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ОЦІНКА ВПЛИВУ ПАРАМЕТРІВ ПРИТИСКНОГО ТРАНСПОРТЕРА НА НАДІЙНІСТЬ ПРИТИСКАННЯ ПАСМ

У статті проведено оцінку впливу параметрів притискного транспортера на надійність притискання сировини пасом в його каналі та отримано математичні залежності, які дозволяють визначити вплив параметрів притискних циліндрів транспортера на зовнішнє зусилля притискання пасом в його каналі під час роботи.

***Ключові слова*:** *конвеєр, параметри, притискні планки, зусилля накопичення, накопичувальний конвеєр, багатофакторний експеримент.*

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EVALUATION OF THE INFLUENCEOF THE PARAMETERSOF THE CLAMPING CONVEYOR OF THE REABILITY OF STRAND CLAMPING

In the article, the influence of the parameters of the pressure conveyor on the reliability of the compression of raw material strands in its channel was evaluated, and mathematical relations were obtained that allow determining the influence of the parameters of the pressing cylinders of the conveyor on the external pulling force of the strands. duct during heating operation.

Keywords: *conveyor, parameters, clamping bars, storage force, storage conveyor, multifactor experiment.*

Statement of the problem.

In recent years, unfortunately, despite the great importance of the linseed industry, the opportunities of the linseed agricultural complex have been lost. However, it should be noted that linen products are very popular all over the world, especially in the markets of European countries and the USA.

Analysis of the latest research and publications.

Theoretical and experimental research devoted to the primary processing of flax and analysis of the design and improvement of A.M. machines. Ipatova [1], F.A. Dyaczkova [2], M.M. Susloa [3], A.B. Lapshin [4] and many other scientists. The analysis of the studies showed that a significant part of them was devoted to the important connection of the three-drum instrument. Machines for forming balls and machines for unwinding rolls are also widely used. However, insufficient attention is paid to the functioning of the transport mechanism in the literature.

An analysis of the studies showed that a significant part of them is devoted to the important unit of the triple instrument. Ball forming machines and roll unwinding machines are usually considered. However, insufficient attention is paid to the functioning of the transport mechanism in the literature.

But it is precisely because of the imperfections in the design of the scraper conveyor that the analysis of known studies has shown that during the compaction process, the loss of long fibers is on average 9.6%, provided that the average length of the stem conveyor is 70 cm, and when reducing the length to 60-65 cm, the amount of losses increases by 17-17.9%.

Therefore, the purpose of this work is to analyze known studies and designs of transport mechanisms in order to identify a list of unexplained, but scientifically based aspects of their work.

Purpose of the study. An important and urgent task today is the improvement of flax processing technology through the modernization of milling and spinning units, which will ensure an improvement in the quality of the fibers obtained from it and other products containing flax.

Research results. The effect of the parameters of the pressure rollers for the pressure transfer on the reliability of the pressure of the tape in the channels was estimated based on the value of the drag force, which was determined based on the experiment of multiple variables.

The impact factors were taken as follows:

- Distance from the cylinder axis to the thread attachment point – x1;
- Rotary spring compression force - x2;
- Pressure roller diameter - x3;

According to [5], conducting a multiparameter experiment involves performing n number of experiments.

Let us determine the number of experiments required for research:

$$n = m^k = 2^3 = 8, \quad (1)$$

m – are the research levels;
k – their levels of variability.

Table 1

Shows the factors and their levels of variability

Are the research levels	Their levels of variability.		
	UPPER	ZERO	LOWER
X1	360	180	0
X2	210	120	30
X3	200	130	60

Use coefficient notation to convert normal coefficient values to notation values:

$$x_i = \frac{X_i - X_0}{\Delta_i} \quad (2)$$

Where – the values X_i, X_0 of the contrast ratio are normal at the tested levels and at zero;

Δ_i - replacement interval;

x_i - this is an encrypted agent.

The experimental conditions are given in Table 2. Value obtained experimentally. The reproducibility of the experiments was verified according to the Cochrane standard:

$$G \le G(0,05;\ n;\ f_i), \quad (3)$$

де $G \le G(0,05;\ n;\ f_i)$ – the critical value of the Cochrane criterion, which was chosen depending on the level of significance, the number of independent variance estimators, and the number of degrees of freedom for each estimator.

Table 2

Conditions for conducting experiments

Points of the plan	x_1	x_2	x_3	$x_1\ x_2$	$x_1\ x_3$	$x_2\ x_3$	Output parameter, y, H			
							y_1	y_2	y_3	y_{cep}
1	-1	-1	-1	+1	+1	+1	17,7	17,2	16,5	17,19
2	-1	+1	-1	-1	+1	-1	58,0	59,16	59,12	58,76
3	-1	+1	+1	-1	-1	+1	70,50	70,62	69,58	70,25
4	+1	+1	+1	+1	+1	+1	32,90	31,70	32,48	32,38
5	+1	-1	+1	-1	+1	-1	8,91	8,98	7,76	8,55
6	+1	-1	-1	-1	-1	+1	2,65	3,95	3,60	3,4
7	+1	+1	-1	+1	-1	-1	9,68	10,89	10,03	10,2
8	-1	-1	+1	+1	-1	-1	29,57	29,64	29,74	29,65

Response surfaces are given (Figure 1).

From the response surface obtained, it can be seen that the closer the threads are to the roller axis, the more effort is required to extract the threads during the combing process.

It can be seen from the response surfaces obtained that the closer the filaments are to the cylinder axis, the greater the effort exerted to pull the filaments during the carding process.

When it is far away from the axis, much less effort is necessary, even with the large compressive force of the pressure roller spring, to ensure reliable clamping. Excessive increase in compressive force causes fiber injury.

In addition, the large distance between the axes of the seedlings does not allow reduction of their dimensions.

The response surfaces are generated according to the normal factor equations shown in the figure 2.

The compressive force of the springs has the greatest influence on the pulling force.

The second most important factor is the distance from the drum axis to the thread placement. The diameter of the seedlings has little effect.

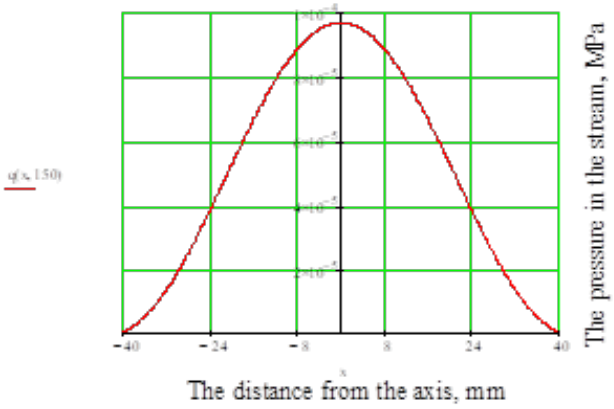

Figure 1. **Response surfaces (equations in cryptographic coefficients) In normal operators the equation will be written:** $y(X_1, X_2, X_3) = 0,238X1 + 0,42X_2 + 0,0024X_3 - 0,001$

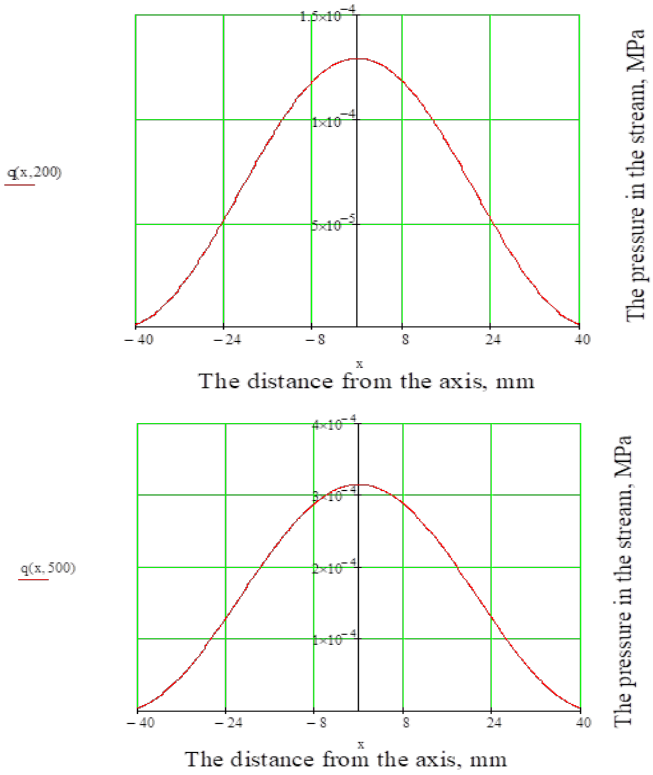

Figure 2. **Response surfaces (equations in natural operators).**

Conclusions. Studies of the influence of the tension vector parameters on the reliability of the scythe fixation showed that the necessary pulling force is affected by the pressure force of the roller and the distance from the axis of the roller to the point of tension of the scythe; Roll diameter. Moreover, the influence of this last factor is the least important.

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