IMPROVING FIBRE QUALITY AND EFFICIENCY BY INSTALLING A METERING DEVICE IN THE SAWING FIBRE SEPARATION CHAMBER

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ABSTRACT
The article discusses the installation of the sowing device in the working cell of the saw gin in cotton mills and its effect on the quality, fibre density and raw material speed. Based on the results of the experiments, the quality of the fibre was changed depending on changes in the density of raw materials. Based on the theoretical and experimental developments, the quality of fibre and seeds has improved due to the quick release of unoccupied seeds using equipment installed in the working chamber of the saw blade separator machine. In addition to improving the quality of the fibre, the qualitative characteristics of the yarn obtained from it are studied.
KEYWORDS: *saw genie, front fart, working Kamera, seeding machine, saw, well grille, fibre, seeds.*

INTRODUCTION

Uzbekistan is a country with great experience and production base for advanced scientific and technical potential in Central Asia.

Equipment for the separation of fibres DP-130, 4DP-130, 5DP-130 used for the processing plants, partially different from that in which it is intended for the processing of cotton fibres.

When analyzing the operation of the gin fibre separator, it is shown that the sawing process adversely affects the quality of seeds and fibre, that is, raw cotton spikes are concentrated in the centre and adversely affect the quality of the fibre.

Improved fibre and seed quality by installing a wall outlet.

METHODS AND MATERIALS

In this article has been learnt effect on fibre quality of speeding and density of valid raw materials by installed into working chamber separation of sawing fibre cleaning cotton on the plants.

The separation machines of sawing fibre are one of the main technological processes of

cleaning cotton on the factory.

It has been known a long time on the

experiences between the efficient of work sawing fibre separation and the raw material density on the quality of the fibre.

The process of extraction of sawing fibre in the working fibre cotton separate from cotton sedes is giving on process depends on several factors.

The most important of these is the hardness, density of the raw material shaft, the number of separated seeds and others.

It is also necessary to take into account the frictional force generated by the walls of the working chamber under the pressure of the raw material.

All of these factors have an impact on the performance and quality of the fibre extractor.

I.G. Boldinsky [1] in his studies has shown that the increase in sawdust separator productivity is accompanied by an increase in raw material density.

However, as the density increases, productivity increases to a certain extent and then productivity decreases.

This is due to the decrease in the velocity of the raw material rotation due to the tension in the lateral direction of the working chamber; G.I. Miroshnichenko has shown that the process stops completely when the density is 550-600 kg / m³ [2].

A.D. Grober has been conducted theoretical and experimental studies on the mathematical expression in the study of the characteristics of fibre separation processes

He discovered the statistical regularities of the process of separating the fibre.

In particular, the author has shown that reducing the inequality of cotton transfer to the working chamber of the gin and stabilizing the fibre extraction process improves the quality of the fibre [3].

Analysis of the main studies of the gin extraction process allows us to identify ways to optimize it.

It is necessary to stabilize the gin extraction process to increase the efficiency of the fibre separator and improve the quality of the fibre.

In factories, cleaning of cotton was the practical study of the adjustment of raw material density of the gin separator is regulated.

For this purpose, the saw gin separator depending on the type of cotton seeds will install speed which determined from experience and then adjusted to the density of raw material and then switch to the raw material density and the seeds fattening roller of raw material density of fibre and the effect on the quality of seeds has been taken information by N.Q.Safarov. [4]

It can be seen from the fact that the least damage to the fibre is observed when the raw material density of the grade   I type cotton is 310.9 kg / m³ and the III-type 270.5 kg / m³ (Figure 1).

Cottonseed type-1

a) The density of raw material valve, kg / m3

Cotton of the 3rd grade
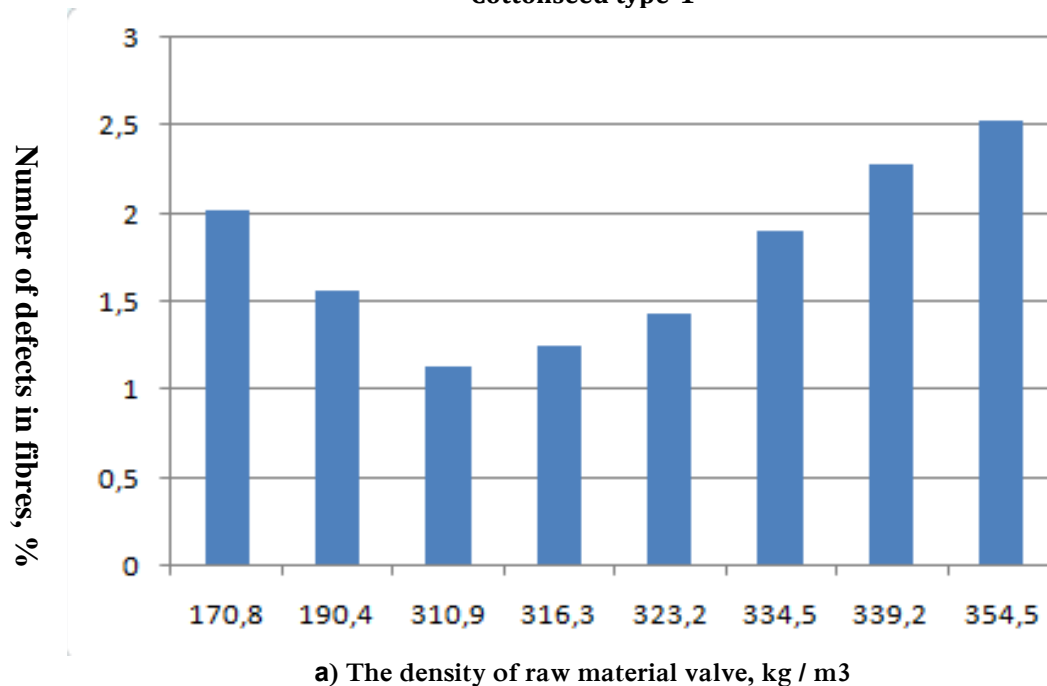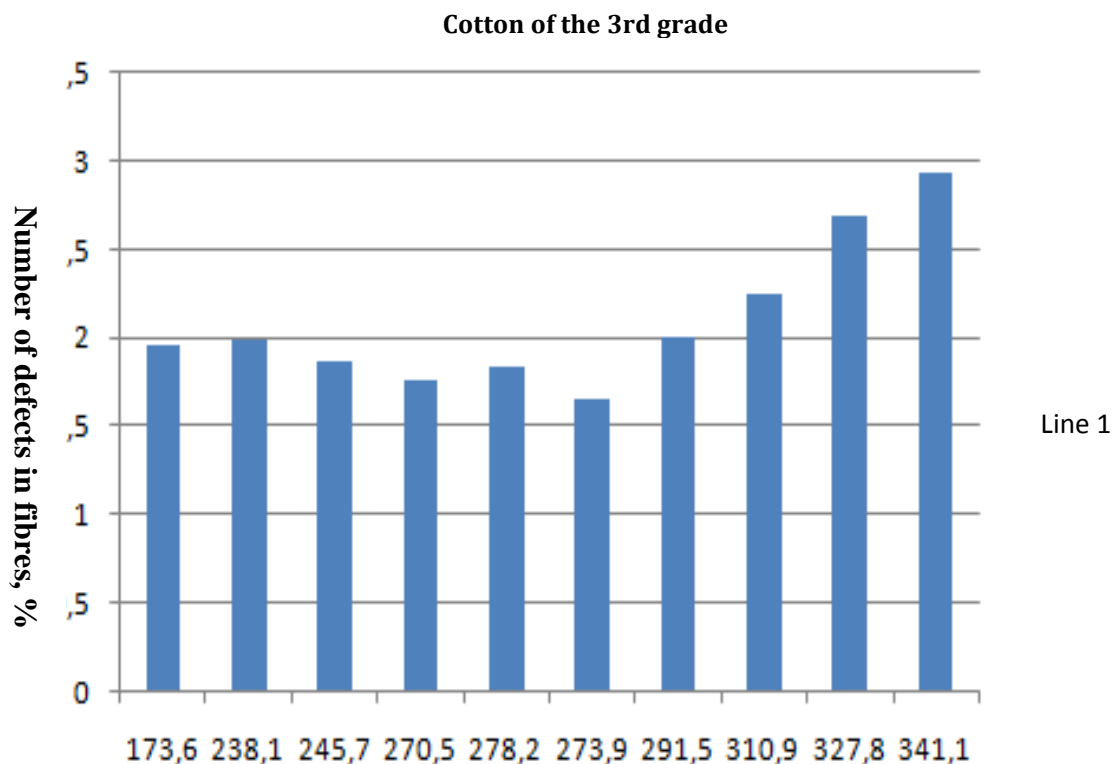
b) The density of raw material valve, kg / m3

Figure 1. The amount of impurities and impurities in the fibre (fibrous coatings, combines, knots and tubes) depends on the raw material density in the separation of the cotton fibre of I and III grades (a and b, respectively).

RESULT AND DISCUSSION

Based on the results of experiments at the Shurchinsky cotton clean on the factory, the total number of defects in the fibre after the separation of saw gin, dirtiness, immature fibre; and has been learning the influence of the density of raw materials on the cause of the increase in the number of broken seeds (table 2).

Saw gin fibres productivity, kg / saw-hour	Raw material weight, kg	Raw material density, kg / m³	Total amount of defects and fibre contamination, %			
			Total	Fractured seeds and fibres	Large and minor impurities	Knots
The density of raw material is normal						
7,4	40,3	265	2,78	1,26	0,96	0.56
9,1	34,1	278	2.88	1,37	0,99	0,64
10,8	37,8	290	2.97	1,48	0,103	0,76
Reduced raw material density						
12,5	35,2	290	2,46	1,02	1,16	0,28
14,2	40,5	300	2,29	0,94	1,01	0,34

Table-2. Influence of weight and density of raw material on fibre quality

Studies conducted by the Center for Scientific Research "Cotton Industry" showed that the main reason for the defects in the fibre during the separation of fibre is the increased and variable density of the raw material shaft.

When the raw material density increases, the knots, combined nodes and knots, which are badly affected by the weaving process, are formed by the variation coefficient and elongation (Table 3).

Name of the pointer	Units of measure ment	Nam-77 1\1		Beshkahramon 1\1	
		In practice 4ДП-130	Modernized 4ДП-130	In practice 4ДП-130	Modernize d 4ДП-130
Productivity of machine	Kg /saw watch	13,6	14,2	13,3	13,8
The number of defects on 1g	piece	267	242	310	285
Including: The amount of dirty	%	110	85	94	80
Seed crust	%	40	31	37	38
Knot	%	117	126	179	167
The thickness of fibre (№)	tex	18,8	18,8	18,8	18,8
Prolonged stretch	%	5,4	5,95	4,8	4,9
Relatively	sn\tex	13,2	14,4	10,3	10,8
Coefficient of variation of one thread	%	27,1	27,5	18,1	19
The number of defects on 1g Including: Knot	Шт	148	110	147	127
Knots	%	70	52	73	64
Seed crust	%	34	30	34	30
Dirtiness	%	12	10	12	10
Swell of fibre	%	26	18	28	23

Table 3. The spinning properties of the fibre obtained as a result of improving the output of auxiliary sawdust to the working chamber of 4DP-130

To minimize the defects in the process of separating the fibre, the raw material shaft should be maintained at a relatively empty and stable density during the fibre extraction process.

To solve the above problems, a sowing apparatus was installed in the centre of the working chamber, and experimental results were obtained under production conditions.

Analyzed of the quality of the fibre obtained after separation of the input shaft by changing the density of raw materials through an auxiliary seeder In the experiments, Nam-77 type-I was picked up cotton by people, moisture content of 7.5% and before ginning cotton was used with 0.6%

Comparison of fibre separation performance of 4DP-130 saws with the raw material density of 164 mm and speed of 350 m / min with an alternate diameter.

With the increase in productivity, the density of raw materials increases as well, which leads to increased defects in the fibre during the production of fibre.

Comparison of 4DP-130 fibre separator and improved the saw gin separator shows that as a result of the reduction of raw material density, the amount of impurities and contamination in the fibre is reduced by 0.4-0.6% mainly due to defects in the fibre.

According to the results of the experiments, it is necessary to reduce the raw material density to reduce the defects in the fibre during the extraction process.

The data from the spinning laboratory of SPC "Pakhtasanoat Scientific Center" in the present research on the quality of the yarn, also confirmed this.

It can be concluded from the above that the intensity of the feed shaft density and velocity parameters in the process of separating the saw gin depends on the equilibrium between the processes of removal of the purified seeds.

Accordingly, we got acquainted with the basic research on fibre and cottonseed extraction processes.

Studies show that removing seeds from the working chamber using a cotton mill allows the machine to work more efficiently in the processing of basic and lower grades of cotton.

CONCLUSION
Based on the results of the above experiment we can conclude that the density of raw materials is 310.9 kg/m³ and 273.9 kg/m³ as a result of processing cotton of grades I and III. The highest quality of the fibre was achieved, that is, the number of impurities and defects in the fibre was 1.14% and 1.66% (table 1).

Cotton seeds type-1		Cotton seeds type-3	
Raw materials of the valet density, kg / m3	Contains fibre defects	Raw materials of the valet density, kg / m3	Contains fibre defects amount,%
170,8	2,02	173,6	1,97
190,4	1,57	238,1	2,00
310,9	1,14	245,7	1,87
316,3	1,25	270,5	1,76
323,2	1,43	278,2	1,84
334,5	1,91	273,9	1,66
339,2	2,28	291,5	2,01
354,5	2,53	310,9	2,25
		327,8	2,7
		341,1	2,94

Table-1. Type I-III Nam-77 Influence of raw material density on fibre quality in the processing of medium fibre cotton.

Studies have shown that removing seeds from the working chamber through a cotton picker allows the machine to work more efficiently, especially when processing low-quality cotton.

In the central part of the working chamber, three different types of extraction of cotton seed devices have been developed and tested, the experimental results have been selected mainly by the optimal version than have been the total surface area of the ellipse holes is 1060 cm2, it consisted of two different types of diameter outside diameter 145 mm and internal diameter 130 mm.

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