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MECHANICAL PROPERTIES OF THE SEED BATCH IN THE SAW GIN WORKING CHAMBER

Abdunabi Mamasharipov
Associate Professor of Andijan State Technical Institute
Doctor of Philosophy (PhD) in Technical Sciences
+998905494210 Mamasharipov.72@mail.ru

Аннотация: Мақолада жин ускунасидаги ишчи камерада колосник юзаси бўйлаб чигит тароғи томон харакатланаётган чигит тўпламининг ишчи камерадан чиқишига таъсир этувчи унинг зичлиги ва чигитлар қатламининг босим кучлари орқали чигит устуни қаттиқлиги ўрганилган.

Калит сўзлар: тола ажратгич, ишчи камера, чигит тароғи, хом ашё валиги, колосник, зичлик, босим кучи.

Аннотация. В статье рассмотрено жесткость движеющейся по поверхности колосника столбиц семян изучая его плотность и сила давления между семенами находяшейся в зоне между пилами джина.

Ключевые слова: волокноотделитель, рабочая камера, семенная гребенка, сырцовой валик, колосник, рлотность, сила давления.

Abstract: The article examines the hardness of the seed column through its density affecting the exit of the seed cluster moving along the grate surface towards the seed comb in the working chamber of the gin equipment and the pressure forces of the seed layer.

Keywords: fiber separator, working chamber, seed comb, raw material roller, grate, density, pressure force.

Currently, ensuring the efficiency of cotton fiber production, identifying factors negatively affecting product quality at all stages of cotton production, and creating resource-saving technologies that reduce product costs remain important tasks in the industry. The technological process at all stages of primary processing of raw cotton was studied, and it was observed that the negative factors affecting the quality indicators of the products occur precisely in the working chamber of the ginning machine.

Thus, to increase or maintain quality indicators, it is possible to accelerate the technological process in the working chamber, reduce or soften the mechanical impacts on the cotton, and by revising and improving the shape and structure of the parts in the design, it is possible to preserve the initial quality indicators of the fiber and seeds. ₹1,2.4

One of these ways is to study the factors that negatively affect the process in the working chamber of the ginning equipment and eliminate them. For this, it is necessary to study the properties of seeds moving along the surfaces of the grate and seed comb, which ensure the exit of seeds with completely separated fibers from the working chamber.

In the ginning machine, during the ginning process, seeds with fully plucked fibers are ejected from the raw material roller, sliding along the grate surfaces towards the seed comb, passing through the gap between the comb teeth and the grate, and exiting the machine. The condition of the

seed cluster plays a key role when passing through the gap. That is, its density, hardness, pubescence, pressure acting on the seed layers relative to each other, etc.

To study the state of the above-mentioned seeds, the following experimental research work was conducted. The moisture content of the seeds of the Andijan 36 breeding variety is 10-11%, which is obtained from the point where the front part of the gin comes into the auger. The obtained seed mass (500g) was placed in a specially prepared rectangular shaft container (Fig. 1). After filling the container with seeds, it was covered with a rectangular sheet of iron at the top.

The seeds in the container were brought to a column position, and loads were gradually placed starting from 300 g and at the same interval. In this case, the height and pressure of the column were determined.

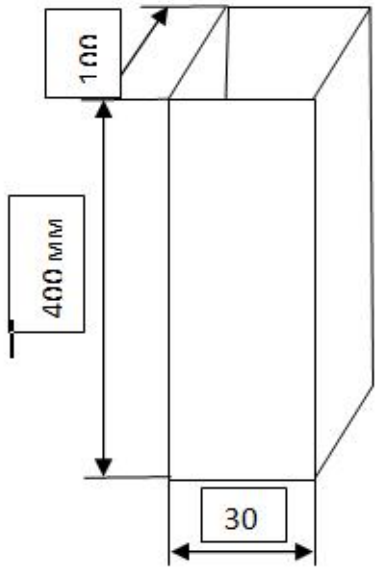

Figure 1. Mine container for cotton seeds.

The hardness of the seed cluster is determined using the following formula.

$C=\frac{P}{X}n/m$

Here: R load, N;

X deformation, m.

Determination of the stiffness coefficient of the seed column led to the study of the influence of the seed comb on the following parameters.

L - length of the tooth of the seed comb, m;

F - friction force between the seed layers, N;

m - mass of seeds actively acting on the teeth of the seed comb, kg;

S hardness of the seed column, N/m.

The experiment was conducted with a triple check and entered into the table below.

Table of results obtained when determining the hardness of the seed column

Load, N	After the jinn			After line 1 linter			After the 2nd line linter		
	Column high width, mm	Density, kg/m^3	Pressure strength, N/m^2	Column high width, mm	Density, kg/m^3	Pressure strength, N/m^2	Column high width, mm	Density, kg/m^3	Pressure strength, N/m^2
0.30	4.12	3.16	27.27	3.60	3.62	30.00	3.03	4.30.	40.35

0.60	4.02	3.24	28.57	3.51	3.71	31.57	2.96	4.40	43.85
0.90	3.93	3.31	30.00	3.43	3.80	33.33	2.90	4.49	45.00
1.20	3.85	3.38	31.57	3.36	3.83	35.29	2.85	4.57	48.00
1.50	3.78	3.45.	33.33	3.30	3.95	37.50	2.81	4.64	51.72

As can be seen from the table, with an increase in load, the density of the seed column increases, and its hardness also increases. At the same time, the hardness of the column after further lintering of the technological process and lintering of the 2nd line increases even more. In turn, this is due to a decrease in seed fuzziness. According to the conclusion, with a decrease in seed fuzziness, the stiffness of the column also increases. As a result, the hardness coefficient also increases.

From this it follows that with an increase in load, an increase in density and pressure force leads to an increase in the stiffness of the seed column. This circumstance leads to an increase in the density and pressure force, as the number of seeds accumulating on the grate surface increases with an increase in its mass. In turn, the size of the gap between the grate and the seed comb negatively affects the exit of seeds from the chamber. Therefore, increasing the gap size leads to an acceleration of the ginning process.

Based on the foregoing, it is recommended to increase the seeds without changing the specified gap dimensions.

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