Research Article

Preparation Of Cotton Raw Material And Analys Of Its Acceptance And Delivery Mechanisms

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Abstract. The article describes about the period of cotton harvest at the ginnery under the Aktash ginnery No. 3 in the system of cotton-textile cluster and the periodic delivery of cotton on the day of delivery of the maximum amount of cotton in the season, the receipt of cotton delivered by truck to ginneries. and taking into account the status of domestic and foreign transporters used in the transmission, 20-30% of the total amount of cotton to be accepted at the enterprise, 70-80% in the outlying areas, the current XPP-III transporter receives and transfers cotton due to low productivity cases of non-compliance with the requirements of the technological process.

Object of the work:
One of the main requirements for the technological process of cotton processing today is to improve the performance of the XPP-III cotton receiving and transfer conveyor while maintaining the natural properties of the raw material.

Methods: Due to the large amount of cotton in the horizontal belt on the XPP-III conveyor and the increase in the mass of cotton, it was observed that the cotton is fed to the sloping belt elevator in a dense and large amount without crushing.

Results: It was studied that the process of entering a large amount of cotton into the settlement should be between 18:00 and 22:00 hours, and during this time all the mechanized means in the settlement should work at high productivity.

Conclusion: operation of all machinery at high voltage as a result of continuous supply of cotton to the cotton mill,their time to unload cotton from trucks,non-accumulation of vehicles,it will be necessary to avoid congestion from waiting traffic, and all this shows the need of creating a machine that receives and transmits cotton which operates at high productivity.

Keywords: *motor transport, cotton receiving and transmitting conveyor, preparation area, cotton, baler, productivity, conveyor, belt, inclined elevator, open field.*

Introduction.

Nowadays, the process of receiving cotton in ginneries of the "Uzbekistan Cotton and Textile Cluster" begins on average from the second 10 days of August and lasts until the end of October.During this period, great attention is paid to the serviceability of mechanization equipment used in the timely quality reception and sorting of cotton without destroying it at all ginneries and outside ginning facilities. [1].

For pre-processing of raw cotton throughout the year, each ginnery will have one ginnery and several ginneries outside. The tasks of receiving, sorting and storing cotton at the level of demand and delivery of cotton to processing enterprises on the basis of the established plan are performed at the cotton processing plants.

If we compare Uzbekistan with other countries with almost the same level of agricultural development, we can conclude that Uzbekistan has a great potential to increase the productivity of the agricultural sector.We have a lot of opportunities in this regard. They require adherence to the established and widely used agro-technical norms and rules in the world, the rational organization of agricultural culture and agricultural production.

As a result of regular human activity in cotton growing and scientific research, new types of cotton have emerged. In particular, new cotton varieties have been created through interspecific hybridization. Over the past period, the nature of cotton has changed so much that it has not only grown and produced in the tropics, but also in subtropical

and, finally, continental climates with lower temperatures and shorter growing seasons.In the tropics, in tree-like species of cotton, the first pod ripens in 7-9 months, while in annual cotton, it ripens in 6 months.

In order for cotton farms to harvest ripe cotton in the fields in a timely and quality manner, they must do the following:

- to ensure that the plots to be harvested in the fields are well leveled, and that the width of the row spacing is the same. Correction of such ridges, softening of the soil, weeding for smooth growth of plants, leveling of furrows, carrying out of agro-technical measures;

- roads, bridges, scales, haystacks, awnings, repair of existing platforms, aprons;

-drawing up an act indicating the terms of the last chemical processing of cotton for each field, the drugs used, the rate of consumption of the drug per unit area (hectare);

-Taking into account the ripening of the crop, it is necessary to draw up a work plan for the brigades and the farm as a whole for the conduct of machine and hand picking;

-Before the start of the cotton harvest, they should instruct all employees involved in the harvest, acquaint them with the standard requirements for cotton, standards and guidelines.;

-cotton pickers, ginners, mechanical pickers, field ginners, maintenance vehicles, refueling and loading vehicles;

-Regardless of how the vegetation is irrigated, a shallow but wider furrow should be taken with the cultivator before the last irrigation, which will allow the machine to move properly inside the furrow and pick the cotton more fully.

-no machine harvesting is carried out in the areas where seeds of long-fiber varieties are obtained, medium-fiber varieties are obtained by elite and first reproduction.

-all personnel involved in defoliation will be instructed in safety;

-defoliation is performed when 2-3 buds are opened in cotton, 5-6 buds are opened in long-fiber cotton;

-cotton in seed areas allocated to machine harvesting should be treated with mild-acting defoliants.

-the fields set aside for machine harvesting should be treated with 7-8 m wide spraying tractors 3-5 days before the start of defoliation, where the open cotton of the cotton variety is picked by hand after manual harvesting. Then the land is leveled with a grader or bulldozer.

-defoliation times, types of defoliants and application criteria, natural and climatic conditions and the state of cotton development.

The stalks on the cotton stalks and branches do not all ripen at the same time. First the cobs on the lower and upper branches are cooked, then the cobs on the middle and upper branches are cooked.It takes 1.5-2 months for the pods on the lower and upper branches to mature. Therefore, the cotton crop is harvested several times. Open cotton is picked by hand or on typewriters.

Measures for harvesting and preparation of cotton include the following measures: efficient use of labor resources and timely completion of the harvest, instruction among cotton pickers, preparation of vehicles for free transportation of cotton, drying and acceptance of cotton in the fields, preparation of skirts for manual cotton picking, timely repair of cotton and gin machines and other equipment, and other organizational measures.

This process will be gradually transferred to mechanization in order to facilitate the delivery of cotton to the gin, fast and high-quality storage of open fields and warehouses, while facilitating manual labor. [1].

The first cotton receiving and transmitting device PTX-20 was developed and introduced into production in 1959 by Uzbekpakhtamash GSKB (State Special Design Bureau). The production of the PTX-20 device has to some extent facilitated manual labor, while accelerating the process of receiving and transporting cotton to cotton fields and warehouses, leading to increased productivity. However, the PTX-20, which is complex in design, was jammed during the cotton pick-up and drop-off process, resulting in frequent downtime.This, in turn, led to a decrease in the efficiency of the device, the inability to unload cotton trucks and tractors in a timely manner, as well as congestion.

In order to drastically reduce the shortcomings of the PTX-20 device and increase the efficiency of cotton picking and unloading, GSKB (State Special Design Bureau) Uzbekpakhtamash produced a PL feeder in 1964 to receive cotton transported to the settlements by machines and tractors (1 -picture).Due to its simple design, light weight and low power consumption, the belt feeder will be widely used instead of PTX-20, which is used in training facilities.

Figure 1. PL type tape supplier

Despite the introduction of the PL supplier, the acceleration of the acceptance of cotton to the premises during the season was due to the high labor intensity of mechanization and maintenance personnel. At the same time, the productivity of the place in receiving cotton was lower than in the transportation of cotton, which caused congestion due to waiting for trucks to unload cotton. One of the main reasons for this is that the operating capacity of the existing PL cotton receiving and transmitting supplier is 7-8 t / h. To increase the performance of the PL supplier, rollers are installed on its side, first XPP and then improved versions are produced in XPP-II and XPP-III (Figure 2).The rollers are responsible for receiving the cotton delivered in the truck and transferring it to the conveyor belt of the XPP-III conveyor.The introduction of the XPP-III conveyor in the settlements will facilitate the workforce somewhat, but will not fully mechanize the process of unloading and transporting cotton.As a result, at least two additional workers were needed to unload the cotton. Therefore, during the season, a single ginnery with 4 and 5 gins for receiving and ginning cotton at ginneries attracted an average of 400-450 workers.

Figure 2. XPP-III type cotton receiving and transmitting conveyor
1- trolley, 2- roller, 3- horizontal belt conveyor, 4- rotary conveyor,
5- control panel.

Today, the amount of cotton accepted at the enterprise is 20-30% of the total amount of cotton that should be accepted, and 70-80% of the cotton that is accepted outside.After the end of the cotton picking season, raw cotton is exported to the ginnery in an average of 5-7 months.At the ginnery, additional mechanisms are used to unload and clean the transported cotton.

For example, in one ginnery, which receives 20,000 tons of cotton, the transportation of cotton from the premises to the enterprise,storing cotton in open fields or closed warehouses,the volume of unloading and loading of cotton in the transportation of cotton to the technology through an additional pipeline for the initial processing is on average 38 thousand tons.Those worksarecarried out using XPP-III, which is the main machine in a small mechanization complex.This requires additional electricity and spare parts, as well as additional manpower.In order to facilitate manual labor and reduce additional costs, the annual increase in the volume of cotton picking by machine accelerates the process of receiving and processing cotton.

If in 2010, during the peak of the harvest season, 2-3% of the total cotton production was received at the ginneries, in recent years in some cotton-textile cluster farms this figure has increased to 8-10% compared to the annual plan.

With this in mind, to ensure the timely receipt of cotton, the required number of mechanization facilities in the procurement facilities should be calculated to receive 10% of raw cotton per day.

Purpose of the work . Today, when the peak of acceptance is 6-7% of the total amount of cotton to be accepted, in some processing plants this figure is 10-11%..

In the United States and China, where the cotton industry is well developed, the process of receiving and delivering cotton is carried out by mobile and stationary mechanization. Mechanization tools in motion are used to thresh cotton on a modular basis or in open fields. Stationary mechanization is used to store cotton in warehouses [2].

In order to study the operation of the XPP-III cotton receiving and transfer conveyor used in the cotton ginning system of the cotton-textile cluster system, research work was carried out at the ginning plant under the Kosonsoy ginnery.The research was carried out on II and IV varieties of S-6524 selection cotton with an initial moisture content of 9.8% and 15.6%, pollution of 3.6% and 10.4%, respectively. The research was conducted on the basis of experimental methods.

Methods The actual capacity of the XPP-III conveyor for the reception and delivery of S-6524 II grade cotton is on average 25 t / h,With an average of 20 t / h in the reception and delivery of grade IV cotton,it was studied that the conveyor is 5 and 10 t / h less by varieties than the work productivity in the passport [3].

Low productivity has caused congestion from waiting for cotton-carrying vehicles to unload cotton.

In addition, due to the increase in the mass of cotton due to the large amount of cotton in the horizontal belt on the conveyor, it was observed that the cotton was fed to the sloping belt elevator in a dense and large amount without crushing.

As a result, there was a traffic jam in the elevator with a sloping belt. The conveyor had to be stopped frequently to avoid congestion. This, in turn, led to a decrease in the productivity of the conveyor.

Despite the large number of machines for receiving and ginning cotton at the ginning facilities, mechanization work is poorly organized.Due to the low productivity of existing mechanization in the reception of cotton, it leads to inefficient reception and placement of cotton, a decrease in the quality of cotton, high consumption of electricity and labor.

Results. All this indicates the need to create and introduce modern devices for efficient reception and transmission of cotton, which today have a high productivity in the timely receipt and placement of high-quality cotton for ginneries in the cotton-textile cluster system.In order to study the amount of cotton received during the season, the daily and seasonal receipt of cotton from the 2020 cotton harvest was studied at the ginnery under the ginnery No. 3 Aktash ginnery Turakurgan district of Namangan region.As a result of the study, the maximum amount of cotton delivered to the processing plant at the enterprise was from September 21 to September 30.. At the same time, the day when the largest amount of cotton was delivered to the settlement was September 23, which accounted for 5% of the annual plan of the enterprise to produce cotton (Figure 3).

The largest amount of cotton delivered to the ginneries of other ginneries in the country during the season also fell on average during this period.With this in mind, it can be determined that ginners are expected to receive an average of 10% of the cotton they plan to produce per day.In this case, a large amount of cotton received has an average moisture content of 5% to 18%, and pollution - up to 15% [2].Given the cold weather and rainy days, the average humidity of cotton delivered to the ginners can be 25% or more. [3]. Experiments were carried out at the Aktash ginnery No. 3, which receives 18,210 tons of raw cotton, according to the plan, in order to determine the maximum number of days of the season and the mechanization required for receiving and ginning cotton.

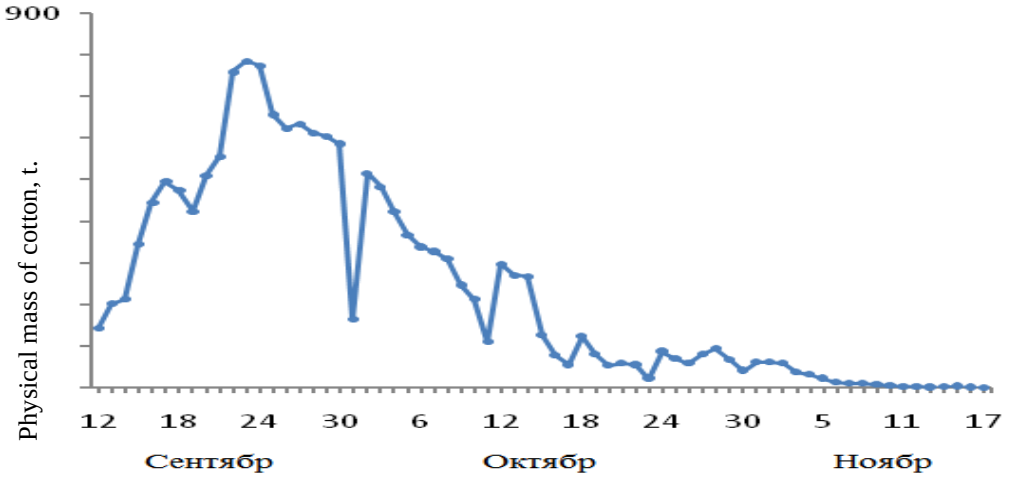

Figure 3. Dynamics of seasonal delivery of cotton to the premises of the ginnery No. 3 Aktash

The date of receipt of the largest amount of cotton was determined, and the amount of cotton delivered to the place by the hour was studied.

The results are shown in Figure 2. As can be seen from Figure 4, in the first half of the day the amount of cotton delivered to the procurement site was 40-70 t / h.

By evening and in the evening, the amount of cotton imported increased sharply and amounted to 100-120 t / h.

The results of the study showed that the process of large-scale entry of cotton into the area should be from 1800 to 2200 hours, and during this time all the mechanization tools in the area should work at high efficiency.

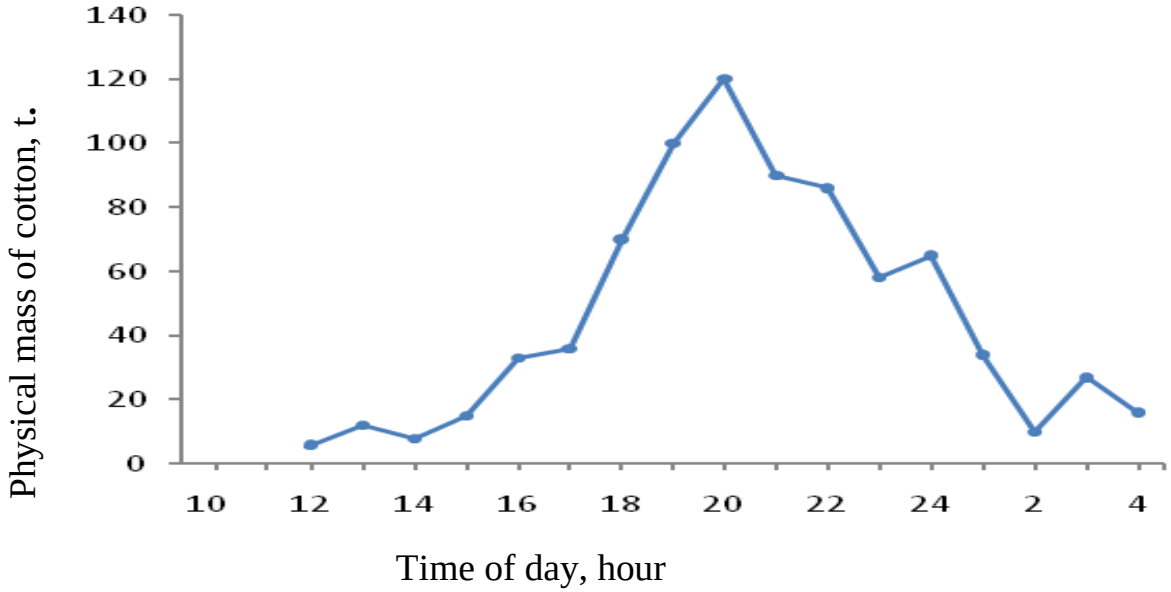

Figure 4 The amount of cotton delivered per day per hour of preparation at the ginnery No. 3 Aktash

However, due to the low productivity of the XPP-III transporter used for receiving and transmitting cotton at the site, it was found that it had to be stopped frequently due to traffic jams in the above-mentioned period. [4, 5].

Studies have shown that the continuous arrival of cotton at the peak of the season causes all machinery in the area to operate at high voltage, causing traffic jams due to the fact that they do not have time to unload cotton from trucks.

Discussion. Despite the large number of machines for receiving and ginning cotton at the ginning facilities, mechanization work is poorly organized.

Conclusion. Due to the large labor consumption due to the low productivity of the existing mechanization of cotton production, it is necessary to create a modern machine for receiving and transmitting cotton at high productivity.

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