



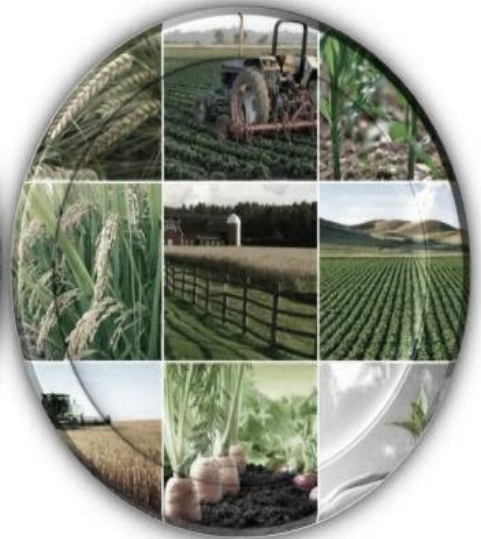
ICECAE 2021

PROGRAM

2nd International Conference on Energetics, Civil and Agricultural Engineering



Let us together take action in support of achieving the United Nations Sustainable Development Goals to promote prosperity while protecting the planet



14-16 October, 2021

Tashkent, Uzbekistan



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PROGRAM

2nd International Conference on Energetics, Civil and Agricultural Engineering 2021

DAY 1: OCTOBER 14, 2021

9:00 Onsite registration	
9:30 Welcoming Tea/Coffee	
OPENING CEREMONY [Hybrid: online and onsite] 10.00am – 12.50pm (Tashkent-Uzbekistan time zone) (Chair/Moderator: Prof. Dr. Obid Tursunov) (Main hall of the Tashkent Institute of Irrigation and Agricultural Mechanization Engineers)	
10.00am–10.10am	Prof. Dr. Obid Tursunov <i>Professor of the Tashkent Institute of Irrigation and Agricultural Mechanization Engineers - Uzbekistan</i>
10.10am-10.20am	Prof. Dr. Bakhadir Mirzaev <i>1st Vice-Rector of the Tashkent Institute of Irrigation and Agricultural Mechanization Engineers – Uzbekistan</i>
10.20am-10.40am	Representatives from the Ministries of the Republic of Uzbekistan
10.40am-10.50am	Prof. Dr. Abdushukur Khamzaev <i>Director of the Research Institute of Forestry – Uzbekistan</i>
10.50am-11.00am	Prof. Dr. Mukhsin Khodjiyev <i>Rector of the Gulistan State University – Uzbekistan</i>
11.00am-11.10am	Prof. Dr. hab. eng. arch. Andrzej Bialkiewicz <i>Rector of the Cracow University of Technology – Poland</i>
11.10am-11.20am	Prof. Dr. Mustafa Yaşar <i>Vice-rector of Karabuk Univeristy – Turkey</i>
HONORABLE SPEAKERS	
11.20am-11.50am	Professor Josep M. Guerrero Managing Director CROM Center for Research on Microgrids Department of Energy Technology Aalborg University - Denmark
Speech title	<i>Space Microgrids – NanoSats, Lunar Bases and Closed Ecosystems</i>
Abstract	This talk will begin by introducing the control of microgrids, the parallelisms with the human brain and the research for possible sources of inspiration in last frontiers of neuroscience. Then, control in electric power systems of satellites and space platforms will be presented, showing approaches that are extended from terrestrial microgrids and explaining the differences and challenges when it comes to apply them out in the space. Further, multi-microgrid systems will be discussed for moon craters in future lunar manmade bases. Finally, the extension from the hierarchical control of microgrids to


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	bioastronautics in the control of closed ecological systems to support with oxygen, water, and food to the astronauts and creating thus creating new ecosystems for the moon and future mars bases.
11.50am-12.20pm	Professor Saifur Rahman Candidate for IEEE President-elect Joseph Loring Professor & Director Virginia Tech Advanced Research Institute - USA
Speech title	<i>Global Electric Power Sector: Engaging with Environmental Issues</i>
Abstract	China, US, India, Japan and Russia are the top five countries in terms of electricity generation capacity. Between them they had a total capacity of 3,650 million kW in 2016. In terms of fuel sources for electricity coal, natural gas, hydro, nuclear, renewables and oil provided 38.3%, 22.9%, 16.3%, 10.2%, 9% and 3.3% respectively in 2017. This means almost two-thirds of the global electricity production came from fossil fuels in that year. This is reflected in about 10 billion tons of CO ₂ from electricity generation or about a third of the global production. However, this mix is expected to change significantly in the next 10 years. By 2030 installed power generation capacities from wind, solar PV, hydro power, nuclear and thermal are going to reach 540 GW, 420 GW, 530 GW, 160 GW and 1200 GW respectively. The top five CO ₂ emitting countries are: China, United States, India, Russian Federation and Japan each producing between nine and one billion metric tons of CO ₂ in 2016. However, CO ₂ is not the only concern against global warming. The Global Warming Potentials (GWP) of greenhouse gases are as follows: CO ₂ (1), Methane (28), Hydro fluorocarbons (138), Nitrous oxide (265), Per fluorocarbons (6,630) and Sulphur hexafluoride (23,500). So, the bottom line is: Efforts in the electric power sector to replace fossil fuel with renewables and nuclear will help. But if emission from the transportation sector continues to rise, the drop in power sector contributions will not be enough. Large scale Electric Vehicle deployment will help, but question remains – how will the EV be powered.
12.20pm-12.50pm	Professor Mohammad Shahidehpour Bodine Chair Professor & Director of the Robert W. Galvin Center for Electricity Innovation Illinois Institute of Technology - USA
Speech title	<i>Blockchain for Transactive Energy Management in Renewable Energy Systems</i>
Abstract	This presentation offers a vision and analyzes a scheme developed for microgrids that utilizes blockchain technologies to optimize transactive operations in power distribution systems. Technological and socioeconomic developments in distributed energy resources have promoted the use of renewable energy in microgrids as a promising alternative to the traditional use of thermal energy for electricity delivery in a bulk power grid. Microgrids are small-scale self-controllable power systems that interconnect on-site generation resources and loads for striking a local balance of energy production and consumption. Geographically-close microgrids are networked to broaden the merits of microgrids and eventually refine electricity service provisions across the power distribution system. Transactive energy, as the cross-section of technological, political and economic innovations, opens up the door to peer-to-peer autonomous electricity retail markets together with new business and operation models for power generation, delivery, and consumption. Through active participation in the decentralized transactive energy management process, networked microgrids collectively provide additional opportunities for improving the operational performance of power distribution systems. As networked microgrids are intrinsically cyber-physical systems that may unintentionally expose cybersecurity vulnerabilities to potential disruptive agents, blockchain is considered as an option that provides a transformative solution to address the cybersecurity and mutual-trust concerns through the application of cryptography and the execution of smart contracts. Accordingly, networked microgrids will interact in an automatic, credible and auditable manner for maintaining a greater degree of efficiency, reliability, resilience, and sustainability in electricity services offered to local communities. We present several practical examples and conclude that blockchain technologies embedded in transactive energy will play a significant role in the evolution of traditional power distribution systems to active and smart distribution networks.
END OF OPENING CEREMONY	
Lunch: 13.00pm-14.20pm (Main Canteen of TIAME)	



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PLENARY SESSION - KEYNOTE SPEAKERS

[Hybrid: online and onsite]

Chair/Moderator: Prof. Dr. Obid Tursunov, Prof. Dr. Jan Wincenty Dobrowolski

14:30pm – 18:20pm

Keynote Speaker I: 14.30pm-14.50pm (mode of presentation: online)	
	Prof. Dr. Jan Wincenty Dobrowolski <i>Professor of the AGH University of Science and Technology, Poland</i> <i>Member of the World Academy of Arts and Science</i>
Speech title	Experiences related to my 50 years contribution to global cooperation on Sustainable Development 1971-2021 and innovative proposals for adaptation to climate change, COVOD-19 and outer-space missions
Keynote Speaker I: 14.50pm-15.10pm (mode of presentation: online)	
	Prof. Dr. Manoj Stephen Paul and Dr. Ritu Chaturvedi <i>Professor of the St. Johns College, Agra, India</i>
Speech title	Human Health Risk Assessment associated with consumption of food containing heavy metals
Keynote Speaker II: 15.10pm – 15.30pm (mode of presentation: online)	
	Prof. Dr. hab. eng. arch. Justyna Kobylarczyk and Assoc. Prof. Dr. eng. arch. Michal Krupa <i>Professors of the Cracow University of Technology, Poland</i>
Speech title	High Quality of Residential Environment
Keynote Speaker III: 15.30pm – 15.50pm (mode of presentation: online)	
	Prof. Dr. hab. eng. arch. Dominika Kusnierz-Krupa and Dr. eng. arch. Malgorzata Hryniewicz <i>Professor of the Cracow University of Technology – Poland</i>
Speech title	A new functions in a historic buildings
Keynote Speaker IV: 15.50pm-16.10pm (mode of presentation: online)	
	Prof. Dr. Devidas Belsare <i>Professor Emeritus of Bhopal University, India</i>
Speech title	Effect of laser diode on oranges to other fruit crops like guava and papaya
Keynote Speaker V: 16.10pm-16.30pm (mode of presentation: online)	
	Prof. Dr. Alirza Mamedov <i>Professor of the Kyiv National University of Construction and Architecture – Ukraine</i>
Speech title	Historical City Analysis


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Keynote Speaker VI: 16.30pm – 16.50pm (mode of presentation: online)	
	Prof. Dr. Jose Osvaldo B. Carioca <i>Professor of the Federal University of Ceara – Brazil</i>
Speech title	Synthesis of Chitosan membranes to be used in dual system of dark fermentation and MEC-electrolyzers to produce high quality Hydrogen
Keynote Speaker VII: 16.50pm – 17.10pm (mode of presentation: online)	
	Dr. Ulrich Berk <i>President of the German Association of Homotherapy – Muchlingen, Germany</i>
Speech Title	Agnihotra and Homa Farming - Tools for a Sustainable Development on Planet Earth
Keynote Speaker VIII: 17.10pm – 17.30pm (mode of presentation: online)	
	Assoc. Prof. Pavel Navitski <i>Oral Roberts University, Oklahoma - USA</i>
Speech title	
Speaker I: 17.30pm – 17.45pm (mode of presentation: onsite)	
	Assoc. Prof. Dr. Fatih Tornuk <i>Yildiz Technical University, Istanbul - Turkey</i>
Speech title	<i>Production Optimization of Lactofermented Sour Cherry Juice Using Different Probiotics</i>
Abstract	It has been known that sour cherry (<i>Prunus cerasus</i>) is a good source of bioactive compounds such as phenolics and flavonoids which exert many health promoting effects. It is mainly consumed as sour cherry juice/nectar. In this study, sour cherry juice was fermented with single cultures of <i>Lactiplantibacillus plantarum</i> subsp. <i>plantarum</i> , <i>Limosilactobacillus fermentum</i> and <i>Lactiplantibacillus pentosus</i> at different sugar concentrations (9, 12 or 15%) and temperatures (20, 28.5 or 37 °C) for 48h to obtain the highest starter population. Initial lactic acid bacterial (LAB) counts were set as 107-108 cob/mL for all samples and number of LABs was determined at 4-h intervals during the incubation. In general, bacterial growth was more rapid and balanced at 20 or 28.5 °C temperature levels while remarkable reductions were observed in the extended periods of the fermentation probably due to the lower pH with increased acid accumulation and the higher osmotic pressure. Again, <i>Lactiplantibacillus plantarum</i> grew faster at increasing sugar concentrations while <i>Limosilactobacillus fermentum</i> and <i>Lactiplantibacillus pentosus</i> were not influenced significantly from the varying sugar levels. In conclusion, this study confirmed that lower incubation temperatures were more favorable for the growth of probiotic LAB species while all the species were adapted well at sour cherry environment containing different concentrations of sugar.
Speaker II: 17.45pm – 18:00pm (mode of presentation: onsite)	
	Assoc. Prof. Dr. M. ZEKİ DURAK <i>Yildiz Technical University, Istanbul - Turkey</i>
Speech title	<i>Microbiological and sensorial properties of probiotic carrier lactofermented sour cherry beverages</i>
Abstract	In recent years, with the increase in consumer awareness about healthy nutrition, functional foods which contain probiotic microorganisms have drawn great attention in all over the world. Among these functional foods, non-dairy probiotic carrier products have become more prominent due to the increasing vegetarianism and some milk based concerns such as its cholesterol content and lactose intolerance etc. In this study, probiotic sour cherry beverage which was produced by fermentation with three different cultures of <i>Lactiplantibacillus plantarum</i> subsp. <i>plantarum</i> , <i>Limosilactobacillus fermentum</i> and <i>Lactiplantibacillus pentosus</i> was stored at 4°C for 10 days and survival of the probiotics and sensory properties of the products were analyzed. Initial LAB populations were around 9-9.5 log cfu/mL for all samples while no significant decrease was observed at the end of the storage period. Also, according to sensory evaluation, all the lactofermented probiotic beverage samples had remarkable general acceptance scores as compared to non-fermented ones. Moreover, the acceptance


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	<p>score of the samples which were fermented at 20 °C was lower than other samples due to their sugary taste. In addition, the samples which were fermented with <i>Limosilactobacillus fermentum</i> (15% w/v sugar content) at 37 °C were found to be more acidic by the panelists as compared to the other samples. The highest sensory score was belonged to the sour cherry sample obtained at the optimized conditions of 12% w/v sugar content and 28.5 °C for each probiotic cultures. In conclusion, this study confirmed that sour cherry juice could be a convenient media as a non-dairy probiotic carrier with high sensorial acceptance and probiotic survival rates. However, longer storage periods should also be assessed.</p>
Speaker III: 18.00pm – 18:20pm (mode of presentation: onsite)	
	Dr. Zhaksylyk Makhatov <i>M. Auezov South Kazakhstan University, Shimkent - Kazakhstan</i>
Speech title1	<i>Enzymatic depolymerization of wheat straw polysaccharides</i>
Abstract	<p>The purpose of this study is to develop a technology for enzymatic processing for depolymerization of polysaccharides in wheat straw to obtain the maximum yield of glucose and sorbitol. Cellulolytic enzymes endo-1,4-β-glucanase (EC 3.2.1.4) and cellobiose (1,3-β-glucosidase) (CF 3.2.1.21) were isolated and studied in local strains <i>Tr. viride</i> 121, which are grown under deep cultivation conditions. A technology has been developed for obtaining a complex preparation "Cellozyme G20x" with a high yield and specific activity of cellulase, xylanase, β-glucanase and pectinase, and a scheme for purification from cellulases by precipitation, ultrafiltration, and freeze drying is not inferior in efficiency to commercial preparations. The physicochemical properties of the preparation "Cellozyme G20x" have been studied, the optimal parameters of the action and stability of the enzyme preparation have been established. The efficiency of Cellozyme G20x for hydrolysis of straw polysaccharides was 35-40% in terms of glucose yield.</p>
Speech title 2	<i>Hydrolysis of wheat straw hemicelluloses for maximum xylose extraction</i>
Abstract	<p>The aim of the study is to select reaction conditions for hydrolysis of wheat straw with dilute sulfuric acid for maximum xylose extraction under mild conditions (at atmospheric pressure and temperature of 100°C). The authors found that maximum glucose yield (72.4-77.1 weight % of the initial content of hemicelluloses in wheat straw) is achieved at a concentration of H₂SO₄ 2-3 weight % and the hydrolysis process duration of 5 hours. Analysis of the obtained hydrolysates showed that they contain cellulose (56.8-70.4 weight %), lignin (19.8-28.8 weight %) and hemicelluloses (2.8-15.3 weight %).</p>
Closing Speech: Prof. Dr. Obid Tursunov	
END of 1st Day	



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DAY 2: OCTOBER 15, 2021

[Fully online]

Time: 10⁰⁰ a.m. – 18⁰⁰ p.m.

Session chairs: Prof. Dr. Obid Tursunov, Prof. Dr. Justyna Kobylarczyk, Assoc. Prof. Dr. Ziyodulla Yusupov, Dr. Dilshod Kodirov, Dr. Khushiev Sirojiddin, Dr. Jurabek Izatillaev

PRESENTERS (ORAL)

<p>Paper ID 04 10⁰⁰ – 10¹⁵ (5 min discussion)</p>	<p>Afanasiy Li, Burkhan Uteпов, Eduard Kan, and Odil Kuychiev <i>¹Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, Tashkent, Uzbekistan</i> <i>²Jizzakh Polytechnic Institute, Jizzakh, Uzbekistan</i></p> <p>Title of presentation: Study on the process of droplet formation when liquid flows out of a capillary Abstract: This article presents the theoretical background for the justification of the parameters of the rotating sprayer. Theoretical studies show that an increase in the rotation frequency of the disk at a constant air flow velocity leads to a minimum median mass diameter of the droplets. Therefore, when justifying the diameter of the sprayed droplets, it is necessary to consider the combination of the disk rotation speed and the axial velocity of the air flow. To obtain high-quality air-droplet flow, the initial speed of the main droplets discharged from the periphery of the spray disc should be less than the air velocity and rotational frequency Pavlovskiy spray is recommended to be applied with in $\omega=60\dots200\text{ c}^{-1}$.</p>
<p>Paper ID 05 10¹⁵ – 11³⁰ (5 min discussion)</p>	<p>Isomiddin Siddikov and Oksana Porubay <i>Department of Information Processing and Management, Tashkent State Technical University named after Islam Karimov, 100000 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Neural network model of decision making in electric power facilities under conditions of uncertainty Abstract: The article is devoted to the issue of creating a mathematical model of the problem of making management decisions in electric power facilities based on modern intelligent technologies, which makes it possible to take into account the influence of various factors on the operating modes of the power system. A systematic approach to describing processes in the mathematical language of the theory of fuzzy sets is proposed. To solve the problem of controlling the operating modes of the power system, a neuro-fuzzy network has been developed that combines the algorithms of Takagi-Sugeno fuzzy inference, as well as a recurrent neural network. An adaptive learning algorithm based on the Frechet method is proposed for training a neural network. The analysis of the efficiency of the fuzzy control model under the conditions of various modes of functioning of the local power system is carried out.</p>
<p>Paper ID 14 10³⁰ – 10⁴⁵ (5 min discussion)</p>	<p>Pinar Akpınar, and Andisheh Zahedi <i>¹Civil Engineering Department, Near East University, Nicosia, North Cyprus, Mersin 10, Turkey</i> <i>²Civil Engineering Department, University of Ottawa, Ottawa, Canada</i></p> <p>Title of presentation: Comparison of the Alkali-Silica Reactivity of North Cyprus and</p>



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	<p>South Cyprus aggregates; preliminary studies using RILEM method Abstract: Alkali-silica reaction (ASR) is regarded as one of the most deleterious concrete durability problems, known to cause severe deteriorations in reinforced concrete structures all around the world. ASR involves the reaction of alkaline concrete pore solution with silica minerals in the aggregates and as a result, hydrous alkali-silica gel is produced. Expansion caused by this gel upon absorbing moisture results in serious deterioration in concrete. Although the susceptibility of South Cyprus aggregates to ASR has been previously studied to a very limited extent in the past, no scientific information on the ASR susceptibility of North Cyprus aggregates are available in the related literature. Beşparmak (Pentadaktylos) Mountains (North Cyprus) and from Troodos Mountains (South Cyprus) are positioned close to each other; however, aggregates obtained from both mountains are known to differ in composition. This difference in composition has the potential to yield ASR performances varying significantly. The aim of this study was to carry out preliminary investigations on the alkali-silica reactivity performance of both North and South Cyprus aggregates under same conditions, in a systematic and comparative manner. Aggregates obtained from both mountains are tested in combination with CEM I and CEM II (with supplementary cementitious materials) under the exposure conditions of RILEM method AAR-2. Preliminary results showed that North Cyprus aggregates are potentially reactive when used with CEM II, where South Cyprus aggregates tested under same conditions are detected to have much higher levels of reactivity.</p>
<p>Paper ID 19 10⁴⁵ – 11⁰⁰ (5 min discussion)</p>	<p style="text-align: center;">Abdelhamid Benmoumou, and Saïd El Madidi ¹<i>Biometrics and Bio Resources, Laboratory BVRN, Faculty of Sciences, University Ibn Zohr, Agadir, Morocco</i></p> <p>Title of presentation: Evaluation of the variability of <i>Citrullus colocynthis</i> (L) schrad as potential biodiesel feedstock: oil content, oil yield and the fatty acid composition Abstract: <i>Citrullus colocynthis</i> has been garnering interest in recent times as a potential biodiesel feed stockcrop due to its high seed oil content and its natural adaptation to drought The variability seed oil content (OC), Oil yield (kg/ha) (OY) and fatty acid composition were investigated for 12 accessions collected in different localities in Morocco. Analysis of the data revealed high variability among the accessions, with seed oil content ranging between 17.1 and 24.3 % of seed weight and Oil yield from 35.3 to 172.7 kg/ha. The predominant fatty acid of the seed oil was linoleic acid, C18:2, ranging from 67.0 to 73.0 % of total fatty acids and the average values of unsaturated fatty acids vary between 75.25 and 81.94 %.The wide range of variations found in this study for the traits measured offers the possibility of genetic improvement to develop cultivars for biodiesel production compatible with sustainable and ecological agriculture.</p>
<p>Paper ID 24 11⁰⁰ – 11¹⁵ (5 min discussion)</p>	<p>Eduard Kan, Muradulla Mukhammadiev, Afanasiy Li, and SHerali Aralov ¹<i>Department of usage of water energy and pumping stations, Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000 Tashkent, Uzbekistan</i> ²<i>Department of power, Tashkent State Technic University named after Islam Karimov, 100095 Tashkent, Uzbekistan</i> ³<i>Moscow State University of Civil Engineering, Yaroslavscoe shosse 26, Moscow, Russia</i></p> <p>Title of presentation: Methodology for assessing the efficiency of water jet pumps in auxiliary systems of irrigation pumping stations Abstract: The reliability and efficiency of irrigation pumping stations operation primarily depends on the well-coordinated operation of all systems. Drainage system should ensure that the building and territory of the pumping station are not flooded by drainage (filtration) water. At many pumping stations (especially those with long pressure lines), water jet pumps are installed as pumps for pumping out drainage water. The experience of operating such plants has revealed their undeniable advantages in</p>



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	<p>comparison with conventional vane centrifugal pumps (type K and D) – sufficient reliability in operation due to the simplicity of the design, the absence of rubbing parts in the installation, the possibility of pumping contaminated liquids and the possibility of their use in the absence of power supply. But with all this, water jet pumps are extremely low-efficiency. To justify the use of jet pumps, a methodology is needed that would allow for a comprehensive consideration of all the main factors that affect their reliability, ease of operation and energy efficiency in the drainage system. On the example of the pumping station "Kiziltepa-2", these factors were identified and the energy efficiency of water jet pumps was calculated. Various applications of jet pumps are considered, and their efficiency is evaluated.</p>
<p>Paper 27 11¹⁵ – 11³⁰ (5 min discussion)</p>	<p>Hoshimov AA, Seytnazarov AR, Tadjiev SM, Alimov UK, Tojiev RR, and Madenov BD</p> <p>¹<i>Fergana polytechnic Institute, 150100, st. Ferganskaya, Fergana, Uzbekistan</i> ²<i>Institute of General and Inorganic Chemistry, 77th Mirzo Ulugbek, 100170, Tashkent, Uzbekistan</i> ³<i>Karakalpak State University, st. Ch.Abdirov, 1, 230112, Nukus, Republic of Karakalpakstan</i></p> <p>Title of presentation: NPSCA-containing fertilizers based on ammonium nitrate melt and powder Suprefos-NS</p> <p>Abstract: Methods for improving the composition and properties of ammonium nitrate (AN) using various inorganic additives are considered. It has been shown that the employing Suprefos-NS, a product of JSC “Ammofos-Maxam”, as an additive in the AN melt allows obtaining a stabilized fertilizer containing, except nitrogen and phosphorus, macroelements such as calcium and sulfur, exclusively in assimilable forms. In this case, the mass ratio AN: Suprefos-NS varied in the range from 100: 5 to 100: 35. It was found that any amount of Suprefos-NS additives significantly improves the composition and properties of the AN.</p>
<p>Paper ID 65 11³⁰ – 11⁴⁵ (5 min discussion)</p>	<p>Sreerag S Kallingal, and Priyanka Singh</p> <p>¹<i>Department of Civil Engineering, Amity School of Engineering & Technology, Amity University, Uttar Pradesh, Noida, India</i></p> <p>Title of presentation: Dynamic analysis of cable stayed bridge with various patterns of pylon</p> <p>Abstract: The construction of cable stayed bridge increase day by day. The reason behind this is because of the aesthetic beauty and the uniqueness in the structure. This work deals with the study of dynamic analysis of cable stayed bridge with different pylon arrangements. The cable transmits the reaction forces of deck to pylon. Pylon transmits the load of cable to foundation. The pylons ‘H’ shape, ‘Inverted Y’ shape, ‘Diamond’ shape & ‘Needle’ shape arrangement were considered. The MIDAS CIVIL software is used to model and analysis of the cable stayed bridge with various pylon arrangements. The materials and section properties of all four bridges are kept same and the moving load is provided as per IRC:6-2000 loading. In the part of seismic analysis, the time history analysis done and took data of 1940 El Centro earthquake so the nonlinear dynamic behaviour of four bridges investigated. A variety of parameter like, axial forces, displacement and bending moment are analysed. From the result, when complexity increases the behaviour of structure changes. Eventually, the results are compared and concluded that which pattern of pylon shows higher and least performance.</p>
<p>Paper ID 66 11⁴⁵ – 12⁰⁰ (5 min discussion)</p>	<p>Priyanka Singh, Mirza Jahangir Baig, Bhumika Pandey, and Kartik Papreja</p> <p><i>Department of Civil Engineering, Amity School of Engineering and Technology, Amity</i></p>



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	<p><i>University Uttar Pradesh, Noida, India</i></p> <p>Title of presentation: Analysis of the behaviour of Cable stayed bridge with different types of Pylon</p> <p>Abstract: Cable stayed bridges are known for their good stability, It has been the most favorable use of structural design, for comparatively low designing and maintenance costs, and for effective structural characteristics. Therefore, this type of bridges are gaining popularity and are generally selected for long spans when compared to suspension bridges. A cable stayed bridge comprises of pylons with cables withstanding the weight of deck. There are different types of pylons i.e. ; H-type pylon, A-type pylon, inverted Y-type pylon, and diamond shaped pylon. In this paper the bridge design, model, and analyses for these different types of pylons is done using STAAD Pro. The comparison for three cases are done on the basis of shear force and bending moment in terms of self weight to obtain the most efficient type of pylon design. The results thus obtained are useful in limiting the drawbacks of other types of pylon.</p>
<p>Paper ID 69 12⁰⁰ – 12¹⁵ (5 min discussion)</p>	<p style="text-align: center;">Md. Tanjid Mehedi, and Azizul Hoque Shochchho <i>Department of Building Engineering and Construction Management, KUET, Khulna-9203, Bangladesh</i></p> <p>Title of presentation: Exploring Facility Management (7D) with BIM Considering Quality and Performance Assessment Models</p> <p>Abstract: The fields of Construction Management are so vast these days that it enriched with so many elements contemplate to 7D of BIM (Building Information Modeling). Facility Management holds the 7D position to understand and acquire proper knowledge about the quality and performance of a building structure. The purpose of this paper is to identify research gaps in the field of Building Information Modelling (BIM) in the Facility Management (FM) business, as well as practical issues that facility management professionals face while using BIM. The key to successful BIM deployment in the FM business is to improve communication among various stakeholders throughout the project lifecycle. However, there is still some debate over the value of FM in the construction business. To put it another way, construction does not comprehend FM. There are also concerns about interoperability and data exchange. The Quality of information is connected with PIM and AIM with various IQ perspectives. It is determined that BIM-based FM procedures have the potential to change not just the perspective of the FM sector, but also the perspective of the whole industry, as they are based on a collaborative approach to the delivery of intelligent facilities.</p>
<p>Paper 71 12¹⁵ – 12³⁰ (5 min discussion)</p>	<p style="text-align: center;">Alexandr Komarov, Alexey Grachev, Anton Gabriel and Natalya Mokhova <i>Institute of Machinery, Materials, and Transport, Peter the Great St. Petersburg Polytechnic University, 195251 St. Petersburg, Russia</i></p> <p>Title of presentation: Simulation of the misalignment process of an overhead crane in Matlab / Simulink</p> <p>Abstract: The object of the study is the angle of deviation of the crane from the perpendicular to the rails in a horizontal plane. The aim of the work is the mathematical description of the crane's bridge beam misalignment, creation of the model in Matlab Simulink. Based on the resulting model, there was implemented a control system that compensates for emerging misalignment by speeding up or slowing down crane drives.</p>
<p>Paper ID 72 12³⁰ – 12⁴⁵ (5 min discussion)</p>	<p style="text-align: center;">Şakir Kuzey, Cihat Şeker, Mohamed Elweddad, and M Tahir Güneşer ¹<i>Giresun University, Sebinkarahisar Vocational Schools of Tech. Sciences, Electricity and Energy Department, 28400 Giresun, Türkiye</i> ²<i>Karabuk University, Engineering Faculty, Electrical and Electronics Engineering Department, 78100 Karabuk, Türkiye</i></p>



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	<p>Title of presentation: Designing an irrigation system using photovoltaic energy by considering crop type in Fergana Valley</p> <p>Abstract: Today, the importance of energy cost and efficiency is gradually increase. The decrease in drinking water and agricultural water resources, increases the interest in drip irrigation systems in agricultural irrigation. Environmentally friendly photovoltaic drip irrigation systems (PVDIS) are the appropriate solution in regions where there is no electricity distribution network, where it is far away, or where power cuts are frequently. This study is carried out in the Fergana Valley of Uzbekistan. Regional climate data obtained from Climwat 2.0 software are processed in Cropwat 8.0 software. Crops that are both the source of livelihood of the people of the region and that can be used in this study have been determined. Annual and daily water needs are analyzed so that these crops are irrigated every seven days. A system is designed by taking the data of the crop with the highest water requirement as a reference. The drip irrigation system is set up in a PVsyst 7.1.7 simulation environment to pump 114.24 m³ of water daily from a 5-meter-deep river with a 1.8 kW photovoltaic system. The efficiency of the system is 58.7% and the efficiency of the pump is 34.5%. Crop water need is met at the rate of 98.87%. It is predicted that the designed and analyzed PVDIS will provide efficiency in energy and water resources.</p>
<p>Paper ID 73 12⁴⁵ – 13⁰⁰ (5 min discussion)</p>	<p>Valeriano Condori-Apaza, Oscar R. Mamani-Luque, Roberto Alfaro-Alejo, Wilber. Laqui, William F. Condori</p> <p>¹<i>Professional School of Topographic Engineering and Surveying, Universidad Nacional del Altiplano, Puno, Peru</i></p> <p>²<i>Faculty of Agricultural Engineering, Universidad Nacional del Altiplano, Puno, Peru</i></p> <p>Title of presentation: Analysis and impact of meteorological droughts in the agriculture of Puno region, Peru</p> <p>Abstract: The research focuses on identifying and characterizing the occurrence of episodes of meteorological droughts in the Puno region in Perú, in order to determine the economic impact of this climatic phenomenon on agricultural activities in the region. From the use of the standardized rainfall index for 12 months (SPI-12) for the period 1981-2019, the occurrence, magnitude, persistence and spatial evolution of drought events in the area were determined, determining that the events that occurred in the years 1982/83, 1989/90 and 1991/92, escalated to levels of severe drought and extreme drought, mainly in the extreme south of the region, which corresponds to the provinces of El Collao, Yunguyo and Chucuito. For the determination of the impact of droughts on agriculture in the region, the records of losses of cultivated areas corresponding to the period 1997-2017 administered by the competent authority were used, finding the non-existence of a direct correlation between the presence of meteorological droughts and the economic losses in production, due to the fact that said information has a general character, not discriminating the different climatic phenomena that generate economic losses in the agriculture sector, therefore, they are not adequate to estimate the economic impact of droughts in the Puno region.</p>
<p>Paper ID 93 13⁰⁰ – 13¹⁵ (5 min discussion)</p>	<p>Wilhelmus Hary Susilo</p> <p><i>University of Persada Indonesia Y.A.I, Diponegoro Street 74, Jakarta-10430, Indonesia</i></p> <p>Title of presentation: Study on the development the market position company of fully electric vehicles</p> <p>Abstract: Owing on decreased the marketing performances on automotive industries-energy generation, and storage industry in many firms. The research inquired of research gap within pursues the market- positions that it was conduct within resources of the corporate. Therefore, the research method conducted the one step approach within the confirmed strategy that conduct within an equation's structural hybrid-model. The results- data was significantly contributed to the goal setting theory that it could drive to improve and enhanced within an innovation evidence in the digital- marketing and</p>



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	<p>encompassed the marketing strategies that could pursued the market positions within the firms in the automotive fully electric vehicles industry as firms policies that innovation effort in digital marketing more focused than task marketing strategies and top managers.</p>
<p>Paper ID 97 13¹⁵ – 13³⁰ (5 min discussion)</p>	<p>Boris M. Kizyaev, Victor I. Balabanov, and Natalia B. Martynova <i>¹Russian Scientific Research Institute of Hydraulic Engineering and Melioration named after A.N. Kostyakov, 127550 Moscow, Russian Federation</i> <i>²Department of Land Reclamation and Construction Machines, Russian State Agrarian University, Moscow Agricultural Academy named after K.A. Timiryazev, 127550 Moscow, Russian Federation</i></p> <p>Title of presentation: Definition of humidification circuit parameters for drip irrigation Abstract: During recent years, there was a steady growth in the gross harvest of potatoes in Moscow region, production capacities for processing of agricultural crop have been also increasing. However, based on 2020 results, the yield is still highly dependent on weather conditions and, in particular, on the amount of precipitation during the growing period. Therefore, in order to obtain sustainable yields, it is necessary to maintain the optimal values of the water-air balance that consider conduction of agromeliorative measures, including additional irrigation. The most economical is drip irrigation among the moisturizing activities. It allows delivering irrigation water directly to the root zone. This will significantly reduce the cost of water and electricity; however, the maximum benefits of drip irrigation may be obtained by revise and calculation of the irrigation rates. Suggested irrigation rates do not take into account the elliptical shape of the humidification contour, which leads to overestimated rates for it. The method for calculating the irrigation rate proposed in the article, takes into account the shape of the humidification contour that enables to use irrigation water wisely.</p>
<p>Paper ID 98 13³⁰ – 13⁴⁵ (5 min discussion)</p>	<p>Quy Nguyen Ngoc, Tien Nguyen Minh, Minh Le Van, Danh Pham Hoang, and Thanh Nguyen Trung <i>¹Faculty of Pharmacy, Nguyen Tat Thanh University, Ho Chi Minh City, Vietnam</i> <i>²Institute of Environmental Sciences, Nguyen Tat Thanh University, Ho Chi Minh City, Vietnam</i> <i>³Research Center of Ginseng and Medicinal Material (CGMM), National Institute of Medicinal Materials, Ho Chi Minh City, Vietnam</i> <i>⁴Faculty of Food and Environmental Engineering, Nguyen Tat Thanh University, Ho Chi Minh City 700000, Viet Nam</i> <i>⁵Nanomaterial Laboratory, An Giang University, 18 Ung Van Khiem St., Dong Xuyen Dist, Long Xuyen City, An Giang Province, Viet Nam</i> <i>⁶Vietnam National University Ho Chi Minh City, Linh Trung Ward, Thu Duc District, Ho Chi Minh City, Viet Nam</i></p> <p>Title of presentation: Chemical Composition and Antioxidant Activities of Extracts of <i>Combretum quadrangulare</i> Kurz Leaves Grown in An Giang Province, Vietnam Abstract: <i>Combretum quadrangulare</i> leaves are an important herbal in traditional Vietnamese medicine due to their ability to cure various diseases and improve health. This study provided the investigation results of different organic solvents that affected the chemical composition, the extraction of polyphenol and flavonoid content, the antioxidant activity of <i>Combretum quadrangulare</i> extract obtained through the maceration method. Several classes of constituents in the extract of <i>Combretum quadrangulare</i> leaves were detected including flavonoids, volatile oils, tannins, etc. The ethanol extract had the highest polyphenol content found at 18.45 ± 0.12 mg GAE/g extract. The diethyl ether leaves extract observed the highest falonoid with a value of</p>



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	<p>21.19 ± 0.05 mg QE/g in. The antioxidant activities were shown through the IC₅₀ values of 1514.50 ± 25.65 µg/ml (DPPH) and 685.15 ± 8.58 µg/ml (ABTS), individually.</p>
<p>Paper ID 101 13⁴⁵ – 14⁰⁰ (5 min discussion)</p>	<p>Isidro A. Pilares-Hualpa, Roberto Alfaro-Alejo, Carlos A. Pilares-Calla, Oscar E. Alfaro-Vilca <i>¹Professional School of Civil Engineering, Universidad Andina Néstor Cáceres Velásquez, Juliaca, Peru</i> <i>²Faculty of Agricultural Engineering, Universidad Nacional del Altiplano, Puno, Peru</i> <i>³Postgraduate Unit of Civil Engineering, Universidad Nacional de Ingeniería, Lima, Perú</i> <i>⁴Faculty of Civil Engineering and Architecture, Universidad Nacional del Altiplano, Puno, Peru</i></p> <p>Title of presentation: Characterization of expansive soils for the foundation of an irrigation canal in the Peruvian Andes, Cabana-Mañazo case Abstract: Alterations in water content in swelling soils cause volume variation, which implies constructive, socioeconomic and environmental damage. This paper characterizes the swelling soil located in an irrigation canal of the Peruvian Altiplano and its behavior of the properties by addition of lime in 5, 10, 15 and 20% of the total weight. Finding that the sample of the station 6+575 has combined presence of montmorillonite clays in a percentage of 13.52% together with the group of kaolinites in a percentage of 1.31%, consequently, it makes an expandable clay of high plasticity. The soils of the station 6+250 have the characteristics of kaolinite clay, which distinguishes it as having low plasticity. In the swelling tests the high expansiveness was found, in the station 6+575, which has decreased with the addition of lime. Considering that concrete canals are generally of small thickness it would be important to consider the slightly dangerous effects on irrigation infrastructure.</p>
<p>BREAK 14:00pm – 15:00pm</p>	
<p>Paper ID 102 15⁰⁰ – 15¹⁵ (5 min discussion)</p>	<p>Truong Nguyen X, Phan Cao H H, Hao Nguyen N, Huyen Duong T T, Nhat Tran T, Khang Q Bui and Van Ho T T <i>¹Hochiminh City University of Natural Resources and Environment (HCMUMRE), Vietnam</i> <i>²Southern Education Development Center, Office of Ministry of Education and Training, Vietnam.</i> <i>³Ho Chi Minh City University of Technology (HCMUT), Ho Chi Minh City, Vietnam.</i></p> <p>Title of presentation: Comprehensive study on the amount of CO₂ absorbed by vegetation: A case study in Ho Chi Minh city, Vietnam Abstract: The city Ho Chi Minh (HCMC) is one of the largest cities in Vietnam with the most dramatically economic development rate. Along with the economic development, the urbanization process in this city is also taking place very fastly. Due to the rapid urbanization and development, the emission rate from the industry and transportation leads to the increase in the amount of carbon dioxide (CO₂) which has been worsening the climate change. Protecting forests and conducting afforestation so that CO₂ is transformed to nutrition through photosynthetic conversion is one of the most effective ways to mitigate the effects of climate change. As a result, the accumulation of CO₂ emissions has become a global concern. Vegetation absorbs carbon dioxide, helps to conserve the environment, produces oxygen, reduces noise, and helps to stabilize subsurface water. This paper highlights the results of ENVI software which was used to interpret remote sensing images and Arcgis to evaluate the amount of carbon dioxide absorbed by vegetation in each administrative unit: district in HCMC and ward. According to the obtained results, the amount of CO₂ absorbed in urban districts “District 1”, “District 3”, “District 4”, “District 5”, “Phu Nhuan District” is immensely</p>



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	<p>low due to the high population density in the center of city. The population is mainly concentrated in the center districts but land area for vegetation is low. Regarding the suburban area, with mangrove forests, Can Gio District has the highest amount of CO₂ absorbed of 35,894.075 tons/day and followed by Cu Chi District with 21,548.48 tons/day. It can be indicated that Can Gio and Cu Chi districts importantly function like the greenhouse gas sinks for the whole HCMC. The success of this study could contribute to climate change mitigation and support in urban and land planning, as well as resettlement policies. Aside from that, CO₂ emission and absorption assessment and evaluation in large-scale cities like HCMC has become a crucial, urgent, and practical issue nowadays.</p>
<p>Paper ID 103 15¹⁵ – 15³⁰ (5 min discussion)</p>	<p style="text-align: center;">Terwase Wuave <i>¹Abubakar Tafawa Balewa University Bauchi, Bauchi, Nigeria</i> <i>²National Environmental Standards and Regulations Enforcement Agency (NESREA), Abuja, Nigeria</i></p> <p>Title of presentation: Constituents of Leachate Generation and Migration in Ministry of Agriculture Forest Nursery Open Dumpsite in Jos Plateau State, Nigeria Abstract: The constituents of leachate generation and migration in ministry of agriculture nursery open dumpsite in Jos Plateau were determined. Leachate extraction from solid waste (SW) was carried out. Test dumpsite soil with different elevations. Elevations were with uniform density. Representative solid waste dumpsite soil sample were collected from one dumpsite. The collected SW soil subjected to column experimental test, results showed physicochemical parameters (pH, TSS, TDS and EC) range of descriptive value in terms of histogram values of 5.66 – 8.23(1.0m to 1.5m depth) pH, 90.65 – 1125.96mg/l (0.5 to 2.0m depth) TSS, 17.78 – 156mg/l (1.5 to 0.5m depth) TDS, 9.02 – 80.01 us/cm and principal component summary analysis. The histogram and principal component summary values increase. Alkalinity has highest concentration, followed by hardness which has least, BOD₅ has lower values, followed by COD which has higher value, Cl⁻ increasing, SO₄²⁻, NO₃ values increases, PO₄ in waste decreases with increase time and depth. The Na⁺, increasing K⁺ second to Na⁺, increases, Mg²⁺ and Ca²⁺ in MSW increases as time and depth proceed. The results of Cu, Fe, Cd and Pb in histogram had moderate to high values. All were examined for physicochemical, alkalinity and hardness, BOD₅, COD, anions, cations and heavy metals to study the seasonal variation of significant parameters. The results from the leachate analysis were used as a tool to identify the processes and mechanisms affecting the soil and water chemistry from the study area.</p>
<p>Paper 118 15³⁰ – 15⁴⁵ (5 min discussion)</p>	<p style="text-align: center;">Matkarim Ibragimov, Abduvali Turdiboyev, and Dilmurod Akbarov <i>¹Department Electrical Technology and Using of Electrical Equipment, Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Effects of electric pulse processing in increasing the efficiency of cotton oil from technical seeds Abstract: This article provides an analysis of the global demand for cottonseed oil consumption, the growing trend of cottonseed oil production and methods of obtaining vegetable oil based on modern technologies. Based on the results of the analysis, the electro technology of electric pulse processing of seed pulp was proposed to increase the efficiency of obtaining cottonseed oil from technical seeds. Experiments have shown that the maximum degree of damage to the seed nucleus by electric pulse treatment depends on the amount of oil extraction. It is also possible to reduce the roasting temperature of electrically pulsed seed pulp to 70-75 °C, and these parameters are considered be energy-saving parameters. It is possible to increase the amount of oil extracted from the seed and reduce energy costs in the technology through electro-pulse processing.</p>



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<p>Paper ID 123 15⁴⁵ – 16⁰⁰ (5 min discussion)</p>	<p>Nguyen Tien Duy, Le Van Quynh, Dang Viet Ha, Bui Van Cuong and Le Xuan Long <i>¹Faculty of Electronics Engineering, Thai Nguyen University of Technology, Thai Nguyen 24000, Vietnam</i> <i>²Faculty of Automotive and Power Machinery Engineering, Thai Nguyen University of Technology, Thai Nguyen 24000, Vietnam</i> <i>³Vietnam Register, Ha Noi 12059, Viet Nam</i></p> <p>Title of presentation: Ride comfort evaluation for a double-drum vibratory roller with semi-active hydraulic cab mount system</p> <p>Abstract: The construction machinery market has required increasingly not only on working capacity but also ride comfort quality, therefore it has required increasing toward researchers and manufacturers. The main objective of this paper proposes and evaluates the performance of semi-active hydraulic cab mount system (SHCMs) of a double-drum vibratory roller in the direction of enhancing vehicle ride comfort under different operating conditions. Firstly, a nonlinear dynamic model of passive hydraulic cab mount system (PHCMs) is established to determine its vertical force which is connected with a dynamic model of vehicle - ground surface interaction. And then, a fuzzy logic controller (FLC) is designed to control the value of the damping force of SHCMs. Both the differential equations of motion and FLC are implemented in the MATLAB/Simulink environment. Finally, the ride performance of SHCMs is evaluated under different conditions according to ISO 2631: 1997 (E) standard. The obtained results show that the values of objective functions with SHCMs significantly reduce in comparison with PHCMs under different operating conditions.</p>
<p>Paper ID 124 16⁰⁰ – 16¹⁵ (5 min discussion)</p>	<p>Le Xuan Long, Dang Viet Ha, Le Van Quynh, Bui Van Cuong, and Vu Thi Hien <i>¹Faculty of Automotive and Power Machinery Engineering, Thai Nguyen University of Technology, Thai Nguyen, Vietnam</i> <i>²Vietnam Register, Ha Noi 12059, Viet Nam</i></p> <p>Title of presentation: Performance Evaluation of a Novel Hydro - Pneumatic Suspension System of a Heavy Truck on Ride Comfort</p> <p>Abstract: The purpose of this work is to evaluate the performance of novel hydro-pneumatic suspension system (HPSs) in comparison with traditional hydro-pneumatic suspension system (HPSs) of a heavy truck in the direction of improving vehicle ride comfort. Firstly, the nonlinear dynamic models of the traditional and novel HPS systems are set up to determine the vertical forces. And then, the vertical forces are connected with a 3-D nonlinear dynamic model of heavy truck with 10 degrees of freedom under random excitation of road surface. The root mean square (RMS) acceleration responses of the vertical cab, pitch and roll angles of the cab (a_{wzcb}, a_{wfcb} and a_{wtcb}) based on the International Standard ISO 2631-1: 1997 are chosen as objective functions. The study results show that the a_{wzcb}, a_{wfcb} and a_{wtcb} values with novel HPSs reduce by 28.27%, 28.32% and 6.89% in comparison with traditional HPSs when vehicle moves on ISO class D road surface at vehicle speed of 50 km/h and full load. Finally, the ride performance of novel HPSs is verified and compared and evaluated with traditional HPSs under different operating conditions and the evaluation results are also indicated that the ride performance of a novel HPSs is better than the traditional HPSs under survey conditions.</p>
<p>Paper ID 127 16¹⁵ – 16³⁰ (5 min discussion)</p>	<p>Adel Aljwary, Ziyodulla Yusupov, Olimjon Toirov, and Rustam Shokirov <i>¹Department of Electromechanical Engineering, University of Technology, Baghdad, Iraq</i> <i>²Department of Electrical-Electronics Engineering, Karabuk University, Karabuk, Turkey</i> <i>³Power Supply and Renewable Energy Sources, Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000 Tashkent, Uzbekistan</i></p>



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	<p>⁴<i>Department of Electric Machine Engineering, Tashkent State Technical University named after Islam Karimov, Tashkent, Uzbekistan</i></p> <p>Title of presentation: Mitigation of load side harmonic distortion in standalone photovoltaic based microgrid</p> <p>Abstract: Photovoltaic (PV) system as one part of distributed energy resources is becoming an alternative for low and medium distribution network of microgrid. By the reason of a wide implementation of power electronic and non-linear loads, harmonics distortion is one of the main problems for the power systems. There are several filter types to mitigate the harmonics. The passive filter is distinguished by its simplicity and economical options from another filter. In this paper, the passive single tuned filter (STF) is used to minimize harmonics distortion in standalone PV based microgrid. A solar PV array is modelled as an ideal single diode model (ISDM) and used to supply electrical power to an AC load. The simulation results are executed on MATLAB/Simulink show that STF is effective in mitigating the voltage total harmonic distortion (VTHD) and the current total harmonic distortion (ITHD) with enhancing the output power quality.</p>
<p>Paper ID 128 16³⁰ – 16⁴⁵ (5 min discussion)</p>	<p>Le Xuan Long, Dang Viet Ha, Le Van Quynh, Bui Van Cuong, and Vu Thanh Niem</p> <p>^{1,3,4}<i>Faculty of Automotive and Power Machinery Engineering, Thai Nguyen University of Technology, Thai Nguyen, Vietnam</i> ^{2,5}<i>Vietnam Register, Ha Noi 12059, Viet Nam</i></p> <p>Title of presentation: Effect of operating conditions on a heavy truck ride comfort with hydro-pneumatic suspension system</p> <p>Abstract: The purpose of this paper is to analyze the performance of the hydro-pneumatic suspension system (HPSs) of a mining dump truck on ride comfort under operating conditions. To achieve goals, a 3-D full-vehicle vibration model of a mining dump truck with 10 degrees of freedom is set up to analyze the effects. A nonlinear mathematical model is set up based on the nonlinear characteristics of the HPSs to determine their vertical force which is connected with a 3-D full-vehicle vibration model. The effects of operating conditions on a heavy truck ride comfort are respectively analyzed through the values of the root mean square of acceleration responses of the vertical cab, pitch and roll angles of cab (a_{wc}, a_{wphi} and a_{wteta}). The analysis results indicate that the survey conditions have a great influence on vehicle ride comfort. Especially, the values of a_{wc}, a_{wphi} and a_{wteta} with the poor road surface condition respectively reduce by 43.1%, 45.9% and 61.8% compared to the very poor road surface condition at vehicle speed of 30 km/h and full load.</p>
<p>Paper ID 129 16⁴⁵ – 17⁰⁰ (5 min discussion)</p>	<p>Radhika Bansal, and Pammi Gauba</p> <p><i>Department of Biotechnology, Jaypee Institute of Information Technology, Sector 62, Noida (Uttar Pradesh) 201309</i></p> <p>Title of presentation: Efficacy of <i>Cicer arietinum</i> L. & <i>Vigna mungo</i> L. in remediation of Hexavalent Chromium</p> <p>Abstract: Hexavalent Chromium is a major soil pollutant; thus, its remediation from soil deserves due attention. Phytoremediation is an area of active current research which is eco-friendly and economic. Use of leguminous plants for phytoremediation will improve soil quality, fertility and nutrient balance and would help in restoration of natural soil ecosystem. The present study focuses on the use of two commonly growing legumes; <i>Cicer arietinum</i> (RP1) and <i>Vigna mungo</i> (RP2) to explore their remediation potential towards Cr(VI) with concentration ranging from 100-900 mg kg⁻¹ with the growth up to three weeks and were assessed for remediation potential and toxicity parameters. Higher percentage of decrease in root and shoot length was observed in RP2 as compared to RP1. Chlorophyll content was also found to be decreasing with increasing Cr stress in both the species. RP2 recorded higher BCF than RP1. Highest</p>



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	<p>bioaccumulation factor 4.32 was observed in RP2 at 400 mg kg⁻¹ concentration. Translocation factor >1 was observed in both the plants with highest as 1.67 at 600 mg kg⁻¹ in RP2 and 1.93 at 400 mg kg⁻¹ in RP1. Remediation percentage of 72.25% in RP2 at 600 mg kg⁻¹ and 73.13% at 400 mg kg⁻¹ in RP1 was observed. Both the plants showed high tolerance and remediation potential towards Cr(VI) therefore has a great phytoremediation prospect, however, RP2 can be preferred over RP1.</p>
<p>Paper ID 133 17⁰⁰ – 17¹⁵ (5 min discussion)</p>	<p>Gennady P. Kornilov, Ildar R. Abdulvelev, Oxana S. Logunova, Palvan I. Kalandarov, Obid Tursunov, Dilshod Kodirov, Doniyor Abdurakhimov ¹<i>Department of Power Supply of Industrial Enterprises, Nosov Mangnitogorsk State Technical University, Magnitogorsk, Russia</i> ²<i>Department of Computer Engineering and Programming, Nosov Mangnitogorsk State Technical University, Magnitogorsk, Russia</i> ³<i>Department of Automation and Control of Technological Process and Production, Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000 Tashkent, Uzbekistan</i> ⁴<i>Department of Power Supply and Renewable Energy Sources, Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000 Tashkent, Uzbekistan</i> ⁵<i>Research Institute of Forestry, 111104 Tashkent, Uzbekistan</i> ⁶<i>Gulistan State University, 120100 Gulistan, Uzbekistan</i></p> <p>Title of presentation: Electric power supply of steel producing companies: schematic design solutions to improve reliability of power grids</p> <p>Abstract: This research is aimed at improving electric power supply reliability at major industrial plants by applying schematic design solutions. The authors analyzed the features of branch electric power distribution systems at a metallurgical plant; considered options of their revamping to improve reliability of electric power supply; carried out experimental research on splitting 110 kV meshed system at the integrated iron and steel works. When performing the research, mathematical simulation methods and full-scale experiment methods were used. Following the research, we proposed three options to revamp the power grid at the industrial plant applying schematic design solutions: Scheme A - separating substations, causing problems, in an individual block; Scheme B - separating independent 110 kV closed electric power grids; Scheme C – splitting the meshed system into two independent circuits. It is proved that the most efficient solution is Scheme C, which is characterized by a lower number of unscheduled downtimes of the facilities by mitigating the effects of faults in one of meshed systems on a continuous operation of shops powered from the neighboring grid; eliminated risks of simultaneous stops of all or the majority of metallurgical shops of the works during short circuits in 110 kV grids; and a considerable reduction in short circuit currents and active losses in 110 kV industrial grids. An aggregate benefit from the proposed measures aimed at revamping of the electrical grid of metallurgical units by applying schematic design solutions is over USD750,000/year.</p>
<p>Paper ID 135 17¹⁵ – 17³⁰ (5 min discussion)</p>	<p>Le Van Quynh, Dang Viet Ha, Bui Van Cuong, Le Anh Vu and Tran Van Thoan ^{1,3}<i>Faculty of Automotive and Power Machinery Engineering, Thai Nguyen University of Technology, Thai Nguyen, Vietnam</i> ²<i>Vietnam Register, Ha Noi 12059, Viet Nam</i> ^{4,5}<i>Faculty of Automobile Engineering, Hung Yen University of Technology and Education, Hung Yen, Viet Nam</i></p> <p>Title of presentation: Improvement of Ride Comfort Quality for an Earth-Moving machinery with Semi-Active Cab Isolation System</p> <p>Abstract: Improving ride comfort of an earth-moving machinery is important to avoid potential health hazards for machine operator. A vehicle - road coupled interaction model including vehicle body, cab body and driver seat masses is set up under the random excitation of ground surface and a Fuzzy –PID controller is designed for control of the damping coefficient of a semi-active hydraulic cab isolation system (SHCIs) for</p>



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	<p>an earth-moving machinery. The ride performance of SHCIs with a combined controller is evaluated under different movement conditions. The comparison results indicate that the proposed controller for semi-active cab hydraulic isolation system has the significantly improved vehicle ride comfort in compared with passive hydraulic cab isolation system (PHCIs) under large amplitude and low frequency excitations of ground surface.</p>
<p>Paper ID 143 17³⁰ – 17⁴⁵ (5 min discussion)</p>	<p style="text-align: center;">Umarbay Odamov, Mirziyo Kamilov, and Shavki Niyazov <i>¹Institute of Energy Problems, Academy of Sciences of the Republic of Uzbekistan, Tashkent, Uzbekistan</i> <i>²Gulistan State University, Gulistan, Sirdarya, Uzbekistan</i></p> <p>Title of presentation: The efficiency of the solar battery operations in real exploitation conditions</p> <p>Abstract: <i>Introduction.</i> Nowadays, there is a constant growth of the demand for the use of solar power plants and obtaining green energy. In the using process of them in real conditions, a decrease in efficiency is observed. Because of the influence of external and internal factors on solar cells, the Coefficient of Efficiency (COE) panels decreases. The study of these influencing factors today is one of the actual problems. In this work is presented a study of the efficiency of a solar battery in real operating conditions.</p> <p><i>Methods.</i> By using an electronic counter DTS-541UN№530230, the output parameters of solar cells were experimentally measured hourly, daily, monthly and yearly. In addition, a Testo-880 thermal imager was used in order to investigate defects caused by high surface temperatures and heating of solar panels. The collected data was analyzed using Microsoft Excel and other software packages.</p> <p><i>Results and Discussions.</i> The annual solar power production over a six-year period shows that solar cell efficiency has decreased by 10% in the first three years; this connects with the deposition of dust on the solar cell's working surface as a result of dust storms. After cleaning the surface, the efficiency of the solar cell increases by 8%. In general, the exponential trend line shows that the efficiency of the solar power plant has decreased by 5.4% over six years. A solar power plant consumes 5-10% of the total generated energy for its own needs. The average hourly electricity generation of solar panels in real conditions for four companies shows that on a clear sunny day, solar panels work very efficiently and generate more than 100% of electricity, on a cloudy day, generate 20-30%, and on days with partly cloudy and rainy days generate 10% of energy. According to the current changes (I) in real conditions of effective operation of S-ENERGY solar panels, the current is higher than that of solar panels from other companies. The temperature coefficient of solar panels from S-ENERGY and TOPSAN is lower than that of solar panels from other companies; this value shows how solar panels are productive on days with high temperatures.</p> <p>In solar panels of HANWHA (4 panels) was observed air bubbles between the glass layer and the EVA membrane. These air bubbles reduce the intensity of sunlight falling on the solar cells and reduce the efficiency of the solar panels.</p> <p><i>Conclusion.</i> The efficiency of the solar battery in real operating conditions has decreased by 5.4% due to the influence of internal and external factors. There have been determined that S-ENERGY and TOPSAN solar panels perform better under real-world conditions, and HANWHA solar panels have been found to be defective and degraded.</p>
<p>Paper ID 180 17⁴⁵ – 18⁰⁰ (5 min discussion)</p>	<p style="text-align: center;">Andrey Khomutov, Gökhan Aydin, and Ismail Karaca <i>¹Pyongyang University of Science and Technology, Korea</i> <i>Isparta University of Applied Sciences, Turkey</i></p> <p>Title of presentation: Comparison of Biodiversity Measured by Using Pitfall Traps in Different Habitats of Balcali-Adana Region of Turkey</p> <p>Abstract: The study was conducted to calculate insect biodiversity: diversity, similarity, dominancy and evenness in agroecosystems (on wheat and trefoil) and in natural habitats (in valley and forest on Pinus spp.). Although the species' richness was found to</p>

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be higher in agroecosystems than in natural habitats, Shannon-Wiener and Simpson diversity indices had been calculated in the upward segment in natural habitats. Simpson dominance index was found to be higher in agroecosystems (on trefoil and wheat) compared to natural habitats, in both valley and forest (on Pinus spp.). Shannon evenness index was found to be more stabilized and had been calculated to be higher in both valley and forest natural habitats than in agroecosystems. Sørensen similarity index showed that both agroecosystems, trefoil and wheat habitats are more similar to each other compared with natural habitats. Agroecosystems and natural habitats were purely similar. The analyses of insect biodiversity index in natural habitats showed the need to redound insect diversity via expanding some protected strategies at natural habitats.

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POSTERS	
Paper ID 01	<p>Fazliddin Egamberdiev¹, Kadam Jumaniyazov¹, Ilkhom Abbazov¹, Hilola Yodgorova¹, and Marguba Rajapova¹</p> <p><i>¹Jizzakh Polytechnic Institute, 130100 Jizzakh, Uzbekistan</i></p> <p>Title of presentation: Theoretical study of the impact aimed at improving the efficiency of fiber cleaning</p> <p>Abstract: Since cotton cleaning in Uzbekistan is carried out mainly manually, this paper discusses the methods and technologies established in the process of cleaning cotton and fiber. The process of fiber cleaning is one of the important processes that complete the technological process of cotton processing, given that the quality of fiber largely depends on the efficiency of this process, the research work on the mechanization of the type of collection and improving the efficiency of its cleaning is analyzed. In order to improve the efficiency of cleaning cotton collected on the machine, information is provided on the need to improve the equipment for cleaning fiber used in cotton gins. The research results are based on the need to replace a special structural device that guides the fiber to the correct tooth of the first sawtooth cylinder located on two drum cleaning plants. New fiber-cleaning equipment was installed in the Jizzakh regional JSC "Zarbdor cotton cleaning» and experimental tests were conducted in production conditions. In addition, the process of changing the pressure, density and speeds in the furnace and the effect of their cleaning efficiency has been modeled and theoretically analyzed, when the efficiency of cleaning the cotton fiber flow using a column system allows changing the raw material from 4 mm to 15 mm based on the device. By results of the conducted analysis it was shown that the increase of efficiency of purification depends on the device attached to the saw teeth, factor of the taxation of the distribution coefficient B and p_0 efficiency factor of increasing the initial pressure and coefficient of efficiency savings from the analysis of graphs, which present graphs of the distribution depending on the type of saw teeth. Based on the results of the research, recommendations are given for the widespread introduction of fiber cleaning equipment installed at enterprises of primary cotton processing, with the installation of a special structural guide device.</p>
Paper ID 18	<p>Vokhid Kadirov¹, Sherzod Karimov, Uchqun Qushshayev¹, and Durdona Sharapova²</p> <p><i>¹Department of Mining, Tashkent State Technical University, 100095 Tashkent, Uzbekistan</i> <i>²General education school № 29, Tashkent, Uzbekistan</i></p> <p>Title of presentation: Study on the influence of the deformation zones of the quarry sides on the rock mass movement</p> <p>Abstract: The article presents a study and analysis of the causes of deformation of the slopes and sides of the quarry indicates that the magnitude and nature of the deformation processes depend on the height of the ledge, the angle of slope of the slopes, the physical and mechanical properties, the lithological and structural features of the instrument array and the geodynamic activity of the fault zones. The influence of the deformation zones of the sides of the quarry on the transport of rock masses is justified. The zone of deformed masses of the ore deposit, which affect the movement of the rock mass, is studied. Each process performed in open pit mining is linked to another workflow. Without ensuring the safety of mining operations and performing the tasks set is impossible. Transportation of rock masses in the lower horizons of a deep quarry is one of the main tasks of the industry. At the same time, the removal of deformation and landslides in the area where the transport</p>



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	<p>berm is being constructed for draining and continuous transportation is the main goal of the quarry. The stability of the transport berm depends directly on the stability of the side of the quarry. It is determined that the choice of a single-lane or two-lane transport berm constructed for heavy-duty quarry dump trucks depends on the condition of the side of the quarry.</p>
<p>Paper ID 20</p>	<p>Inoyat Umarova¹, Sokhibjon Matkarimov¹, Javlon Bekpulatov¹, Dilmurod Makhmaredjabov¹, and Sherzod Yuldashev¹</p> <p><i>¹Department of Mining and Metallurgy, Tashkent State Technical University, 100095 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Study of the Form of Minerals in Copper Porphyry Ores of «Yoshlik-I» Deposit</p> <p>Abstract: The purpose of these studies is to study the forms of finding copper-porphyry ores of the Yoshlik I deposit compared with the Kalmakyr deposit data and to decide on the choice of a cost-effective ore processing technology. As a result of the studies, it was revealed that ore mineralization is represented by sulfides of various metals and iron oxides. The primary sulfides are pyrite and chalcopyrite. In the «Yoshlik-I» sample, the pyrite content is six times less than in the Kalmakyr sample and is 0.7%. The mass fraction of chalcopyrite in the Kalmakyr and «Yoshlik-I» deposits is 1.1 and 0.8%, respectively. The remaining sulfides of various metals and the minerals of these ribs are present in several single signs. According to the content of cell fids, the Kalmakyr ore sample is characterized by a small-sulfide ore; the «Yoshlik-I» ore sample is a slab-sulfide type ore. According to the oxidation state calculated by iron, ore samples of the Kalmakyr and «Yoshlik-I» deposits belong to the mixed variety of ores.</p>
<p>Paper ID 26</p>	<p>Sherzod Khudainazarov¹, Obidjon Karabayev², Ubaydulla Khalmatov³ and Akhrorbek Numonov¹</p> <p><i>¹Department of Theoretical and Structural Mechanics, Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000 Tashkent, Uzbekistan</i></p> <p><i>²Tashkent Islamic Institute named after Imam Bukhari, Zarkainar 18th Blind Alley, 97 Almazar district, Tashkent, Uzbekistan,</i></p> <p><i>³Tashkent State Technical University after I.Karimov, 2, Universitet str., Tashkent, Uzbekistan</i></p> <p>Title of presentation: Numerical solution of problems of plasma dynamics with a neutral layer</p> <p>Abstract: Mathematical modeling on a computer is widely used in problems of magnetic hydrodynamics and dynamics of ionized gas (plasma). In these problems, in addition to the equations of mass, momentum, and energy balance that are common in continuum mechanics, it is necessary to solve Maxwell's equations for the electromagnetic field. An urgent and interesting problem in the theory of ionized gas is the problem of changing the topology of the magnetic field in plasma during the processes of magnetic field lines reconnection. Such situations are characteristic of plasma processes in the Earth's magnetosphere (natural processes and the ones resulting from active experiments in space) and in laboratory facilities for the creation of closed configurations. Because of the difficulties of diagnostics, mathematical numerical modeling is of great importance. The article presents two-dimensional mathematical models of the processes of magnetic field lines reconnection occurring in plasma with finite conductivity in the vicinity of the neutral surface. Effective numerical algorithms are constructed for solving problems of plasma dynamics in the approximation of one-fluid magnetohydrodynamics. Calculations are conducted taking into account dissipative processes. The problem of transportation and interaction of closed plasma configurations in a single computational domain was solved.</p>
<p>Paper ID 31</p>	<p>Sherzod Khudainazarov¹, Burkhon Donayev², Talibjan Sabirjanov³, and Jahongir Qosimov¹</p> <p><i>¹Department of Theoretical and Structural Mechanics, Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000 Tashkent, Uzbekistan</i></p>



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	<p style="text-align: center;">²<i>Karshi Engineering-Economics Institute, Karshi, Uzbekistan</i> ³<i>Fergana Polytechnical Institute, Fergana, Uzbekistan</i></p> <p>Title of presentation: Dynamics of high-rise structures taking into account the viscoelastic properties of the material</p> <p>Abstract: The article deals with forced vibrations of a high-rise axisymmetric structure, represented as a viscoelastic beam of an annular section with a variable slope of the generatrices and variable thickness. The research was conducted to analyze the behavior of a high-rise structure for various kinematic effects. The task is to determine the displacements of the points of a high-rise structure at different time points under different kinematic effects. The methods were developed and a computer program was built; forced vibrations of high-rise axisymmetric structures under various kinematic actions, considering viscoelastic properties of the material, were investigated in linear, nonlinear, and viscoelastic formulations. The study of the dynamic behavior of a high-rise structure, taking into account the nonlinear and dissipative properties (different in nature) of the material, shows that the combined consideration of all these properties brings the resulting pattern closer to the one observed in reality. That is, the amplitude of the structure's oscillations does not grow infinitely, but gradually decreases over time, and the maximum possible consideration of nonlinear and dissipative properties leads to the fastest damping of oscillations.</p>
<p>Paper ID 35</p>	<p style="text-align: center;">Muzaffar Khudayarov¹, Bahrom Bobonazarov¹ ¹<i>Department of Power Plants, Networks and Systems, Tashkent State Technical University named after Islam Karimov, 100095 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Assessment of technical losses of electrical energy in distribution networks based on artificial neural networks</p> <p>Abstract: Calculation of electrical energy losses is one of the difficult problems in the process of transmission and distribution of electricity. At present, for calculating electrical energy losses, some methods based on deterministic information are used, which involves the adoption of a number of assumptions and using the results of iterative steady-state calculations. For a quick and correct calculation of losses, it is necessary to use methods that allow accounting for the fuzziness of circuit-mode information, as well as faster approaches required for the operational management of electrical networks. Considering this, the article presents models for assessing electrical energy losses in distribution networks based on various types of artificial neural networks. The use of these models makes it possible to increase the speed of calculations of electrical energy losses. Approbation of theoretical statements is carried out on the example of real circuits of 6-10 kV distribution networks.</p>
<p>Paper ID 36</p>	<p style="text-align: center;">M M Adilov¹, B A Rustamov¹, M E Amanova¹, and A S Rustamov² ¹<i>Tashkent State Agrarian University, 100140 Tashkent, Uzbekistan</i> ²<i>Scientific Research and Manufacturing Center of Agriculture and Food Supply, 100140 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Planting dates and seedling age of red cabbage during the spring season in Uzbekistan</p> <p>Abstract: The importance of red cabbage for expanding the range of vegetable crops in Uzbekistan is highlighted in this paper. The results of three-year (2018-2020) studies on the comparative assessment of the effectiveness of three spring planting dates (March 5-9, 13-16 and 25-27) at three seedling ages (70, 60 and 50 days) at each planting date were presented. It was revealed that the later the seeds are sown to obtain seedlings for spring culture, the faster the seedlings appear and the more the seedlings form leaves. With the postponement of the timing of planting seedlings, the survival rate of seedlings increases. It has been established that the later the seedlings are planted, the higher the temperatures are the growth of plants and the formation of heads. The most unfavorable temperature conditions are formed when the seedlings are planted on March 25-27, which causes a delay at the beginning of the formation of heads of cabbage, an increase in the number of leaves of a root rosette, a decrease in the setting and average weight of heads of cabbage and their</p>



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	<p>marketability. The best indicators of head set-up, their average weight and marketability, yield per unit area are provided when planting on March 14-16, 70 and 60-day old seedlings. Planting seedlings on March 25-27, seedlings of any age, due to the formation of heads of cabbage at excessively high temperatures, delays the flow of products, reduces the setting, average weight and marketability of heads of cabbage and significantly reduces the yield per unit area. It is recommended for a spring culture to plant on March 14-16 with 70 and 60-day old seedlings and not allow planting at the end of March.</p>
Paper ID 37	<p style="text-align: center;">B A Sulaymonov <i>Tashkent State Agrarian University, 100140Tashkent, Uzbekistan</i></p> <p>Title of presentation: Representatives of lepidoptera groups in plant biocenosis and their effective parasite-entomophage types Abstract: The article highlights interesting parts of ten years of scientific research, the development of fauna and bioecology and populations of more than 50 species of the main family Lepidoptera, which are found in the biocenosis of agricultural crops in Uzbekistan. Also, the species composition of representatives of the family Trichogrammatidae, Braconidae, Ichneumonidae, Chalcididae, Pteromalidae, Tachinidae from the main entomophagous species that effectively control the number of members of the family Lepidoptera was identified and systematically analyzed.</p>
Paper ID 38	<p style="text-align: center;">A Kayimov¹, M Z Kholmurotov¹, and B I Eshankulov² <i>¹Tashkent State Agrarian University, 100140 Tashkent, Uzbekistan</i> <i>²Scientific Research Institute of Forestry, 102017 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Justification of prospective pistachio (<i>pistacia vera</i> l.) varieties and forms while creating plantations in Uzbekistan Abstract: This article presents the results of research on the study of the qualitative properties of the fruits of selected promising pistachio forms. When creating pistachio plantations, it is recommended to use varieties with different periods of flowering and fruit ripening. This arrangement reduces the likelihood of damage to the pistachio flowers by spring frosts, increases the chances of pollination and ensures that the harvest is carried out in stages. For the creation of plantations in forestry, promising forms 518-G, 521-G, 527-SH, 528-G, 52-RG, 21-SH and 59-G are recommended as the most productive, large-fruited and resistant to adverse environmental factors, and also pests.</p>
Paper ID 39	<p style="text-align: center;">V T Kaysarov¹ and E T Akhmedov¹ <i>Tashkent State Agrarian University, University str., 2, 100140 Tashkent province, Uzbekistan</i></p> <p>Title of presentation: Several features of growing <i>Colchicum autumnale</i> l. in the urban environment of Tashkent-Uzbekistan Abstract: For the first time, the collection of autumn colchicum was created at the experimental field site of the Tashkent State Agrarian University. In this paper, the issues of growing conditions for the growth and development of <i>Colchicum autumnale</i> l plant were deeply studied and investigated. It was revealed that the <i>Colchicum autumnale</i> l growth and development largely depend on the size of the corm and the type of soil conditions.</p>
Paper ID 40	<p style="text-align: center;">A Sh Azizov¹, K S Sultonov¹, and J A Gafurov² <i>¹Tashkent State Agrarian University, 100140 Tashkent, Uzbekistan</i> <i>²Scientific Research Institute of Horticulture, Viticulture and Winemaking named after academician Makhmud Mirzaev, 100047 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Scientific significance of using protective devices in pear storage in refrigerated warehouses (in the case of Uzbekistan) Abstract: In this article, a scientific study on the long-term storage of Santa Maria pears in refrigerated warehouses through using modern protective equipment, special bags and ethylene-absorbing absorbers, was conducted. Accordingly, the main factor influencing the long shelf life of pears was the natural loss during the storage. It was considered that calculation and analysis of effects inducing the natural loss were pivotal to improve the</p>



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	<p>preservation of the fruit, maintain freshness and all useful elements of the fruit, and prolong the storage period. Ethylene absorber and Modified Atmosphere Packaging (MAP) packages were used in the initial research step, and collected pears were placed in the refrigerator at a temperature of 0-2°C in 8 different Options. Results showed that the higher natural loss in the fruit stored without employing any means (in option 1) was 5.45% equal to 193.9 gram, whereas the best result was in Option 7 used the MAP special plastic bag and two pieces of absorbers, and compared to the initial weight, 4099 grams, the natural loss in the fruit was 1.20% equal to 47.7 gram.</p>
<p>Paper ID 41</p>	<p>M M Kalandarov^{1*}, KH T Mashrapov¹, and G M Salokhiddinov¹ <i>¹Tashkent State Agrarian University, University str., 2, 100140 Tashkent province, Uzbekistan</i></p> <p>Title of presentation: Planting dates and placement of the Sophora plantation on the irrigated lands of the Tashkent oasis</p> <p>Abstract: This article is very relevant to set out organizing plantations in the conditions of the Tashkent oasis. Climatic zones of desert and semi-desert under the influence of new conditions (abundance of light and thermal solar energy, a very long growing season, artificial irrigation), the growth and development of sophora is favorable. Annual seedlings under the influence of mineral fertilizers reach a height of up to 110 cm, the growth of lateral shoots of seedlings in the first year after planting is 33 cm. In the conditions of the Tashkent oasis, sophora favorably tolerates short-term winter low air temperatures (up to 30°C), tolerates soil compaction and has established itself gas-, dust-resistant decorative breed. The number of inflorescences on one tree ranges from 16 to 60 pieces, depending on the layout of the seats. Abundant flowering of sophora was noted with a planting pattern of 5.0x4.0, 5.0x3.0 with sufficient sunlight. The content of rutin in fruit elements ranges from 3.9 to 14.7% and depends on agrotechnical care, the state of the plantings themselves and their location.</p>
<p>Paper ID 42</p>	<p>B S Kamilov¹, A SH Makhkamova¹, G S Sodikova¹, and E T Kodirov¹ <i>¹Tashkent State Agrarian University, University str., 2, Tashkent province, Uzbekistan, 100140</i></p> <p>Title of presentation: Effect of humate substances on biological activity and physical properties of eroded soils: a case study of Uzbekistan</p> <p>Abstract: Worldwide, approximately 3 million hectares of land degraded due to erosion, and every minute approximately 44 hectares of agricultural land are being lost. In fact, agricultural area situated in arid zone is vulnerable to erosion, which leads to decline in agricultural productivity due to low quality soil. Evidently, the vital activity of microorganisms is interlinked with the assimilation of minerals by plants in irrigated lands, that is, the production of high and quality crops. Therefore, this research was intended to see effect of humate substance on biological activity and physical properties of eroded soils, that is, investigate how humate substance impact on overall structure of soils in the Pskent district of Tashkent province. The results extracted from field and laboratory experiments showed that poultry manure in moderately eroded soils and humus and poultry manure variants in washed-out soils ranged from 2.2x10⁷ KHB/g to 7.5-3.0x10⁶ KHB/g. Oligonitrophilic microorganisms were found to be the same in all variants. Micromycetes were observed in humus variants with an average erosion of 2.2x10⁴ KHB/g, and in washed-out soils of 7.5x10³ KHB/g. The amount of actinomycetes in samples 3 and 4 was 7.5x10³ KHB/g per 1 gram of soil, while in samples 1, 2, 5 and 6 they were not found at all. This means that the amount of actinomycetes was slightly reduced in summer, but the relative changes between the options were 1.1-8.3x10⁸ KHB/g in washed-out soils with moderate erosion in less washed soils, and 7.5-8.3x10⁷ KHB/g in moderately washed and washed soils. Furthermore, influence of humic biofertilizers, organic fertilizers on general physical properties of eroded typical gray soils was also studied. Accordingly, the effect of fertilizers in the control variant was 1.30g/cm³, followed by the variant with the use of mineral fertilizers humate 1.27g/cm³, and the application of poultry manure 1.29g/cm³. In</p>



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	<p>moderately eroded soils, the values were found to be 1.40 g/cm³, 1.35 g/cm³, 1.33 g/cm³, respectively, and 1.25 g/cm³, 1.31 g/cm³, 1.29 g/cm³ in washed out soils.</p>
Paper ID 43	<p style="text-align: center;">S A Usmanov¹, KH T Mashrapov², and K O Khudarganov¹</p> <p style="text-align: center;">¹<i>Scientific Research Institute of Breeding, Seed Production and Agricultural Technology of Cotton Growing, University str., 1, 100140 Tashkent province, Uzbekistan</i></p> <p style="text-align: center;">²<i>Tashkent State Agrarian University, University str., 2, 100140 Tashkent province, Uzbekistan</i></p> <p>Title of presentation: Vilt resistance of cotton varieties while inoculation with various isolates of the fungus <i>Verticillium dahliae</i> kleb. in an artificial climate of Uzbekistan</p> <p>Abstract: This article addresses the studies on the resistance of cotton varieties to <i>Verticillium dahliae</i> Kleb on an artificial infectious background. It is shown that resistance indicators depend on the origin of varieties. <i>V.dahliae</i> isolates isolated from varieties C-6524, Namangan-77, Barkhayot, Shodiyona, Omad and C-8290 showed different virulence; isolates allocated from varieties C-6524, Namangan-77, Barkhayot, Shodiyona and Omad showed the highest virulence.</p>
Paper ID 44	<p style="text-align: center;">H F Hamroev^{1*}, KH T Mashrapov¹, O A Shaymatov¹, and D B Tulaev¹</p> <p style="text-align: center;">¹<i>Tashkent State Agrarian University, University str., 2, 100140 Tashkent province, Uzbekistan</i></p> <p>Title of presentation: Efficiency of choosing promising walnut forms in the case of Uzbekistan</p> <p>Abstract: Walnut (<i>Juglans regia</i> L) is one of the most important tree species in Uzbekistan. Natural walnuts have a valuable gene pool, among which there are many forms with different bioecological properties. In particular, biodiversity in terms of kernel quality is highly variable within the species. This article provides information on the analysis of quality indicators of walnut kernels in natural and local nuts. Among the indicators of kernel quality in the selected forms, the yield of walnut kernels was of high importance as the main indicator, and in the selected forms this indicator was 38.2-63.3. According to international indicators, Parkent-2, Boysun-1 and Humson-5 forms are recommended for wide use, given that the form with a yield rate of more than 50% is promising.</p>
Paper ID 45	<p style="text-align: center;">A J Shokirov^{1*}, S S Lapasov¹, and K J Shokirov¹</p> <p style="text-align: center;">¹<i>Tashkent State Agrarian University, University str., 2, 100140 Tashkent province, Uzbekistan</i></p> <p>Title of presentation: Scientific and practical fundamentals of growing cabbage (<i>Brassica capitata</i> lizg.) in Uzbekistan</p> <p>Abstract: At present, scientific research is underway to further develop vegetable growing in the secondary crop, in particular to further increase the yield and quality of white cabbage, to select a system of planting time-sowing scheme that maximizes the biological productivity of varieties, and to apply the most optimal standards of fertilization and irrigation. In this regard, the urgent task remains to determine the optimal varieties of cabbage that can be grown in repeated crops, their optimal planting scheme, timing, development and implementation of optimal standards for each variety of mineral fertilizers and irrigation, and its solution is large-scale throughout the country. Besides that a number of problematic issues are addressed, which could allow to get high and high-quality harvest of white cabbage in repeated sowing in grain-free areas.</p>
Paper ID 46	<p style="text-align: center;">M K Khojanazarova^{1*}, S S Murodova¹, S F Sanakulov², and G K Khalmuminova¹</p> <p style="text-align: center;">¹<i>Department of Tashkent State Agrarian University, University str., 2, 100140 Tashkent province, Uzbekistan</i></p> <p style="text-align: center;">²<i>Scientific Research Institute of Soil Sciences and Agrochemistry, Kamarniso str., 3, 100020 Tashkent, Uzbekistan</i></p>



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	<p>Title of presentation: Investigating the cultural-morphological features of rhizobacteria and allocating it from the cotton plant (<i>Gossypium hirsutum</i>): in the example of irrigated meadow soils of Uzbekistan</p> <p>Abstract: This paper investigates the cultural-morphological, physiological and biochemical properties of bacterial isolates with stimulating properties isolated from the rhizosphere of cotton (<i>Gossypium hirsutum</i>) grown in saline soils of Uzbekistan. The cells of the isolated culture No. 12 were found to be rod-shaped, 2-3x0.5-0.6 µm in size, single or chain-linked, Gram-positive aerobic bacteria producing spores. In studying the culture No. 146, its cells were in the form of thick, less mobile rods, 1-2x0.6-0.8 µm in size, forming thermostable spores. The spores were located in the center of the cell; the Gram-stained colonies in meat-peptone agar were round, bulging; the edges were flat, consistency oily, smooth and, mucous; and, the upper part was found to be shiny. Studies have shown that the isolates appertained to the genus <i>Bacillus</i> sr.</p>
<p>Paper ID 47</p>	<p>M K Khojanazarova^{1*}, S S Murodova¹, S F Sanakulov², and J M Turdaliev² ¹Tashkent State Agrarian University, University str., 2, Tashkent province, Uzbekistan, 100140 ²Scientific Research Institute of Soil Sciences and Agrochemistry, Kamarniso str., 3, Tashkent, Uzbekistan, 100020</p> <p>Title of presentation: Influence of biopreparation ‘Zamin-M’ on cotton plants (<i>Gossypium hirsutum</i>) under soil salinization in Uzbekistan</p> <p>Abstract: In this article, a microbial inoculant acting as a biofertilizer is considered as a biostimulant, consisting of three strains of local salt-tolerant strains of rhizobacteria <i>Pseudomonas stutzeri</i> SKB308, <i>Bacillus subtilis</i> SKB309, <i>Bacillus megaterium</i> SKB310. The authors have developed and introduced into agricultural practice an experimental sample of the biological product ‘Zamin-M’, which increases the resistance of cotton to stress conditions of soil salinity. It is proved that the biological product ‘Zamin-M’ increases soil fertility has a beneficial effect on the enzymatic activity of the soil and the development of a population of beneficial microorganisms. The bioproduct ‘Zamin-M’ is presented as a new stimulant in the practice of growing cotton in saline conditions. An agricultural technique for the use of a local biological product in agriculture has been developed. The ‘Zamin-M’ is included by the State Committee of the Republic of Uzbekistan in the list of agrochemicals and pesticides permitted for use in agriculture of the Republic of Uzbekistan (certificate No. 1A1005).</p>
<p>Paper ID 48</p>	<p>B B Shoyusupov¹, N R Ruzibayev², U R Soatov^{1*} and N T Shoymurodov¹ ¹Tashkent State Agrarian University, University str., 2, 100140 Tashkent province, Uzbekistan</p> <p>Title of presentation: Analysis of external features and live weight of woolly-meaty sheep (<i>Ovis aries</i>)</p> <p>Abstract: This article addressed the development and the growth of offspring, the external characteristics and the productivity at different breeding periods of woolly-meaty sheep of Uzbekistan. It was observed that wool productivity was higher in sheep rich in wool-meat than ordinary sheep; sheared wool was 1.26 kg (49.6%), after washing it was 0.97 kg (67.8%), wool length was 2.13 (19.2%) higher. Live weights of lambs from ewes in the experimental groups were determined at birth, at 30 days of age, and 3 months of age. From September 1 to September 20 of the year, the live weight, body size and wool productivity of early inseminated ewes were higher than those of inseminated ewes from late October to November 10. The live weight of lambs obtained from artificially inseminated sheep with frozen semen of typical rams in world gene pool considered semi-fine wool in the meat-wool direction was higher than sheep naturally inseminated with pedigree rams. Accordingly, it was heavier by 0.4 kg (9.3%) at the first day of birth, followed by 0.5 kg (6.8%) at 10 days, and 0.4 kg (1.3%) at 3 months of age.</p>
<p>Paper ID 49</p>	<p>K J Shokirov^{1*}, M KH Dosmukhamedova¹, A J Shokirov¹, U T Khodjaev², and U R</p>



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	<p style="text-align: center;">Soatov¹ <i>¹Tashkent State Agrarian University, University str., 2, 100140 Tashkent province, Uzbekistan</i> <i>²Scientific Research Institute of Veterinary, Al-Beruni str., 35, Toylok hamlet, Samarkand province, Uzbekistan</i></p> <p>Title of presentation: Improving breeding and productivity qualifications of Holstein cow breeds (b. Taurus) in climate of Uzbekistan Abstract: This article accelerates the development of selection methods for selecting the best genotypes that are acceptable from the similarity genotypes of imported Holstein cattle typical of Chinese, German and Slovenian selection. The genetic potential of reproduction and productivity of breeding breeds in genotype-environment interactions has been demonstrated. The results of the same feeding, storage and performance of Holstein cows in summer and winter, the productivity characteristics of the cattle are presented.</p>
<p>Paper ID 50</p>	<p style="text-align: center;">Kh N Atabayeva^{1*}, N S Umarova¹, S Yakubov¹, and S Sh Khayrullaev¹ <i>¹Tashkent State Agrarian University, University str., 2, 100140 Tashkent province, Uzbekistan</i></p> <p>Title of presentation: Influence of trace elements on soybean yield in grassland-swamp soils Abstract: This article presents the results of experiments conducted in the conditions of meadow-swamp soils of Tashkent region. The study of the effect of various norms of trace elements sulphur, manganese and iron on the growth, development and yield of early maturing varieties of soybeans was studied. Positive results were obtained from moderate levels of sulphur and manganese, and low levels of iron. Macro and micronutrients had a positive effect on soy yield. An additional 7.6 quintals (q)/ha was harvested in exchange for macro fertilizer. Compared to the background variant, the yield was 4.6-8.3 q/ha for sulphur and 4.9-9.8 q/ha for manganese. The yield of the iron element was lower than that of the background variant. Grain quality has changed in exchange for macro and micronutrients. In exchange for mineral fertilizers, this figure increased by 2.4%. In exchange for the element sulphur, the protein increased by 3.1-5.8%; an increase of 4.4-8.4% was observed in exchange for the element manganese. It was noted that the protein increased by 7.9-8.7% in exchange for the element iron.</p>
<p>Paper ID 51</p>	<p style="text-align: center;">N M Ilkhamov^{1*}, I G Kurbanov¹, J Kh Aliev¹, S E Ganiev¹, and Ch V Toshpulatov¹ <i>¹Tashkent State Agrarian University, University str., 2, 100140 Tashkent province, Uzbekistan</i></p> <p>Title of presentation: Possibilities of drip irrigation of vegetables in agricultural land of Uzbekistan Abstract: Reducing water consumption in crop irrigation in the world agriculture, studying soil moisture and water consumption by different irrigation methods, improving soil agrophysical properties and increasing productivity, as well as increasing the productivity of vegetable crops by various irrigation methods and improving phytosanitary conditions (weed and pest density, disease). Extensive research is being conducted to assess the level of one of the most pressing issues in agriculture is the development, improvement and widespread introduction of cost-effective irrigation methods in the spring and summer planting and care of vegetable crops in conditions of water scarcity.</p>
<p>Paper ID 52</p>	<p style="text-align: center;">Tulagan Kamalov¹, Abdusaid Isakov², Abdulatif Shavazov¹, Albina Elmuratova² and Khairulla Hojiev³ <i>¹Scientific and Technical Centre of JSC Uzbekenergo, 100204 Tashkent, Uzbekistan</i> <i>²Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000 Tashkent, Uzbekistan,</i> <i>³Tashkent branch of Samarkand institute of veterinary medicine, 100269 Tashkent region, Uzbekistan</i></p>



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	<p>Title of presentation: Development of a procedure for calculation of specific rates of electric energy consumption at frequency regulation of electric drives of pumping stations</p> <p>Abstract: The issues of developing a methodology for calculating the specific rates of electrical energy consumption during frequency regulation of electric drives of pumping stations are considered. When calculating specific consumption rates, experimental studies were carried out at the Chirchik pumping station. When developing the methodology, technological, design parameters, water consumption, as well as the total capacity of pumping units based on frequency-controlled electric drives are taken into account. At the same time, the characteristics of the main parameters that must be taken into account when choosing variable frequency drives for pumping units are determined.</p>
<p>Paper ID 53</p>	<p>R M Usmanov^{1*}, S M Nabiev¹, S V Lukyanova¹, M T Sagdiyev², and Sh A Hamdullaev¹ ¹<i>Institute of Genetics and Experimental Biology of Plants, Academy of Sciences of the Republic of Uzbekistan, Tashkent, Uzbekistan</i> ²<i>Department of Environmental Safety of Agriculture and Botany, Tashkent State Agrarian University, Tashkent, Uzbekistan</i></p> <p>Title of presentation: Influence of physicochemical factors on water exchange in cotton leaves under the moisture deficit conditions</p> <p>Abstract: Presowing treatment of cotton seeds with a physical factor (low-frequency electromagnetic field - LF EMF) and a chemical compound (glycyrrhizic acid - GzA) and sowing them under conditions of optimal and limited water supply showed that different varieties of cotton, depending on their biological peculiarities and the method of seed treatment, had different parameters of water exchange in plants. The experiments were carried out in laboratory, greenhouse, lysimetric and field conditions, the indicators of the electrical resistance of leaf tissues (ERLT) of cotton plants depended on the conditions of water supply. According to this indicator, the varieties <i>Ishonch</i>, <i>Gulbahor-2</i> and <i>Navbahor-2</i> showed greater resistance to soil moisture deficiency, in comparison with the variety <i>Tashkent-6</i>. The plant varieties from seeds, treated with LF EMF and GzA, to a greater or lesser extent, are in the range with the lowest ERLT values, in comparison with the varieties from untreated seeds.</p>
<p>Paper ID 56</p>	<p>M Ibragimov^{1*}, I E Tadjibekova², and O Matchonov¹ ¹<i>Tashkent institute of irrigation and agricultural mechanization engineers, 39, Kari Niyazi, Tashkent state, 100000, Uzbekistan</i> ²<i>Tashkent state agrarian university, 2, University, Tashkent state, 100140, Uzbekistan</i></p> <p>Title of presentation: Interconnected operation of the ozone generator with the power supply unit</p> <p>Abstract: This article is addressed to the inductivity of the feeder transformer influence on of the plate-type ozone generator operating modes. The equation characterises the ozone generator interconnected operation with the transformer, in discharge and non-discharge modes is represented. Use of the near-resonant mode of operation is proposed with a view to reach maximum output capacity. With that end in view, it is proposed to use the transformer with higher inductance. Oscillograph charts of two modes of operation of the ozone generator are analysed. Current waveform factors are determined by the harmonic analysis method. Experiments proved that current waveform factor increase in value for the account of continuous discharge is conducive to increase of ozone output by 25-30 % and power loss reduction by 10-15 %.</p>
<p>Paper ID 57</p>	<p>A Z Mamatov¹, A K Usmankulov², I Z Abbazov², U A Norboyev², and E T Mukhametshina² ¹<i>Department of Mathematics and Computer Science, Tashkent Institute of Textile and Light Industry, Tashkent, Uzbekistan</i> ²<i>Jizzakh Polytechnic Institute, Jizzakh, Uzbekistan</i></p> <p>Title of presentation: Determination of Temperature of Components of Cotton-Raw Material in a Drum Dryer with a Constant</p> <p>Abstract: This article solves one parabolic-type boundary value problem for determining</p>



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	<p>the heat-moisture state of raw cotton in drum dryers at a constant air temperature. Numerical results are obtained by the Bubnov – Galerkin method of the problem under consideration, a comparative analysis is carried out with experimental data. It is shown that the proposed mathematical model and its numerical algorithm adequately describe the drying process of raw cotton.</p>
<p>Paper ID 58</p>	<p style="text-align: center;">Q Jumaniyazov¹, M Ismatova¹, I Abbazov^{1*}, and D Kazakova¹ <i>¹Jizzakh Polytechnic Institute, Jizzakh, Uzbekistan</i></p> <p>Title of presentation: Study on the influence of the cotton storage process on the quality indicators of fiber and yarn</p> <p>Abstract: This article defines fiber quality indicators that differ in laboratory conditions from the upper, middle and lower layers of Bukhara-6 breeding varieties of cotton, in the modern system HVI 1000 SA. Based on the results of the study, histograms of changes in the quality of cotton fiber in the layers of the harem are presented. As an alternative, the quality indicators of yarn obtained in the laboratory spinning device “Sherli” of small size from fiber were determined. As can be seen from the analysis of the test results, it was found that the comparative elongation strength of cotton obtained from the lower layer of the stack, the upper average length, elongation at break, the light output coefficient, decreased compared to other layers of the stack, on the contrary, the index of hip fibers, increased, decreased compared to other layers of the stack. In addition, according to the results of the tests obtained, the fiber viscosity index was obtained – the correlation between the properties of fibers and the properties of yarn, the thread viscosity index was estimated by the CSP (COUNT STRENGTH PRODUKT) coefficient, which was determined by the formula for carded yarn obtained in the laboratory spinning device "Sherli" from fiber stored in the refrigerator. The obtained results showed that the relationship between fiber properties and yarn properties due to the fact that the maturity index of a thread is at the top of the stack compared to the middle and lower part of the stack.</p>
<p>Paper ID 59</p>	<p style="text-align: center;">Azimjon Parpiyev¹, Ilkhom Sabirov¹, Alisher Usmankulov², Nodir Navruzov¹ <i>¹Tashkent Institute of Textile and Light Industry, 100100 Tashkent, Uzbekistan</i> <i>²Jizzakh Polytechnic Institute, 130100 Jizzakh, Uzbekistan</i></p> <p>Title of presentation: Study of the Influence of Main Parameters of the Regenerator Ginning Machine on the Qualitative Indicators of the Fibers and Seeds</p> <p>Abstract: Since cotton ginning in Uzbekistan is carried out mainly by saw gins, this article proposes a technology for the process of cotton ginning, regeneration, and purification of fibrous waste. The process of regeneration and purification of fibrous waste is an urgent problem for the cotton ginning industry since the composition of fibrous waste contains about 80% of spun fiber. Technology “The process of separating the fiber from seeds” was carried out in two stages: in the first stage of separating the fiber from seeds, a low density of the raw roller of the saw gin took place, while the productivity remained unnamed. After the first stage of separating the fiber from the seeds, the fiber was cleaned in fiber cleaners. The fibrous waste separated in the fiber cleaner was mixed with the seeds after the first stage of separating the fiber from the seeds and fed to the second stage of separating the fiber from the seeds. This paper proposes a technology for the regeneration and purification of fibrous waste, separated during fiber purification. The influence of the length of the seed comb pegs when ginning a mixture of progressed seeds and fibrous waste on gin using the 1DR-119 regenerator on the gin parameters and the quality of the resulting fiber has been studied. A diagram of an experimental technological process is proposed and the results of production tests carried out at “JSC Dalverzin Buttermilk Cleaning” are presented. Experimental dependences of productivity, quality indicators of fiber, and seeds on the length of the splitting of the seed comb were obtained. In this case, the length of the pegs of the seed comb was studied in the aisles from 95 to 125 mm. The results of the experiments showed that with the lengthening of the heads of the seed comb, the residence time of the seeds in the working chamber increases, which entails a slight decrease in productivity and an increase in the share of short fiber in the product, but when the length of the heads of the</p>



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	<p>seed comb is 125 mm, lint prevails in the mass of fibrous products. Having a lower specific gravity compared to fiber, causing a decrease in the seed throughput of the regenerator gin. Analyzing the results of studies of the effect of the length of the pegs on the quality indicators of fiber and seeds after the second stage of ginning, it was revealed that with a decrease in the pubescence of the seeds emerging from the working chamber, their mechanical damage increases, which leads to an increase in the fiber of broken seed and such a hard-to-remove defect as a peel with fiber. Based on the research results obtained during processing on the 1DR-119 regenerator gin of a mixture of ginned seeds with the fibrous waste of fiber cleaners at different lengths of the seed comb splints, the most acceptable length of the seed comb is 105-115 mm, since this produces a standard fiber with a staple mass length of 30.1 – 29.9 mm, meeting the standards.</p>
<p>Paper ID 62</p>	<p>Mohamed Elweddad¹, Muhammet Tahir Guner¹, and Ziyodulla Yusupov¹ <i>Department of Electrical-Electronics Engineering, Karabuk University, Karabuk, Turkey</i></p> <p>Title of presentation: Energy management and optimization of microgrid system using particle swarm optimization algorithm Abstract: An optimization model is proposed to manage a day-ahead optimal energy management strategy for economic operation of Microgrids. The model is based on a using particle swarm optimization algorithm (PSO) for scheduling four energy sources (grid, PV system, wind system, energy storage system) with 24 hours' time step, considering forecasted electrical demands, weather, and renewable energy generations. In this paper, the objective function is to minimize the cost of electricity generation and to manage delivering power from hybrid sources to the demand. The results showed that scheduling and controlling of different energy sources in efficient way reduce the total cost of power generation and ensure sustainable power flow. It is important to enhance the usage of solar and wind sources, optimize the operation of storage systems.</p>
<p>Paper ID 75</p>	<p>Sherkul Rakhmanov^{1*}, Dilbaroy Abdullaeva¹, Nigora Azizova¹, and Aziz Nigmatov¹ <i>¹Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100007 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Construction of mathematical modelling of a population of microalgae Abstract: This article devoted to the development of the mathematic model of the technological process of the chlorella cultivation process, its features and solving of this mathematic model. The Exponential growth of microalgae population under conditions of unlimited nutrient resources and population space proceeds at a rate proportional to the number of species of predominant cells and is described by the differential equation. In the presence of several inhibitors, specific velocity equations with the number of inhibitors can be used, but, as a rule, there are practically no elements acting as inhibitors in the cultivation of Chlorella microalgae. The modeling of this particular class of objects did not take into account the effect of inhibitors on the growth of microalgae. The consumption of nutrients to support the life of microalgae is described by the differential equation. In the course of this work, the processes of cultivation of microalgae were brought together into a system of equations. As a result, a system of differential equations of the technological process of Chlorella cultivation was obtained. Thus, the obtained system of equations describes the process of cultivation of microalgae and its technological process, implemented in a periodic mode.</p>
<p>Paper ID 77</p>	<p>S.B. Donaev¹, K.B. Kim², E. Rabbimov³, B.E. Umirzakov¹, G.M. Shirinov¹ <i>¹Tashkent State Technical University, 2, University str., Tashkent, Uzbekistan,</i> <i>²Sejong University, Seoul, South Korea</i> <i>³Jizzakh Polytechnic Institute, Jizzakh, Uzbekistan</i></p> <p>Title of presentation: Effect of implantation of barium and oxygen ions on the emission properties of Mo, Pd, and Pd-Ba Abstract: The effect of ion doping on the secondary emission characteristics of Mo, Pd and</p>



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	<p>Pd-Ba alloy has been investigated. It was found that as a result of doping with low-energy barium ions, an intermetallic compound of the Pd-Ba type is formed in the Pd surface layer. The formation of a chemical compound between the substrate and the dopant contributes to a significant (threefold) increase in the secondary electron emission (SEE) coefficient. It was found that the Pd and Pd-Ba samples after doping with a large dose of Ba⁺ ions have almost the same secondary emission parameters. Doping of Pd-Ba first with barium ions, then with oxygen ions with an energy of E₀ ≤ 1 keV leads to a significant increase in the secondary electron emission (SEE) coefficient.</p>
<p>Paper ID 78</p>	<p>Sardor Donaev¹, Nodira Mustafaeva², Azizakhon Maksumkhanova³ and Bakhrom Shafkarov³ ¹Tashkent State Technical University, 100097 Tashkent, Uzbekistan ²Karshi State University, 180119 Karshi, Uzbekistan Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000 Tashkent, Uzbekistan</p> <p>Title of presentation: The Dependence of the parameters of energy bands on the depth of the ion-doped layer for Si impanted with ions Ba⁺</p> <p>Abstract: The physicochemical properties of near-surface layers of Si implanted with low-energy (E₀ ≤ 5 keV) Ba⁺ ions have been investigated by ultraviolet photoelectron spectroscopy and secondary emission spectroscopy. It was found that at E₀ = 0.5 keV the dependence of the concentration of Ba⁺ atoms on the depth d has a stepwise character. Up to d ≈ 25-30 Å, the C_{Ba} practically does not change and is ~50-55 at.%. Starting from d ≈ 25-30 Å, with an increase in the depth, C_{Ba} decreases and at d ≈ 80 Å does not exceed 1–2 at.%, therefore, in this region, the band parameters and the density of states in valence electrons change. The observed changes are explained both by the formation of chemical bonds between the Ba and Si atoms and the emergence of new electronic states in the band gap due to the presence of unbound barium and silicon atoms.</p>
<p>Paper ID 79</p>	<p>Kh Otaboev^{1*}, D Sherkuziev², Sh Namazov¹, R Radjabov¹, and A Seytnazarov¹ ¹Phosphate Fertilizer Laboratory, Institute of General and Inorganic Chemistry, Academy of Sciences of Uzbekistan, 100170 Tashkent, Uzbekistan ²Department of Chemical Technology, Faculty of Chemistry Technology, Namangan Institute of Engineering and Technology, 160115 Namangan, Uzbekistan</p> <p>Title of presentation: Flow of simple superphosphate using two-stage decomposition of phosphorite</p> <p>Abstract: The methods for producing simple superphosphate by two-stage sulfuric acid decomposition of natural phosphates are analyzed. For the first stage, the process of decomposition of high-carbonate powdered phosphorite is studied depending on the rate of sulfuric acid from stoichiometry to the formation of H₃PO₄, its concentration and the reaction time of the starting components. For the second stage, the process of neutralization of phosphoric acid is studied, depending on the norm of phosphate rock for the formation of Ca(H₂PO₄)₂. The drying process of superphosphate is carried out, in which granular superphosphate is obtained, and P₂O_{5total} - 12%, P₂O_{5free} - 4.6%, P₂O_{5dig} : P₂O_{5total} = 90%, P₂O_{5 water} : P₂O_{5total} = 79%.</p>
<p>Paper ID 80</p>	<p>B Kuldashov^{1*}, L Khalilova², N Khalilov¹, and A Khamzayev² ¹Department of Plant Science and Forage Production, Faculty of Biotechnology and Processing of Livestock Products, Samarkand Institute of Veterinary Medicine, Samarkand, Uzbekistan ²Department of Plant Science, Faculty of Agrobiolgy, Tashkent State Agrarian University, Tashkent, Uzbekistan</p> <p>Title of presentation: The influence of planting schemes, norms and inoculants on the yield of new soybean varieties</p> <p>Abstract: In this article, data about the new native variety of <i>Nafis</i> and variety of <i>Selekta-302</i> is described which was brought from Krasnodar region of the Russian Federation in the</p>



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	<p>conditions of irrigated meadow-gray soils of Samarkand region, seed germination in field conditions, storage, growth, development, productivity, yield composition, the optimal planting schemes, norms have been identified and recommended for implementation. In the second experiment, in the conditions of irrigated meadow-gray soils, local <i>Nafis</i> variety and <i>Selekta-302</i> variety of Krasnodar regions included in the State Register, imported strains of <i>Bradyrhizobium japonica</i> endogenous bacteria produced in our republic and aboriginal populations bacterium present in local soil. The results of the study on the effect of inoculants studied and their effect on plant development, the number and weight dynamics of stems formed in plant roots, crop structure, yield, weight of 1000 seeds, as well as their effectiveness are described.</p>
<p>Paper ID 81</p>	<p style="text-align: center;">D Sherkuziev <i>¹Tashkent Department of Chemical Technology, Faculty of Chemistry Technology, Namangan Institute of Engineering and Technology, 160115 Namangan, Uzbekistan</i></p> <p>Title of presentation: Simple superphosphate by two-stage acid treatment of phosphate raw materials Abstract: The distinguishing feature of the proposed flow method before the classical (chamber) method is that the entire production cycle of natural phosphate processing is carried out in two stages. At the first stage, the phosphorite is treated with a stoichiometric flow rate of concentrated sulphuric acid (at least 93%), under conditions of complete decomposition of phosphorite to form phosphoric acid and crystals of anhydrite (calcium sulfate). The reaction temperature is 122 °C. In the second stage, the resulting concentrated solution of phosphoric acid in a mixture with sulphur is involved in a reaction with an additional input of phosphorite, which is the basis for the mechanism of chemical formation of monocalciumphosphate and granulation of superphosphate mass. The processes for neutralizing phosphoric acid on monocalciumphosphate and for granulating the product by coagulation are combined in one apparatus. The drying stage of the product is excluded from the scheme.</p>
<p>Paper ID 82</p>	<p>Igor Kravchenko¹, Mihail Erofeev¹, Aleksandr Fedorov², Valeriy Kondrashchenko³, Diana Abdumuminova⁴, Shukurilo Yuldashev⁴, Jaloliddin Matyokubov⁵, and Kudrat Bobomurodov⁶ <i>¹Institute of Mechanical Engineering named after A.A. Blagonravov Russian Academy of Sciences, Moscow, Russia</i> <i>²Military Academy of Material and Technical Support Army General A.V. Khruleva, St. Petersburg, Russia</i> <i>³Russian University of Transport (MIIT), Moscow, Russia</i> <i>⁴Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, Tashkent, Uzbekistan</i> <i>⁵Uzbekistan State World Language University Tashkent, Uzbekistan</i> <i>⁶Termez State University, Termez, Surkhandarya, Uzbekistan</i></p> <p>Title of presentation: Research of Mechanochemical Processes of Activation of Building Materials by Air-Impact Method Abstract: To increase the specific surface area of the binder and accelerate the strength gain of fast-hardening concrete mixtures, a model has been created for calculating aeroactivators as part of mobile complexes based on new equipment for cement activation, sand enrichment, local materials, and production waste. The proposed model establishes the dependence of the rate of destruction of the dusty shell of particles on the mechanical impact of the beaters and materials` physical and mechanical characteristics. To improve the operational characteristics of the cement aeroactivator, experimental studies were carried out, the results of which made it possible to determine the rational parameters of the developed installation. Based on the test results, it was found that the use of the cement activation process with additives accelerates the hardening process of concrete and mortar mixtures in the initial period, increases the design strength of concretes and mortars by 20–40% in comparison with the strength of the control composition at the same cement</p>



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	<p>consumption, and also reduces the consumption cement up to 17% to obtain concretes and mortars equal to the control composition at the design age.</p>
Paper ID 83	<p>Safargul Ulugova¹, Umid Ruzmetov¹, Abdushukur Hamzayev¹, and Askarboy Yunusov¹ <i>¹Research Institute of Forestry, 111104 Tashkent, Uzbekistan</i></p> <p>Title of presentation: The productivity of raw seeds and cuttings (leaf) of <i>Salvia officinalis</i> L. medicinal plants Abstract: This article highlights the different portions of minerals in fertilizer mixture used for the acceleration of cultivation of the medicinal plant of Sage in soil – climatic conditions of Syrdarya region. The obtained results showed that different portions of minerals in fertilizer mixture have a positive effect on increasing the yield of seedlings and cuttings of the plant. When feeding with different sharings of mineral fertilizers used in an experiment, applying Nitrogen-90, Phosphorus - 60 and Potassium - 40 kg/ha norms has given good results to the rapid growth of plants. This article provides information on the technology of intensive cultivation of seedlings and cuttings of Salvia plant.</p>
Paper ID 86	<p>Ruziboy Bakhramov¹, Xamza Yuldashev¹, Feruza Tokhtaboeva², Ergashali Ro'zimatov², Gulmira Ergasheva², Saodat Mirzaeva² <i>¹Research Institute of Forestry, 111104 Tashkent, Uzbekistan</i> <i>²Andijan State University, 170100 Andijan, Uzbekistan</i></p> <p>Title of presentation: Seed Reproduction technology of the Magnolia grandiflora from seeds Abstract: This article highlights the results obtained on the basis of scientific research carried out in 2019-2020 on the technology of reproduction from the seeds of <i>Magnolia grandiflora</i> plant in the farmer's farm named “Saydullo Temirov” specialized in the cultivation of landscape trees and shrubs located in the Uighur village of Pakhtaobod District of Andijan region. As a result of the study, determination of seed stratification time, planting time and methods, as well as maintenance work were determined, and conclusions were made.</p>
Paper ID 87	<p>Khusen Khamroyev¹, Obidjon Abdullayev² <i>¹Tashkent State Agrarian University, 100140 Tashkent, Uzbekistan</i> <i>²Research Institute of Forestry, 111104 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Formation of the vegetation cover in the desert pasture phytocenoses Abstract: Rising global temperatures in recent years have led to a sharp increase in the area of desert areas. Desert areas are widely used as pastures. The productivity of desert pastures in Uzbekistan is very low, ie 1-3 ts/ha. This limits the year-round use of desert pastures. One of the resource-saving and long-term effective ways to increase their productivity is to plant enclosures, as well as reclamation and forage rows in these desert pastures using plants such as <i>Haloxylon aphyllum</i>, <i>Calligonum caput-medusae</i>, <i>Salsola paletzkiana</i>. This is because protected areas have been scientifically proven to show their positive properties in other areas (around mountainous and irrigated fields). In these areas, enclosures not only perform a protective function, but also serve as a source of fodder for livestock in the autumn-winter seasons.</p>
Paper ID 88	<p>B Gafurdjanov^{1*}, E Berdiev², and U Xoliyorov³ <i>¹Research Institute of Forestry, 111104 Tashkent, Uzbekistan</i> <i>²Tashkent State Agrarian University, 100700, Tashkent, Uzbekistan</i> <i>³Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000, Tashkent, Uzbekistan</i></p> <p>Title of presentation: Study on the breeding ginkgo (<i>ginkgo biloba l.</i>) in Tashkent oasis Abstract: This article presents the results of research on the biochemical composition of green and yellowing leaves of 64-year-old bipedal ginkgo (<i>Ginkgo biloba L.</i>) seed and pollen trees growing in the Botanical Garden of the Academy of Sciences of Uzbekistan, introduced to Uzbekistan in the last century. Biochemical analyzes recorded the presence of</p>



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	<p>6 types of vitamins and 44 macro- and micronutrients in the leaves of the ginkgo tree. Vitamin C levels were found to be lower in the seed tree than in the pollen tree. The amount was 35.8 mg/% in the green leaves of the seed tree and 34.4 mg/% in the yellowed leaves. Ginkgo leaves contain important macro-and micronutrients such as Ca, Mg, K, Al, Fe, Cu, Mn, Zn, Mo, Co, I, Se, which are necessary for the vital activity of the human body and normal metabolism. The green leaves of the two-leafed ginkgo pollen tree contained 27577.288 mg/l of calcium, 11562.299 mg/l of potassium, the leaves of the seed tree 13912.903 mg/l of calcium and 7491.462 mg/l of potassium. At the same time, the green leaves of ginkgo contain 3073.807 mg/l – 7977.459 mg/l magnesium, 4353.72-5003.88 mg/l phosphorus, 501.073-515.343 mg/l sodium, 779.750 mg/l– the presence of silicon in the amount of 844.039 mg/l and iron in the amount of 373.023 mg/l – 655.148 mg/l was determined.</p>
<p>Paper ID 89</p>	<p style="text-align: center;">J Temirov¹, G Shukurova^{1*}, and I Klichov¹ <i>¹Research Institute of Forestry, 111104 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Study on the influence of stimulants on the rooting of the paulownia (<i>paulownia</i>) and tulip (<i>liriodendron tulipifera</i>) trees during the propagation by cuttings Abstract: This article describes the effect of a growth stimulant on the rooting of Paulownia and tulip tree saplings in the conditions of the Tashkent region. In addition, the article discusses the method of propagation of sapling from lignified and annual green cuttings, the influence of the preparation of the substrate 3: 3: 1 from sand, klinec (crushed stone), vermicompost on the development of saplings. In this case, the usual water (control), root SP, basfoliar Kel-SL and heteroauxin stimulants were used.</p>
<p>Paper ID 90</p>	<p style="text-align: center;">A Abdugarimov^{1*}, and I Saidakulov¹ <i>¹Institute of Mechanics and Seismic Stability of Structures, Academy of Sciences of the Republic of Uzbekistan, 100125, Tashkent, Uzbekistan</i></p> <p>Title of presentation: Dynamic analysis of a ten-link tooth-lever differential transmission Abstract: This article discusses the dynamics of a ten-link tooth-lever differential transmission mechanism. The force analysis of the transmission mechanism is given in order to find the dependence for determining the reaction in kinematic pairs and the balancing moment of the pair of forces and to show some features of the tooth-lever transmission mechanism. The force calculation was carried out taking into account the accelerated movement of links since their acceleration in modern high-speed machines is very significant. To obtain a more accurate concept of the external forces and moments loading the transmission mechanism in the accelerated movement of the links, the dynamics of the transient process of roller technological machines was considered. Cases of feeding the processed material were considered both from the side of the intermediate gears and from the side opposite to the parasitic gears. Dependencies were obtained to determine the force characteristics of this mechanism. Cases of pressure unloading and overloading on the processed material from the side of the free shaft, depending on the location of the transmission mechanism are shown. The dependence of the reaction force of intermediate gears on their own axes of rotation on the angle between the levers is shown. With an increase in the angle between the levers, the reaction of the intermediate gears on the axis of rotation increases.</p>
<p>Paper ID 91</p>	<p style="text-align: center;">Abdusalam Abdugarimov¹, Sanjarbek Madaminov¹, and Asrorbek Abdullajonov¹ <i>¹Institute of Mechanics and Seismic Stability of Structures, Academy of Sciences of the Republic of Uzbekistan, 100125, Tashkent, Uzbekistan</i></p> <p>Title of presentation: Synthesis of a ten-link tooth-lever differential roller transmission mechanism Abstract: This article deals with the synthesis of a ten-link tooth-lever differential transmission mechanism. The article contains an analytical review of modern scientific research on the synthesis of tooth-lever differential transmission mechanisms of roller machines with a variable center distance of the working shafts; a method for the synthesis of</p>



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	<p>tooth-lever differential transmission mechanisms of roller machines with a variable center distance of the working shafts described on the example of a ten-link tooth-lever differential transmission mechanism; the conditions for the synthesis of the mechanism given and substantiated when this mechanism is used in a roller machine; one of its working shafts has the ability to rotate about its own axis, and the second working shaft, in addition to rotation about its own axis, has the ability to move relative to the first working shaft along a line passing through the center the axes of rotation of both working shafts; the geometric synthesis of the tooth and lever contours of the mechanism, the dynamic synthesis of the mechanism, taking into account the angles of pressure between the lever link of the lever contour of the mechanism, which allows us to determine the optimal working position of the mechanism where the angles of pressure are within acceptable limits; the graphs of changes in the angles of pressure between the links of the lever contour of the mechanism, plotted depending on its position.</p>
<p>Paper ID 94</p>	<p>Abdunabi Bairov¹, Khurshida Nuriddinova¹, and Shukhrat Juraev¹ <i>¹Research Institute of Soil Science and Agrochemistry, 100179 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Study on the organic carbon and total nitrogen reserves in brown soils in the Chirchik river basin: A case study of Tashkent region, Uzbekistan Abstract: To identify the role in carbon stabilization, the content and reserves of SOC and TN in brown soils of the middle mountains of the Chirchik river basin of the Tashkent region of Uzbekistan were investigated in connection with the climatic conditions of the slopes of various topographic aspects. The content and reserves of SOC and N were the highest in the soils of the northern slope, and the lowest in the soils of the southern slopes; the eastern slopes, in this respect, occupied an intermediate position. The climates of slope exposures were the main factors influencing on the content and reserves of SOC and N in the profile of brown soils, indicating the need for separate consideration of carbon emissions from soils which are developed on slopes of various topographic aspects.</p>
<p>Paper ID 95</p>	<p>Bakhran Mamutov¹, Evgeniy Butkov¹, Abdushukur Hamzayev¹, Doniyor Sherkuziev², Khayrullakhan Aripov², Farogat Ergasheva³, and Karomatkhon Ismoilova³ <i>¹Research Institute of Forestry, 111104 Tashkent, Uzbekistan</i> <i>²Department of Chemical Technology, Faculty of Chemistry Technology, Namangan Institute of Engineering and Technology, 160115 Namangan, Uzbekistan</i> <i>³Department of Biology, Gulistan State University, 120100 Gulistan, Uzbekistan</i></p> <p>Title of presentation: Application of mineral fertilizers to increasing soil moisture and growth of forest seedlings for creation forest crops in Western Tien-Shan Abstract: This article presents the results of research of studying the effect of mineral fertilizers on soil moisture and the growth and development of forest seedlings when creating forest crops on the western slope of the Western Tien-Shan. It was established by experience that forest seedlings react differently to the action of mineral fertilizers. In pine, an increase in the fertilizer dose contributes to an increase in the growth of seedlings in height by 1.2 times. English oak, on the contrary, reacts weakly to the effects of fertilizers. Korolkov's hawthorn reacts intensively to the effects of fertilizers. At the same time, an increased dose of fertilizers contributes to an increase in the annual growth of plants by 3.2 times. The Sievers apple tree differed from other species with intensive growth in all variants of the experiment on the western slopes during the growing season. But in this breed, an increase in the dose of fertilizers caused an increase in annual growth up to 1.5 times compared with the control variant. Mineral fertilizers do not contribute to significant moisture retention in the upper soil layer during the summer vegetation season, but in the lower root-inhabited layers of fertilizer, it has a positive effect in increasing soil moisture above the wilting moisture, which is 8%, and is often observed in the upper horizons.</p>
<p>Paper ID 99</p>	<p>N D Khodzhaeva^{1*}, and I U Urazbayev² <i>¹Department of Biotechnology, Samarkand Veterinary Medical Institute, Uzbekistan</i> <i>²Gulistan State University, Gulistan, Uzbekistan</i></p>



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	<p>Title of presentation: Study on some features of water exchange of local varieties of hard wheat</p> <p>Abstract: This article discusses the main physiological indicators of water exchange in winter wheat varieties Makus-3, Istiklal and Istiklal-20. There were revealed indicators of daily and residual water deficit of leaves, as well as the water potential of leaves. As you are aware, drought resistance of plants depends on a number of factors. In particular, it is largely determined by the biological characteristics of plants. In this regard, the identification of the features of the physiological processes of the water regime and the associated metabolic processes that determine the resistance to drought in various varieties and hybrids of wheat is of great interest not only in scientific but also in practical terms, because the research results can be used to develop recommendations for selection of source forms for breeding work. We have studied a number of indicators of the water regime of local varieties of winter wheat - Istiklal, Istiklal-20 and Makus-3. The research was carried out on plants grown under the conditions of vegetation and field experiments in the phases of booting, earing, flowering and waxy ripeness.</p>
<p>Paper ID 104</p>	<p align="center">B Rasakhodzhaev^{1*}, S Makhmudov², and F Muminov³</p> <p align="center"><i>¹International Institute of Solar Energy, Academy of Sciences of the Republic of Uzbekistan, 100084 Tashkent, Uzbekistan</i></p> <p align="center"><i>²Department of World Economy, Tashkent State Economic University, 100003 Tashkent, Uzbekistan</i></p> <p align="center"><i>³Department of Commercialization of Innovative Developments and Technology Transfer, Ministry of Innovative Development of the Republic of Uzbekistan, 100060 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Selection of a heating system based on climatic conditions of Uzbekistan and on calculations of the technical and economic indicators of alternative systems: A case study of the solar greenhouse with a transformable building</p> <p>Abstract: This paper presents studies on the choice of a heating system based on calculations of economic efficiency and payback periods for alternative systems, a solar greenhouse with a transformable body. The purpose of the work is to carry out calculations to determine the consumption of fuel resources necessary to ensure the required amount of energy for the heating season: consumption of natural gas, solid fuel (coal) and electricity for heating a greenhouse with a transformable (adjustable) body. Analytical methods were used to determine the cost of materials and the main units of a greenhouse with a transformable (adjustable) body. Depending on the shape of the greenhouse, the total costs, economic efficiency and payback periods are determined. The research work carried out shows that, in terms of the cost of construction and consumption of materials, the developed greenhouse with transformable (adjustable) body are quite acceptable for its successful use among farmers and private households in the Republic of Uzbekistan. Calculation of economic efficiency and payback periods for greenhouses with a transformable housing allows you to choose the most acceptable heating system and technical characteristics of alternative systems acceptable for the climatic conditions of Uzbekistan.</p>
<p>Paper ID 105</p>	<p align="center">Khakim Muratov¹, Kamoliddin Kodirov¹, and Alijon Kushev¹</p> <p align="center"><i>¹Uzbekenergo "JSC Scientific and Technical Center" LLC, 100076 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Specification of the system application for the different tariffs during the consumption time of electricity by industrial enterprises</p> <p>Abstract: This article is devoted to such issues as smoothing the schedule of loads of manufacturing factories in the "intensive" periods due to the correct use of the system of tariffs, which is stratified by time. It is possible to achieve smoothing of the load schedule of the energy system through the correct use of the time-stratified tariff system by taking into account the above-mentioned issue. Proper use of the time-stratified tariff system by consumers will reduce the load period of the energy system and change its modes.</p>
<p>Paper ID 106</p>	<p align="center">Hamrokul Ravshanov¹, Farmon Mamatov^{1,2}, Odil Primov¹, Shakhnoza Khazratkulova¹ and Dilshod Baratov³</p>



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	<p>¹<i>Karshi branch of Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, Karshi, 180119, Uzbekistan</i></p> <p>²<i>Karshi Engineering Economic Institute, Karshi, 180100, Uzbekistan</i></p> <p>³<i>Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, Tashkent, 100000, Uzbekistan</i></p> <p>Title of presentation: Study on technological properties of winter wheat soils</p> <p>Abstract: The aim of the study is to study and analyze the physical, mechanical and technological properties of soils from under winter grain crops in the hot climate of Uzbekistan. The results of determining the moisture content, density, hardness and resistance to various deformations of soils after harvesting winter wheat are presented. The basic principles and methods of classical mechanics, mathematical analysis and statistics were used in this study. Studies have found that, in the layer 0-30, the soil moisture for ten days after harvesting winter cereals decreases by 12.1-16.3%, and the soil hardness increases by 10.7-16.4% and are 3.22-5.14 MPa. At the same time, at an average humidity of 12-14%, the resistance of the soil to breakage and torsion, respectively, is 1.3-1.8 and 1.0-1.1 times higher than the resistance of the soil to shear. The resistance of the soil to shear is 87.9 kPa, and to breakage and torsion-69.7 and 78.6 kPa, respectively.</p>
<p>Paper ID 107</p>	<p>F Mamatov^{1,3}, B Mirzaev², S Toshtemirov^{1*}, O Hamroyev¹, T Razzaqov¹, and I Avazov²</p> <p>¹<i>Karshi Engineering Economic Institute, 180100, Karshi, Uzbekistan</i></p> <p>²<i>Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000, Tashkent, Uzbekistan</i></p> <p>³<i>Karshi branch of Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 180119, Karshi, Uzbekistan</i></p> <p>Title of presentation: Study on the development of a machine to prepare the soil for cotton sowing on ridges</p> <p>Abstract: The aim of this paper is to create a combined machine for planning the soil for sowing cotton on the edges. A total for the execution of the innovation of planning the soil for sowing cotton on the edges was developed, which comprises of a dump deep-dredger with a slanted rack and a comb-maker. The essential standards and strategies of classical mechanics, numerical examination and measurements were utilized in this paper. The plan conspire of the combined unit is advocated. The following results were obtained from the outcomes of multivariate tests set up: the width of the ripper within the extend of 10.5-11.03 cm, the disintegrating point of 27°, the point of establishment of the plowshare edge to the heading of movement of 31°. The arrangement of edges of the desired degree with negligible vitality utilization is given with a width and length of the deep-dredger bit, separately, of 5 and 20 cm, edge hold width of 21 cm, the length of its wing within the run of 47-49 cm, and a least longitudinal.</p>
<p>Paper ID 108</p>	<p>Bakhadir Mirzaev¹, Farmon Mamatov^{2,3}, Uchkun Kodirov², and Dustmurod Chuyanov³</p> <p>¹<i>Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000, Tashkent, Uzbekistan</i></p> <p>²<i>Karshi Engineering Economic Institute, 180100, Karshi, Uzbekistan</i></p> <p>³<i>Karshi branch of Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 180119, Karshi, Uzbekistan</i></p> <p>Title of presentation: Study on machine for processing and preparing the soil for sowing potatoes on ridges</p> <p>Abstract: The technologies used to prepare the soil for sowing potatoes on ridges, consisting of numerous soil preparation operations, lead to loss of moisture, prolonging the sowing period and increasing operating costs. The aim of the research is to develop a machine for processing and preparing the soil for sowing potatoes on ridges. The authors have developed a technology for preparing fields for sowing potatoes on ridges and a machine for its implementation. The basic principles and methods of classical mechanics,</p>



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	<p>mathematical analysis and statistics were used in this study. On the basis of multifactorial experiments, the following parameters are justified: the angle of inclination of the ploughshare blade in the range of 6-70, the height and length of the guiding knife in the range of 94-110 mm and 107.2-136 mm, respectively. The main parameters of the working bodies of the machine and its technical characteristics are given. The results of the tests have established that the proposed machine for preparing the soil for sowing on the ridges reliably performs the specified technological process and its performance indicators fully meet the requirements. The use of the machine provides a reduction in operating costs for processing 1 hectare of area in comparison with the technical means used by 33.8 %.</p>
<p>Paper ID 109</p>	<p>Khayriddin Fayzullaev¹, Farmon Mamatov^{1,3}, Bakhadir Mirzaev², Dilmurod Irgashev¹, Sodik Mustapakulov¹, and Akram Sodikov¹ ¹Karshi Engineering Economics Institute, 180100, Karshi, Uzbekistan ²Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000, Tashkent, Uzbekistan ³Karshi branch of Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 180119, Karshi, Uzbekistan</p> <p>Title of presentation: Study on mechanisms of tillage for melon cultivation under the film Abstract: The aim of the study is to develop a machine for preparing the soil for sowing melons under a tunnel film. The authors have developed a machine for preparing the soil for sowing melons under a tunnel film, which is equipped with deep-diggers with an inclined stand of the "paraplau" type, a furrow maker and rotary working bodies. A design diagram and a fragment of the machine operation have been given. The basic principles and methods of classical mechanics, mathematical analysis and statistics were used in this study. Tests have established that the developed machine reliably performs the specified technological process and its performance indicators fully meet the requirements. When using the developed machine for preparing the soil for sowing melons under the film, the direct cost of processing one hectare of area is reduced by 33.4%. The study's goal is to create a machine that prepares soil for seeding melons under a tunnel film. The authors have created a machine that includes deep-diggers with a "paraplau" style inclined platform, a furrow maker, and rotating working bodies for preparing the soil for planting melons beneath a tunnel film. A design schematic as well as a portion of the machine functioning has been provided. In this work, the fundamental concepts and methodologies of classical mechanics, mathematical analysis, and statistics were employed. The created machine reliably executes the required technical procedure, and its performance indicators completely fulfill the criteria, according to tests. The direct cost of processing one hectare of land is lowered by 33.4 percent when utilizing the developed machine to prepare the soil for growing melons beneath the film.</p>
<p>Paper ID 110</p>	<p>Kh Ravshanov^{1*}, F Mamatov^{1,2}, B Mukimov¹, R Sultonov¹, A Abdullayev¹, and G Murtazaeva³ ¹Karshi branch of Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 180119 Karshi, Uzbekistan ²Karshi Engineering Economic Institute, 180100 Karshi, Uzbekistan ³Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000 Tashkent, Uzbekistan</p> <p>Title of presentation: Study on combined machine for the subsurface soil treatment Abstract: The purpose of the study is to substantiate the relative position of the working bodies of a combined machine for non-fall tillage of winter crops. The design scheme and the principle of operation of the combined machine are given. The basic principles and methods of classical mechanics, mathematical analysis and statistics were used in this study. It is established that the most optimal design scheme of a combined machine for non-tillage of the soil and its preparation for sowing of repeated crops is considered to be a scheme consisting of non-tillage cases with crushers, a battery with cut-out spherical disks and a roller. According to the results of theoretical and experimental studies, it was found that</p>



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	<p>with a longitudinal distance between the shaft-free bodies of 40 cm and a transverse distance of 90 cm, a longitudinal distance from the toe of the ploughshare to the center of the support wheel of 50 cm and a longitudinal distance from the toe of the ploughshare of the shaft-free body to the axis of rotation of the cut-out spherical disk of 120 cm, a longitudinal distance from the axis of rotation of the cut-out spherical disk to the center of the roller of 75 cm, high-quality tillage with minimal energy costs is provided.</p>
<p>Paper ID 111</p>	<p>Uktam Umurzakov¹, Farmon Mamatov^{2,3}, Bakhadir Mirzaev¹, Sherzod Kurbanov², Sunatullo Badalov², and Javlon Raxmonov³ ¹<i>Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000, Tashkent, Uzbekistan</i> ²<i>Karshi Engineering Economic Institute, 180100, Karshi, Uzbekistan</i> ³<i>Karshi Branch of Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 180119, Karshi, Uzbekistan</i></p> <p>Title of presentation: Front-mounted plow for smooth, non-furrow plowing with offsets Abstract: The purpose of the study was the development of a front plow with angle clamps, which performs, smooth plowing. The authors have developed an improved front plow with angle clamps. The constructive scheme of the plow has been given. The basic principles and methods of classical mechanics, mathematical analysis and statistics were used in this study. Experimental studies have justified the processing depth within the limits of 10-12. 5 cm and the width of the capture of the angle is within the range of 7.5-10 cm. Economic tests have established that the developed front plow reliably performs the specified technological process and its performance indicators meet agrotechnical requirements. The use of a frontal plow for smooth, plowing provides a reduction in direct costs for processing 1 hectare of area compared to the technical means used by 26.8 %.</p>
<p>Paper ID 112</p>	<p>Farmon Mamatov^{1,2}, Isroil Temirov², Samar Ochilov¹, Dilsabo Chorjieva², Doniyor Rakhmatov¹, and Gulnoza Murtazaeva² ¹<i>Karshi branch of Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 180119, Karshi, Uzbekistan</i> ²<i>Karshi Engineering Economic Institute, 180100, Karshi, Uzbekistan</i></p> <p>Title of presentation: Substantiation the technology and parameters of the “paraplau” type soil dredger for a two-tier plow Abstract: The purpose of the study was to substantiate the technology and parameters of the “paraplau” type soil dredger for a two-tier plow. The basic principles and methods of classical mechanics, mathematical analysis and statistics were used in this study. Sub-tillage loosening of the most compacted layers of the soil of the fields from under the cotton must be carried out in a strip way along the line of the middle of the irrigation furrows between the rows. It is established that for the implementation of strip loosening of the sub-arable soil layers of fields from under cotton, the width of the two-tier plow should be a multiple of the width of the row spacing. At the same time, for loosening the compacted subsurface layers of the middle of the row spacing of cotton with one working body, the soil dredgers are installed behind each even lower body in the plane of the field edges of the odd bodies. In the case of sub-tillage loosening of the middle of the row spacing by two soil dredgers with an inclined stand, one soil dredger is installed behind each lower body. An analytical relationship is obtained to justify the relative position of the plow bodies and the soil dredgers, as well as their parameters. Experimental studies have established that the resistivity of a two-tier plow decreases (in comparison with continuous loosening) when the most compacted layers of the middle of the row are loosened with a pointed paw by 17.56%, two soil dredgers with inclined posts by 24.04%, and one soil dredger with an inclined post by 23.24%.</p>
<p>Paper ID 113</p>	<p>F Mamatov^{1,3}, I Temirov^{1*}, P Berdimuratov², A Mambetsheripova⁴, and S Ochilov¹ ¹<i>Karshi branch of Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 180119, Karshi, Uzbekistan</i> ²<i>Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000,</i></p>



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	<p style="text-align: center;"><i>Tashkent, Uzbekistan</i></p> <p style="text-align: center;">³<i>Karshi Engineering Economic Institute, 180100, Karshi, Uzbekistan</i></p> <p style="text-align: center;">⁴<i>Karakalpak State University, Nukus, Uzbekistan</i></p> <p>Title of presentation: Study on plowing of cotton soil using two-tier plow</p> <p>Abstract: The purpose of the study is to substantiate the parameters of a two-tier plow for plowing soil from under cotton. The basic principles and methods of classical mechanics, mathematical analysis and statistics were used in this study. The effects of the cotton field relief on the tillage and traction resistance of a two-tier plow were studied theoretically and experimentally. Analytical expressions are obtained for determining the uniformity of the course, the load of the bodies and the center of resistance of the plow, depending on its main parameters and the roughness of the relief of the cotton field. It is established that serial two-tier plows, due to the discrepancy between their width of the gripper and the width of the row spacing, do not meet the requirements of agricultural technology: the plowing depth is not stable, the coefficient of variation of the plowing depth reaches 16% for a trailed plow, and for a mounted plow - 25.8%; the transverse direction of the plough the bottom of the furrow turns out to be stepped; the value of the traction resistance changes at each pass of the plow. To improve the quality of plowing fields from under cotton, a new plowing method has been developed, carried out by a two-tier plow, the width of which is a multiple of the width of the row spacing of cotton. The width of the plow bodies is equal to half the width of the row spacing.</p>
<p>Paper ID 116</p>	<p style="text-align: center;">J H Rakhmanov¹, R A Gulmurodov², S S Tukhtamishev³, T T Soatov², Sh Gulmurodova²</p> <p style="text-align: center;">¹<i>Scientific-Research Institute of Protecting Plants, 100140 Tashkent, Uzbekistan</i></p> <p style="text-align: center;">²<i>Tashkent State Agrarian University, 100140 Tashkent, Uzbekistan</i></p> <p style="text-align: center;">³<i>Gulistan State University, 120100 Gulistan, Uzbekistan</i></p> <p>Title of presentation: Diseases that provoke fungi in leguminous cereals and measures of fighting against them</p> <p>Abstract: Many crop losses have been observed in all states due to diseases in which fungi come from leguminous grain crops such as mung bean, peas and beans. In particular, this situation was noted in scientific observations conducted in several regions of our republic where legumes are grown. Fuzariosis, which occurs in leguminous grain crops, has been studied in studies on root rot, anthracnosis, ascochitosis, flour-dew and other fungi diseases, at what time of their appearance, spread, development and damage to the crop. From these diseases, root rotting in chickenpox and fuzariosis, as well as anthracnosis in mung bean and beans, root rot in fuzariosis, rapid spread and development of flour-dew diseases in connection with weather conditions have been identified.</p>
<p>Paper ID 117</p>	<p style="text-align: center;">B Mirzaev¹, F Mamatov^{2,3}, U Kodirov^{3*}, and X Shirinboyev³</p> <p style="text-align: center;">¹<i>Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000 Tashkent, Uzbekistan</i></p> <p style="text-align: center;">²<i>Karshi branch of Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 180119 Karshi, Uzbekistan</i></p> <p style="text-align: center;">³<i>Karshi Engineering Economic Institute, 180100 Karshi, Uzbekistan</i></p> <p>Title of presentation: Study on working bodies of the soil preparation machine for sowing potatoes</p> <p>Abstract: The purpose of the study is to substantiate the parameters of the guide knife and the loosening pointed leg of the machine. The basic principles and methods of classical mechanics, mathematical analysis and statistics were used in this study. Theoretical studies were carried out to determine the parameters of the guide knife and the loosening pointed leg of the machine. It is established that to ensure the required value of the crest height with minimal energy consumption, the height and length of the guide knife should be 8 and 15 cm, respectively, the angle of the knife blade to the horizon - 30°, the longitudinal distance from the toe of the ploughshare body of the knife toe – 13 cm. To ensure the required</p>



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	<p>crumbling of the soil, the width of the pointed loosening paw should be 15 cm.</p> <p>Isroil Jumanov^{1*}, Olim Djumanov¹, and Rustam Safarov¹ <i>Department of Information Technologies, Samarkand State University, 140104, University blv. 15, Samarkand, Uzbekistan</i></p> <p>Title of presentation: Improving the quality of identification and filtering of micro-object images based on neural networks</p> <p>Abstract: Constructive approaches, principles, and models for optimizing the identification of micro-objects have been developed based on the use of combined statistical, dynamic models and neural networks with mechanisms for filtering noise and foreign particles of images of medical objects and pollen grains. Algorithms for learning neural networks under conditions of a priori insufficiency, uncertainty of parameters, and low accuracy of data processing are investigated. The mechanisms of contour selection, segmentation, obtaining the boundaries of segments with hard and soft thresholds, filtering using the morphological features of the image have been developed [1]. Mechanisms for recognition and classification of images, adaptation of parameter values, tuning of the network structure, approximation and smoothing of random emissions, bursts in the image contour are proposed. A mechanism for suppressing impulse noise and noise is implemented based on various filtering methods, preserving the boundaries of objects and small-sized parts. Mathematical expressions are obtained for estimating the identification errors caused by nonstationarity, inadequacy of approximation, interpolation, and extrapolation of the image contour. A software package for the recognition and classification of micro-objects has been developed. The results were obtained for correct, incorrect recognition, as well as rejected pollen samples, which were synthesized with cubic, biquadratic, interpolation spline-functions and wavelet transforms.</p>
Paper ID 121	
	<p>Nzomjon Usmonov¹, Yusufbek Abdullabekov¹, and Saodat Axmatova¹ <i>¹Department of Thermodynamics, Tashkent State Technical University, 100097 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Development of an experimental facility for cooling circulated water of industrial plants</p> <p>Abstract: The article discusses the installation and the hydrodynamic results analysis of three-phase fluidized bed experimental studies. An energy coefficient linear dependence of the circulating water evaporative cooler of the considered type on the irrigation coefficient has been experimentally established. The dependence of the fraction of circulating water evaporated moisture in an evaporative cooler of the type under consideration on the cooled water temperature at the inlet to the cooler and the irrigation coefficient has been established. The analysis of hydrodynamic and thermal processes occurring in a three-phase fluidized bed is carried out, and the main technological parameters for the optimal operation of installations with the specified bed are obtained in relation to solving the problem of cooling the circulating water. The dependence of the expansion of a three-phase fluidized bed on air velocity and irrigation density has been investigated. On the basis of the performed experimental studies, empirical formulas for calculations are derived.</p>
Paper ID 130	
	<p>Nizomjon Usmonov¹, Shaxlo Mavjudova¹, and Adeliya Ivanisova¹ <i>¹Department of Thermodynamics, Tashkent State Technical University, 100097 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Mathematical modeling of heat and mass exchange processes in the evaporative cooler</p> <p>Abstract: This article describes the advantages of the widespread using of the evaporative coolers for cooling recycled wastewater in the air conditioning systems in various industries. The mathematical model of heat and mass transfer processes in the evaporative coolers has been developed. The dependence of the changes in the temperature of the air leaving the evaporator on the irrigation density is considered. When comparing the values obtained by using mathematical expressions and experiments, the resulting difference was</p>
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	6.7%.
Paper ID 132	<p style="text-align: center;">Kh Isakhodjayev¹, F Mukhtarov^{1*}, D Kodirov², and I Toshpulatov¹ ¹<i>Tashkent State Technical University, 100097 Tashkent, Uzbekistan</i> ²<i>Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Development of a laboratory nozzle chamber installation for the humidification of buildings Abstract: The nozzle chamber, in which water is sprayed into the air stream using mechanical nozzles, is the main unit for these processes in central air conditioning systems (AHUs). The types of nozzles used do not have a sufficiently high effect of interfacial surface forming due to increased metal usage and the broad total dimensions of certain chambers, i.e., they do not have intensive heat and mass transfer. The authors performed testing of the apparatus in the direct iso-enthalpic air cooling mode to improve the performance of the nozzle chamber. Thus, the experiments conducted confirm the relatively high efficiency of FET operation at small values of irrigation coefficient $B \leq 1.0$. The area highlighted is characterised by the unstable operation of other nozzle types. Therefore, FET nozzles can be operated at irrigation factor values $B = 0.1 \dots 1.0$. Experiments have shown that this equation is applicable for practical calculations, with a relative error of $\pm 6.7\%$. The aerodynamic resistance of the spray chamber nozzle chambers is also according to the data not exceeding 160 Pa.</p>
Paper ID 134	<p style="text-align: center;">M T Khodjiev¹, D D Eshmurodov², and D A Ortiqova² ¹<i>Gulistan State University, Gulistan, Uzbekistan</i> ²<i>Tashkent State Institute of Textile and Light Industry, Tashkent, Uzbekistan</i></p> <p>Title of presentation: Study on the development of improved routing technology of CC-15A cotton separator Abstract: The present article examines the existing problems in pneumo-transporters. It also presents advantages of the proposed improved model and the results of research on the Uster HVI 1000 laboratory equipment with high average length, uniformity index in length, short fiber index. The ability to maximize the natural properties of the products and significantly extend the service life of the separator design through this improved device has been proven on the basis of theoretical and practical analysis.</p>
Paper ID 136	<p style="text-align: center;">M T Khodjiev¹, and Sh Sh Isaev² ¹<i>Gulistan State University, Gulistan, Uzbekistan</i> ²<i>Engineering and Technology Institute of Namangan, Namangan, Uzbekistan</i></p> <p>Title of presentation: Study on the improvement of the device for cleaning low-grade cotton with high- moisture Abstract: This article analyzes the importance of the process of ginning cotton with high pollution before ginning, the operation of the ginning device before ginning, the impact of the device nodes with the raw cotton. At the same time, the cleaning efficiency of the machine in the cleaning equipment from small and large contaminants, the basic control developments and calculation processes in the selection of the technological parameters of the cleaners are considered. It was suggested and analyzed that before the cotton was ginned, the cleaning device should be replaced with cone-tipped piles and a new belt extension to remove impurities instead of fine-grained drum piles. The impact strength and impact of the proposed conical-tipped pile drums on cotton have been studied.</p>
Paper ID 137	<p style="text-align: center;">M Ergashev¹, Z Abdikulov¹, and M Tursunov² ¹<i>Department of Biology, Gulistan State University, Gulistan, Uzbekistan</i> ²<i>National University of Uzbekistan named after Mirzo Ulugbek, Tashkent, Uzbekistan</i></p> <p>Title of presentation: Heredity of determination coefficient in cotton plant hybrids Abstract: The fiber yield and fiber length are strong, the weight of 1000 cottonseeds is average, and the weight of cotton boll in one piece is weakly determined. The weight of</p>



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	<p>cotton in one cotton boll was recognized as ecological, the weight of 1000 seeds as biological, and the length of the fiber as genotypic indicator. The similarity of the first-generation hybrid with L-395 was 92.7%, and with L - 620-50.9%, according to the nature of inheritance of the degree and structure of correlations. This showed that the first-generation hybrid was similar to the L-39 range. When conducting breeding work in breeding, it is recommended to attach importance to the length of the fibers and the selection of genotypes, and to use the “correlation matrix comparison” method when comparing them.</p>
Paper ID 138	<p style="text-align: center;">Muksin Khodjiev¹, and Orif Alimov² <i>¹Gulistan State University, Gulistan, Uzbekistan</i> <i>²Jizzakh Polytechnic Institute, Jizzakh, Uzbekistan</i></p> <p>Title of presentation: Study on the process of droplet formation when liquid flows out of a capillary Abstract: In this article, the law of interaction of air and fibrous materials emanating from two opposite pipelines is described in the theory of singular points by S.A. Chaplignin, N.E. Zhukovsky function, theoretically studied using K. Schwarz's integral formula, Lopital's rule, complex potential field and canonical field.</p>
Paper ID 139	<p style="text-align: center;">Muksin Khodjiev¹, Ilkhom Abbazov², and Javlon Karimov¹ <i>¹Gulistan State University, Gulistan, Uzbekistan</i> <i>²Jizzakh Polytechnic institute, Jizzakh, Uzbekistan</i></p> <p>Title of presentation: Influence of Local Resistance on Pressure and Speed Changes in Expanded Pneumatic Conveying Abstract: This article focuses on improving product quality and reducing costs to ensure the efficiency of the global production of cotton fiber, in recent years, an increase in the consumption of cotton fiber, its specific type and navigation, changing demand for quality indicators, production of products with certain quality indicators. In all processes of cotton production, as well as in the processes of transporting raw cotton using pneumatic transport, on the basis of analyzes, studies conducted to determine factors that have a negative impact on product quality and their elimination, to create resource-saving technologies that reduce production costs, theoretically the connection is substantiated by the pressure loss of the local resistance of the mixture of air and fibrous waste. Based on the analysis, theoretical equations of motion of a mixture of air and fibrous waste in the expanding part of the pipeline in currently used pneumatic transport systems have been developed. It has been theoretically proven that the angle of expansion of an expanding pipe depends on local resistances generated in the expanding part of the pipe during the movement of air and fibrous waste in the ginner.</p>
Paper ID 140	<p style="text-align: center;">Zafar Abdikulov¹, and Marufjon Ergashev¹ <i>¹Gulistan State University, 120100 Gulistan, Uzbekistan</i></p> <p>Title of presentation: Effect of cadmium metal on barley (<i>Hordeum vulgare</i>) growth and development Abstract: In this study, the effect of cadmium metal ion to 7, 14 and 21day after germination (DAG) autumn barley samples under laboratory condition is investigated. We determined the biomass of plant organs and the amount of cadmium accumulation in above-ground organs at germination (7 DAG), 2-leaf (14 DAG), 3-leaf (21DAG) stages. The results showed that the dry mass of 7, 14 and 21 DAG barley plant was decreased under cadmium metal treatment. However, the root biomass did not change compared with control plant. It is also observed that the 21 DAG plant accumulated around 2.4 and 5.6 times more cadmium than the 14 DAG and 7 DAG plants respectively.</p>
Paper ID 141	<p style="text-align: center;">Elmira Mukhametshina¹, Rustam Muradov¹, Ilkhom Abbazov¹, and Alisher Usmankulov¹ <i>¹Jizzakh Polytechnic Institute, 130100 Jizzakh, Uzbekistan</i></p>



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	<p>Title of presentation: Improving fiber quality by reducing seed damage in the gin machine Abstract: The article focuses on the prevention of seed damage in a gin machine and conducts research on what parameters of the gin machine affect seed damage. Based on the analysis of scientific research in this area, it was established and studied that the density of the raw material roller and its rotation speed, as well as the release of fibers from the working chamber are factors influencing seed damage. Scientific research on the density of raw materials and the acceleration of turnover have been analyzed. Based on the analysis, the acceleration of the rotation of the raw material roller is based on obtaining optimal results, which is carried out using a rotating disk with piles on the side of the working chamber. It is also scientifically proven that the surface of the gutter must be grooved in order to timely remove the seeds separated from the fiber from the working chamber of the gin. Practical studies have shown that as a result of turning the side of the working chamber of the gin machine, the short fiber index in the fiber content decreased by 1.5%, Str-specific tensile strength 0.4 qs / tex and Ehg-elongation elongation improved by 0.2%.</p>
<p>Paper ID 142</p>	<p>Alisher Mamatov¹, Xusanboy Narjigitov², Dilshod Turdibayev², and Jamshidbek Rakhmanov² ¹Tashkent Institute of Textile and Light Industry, 100100 Tashkent, Uzbekistan ²Department of Mathematics, Gulistan State University, Gulistan, Uzbekistan</p> <p>Title of presentation: Refining the Galerkin method error estimation for parabolic type problem with a boundary condition Abstract: The article considers a parabolic-type boundary value problem with a divergent principal part, when the boundary condition contains the time derivative of the required function:</p> $\begin{cases} u_t - \frac{d}{dx_i} a_i(x, t, u, \nabla u) + a(x, t, u, \nabla u) = 0, \\ a_0 u_t + a_i(x, t, u, \nabla u) \cos(\nu, x_i) = g(x, t, u), & (x, t) \in S_t, \\ u(x, 0) = u_0(x), & x \in \Omega \end{cases}$ <p>Such nonclassical problems with boundary conditions containing the time derivative of the desired function arise in the study of a number of applied problems, for example, when the surface of a body, whose temperature is the same at all its points, is washed off by a well-mixed liquid, or when a homogeneous isotropic body is placed in the inductor of an induction furnace and an electro-magnetic wave falls on its surface. Such problems have been little studied, therefore, the study of problems of parabolic type, when the boundary condition contains the time derivative of the desired function, is relevant. In this paper, the definition of a generalized solution of the considered problem in the space $\widetilde{H}^{1,1}(Q_T)$ is given. This problem is solved by the approximate Bubnov-Galerkin method. The coordinate system is chosen from the space $H^1(\Omega)$. To determine the coefficients of the approximate solution, the parabolic problem is reduced to a system of ordinary differential equations. The aim of the study is to obtain conditions under which the estimate of the error of the approximate solution in the norm $H^1(\Omega)$ has order $O(h^{k-1})$. The paper first explores the auxiliary elliptic problem. When the condition of the ellipticity of the problem is satisfied, inequalities are proposed for the difference of the generalized solution of the considered parabolic problem with a divergent principal part, when the boundary condition contains the time derivative of the desired function and the solution of the auxiliary elliptic problem. Using these estimates, as well as under additional conditions for the coefficients and the function included in the problem under consideration, estimates of the error of the approximate solution of the Bubnov-Galerkin method in the norm $H^1(\Omega)$ of order $O(h^{k-1})$ for the considered nonclassical parabolic problem with divergent principal part, when the boundary condition contains the time derivative of the desired function.</p>
<p>Paper ID 144</p>	<p>Abduvali Khaldjigitov¹, Aziz Kalandarov², Umidjon Djumayozov³ ¹National University of Uzbekistan, 100174 Tashkent, Uzbekistan ²Gulistan State University, 120100 Gulistan, Uzbekistan ³Samarkand branch of Tashkent University of Information Technologies, 140100</p>



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	<p style="text-align: center;"><i>Samarkand, Uzbekistan</i></p> <p>Title of presentation: Numerical modeling of coupled problems of thermoplasticity on non-uniform meshes</p> <p>Abstract: This article discusses a new approach for the numerical solution of two-dimensional dynamic problems of thermo-elastic-plasticity. The deformation theory of Ilyushin was used as a model. Discrete equations are based on non-uniform grid equations. The essence of using non-uniform meshes is that you can thicken the mesh if there are features in the area under consideration. As an example, a two-dimensional dynamic coupled thermoplastic problem for an isotropic material is solved numerically. The influence of the temperature field on the thermo-stressed state of a solid is estimated. Based on the numerical results, the dynamics of deformation and the appearance of plastic zones in the considered two-dimensional region are shown.</p>
<p>Paper ID 146</p>	<p style="text-align: center;">Abduvali Khaldjigitov¹, Aziz Kalandarov^{2*}, Mumin Babajanov³, Uchkun Adambaev¹, Dilnoza Sagdullaeva⁴</p> <p style="text-align: center;">¹<i>National University of Uzbekistan, 100174 Tashkent, Uzbekistan</i> ²<i>Gulistan State University, 120100 Gulistan, Uzbekistan</i> ³<i>Tashkent University of Information Technologies, 100200 Tashkent, Uzbekistan</i> ⁴<i>Institute of Mechanics and Seismic Stability of Structure named after M.T. Urazbaev, Academy of Sciences of the Republic of Uzbekistan, 100125 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Three-Dimensional Coupled Dynamic Thermoplastic Boundary Value Issue for a Transversely Isotropic Parallelepiped Numerical Solution</p> <p>Abstract: This article is devoted to the numerical study of a three-dimensional coupled thermoplastic boundary value problem for a transversely isotropic parallelepiped. The coupled boundary value problem consists of an equation of motion, the thermoplastic constitutive relations for transversally isotropic bodies, the Cauchy relation, and the heat conduction equations with the corresponding initial and boundary conditions. For coupled dynamic boundary value problem, an explicit and implicit difference schemes are constructed. The finite-difference schemes are numerically solved, using the recurrent formulae and elimination method, corresponding to explicit and implicit schemes. The distribution of the displacement and temperature depending on time and coordinates are investigated. The propagation of the plastic zones also is considered. The coincidence of the numerical results obtained by the two methods is shown.</p>
<p>Paper ID 147</p>	<p style="text-align: center;">Isroil Jumanov^{1*}, Olim Djumanov¹, and Sunatillo Xolmonov¹</p> <p style="text-align: center;">¹<i>Department of Information Technologies, Samarkand State University, University blv. 15, 140104 Samarkand, Uzbekistan</i></p> <p>Title of presentation: Mechanisms of image recovery optimization in the system for recognition and classification of micro-objects</p> <p>Abstract: The scientific and methodological foundations for the construction of methods, models, and algorithms of the software complex for visualization, recognition, classification of micro-objects with mechanisms for optimizing image restoration based on the use of structural and statistical redundancy of information have been developed. Mechanisms for optimizing image recovery based on the principles of using structural-statistical redundancy caused by the repetition of identical frames during stream transmission, interframe difference, and fractal characteristics of images are proposed. The image recovery mechanisms are improved on the basis of multilayer segmentation of the contour, object texture, binary alpha map, creation of metadata arrays, image scaling by bicubic interpolation. Mechanisms for image identification based on a dynamic model of neural networks with component schemes of axon branching, neuronal activity, and revealing their influence on interneuronal connections have been developed. Optimization of NN image restoration is based on the use of process features, axon movement, axon branching, choice of the direction of its growth depending on the concentration of surrounding neurons,</p>



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	<p>emulation of changes in global and additional characteristics of images. A software package has been implemented that includes mechanisms for optimizing image recovery, which has been tested with 538 training sets of medical objects (unicellular microorganisms in the blood).</p>
<p>Paper ID 148</p>	<p>Aziz Kalandarov^{1*}, Abdukayum Kalandarov¹, Sindorkul Kulmamatov¹, Shamshidin Ashirov¹ <i>¹Gulistan State University, 120100 Gulistan, Uzbekistan</i></p> <p>Title of presentation: Numerical modeling of the thermo-stressed state of isotropic bodies Abstract: This article proposes a numerical method for solving unconnected static boundary value problems of the theory of thermoelasticity, based on the finite-difference approach. Mathematical and numerical models of a two-dimensional unconnected static boundary value problem of thermoelasticity for an isotropic rectangle with boundary conditions of the first and second types are considered. Finite-difference schemes have been constructed that allow, in combination with the iterative method, to find the desired nodal displacement values. The influence of the temperature field on the stress-strain state of the considered solid is estimated.</p>
<p>Paper ID 149</p>	<p>Khamza Yuldashev¹, Yakubjan Yuldashov², Ruziboy Bahramov¹, and Mukhitdin Kalandarov² <i>¹Research Institute of Forestry, 111104 Tashkent, Uzbekistan</i> <i>²Tashkent State Agrarian University, 100020 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Influence of mineral fertilizers on growth and formation of large-sized saplings of small-leaved linden (<i>Tilia Cordata Mill.</i>) and silver birch (<i>Betula Pendula Roth.</i>) Abstract: This article presents the results of a study on the effect of mineral fertilizers on the growth and formation of large-sized saplings of small-leaved linden (<i>Tilia Cordata Mill.</i>) and silver birch (<i>Betula Pendula Roth.</i>) in a typical sierozem of the Tashkent region. The main criterion for assessing the effect of fertilizers and the feasibility of their use is the growth of saplings. It has been established that the growth of saplings of small-leaved linden and silver birch is enhanced by the use of mineral fertilizers. At the same time, the growth rate depends on the doses and the ratio of the fertilizers used.</p>
<p>Paper ID 150</p>	<p>Zinovi Novitskiy¹, Abdushukur Hamzayev¹, Nizomiddin Bakirov², and Abdulla Karimkulov³ <i>¹Research Institute of Forestry, 111104 Tashkent, Uzbekistan</i> <i>²State committee on forestry of the Republic of Uzbekistan, 100163 Tashkent, Uzbekistan</i> <i>³Gulistan State University, 120100 Gulistan, Uzbekistan</i></p> <p>Title of presentation: Study on the development of the desert pasture agrophytocenoses using a wide range of forage plants Abstract: The drained bottom of the Aral Sea covers an area of about 6 million hectares, of which 3.2 million hectares are located on the territory of the Republic of Uzbekistan. In addition to the fact that salt is spread from the drained bottom, dust and sand causing enormous damage to the environment, on the drained bottom there is a forest suitable area of 1.5 million hectares where it is possible to create desert shrub agrophytocenoses. The purpose of the work was to develop the most effective methods for creating desert agrophytocenoses on forest suitable types of bottom sediments of the dried bottom of the Aral Sea and the selection of desert forage plants to increase the productivity of the created pastures. Studies shown that when using focal, pasture protection and reclamation-fodder methods, as well as such fodder plants as teresken, boialich, keyreuk, it is possible to create pastures with a fodder capacity of up to 500 fodder units per hectare. This will increase the number of grazed animals by 20-30%. The field of application of the results arising from this work is forest suitable types of bottom sediments of the drained bottom of the Aral Sea. The drained bottom of the Aral Sea is a reserve of a forage base for animals in the near future, which will give a new impetus to the development of animal husbandry in the Aral</p>



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	Sea region, and at the same time, fodder plants, fixing the soil of the drained bottom of the Aral Sea, will significantly improve the ecological situation in the Region.
Paper ID 151	<p>Nusratillo Tashpulatov¹, Odina Nazarova², Dilafruz Yuldosheva², Azamat Tabaev¹, and Roza Amanboeva³ ¹Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000 Tashkent, Uzbekistan ²Research Institute of Forestry, 111104 Tashkent, Uzbekistan ³Gulistan State University, 120100 Gulistan, Uzbekistan</p> <p>Title of presentation: Study on propagation of pulse current discharges in plant tissue Abstract: This article provides a theoretical description of the propagation of current pulses in plant tissue and the processes of destruction of cellular structures of harmful pathogens in the plant organism. Plants, from the point of view of electricity, are regarded as a well-conductive cable. The peel of the plant is the sheath of the cable, the fire (core) is the electrically conductive conductor. When infected with diseases, the growth of the cellular structure occurs and, as a result, the resistance of the plant tissue decreases. When current is applied, it passes through the circuit with the least resistance and thus provides the lethal effect of harmful microorganisms.</p>
Paper ID 152	<p>Sardor Gulyamov Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000 Tashkent, Uzbekistan</p> <p>Title of presentation: Drip irrigation of the apple orchard in the conditions of Tashkent region in Uzbekistan Abstract: This article presents the results of long-term theoretical experimental field studies on drip irrigation of Apple orchard of the cultivar "Golden" in the conditions of Tashkent region. Based on the analysis of climate, soil, hydrogeological, hydrological and economic conditions of the experimental plot and biological features of the garden is determined by the values of total water use, scarcity of water, irrigation, irrigation norms and number of irrigations bioclimatic method.</p>
Paper ID 153	<p>T Baizakov¹, R Yunusov¹, Sh Yusupov^{1*}, Z Kilichev², and Yu Xasanova² ¹Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000 Tashkent, Uzbekistan ²Karshi Engineering and Economics Institute, Karshi, Uzbekistan</p> <p>Title of presentation: Methods of using ecological sources of clean energy in the cultivation of bell pepper seedlings Abstract: Development of ways to use solar energy as a source of clean energy. Development of scientific foundations for the widespread use of solar cells, their new capabilities, development of methods for increasing efficiency. With the development of new innovative technologies, it is necessary to study the operating conditions of autonomous power sources that can be used by consumers, their period of operation, and their in-depth structure. This article describes the role of greenhouses in agricultural production and the structure of autonomous power sources and their principles of operation.</p>
Paper ID 154	<p>Ulbosin Eshbaev^{1,2}, Akbarjon Nishonov¹, and Aziz Saodatov¹ ¹Namangan Institute of Engineering and Technology, 160115 Namangan, Uzbekistan ²Tashkent Institute of Textile and Light Industry, 100100 Tashkent, Uzbekistan</p> <p>Title of presentation: Development of mathematical models of print quality by Box-Wilson Abstract: The transfer coefficient of ink to the printed material was determined by comparing the mass of the printed material before and after printing. The specifics of the interaction of the printed surface with the surface of the paint layer and the influence of technological factors on the graphic distortion of the image when printing on paper also affect the gradation characteristic of the image. This article states about static modeling,</p>



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	<p>preliminary analysis of the color perception of offset printing on papers including synthetic polymers. On the basis of the model of color perception obtained as a result of research in offset printing on printed materials, the optimal choice is developed, which allows to make an objective assessment and predict the color perception of the printed materials.</p>
Paper ID 155	<p>Nodira Saydalieva¹, Dilfuza Khudayberdieva¹, Feruza Isamukhamedova², and Illarion Shin¹</p> <p>¹<i>Tashkent Institute of Textile and Light Industry, 100100 Tashkent, Uzbekistan</i> ²<i>Uzbek State University of World Languages, 100138 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Integrated studies of the physical and mechanical properties of cotton fabric</p> <p>Abstract: The nature of the adhesive forces of the K-4 preparation is manifested in the occurrence of hydrogen bonds between molecules, as a substance with a sufficiently developed ability to form hydrogen bonds with cellulose. By the method of a one-factor experiment, the regularities of the influence of the concentration of the preparation alkaline-hydrolyzed PAN product on shrinkage, the total opening angle and weight gain of the fabric were revealed. It was found that the concentration of the preparation, equal to 75 g/l, provides the minimum shrinkage and rinsability of the sizing, as well as at the same time the largest value of TOA.</p>
Paper ID 156	<p>Nodira Yusupova^{1*}, Sanovar Khamrayeva¹, Jur'atbek Jabbarov¹, Nigora Jabbarova¹, and Saida Djabbarova¹</p> <p>¹<i>Tashkent Institute of Textile and Light Industry, 100100 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Structure of the costume texture thickness investigation</p> <p>Abstract: The costume fabric is woven on the basis of tandoor sarja braids. Such textures are superficial in the body. When washing a suit sewn from the surface tissue of the body, in the process of using it only the body coverings are eroded and thinned, resulting in tissue rupture. This article presents the results of research on improving the quality, in particular, increasing the resistance to abrasion of cotton fabrics such as costume cloth. It is noted that the resistance of the fabric to abrasion depends on the indicators of its structure, that is, on the degree of mutual bending of the warp and weft threads or the supporting surface of the fabrics.</p>
Paper ID 157	<p>Karim Sultanov^{1*}, Sabida Ismailova¹, Bakhodir Baymuratov², and Shamsidin Tulanov²</p> <p>¹<i>Institute of Mechanics and Seismic Stability of Structures, Uzbekistan Academy of Sciences, Tashkent, Uzbekistan</i> ²<i>Tashkent Institute of Textile and Light Industry, 100100 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Experimental determination of cotton yarn strength at different speeds of movement obtained by various technological methods</p> <p>Abstract: Our results on the strength parameters of cotton yarns manufactured by carded and combed systems by ring and rotor spinning (CD-carded ring-spun, OE-carded rotor-spun, CM-combed ring-spun) are presented. Experiments to test yarns for strength were conducted on a "Statimat C" tensile installation at speeds of the lower end of the yarn from 100 mm/min to 1000 mm/min. From the diagrams of yarn stretching to breaking, the changes in breaking load, specific breaking load, critical strain values at which the yarn breaks, time of stretching before breaking, depending on the strain rate for the considered types of yarns, were determined. The analysis of the experimental results obtained shows the quantitative and qualitative characteristics of the change in strength parameters of three varieties of yarns.</p>
Paper ID 158	<p>Bakhodir Baymuratov^{1*}, Shamsidin Tulanov^{1,2}, Karim Sultanov^{1,2}, and Sabida Ismailova¹</p> <p>¹<i>Tashkent Institute of Textile and Light Industry, 100100 Tashkent, Uzbekistan</i> ²<i>Institute of Mechanics and Seismic Stability of Structures of the Academy of Sciences of the Republic of Uzbekistan, 100128 Tashkent, Uzbekistan</i></p>



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	<p>Title of presentation: Strain characteristics of cotton yarns depending on the strain rate and methods of their manufacture</p> <p>Abstract: One of the main reasons for the nonlinearity of the tension diagrams of cotton yarns is the variability of their moduli of elasticity and plasticity under strain. The changes in strain moduli obtained from the tensile diagrams confirm this. The strain curve has ten parameters, the values of which depend on the method of yarn manufacture and the strain rate. Based on the results of processing the tension diagrams of cotton yarn, obtained by carded and combed systems by ring and rotor spinning (CD-carded ring-spun, OE-carded rotor-spun, CM-combed ring-spun), at strain rates from 0,0033 s⁻¹ to 0,033 s⁻¹, the values of these ten parameters were determined and analyzed. Their quantitative and qualitative dependence on the method of their manufacture and strain rate are shown.</p>
<p>Paper ID 159</p>	<p>Salokhiddin Yunusov¹, Azamat Sultonov², Mashkhur Rakhmatov², Tojiddin Bobomurotov³, and Mirkhosil Agzamov³ ¹Branch of Russian State University of Oil and Gas, 100125 Tashkent, Uzbekistan ²“Bukhara agroklaster” LLC, 200103, Bukhara, Uzbekistan ³Tashkent Institute of Textile and Light Industry, 100100 Tashkent, Uzbekistan</p> <p>Title of presentation: Results of studies on extending the time operation of gin and linter grates</p> <p>Abstract: Results of studies on extending the time operation of gin and linter grates by hardening of the working area by high-frequency current are given in article. Mathematical models for calculation of key parameters of the mode of hardening of the working area of gin and linter grates are made. As a result of the executed researches the following conclusions are drawn: change of a gap between grates in a grate lattice leads to change of parameters of process of ginning and finally to deterioration of products. Mathematical models for calculations of parameters of process of hardening of the working area of grates are received. On the received mathematical models key parameters of hardening process current of high frequency which have the following values are calculated: depth of the tempered layer – 2.0 mm, the optimum frequency of current – 60000, specific power – 500 W/cm², hardening time – 10, studying hardness tempered and not tempered sites of grates by method of Rockwell showed increase in hardness of the tempered site to HRC 55 against HRC 45 at not tempered by the working area.</p>
<p>Paper ID 160</p>	<p>Azamat Sultonov¹, Mirsolikh Agzamov², Mashkhur Rakhmatov^{1,2}, Mirkhosil Agzamov², and Khasan Nosirov² ¹“Bukhara agroklaster” LLC, 200103 Bukhara, Uzbekistan ²Tashkent Institute of Textile and Light Industry, 100100 Tashkent, Uzbekistan</p> <p>Title of presentation: Development of the saw cylinder for gins and linters with use of new elements of the design</p> <p>Abstract: Article issues of decrease in amplitude of dynamic fluctuations of saw cylinders of gins and linter for the purpose of reduction of a deviation of saws from the plane of rotation and contact with saws of grates are consecrated. Mathematical models for calculation of flexural fluctuations of a shaft of a saw cylinder, taking into account intensity of placement of the mass moments of inertia, a technique of the solution of the equation of flexural fluctuations of a saw cylinder with variable intensity of weight and flexural rigidity of sections are given. Data on a new design of saw cylinders with use between the saw laying made on a polymeric basis and equipped with steel pins.</p>
<p>Paper ID 161</p>	<p>Mirkhosil Agzamov¹, Ibrat Radjabov¹, and Djaloliddin Yuldashev¹ ¹Tashkent Institute of Textile and Light Industry, 100100, Tashkent, Uzbekistan</p> <p>Title of presentation: Research of the reasons of increased drop in cotton seeds after generation with reduced density of raw roller</p> <p>Abstract: Results of researches on definition of influence of density of the raw roller on pubescence of cotton seeds are given in article. The received mathematical model for</p>



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	<p>calculation of contact pressure and movement of the raw roller in the form of a system from six equations with six unknown. The numerical results calculated on the computer. Sizes of shift and contact pressure for the set physic-mechanical and geometrical parameters of a system are determined. It is established that contact pressure significantly depends on elasticity (density) and angular speed of the raw roller. On the basis of the graphic data of contact pressure and contact movement of the raw roller received results of calculations the conclusion that with reduction of density of the raw roller conditions of capture of a short cotton slice worsen. The fact that the contact pressure and movement fluctuate during time is the reason of it, i.e. in the beginning the short cotton slice contacts to a saw, but during fractions of a second this contact is lost, also contact pressure similarly changes. Results of theoretical researches proved increase in a full pubescence of seeds after gin with reduction of density of the raw roller, i.e. one of the reasons of it is deterioration in conditions of capture of short cotton slices a saw - fluctuations of contact pressure and contact movement of the raw roller.</p>
<p>Paper ID 162</p>	<p>Mirsolikh Agzamov¹, Mashkhour Rakhmatov², Mirkhosil Agzamov¹, Odiljon Olimov¹, and Khasan Nosirov¹ <i>¹Tashkent Institute of Textile and Light Industry, 100100, Tashkent, Uzbekistan</i> <i>²“Bukhara agroklastar” LLC, 200103, Bukhara, Uzbekistan</i></p> <p>Title of presentation: Search for ways to increase yield and improve product quality in the process of saw ginning Abstract: This article presents the results of research on increasing fiber yield and improving product quality by using a new design of the vas deferens from the working chamber. It has been experimentally established that the most rational in terms of yield and quality of fiber, seeds and gin productivity is the position of the seed comb when the axes of its pegs are directed 5-10 degrees above the axis of the saw cylinder. The smallest value of complete hairiness of seeds after gin was obtained when installing a lamellar seed comb. Its average value was 13.8%. At the same time, the fiber yield was maximum - 34.66%, and the highest productivity - 8.5 kg of fiber per saw per hour. The influence of the distance between the ends of the seed comb pegs and grates at their values of 10, 20, 30 mm on the ginning indices was investigated. A distance of 20 mm is recognized as optimal taking into account all indicators - fiber yield, complete pubescence, productivity, quality of fiber and seeds. An experimental working chamber equipped with lamellar combs was made. It has been tested in the production conditions of a pilot cotton mill.</p>
<p>Paper ID 163</p>	<p>Nozimjon Jurabayev^{1*}, Shakhboz Shogofurov¹, Kurbonali Kholikov¹, and Umarjon Meliboev¹ <i>¹Namangan Institute of Engineering and Technology, 160115 Namangan, Uzbekistan</i></p> <p>Title of presentation: Study of the fabric structure influence on the physical-mechanical and technological properties of knitted products Abstract: Three kinds of knitted fabrics with high shape retention capacity equipment LONG-XING SM 252 (China) 12-grade flat needle loom were produced, their technological characteristics were compared, and graphical records were supplied in this article based on experimental samples of knitted rubber fabric. The developed variants of knitted fabric differ from each other in pattern type, report, shape retention feature and a number of other indicators. Physical and mechanical properties of the obtained samples were determined experimentally on modern equipment installed in the testing laboratory of the Namangan Institute of Engineering Technology.</p>
<p>Paper ID 164</p>	<p>Anvar Djuraev¹, Ruzimurad Rosulov¹, Javlon Kholmiraev², Husan Diyorov³, and Umid Berdimurodov³ <i>¹Tashkent Institute of Textile and Light Industry, 100100 Tashkent, Uzbekistan</i> <i>²Namangan Institute of Engineering and Construction, 169101 Namangan, Uzbekistan</i> <i>³Termiz Branch of Tashkent State Technical University, 190100 Termiz, Uzbekistan</i></p> <p>Title of presentation: Development of effective construction and justification of</p>



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	<p>parameters of the cleaner of fibrous material</p> <p>Abstract: This article provides a general scheme of the principle of operation of a fibrous material cleaner from coarse and fine litter. Based on the compilation of dynamic and mathematical models, its numerical solution, the regularities of the movement of the working bodies of the purifier are presented. Analyzes of the laws of motion and graphic dependencies substantiated the main parameters of the purifier. Recommendations are given for widespread use in fiber-cleaning production.</p>
Paper ID 165	<p>Kamol Akhmedov^{1*}, Saypila Matismailov¹, Botir Mardonov¹, and Alisher Yuldashev¹ <i>¹Tashkent Institute of Textile and Light Industry, 100100 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Theoretical and experimental analysis of the process of discretization of cotton fiber in OE spinning</p> <p>Abstract: This article examines the influence of the parameters of the coating teeth of the discrete drum on the quality of the OE yarn. Based on the analysis of the conditions for retention of fibers by the covering teeth of the discrete drum, equations were obtained to determine the angle of inclination of the teeth. To determine the effect of the coating parameters of the discrete drum teeth on yarn quality, experiments were performed using the Full Factor Experiments mathematical planning method, and a regression equation was obtained for each variable. As a result, the optimal values of the discretization drum coating teeth of the OE spinning machine were determined.</p>
Paper ID 166	<p>Illarion Shin¹, Zokhir Shodmonqulov¹, Sakhrobjon Nazarov¹, and Nigora Iskandarova¹ <i>¹Tashkent Institute of Textile and Light Industry, 100100 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Processing of teeth of saw blades of cotton processing machines with a stream of compressed air with abrasive particles</p> <p>Abstract: In the article, it is presented materials on abrasive blasting of teeth of saw blades of cotton processing machines with particles of black silicon carbide. The micro-profile of the surface, characterized by the height and pitch of irregularities, after microcutting with abrasive particles is able to intensify the process of fiber separation by activating the tank surfaces of the teeth. This machining process is also accompanied by deformation hardening of the surface layer of the teeth, leading to an increase in the wear resistance and durability of the saws.</p>
Paper ID 167	<p>Nigora Ergasheva¹, Illarion Shin¹, Fotima Nigmatova¹, and Zamira Nazarova¹ <i>¹Tashkent Institute of Textile and Light Industry, 100100 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Investigation of the deformation and strength characteristics of the thread connection in the manufacture of products from fur waste</p> <p>Abstract: By the method of mathematical planning of the experiment, regression equations were obtained for the breaking load and the breaking relative elongation of the thread connection of a special furrier's seam in the manufacture of products from fur waste. As input factors were taken: the number of stitches in 1 cm., Thread thickness, needle diameter. The features of the behavior of the strength model of this thread connection are revealed.</p>
Paper ID 168	<p>Sadoqat Rahmatova¹, Nozimjon Jurabayev¹, and Qurbonali Holikov¹ <i>¹Namangan Institute of Engineering and Technology, 160115 Namangan, Uzbekistan</i></p> <p>Title of presentation: Study of the effect of the introduction of the back yarn on two-layer knitted fabric's physical and mechanical properties</p> <p>Abstract: In this research work, the physical and mechanical properties of 3 variants of jacquard knitted fabric obtained in order to increase the heat retention properties and increase the range of knitted fabrics by adding back yarn to the base of glad, rubber cuts in 20 grade double-needle jacquard knitting machine using local raw materials effectively The technological indicators were obtained experimentally and tabulated and recommendations for production sectors are given.</p>



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<p>Paper ID 169</p>	<p>Sanovar Khamrayeva¹, Dilfuza Kadirova¹, and Sayidvoris Rakhimkhodjayev¹ <i>¹Tashkent Institute of Textile and Light Industry, 100100 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Study on the mechanics of textile thread in woven Abstract: Specialists in the weaving industry are often interested in the question of what tension of the warp and weft threads must be set on the weaving machine to produce a particular fabric. Along with this, they are interested in the question of what is the relationship between these parameters and the structure of the fabric, how much it is necessary to increase or decrease the tension of the warp and weft threads when changing the assortment of fabric. These problems arise because the correct thread tension on weaving machines increases the productivity of equipment and labor, and also improves the quality of the fabrics produced. The current state of the mechanics of a weighty deformable flexible thread on a plane and other forms of guides do not take into account the rigidity of the threads on the friction surface, since this parameter is determined by the type and type of threads, the linear density of the threads and the elastic properties of the threads. Therefore, the article analyzes the work on the mechanics of textile yarn and studies of the tension of the yarns were carried out depending on the radius of friction, angle of friction, coefficient of friction and stiffness of the yarns.</p>
<p>Paper ID 170</p>	<p>Umida Yusupalieva¹, Saypila Matismailov¹, and Alisher Yuldashev¹ <i>¹Department of Spinning Technology, Tashkent Institute of Textile and Light Industry, 100100 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Study of the influence of cotton fiber indicators on yarn quality Abstract: In order to determine the relationship between the fiber properties of the yarn quality in the article, experiments were conducted using a passive method of mathematical planning and a regression equation was obtained for each optimal parameter. Based on the experiments, it was found that a decrease in fiber micronaire, an increase in tensile strength, fiber length and uniformity, leads to an increase in the specific tensile strength of yarn, a decrease in the coefficient of variation in tensile strength and the number of breaks in the yarn.</p>
<p>Paper ID 171</p>	<p>Gulom Allaniyazov¹, Kurbonali Kholikov², Gulfiya Gulyaeva³, Nuriddin Musae³, and Mirabzal Mukimov³ <i>¹Nukus State University, 230105 Nukus, Uzbekistan</i> <i>²Namangan Engineering Technological Institute, 190110 Namangan, Uzbekistan</i> <i>³Tashkent Institute of Textile and Light Industry, 100100 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Study of technological parameters and material consumption of two-layer knitted fabric Abstract: This article presents the results of a study of technological parameters and material consumption of new structures of two-layer knitted fabric. To study the technological parameters of new variants of two-layer knitted fabric on a Long Xing 252 SC flat-fanged machine, five variants of two-layer knitted fabric were developed, which differed from each other in the weave structure.</p>
<p>Paper ID 172</p>	<p>Ruzimurad Rosulov¹, Anvar Djuraev¹, Husan Diyorov², and Umid Berdimurodov² <i>¹Tashkent Institute of Textile and Light Industry, 100100 Tashkent, Uzbekistan</i> <i>²Termiz Branch of Tashkent State Technical University, 190100 Termiz, Uzbekistan</i></p> <p>Title of presentation: Theoretical study of the influence of the length of the spike on the cleaning effect of the fine litter cleaner Abstract: In the article, a schematic diagram and principle of operation of the recommended raw cotton cleaner from fine litter are provide. The article presents the results of theoretical studies of the effect of the length of the pegs on the cleaning effect of the raw cotton cleaner. Based on the study of the law of movement of raw cotton on the surface of the splitter, graphical dependences of the change in the length of the splitter on the change in the mass of cotton are constructed. Substantiation of the length of the drum heads of the</p>



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	<p>corresponding areas for cleaning cotton from fine litter.</p>
Paper ID 173	<p>Sardor Karimov¹, Adham Rafikov¹, and Nabijon Nabiev¹ <i>¹Tashkent Institute of Textile and Light Industry, 100100 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Physicochemical properties of graft copolymers of collagen and fibroin with polyacrylic acid Abstract: Certain physicochemical properties of the synthesized graft copolymers of raw skin collagen and natural silk fibroin with polyacrylic acid have been determined. The dependence of the solubility, density, and thermal properties of copolymers on the ratio of components and synthesis conditions has been established.</p>
Paper ID 174	<p>Azamat Gulamov¹, Komil Avazov¹, and Bekzod AbRAYqulov¹ <i>¹Tashkent Institute of Textile and Light Industry, 100100 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Research of quality silk cocoon making technology Abstract: This article presents the period of wrapping a silkworm in a cocoon during the season of making cocoons, as well as the results of experiments on their collection and analysis, existing problems. Based on the results, proposals were made to improve the system of attracting the population to entrepreneurship and the development of entrepreneurship. In particular, the effectiveness of organizing capacities for the production of raw silk by cocooning a silkworm at home, serving the enterprises of the silk cluster, is explained.</p>
Paper ID 175	<p>Azamat Gulamov¹, Komil Avazov^{1*}, and Bekzod AbRAYqulov¹ <i>¹Tashkent Institute of Textile and Light Industry, 100100 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Studying the effect of drying technology on silk cocoon shell and chrysalis features Abstract: This article proposes the influence of the cocoon drying technology on the properties of the shell and pupa of the silkworm. We also analyzed the change in the initial weight of the cocoons treated at different temperatures, the microscopic view of the cocoon shells. Cocoons grown at different times of the year were taken as the object of the study. As a result of the treatment of the cocoon pupa with an infrared ray, hot air and chemical methods, the yield, color properties and solubility of the cocoon shell were compared and analyzed.</p>
Paper ID 176	<p>Asror Daminov¹, Bektosh Doniyorov², Matluba Doniyorova², Diyor Kosimov¹, Zukhra Sultonbekova, and Abbosbek Nalibaev¹ <i>¹Tashkent Institute of Textile and Light Industry, 100100 Tashkent, Uzbekistan</i> <i>²Jizzakh Polytechnic Institute, 200103 Jizzakh, Uzbekistan</i></p> <p>Title of presentation: Experimental determination of the wave height of the base and yarns in the tissue and a new method for measuring the tissue thickness without contact Abstract: In many spinning and weaving processes, fibers and threads are bent. To be more precise: in the textile industry there is no technological process in which fibers, threads or textiles do not pass through a curved surface. Therefore, this article highlights the research work on a new method of contactless determination of the wave height and thickness of the warp and weft threads in the fabric using the capabilities of information and communication technologies. Experiments of research work are considered on the example of crêpe de Chine fabric.</p>
Paper ID 177	<p>Abdurakhim Kuchboev¹, Oybek Amirov^{1,2}, Gulnoza Soliyeva³, Rokhatoy Karimova¹, Humoyun Sabirov¹, Mahamadi AbramatoV⁴, and Boymakhmat Kakhramanov² <i>¹Institute of Zoology, Academy of Sciences of Uzbekistan, 100053 Tashkent, Uzbekistan</i> <i>²Tashkent State Agrarian University, 100140 Tashkent province, Uzbekistan</i> <i>³Jizzakh State Pedagogical Institute, 130100 Jizzakh, Uzbekistan</i> <i>⁴Termez State University, 190111 Termez, Uzbekistan</i></p> <p>Title of presentation: Morphological and molecular identification three species</p>



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	<p><i>Teladorsagia</i> (Nematoda: Trichostrongylidae) in sheep, Uzbekistan Abstract: Comparative studies of three species <i>T. circumcincta</i>, <i>T. trifurcata</i> and <i>T. davtiani</i>, which are preliminarily different morphs of the same species, have been carried out in this paper. Insignificant differences in morphological sizes and characters between males were identified and fragments of ITS-2 ribosomal DNA of three species of the genus <i>Teladorsagia</i> were investigated. There were no sequence differences between <i>T. circumcincta</i> and <i>T. trifurcata</i>. Minor differences were noted between <i>T. circumcincta</i> and <i>T. davtiani</i> species at the level of 0.8%. With complete similarity between <i>T. circumcincta</i> and <i>T. trifurcata</i> and a low percentage of differences between <i>T. circumcincta</i> and <i>T. davtiani</i> in different specimens, they represent different morphological forms of one species of <i>T. circumcincta</i>.</p>
<p>Paper ID 178</p>	<p>Mekhriniso Makhammatova¹, Musa Ashurov¹, Sobir Tursoatov¹, and Abdulla Fayzullaev² ¹<i>Tashkent State Agrarian University, 100140 Tashkent, Uzbekistan</i> ²<i>Kashkadarya Grain and Legume Research Institute, Karshi, Uzbekistan</i></p> <p>Title of presentation: Scientific basis of appropriate sowing of wheat varieties on irrigated land of Uzbekistan Abstract: In the irrigated lands of Tashkent province, regionalized wheat varieties are usually planted at a rate of 250 kg/ha, but it would be possible to increase yields and grain quality if a scientifically based optimal sowing rate was recommended for each variety. Another opportunity to increase wheat yields in the region is the development of seed production. Numerous studies and practices have shown that it is possible to increase wheat yields by 20-25 by sowing wheat seeds. In this regard, the most pressing issue is to increase the level of seed germination. In this article, it is important to study the scientifically based sowing norms, physiological maturation of seeds, and their impact on yield and grain quality in order to take full advantage of the potential of regionalized varieties of wheat in irrigated lands. The determination of the most optimal planting norms, taking into account their biological properties, is based on research.</p>
<p>Paper ID 179</p>	<p>Saidahon Ahmedova¹, and Muzaffar Asrarov¹ ¹<i>National University of Uzbekistan named after Mirzo Ulugbek, Tashkent 100174, Uzbekistan</i></p> <p>Title of presentation: Evaluation of the hepatoprotective and antioxidant properties of an aqueous extract of plant polyphenols (<i>helichrysum maracandicum</i>) Abstract: This study investigated in vivo and in vitro the effects of helmar 2 polyphenol extracts isolated from the plant <i>Helichrysum maracandicum</i> in the conditions of toxic hepatitis poisoned by carbon dioxide (CCl₄) in rats. The experiments were performed on healthy male rats and grouped hepatitis model animals with CCl₄. In toxic hepatitis, helmar 2 polyphenol extracts at a dose of 20 mg/kg showed an inhibitory effect on hepatic mitochondrial lipid peroxidation. Evidently, the inhibitory effect of polyphenol extracts on the peroxidation of hepatic mitochondrial lipids was very close to that of the hepatoprotective drug silymarin.</p>
<p>Paper ID 181</p>	<p>Anvar Anarbaev¹, Obid Tursunov^{1,3,4}, Dilshod Kodirov¹, Zayniddin Sharipov¹, Farrukh Mukhtarov⁵ ¹<i>Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000 Tashkent, Uzbekistan</i> ²<i>Institute of Energetic Problems, Uzbek Academy of Science, 100084 Tashkent, Uzbekistan</i> ³<i>Research Institute of Forestry, 111104 Tashkent, Uzbekistan</i> ⁴<i>Gulistan State University, 120100 Gulistan, Uzbekistan</i> ⁵<i>Tashkent State Technical University, 100097 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Changes of chemical reactions in soil during electric processing by means of UV-radiation Abstract: The technology of electro-processing by UV-radiation soil of agricultural plants</p>



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	<p>is considered. The mechanism of the effect of UV irradiation to change by redox reactions a chemical potential of the soil is shown. As the result of experimental researches, optimum parameters for processing soils with ultraviolet radiation lamps for increasing the absorption of the most mobile manganese forms in plants are defined.</p>
Paper ID 182	<p>Anvar Anarbaev¹, Obid Tursunov^{1,2,3}, Dilshod Kodirov¹, Ibrokhim Khudaev, Khayrulla Isakhodjayev¹, and Sayid Islikov³ ¹Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000 Tashkent, Uzbekistan ²Research Institute of Forestry, 111104 Tashkent, Uzbekistan ³Gulistan State University, 120100 Gulistan, Uzbekistan</p> <p>Title of presentation: Pre-sowing activation of seeds by ultraviolet (UV) radiation Abstract: The mechanism of influence the UV- radiation biological processes into seeds of agricultural plants is considered. The technical parameters of installation for pre-sowing treatment seeds with ultraviolet radiation lamps for increasing the permeability of biological membranes of cells in seed are defined. The results of experimental researches on have established that for processing of seeds cotton pre-sowing treated with ultraviolet rays, increasing of their germination and productivity of agricultural crops are shown.</p>
Paper ID 183	<p>Shaukat Khakimov*, Sayyora Rajapova, Faffukh Amirkulov, Elyor Islomov ¹Institute Tashkent state transport university, 100167 Tashkent city, Uzbekistan</p> <p>Title of presentation: Road Intersection Improvement – Main Step for Emission Reduction and Fuel Economy Abstract: This article demonstrates the changes made in the intersection model using PTV Vissim have an impact on reducing an amount of GHG and fuel consumption. One of the most problematic intersections in Namangan, Uzbekistan, was selected and traffic flow during peak hours was studied in order to prepare the simulation of the intersection. The article offers two types of solution as so to lessen the amount of toxic gases and fuel consumption. In the first solution, the situation was improved by optimizing the phase of the traffic light and by changing the cycle duration. The second solution was to reduce the amount of toxic gases and fuel consumption from vehicles by changing the geometric dimensions of the intersection. After the implementation of both solutions, the current state of LOS was raised from D to A level.</p>
Paper ID 184	<p>Yu Kenjaev^{1*}, and A Tursunkulova² ¹National University of Uzbekistan named after Mirzo Ulugbek, 100174 Tashkent, Uzbekistan ²Tashkent State Agrarian University, 100140 Tashkent, Uzbekistan</p> <p>Title of presentation: Changes in soil physical properties under the effect of irrigation Abstract: The mechanical composition of soils in the middle reaches of the Zarafshan River (Jambay, Samarkand, Payarik, Ishtikhon, Kattakurgan and Narpay districts) and the processes of formation of soil layers under the influence of irrigation water of general physical properties were scientifically analyzed. In this case, the inflow of the Zarafshan River played an important role in the formation of light agroirrigation strata. An increase in nutrients and humus with an increase in the amount of physical sludge over a long period of time (35–40 years) is positively assessed for thickening of the soil layer, but leads to an increase in bulk mass of 0.15–0.3 g / cm³ and soil compaction.</p>
Paper ID 185	<p>Kh G Ayasov^{1*}, E Akhmedov², and S Khidirov² ¹Research Institute of Forestry, 111104 Tashkent, Uzbekistan ²Tashkent State Agrarian University, 111218 Tashkent, Uzbekistan</p> <p>Title of presentation: Effects of certain mineral fertilizers on the biological mass of <i>Indigofera Tinctoria</i> and <i>Impatiens Balsamina</i> plants Abstract: The article describes the effect of mineral fertilizers on the cultivation of dyed <i>Indigofera (Indigofera tinctoria L.)</i> and henna (<i>Impatiens balsamina L.</i>), the amount of their</p>



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	<p>application and the ratio of basic nutrients (nitrogen, phosphorus and potassium) related. It has been established that the adequate development of Indigofera and henna plants depends on the ratio of mineral fertilizers used.</p>
Paper ID 186	<p>S F Amirov¹, A Kh Sulliev^{1*}, A T Sanbetova², and Islom Kurbonov¹ ¹Tashkent State Transport University, Tashkent, Uzbekistan ²Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000 Tashkent, Uzbekistan</p> <p>Title of presentation: Study on the biparametrical transductions circuits with distributed parameters Abstract: This paper highlights the methods of resenting mode in the transudation with distributed parameters. The transient parameters of the power supply were analyzed. It was discovered that resonance is provided in a small range of movement of the moving component of the sensor in known turbofan engines, indicating that the known techniques of sustaining the resonance mode are flawed. Further study should focus on developing novel methods for preserving resonance mode over the entire range of change of the converted value, general principles of turbojet engine construction, and a complete examination of their resonant circuits, according to the findings.</p>
Paper ID 187	<p>S Amirov¹, D Rustamov^{1*}, N Yuldashev¹, U Mamadaliev¹, and M Kurbanova¹ ¹Tashkent State Transport University, 100167 Tashkent, Uzbekistan</p> <p>Title of presentation: Study on the Electromagnetic current sensor for traction electro supply devices control systems Abstract: This article is devoted to the new electromagnetic sensor design of large direct and alternating currents with expanded functionality for the electro supply devices control and management systems on electrified railways. It's analyzed that its nonlinear magnetic circuit with longitudinal magnetization based on the magnetization curve approximation. Also it's shown that developed sensor sensitivity depends on working air gap sizes and modulating magnetic field induction.</p>
Paper ID 188	<p>A Mirzabaev^{1,2*}, A Isakov¹, O Soliev³, M Makhkamova⁴, and D Kodirov¹ ¹Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000 Tashkent, Uzbekistan ²International Solar Energy Institute ISEI, 100084 Tashkent, Uzbekistan ³Tashkent State Technical University, 100097 Tashkent, Uzbekistan ⁴“MIR SOLAR” LLC, 100076 Tashkent, Uzbekistan</p> <p>Title of presentation: Major trends characterizing solar energy development in Uzbekistan Abstract: This paper examines the main trends in the development of solar energy in Uzbekistan. It also describes various schemes for powering deep-water pumps using PV power plants and analyzes the payback period of small autonomous (off-grid) solar systems.</p>
Paper ID 189	<p>Akram Mirzabaev^{1,2}, Sherzod Mirzabekov³, Temur Makhkamov⁴, Odil Soliev³, Oskar Sitdikov⁴ and Dilshod Kodirov¹ ¹Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000 Tashkent, Uzbekistan ²International Solar Energy Institute ISEI, 100084 Tashkent, Uzbekistan ³Tashkent State Technical University, 100097 Tashkent, Uzbekistan ⁴“MIR SOLAR” LLC, 100076 Tashkent, Uzbekistan</p> <p>Title of presentation: The impact of renewable energy sources on power flows in the electric power system of Uzbekistan Abstract: This paper analyzes the variations in power flows along the main power transmission lines of the electric power system of Uzbekistan, taking into account the power generation by large PV power plants (PVP), which will be commissioned by 2024. The paper concludes with recommendations on the modernization of the electric power economy.</p>



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<p>Paper ID 190</p>	<p style="text-align: center;">A Rakhmatov <i>Department of Power Supply and Renewable Energy Sources, Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Study on the increase in power supply reliability for the consumers of electricity Abstract: The issues of increasing the reliability of power transformers used in power supply systems for agriculture and water management were discussed in this article. The degree of damage to the insulation of power transformers by the physical and chemical composition of the transformer oil and insulation of other parts was also investigated, materials on the assessment of the state of insulation by the degree of damage to the insulation of individual units of the power transformer were presented.</p>
<p>Paper ID 191</p>	<p style="text-align: center;">A Rakhmatov^{1*}, and A Sanbetova¹ <i>¹Department of Power Supply and Renewable Energy Sources, Tashkent Institute of Irrigation Engineers and Agricultural Mechanization, 100000 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Study on modeling of the air ionization process in the technology of long-term storage of fruit and grape Abstract: This article presents the results of modeling the process of air ionization in the technology of long-term storage of fruits and grapes in fruit storage facilities. Also was determined the main forces acting on ions in the ionization zone, in the volume of the fruit storage and on the surface of the processed product in order to establish the ionization modes and design the discharge gap of the ionizer. Based on the results of the research, the issues of the ionizer placement in the volume of the fruit storage have been resolved. The results of theoretical studies have been verified experimentally and the corresponding dependencies of the parameters of ionized air was obtained.</p>
<p>Paper ID 192</p>	<p style="text-align: center;">O Tursunov^{1,2,3,4*}, J W Dobrowolski¹, O Khujaev³, N Abduganiev², O J Nazarova³, and D J Yuldosheva³ <i>¹Team of Environmental Engineering and Biotechnology, Faculty of Mining Surveying and Environmental Engineering, AGH University of Science and Technology, 30-059 Krakow, Poland</i> <i>²Department of Power Supply and Renewable Energy Sources, Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000 Tashkent, Uzbekistan</i> <i>³Research Institute of Forestry, 111104 Tashkent, Uzbekistan</i> <i>⁴Gulistan State University, 120100 Gulistan, Uzbekistan</i></p> <p>Title of presentation: Study on the perspectives of application of eco-friendly laser biotechnology for environmental protection in Uzbekistan Abstract: Since few decades, the world is encountering unusual and daunting environmental challenges like global warming, climate change, pollution of the atmosphere and water, an emerging international crisis in water availability, long-term damage to ecosystems and substantial loss of biodiversity, waste production and disposal, damaged aquatic ecosystems, impacts of chemicals use and toxic substance disposal, as well as land degradation and deforestation. Accordingly, Uzbekistan has also been encountering some environmental issues, such as global Aral Sea crisis, soil erosion and desertification, wastewater, air pollution and a growing amount of municipal solid waste. Hence, this paper illustrates the major environmental challenges and risks in Uzbekistan, as well as, the possible application of environmentally friendly laser biotechnology for more efficient and rationale protection of ecosystems and wide-scale reclamation of deteriorated areas. Comprehensive use of laser irradiation can be effectively applied in environmental protection engineering and technologies for sustainable development in selected regions. Laser irradiation or photostimulation is a neoteric area and process of environmental biotechnology. In this process, coherent laser light is employed to optimize the natural processes involved in the bioremediation of xenobiotics or bioaccumulation of metals.</p>



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	<p>Additionally, laser biotechnology could be broadly used for more efficient reclamation of contaminated soil, wastewater treatment, as well as for increasing the growth rate of irradiated plants and their resistance to various macro- and micro pollutants in the air, soil, and water.</p>
Paper ID 193	<p style="text-align: center;">Elmurod Bozorov <i>Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Field study on application of electric pulse processing device in the cultivation of tomatoes and cucumbers Abstract: This article explains the main diseases of tomato and cucumber plants that grow in greenhouses and fields. At present, the protection of the environment, especially from the effects of various chemical toxins, is one of the main problems of land and water resources of the world civilization. During the global financial and economic crisis, our country is currently using high-quality land resources, introducing advanced science and technology, agricultural technologies and cultivation of low-quality crops. Some of the important issues are the management and control of land use, the improvement of land relations, and the efficient use of land by the public in general. Electric pulse processing should be used for growing vegetables and melons. Diseases of nematodes attach and settle in the root system of plants. Inside, plant roots, nematodes form tumors and folds, do not nourish young seedlings, destroy mineral nutrients and eventually seedlings. We offer an electrical impulse to treat nematode diseases of the roots of tomato and cucumber plants and to obtain the results of electrotechnical experiments. To get the results of this experiment faster, we can clearly see that the results of experiments conducted in the scientific laboratory of the Institute of Plant Protection using electron microscopy in the processing of root stalks of tomato and cucumber plants were infected with nematodes. The use of an electric pulse device in the cultivation of tomatoes and cucumbers has been considered in the fight against nematode diseases caused by plants and its roots, and the results of preliminary studies have been presented.</p>
Paper ID 194	<p style="text-align: center;">O Khujaev^{1*}, D Obidjanov¹, O Tursunov^{1,2,3}, and O Nazarova¹ <i>¹Research Institute of Forestry, 111104 Tashkent, Uzbekistan</i> <i>²Department of Power Supply and Renewable Energy Sources, Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000 Tashkent, Uzbekistan</i> <i>³Gulistan State University, 120100 Gulistan, Uzbekistan</i></p> <p>Title of presentation: Types and composition of diseases and pests of restructured forest and pasture plants in the dry part of the Aral Sea Abstract: Studies on the dried bottom of the Aral Sea have shown that dominant disease from 3 species of them in Haloxylon plant is Podosphaera leucotricha and the dominant species from 34 species of pests is Big Dwarf Haloxylon Locust (<i>D. albidula</i>) and Small Haloxylon Locust (<i>D. annulata roseipen</i>). Chemical and biological control measures were taken against this disease and pests. When using anti-inflammatory drugs Redomil gold, Dnox, Fundazol and Sporagin, their effectiveness is as follows: Redomil gold - 68% sp (2.0–2.5 kg / ha), Fundazol - 50% ke (2.0 l / ha), Dnox - 40% ke (2.0 l / ha) and Sporagin (4.0, l / ha) were tested using fungicides in the norms. Of the drugs used in the experimental variant, Redomil gold, 68% s.p. (2.0-2.5 kg / ha) was the highest biological efficacy against powdery mildew in the variant in which the fungicides were applied, was 91.3%.</p>
Paper ID 195	<p style="text-align: center;">Shakhnoza Gaipova^{1,2}, Akbarali Ruzibayev¹, Zulfiya Khakimova¹, Shakhnozakhon Salijanova¹, and Asliddin Fayzullayev¹ <i>¹Tashkent Chemical-Technological Institute, 100011 Tashkent, Uzbekistan</i> <i>²Ministry of Innovative Development, 100174 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Formulation of mayonnaise recipe enriched with biological active compounds of sesame cake Abstract: Today, scientific schools have been formed to improve the recipe and technology</p>



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	<p>of mayonnaise. In the present study, a byproduct of an oilseed source, namely sesame cake, containing unique antioxidant compounds, such as lignans, is studied as a biologically active additive that can be used in the place of starch and synthetic antioxidants in mayonnaise. Sesame seed purchased from local markets. Sesamol standard was obtained from Sigma Chemical Company (USA). The experimental results have shown that regarding the taste, color, mouthfeel, and overall acceptability, the samples containing 10% sesame cake powder obtained the highest score. It is therefore recommended to use sesame cake powder at the concentration of 8-10% in mayonnaise formulation. The findings of this research could be useful for food industries to improve their products qualitatively.</p>
<p>Paper ID 196</p>	<p>Sevarakhon Khodjaeva^{1,2}, Marufdjan Musaev², and Shonazar Akhmedov¹ ¹Joint Stock Company “Hududgazta’minot”, 100115 Tashkent, Uzbekistan ²Tashkent State Technical University named after Islam Karimov, 100174 Tashkent, Uzbekistan</p> <p>Title of presentation: Studying safety and risk management in the gas transmission system using GIS technology Abstract: In this current research, the combination of gas transportation system in line with analytical process was applied to conduct an assessment on the risk management of gas transferring pipe lines. By this process, classification and qualification of the numerous types of transportation risks would be accessible. Index and transportation index indicate risk probability and risk severity, respectively. In this regard, total risk is calculated based on the multiplication of all risk probability using geographical information systems (GIS) classified risks that have been throughout the pipeline route using attributive information. This information also gave database alternative monitoring of gas transportation.</p>
<p>Paper ID 197</p>	<p>Nurbek Rizaev¹ and Sakhobiddin Kadirov² ¹Tashkent Institute of Finance, 100000 Tashkent, Uzbekistan ²Tashkent State Agrarian University, 100140 Tashkent, Uzbekistan</p> <p>Title of presentation: Methodology of intangible assets efficiency analysis Abstract: This article addresses the issues of methodology for the analysis of the effective use of intangible assets. In the analysis of the efficiency of intangible assets, scientific conclusions and practical recommendations are formed, which allow determining its indicators of profitability, turnover, profitability, and on this basis to make management decisions in agriculture.</p>
<p>Paper ID 198</p>	<p>N T Tashpulatov, R A Zakhidov <i>Department of Power Supply and Renewable Energy Sources, Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Study on electric pulse destruction of diseased nematodes Abstract: The article presents the results of research on the use of electric discharges of current for the destruction of worms, larvae and galls of pathogenic nematodes. Nematodes consisting of round worms in the process of their vital activity penetrates the roots, stems and leaves of the plant, disrupting the integrity of tissues, cells and cellular structures, feeding on plant sap leads to lagging behind growth and development, contributes to the spread of various diseases, causes rot and infection. They can be found even in fruits and seeds of plants. Most often, worms form a kind of swelling growth in the roots, in the stems in the leaves and in the fruits, the growths of which are called galls. When unfavorable conditions arise, they move at an accelerated rate in the soil, maintaining their vitality. Therefore, their destruction using well-known methods such as agro technical, thermal biological, chemical, etc. is laborious and ineffective. The article describes an alternative electro technological method for the destruction of nematodes using electric current discharges, which provides the required destruction effect at the lowest cost.</p>



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<p>Paper ID 199</p>	<p style="text-align: center;">A Rakhmatov^{1*}, N Rajabov¹, and Kh Yakubova¹ <i>¹Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000, Tashkent, Uzbekistan</i></p> <p>Title of presentation: Determination of the technical condition of electrical equipment in power supply systems Abstract: This article describes the methods and means for determining the technical condition of electrical equipment in power supply systems, particularly in transformer substations. There are many ways to determine the technical condition of electrical equipment. However, their implementation requires complex and additional equipment and devices. In addition, these tests must be carried out when the power supply system is off. This will lead to a decrease in the quality of electrical energy. Determination of the technical condition of electrical equipment using thermal imagers is performed under the voltage and in operating modes, the measurement process does not affect the parameters of the power supply system. The results of research in energy enterprises of the Syrdarya region are presented.</p>
<p>Paper ID 200</p>	<p style="text-align: center;">A Anarbaev^{1*}, O Tursunov^{1,2,3}, D Kodirov¹, I Allenova¹, and D Nazaraliev¹ <i>¹Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000 Tashkent, Uzbekistan</i> <i>²Research Institute of Forestry, 111104 Tashkent, Uzbekistan</i> <i>³Gulistan State University, 120100 Gulistan, Uzbekistan</i></p> <p>Title of presentation: Determination of model parameters of water-nutritional processes in soil for nitrogen compounds Abstract: Studies of development of an integrated model that allows calculating the whole range of processes necessary for predicting and managing the water and nutrient regimes of reclaimed soils are considered. Calculated values of the maximum concentrations of nitrate nitrogen in the topsoil during the growing season of plant for Tashkent's region are shown. Values of field moisture capacity and wilting moisture of the main varieties of irrigated soils are defined.</p>
<p>Paper ID 201</p>	<p style="text-align: center;">A Anarbaev^{1*}, O Tursunov^{1,2,3}, D Kodirov¹, U Tasheva¹, Q Davronov⁴, and A Davirov¹ <i>¹Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000 Tashkent, Uzbekistan</i> <i>²Research Institute of Forestry, 111104 Tashkent, Uzbekistan</i> <i>³Gulistan State University, 120100 Gulistan, Uzbekistan</i> <i>⁴Fergana Polytechnic Institute, 150107 Fergana, Uzbekistan</i></p> <p>Title of presentation: UV treatment of agricultural plants in territories subject to salination of soil Abstract: An assessment of the influence of electrotechnology of ultraviolet irradiation of seeds and pre-sowing soil treatment and the creation, on their technological basis, of management and control of salt and nutritional regimes of irrigated soils has been carried out. Relative yield of field crops versus the concentration of toxic salts in the soil solution at full moisture capacity are shown. By results of experimental researches acting of UV irradiation on the amount of ammonifying bacteria in the soil under cotton for increasing the accumulation of the most mobile nitrate forms of nitrogen are defined.</p>
<p>Paper ID 202</p>	<p style="text-align: center;">Alisher Safarov¹, Hayrulla Davlonov², Rasul Mamedov^{3*}, Makhbuba Chariyeva³, Dilshod Kodirov⁴ <i>¹Department of Energy Audit, Bukhara Engineering Technological Institute, 200100 Bukhara, Uzbekistan</i> <i>²Department of Alternative Energy Sources, Karshi Engineering-Economics Institute, 180100 Karshi, Uzbekistan</i> <i>³Department of Energy, Bukhara Engineering Technological Institute, 200100 Bukhara, Uzbekistan</i> <i>Department of Power Supply and Renewable Energy Sources, Tashkent Institute of</i></p>



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	<p><i>Irrigation and Agricultural Mechanization Engineers, 100000 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Design and modeling of dynamic modes of low speed electric generators for electric power generation from renewable energy sources</p> <p>Abstract: This article provides information on the current state and prospects for the development of renewable energy sources in the world and in our country, as well as on the choice of efficient power generators to ensure stable operation at low flows of micro hydroelectric and wind power plants. When designing a simulation model and a theoretical study of the dynamic modes of an electric generator, Solidworks and Matlab/Simulink software were used. Mathematical expressions are given for the output parameters of an electric generator (voltage, current, frequency, electromagnetic power, etc.) depending on its geometric dimensions, the number of permanent magnets, the connection diagram and the number of turns of the stator winding, the minimum distance between the stator and the rotor. According to the results of scientific research, an electric generator was developed with a power of 600 W, with the number of permanent magnets 32, the number of windings in each phase of the stator 4, the number of turns in each winding 200, the stator and rotor of which rotate in opposite directions. It was found that with opposite rotation of the stator and rotor relative to each other, the electromagnetic torque and electromagnetic power of the generator increase by 20% compared to a rotating rotor and a stationary stator of an electric generator. It is scientifically substantiated that by using this type of electric generator in micro hydroelectric power plants and wind power plants, it is possible to significantly increase the efficiency of installations at low currents.</p>
<p>Paper ID 203</p>	<p>A Anarbaev^{1*}, O Tursunov^{1,2,3}, D Kodirov¹, J Izzatillaev¹, A Rakhmatov¹, and K Shipilova¹</p> <p><i>¹Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000 Tashkent, Uzbekistan</i></p> <p><i>²Research Institute of Forestry, 111104 Tashkent, Uzbekistan</i></p> <p><i>³Gulistan State University, 120100 Gulistan, Uzbekistan</i></p> <p>Title of presentation: Intensification of nitrification processes in soil by ultraviolet (UV) irradiation</p> <p>Abstract: This study highlights the application of UV radiation for soil treatment with regard to agricultural plant growth intensification. The influence of the parameters of ultraviolet radiation (intensity and wavelength) on the value of the redox potential in the soil was quantified. The experimental tests carried out in soils, plants, seeds with ultraviolet radiation lamps for changing the accumulation of the most mobile nitrate forms of nitrogen were defined.</p>
<p>Paper ID 204</p>	<p>D Yuldosheva^{1*}, O Khujaev¹, R Gulmurodov², and Sh Gulmurodova²</p> <p><i>¹Research Institute of Forestry, 111104 Tashkent, Uzbekistan</i></p> <p><i>²Tashkent State Agrarian University, 100140 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Study on protective measures against diseases of almonds caused by fungi: A case study in Tashkent region of Uzbekistan</p> <p>Abstract: Among the fruit trees, almond has a special place and is an ancient and traditional type of fruit crop for many countries of the world. Leading research centers around the world have conducted research to study the prevalence, development, damage, and control measures of the almond tree fungi <i>Stigmata carpophila</i> and <i>Monilinia cinerea</i>, which cause widespread perforated spot and moniliosis burns. As a result, it was possible to preserve the almond crop lost under the influence of these diseases. Even today, research aimed at developing effective measures to control the fungal diseases of the almond tree remains relevant.</p>
<p>Paper ID 205</p>	<p>A Rau¹, I Begmatov^{2*}, and G Rau³</p> <p><i>¹Department of Hydraulic Engineering and Melioration, Kazakh National Agrarian University, Almaty 050000, Republic of Kazakhstan</i></p> <p><i>²Department of Irrigation and Melioration, Tashkent Institute of Engineers of Irrigation</i></p>



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	<p><i>and Agricultural Mechanization, 100000 Tshkent, Uzbekistan</i> <i>³Kazakh National Agrarian University, Almaty 050000, Republic of Kazakhstan</i></p> <p>Title of presentation: Study on the influence of rice paddies' water layer temperature on rice yield</p> <p>Abstract: Studies on Akdala rice system found that rice plants sensitive to meteorological conditions. Climate change leads to changes in crop structure. The temperature of the rice field air and water has a special influence on the structure of the rice crop. It is established that the temperature of the water layer in rice paddies in the irrigation period does not exceeds 29⁰ C, which is below the threshold of 35⁰ C, when the flow and discharge of water from the paddies are recommended. The temperature of water in rice paddies, the surface layer was determined by an express thermometer, at the depth of the water layer 5, 10, 15 and 20 cm by Savin Thermometers, soil – thermometers TM-5.</p>
Paper ID 206	<p>Shavkat Muzafarov^{1*}, Aziz Babaev², Orif Kilichov³, Vladlen Balitskiy⁴ <i>¹Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Study on electrosynthesis of ozone in the low-temperature plasma medium</p> <p>Abstract: This article analyzes the state of the art of ozone electrosynthesis, reveals the shortcomings of existing methods of ozone electrosynthesis, and identifies research directions. A theoretical analysis of ozone electrosynthesis processes using sinusoidal voltages and periodic acute-angled voltage pulses with an amplitude factor of more than 5 is carried out. The calculation of the electric intensity values in the elements of the ozone generator when powered by sinusoidal and impulse voltage is highlighted. Experimental studies have confirmed the results of theoretical studies and revealed the reasons for the heating of the dielectric barrier with sinusoidal power supply. It was found that when powered by a pulsed voltage, due to a significant increase in the amplitude value of the electric field strength, the conductivity of the discharge gap increases sharply with the formation of low-temperature plasma and intense ultraviolet radiation, which leads to a sharp increase in the energy parameters of the ozone electrosynthesis process and the absence of the dielectric barrier heating process.</p>
Paper ID 207	<p>Shavkat Muzafarov¹, Ravshan Turdaliev¹, Lolita Batirova¹, Aziz Babayev¹ <i>¹Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Improving reliability of power supply and the quality of electrical energy and safety in rural settlements</p> <p>Abstract: This article analyzes the state of the issue of power supply in a rural settlement on the example of the Shampan village of the Tashkent region. In particular, the number of 10 / 0.4 kV transformer substations and the length of 10 and 0.4 kV networks. Collected statistical materials on the voltage level of subscribers, the total load of transformers and the load on individual phases. Based on these data, a conclusion was made on the unsatisfactory state of the issue of power supply to the settlement. To increase the reliability of power supply, it is recommended to use self-supporting insulated wires (SIP) for voltages of 0.4 and 10 kV. To improve the quality of power supply, reduce the one-time power of the transformer substation to 25 kVA and include in the project the installed capacity of one house equal to 4 kW. To ensure electrical safety, a circuit has been developed with a neutral isolated from the ground with two neutral wires: working and protective. Protection circuits against single-phase earth faults have been developed. Switching in 10 kV networks is performed by reclosers - automatic sectioning points (APS). The calculation of the reduction in the cost of losses in 10 / 0.4 kV networks has been carried out.</p>
Paper ID 208	<p>Sh M Muzafarov^{1*}, A G Babaev¹, O G Kilichov¹, and L A Batirova¹ <i>¹Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000 Tashkent, Uzbekistan</i></p>



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	<p>Title of presentation: Disinfection of drinking water with ozone by the method of electrodispersion</p> <p>Abstract: This article analyzes the existing methods for disinfecting drinking water with ozone and identifies their disadvantages. The substantiation of the method of water disinfection with ozone using electrodispersion is given. The description of the technological scheme of water disinfection using the method of electrodispersion is given. The description of the design of the electric spray is given. The results of production tests of a device for water disinfection on the water of open reservoirs and artesian wells are presented.</p>
<p>Paper ID 209</p>	<p style="text-align: center;">Z G Yunusova¹, F Kh Rakhimov¹, and M Kh Zhabiev¹ <i>¹Tashkent Institute of Textile and Light Industry, 100100 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Study on knitted filled knits for fruit juice filtering</p> <p>Abstract: This article discusses the essence of the formation of knitted filled filter cloths, in which the mass fraction of the filler exceeds more than 50% of the total surface density. The new method was tested in the production environment of the ‘Gani Rakhimov Ishonch’ enterprise (Samarkand) by modernizing the existing equipment, and also a pilot batch of products and final products were produced for filtering fruit juices.</p>
<p>Paper ID 210</p>	<p style="text-align: center;">Palvan Kalandarov^{1*}, Ziyoviddin Mukimov², Obid Tursunov^{3,4,5}, Dilshod Kodirov³ <i>¹Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000 Tashkent, Uzbekistan</i> <i>²Tashkent State Agrarian University</i> <i>³Department of Power Supply and Renewable Energy Sources, Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000 Tashkent, Uzbekistan</i> <i>⁴Research Institute of Forestry, 111104 Tashkent, Uzbekistan</i> <i>⁵Gulistan State University, 120100 Gulistan, Uzbekistan</i></p> <p>Title of presentation: Study on dielectric moisture control method based on capacitive transducers</p> <p>Abstract: This article investigates the concept and definition of moisture and its function in regulation and control, where the role of moisture at all stages of the technical process is an important part. Approximation of the actual physical entity by its electrical model in the form of replacement schemes is evaluated by the primary transducers of moisture translated into electrical value, the basis of which is a capacitive sensor-capacitor in the electrical field of which is a certain volume of the studied content. Indirect methods based on the calculation of the dielectric permeability of moisture content of the studied substance are evaluated in order to choose the process, evaluate the dielectric method, consider the design and installation of bulk material moisture management devices based on this method, and draw conclusions on the advantages and disadvantages of the dielectric method.</p>
<p>Paper ID 212</p>	<p style="text-align: center;">N R Avezova^{1,2}, E Yu Rakhimov², N N Dalmuradova^{1*}, and M B Shermatova³ <i>¹Tashkent State Technical University named after I.A. Karimov, 4, University street, Olmazar District, Tashkent, 100 174 Uzbekistan</i> <i>²Physical-Technical Institute of Academy of Sciences of the Republic of Uzbekistan, 2B, Chingiz Aytmatov street, Tashkent, 100 084, Uzbekistan</i> <i>³National research institute of renewable energy sources under the Ministry of energy of the Republic of Uzbekistan, 2B, Chingiz Aytmatov street, Tashkent, 100 084, Uzbekistan</i></p> <p>Title of presentation: Adjustments to the indicators of the heating and cooling degree-days for regions of the Republic of Uzbekistan</p> <p>Abstract: This paper identifies the indicators of the calculated heating and cooling degree-days for the territory of Uzbekistan. The revealed values of the maximum and average daily outside air temperature were taken into account based on the collection, processing and analysis of the latest archives of climatic data. These data was obtained from open sources of weather stations, suitable for servicing scientific data, in order to enter adjustments to</p>



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	forecasts in the design of heat and cold supply systems in buildings and structures, which, in turn, mitigate the effects of climate change.
Paper ID 213	<p>R Baratov^{1*}, T Bon², Y Chulliyev¹, Yu Shoyimov³, and M Abdullayev¹ ¹<i>Electrical Engineering and Mechatronics Department, Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000 Tashkent, Uzbekistan</i> ²<i>Agricultural and Biosystems Engineering Department, North Dakota State University, 1221 Albrecht Blvd, Fargo ND 58102, USA</i> ³<i>Electromechanical Engineering Department, Almalyk branch of Tashkent State Technical University, 110100 Almalyk, Uzbekistan</i></p> <p>Title of presentation: Modeling and simulation of water levels control in open canals using Simulink</p> <p>Abstract: This paper discusses the question of modeling and simulation of water levels control in open canals as a key decision of water and energy resources scarcity in the vegetation period of agricultural irrigation. The mathematical model of the water levels control in open canals is developed and the outcomes are evaluated using by Matlab's tool Simulink. In addition, the paper proposes that the pivot weir or overshoot gate for water levels control in open canals is simple in terms of precise and quality control of the upstream and downstream water levels control. Then dynamic equation of control object that describes dynamic state of the water levels control was obtained. A functional diagram has been developed and PID control was applied for the water levels control in the open canals. PID control was applied for the water levels control in the open canals to know how faster response the object to disturbance. Based on functional diagram the model of the system was built in Simulink environment and obtained the dynamic response.</p>
Paper ID 214	<p>P I Kalandarov^{1*}, Zi Mukimov¹, Kh Abdullaev¹, Nodir Avezov¹, O Tursunov^{1,2,3}, D Kodirov¹, N Toshpulatov¹, and S Khushiev¹ ¹<i>Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000 Tashkent, Uzbekistan</i> ²<i>Research Institute of Forestry, 111104 Tashkent, Uzbekistan</i> ³<i>Gulistan State University, 120100 Gulistan, Uzbekistan</i></p> <p>Title of presentation: Study on microwave moisture measurement of grain crops</p> <p>Abstract: This article discusses the possibility of implementing the microwave method for controlling the moisture content of agro-industrial products, which allows it to be used to control technological processes in grain processing industries and to control materials in free space, converting the parameters of waves passed through the material's wave into an electrical signal. A functional diagram of the developed moisture meter is proposed, on the basis of the method, its electrodynamic characteristics are determined. Experimental data was obtained for samples of cotton seeds with specified moisture values. A method for measuring grain moisture in continuous production have been proposed, which gives a possibility to reduce the components of the measurement error caused by the uneven distribution of moisture in the grain, the inhomogeneity of the material in terms of density and temperature.</p>
Paper ID 215	<p>O S Logunova¹, P I Kalandarov², E A Garbar^{1*}, M Abdullaev³, N Alimova³, O Matchanov², and Kh Abdullaev² ¹<i>Magnitogorsk State Technical University named after G. I. Nosov, 455000 Magnitogorsk, Russia</i> ²<i>Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000 Tashkent, Uzbekistan</i> ³<i>Tashkent State Technical University, 100095 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Study on signs of defects in the image of the surface of flat-rolled products</p> <p>Abstract: Currently, more and more challenges of modern industrial enterprises require an increase in the reliability of the information on the quality of products. This becomes</p>



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	<p>possible when using digital technologies to assess the quality of products. The cited publication discusses the technology for recognizing defects in the surface of sheet products in images obtained from cameras of the strip inspection system during rolling. The authors proposed a classification of the signs of defects in the image and highlighted the most significant of them also suggested using geometric, optical and spectral features for images of flat-rolled products containing defects of different classes. The research results at this stage, obtained during the processing of digital images, showed that to identify a defect and reduce false-positive and false-negative alarms of the automated defect identification system, it is required to conduct a study of interval estimates and make decision-making rules based on intersection and merging of intervals; introduce additional classes that allow the introduction of signs that characterize the irregularity of the shape of defects and the characteristic location; the use of new technologies of soft computing will reveal the hidden patterns of the manifestation of defects in the images of the surface of the steel strip.</p>
<p>Paper ID 216</p>	<p>L Sh Bozorova^{1*}, M J Qurbanov², O J Pirimov¹, and O Tursunov^{3,4,5} ¹<i>Karshi branch of Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 180100 Karshi, Uzbekistan</i> ²<i>Karshi State University, 180100 Karshi, Uzbekistan</i> ³<i>Department of Power Supply and Renewable Energy Sources, Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000 Tashkent, Uzbekistan</i> ⁴<i>Research Institute of Forestry, 111104 Tashkent, Uzbekistan</i> ⁵<i>Gulistan State University, 120100 Gulistan, Uzbekistan</i></p> <p>Title of presentation: Arenothiophenes in oil basic sulfoxides synthesis and oxidation receiving sulfoxides from oil Abstract: Some of the sulfide compounds were converted to sulfoxides by the action of a 30% solution of hydrogen peroxide on the acid catalyst of a molecule of bicyclic sulfide organic compounds in the paraffin distillate of the oil. The resulting sulfoxides were treated with 70% sulfuric acid and sulfate compounds of sulfoxides were obtained. In order to confirm the composition and structure of these compounds, chemical reactions of the corresponding sulfoxides on the basis of benzothiophene derivatives were carried out.</p>
<p>Paper ID 217</p>	<p>M S Yakubov¹, K H Turdibekov¹, A Kh Sulliev¹, I A Karimov¹, S S Saydivaliyev¹, and S S Xalikov¹ ¹<i>Tashkent State Transport University, 100067 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Improvement of the information-measuring complex for diagnostics of traction power supply objects at high-speed traffic Abstract: This paper considers the improvement of the information-measuring complex for diagnostics and monitoring of traction power supply equipment under high-speed traffic, which has several features associated with a multilevel hierarchical structure, spatial distribution of objects, energy modes and functional relationships. The analysis of the transmission and conversion of measuring analogue information into a digital one, considering the maximum frequency of the primary signal spectrum components according to the sampling and quantization parameters to determine the time of the signal converted into a digital form is made. Functional dependencies and an algorithm for measuring information processing, considering the multilevel structure of traction power supply, which allow increasing the reliability and accuracy of diagnosing the main objects in high-speed traffic, are obtained.</p>
<p>Paper ID 222</p>	<p>Maria Radkevich¹, Malokhat Abdukodirova¹, Kamila Shipilova¹ and Bakhromjon Abdullaev² ¹<i>Tashkent Institute of Irrigation and agriculture Mechanization Engineers, Uzbekistan</i> ²<i>SE "Institute of hydrogeology and engineering geology", Uzbekistan</i></p> <p>Title of presentation: Determination of the Optimal Parameters of the Jet Aeration Abstract: To ensure effective aeration of the biological wastewater treatment process, easy-to-operate and not too energy-intensive units are needed. Jet aerators have such capabilities.</p>



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	<p>In this study, the authors searched for the best hole shape for the aeration nozzles. It was determined that a nozzle with an elongated hole has the largest size of the actively aerated zone. Experimental studies of nozzles of a diameter of 56 mm with nozzles of elongated shape showed that the best characteristics of mass transfer are provided by nozzles with a total area of holes of 356 mm² at a flow rate of 10 ... 12 m/s. For practical calculations, an equation was obtained for the dependence of the oxygen transfer coefficient $K_{La(20)}$ on the complex criterion vn, and a method for calculating aeration units was developed, which is applicable for aerators with elongated holes.</p>
<p>Paper ID 223</p>	<p>Jurabek Izzatillaev^{1*}, Pavel Navitski², Sirojiddin Khushiev¹, Abdushoxid Mamadjanov³, Azizbek Akrombaev⁴</p> <p>¹Department of Power Supply and Renewable Energy Sources, Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000 Tashkent, Uzbekistan ²Department of Engineering, Oral Roberts University, Tulsa, 74171 OK, USA ³Department of Power Engineering, Namangan Engineering - Building Institute, Turakurgan, Uzbekistan ⁴Department of Economic, Tashkent State University of Economics, Toshkent, Uzbekistan</p> <p>Title of presentation: Determination of technical and economic efficiency of microgrid based on renewable energy sources Abstract: This article proposes a modern feeder-type microgrid, which is considered energy-efficient and environmentally friendly, and the prospects for its development, the planned work to increase the share of renewable energy sources in the electricity balance in Uzbekistan, as well as a method for determining the feasibility of creating microgrids based on renewable energy sources. In the calculation work, a 10 kV SHFK feeder was selected as a microgrid, which is located in the Uychi district (Namangan region).</p>
<p>Paper ID 224</p>	<p>Sirojiddin Khushiev^{1*}, Oybek Ishnazarov², Sanjar Juraev³, Jurabek Izzatillaev¹, Asliddin Karakulov²</p> <p>¹Department Power Supply and Renewable Energy Sources, Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, Tashkent 100000, Uzbekistan ²Institute of Energy Problems, Academy of Sciences of the Republic of Uzbekistan, 100084 Tashkent, Uzbekistan ³Tashkent State Technical University, Tashkent, Uzbekistan</p> <p>Title of presentation: Construction of an electric drive system for borehole pumps with frequency control Abstract: Variable speed drive (VSD) can provide reliable dynamic systems and essential savings in energy usage and costs of the electrical motors. A variable speed drive (VSD) is a device that regulates the rotational force and speed of mechanical equipment. VSDs are effective in energy savers in fan and pump applications; they strengthen process operations, especially where flow control is involved. VSDs provide accurate soft-start capabilities, which decrease line voltage sags and electrical stresses associated with complete voltage motor start-ups, particularly when driving high-inertia loads. Variable speed drive technology and the significance of controlling the speed of existing electrical motors have attracted many attentions in the recent years with the advent of new magnetic materials and power devices. Thus, this paper highlights a comprehensive review on applications of VSD in electrical motors energy savings and energy use. The purpose is to identify incorporated costs of applying variable speed drives and energy saving opportunities to the existing applications of electrical motors. Author hopes to provide convenient information for future variable speed drive applications like pumps, chillers, fans, heaters and ventilators.</p>
<p>Paper ID 225</p>	<p>S M Khushiev^{1*}, O X Ishnazarov², J O Izzatillaev¹, S Juraev³, and Sh Karakulov²</p> <p>¹Department Power Supply and Renewable Energy Sources, Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, Tashkent 100000, Uzbekistan ²Institute of Energy Problems, Academy of Sciences of the Republic of Uzbekistan, 100084 Tashkent, Uzbekistan ³Tashkent State Technical University, Tashkent, Uzbekistan</p>



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Title of presentation: Assessment of the impact of the main technological characteristics of wells on the power consumption of pumps

Abstract: The issue of assessing the impact of the main technological characteristics of wells on the power consumption of pumps is one of the important issues. Based on the analysis of the data obtained in the article, the electric energy consumption of the well pump device the rotational speed of the pump (ω); the density of the solution (liquid) (ρ); the pressure generated by the pump (H); the performance of the pump aggregate (q); depth of the well (H); hydrodynamic resistance (dp); Also, on the basis of the STATISTICA program, the calculation work is carried out, the binding function of the pumps is determined to what extent the factor affects the electricity consumption, and is described in the Pareto diagram.

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