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## NamMTI ILMIY-TEXNIKA JURNALI TAHRIR HAY'ATI A'ZOLARI

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## WITH IMPROVED BLADE MIXER RESULTS OF RESEARCH WORK ON THE DEVELOPMENT OF THE 5LP LINTER

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**Abstract:** Propeller ends seed roller rotation towards 60 degrees bent and bent 16 mm long mixer, Namangan region Related to "Namangan Pakhta TEKS" LLC Kosonsoy cotton cleaning to the 5LP linter in the enterprise installed and linter improved. Improved in order to study the effectiveness of the linter, a comparison-research work was carried out with a 5LP linter with an existing mixer in the Andijon-36 selected cotton grade I and III technical seed at a distance of 9-12 mm with the mixer blades selected on the basis of theoretical and practical research. In the comparative work, the fluffiness of the seed after the linter was 6.85-8.24% on average, and the damage was on average 5.42-4.25%. showed an average of 0.34 (abs)% to 0.27 (abs)% less than seed hairiness and an average of 0.36 (abs)% to 0.4 (abs)% less than damaged seed. The mass fraction of impurities and whole seeds in the lint produced changed from an average of 5.96 % to 5.38 %, compared to the mass fraction of impurities and whole seeds in the fluff produced from the existing 5LP linters from 0.51 (abs)% to 0.77 (abs) decreased by %. The staple length of the fluff is 6/7 mm, and due to the improvement of its quality, according to the state standard UzDst 645:2016, it corresponded to the I type B type "Middle" class. In this case, the productivity of the linter changed from 693 kg/h to 745 kg/h for seed, and from 27.9 kg /h to 24.8 kg /h for fluff, compared to the productivity of the existing 5LP linter taken for the experiment by 70 kg /h . It was found to be higher than 2.5 kg /h to 3.1 kg/h for fluff at 34 kg /h.

**Keywords:** Linter, mixer, parcher, saw cylinder, working chamber, seed roller, cotton, seed, fluff, hairiness, damage, productivity, quality.

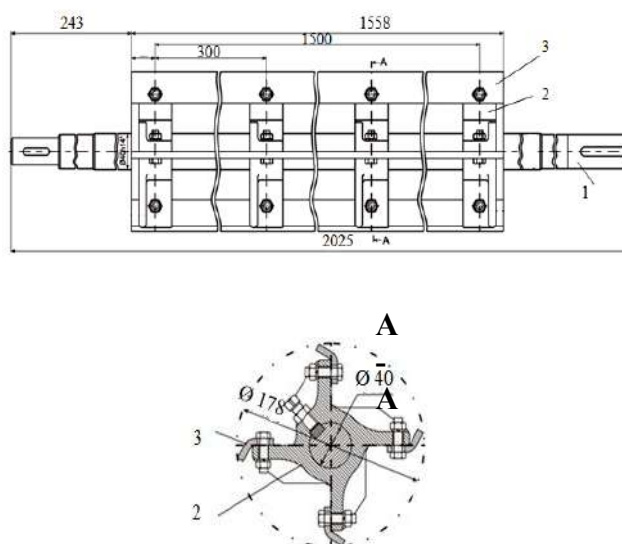
**Introduction.** Drawings of the industrial-experimental copy of the improved mixer, the blades of which are selected on the basis of theoretical and practical studies in order to increase the productivity of the linter, improve the quality of seed and fluff, save electricity and spare parts consumption, the tips of which are bent at 60 degrees towards the rotation of the seed roller, "Cotton Industry Scientific Center" JSC prepared in the design department ( Fig. 1 ). The prototype produced was installed on the 5LP linter at the seed linting workshop of the Kosonsoy cotton ginning enterprise belonging to the Namangan region "Namangan Pakhta TEKS " LLC, and the linter was improved ( pictures 2, 3 ).

As a result of the research conducted in laboratory conditions, effective linting process in the linting of technical seed in the proposed mixer, improvement of the quality of produced seed and fluff, taking into account the fact that the distance between the blades of the mixer and the saw cylinder is 9 mm and 10 mm, and in the linting of seed seed, it is 12 mm [ 1, 2 ], comparison tests were carried out at the above-mentioned distances between the mixer blades and the saw cylinder.

In order to make the comparison-test work identical, the seed linting with the improved 5LP linter was carried out on the 5LP linter with one existing design mixer selected for the experiment in the technological system. A saw cylinder with 160 new saws with an outer diameter of 320 mm and number of saws was installed on both linters. The rotation speeds of the saw cylinder and mixers in both 5LP linters were the same as in their passports, the saw cylinder was 730 rpm, and the mixer was 500 rpm [3 ].

Comparison-test work was carried out after 4 hours of use of new saws. Tests were conducted on I and III varieties of Andijan-36 selected cotton with initial moisture content of 9.3% and 12.1%, dirtiness of 4.8% and 7.6% [ 4, 5 ].

In the technology, there were 3 pieces of 5DP-130 type sawed seeds, the hairiness of the seeds produced from sawed seeds was 10.2% and 11.5%, respectively, in the I and III varieties, and the damage was 3.4% and 3.57%. To determine the seed performance of the linters, the seeds produced from the selected and proposed 5LP linters for the experiment were individually collected at 3-minute intervals and then weighed. Fluff productivity was measured after the condenser by taking the fluff separately for 15 minutes and weighing it. Then the seed and lint performance of the proposed and available 5LP linters selected for the experiment was determined.



**Figure 1.** A drawing of an industrial-experimental replica of an improved paddle mixer  
1- shaft, 2- cross, 3- wings

#### Produce 5LP linters

In order to study the effect on the hairiness, damage, dirtiness of the fluff, staple length of the produced seed, samples were taken and analyzed in the company's laboratory. In order for the results of the analysis to be accurate, the samples were repeated 7 times and their average values were taken.

5LP with a mixer of the existing construction of Andijan-36 seed of selection I grade, with a change of the distance between the mixer and the saw cylinder in the range of 9-12 mm

The hairiness of the seed produced from linting in the linter was on average 7.19-8.51 %, damage was 5.78-4.65%.

The mass percentage of dirty mixtures and whole seeds in fluff was equal to 6.47-6.15% on average, and according to the quality indicator, it corresponded to the II type B type "Ilfos" class. In this case, the productivity of the linter for seed was on average 623-

711 kg/h, for fluff 25.4-21.9 kg/h. This indicator shows that in a 5LP linter with bent blades and an improved mixer, when the distance between the mixer blades and the saw cylinder is changed by 9-12 mm, the hairiness of the seed after the linter is 6.85-8.24% on average, and the damage is on average 5.42-4.25% average compared to seed hairiness produced from the existing mixer 5LP linter



**Figure 2.** The working chamber of the 5LP linter with improved mixing blades  
*1- working chamber, 2- improved paddle mixer.*



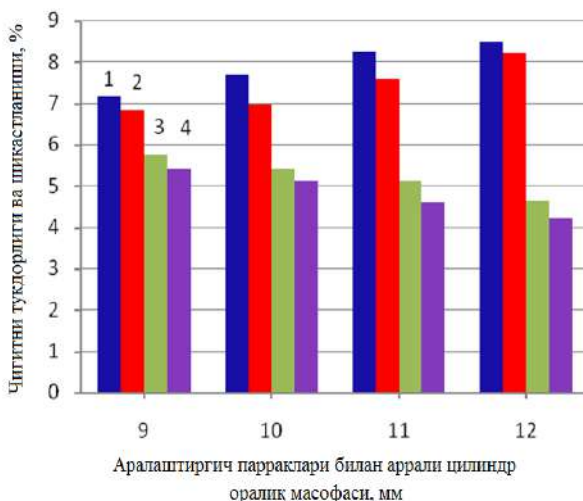
**Figure 3.** A view of the 5LP linter in production, with blades having an improved agitator

From 0.34 (abs)% to 0.27 (abs)%, it showed an average of 0.36 (abs)% to 0.4 (abs)% less than damaged ( Figure 4 ). The mass fraction of impurities and whole seeds in the

produced lint changed from 5.96% to 5.38% on average, and from 0.51 (abs)% of the mass fraction of impurities and whole seeds in the fluff produced from the 5LP linter with the existing design mixer . decreased by 0.77 (abs)% (Fig. 5). The staple length of the fluff is 6/7 mm, and due to the improvement of its quality, according to the state standard UzDst 645:2016 "Cotton fluff" "Technical conditions", it corresponded to class I type B type "Medium". In this

The linter productivity averaged from 693 kg/h to 745 kg/h for seed and from 27.9 kg/h to 24.8 kg/h for lint, compared to the 5LP linter with the existing design mixer taken for the experiment. It was found to be 3.1 kg/h higher than 2.5 kg/h for fluff by 34 kg/h.

Andijon-36 selection III grade seed with a hairiness of 11.5% and damage of 3.57% produced from 5DP-130 type saw blades in the 5LP linter with an existing mixer has an average hairiness level of 7.57-8.64%. , damage was 5.76-5.16% [ 6, 7 ].

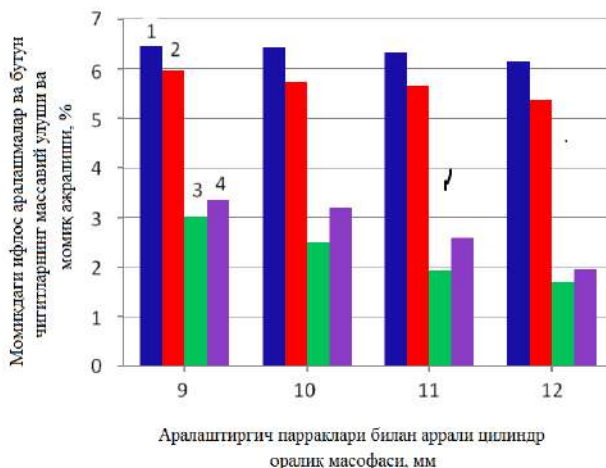


1, 3- in an existing mixer linter,  
2, 4- in an improved mixer linter

**Figure 4.** Dependence on the hairiness and damage of the seed coming out of the working chamber and the distance between the saw teeth in the saw cylinder and the mixer

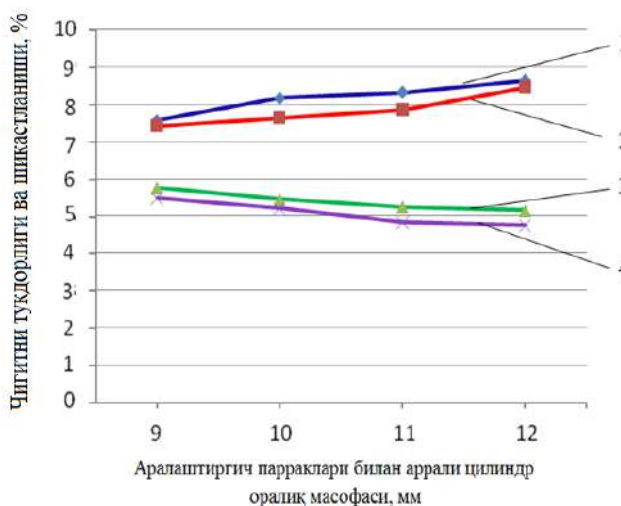
The linting process was on average 6.42-6.10%, and according to the quality indicator, it corresponded to the class II type B type "Illusion" [ 8 ]. The productivity of the linter was 615-688 kg/hour for seed and 24.6-21.4 kg/hour for fluff. This indicator is available in the proposed 5LP linter with a mixer, the distance between the bent blades of the mixer and the saw cylinder is 9-12 mm. 0.15 (abs)% to 0.19 (abs)% hairiness, 0.28 (abs)% damage compared to 5LP linter with mixer showed that it is less than 0.4 (abs)% ( Fig. 6 ). The mass fraction of impurities and whole seeds in the lint produced averaged 5.73-5.35%, compared to 0.69 (abs)% of the mass fraction of impurities and whole seeds in the fluff produced from the 5LP linter with the existing construction mixer. It was found that it is less than 75 (abs)% ( Fig. 7 ). The staple length of the fluff is equal to 6/7 mm, and due to the improvement of its quality, according to the state standard UzDst

645:2016, it corresponded to the type II grade B type "Middle" class [ 9 ]. In this case, the productivity of the linter is an average of 672-734 kg/h of seed and an average of 27.1-23.2 kg/h of fluff, compared to the productivity of the 5LP linter with a mixer of the existing design, from 57 kg/h to 46 kg/h of seed. , fluff it was found to be higher than 2.5 kg/h to 1.8 kg/h.



1,3- in an existing mixer linter,  
2,4- in an improved mixer linter.

**Figure 5.** Dependence of the mass fraction of impurities and whole seeds in the fluff and the separation of fluff with the mixer and the distance between the saw teeth in the saw cylinder

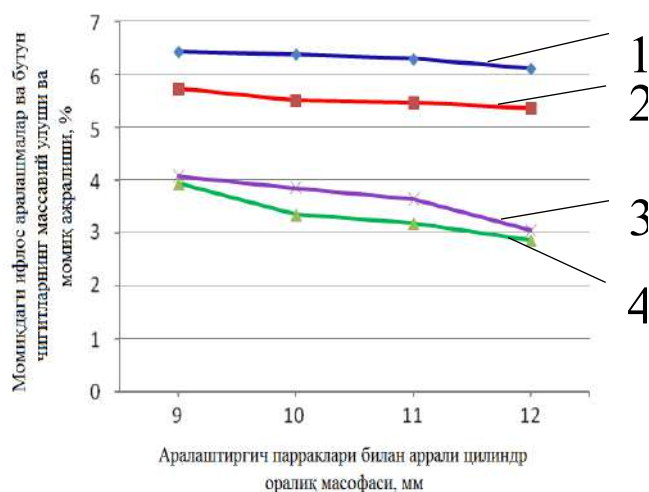


1, 3- available with mixer *in* linter  
2, 4- improved with mixer in the linter .

**Figure 6.** Dependence on the hairiness and damage of the seed coming out of the working chamber and the distance between the saw teeth in the saw cylinder and the mixer

During the test period, an acceleration of linter seed discharge from the working chamber of the 5LP linter with an improved stirrer was observed. As a result, the supply of new seeds from the linter feeder to the working chamber increased. Due to this, an increase in the speed of rotation of the seed roller along the length of the chamber without jamming the seed roller in the working chamber occurred, and an effective process of lintering of the seed was carried out.

The proposed improved 5LP linter is a coordinated cotton preprocessing technology due to increased productivity - based on PDI70-2017 cotton- textile cluster cotton ginning enterprises seed linting, instead of 8 existing 5LP linters in the technological system, it is aimed to use 7 improved 5LP linters, and from the reduction of one 5LP linter in the technological system, 30.6 kW of electricity per hour and, accordingly, spare parts consumption will be saved comes [ 10 ].



1, 4- available with mixer in linter  
2, 3- improved with mixer in the linter .

**Figure 7.** Dependence of the mass fraction of impurities and whole seeds in the fluff and the separation of fluff with the mixer and the distance between the saw teeth in the saw cylinder

**Conclusion.** Comparison - from the results of the research work, in order to increase the productivity of the linter, to improve the quality of the seed and fluff, with the use of the improved mixer in the working chamber of the 5LP linter, the blade ends of the mixer were bent by 60 degrees towards the rotation of the seed roller, and the length of the bent part was 16 mm.

It was studied that it is targeted. In order not to have a negative effect on the amount of oil extracted from the seed during technical seed lintering, it was determined that the distance between the saw teeth in the saw cylinder with the improved blade tips should be set at 9-10 mm, and this distance should be set at 12 mm in order to prevent damage to the seed when linting the seed.

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## C O N T E N T S

### TECHNICAL SCIENCES: COTTON, TEXTILE AND LIGHT INDUSTRY

|   |           |
|---|-----------|
| <b>Saloxiddinova M.</b>   | <b>3</b>  |
| Improving the separator design to prevent cotton fiber loss.  |           |
| <b>Juraeva G.</b>   | <b>9</b>  |
| Optimizing cotton fiber quality during the production process.  |           |
| <b>Mamadaliyev F.</b>   | <b>16</b> |
| Analysis of problem in the aerodynamic system of cottonseed linting equipment in cotton processing plants.                    |           |
| <b>Kozokov S.</b>   | <b>23</b> |
| Conducting experiments with newly designed saw gin ribs in the cotton cleaning process for different cotton varieties.        |           |
| <b>Usmonov I., Abdullajonov S.</b>  | <b>30</b> |
| Methods and results for determining the parameters and operating modes of irradiating watermelon seeds with ultraviolet rays. |           |
| <b>Majidov A.</b>   | <b>36</b> |
| Theoretical foundations of the technological parameters of a straight-flow fiber separation device.                           |           |
| <b>Rahmatova S.</b>   | <b>44</b> |
| Scientific approach to considering properties in the design of garments made from knitted fabrics.                            |           |
| <b>Rahmatova S.</b>   | <b>48</b> |
| Technology for obtaining knitted fabrics from various raw materials.  |           |
| <b>Turaboyev G.</b>   | <b>54</b> |
| Methodology for determining the tribotechnical properties of structural materials interacting with raw cotton.                |           |

### TECHNICAL SCIENCES: AGRICULTURE AND FOOD TECHNOLOGIES

|   |           |
|---|-----------|
| <b>Khurmamatov A., Boyturayev S.</b>  | <b>58</b> |
| Results of industrial water treatment from mechanical impurities.                     |           |
| <b>Khurmamatov A., Alimardonov Kh., Akhmedova K.</b>                                  | <b>65</b> |
| Two-stage installation for deep air purification from fine-dispersed solid particles. |           |
| <b>Mamatusmonova D., Mamatov Sh.</b>  | <b>73</b> |
| Technical characteristics of the use of vibrating conveyors for drying rosa caninas.  |           |
| <b>Toshboyeva S., Dadamirzayev M.</b>   | <b>79</b> |
| Physicochemical properties of a functional sauce for fish canned products.            |           |

|   |            |
|---|------------|
| <b>Saribayeva D., Maxmudova D.</b>  |            |
| Study of protein–lipid composition in food products.  | <b>83</b>  |
| <b>Gulomkhojaeva N., Zokirova M.</b>  |            |
| Study of polyphenolic compounds in jujube ( <i>Ziziphus jujuba</i> mill.) grown in Uzbekistan.  | <b>88</b>  |
| <b>Gulomkhojaeva N., Zokirova M.</b>  |            |
| Investigation of the amino acid composition in black and white mulberry ( <i>Morus nigra</i> L. and <i>Morus multicaulis</i> Perr.) varieties.            | <b>94</b>  |
| <b>Kadirov A., Vokosov Z.</b>   |            |
| New technology for growing microorganisms of the <i>Bacillus</i> sp, <i>Rhizobium</i> sp, <i>Azotobacter</i> sp.  | <b>101</b> |
| <b>Rakhimova G.</b>   |            |
| Development of an effective technology for producing soy milk from local soy raw materials, studying its composition and physical and chemical properties | <b>107</b> |

## CHEMICAL SCIENCES

|  |            |
|--|------------|
| <b>Khabibullaev J., Shomurotov Sh.</b>   |            |
| Oxidation of various cellulose containing materials using the $\text{HNO}_3/\text{H}_3\text{PO}_4\text{-NaNO}_2$ system. | <b>112</b> |
| <b>Nuritdinov A., Abdullaev O.</b>   |            |
| Technical parameters and energy efficiency of an oil sludge processing unit  | <b>122</b> |
| <b>Okhundadaev A.</b>  |            |
| Study of the effect of various factors on the synthesis of vinyl esters of wine acids                                    | <b>127</b> |
| <b>Usmonova Z.</b>   |            |
| Effectiveness analysis of thermally and steam activated plum seed adsorbents   | <b>133</b> |
| <b>Kaxarova M.</b>   |            |
| Technological scheme for extracting naphthalene from pyrolysis oil by the extraction (phase separation) method           | <b>139</b> |
| <b>Oribzhonov M., Bektemirov A., Arislanov A., Azizov V.</b>   |            |
| Method for producing biosuperphosphate fertilizers containing humic compounds  | <b>143</b> |
| <b>Erkinov R., Soliyev M., Arislanov A.</b>  |            |
| Synthesis of sulfur containing organic compounds by reaction of thiol-en and thiol-in                                    | <b>151</b> |
| <b>Yusupov M., Nuritdinov A.</b>   |            |
| Elemental analysis of carboxyl-modified copper phthalocyanine pigment  | <b>156</b> |

---

**Nuritdinov A.**  
Thermal analysis of carboxyl-modified cobalt and calcium metal phthalocyanine pigments 162

---

**Isakov B.**  
Development and study of an anti-caking additive to improve the physico-mechanical properties of ammonium nitrate 168

---

## TECHNICAL SCIENCES: MECHANICS AND MECHANICAL ENGINEERING

---

**Gulamova D., Bobokulov S., Eshonkulov E.**  
Resistance and voltage anomalies above 200k bscco synthesized by solar technology 173

---

**Kutbidinov O., Abdullabekov D., Usmonov D., Xushbakov M.**  
Analytical and experimental model for assessing the depreciation rate of transformer oil based on physicochemical factors 182

---

**Obidov A., Abdurasulov A.**  
Basis of implementation of resource-effective shaft production 188

---

**Utaev S.**  
Calculation of oil change intervals in diesel-based gas engines 193

---

**Isomiddinov A.**  
Derivation of differential equations for spindle oscillation in a system of rectangular coordinates 200

---

**Dedakhanov A.**  
Determination of fuel consumption for drying cotton raw materials 209

---

**Atambaev D.**  
Difference of the individual yarns in the composition of a wrapped yar on the quality of the yar and determination of acceptable values of the main factors affecting their production 215

---

**Rokhmonov D., Sulaymonov J.**  
Development of a control algorithm for a smart irrigation system based on soil moisture and meteorological data 224

---

**Mamakhonov A., Khikmatillaev I.**  
Modeling of a vibratory cleaning device with cosinoidal and sinusoidal shapes in matching the longitudinal and transverse cutting surface 227

---

**Soliyev A.**  
Theoretical study and characteristics of yarns in the production of circular knit fabrics 239

---

---

**Nomanov M.**

With improved blade mixer results of research work on the development of the 5lp linter **246**

---

**Lastochkin P.**

The influence of carding parameters optimization on the useful time coefficient of a rotor spinning machine **259**

---

**Mirzaakbarov A.**

Improving the efficiency of the ginning process to enhance fiber quality **260**

---

## ADVANCED PEDAGOGICAL TECHNOLOGIES IN EDUCATION

---

**Abdumanonov A.**

Enhancing the methodology for applying intelligent control systems in the teaching of technical sciences **265**

---

**Makhmudov Z.**

Increasing students' activity and knowledge level using test assignments **271**

---

## ECONOMICAL SCIENCES

---

**Sarimsakov B., Mirzabdullayev R.**

The role of contemporary HR technologies in improving business performance **275**

---