

International Scientific and Practical Conference "Modern Problems of Ecology, Transport and Agricultural Technologies" (MPETAT' 2020)

IOP Conference Series: Materials Science and Engineering
Volume 941

Barnaul, Russia
26-27 June 2020

ISBN: 978-1-7138-4776-2
ISSN: 1757-8981

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

This work is licensed under a Creative Commons Attribution 3.0 International Licence.
Licence details: <http://creativecommons.org/licenses/by/3.0/>.

No changes have been made to the content of these proceedings. There may be changes to pagination and minor adjustments for aesthetics.

Printed with permission by Curran Associates, Inc. (2022)

For permission requests, please contact the Institute of Physics
at the address below.

Institute of Physics
Dirac House, Temple Back
Bristol BS1 6BE UK

Phone: 44 1 17 929 7481
Fax: 44 1 17 920 0979

techtracking@iop.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

Preface

Peer review declaration

1. TECHNOSPHERE AND ENVIRONMENTAL SAFETY, AGROECOLOGY

Zinc in the body and somatic health of industrial workers	1
<i>G Slepchenko, E Moiseeva, I Khlusov</i>	
The effectiveness to cleanup oil spills from the water environment of the combined sorbent on the basic of PUF and chitin	5
<i>T Y D Trang, L A Zenitova</i>	
Resource-saving technologies in the processing of nepheline ores by sintering	11
<i>I I Shepelev, E N Eskova, E V Kirushin, O V Pilyaeva, A Yu Sakhachev</i>	
Cultivation of biocultures for the purpose of their use for cleaning soils from oil pollution.....	16
<i>S M Kurbatova, L Yu Aisner, A G Rusakov, A A Rusakov</i>	
Dynamics of steppe arable land in zones of oil fields development (Orenburg region).....	22
<i>D A Grudinin, K V Myachina</i>	
An adsorption technique applied by plants and factories for purifying gas emissions using modified wastes available at power plants.....	28
<i>E M Khusnutdinova, L A Nikolaeva, A N Khusnutdinov</i>	
Estimation of anti-chlorosis action of iron-lignosulfonate complex synthesized by anodic dissolution of iron.....	36
<i>Yu G Khabarov, V A Veshnyakov, A E Shergin</i>	
Environmental mapping of radiation-hazardous areas	40
<i>M T Abisheva, V N Monayenko, E P Khlebnikova</i>	
The Alternative Method of Conditioning Industrial Wastewater Containing Heavy Metals Based On The Hydrothermodynamic Cavitation Technology	45
<i>O.G. Dubrovskaya, V.A. Kulagin, Yao Limin</i>	
Arctic Reindeer Herding and Ecology: When Economy is Impossible without Safeguarding Ethnocultural Distinctiveness	54
<i>A. Gorbunova, M. Zadorin, N. Kuprikov, I. Saveliev</i>	
Environmental Improvement of Saline and Alkali Soils in the Kamyshlovskaya Valley and Revival of Natural Grassland Efficiency	60
<i>A I Kuzmin, Zh A Tusupbekov, N L Ryapolova, V S Nadtochiy</i>	
Ecological stability of wood species in conditions of root reclamation of salt flats.....	66
<i>M Yu Sautkina, Yu I Cheverdin, A G Akhtyamov</i>	
Ecological and physiological feature of some microelements and their concentration in vegetable products	71
<i>K Sidorova, O Dragich, N Shvets, A Bukin, N Ryabova, E Klyushnikova, O Kochetova</i>	

Influence of fish pond culture on the fish fauna of Ladoga Lake.....	76
<i>N P Milyanchuk, N V Ilmast, O P Sterligova</i>	
Ecologically safe device technologies of road covering with the using technogenic materials.....	81
<i>S O Potapova, I I Shepelev, E N Eskova, N N Bochkov, A M Nemerov</i>	
Prospects for the implementation of a separate waste collection system in specially protected areas by the example of the Tunkinsky National Park.....	86
<i>N B Lubsanova, L B-Zh Maksanova</i>	
Carbonates in the soils of the Aral Sea dried bottom	90
<i>G V Stulina, G V Kharitonova, V O Krutikova, E V Shein, N V Berdnikov</i>	
Livestock enterprises waste utilization for heat system supply to rural buildings in Yakutia	96
<i>V P Druzyanova, G E Kokieva, I A Savvateeva, N S Khiterkheeva, O K Kilchukova</i>	
Production of Biogas using method of agricultural waste fermentation.....	101
<i>G E Kokieva, G P Protodiakonova, U Z Dondokov, D V Shalbuev, SA Voinash</i>	
Geoinformation technologies for studying the effects of water level fluctuation of Lake Baikal: the case of Angarsky Sor.....	108
<i>T Yu Zengina, S N Kirillov, M V Slipenchuk</i>	
Innovations in the technology for producing asphalt concrete based on neutralized catalyst as a condition for improving the quality of road surfaces.....	116
<i>G I Egorova, S P Semukhin, A N Egorov, N A Kachalov</i>	
State of Humus in Soils under Rice Cultivation	121
<i>A Kh Sheudzhen, O A Gutorova</i>	
<u>2. CURRENT PROBLEMS AND PROSPECTS FOR AGRICULTURAL TECHNOLOGIES DEVELOPMENT</u>	
Innovation Clusters in the Arctic Zone of Russian Federation.....	125
<i>A A Pankratov, R A Musaev, S V Badina</i>	
Dynamics of Agrarian Lands of the Republic of Tyva (Russia) in 1890–2019.....	129
<i>A. Sambuu, D. Dabiev</i>	
Formalized model of agricultural insurance development strategy as an element of industry management digitalization.....	141
<i>K Zhichkin, V Nosov, L Zhichkina, A Tarakanov, V Zhenzhebir, F Sterlikov</i>	
Investment attractiveness of the territory, greening and self-recreation of citizens: Northern regions	146
<i>Yu O Vladykina, N J Donets, N V Rozumnaya</i>	
Thermophysical properties of lowland Histosols of the Upper Volga woodland (on the example of the Yakhroma river valley).....	152
<i>N V Sorokina, E V Shein, A D Pozdnyakova, A P Shvarov</i>	
The effectiveness of vermiculites under the conditions of vegetation experience.....	157
<i>E V Kallas, A V Rodikva, S P Kulizhskiy</i>	

Development of clonal micropropagation technique for <i>Gloxinia hybrida</i> hort. “Strawberry Ice-Cream”	162
<i>A A Zaripova, A A Mukhametvafina, K A Urazbakhtina, A I Shigapova, A Sh Akhmetova, Z Kh Shigapov</i>	
Development of biotechnology for cultivating <i>Potentilla L.</i> plant material with antivirus and antibacterial activity	167
<i>L I Tikhomirova, AA Zaripova</i>	
Active substrate as a tool to improve the efficiency of green technology for seeds production.....	173
<i>V.V. Popov, VA Afonkina, E I Krivosheeva</i>	
Physical and microbiological aspects of the soil seed bed in the early formation of the barley root system (<i>Hordeum vulgare L.</i>): tomographic studies.....	179
<i>A V Suzdaleva, E V Shein, N V Verkhovtseva, KN Abrosimov</i>	
Ultrastructure Aspects Of Acquired Resistance In Plants Under Viral Pathogenesis.....	187
<i>S N Lega, IN Tikhonova, VN Orobinskaya</i>	
Reproduction methods of <i>Iris Spuria</i> varieties in the forest steppe of the Altai Territory	193
<i>Z V Dolganova, L I Tikhomirova</i>	
Research and Development of Process Conditions for Growing Young Plants <i>Iris sibirica L.</i> Aimed at Bio-Synthesis of Tannins, Flavonoids and Xanthones	199
<i>L I Tikhomirova, E V Malaeva</i>	
Study of Biological Characteristics of <i>Leucinodes orbonalis</i> Guenée which Destroyed Young Shoot and Fruit of Eggplant (<i>Solanum melongena L.</i>): A case in Trang Bom district, Dong Nai province, Vietnam	205
<i>Vu Van Hung, Dang Viet Hung, Dang Thi Lan Anh</i>	
Producing high-quality seeding material of Russian spring soft wheat varieties in Priobskaya zone of Altay forest steppes	214
<i>S Zharkova, A Nechaeva, N Kiyan, I Gefke</i>	
Increasing gross grain harvest in the southern forest-steppe zone of the Novosibirsk region	220
<i>B D Dokin, O V Elkin, E A Balushkina, A A Aletdinova</i>	
Intensification of secondary dampening of grain before milling.....	225
<i>N S Protasov, I Y Fedorenko, S Y Buzoverov, V V Sadov</i>	
The Technology of Dehydrated Soup Base from Poultry Meat and Bone Residue.....	230
<i>S V Polyanetskikh, M M Danyliv, U R Dubrovina, O N Ozherelyeva, O A Vasilenko</i>	
Seed drill used on complex configuration fields	236
<i>V I Plyaka, N A Sergeeva, A I Panov, N A Yakovleva</i>	
The influence of the sowing coulters type on the seeding quality and the spring wheat yield	241
<i>V I Belyaev, V V Vol'nov, D A Iakovlev, L V Sokolova</i>	
Combine head mover designing by modern software using	247
<i>D N Pirozhkov, V V Sadov</i>	
Study of the operation of a combine harvester cleaning system with a sieve screw separator in the conditions of operation on slopes	251
<i>S F Sorochenko, V A Ugarov</i>	

Pneumatic boom applicator for dispersion of mineral fertilizers.....	255
<i>Nikolay Byshov, Valentin Makarov, Olga Zhravleva, Alexander Shemyakin, Oksana Starovoitova, Aleksandra Manokhina</i>	
Modeling Elastic and Dissipative Properties of Feed Grain Subjected to Vibration	261
<i>I Ya Fedorenko, A M Levin, A V Tabaev</i>	
Stress-strain modelling state and fatigue of the working body of the tillage unit for weed removal.....	265
<i>A V Shindelov, N M Ivanov, A E Nemtsev, B B Vakhrushev, A D Nikolaev</i>	
Role of metrology inaccuracy for variance of test results under reproducibility conditions	269
<i>V.G. Zakhakhatnov, V.M. Popov, V.A. Afonkina, V.N. Levinsky</i>	
Information and search space for monitoring the machine and tractor fleet.....	276
<i>V. D. Chervenchuk, G. V. Redreev, I. V. Chervenchuk, A.V. Shimokhin, A. A. Luchinovich</i>	
Influence of inclination angle of piezoelectric receiver of ultrasonic sensor on the error in measurement of the average fiber diameter.....	284
<i>A A Bagaev, L V Kulikova, R A Kunitsyn</i>	
Analysis of discriminatory characteristics of a video sensor with an exponential correlation function.....	290
<i>V P Gerasimov, V D Kovalev, A Yu Darzhaniya, R A Magomedov, E V Sokolova, O V Klimenko</i>	
Research of the process of vegetable oil extracting under the influence of a high frequency wave field.....	296
<i>V Yu Ovsyannikov, A A Berestovoy, N N Lobacheva, V V Toroptsev, S A Trunov</i>	
Electrically Energized Comfort Heating System Based on Electric Film Heaters and intended for Post-Weaned Pigs.....	302
<i>V M Popov, V A Afonkina, E N Epishkov</i>	
Use of low-temperature plasma for stabilizing a combustion process under the utilization of waste products with high moisture content	308
<i>V N Delyagin, N M Ivanov, A N Karzanov, V N Bocharov, A A Kondrat'ev</i>	
The project solution of the refrigeration machine scheme with the heat utilization of condensation.....	312
<i>E N Neverov, I A Korotkiy, M Y Mokrushin, I A Prib, D I Goleshov</i>	
Using the organic Rankine cycle for heat supply of greenhouses at agricultural enterprises	317
<i>K V Osintsev</i>	
Using absorption principles of water-ammonia mixture for energy supply of agricultural enterprises.....	321
<i>K V Osintsev</i>	
The Use Of Combined Composites Of Non-Traditional Raw Materials Of Plant Origin In The Production Of Functional Bakery Products.....	326
<i>I D Konovalova, V N Orobinskaya, E N Kholodova, O N Pisarenko, E V Galdin</i>	
The Reduction Of Activity Of Antialimentary Compounds Of Vegetable Raw Materials Under Exposure To Electric Discharges	336
<i>V T Kazub, V N Orobinskaya, E V Galdin, S A Yemelyanov</i>	
The Use Of Phyto-Enrichment Agents In The Production Of Functional Bakery Products.....	342
<i>V N Orobinskaya, E N Kholodova, E V Galdin, S A Yemelyanov</i>	

Future development of transport and environment.....	354
<i>S.E. Rudneva</i>	
<u>3. CURRENT PROBLEMS AND PROSPECTS FOR THE DEVELOPMENT OF GROUND TRANSPORTATION AND TRANSPORT-TECHNOLOGICAL MACHINES</u>	
Research of the wear mechanism the rubber lining mining trucks	359
<i>V G Kopchenkov, A G Babich</i>	
Experimental comparison of smooth movement of an agricultural tractor with balancer suspension and torsion bar suspension.....	365
<i>I P Troyanovskaya, V V Krasnokutsky, M A Rusanov</i>	
Mathematical model of wedge-shaped sliding support with low melting metal coated guide for partially filled working gap	371
<i>M A Mukutadze, A N Opatskikh, A V Morozova, N S Zadorozhnaya</i>	
Assessing the forcing level of air cooled diesel engine considering parameter spread of boosting system.....	377
<i>A M Lartsev, E A Salykin, E A Fedyanov</i>	
Tribological tests of frictional carbon/carbon composite in braking mode	382
<i>V V Alisin</i>	
Increasing the efficiency of agricultural transport and technological machines in the operation	388
<i>G E Kokieva, Y A Shaposhnikov</i>	
Evaluation of the main indicators of the reliability of the power transmission of a combine harvester John Deere 9660	394
<i>V V Vakhrushev, A E Nemtsev, N M Ivanov, A A Melbert</i>	
Assessment of the service properties of commodity motor oils by hydrogen indicator	399
<i>V V Vakhrushev, A E Nemtsev, N M Ivanov</i>	
Application of the photoelasticity method for studying the stress-strain state of the tribomechanical system “ring-bearing housing”	403
<i>V V Vakhrushev, A E Nemtsev, N M Ivanov, AV Shindelov</i>	
The rational repair and maintenance cycle of the KamAZ car gearbox taking into account the pre-repair operating time.....	408
<i>V V Vakhrushev, A E Nemtsev, N M Ivanov, V I Poddubny</i>	
Modern approaches of vehicle suspension durability evaluation at early stages of development	413
<i>V A Kulagin, A I Bokarev</i>	
Assessment of the technical and technological condition of the transport complex.....	420
<i>A V Gubin, A V Pavlova, Yu V Kosolapov, D E Morkovkin, E S Lineva, A A Gibadullin</i>	
Formation of a digital transformation system for the transport complex	425
<i>S A Tolkachev, D E Morkovkin, P S Shcherbachenko, A A Gibadullin, A A Bykov</i>	

Author Index