certification. Tashkent 2014
3. Kh.J.Abdugaffarov., O.J.Murodov., A.A Safoev. Improving the quality of lint by strengthening the cleaning of cotton seeds from waste. MIP: Engineering-2020 - Modernization, Innovations. P. 1845.