IJDPP International Journal of Development and Public Policy

| e-ISSN: 2792-3991 | www.openaccessjournals.eu | Volume: 1 Issue: 6

Research of New Technologies That Allow Selecting Tolador Seeds

I. Muhammadjonova, I. D. Madumarov
Namangan Institute of Engineering and Technology

Abstract: The aim of the research work is to increase the yield of cotton fiber by improving the processing technology of germinated seeds, to improve the quality indicators of seeds and lint.

In order achieve this goal; a mesh surface device was created to sort the seeds into fractions. Sorting technology was developed on this device and operating modes were determined. In addition, the law of surface distribution of the fractions separated from the cotton stream moving along the surface of the net was determined, and based on the results of practical and theoretical research, a mode of sorting of cotton seeds was developed.

Keywords: Cotton, seeds, slope angle, sorting device, fractions, cotton ginning, amplitude, frequency, ginning, sorting sections, brush drum, movement.

It is known that cotton fiber plays an important role in the economy of Uzbekistan. This issue has been highlighted not only in modern research, but also in many scientific studies conducted in any period of the Republic. The issue of increasing fiber output in the industry has always been and remains relevant.

After the ginning process in the ginning plant, the cotton fibers are cleaned of various contaminants and sent for pressing. Demon seeds are sent to processes such as lintering, delintering, and from them fibrous products such as lint (fluff) and short fibers are produced. Lintering and delintering of cotton seeds, i.e. the separation of fiber and short fiber remaining after seed germination, is extremely important as the main process. As a result of primary processing of seed cotton in ginneries, fiber, short fiber, seeds and technical seeds, feathers and plums are obtained.

The study mainly focuses on activities such as improving the quality of lint and preventing damage to demon-possessed seeds, while increasing the production of spinning fibers.

During the processing of cotton seed, its complete separation from the fiber and the level of residual fiber are determined and analyzed. The use of cotton seeds, both as oil production and as a planting material, requires their minimum level of fiber: the lower the fiber content of the seed, the higher the oil yield and the better the germination of the seed.

Table 1 The cut color of the seed kernel by cotton variety

seed type	The color of the core in the seed section
I	Depending on the selection navigation of the cotton is slightly white or white-yellow mixed with other colors
II	Depending on the selection navigation of the cotton is slightly white-yellow mixed with other colors
III	Different light colors are mixed from grayish white to yellow to light yellow
IV	Yellow to light brown

In addition, the degree of fiber content of seeds is important in the rational use of fibrous raw materials in industry. The smaller the fiber content of the processed seed, the more lint and delint will be obtained from the fiber coating of the seed.

The value of lint that can be obtained from cotton ginning products is in a wide range depending on the selection and industrial varieties of cotton and the growing conditions of the cotton. Complete removal of fibers from the fiber is the percentage of lint and delint remaining in the cotton seed after ginning or lintering by weight after the initial cotton seed was pulled.

Currently, elite, first (R1), second (R2) generation seeds of regionalized, new and promising cotton varieties are used for planting, which must meet the requirements for varietal purity [1].

An analysis of the literature on the ginning process and studies [2] have shown that cotton seeds do not always fully meet the requirements of the above standards for fiber, contamination, residual fiber and others. This is due, on the one hand, to the imperfection of the ginning process, and, on the other hand, to the lack of regulated technological

IJDPP International Journal of Development and Public Policy
| e-ISSN: 2792-3991 | www.openaccessjournals.eu | Volume: 1 Issue: 6

processes for further processing of ginning products. Accordingly, these studies will consider the development of effective technology for processing cotton seeds and improving the quality of seeds, residual fiber and lint obtained from it.

Ginned seeds differ from each other in the value of their size, which characterizes the frictional properties, depending on the fiber. The main parameters that characterize the frictional properties of the seed include the coefficients of friction at rest and sliding on the surfaces, as well as friability (the inverse characteristic is defined by the adhesive force as the adhesive).

The coefficient of friction of cotton seeds on a stationary surface is of scientific and practical importance. This indicator is encountered by theorists, designers, manufacturers in the process of designing seed processing machines and in the process of processing cotton seeds.

The fiber content of the processed seed creates various physical-mechanical and frictional properties. Seeds with different fibers have different coefficients of friction and are in different conditions under the influence of external forces. Therefore, in order to properly address the issues related to the processing of cotton seeds with different fibers, it is necessary to take into account the friction coefficients that apply to them.

Coefficient of quiet friction on the surface by the authorφfiberingP_{on}dependence has been determined. In this case, for seeds with a moisture content of 7.0%:

friction with metal surfaces $P_{on} = 0,22$ when $\varphi = 23,2^{\circ}$ will be, friction fiber with rubber tape surface $P_{on} = 0,22$ when $\varphi = 22,8^{\circ}$ will be.

The coefficient of friction in motion is well represented by this formula.

$$\mu = \left(A + BV\right) \cdot e^{-cv} + D, \qquad (1)$$

here: V – relative slip speed of seed, m/sec;

A, B, D – experimentally determined constants.

In determining the coefficient of friction of seeds on common materials, it was found that the coefficient of friction decreases with increasing pressure on the seed, increasing the surface cleanliness class and decreasing the moisture [3]. By increasing the relative slip speed by 0.4 - 0.8 m/sec, the coefficient of friction increases with the smallest fiber in the seed and the largest value at the smallest pressure. With further increase in speed, the coefficient of friction decreases and remains constant.

One of the main characteristics influencing the process of transportation and sorting of cotton seeds is fiber, we conducted research to determine the coefficient of friction in the sliding and vibration of seeds with different fiber content [3].

ISSN 2792-3991 (online), Published under Volume: 1 Issue: 5 in October -2021

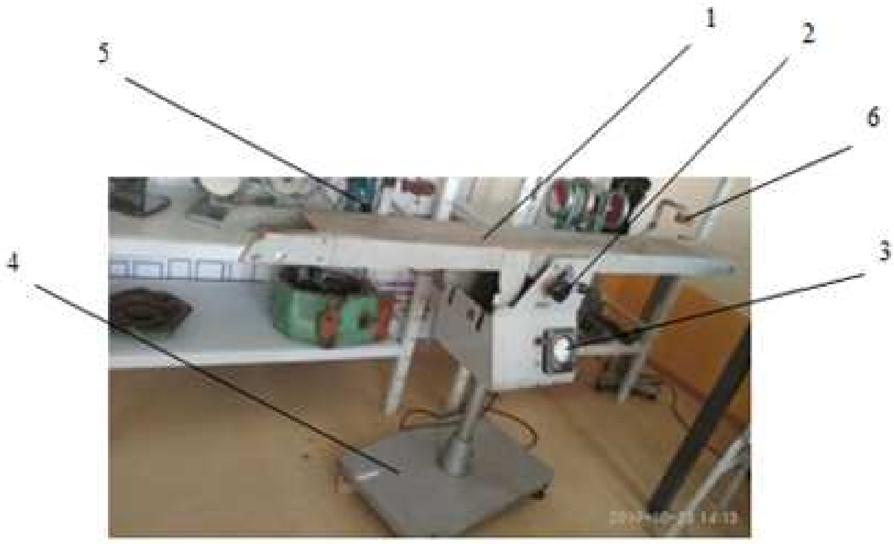

Figure 1. Device for determining the coefficient of friction

To do this, the device shown in Figure 1 was used. This device consists of a base 4, an adjustable bevel 1, a stopwatch 3, sensors 5, 6 and a handle of the turning mechanism 2.

The study was carried out in the following order: a sample of the seed to be studied was set in the plane of rotation of the surface 1, then the surface was set using an angle 2 so that the sample begins to move.

This angle corresponds to the coefficient of rest friction determined using a known formula.

$$\mu = tg\alpha \,, \qquad (2)$$

here: α – slope angle of the surface, grad.

By increasing the angle of inclination, the sample begins to slide downwards and starts the sensor 6, where the stopwatch 3 sets the time. As the sample approaches sensor 5, the stopwatch 3 again determines the time taken for the sample to travel the distance from sensor 6 to sensor 5. The value of the turning angle and the stopwatch reading are entered in the table.

We determine the coefficient of friction in sliding using a known formula [2]:

$$\mu_0 = tg\alpha - \frac{a_m}{g \cdot \cos\alpha} \,, \qquad (3)$$

here: α – the angle of inclination of the surface relative to the horizon;

a_m – acceleration of the sample across the surface;

g – acceleration of gravity.

Sample acceleration is a constant value (a_m=*const*)We define it using the following formula:

$$a_m = 2S/t^2 \qquad (4)$$

ISSN 2792-3991 (online), Published under Volume: 1 Issue: 5 in October -2021

IJDPP International Journal of Development and Public Policy
| e-ISSN: 2792-3991 | www.openaccessjournals.eu | Volume: 1 Issue: 6

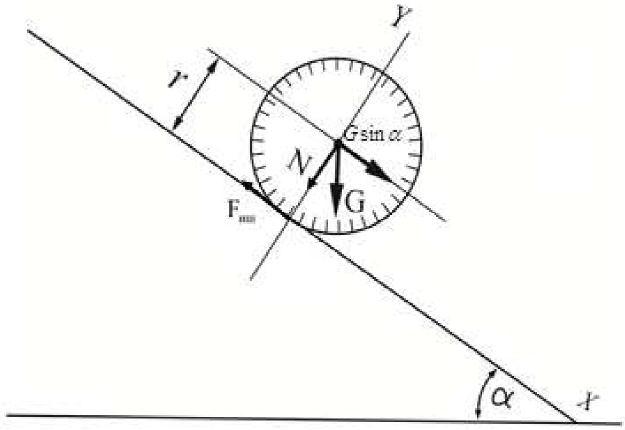

Figure 2. Schematic of the forces acting on a cotton seed on a sloping surface

The frictional force in sliding occurs as a result of deformation of the fibrous layer at the points of contact of the seed surface with the material surface. Figure 2 shows the effect of forces on a cotton seed on a sloping surface.

The following condition must be met for cotton seeds to slip:

$$N = G \cdot \cos\alpha\,;\; F_{fr} = N \cdot K_c\,;$$

$$G\sin\alpha - F_{fr} = -P$$

here: G – weight of seed, g;

N – normal reaction of the base surface, N;

r – seed radius, mm;

K_c – slip friction coefficient;

K_o –the coefficient of friction at rest is determined using the following formula:

$$\frac{K_o}{2} = -tg\alpha + K_c$$

Table 2 Quiet friction (K_0) affecting cotton S-6524 seedand (Ks) slip friction coefficients

Material type	Seed fibering, %					
	8,0		10,0		13,0	
	K_0	K_c	K_0	K_c	K_0	K_c
Steel	0,5888	0,5798	0,6887	0,6728	0,879	0,972
Conveyor rubber band	0,802	0,8036	0,8903	0,8818	0,989	1,701
Conveyor fabric tape	1,201	1,285	1,2339	1,2232	1,2656	1,401

Conclusion. By increasing the fiber content of the seed, the contact area with the surface increases, so high-fiber seeds slip in most cases, their oscillating motion is observed at a large slope angle of the moving surface. The results of the study showed that the coefficients of friction in vibration of seeds with a fiber content of 8, 10, 13% were 0.58, respectively; 0.67; Is equal to 0.97. The results of this study can be used in the separation of cotton seeds by fiber, as well as in the calculation of the coefficients of friction of cotton seeds on the surfaces of various materials.

ISSN 2792-3991 (online), Published under Volume: 1 Issue: 5 in October -2021

References

1. I.D.Madumarov, I.Muhammadjonova. Methods for determining the maturity of cotton fiber. NOVATEUR PUBLICATIONS JournalNX-A Multidisciplinary Peer Reviewed JournalISSN No:2581 -4230VOLUME 7, ISSUE 7, July. -2021
2. AObidov, K Akhmedhodjaev, O Sarimsakov, Q Holikov. Investigation of the Properties of Fibrous Cotton Seeds, for Sorting on a Mesh Surface. Engineering, Vol.10 No.09(2018), 572-578 P.
3. ObidovAvazbek, SultonovMirzaolim, MuhksinovIbrohim, AbdullaevShokir. The Theoretical Studies of the Cultivation of Three Cotton Seeds along the Plain. Engineering Vol.10 No.08 (2018), 514-520 P.