



TÜRKMENISTANYŇ BILIM MINISTRLIGINIŇ TÜRKMEN DÖWLET MALIÝE INSTITUTYNYŇ

**04-11.09.2026ý. senesi aralygynda ýerine ýetiren işleri barada
HEPDELIK SANLY HASABATY**

GEÇIRILEN ÇÄRELER

**2026-njy ýylyň 4-nji sentýabrynda
«Garaşsyz, baky Bitarap Türkmenistan –
bedew batly at – myradyň mekany»
ýylynda ýerine ýetirilmegi meýilleşdirilen
işleriň meýilnamasyna laýyklykda
TDMal-niň uly mugallymy
Nyýazsoltan türkmen halkynyň Milli Lideri
Gahryman Arkadagymyzyň «Atda wepada
bar, sapa-da» atly kitabynyň many-
mazmuny barada söhbetdeşligi «Miras»
teleýaýlymyna ýazgy edildi.**



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söhbetdeşligi «Miras» teleýaýlymyna
ýazgy edildi.**



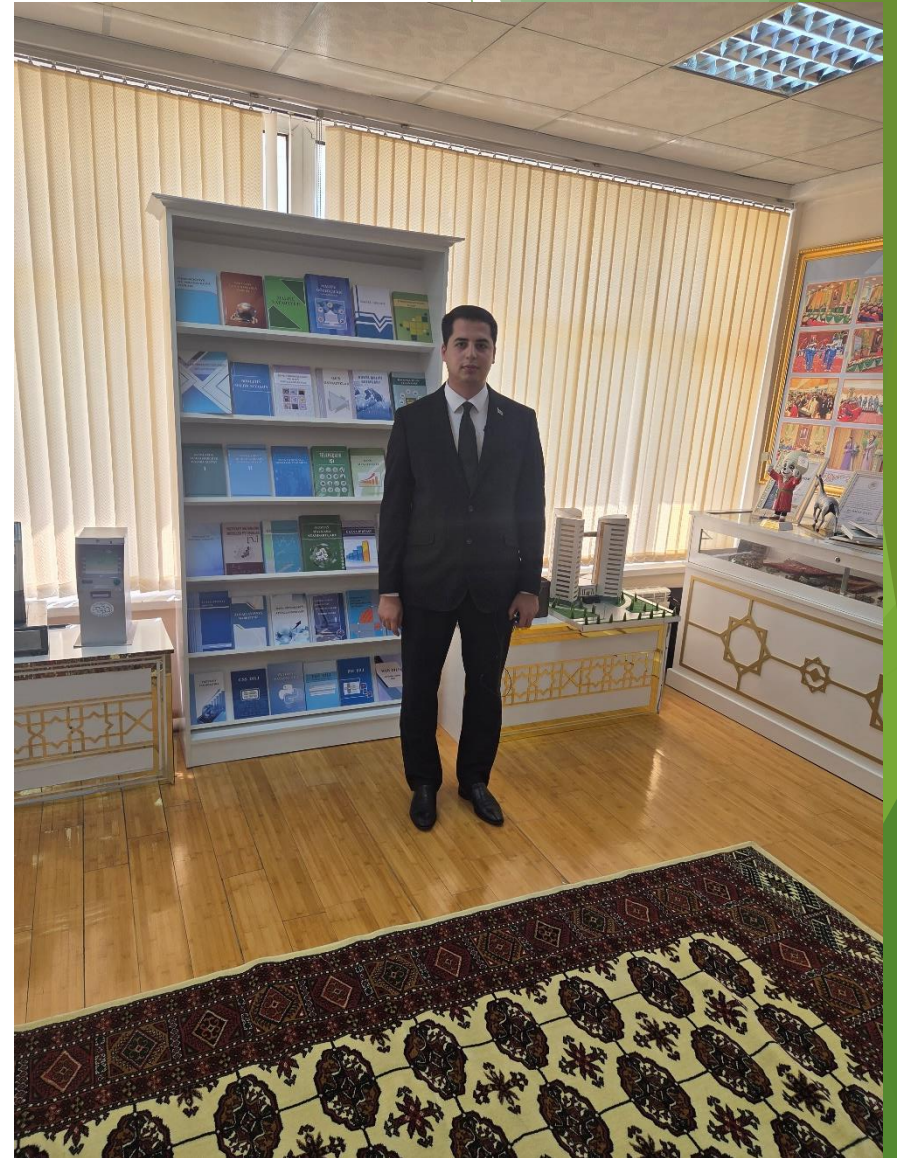
GEÇIRILEN ÇÄRELER

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TDMal-niň uly mugallymy
Gültäç Annamämmedowanyň şanly
Garaşsyzlygymyzyň 35 ýyllygy barada
«Türkmenistan sport» teleýaýlymyna
ýazgy edildi.**



GEÇIRILEN ÇÄRELER

2026-njy ýylyň 4-nji sentýabrynda «Garaşsyz, baky Bitarap Türkmenistan – bedew batly at – myradyň mekany» ýylynda ýerine ýetirilmegi meýilleşdirilen işleriň meýilnamasyna laýyklykda TDMal-niň Maglumatlar we okatmagyň tehniki serişdeleri bölüminiň başlygy Serdar Agalykowýň Bilim ulgamynda sanly tehnologiýalaryň orny barada çykyşy «Türkmenistan sport» teleýaýlymyna ýazgy edildi.



GEÇIRILEN ÇÄRELER

**2026-njy ýylyň 5-nji sentýabrynda
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Lideri Gahryman Arkadagymyzyň Arkadag
şäheriniň Ruhýet köşgünde geçiren
umumy okuw sapagyna hoşallyk
maslahaty geçirildi.**



GEÇİRILEN ÇÄRELER

**2026-njy ýylyň 4-nji sentýabrynda
«Garaşsyz, baky Bitarap Türkmenistan –
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işleriň meýilnamasyna laýyklykda
TDMal-niň Bank işi fakultetiniň
1-nji ýyl talyplary bilen terbiýeçilik
häsiýetli wagyz-nesihat çäresi geçirildi.**



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TDMal-niň Hasap we audit fakultetiniň
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GEÇIRILEN ÇÄRELER

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TDMal-de «Türkmenistanyň Halk
Maslahaty halkymyzyň agzybirliğiniň
jebisliginiň, abadançylygynyň kepili» atly
maslahat geçirildi.**



GEÇİRILEN ÇÄRELER

**2026-njy ýylyň 8-nji sentýabrynda
«Garaşsyz, baky Bitarap Türkmenistan –
bedew batly at – myradyň mekany»
ýylynda ýerine ýetirilmegi meýilleşdirilen
işleriň meýilnamasyna laýyklykda
TDMal-niň mugallymlary
Nyýazsoltan Nobatowanyň,
Gültäç Annamämmedowanyň,
Gözel Mätiýewanyň gatnaşmagynda
Niderlandlar Patyşalygynda geçirilen
ahalteke atlarynyň arasynda atly sport
we gözellik bäsleşiginiň dünýä
çempionaty barada «Miras»
teleýaýlymyňa üçin «tegelek stol»
söhbetdeşligi ýazgy edildi.**



GEÇIRILEN ÇÄRELER

2026-njy ýylyň 8-nji sentýabrynda «Garaşsyz, baky Bitarap Türkmenistan – bedew batly at – myradyň mekany» ýylynda TDMal-niň Bank işi kafedrasynyň 07.09-12.09.2026 ýyl aralygynda geçirilýän hepdeliginiň meýilnamasy esasynda sagat 15:00-da Okuw binanyň 407-nji okuw otagynda «Garaşsyz Türkmenistanyň bank ulgamynyň ösüşiniň strategik ugurlary» atly ylmy-amaly maslahaty geçirildi.



GEÇIRILEN ÇÄRELER

2026-njy ýylyň 9-njy sentýabrynda «Garaşsyz, baky Bitarap Türkmenistan – bedew batly at – myradyň mekany» ýylynda TDMal-niň mugallymlary Jumageldi Salamowyň, Nyýazsoltan Nobatowanyň, Gültäç Annamämmedowanyň ýurdumyzyň ösüşlerine we syýasy wakalara bagyşlanan syýasy geplesigi «Altyn Asyr» teleýaýlymyna ýazgy edildi.





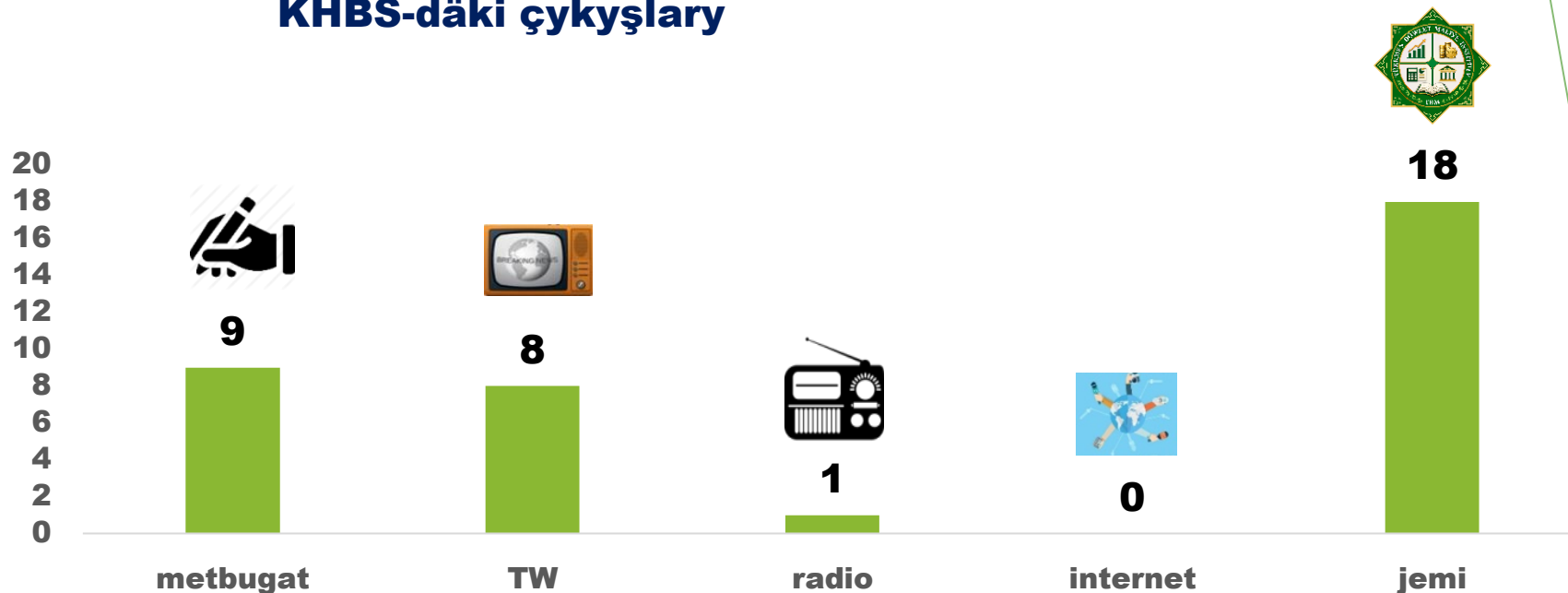
Türkmen döwlet maliýe institutynyň KHBS-däki çykyşlary





KHBS-DÄKI ÇYKYŞLAR

Türkmen döwlet maliýe institutynyň
KHBS-däki çykyşlary



Jemi çykyş – 18; şol sanda:
Metbugatda – 9;
Internet saýtlarynda – 0;
Telewideniýede – 8;
Radioda – 1;
çykyş guraldy.



MUGALLYMLARYŇ KHBS-DÄKI ÇYKYŞLARY

t/b	F.A.	Metbugat	Teleýaýlym	Internet saýtlary	Radio
1.	Şöhrat Bäşimow	Experimental Evaluation of Zero-Waste Technology for Agricultural Waste Utilization. BIO Web of Conferences 238, 02004 (2026). ESDCA 2026. https://doi.org/10.1051/bioconf/202623802004			
2.	Ruslan Jumaýew Ylmy ýol: Kerim Kertiýew	Развитие цифровой экономики Туркменистана: новые услуги в социальной сфере. Стр 402-405 Цифровая экономика глазами студентов: материалы VI Международной научной конференции. Казань, 14 мая 2026 г. /под технической редакцией Г.Г.Мустафиной, Н.В. Кашиной. – Казань: ИП Сагиев А.Р., 2026. ISBN 978-5-6055370-5-2.			
3.	Hajybaý Annaýew Aknabat Möwlamowa Ylmy ýol: Ýaňyl Mämmedowa	Информационная безопасность банковской системы. Стр 318-320 Цифровая экономика глазами студентов: материалы VI Международной научной конференции. Казань, 14 мая 2026 г. /под технической редакцией Г.Г.Мустафиной, Н.В. Кашиной. – Казань: ИП Сагиев А.Р., 2026. ISBN 978-5-6055370-5-2.			
4.	Selbi Atagulyýewa Ylmy ýol: Hajybaý Annaýew	Цифровизация в современной экономике: новые возможности и вызовы конкурентоспособности. Стр 17-18 Цифровая экономика глазами студентов: материалы VI Международной научной конференции. Казань, 14 мая 2026 г. /под технической редакцией Г.Г.Мустафиной, Н.В. Кашиной. – Казань: ИП Сагиев А.Р., 2026. ISBN 978-5-6055370-5-2.			
5.	Öwezgeldi Akmämmadow Ylmy ýol: Hajybaý Annaýew	ИНДУСТРИЯ 4.0: влияние на экономику и неравномерность глобального внедрения. Стр 679-682 Цифровая экономика глазами студентов: материалы VI Международной научной конференции. Казань, 14 мая 2026 г. /под технической редакцией Г.Г.Мустафиной, Н.В. Кашиной. – Казань: ИП Сагиев А.Р., 2026. ISBN 978-5-6055370-5-2.			
6.	Bägül Gurbanlyýewa Ylmy ýol: Ýaňyl Mämmedowa	Вопросы кибербезопасности в цифровых банковских услугах. Стр 388-390 Цифровая экономика глазами студентов: материалы VI Международной научной конференции. Казань, 14 мая 2026 г. /под технической редакцией Г.Г.Мустафиной, Н.В. Кашиной. – Казань: ИП Сагиев А.Р., 2026. ISBN 978-5-6055370-5-2.			
7.	Gurbanmyrat Gurbanmyradow Ylmy ýol: Kerim Kertiýew	Интеграция цифровой экономики в систему управления производством: модели, инструменты и эффекты. Стр 1416-1418 Цифровая экономика глазами студентов: материалы VI Международной научной конференции. Казань, 14 мая 2026 г. /под технической редакцией Г.Г.Мустафиной, Н.В. Кашиной. – Казань: ИП Сагиев А.Р., 2026. ISBN 978-5-6055370-5-2.			
8.	Gurbanmyrat Gurbanmyradow	Applying Lean Management and the Kaizen Method to Improve Production Performance. Ýewropa bileleşiginiň "Zedondo" elektron ylmy žurnaly Doi: https://doi.org/10.5281/zenodo.22220182 01.09.2026			
9.	Şirin Öwezberdiýewa	Milli ösün döwrebap ýoly. "Biznes reklama" gazeti. № 35 (1445) 2026-njy ýylyň 31-nji awgusty, duşenbe			



MUGALLYMLARYŇ KHBS-DÄKI ÇYKYSLARY

t/b	F.A.	Metbugat	Teleýaýlym	Internet saýtlary	Radio
10.	Annadursun Ýegenowa		Bilimler we talyp ýaşlar güni mynasybetli çykyşy “Ýaşlyk” teleýaýlymy 01.09.2026ý.		
11.	Nyýazsoltan Nobatowa Gözel Mätiýewa		Niderlandlar Patyşalygynda geçirilen gőzellik we atçylyk sporty çempionaty “Miras” teleýaýlymy 09.09.2026ý.		
12.	Gültaç Annamämmedowa		Niderlandlar Patyşalygynda geçirilen gőzellik we atçylyk sporty çempionaty “Miras” teleýaýlymy 09.09.2026ý.		
13.	Ýusup Ulugberdiýew		Şanly Garaşsyzlymyzyň 35 ýyllygy. Türkmenistanyň Halk Maslahatyna taýýarlyk “Türkmenistan sport” teleýaýlymy 10.09.2026ý.		
14.	Gültaç Annamämmedowa		Şanly Garaşsyzlymyzyň 35 ýyllygy. Türkmenistanyň Halk Maslahatyna taýýarlyk “Türkmenistan sport” teleýaýlymy 10.09.2026ý.		
15.	Serdar Agalykow		Şanly Garaşsyzlymyzyň 35 ýyllygy. Türkmenistanyň Halk Maslahatyna taýýarlyk “Türkmenistan sport” teleýaýlymy 10.09.2026ý.		
16.	Aýjemal Aklyýewa		Şanly Garaşsyzlymyzyň 35 ýyllygy. Türkmenistanyň Halk Maslahatyna taýýarlyk “Türkmenistan sport” teleýaýlymy 10.09.2026ý.		
17.	Azat Aşyrmuhammedow		Ýaşlar guramasynda şanly Garaşsyzlymyzyň 35 ýyllygy we guramanyň döredilmegi mynasybetli çykyşy “Ýaşlyk” radioýaýlymy 10.09.2026 ý.		
18.	Güýçmyrat Soltanmyradow				Gahryman Arkadagymyzyň Bilimler we talyp ýaşlar güni mynasybetli Arkadag şäheriniň Ruhýýet köşgünde geçiren umumy okuw sapagynyň ýaş nesli Watançylyk ruhunda terbiýelemekdäki ähmiýeti barada “Watan” radioýaýlymy 04.09.2026 ý.



DAŞARY ÝURT METBUGATDAKY ÇYKYŞLAR

Experimental Evaluation of Zero-Waste Technology for Agricultural Waste Utilization.

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<https://doi.org/10.1051/bioconf/202623802004>



**Şöhrat
Bāşimow,
“Maliýe”
kafedrasynyň
uly mugallymy**

Experimental Evaluation of Zero-Waste Technology for Agricultural Waste Utilization

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Abstract: In this study, the zero-waste composting technology for agricultural waste was analyzed under controlled conditions. The study aimed to evaluate the efficiency of the composting process, the initial substrate composition, and the resulting physicochemical indicators, including pH, organic matter, total nitrogen, phosphorus, potassium, C/N ratio, and biomass mass reduction. The results showed that the composting process was effective in reducing the biomass mass and increasing the organic matter content. The final compost product was found to be suitable for use as a soil amendment and a fertilizer. The study also evaluated the impact of the composting process on the environment and the health of the soil. The results showed that the composting process was a sustainable and effective way to manage agricultural waste and improve soil fertility.

1 Introduction

The production of crop residues, livestock manure, and other biodegradable byproducts that need to be used in an ecologically sustainable manner has steadily increased due to the development of agricultural output. These wastes may contribute to soil and water pollution.

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$M_f = 61.5 \text{ kg}$ – final mass of mature compost;
 $R_{\text{sub}} = \frac{100 - 61.5}{100} = 38.5\%$

Therefore, the total biomass mass decreased by 38.5% as a result of the composting of agricultural waste, suggesting significant biodegradation of the organic part.
The mature compost showed increased concentrations of the primary agronomically important nutrients along with mass reduction. This rise was linked to the stability of the compost matrix, the conversion of non-stable organic matter into stable organic matter, and the release of nutrients from the organic matter. The results showed that the composting process was a sustainable and effective way to manage agricultural waste and improve soil fertility.

To quantify nutrient accumulation in the final product, enrichment coefficients were calculated and are presented in Table 4.

Indicator	Initial value	Final value	Enrichment coefficient
Total nitrogen, %	1.24 ± 0.08	1.80 ± 0.07	1.50
Phosphorus, %	0.48 ± 0.02	0.81 ± 0.03	1.69
Potassium, %	0.72 ± 0.03	1.17 ± 0.04	1.60

The enrichment coefficient was calculated according to Equation (1):

$$K_{\text{sub}} = \frac{X_f}{X_0}$$

where X_f is the nutrient concentration in mature compost, and X_0 is the nutrient concentration in the initial substrate.

Phosphorus had the greatest enrichment coefficient (1.69), followed by potassium (1.60) and total nitrogen (1.50). According to these findings, the finished compost product had more fertilizing capacity than the mixture of raw agricultural waste.

3.1 Evaluation of compost maturity and agronomic suitability

The experiment's final compost had a dark brown hue, a fibrous structure, and no overly decomposable smell, all of which visually signified that the stabilization step had finished. The concentration of vital nutrients in the finished product, the decrease in the C/N ratio, and the pH shift toward neutral values were the most significant maturity-related observations from an analytical perspective.

Based on the experimental compost's physicochemical qualities such as for additional agricultural uses as an organic amendment. Specifically, the matured altered a degree of maturity rate for agricultural use and decreased phytotoxic risk, as shown by the final pH value of 7.48 and the decreased C/N ratio [13].

The final assessment of compost maturity and agronomic suitability is summarized in Table 5.

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natural losses, odor issues, and greenhouse gas emissions when they are gathered or disposed of incorrectly. However, rather than being seen as unwanted trash, agricultural wastes are a valuable biomass resource that may be transformed into beneficial goods without creating any zero-waste production problems [1].

The idea of zero-waste agriculture has drawn more attention recently as a workable strategy for sustainable development. Its fundamental idea is to maximize the amount of material and nutrient value that may be recovered from agricultural byproducts by recycling, biologically converting, and reusing them in production systems. Because it converts unusable biomass into a valuable biomass-like product that can be returned to the soil, composting is regarded as one of the most accessible and environmentally sound biotechnologies currently available for the treatment of organic agricultural waste [2]. Additionally, composting has significant agronomic implications. Applying mature compost enhances soil structure, encourages the recovery of nutrients lost during crop production, and supports the replacement of organic matter. Composting minimizes herbicides, reduces organic waste, reduces costs, and improves soil fertility. Furthermore, the soil system with nutrients, according to FAO literature on soil fertility management [3]. Furthermore, prior research has demonstrated that composting can be incorporated into waste management plans at the farm level and can be a sustainable way to manage crop agriculture and livestock-derived wastes while creating value-added biofertilizer that may be used in agriculture [4].

Even though agricultural waste valorization has generated a lot of attention, many papers are still mostly descriptive and concentrate on general management techniques rather than the quantifiable performance of a particular zero-waste technology under predetermined experimental settings [12]. Because of this, research that examines changes in important physicochemical characteristics during the conversion of agricultural leftovers into compost and establishes whether the finished product is suitable for use as sustainable agriculture is still needed. Thus, the purpose of this study was to examine changes in the physicochemical parameters of the final compost product and to experimentally evaluate a zero-waste composting technique for agricultural waste usage.

2 Materials and Methods

2.1 Raw materials and experimental design

The purpose of the study was to assess a zero-waste composting method for turning agricultural waste into stabilized organic fertilizer. To create a biodegradable substrate appropriate for aerobic decomposition, crop stems, organic waste, and vegetable waste were combined in precise ratios to form the experimental substrate. In order to balance carbon-rich and nitrogen-rich components in the initial mixture and to guarantee successful development under regulated land conditions, plant wastes were used in addition to manure [6].

Pre-determined organic materials were used to create another mix for the composting experiment. In order to preserve the oxygen supply and enhance mass and heat transfer during biodegradation, the piles were turned on a regular basis. By adding water on a regular basis, moisture was kept within the operating range needed for microbial activity. Usable biomass could be turned into a regular basis. By adding water on a regular basis, moisture was kept within the operating range needed for microbial activity. Usable biomass could be turned into a regular basis. By adding water on a regular basis, moisture was kept within the operating range needed for microbial activity.

On a fresh weight basis, 40% crop wastes, 30% straw, 20% vegetable waste, and 30% cow manure made up the original experimental combination. Each experimental composting pile had a starting mass of 100 kg. Three replicates of the experiment were conducted.

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Table 4. Summary evaluation of compost quality

Criteria	Observed result	Interpretation
pH = 7.48 ± 0.06	Neutral to slightly acidic	Suitable for soil application
C/N ratio = 18.1 ± 0.7	Lower than in the initial mixture	Indicates stabilization
N, P, and K increased	Positive nutrient accumulation	Improved fertilizer value
Mass reduction = 38.5%	Effective decomposition	Confirms biodegradation efficiency
Final appearance	Dark, crumbly, homogeneous	Visual sign of compost maturity

Overall, the results show that the chosen zero-waste composting process successfully transformed agricultural waste into a stable compost product with stabilized agronomic qualities. The findings show that aerobic composting of manure and crop byproducts may both provide a useful resource for sustainable agriculture and lessen the impact of organic waste on the environment.

2.4 Nutrient Distribution in the Final Compost Product

The distribution of the primary macronutrients in the finished product was examined in order to further describe the agronomic value of the created compost. Since total nitrogen, phosphorus, and potassium determine the fertilizing capacity of the produced organic amendment, special attention was given to these elements.

The findings supported the concentration shift in total organic matter decomposition and biomass stabilization by demonstrating that all three nutrients were higher in the mature compost than in the original substrate. Potassium also showed a noticeable rise in the final product, but phosphorus had the highest enrichment coefficient. The compost's nitrogen content also significantly rose, suggesting that it gained better fertilizing qualities and may be considered an organic amendment rich in nutrients for use in agriculture.

Figure 2 shows the relative amounts of potassium, phosphorus, and total nitrogen in the mature compost. The diagram demonstrates that using zero-waste composting technology produced a compost product with useful agronomic value in addition to lowering the quality of agricultural waste.

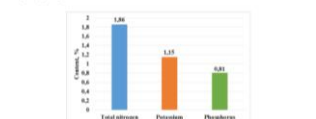


Fig. 2. Relative content of total nitrogen, phosphorus, and potassium in the mature compost product.

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under identical operational circumstances. To enable independent monitoring of the composting process and subsequent comparative examination of the resulting mature compost, each pile was created independently.

2.2 Composting conditions and monitored parameters

The initial C/N ratio of the composting mixture was made to match the suggested interval for effective organic waste biodegradation. One of the most important operational factors affecting microbial metabolism, degradation rate, and final compost maturity in composting systems is the initial C/N ratio. Because of this, before pile formation, care was taken to balance lignocellulosic crop wastes with components that included manure [3]. There was an active decomposition phase and a maturation step during the 60-day composting process. Throughout the process, the moisture level was kept between 55 and 60 percent. Throughout the active period, the composting piles' temperature was routinely checked and kept within the biologically viable range of 40 to 60°C. To enhance aeration and ensure consistent organic material decomposition, the heaps were physically turned once every second day.

pH, organic matter, total nitrogen, phosphorus, potassium, and the C/N ratio were all tracked during the experiment. These characteristics were chosen since they describe the finished compost's agronomic suitability as well as its degree of decomposition. Furthermore, a further indication of waste stabilization effectiveness was the decrease in biomass mass [5].

Table 1. Initial composition of the composting mixture

Component of mixture	Functional role in composting	Expected contribution
Crop residues	Carbon source	Structural support, carbon, organic carbon
Manure	Carbon source	Enrichment of nutrients, nitrogen, organic carbon
Vegetable waste	Easily degradable organic fraction	Enrichment of nutrients, organic carbon
Cattle manure	Nitrogen source	Biodegradation, enrichment of nutrients

2.3 Sampling procedure

Sampling was performed at two stages of the composting process: on day 0 and on day 60, after completion of the maturation phase. For each replicate, subsamples were collected from the upper, middle, and lower parts of the compost pile and combined into one composite sample. Thus, three composite samples were obtained for the initial substrate and three composite samples for the mature compost. All samples were homogenized prior to laboratory analysis to ensure representative physicochemical assessment.

2.4 Analytical assessment

pH, organic matter, total nitrogen, phosphorus, potassium, C/N ratio, and biomass mass decrease were the primary physicochemical indicators related to mature compost. Using a 40 gH mass, the pH of a water mixture was determined at a sample-to-water ratio of 1:10. The two-suspension technique was used to gravimetrically determine the organic matter content. The Kjeldahl technique was used to quantify nitrogen.

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4 Discussion

Since the procedures simultaneously decreased the bulk of the starting substrate and enhanced the agricultural quality of the end product, the obtained findings show that aerobic composting may be regarded as a successful zero-waste technique for agricultural waste reuse. The organic mixture experienced significant stabilization and gained biomass typical of mature compost used by the agriculture in the region. The C/N ratio, the shift in pH toward near-neutral values, and the rise in nitrogen, phosphorus, and potassium content. In practical terms, these data indicate that the composting process could be viewed as a recyclable biological resource that may be reintegrated into agricultural production systems as organic fertilizer rather than as accumulating waste [14].

From the perspective of sustainable agriculture, the matured compost may help reduce environmental concerns related to uncontrolled decomposition or disposal of agricultural byproducts, enhance soil fertility, and partially replace external mineral fertilizer inputs. However, because immature compost may still include phytotoxic chemicals that adversely influence germination and early plant growth, the assessment of compost maturity should not be based solely on visual appearance or a single chemical signal. As a result, the final physicochemical properties found in a reliable product can be regarded as a reliable predictor of compost appropriateness, and more findings might improve the practical assessment of its efficacy and safety in agriculture [15].

4.1 Environmental and Practical Significance of the Zero-Waste Approach

The potential to transform agricultural waste into a valuable secondary product rather than regarding them as an environmental burden is what makes the technology under study practically significant. Manure, plant residues, and vegetable byproducts are frequently gathered as open spaces in conventional agricultural systems, where they may cause local environmental contamination, nutrient loss, and odor development. By encouraging the regulated biological conversion of such materials into stabilized compost, the zero-waste composting technique, on the other hand, lessens the ecological dangers connected with uncontrolled decomposition.

From an agricultural standpoint, the resultant compost might be applied as an organic amendment that enhances soil characteristics and promotes nutrient cycling in agroecosystems. In the context of sustainable agriculture, retaining recycled organic matter to the soil is particularly crucial since it helps restore soil fertility and lessens reliance on outside inputs. Therefore, the suggested technology should be viewed as a useful instrument for the biological recycling of nutrients and the enhancement of environmental safety in agricultural production systems, in addition to being a waste treatment technique.

5 Conclusion

The study showed that using zero-waste composting technology is a successful way to use agricultural waste in sustainable agriculture. The findings of the experiment demonstrated that the composting of straw, vegetable waste, animal manure, and crop residues guaranteed a significant transformation of the organic residue and produced a stable compost product with enhanced physicochemical qualities.

Positive changes were noted in the primary maturity-related indicators during the composting process, such as in the final product's enrichment with nitrogen, phosphorus, and potassium, the pH rising to nearly neutral values, the C/N ratio decreasing, and the initial substrate's mass decreasing. These findings demonstrate that the method used not only

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spectrophotometric analysis was used to detect phosphorus, and flame photometry was used to measure potassium. Every laboratory measurement was carried out in triplicate, and the results were reported as mean values with standard deviations. Substrate transformation, nutrient accumulation, compost maturity, and the end product's agronomic appropriateness were all evaluated using the chosen indicators.

Table 3. Mean indicators used for compost quality evaluation

Table 3. Main indicators used for compost quality evaluation.		
Indicator	Unit	Purpose of determination
pH	units	Evaluation of acidity/alkalinity of compost
Organic matter	%	Assessment of substrate transformation
Total nitrogen	%	Characterization of fertilizer value
Phosphorus	%	Assessment of nutrient accumulation
Potassium	%	Assessment of nutrient accumulation
C/N ratio	ratio	Indirect indicator of compost maturity
Mass reduction	%	Indicator of waste decomposition efficiency

Figure 1 presents the technological scheme of the zero-waste composting process. It displays the steps involved in collecting and preparing organic wastes, maturing the compost, and then applying it to soil.



Fig. 1. Technological scheme of the zero-waste composting process.

2.5 Statistical Processing of Experimental Data

Standard statistical techniques were used to process the acquired experimental data. Every physicochemical test was carried out three times, and the findings were presented as mean values with standard deviations. The starting substrate and the mature compost that was produced at the conclusion of the composting cycle were compared. Changes in pH, organic matter, total nitrogen, phosphorus, potassium, C/N ratio, and biomass mass decrease during composting were the main objectives of the statistical evaluation. The

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reduced the bulk of biodegradable agricultural wastes but also produced a useful organic amendment that might be used in agriculture going forward.
Therefore, the zero-waste technology under study may be regarded as a useful instrument for lowering the toxicity of organic waste, enhancing nutrient recycling, and promoting ecologically safe agricultural production. The finished compost may be utilized as an organic fertilizer to enhance soil and boost agricultural productivity. Plant growth tests, field-scale validation, and the evaluation of the long-term impacts of compost application on soil fertility and crop production may be the main topics of future research.

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DAŞARY ÝURT METBUGATDAKY ÇYKYŞLAR

Информационная безопасность банковской системы. Стр 318-320

Цифровая экономика глазами студентов:

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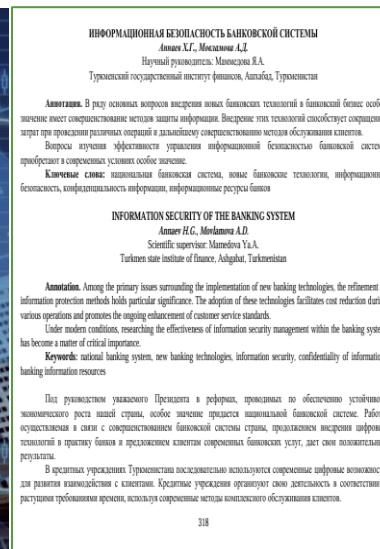
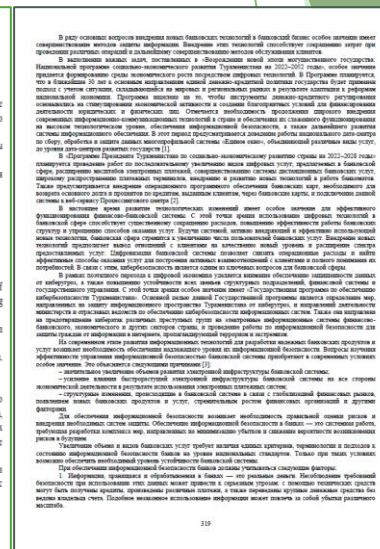
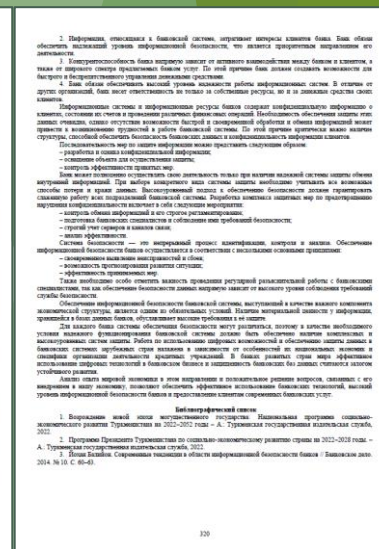


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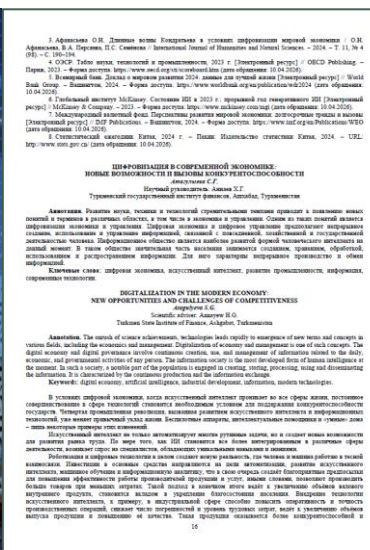
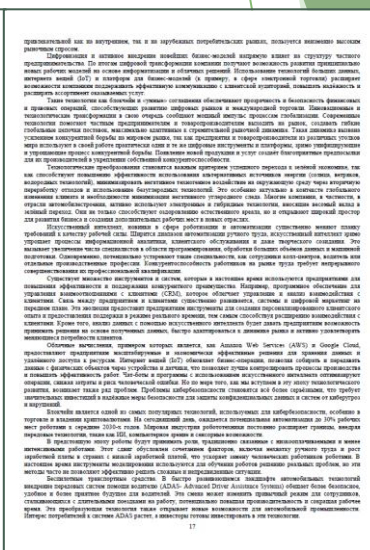
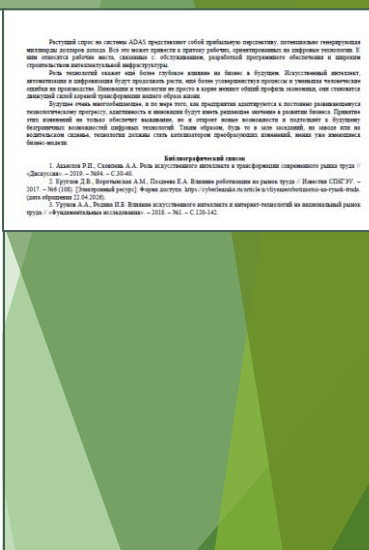
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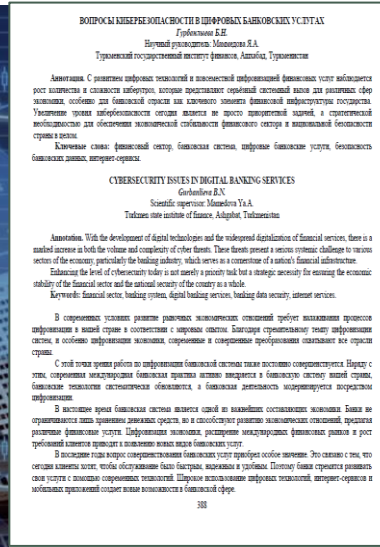
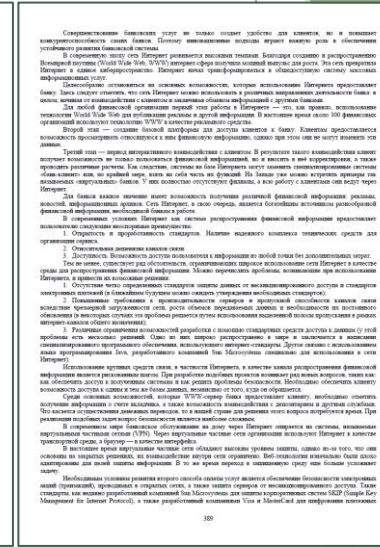
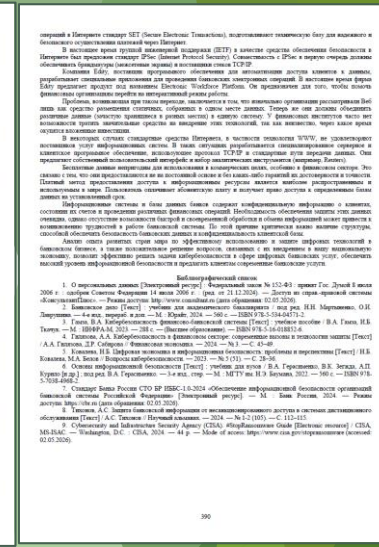


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**Вопросы кибербезопасности в цифровых
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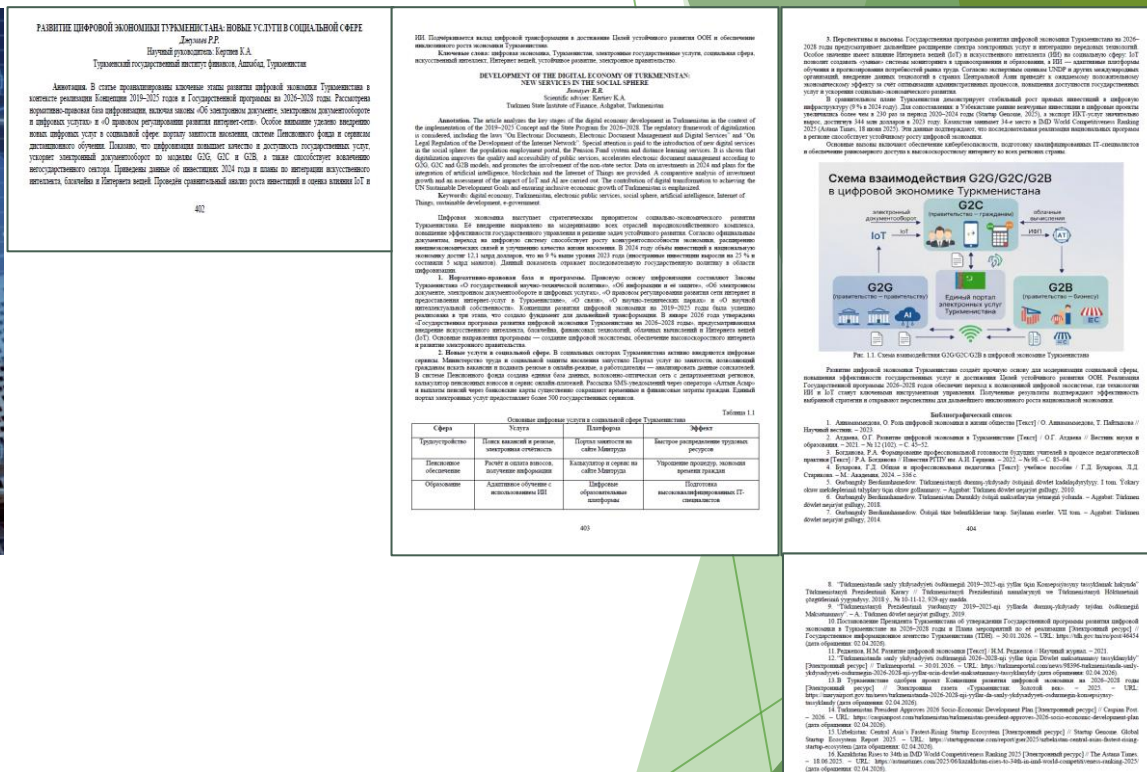
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Интеграция цифровой экономики в систему управления производством: модели, инструменты и эффекты. Стр 1416-1418

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Kertiýew,
“Salgytlar we
salgyt salmak”
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müdüriniň w.ý.ý.,
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<p>ИНТЕГРАЦИЯ ЦИФРОВОЙ ЭКОНОМИКИ В СИСТЕМУ УПРАВЛЕНИЯ ПРОИЗВОДСТВОМ: МОДЕЛИ, ИНСТРУМЕНТЫ И ЭФФЕКТЫ Гурбанмұрат Г.Г. Нұрмұхаммедов Керим К.А. Түркістан мемлекеттік университеті</p> <p>Аннотация. В статье исследуются теоретические и методологические основы интеграции цифровой экономики в систему управления производством. Рассматриваются различные модели цифровой трансформации, анализируются современные научные подходы, описываются инструменты и методы цифровой экономики. На основе анализа формулируются рекомендации по интеграции цифровой экономики в управление производством, а также оценивается ее влияние на эффективность и конкурентоспособность предприятия.</p> <p>Ключевые слова: цифровая экономика, управление производством, интеграция, модели, инструменты, эффекты.</p>	<p>ПРОИЗВОДСТВО ЦИФРОВОЙ ЭКОНОМИКИ В СИСТЕМЕ УПРАВЛЕНИЯ ПРОИЗВОДСТВОМ: МОДЕЛИ, ИНСТРУМЕНТЫ И ЭФФЕКТЫ Гурбанмұрат Г.Г. Нұрмұхаммедов Керим К.А. Түркістан мемлекеттік университеті</p> <p>Аннотация. В статье исследуются теоретические и методологические основы интеграции цифровой экономики в систему управления производством. Рассматриваются различные модели цифровой трансформации, анализируются современные научные подходы, описываются инструменты и методы цифровой экономики. На основе анализа формулируются рекомендации по интеграции цифровой экономики в управление производством, а также оценивается ее влияние на эффективность и конкурентоспособность предприятия.</p> <p>Ключевые слова: цифровая экономика, управление производством, интеграция, модели, инструменты, эффекты.</p>	<p>Цифровая экономика оказывает глубокое влияние на управление производством. Однако, интеграция цифровой экономики в систему управления производством является сложной задачей, требующей комплексного подхода. В статье рассматриваются различные модели цифровой трансформации, анализируются современные научные подходы, описываются инструменты и методы цифровой экономики. На основе анализа формулируются рекомендации по интеграции цифровой экономики в управление производством, а также оценивается ее влияние на эффективность и конкурентоспособность предприятия.</p> <p>Ключевые слова: цифровая экономика, управление производством, интеграция, модели, инструменты, эффекты.</p>
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DAŞARY ÝURT METBUGATDAKY ÇYKYŞLAR

Applying Lean Management and the Kaizen Method to Improve Production Performance

Ýewropa bileleşiginiň "Zedondo"
elektron ylmy žurnaly

Doi: <https://doi.org/10.5281/zenodo.22>

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Applying Lean Management and the Kaizen Method to Improve Production Performance

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Turkmenistan, Ashgabat*

Abstract

Manufacturing organizations face continuous pressure to reduce costs, shorten lead times, and improve quality while operating with limited resources. Lean management, originating from the Toyota Production System (TPS), and Kaizen, its philosophy of continuous incremental improvement, remain among the most widely adopted frameworks for addressing these challenges. This article examines the theoretical foundations of Lean and Kaizen, the principal tools used in their implementation, and the practical steps required to introduce them into a production environment. It also discusses common barriers to successful adoption and proposes a structured implementation framework supported by measurable performance indicators. The analysis suggests that the sustained success of Lean and Kaizen initiatives depends less on the tools themselves than on organizational culture, employee engagement, and management commitment to long-term, incremental change.

Keywords: lean management, kaizen, continuous improvement, waste reduction, production efficiency, Toyota Production System

Global competition and shortening product life cycles have forced manufacturers to seek methods that increase efficiency without proportional increases in capital investment. Lean management emerged from Japanese manufacturing practices, most notably the Toyota Production System developed by Taiichi Ohno and Shigeo Shingo in the decades following World War II. Its core objective is the systematic elimination of waste (muda) — any activity that consumes resources without adding value for the customer.

Kaizen, meaning “change for the better,” is both a philosophy and a practical methodology embedded within Lean. Rather than pursuing large, infrequent transformations, Kaizen emphasizes small, continuous improvements carried out by the people who perform the work. Together, Lean and Kaizen form a management approach that treats improvement not as a project with an end date but as an ongoing organizational discipline.

This article aims to (1) outline the theoretical basis of Lean and Kaizen, (2) present the tools most commonly used to implement them in production settings, (3) propose a stepwise implementation framework, and (4) discuss the organizational conditions that determine long-term success.

The Concept of Waste (Muda)

Lean theory identifies eight categories of waste in production processes: Overproduction — producing more than is needed or before it is needed; Waiting — idle time between process steps; Transportation — unnecessary movement of materials; Overprocessing — performing work beyond what the customer requires

Inventory — excess raw materials, work-in-progress, or finished goods

Motion — unnecessary movement by workers or equipment

Defects — errors requiring rework or scrap

Unused talent — failure to utilize employees' skills and ideas

Identifying and reducing these forms of waste is the operational core of Lean management.

Kaizen as a Complementary Philosophy

While Lean provides the conceptual framework for identifying waste, Kaizen provides the mechanism for addressing it continuously. Kaizen rests on several principles: improvement is the responsibility of everyone, not only specialists; small changes accumulated over time produce large results; and problems should be treated as opportunities rather than failures. The Kaizen cycle is commonly structured around the “Plan-Do-Check-Act” (PDCA) cycle, which allows improvement ideas to be tested on a small scale before being standardized across the organization.

Core Tools and Techniques

Several tools are typically deployed together when implementing Lean and Kaizen in a production environment:

5S (Sort, Set in order, Shine, Standardize, Sustain): a workplace organization method that reduces motion waste and improves safety and visual control.

Value Stream Mapping (VSM): a diagramming technique used to visualize material and information flow, distinguishing value-adding from non-value-adding activities.

Kanban: a visual pull system that regulates production based on downstream demand, reducing overproduction and excess inventory.

Just-in-Time (JIT): a production strategy aligning material delivery with production schedules to minimize inventory holding costs.

Single-Minute Exchange of Die (SMED): a method for reducing equipment changeover times, increasing flexibility and reducing batch sizes.

Total Productive Maintenance (TPM): a proactive maintenance approach that reduces equipment downtime and defects.

Kaizen events (or “Kaizen blitzes”): short, focused workshops in which cross-functional teams analyze and improve a specific process over a few days.

Root cause analysis (5 Whys, Ishikawa fishbone diagrams): structured problem-solving techniques used to identify the underlying causes of defects or inefficiencies rather than treating symptoms.

A Framework for Implementation

Based on documented practice across manufacturing sectors, a structured implementation of Lean and Kaizen can be organized into five phases:

Phase 1 — Assessment and Baseline Measurement. Before changes are introduced, current performance must be measured using indicators such as cycle time, defect rate, on-time delivery, and equipment uptime. A value stream map of the existing process establishes a baseline against which future improvement can be evaluated.

Phase 2 — Employee Training and Cultural Preparation. Because Kaizen depends on participation from frontline workers, initial investment in training on Lean principles, waste identification, and basic problem-solving tools is essential. Management must also communicate a clear rationale for the change to reduce resistance.

Phase 3 — Pilot Implementation. Rather than deploying Lean tools across an entire facility simultaneously, a single production line or work cell is typically selected as a pilot. This allows the organization to test tools such as 5S, Kanban, or SMED, refine them, and generate visible early results that build organizational confidence.

Phase 4 — Standardization and Scaling. Successful practices from the pilot are documented as standard work and expanded to additional lines or departments. Visual management boards and regular Kaizen events help sustain momentum during scaling.

Phase 5 — Continuous Monitoring and Sustaining Change. Lean implementation does not conclude once tools are in place. Regular audits, key performance indicator (KPI) tracking, and ongoing Kaizen suggestion systems are required to prevent regression to previous practices — a phenomenon widely documented in the literature as a common failure mode of Lean initiatives.

Performance Indicators

Organizations typically track a combination of the following metrics to evaluate the impact of Lean and Kaizen initiatives:

- Defect rate
- Scrap rate
- Overall Equipment Effectiveness (OEE)
- Measures availability, performance, and quality of equipment
- Lead time
- Time from order to delivery
- First-pass yield
- Proportion of units produced correctly without rework
- Inventory turnover
- Efficiency of inventory usage
- Changeover time
- Time required to switch between product variants
- Employee suggestion rate
- Degree of workforce engagement in continuous improvement

Barriers to Successful Implementation

Empirical and case-based literature consistently identifies several recurring barriers:

Lack of management commitment, where Lean tools are introduced without sustained leadership involvement, leading to abandonment after initial enthusiasm fades.

Treating Lean as a toolkit rather than a culture, applying techniques such as 5S or Kanban without addressing underlying behavioral and organizational norms.

Insufficient employee involvement, since Kaizen depends on ideas generated by workers closest to the process; top-down mandates without participatory mechanisms tend to produce superficial compliance rather than genuine improvement.

Absence of measurement systems, making it difficult to demonstrate the value of improvements and sustain organizational support.

Resistance to change, particularly where employees perceive efficiency initiatives as precursors to workforce reduction.

The evidence from decades of Lean and Kaizen practice suggests that technical tools are necessary but not sufficient conditions for success. Organizations that view Lean purely as a set of techniques to be installed tend to experience diminishing results over time, while those that embed Kaizen as an ongoing cultural practice — supported by training, measurement, and genuine employee participation — report more durable gains. This distinction between “Lean tools” and “Lean thinking” is central to understanding why implementations with similar technical content produce markedly different long-term outcomes across organizations.

Lean management and Kaizen offer a coherent, well-tested approach to improving production performance through the systematic elimination of waste and the cultivation of continuous, incremental improvement. Their effective implementation requires more than the mechanical application of tools such as 5S, Kanban, or SMED; it requires a structured phased approach, reliable performance measurement, and — most critically — an organizational culture in which improvement is treated as a shared, ongoing responsibility rather than a one-time project. Future research and practice should continue to examine how these principles can be adapted to different industrial contexts, including small and medium-sized enterprises and emerging manufacturing economies, where resource constraints may require adjusted implementation strategies.

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Активация Windows



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Biznes reklama

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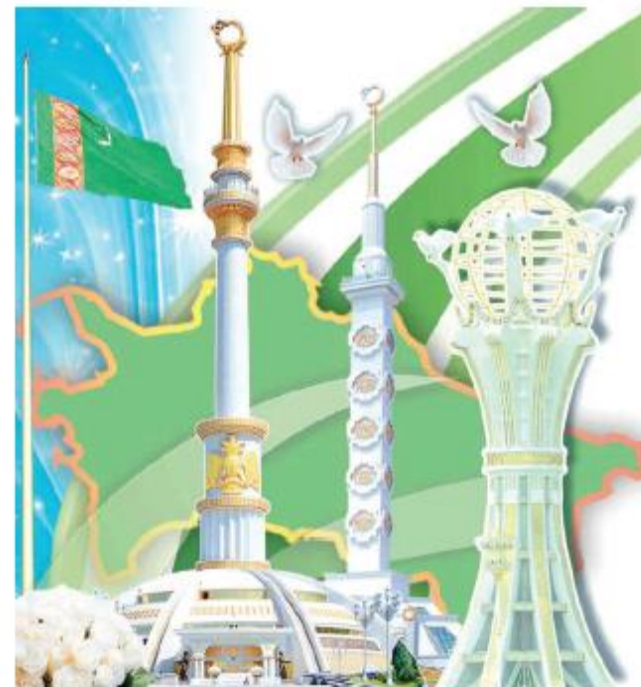
DÖWÜR HAKDA KELAM

Milli ösüşin döwrebap ýoly

Türkmenistanyň döwlet Garaşsyzlygyny gazanmagy ýurdu-myzyň taryhynda täze eýsamyň başlanandygyny alamatlandyrdy. 1991-nji ýylyň güýzünde gazyylan Garaşsyzlyk türkmen halkyna öz döwlet gurluşyny, ykdysady ösüş ugruny, durmuş syýasatyny we halkara gatnaşyklaryny milli bähbitleriň esasynda özbäşdak kesgitlemäge giň mümkinçilik berdi. Şon-dan bieri geçen ýyllaryň dowamynda Türkmenistan syýasy taýdan durnukly, ykdysady taýdan kuwwatly, durmuş taýdan ösüşe gönükdirilen döwlet hökmünde öz ýoluny kemala getirdi. Türkmenistanyň ýokary depginde ösýän ykdysadyýeti sebät hem dünýä ykdysadyýetine işjeň goşulýşar. Türkmenistan ykdysady ösüşin netijelerini durmuş ulgamyňy ösdürmäge, ýurduň gelejekdi gullap ösüşini üpjün etmäge ukyply ýokary intellektual we berk bedenli adam maýasyny kemala getirmäge gönükdirýär. Garaşsyzlyk ýyllarynda durmuş maksatly iri taslamalar amala aşyryldy, bilim, medeni, ylmý we sport maksatly edaralaryň ösen giň toplumy döredildi.

Garaşsyzlyk ýyllarynda ýurdu-myzynda halkyň ýaşayş-durmuş derejesini ýokarlandyrmak, milli ykdysadyýetiň kuwwatyny artdyrmak, tebigy baýlyklary netijeli peýdalanmak, senagatyň dürli pudaklaryny ösdürmek, azyk we haryt bolçulygyny üpjün etmek, döwrebap infrastruktura döretmek hem-de Türkmenistanyň dünýä ykdysady giňişligindiki ornuny berkitmek babatda uly işler durmuşa geçirildi.

Geçen ýyllaryň dowamynda durmuşa geçirilen giň möçberli döwlet maksatnamalary ýurdu-myzyň keşbini düşpeli öşgertdi. Täze şäherler, şäherçeler, ýaşayş toplumary, senagat kärhanalary, ulag we demir ýollary, halkara howa menzilleri, deňiz portlary, energetika desgalary, çagalar baglary, umumybilim berýän mektepler, ýokary okuw mekdepleri, saglygy goraýş merkezleri, sport desgalary we medeni merkezler gurlup ulanylmaga berildi. Şeýle ösüş diňe bir ykdysady



görkezijileriň ýokarlanmagynda diň, eýsem, halkyň durmuş şertleriniň gowulanmagynda, täze iş orunlarynyň döredilmeginde, önümçilik mümkinçilikleriniň giňelmeginde we ýurdu-myzyň ähli sebitleriniň sazlaşykly ösdürilmeginde öz beýanyny tapýar.

Umuman alanyňda, Garaşsyzlyk ata-babalarymyzyň özbäşdak döwletli bolmak baradaky arzuwlarynyň amala aşmagyna köp asyrylyk milli we ruhy gymmatlyklarymyz, şeýle hem arzyly ynsanperwer däpberimizdi dikeltmäge mümkinçilik berdi. Garaşsyzlyk ýurdu-myza halkara gatnaşyklarynyň

doň hukukly agzasy hökmünde öz syýasy garaşsyzlygyny beýan etmäge mümkinçilik berdi. Ol bu giň iň belent münberlerden dünýä ýaň salýar. Türkmenistanyň ählumumy parahatçylygy we howpsuzlygy pugtalandyrmaga, durnukly ykdysady ösüş gazanmaga gönükdirilen halkara başlangyçlary we iş ýüzündäki anyk ädimleri dünýä jemgyýetçiliginde giň goldawa eýe bolýar.

Şirin ÖWEZBERDIÝEWA,
Türkmen döwlet maliýe
institutynyň mugallymy.



TELEÝAÝLYMLARDAKY ÇYKYŞLAR

01.09.2026ý.

Annadursun Ýegenowa
“Ýaşlyk” teleýaýlymy

Bilimler we talyp ýaşlar güni mynasybetli çykyşy





TELEÝAÝLYMLARDAKY ÇYKYŞLAR

09.09.2026ý.

**Nyýazsoltan Nobatowa
Gözel Mätiýewa**

“Miras” teleýaýlymy

Niderlandlar Patyşalygynda geçirilen gőzellik we atçylyk sp
çempionaty





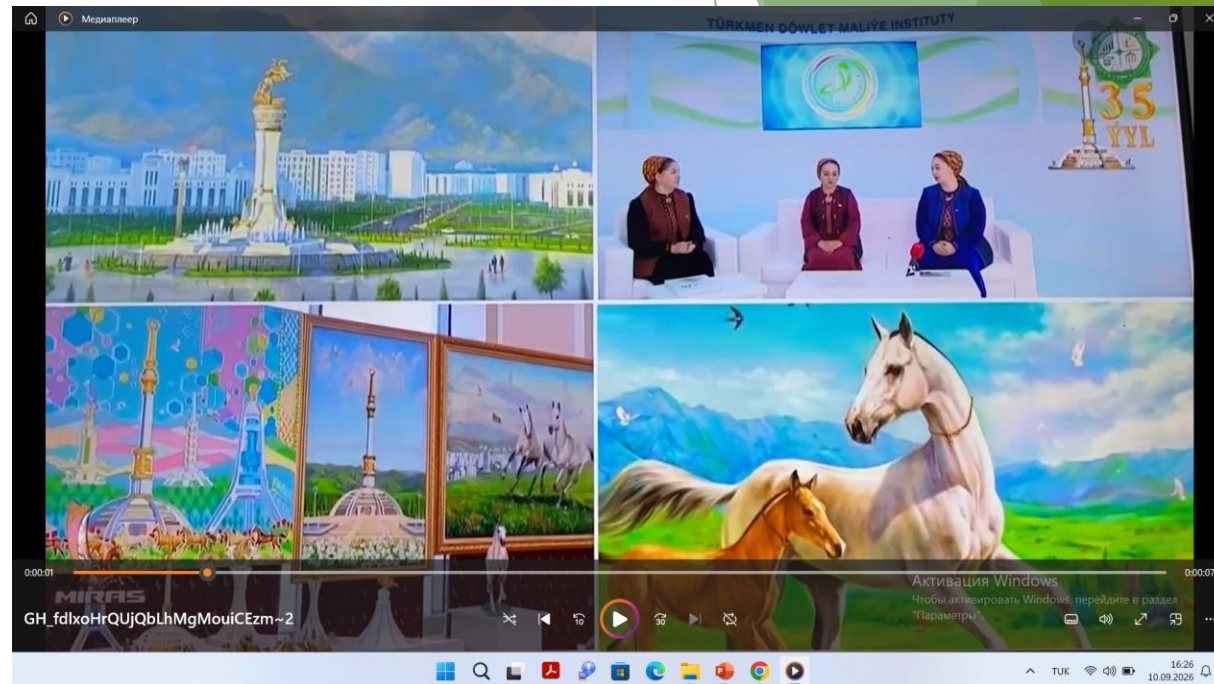
TELEÝAÝLYMLARDAKY ÇYKYŞLAR

09.09.2026ý.

Gültaç Annamämmedowa

“Miras” teleýaýlymy

Niderlandlar Patyşalygynda geçirilen gőzellik we atçylyk sporty
çempionaty





TELEÝAÝLYMLARDAKY ÇYKYŞLAR

10.09.2026ý.

Ýusup Ulugberdiýew
“Türkmenistan sport”
teleýaýlymy

Şanly Garaşsyzlymyzyň 35 ýyllygy. Türkmenistanyň Halk
Maslahatyna taýýarlyk





TELEÝAÝLYMLARDAKY ÇYKYŞLAR

10.09.2026ý.

Gültaç Annamämmedowa

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10.09.2026ý.

Serdar Agalykow

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teleýaýlymy**

Şanly Garaşsyzlymyzyň 35 ýyllygy. Türkmenistanyň Halk
Maslahatyna taýýarlyk





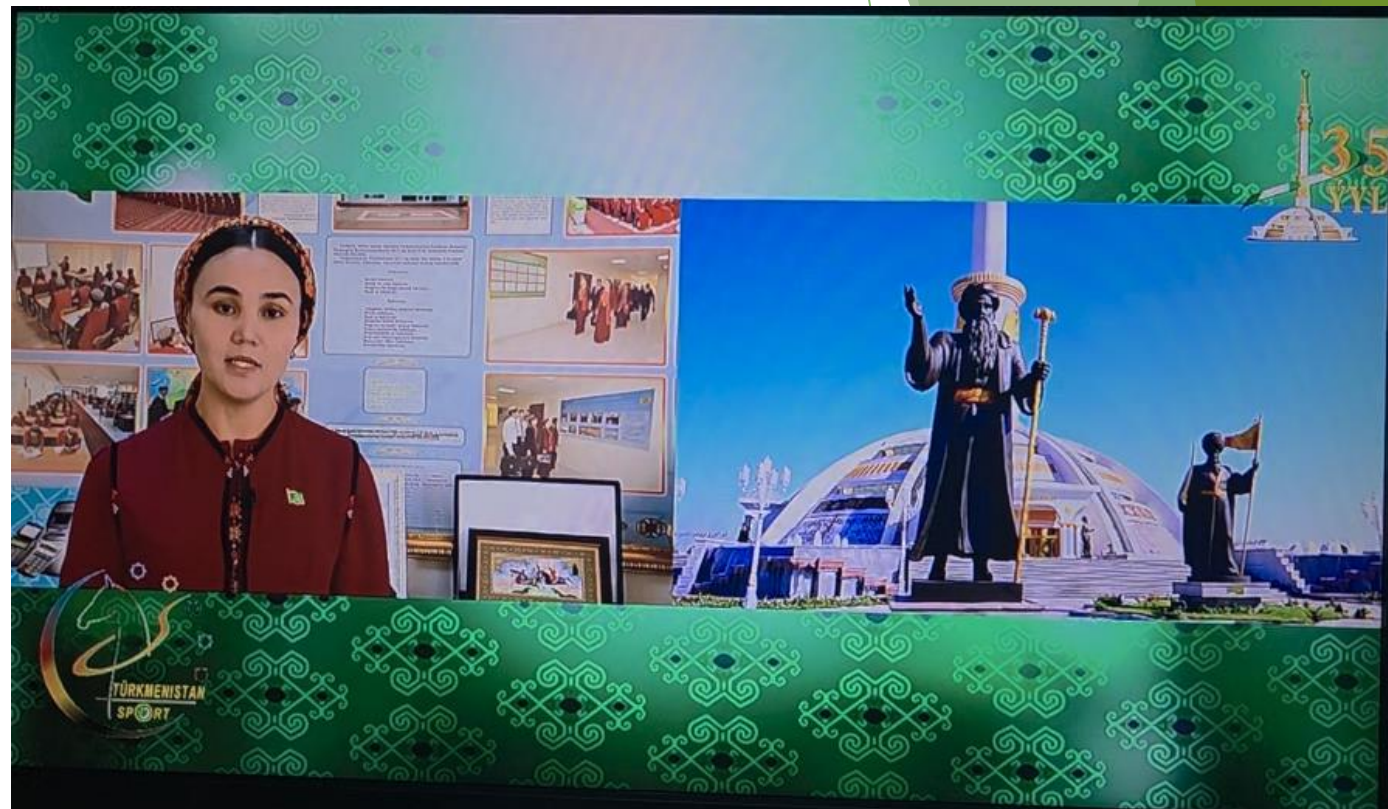
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10.09.2026ý.

Aýjema Aklyýewa

**“Türkmenistan sport”
teleýaýlymy**

Şanly Garaşsyzlymyzyň 35 ýyllygy. Türkmenistanyň Halk
Maslahatyna taýýarlyk





TELEÝAÝLYMLARDAKY ÇYKYŞLAR

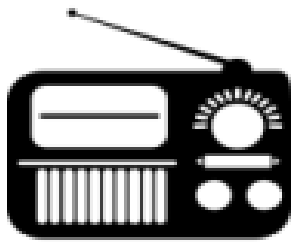
10.09.2026ý.

Azat Aşyrmuhammedow

“Ýaşlyk” teleýaýlymy

Ýaşlar guramasynda şanly Garaşsyzlymyzyň 35 ýyllygy we guramanyň döredilmegi mynasybetli çykyşy





RADIOÝAÝLYMLARDAKY ÇYKYŞLAR

04.09.2026 ý.

Güýçmyrat Soltanmyradow

“Watan” radioýaýlymy

Gahryman Arkadagymyzyň

Bilimler we talyp ýaşlar güni mynasybetli Arkadag şäheriniň

Ruhyýet köşgünde geçiren umumy okuw sapagynyň ýaş nesli

Watançylyk ruhunda terbiýelemekdäki ähmiýeti barada



Şahadatnama № 1678

“ResearchInsight AI” kompýuter programmasy

Döwlet sanawynda hasaba alnan senesi: 20.07.2026

Haýyşnamanyň berlen senesi: 15.07.2026

Haýyşnamanyň belgisi: 2026.509



**Babajan
Ataýew,**
Maliýe
gözegçiligi
taýýarlyk ugry,
1 ýyl talyp



**Eziz
Beknazarow,**
Okuw bölüminiň
başlygynyň w.w.ý.ý.



**Gurbanmyrat
Gurbanmyradow,**
“Maliýe”
kafedrasynyň
mugallymy

<p>TÜRKMENISTANYŇ MALIÝE WE YKDYSADYÝET MINISTRIGINIŇ INTELEKTUAL EÝEÇILIK BOÝUNÇA DÖWLET GULLUGY</p> <p>Awtorlyk hukugyna degişli bolan obýektin döwlet tarapyndan hasaba alnandygy barada</p> <p>ŞAHADATNAMA № 1678</p> <p>Döwlet sanawynda hasaba alnan senesi: 20.07.2026</p> <p>Haýyşnamanyň berlen senesi: 15.07.2026</p> <p>Haýyşnamanyň belgisi: 2026.509</p> <p>Awtorlyk hukugyna degişli bolan obýektin ady: “ResearchInsight AI” kompýuter programmasy</p> <p>Awtorlyk hukugyna degişli obýektin döredilen senesi: 11.05.2026</p> <p>Awtorlyk hukugyna degişli obýektin döredijisi: Atajew Babajan Orazmuhamedow (TM) Beknazarow Eziz Rajnazarow (TM) Gurbanmyradow Gurbanmyrat Batyrow (TM)</p> <p>Hukuk ejesi (ýurt): Atajew Babajan Orazmuhamedow (TM)</p> <p>Başlyk: A. Annanijazow</p>	<p>TÜRKMENISTANYŇ MALIÝE WE YKDYSADYÝET MINISTRIGINIŇ INTELEKTUAL EÝEÇILIK BOÝUNÇA DÖWLET GULLUGY</p> <p>Awtorlyk hukugynyň obýektine degişli bolan eseriň döwlet tarapyndan hasaba alnandygy barada</p> <p>ŞAHADATNAMA № 1678</p>	<p>TÜRKMENISTANYŇ MALIÝE WE YKDYSADYÝET MINISTRIGINIŇ INTELEKTUAL EÝEÇILIK BOÝUNÇA DÖWLET GULLUGY (TÜRKMENPATENT)</p> <p>74000, Türkmenistan, Aşgabat ş., Arçabil prosy, 156</p> <p>E-mail: info@tupat.tj</p> <p>Tel. (Phone): (99312) 39-47-52</p> <p>Faks (Fax): (99312) 98-51-19</p> <p>STATE SERVICE FOR INTELLECTUAL PROPERTY OF MINISTRY OF FINANCE AND ECONOMY OF TURKMENISTAN (TURKMENPATENT)</p> <p>74000, 156, Archabil Avenue, Ashgabat c., Turkmenistan</p> <p>№ 02/1678</p> <p>Atajew Babajan Orazmuhamedow (TM)</p> <p>Awtorlyk hukugyna degişli bolan obýektin döwlet tarapyndan hasaba almak barada</p> <p>ÇÖZGÜT № 172</p> <table><tr><td>Şahadatnamanyň belgisi:</td><td>1678</td></tr><tr><td>Döwlet sanawynda hasaba alnan senesi:</td><td>20.07.2026</td></tr><tr><td>Haýyşnamanyň berlen senesi:</td><td>15.07.2026</td></tr><tr><td>Haýyşnamanyň belgisi:</td><td>2026.509</td></tr><tr><td>Awtorlyk hukugyna degişli bolan obýektin ady:</td><td>“ResearchInsight AI” kompýuter programmasy</td></tr><tr><td>Awtorlyk hukugyna degişli bolan obýektin döredilen senesi:</td><td>11.05.2026</td></tr><tr><td>Awtorlyk hukugyna degişli bolan obýektin döredijisi:</td><td>Atajew Babajan Orazmuhamedow (TM) Beknazarow Eziz Rajnazarow (TM) Gurbanmyradow Gurbanmyrat Batyrow (TM)</td></tr><tr><td>Hukuk ejesi (ýurt):</td><td>Atajew Babajan Orazmuhamedow (TM)</td></tr></table> <p>Türkmenistanyň Maliýe we ykdysadyýet ministrliginiň intellektual eýeçilik boýunça döwlet gullugy 2026-ýyly 15-ji ulynda gelsip gowuşan haýyşnamada görkezilen Awtorlyk hukugyna degişli bolan obýektin döwlet tarapyndan hasaba alnandygy barada çözügiň kabul edilişi.</p> <p>Paç titlegi 120 minut möhletinde alynýar.</p> <p>Belligi ahy mähiriniň hususy: J. Muhammedowa</p> <p>Belligi ahy mähiriniň hususy: G. Nargeldijew</p>	Şahadatnamanyň belgisi:	1678	Döwlet sanawynda hasaba alnan senesi:	20.07.2026	Haýyşnamanyň berlen senesi:	15.07.2026	Haýyşnamanyň belgisi:	2026.509	Awtorlyk hukugyna degişli bolan obýektin ady:	“ResearchInsight AI” kompýuter programmasy	Awtorlyk hukugyna degişli bolan obýektin döredilen senesi:	11.05.2026	Awtorlyk hukugyna degişli bolan obýektin döredijisi:	Atajew Babajan Orazmuhamedow (TM) Beknazarow Eziz Rajnazarow (TM) Gurbanmyradow Gurbanmyrat Batyrow (TM)	Hukuk ejesi (ýurt):	Atajew Babajan Orazmuhamedow (TM)
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**ÜNS BERENIŇIZ ÜÇIN
SAG BOLUŇ!**