



**IV INTERNATIONAL SCIENTIFIC CONFERENCE
CONSERVING SOILS AND WATER**

PROGRAM

ORGANIZER:

SCIENTIFIC -TECHNICAL UNION OF MECHANICAL ENGINEERING

*28.08. – 31.08.2019
BURGAS, BULGARIA*

PROGRAM

28.08.2019 (WEDNESDAY)

16:00 – 20:00	REGISTRATION	IN FRONT OF THE CONFERENCE HALL
---------------	--------------	---------------------------------

29.08.2019 (THURSDAY)

08:00 – 10:00	REGISTRATION	IN FRONT OF THE CONFERENCE HALL
---------------	--------------	---------------------------------

CONFERENCE HALL		
10:00 – 10:10	OPENING OF THE CONFERENCE	
10:10 – 12:30	PLENARY SESSION	
12:30	COLLECTIVE PICTURES OF THE PARTICIPANTS	INFRONT OF THE SWIMMING POOL

12:30 - 14:00 LUNCH BREAK (NO LUNCH PROVIDED)

CONFERENCE HALL	
14:00 – 16:00	SESSION "SOIL & WATER"

16:00 – 16:30	COFFEE BREAK - THE RESTAURANT OF HOTEL "ATLANTIS"
---------------	---

CONFERENCE HALL	
16:30 – 18:00	SESSION "MACHINES AND TECHNOLOGY & MANAGEMENT"

19:30 – 24:00	"WELCOME" COCKTAIL - HALL "LAZUR" (where the breakfast is served)
---------------	---

30.08.2019 (FRIDAY)

10:00	CLOSING OF THE CONFERENCE WINE AND CHEESE PARTY	THE RESTAURANT OF HOTEL "ATLANTIS"
-------	---	------------------------------------

SCIENTIFIC PROGRAM

29.08.2019 10:00 – 10:10	OPENING OF THE CONFERENCE	CONFERENCE HALL
	CHAIRMAN: PROF. DR. MIHO MIHOV	

29.08.2019 10:10 – 12:30	PLENARY SESSION			CONFERENCE HALL	
CHAIRMAN: PROF. DR. MIHO MIHOV (BG)			CO-CHAIR: PROF. DR. DARIUSZ JASKULSKI (PL)		
1	BIOGEOCHEMISTRY OF LIGNIN IN SOILS OF MOUNTAINOUS LANDSCAPES	Prof. Dr. Biol. Kovaleva N., Dr. Agricult. Kovalev I., Faculty of Soil Science – Moscow State University	34	RU	
2	ADVANCED ELECTROMAGNETIC CONDUCTIVITY METHOD FOR SOIL ANALYSIS	Assoc. Prof. DSc Georgi Mitev, Dr. Krasimir Bratov University of Ruse “Angel Kanchev”	59	BG	
3	SOIL MOISTURE AND SOIL DENSITY VARIATION DURING PLANT GROWING SEASON BY IMPLEMENTATION OF MINERAL AND ORGANIC FERTILIZATION	Prof. Dr Eng. Błaszkiwicz Z. ¹ , Dr Eng. Sztukowski P. ² ¹ Poznan University of Life Sciences, Poznań, Poland ² Water Company in Melioration of the Obrzańska Lowlands, Kościan, Poland	52	PL	
4	NATURE-BASED SOLUTIONS FOR SOIL AND WATER QUALITY PROTECTION – EXPERIENCES FROM THE NORDIC-BALTIC REGION	Dr. silv. Lībiete Z. ¹ , Mg. chem. Bārdule A. ¹ , Dr. sc. ing. Lagzdīņš A. ² , Mg. sc. ing. Grinberga L. ² , Dr. silv. Lazdīņš A. ¹ , Mg. silv. Lupiķis A. ¹ , Dr. silv. Lazdiņa D. ¹ ¹ Latvian State Forest Research Institute Silava, Rigas, ² Latvia University of Life Sciences and Technologies	23	LV	
5	TESTING OF FIVE OPTICAL DEVICES TO ASSESS LEAF MINERAL AND WATER CONTENT OF DETACHED POTATO LEAVES	Assoc. Prof. Dr. Muharrem Keskin, Dr. Yunus Emre Sekerli Faculty of Agriculture, Hatay Mustafa Kemal University, Antakya, Hatay	54	TR	
6	THE INFLUENCE OF BIOORGANIC PREPARATIONS ON PLANT PRODUCTIVITY AND SOIL QUALITY	Dr. Brazienė Z. ¹ , Dr. Paltanavičius V. ¹ , Dr. Aleknavičienė A. ² ¹ Rumokai Experimental Station, Lithuanian Research Centre for Agriculture and Forestry, ² UAB “Agrodema”	26	LT	
7	GEOINFORMATION MAPPING FOR PROVIDING THE RATIONAL USE AND PROTECTION OF SOIL	PhD Moskalenko A. National university of life and environmental science of Ukraine, Kyiv	53	UA	

12:30 – 14:00	LUNCH BREAK (NO LUNCH PROVIDED)
---------------	--

29.08.2019 14:00 – 16:00		SESSION “SOIL&WATER”		CONFERENCE HALL	
CHAIRMAN: PROF. DSC. GEORGI MITEV (BG)			CO-CHAIRMAN: PROF. DSC. NATALIA KOVALEVA (RU)		
8	THE INCREASE IN THE YIELD OF VEGETABLES IN GREENHOUSES USING SUPERCAVITATION TREATMENT OF IRRIGATION WATER	Prof. DSc. Kulagina T., Prof. DSc. Kulagin V. Siberian Federal University, Krasnoyarsk	07	RU	
9	THE INFLUENCE OF PERENNIAL LEGUMES, LEGUME-FESTULOLIUM MIXTURES AND THEIR MULCH ON SOIL MINERAL NITROGEN UNDER ORGANIC CROPPING CONDITIONS	Dr. Arlauskienė A., PhD student Gecaitė V. Joniskelis Experimental Station of Lithuanian Research Centre for Agriculture and Forestry	29	LT	
10	MONITORING OF THE DRAINED SOILS, RUSSIAN PLAIN	Prof., Dr. Agricult. Kovalev I.V., Prof., Dr. Biol. Kovaleva N.O. Soil Science Faculty, Lomonosov Moscow State University – Moscow	35	RU	
11	MODELING NUTRIENT LOADS ON THE LAKES DUDERHOFF (NORTH-WEST RUSSIA)	DSc Kondratev S., Shmakova M. Institute of Lake Studies RAS, St. Petersburg	10	RU	
12	EVALUATION OF BACTERIAL ISOLATES FOR STIMULATING THE GROWTH OF YOUNG MELON (<i>CUCUMIS MELO L.</i>) PLANTS	Assist. Prof. Vasileva K. PhD., Ivanova Zh. PhD-student., Assoc. Prof. Tringovska I. PhD., Maritsa Vegetable Crops Research Institute, Plovdiv	36	BG	
13	ASSESSMENT OF SOIL CARBON STORAGE IN SAXAUL FORESTS IN THE BUIN ZAHRA DESERT OF IRAN	Assist. Prof. Hamidreza Naseri University of Tehran	21	IR	
14	THE EFFECT OF PISTACHIO GARDENS DEVELOPMENT ON SOIL CHARACTERISTICS AND SPECIES DIVERSITY IN THE DESERT AREA OF HOZE SOLTAN	Dr. Reza Shakeri Behbahan Khatam Alanbia University of Technology	28	IR	

16:00 – 16:30	COFFEE BREAK - THE RESTAURANT OF HOTEL "ATLANTIS"
----------------------	--

29.08.2019 16:30 – 18:00		SESSION “MACHINES AND TECHNOLOGY&MANAGEMENT”		CONFERENCE HALL	
CHAIRMAN: PROF. DSC. VLADIMIR KULAGIN (RU)			CO-CHAIRMAN: DR. ZANE LIBIETE (LV)		
15	BIOBASED ADSORBENT PREPARED BY PYROLYSIS OF A RENEWABLE AGRICULTURE WASTE	Assoc. Prof. Dr. Eng. Uzunov I. ¹ , Assoc. Prof. Dr. Vassileva P. ¹ , Assoc. Prof. Dr. Eng. Uzunova S. ² Institute of General and Inorganic Chemistry-BAS. ¹ , University of Chemical Technology and Metallurgy-Sofia ² ,	02	BG	
16	TOWARDS FARMS WITH ZERO CARBON-, WASTE- AND WATER-FOOTPRINT. ROADMAP FOR SUSTAINABLE MANAGEMENT STRATEGIES FOR APPLE PRODUCTION SECTOR IN BULGARIA	Georgi Mitev, Krasimir Bratov, Cveta Dimitrova, Maria Doura University of Ruse “Angel Kanchev”	60	BG	

17	DEVELOPMENT OF A LOW-COST PROTOTYPE OPTICAL SENSOR TO PREDICT TURFGRASS LEAF WATER AND NUTRIENTS	Dr. Yunus Emre Sekerli, Prof. Dr. Yurtsever Soysal, Assoc. Prof. Dr. Muharrem Keskin Faculty of Agriculture, Hatay Mustafa Kemal University, Antakya, Hatay	55	TR
18	OPPORTUNITIES FOR AGROFORESTRY IN LATVIA	Mg. chem. Bardule A., Dr. silv. Lazdina D., Mg. oec. Makovskis K., Dr. silv. Bardulis A. Latvian State Forest Research Institute "Silava"	25	LV
19	WATER PURIFICATION PRICE AND ACTUALITY OF THE PROBLEM OF WATER DEPURATION OF THE DNIEPER ACCORDING TO THE THEORY OF SOCIAL WELFARE	PhD Stud. Holiachuk O. National University of Life and Environmental Sciences of Ukraine – Kyiv	50	UA

THURSDAY (29.08)		09:00 – 18:00	POSTER SESSION "SOIL&WATER"	CONFERENCE HALL	
FRIDAY (30.08)		09:00 – 12:00			
20	CHANGES IN SOIL PROPERTIES DUE TO APPLICATION OF DIGESTATE	Mgr. Vařinka M., Ing. Badalíková B. Agricultural Research, Ltd., Department of Agronomy, Troubsko	04	CZ	
21	ASSISTED PHYTOSTABILIZATION OF A HEAVY METALS CONTAMINATED SOIL USING MINERAL AMENDMENTS AND L. PERENNE	Assoc. Prof. Dr. Maja Radziemska ¹ , Dr. Agnieszka Beęć ² Warsaw University of Life Sciences ¹ University of Warmia and Mazury in Olsztyn ²	09	PL	
22	ACTIVATED CARBON OBTAINING FROM VARIOUS RAW MATERIAL / VIA CHEMICAL ACTIVATION FOR THE PURPOSE OF ENVIRONMENTAL PURIFICATION – OVERVIEW	Assist. Prof. Dr. Eng. Liliya Manoilova ¹ , Assist. Prof. Dr. Eng. Kamelia Ruskova ² ¹ University of Chemical Technology and Metallurgy, Sofia, ² Technical University of Sofia	11	BG	
23	TREE-SOIL-WATER RELATIONSHIPS IN EUROPEAN BLACK ALDER FOREST - CASE STUDY	Prof. Paweł Rutkowski, Phd Student Monika Konatowska, Phd.Student Eng. Tomasz S. Wajsowicz Poznań University of Life Sciences,	13	PL	
24	MONITORING OF NATURAL WATERS USING SORPTION CARTRIDGES	As. prof. Bondareva L.P., as. prof.. Peregudov Yu. S., prof.. Niftaliev S.I., stud. Tkach E.N., stud. Prushinskaya A.G., stud. Chesnokov A.I. Voronezh State University of Engineering Technologies,	18	RU	
25	DESIGN OF IRRIGATION SYSTEMS FOR GARDENS BY ALTERNATING GREYWATER AND WELL WATER	Jun. Res. Dabić B., Ass. Prof. Grabić J., Ass. Prof. Mladenović E., Jun. Res. Bubulj S. University of Novi Sad	19	RS	
26	SURFACE WATER RESOURCES ASSESSMENT METHODOLOGIES APPLICATION IN CASE OF VIT RIVER	Eng. Maya Rankova, National Institute of Meteorology and Hydrology, Sofia,	20	BG	
27	THE EFFECT OF MINERAL AND LIQUID ORGANIC FERTILISERS ON SOIL MINERAL NITROGEN AND CHLOROPHYLL CONTENT IN WINTER WHEAT LEAVES	PhD Stud. Danute Kvasoviene - Petraityte ¹ , Dr. Jurgita Ceseviciene ¹ , Dr. Ausra Arlauskiene ² , Dr. (HP) Alvyra Slepeliene ¹ ¹ Lithuanian Research Centre for Agriculture and Forestry, ² Joniskelis Experimental Station, Lithuanian Research Centre for Agriculture and Forestry, Lithuania	30	LT	

28	EVALUATION OF GARDEN PEA CULTIVARS TO SALT STRESS TOLERANCE	Assoc. Prof. Grozeva S. PhD. ¹ , Assoc. Prof. Kalapchieva S. PhD. ¹ , Assoc. Prof. Tringovska I. PhD. ¹ , Maritsa Vegetable Crops Research Institute, Plovdiv	33	BG
29	REDUCTION OF LOSSES FROM DROUGHT BY OPTIMIZING THE USE OF WATER RESOURCES FOR IRRIGATION OF AGRICULTURAL CROPS	Assoc. Prof. PhD R. Kireva, Prof. PhD M. Mihov Institute of Soil Science, Agricultural Technology and Plant Protection "Nikola Pushkarov", Sofia,	46	BG
30	EVAPOTRANSPIRATION WITH STRAWBERRIES GROWN IN DRIP IRRIGATION CONDITIONS	Assoc. Prof. PhD R. Kireva, Prof. PhD M. Mihov - Institute of Soil Science, Agricultural Technology and Plant Protection "Nikola Pushkarov", Sofia	47	BG
31	RESEARCH OF QUALITY OF IRRIGATING WATER OF IRRIGATED MASSIFES OF UZBEKISTAN	Prof. Dr. Chembarisov EI, Research Institute for Irrigation and Water Problems Tashkent	51	UZ
32	THE RESEARCH OF THE RAIN INTENSITY ADAPTATION TO THE CONDITIONS OF HYDROPHYSICAL CHARACTERISTICS OF THE SOIL FOR ECOLOGICAL AND ECONOMICAL IMPROVEMENT OF THE IRRIGATIVE EQUIPMENT	Iu. Melnic, A. Coronovschi, R. Ceban, A. Melnic. State Agrarian University of Moldova, Chisinau	58	MD

THURSDAY (29.08)		POSTER SESSION "MACHINES AND TECHNOLOGY & MANAGEMENT"	CONFERENCE HALL	
09:00 – 18:00				
FRIDAY (30.08)				
09:00 – 12:00				
33	MULTI-COMPONENT ADSORPTION OF HEAVY METAL IONS FROM AQUEOUS SOLUTIONS ONTO LOW COST ADSORBENT BASED ON RICE HUSKS	Assoc. Prof. Dr. Paunka Vassileva ¹ , Assoc. Prof. Dr. Ivan Uzunov ^{1*} , Assoc. Prof. Dr. Albena Detcheva ¹ , Assoc. Prof. Dr. Snezhanka Uzunova ² , MSc Dimitrinka Voykova ¹ Institute of General and Inorganic Chemistry-BAS, Sofia ¹ University of Chemical Technology and Metallurgy, Sofia ²	03	BG
34	GRINDING CHARACTERISTICS AND HEAT OF COMBUSTION OF SPROUTED WHEAT	M.Sc. Waleed H. Hassoon PhD ¹ , Prof. M.Sc. Dariusz Dzik ² ¹ University of Al-Qasim Green Babylon, ² University of Life Sciences, Lublin	14	PL IQ
35	THE IMPACT OF LONG ROTATION CYCLE FOREST MANAGEMENT ON SOIL AND WATER PROPERTIES IN HEMIBOREAL REGION	Mg. env. sc. Kalvīte Z. ^{1,2} , Mg. env. sc. Kļaviņš I. ^{1,2} , Dr. silv. Lībiete Z. ¹ , Mg. chem. Bārdule A. ¹ ¹ Latvian State Forest Research Institute Silava, Salaspils, Latvia ² University of Latvia, Riga, Latvia	24	LV
36	CHANGE IN SOIL PROPERTIES AFTER 5 YEARS OF USING STRIP-TILL TECHNOLOGY	Assoc. Prof. Iwona Jaskulska, Prof. Dariusz Jaskulski Faculty of Agriculture and Biotechnology, University of Science and Technology, Bydgoszcz	32	PL
37	DETERMINE THE DENSITY FROM COB OF CORN WITH ADDED BIOCHAR	Assoc. Prof. Dr. Eng. Manolova S., Ass. Dr. Stojnov S., Assoc. Prof. Dr. Benkova M., Assoc. Prof. Dr. Mikova A. Institute of Soil Science, Agrotechnology and Plant Protection "Nikola Poushkarov	44	BG

38	COMPARATIVE ANALYSIS OF ENERGY INDICATORS OF GREEN ONIONS AND ONION	Assoc. Prof. Dr. Eng. Manolova S., Ass. Dr. Stojnov S., Prof. Dr. Mitova I., Prof. DSc. Dinev N. Ass. Vasileva V. Institute of Soil Science, Agrotechnology and Plant Protection "Nikola Pushkarov"	45	BG
39	FEATURES OF MECHANIZATION OF PLANT PROTECTION ACTIVITIES	Ivan Morteve, Elena Dimitrova, Blagoy Elenov Institute of Soil Science, Agro-Technology and Plant Protection "Nikola Pushkarov", Sofia	49	BG
40	JUSTIFICATION OF KINEMATIC PARAMETERS OF COUPLING FOR WIDE-SPAN ROW-CROP UNIT	Prof. Eng. Volodymyr Bulgakov ¹ PhD., DrSc., Prof. Ladislav Nozdrovicky ² , Assis. prof. Eng. Vitaliy Movchan ³ PhD., Eng. Yevhen Ihnatiev ³ PhD. ¹ National University of Life and Environmental Sciences of Ukraine, Kyiv, ² Slovak University of Agriculture in Nitra, ³ Tavria State Agrotechnological University	56	UA SK
41	SOIL AND WATER RESOURCES AS IMPORTANT OBJECTS AND PREREQUISITES FOR THE DESIGN OF AGRICULTURAL MACHINES AND THE FORMATION OF PROFESSIONAL COMPETENCIES OF AN AGRICULTURAL ENGINEER	Assoc. Prof. Dr. Viktor Pryshliak, Corr. Member Vasyl Kurylo Vinnytsia National Agricultural University	57	UA
42	IRRIGATION REGIME FOR LONG-FRUIT CUCUMBERS GROWN UNDER GREENHOUSE CONDITIONS	Assoc. Prof. PhD R. Kireva, Prof. PhD M. Mihov Institute of Soil Science, Agricultural Technology and Plant Protection "Nikola Pushkarov", Sofia	61	BG

19:30 – 24:00	“WELCOME” COCKTAIL - HALL “LAZUR” (where morning is the breakfast)
----------------------	--

30.08.2019 (FRIDAY)

10:00	CLOSING OF THE CONFERENCE WINE AND CHEESE PARTY	THE RESTAURANT OF HOTEL "ATLANTIS"
--------------	--	---

NEXT CONFERENCE „Conserving Soils and Water 2020”
26.08 - 29.08.2020, BURGAS, HOTEL “ATLANTIS RESORT&SPA”

.....

.....

.....

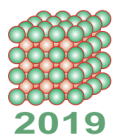
.....

.....

.....

.....

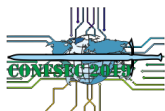
.....



VI INTERNATIONAL SCIENTIFIC CONFERENCE
MATERIAL SCIENCE.
NONEQUILIBRIUM PHASE TRANSFORMATIONS 2019
09-12.09.2020, VARNA, HOTEL AQUA AZUR
www.material-science.eu



XVI INTERNATIONAL SCIENTIFIC CONGRESS - SUMMER SESSION
MACHINES. TECHNOLOGIES. MATERIALS 2019
11-14.09.2019, VARNA, HOTEL AQUA AZUR
www.mtmcongress.com



III INTERNATIONAL SCIENTIFIC CONFERENCE
CONFSEC 2019
09-12.12.2019, BOROEVETS, HOTEL ELA
www.confsec.eu



IV INTERNATIONAL SCIENTIFIC CONFERENCE - WINTER SESSION
INDUSTRY 4.0
11-14.12.2019, BOROEVETS, HOTEL ELA
www.industry-4.eu



III INTERNATIONAL SCIENTIFIC CONFERENCE
MATHEMATICAL MODELING
11-14.12.2019, BOROEVETS, HOTEL ELA
www.mathmodel.eu



V INTERNATIONAL SCIENTIFIC CONFERENCE
HIGH TECHNOLOGIES. BUSINESS. SOCIETY 2020
09-12.03.2020, BOROEVETS, HOTEL ELA
www.hightechsociety.eu



XIII CONFERENCE FOR YOUNG RESEARCHERS
TECHNICAL SCIENCES. INDUSTRIAL MANAGEMENT 2020
11-14.03.2020, BOROEVETS, HOTEL ELA
www.youngconference.com



XVII INTERNATIONAL SCIENTIFIC CONGRESS - WINTER SESSION
MACHINES. TECHNOLOGIES. MATERIALS 2020
11-14.03.2020, BOROEVETS, HOTEL ELA
www.mtmcongress.com



XXVII INTERNATIONAL SCIENTIFIC-TECHNICAL CONFERENCE
FOUNDRY 2020
08-10.04.2020, PLEVEN, HOTEL ROSTOV
www.metalcasting.eu



VIII INTERNATIONAL SCIENTIFIC CONFERENCE
ENGINEERING. TECHNOLOGIES. EDUCATION. SECURITY 2020
27.05-30.05.2020, VELIKO TARNOVO, HOTEL ASENEVTSI
www.techtos.net

KURILO V.L.

**SOIL AND WATER RESOURCES AS IMPORTANT OBJECTS FOR THE
DESIGN OF AGRICULTURAL MACHINES**

In the project activity of students, during the implementation of course and diploma projects for the initial parameters during the design of soil-cultivation equipment take agrochemical, mechanical-technological and other characteristics of soil. Agrochemical properties of soils that students study are the content of humus, nitrogen, phosphorus, potassium, soil acidity. Physico-mechanical properties of soils, which are determined during laboratory work or used in the design activity, are the soil mass, angles of internal and external friction, particle size, maximum bearing capacity, modulus of elasticity, humidity, etc.

The purpose of laboratory and practical work is to broaden and deepen the students' knowledge of the basics of theory, calculation and design of agricultural machines, development of visual ideas on the basic theoretical provisions of the course on the interaction of working bodies of machines with soil, irrigation systems of land irrigation and more. The purpose of course work on agricultural machines is the technological development of the design of the machine or its components or the improvement of existing means of mechanization

Future agricultural engineers should have a general understanding of erosion processes and prevent them from occurring. For example, soil erosion is the separation and movement of the upper most fertile soil layers from one place to another under the influence of water or wind. The process of water erosion consists of three steps: 1) separation of soil particles; 2) soil transfer – movement of soil particles from the site of erosion; 3) deposition of soil particles in a new place. Water erosion is appearing mostly when the effect of rain is exacerbated by the action of water flows: rain drops are separated by soil particles, and their flows are swept away

Soil is the basic means of agricultural production. Samples are taken for soil analysis. From the conducted analyzes it is possible to obtain information on: the structure of the soil and the shape of its solids; soil type, density, humidity, crushing coefficient, etc. To a certain extent, this helps to find the optimal technology of tillage and restoration of

soil and the necessary equipment for carrying out technological operations. Type, soil structure, its porosity play a decisive role in plant development and crop productivity. With the optimal soil condition, fertilizer efficiency is high. For experienced farmers, along with laboratory chemical analyzes, visual assessment of soil condition is of great importance. In the study of the soil, it is necessary to pay attention to many indicators, including even the plow sole, the depth of its occurrence, how the residual residues in the soil were placed evenly, whether a layer of residues was created at the bottom of the plow layer.

The purpose of this laboratory work is to consolidate and expand the knowledge of the technological properties of the soil by analyzing theory, conducting experimental studies in laboratory or field conditions, processing the data obtained and analyzing the results

". There are several phases in the diagram. During the first phase (section OA), the deformation resistance increases in proportion to the depth of the tip into the ground. The second phase of AB is transitional. During this period, the cone-shaped growth from a strongly compacted soil (compacted core) is formed in front of the base of the tip. In the third phase (section of the BC), the soil is deformed by a conical outgrowth that spreads it, shifting to the sides and encountering constant resistance (ground "flowing"). The first phase is several times shorter than the third, but it is of great practical importance, since the deformation of the soil by agricultural machinery does not usually extend beyond the first section of the diagram. Only after passing the tip of the plow layer, the CD curve rises upward as a denser "plow sole" is encountered along its path.

In pedagogical technologies of formation of professional competencies of future agro-engineers in higher education agrarian institutions considerable attention is paid to the problematic issues of soil and water protection. During the educational process, students systematically and consistently study the mechanical and technological properties of soils as the main means of agro-industrial production. For the initial parameters in the project activity, soil characteristics are first and foremost taken into account, and their use presupposes fertility conservation. Some concepts and categories that are used in the educational process for students to study agricultural land reclamation machinery and equipment are analyzed. Depending on the purpose, tasks, techniques of technological

processes, the types of land reclamation measures are distinguished. The example of calculation of working bodies of earth-moving reclamation machines is given. The methodological features of calculating the power balance of the earth-moving reclamation machine, which includes the power required to: isolate the material to be processed, taking into account its deformation, are theoretically described; the movement of the material being treated, that is, providing it with kinetic energy; lifting of the processed material; overcoming the friction resistance of the workpiece material on the surface of the working bodies and guide surfaces; overcoming the full resistance of the movement of the machine, taking into account the slope of the surface of the movement to the horizon; overcoming the propulsion; acceleration of the machine to the calculated speed of movement, such as overcoming the forces of inertia; drive conveyors and accessories. The developed procedure of laboratory and practical work includes the study of the methods and features of the calculation of components of the balance of the capacity of reclamation machines, taking into account such indicators as the type of soil, its density, thickness of layer, productivity, kinematics of the working body, the required lifting height, etc. In general, innovative pedagogical technology of cross training was developed, aimed at the formation of professional competencies of future agricultural engineers. Their activities will be successful if the soil and water resources are used effectively as important objects and prerequisites for agricultural machinery development.



SCIENTIFIC TECHNICAL UNION OF MECHANICAL
ENGINEERING BULGARIA

AWARDS

A

DIPLOMA

FOR THE PARTICIPATION IN THE



IV INTERNATIONAL SCIENTIFIC CONFERENCE
CONSERVING SOILS AND WATER

TO

*Dr. in Agriculture, Prof.
Vasyl Kurylo*

FOR THE REPORT

SOIL AND WATER RESOURCES AS IMPORTANT OBJECTS AND PREREQUISITES FOR THE DESIGN
OF AGRICULTURAL MACHINES AND THE FORMATION OF PROFESSIONAL COMPETENCIES OF
AN AGRICULTURAL ENGINEER



Prof. D. Sc. Eng. Georgi Popov

President of the Scientific Technical Union of Mechanical Engineering