

SOILS FOR THE PRODUCTION OF FOOD AND/OR RENEWABLE ENERGY - THE FUTURE PERSPECTIVES

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After definition of food security and the main functions of soil, the global soil resources for food production are described in detail, discussing their quality and distribution at a global scale. Based on this, threats to soil which compromise food production through the impact of human activities are described, like sealing, erosion, decline in organic matter, soil contamination, decline in soil biodiversity, soil compaction and salinisation, floods and landslides, soil nutrient mining as well as desertification. Under global changes threatening food security, the increase of world population, including migration, changes in food habits, and climate change, are discussed. Moreover, the competition for space, energy and water, between food production and biofuels, are shown. New trends in world economy, especially emerging marketing procedures on a speculative basis are seen as one of the main reasons for the volatilisation of food prices and for food shortage. From this we conclude that food security is severely endangered and new solutions are necessary in order to feed the world population.

DEGRADATION PROCESSES OF WATER-STABLE CHERNOZEM AGGREGATES

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Unique natural formation, which gives the soil a particular form of hierarchical structure organization and underlying all soil functions - soil aggregate - has a spatial organization, where the main role of "adhesives" is played by soil organic matter. Disruption of the natural chernozem structure by plowing is a typical consequence of anthropogenic degradation processes, which manifests itself primarily in the loss of aggregates water-stability. Spatial differentiation of humic substances components in aggregate consists in the localization of hydrophilic humification products of allochthonous genesis on the surface of mineral particles, and hydrophobic humic substances of autochthonous origin - in organic elementary soil particles. Structural and functional organization of humic substances components in the aggregate ensures the formation of hydrophobic surface properties of aggregate pore space. The cumulative effect of intra-aggregate hydrophobic zones is to counter the rapid water inflow into the aggregate and the appearance of disjoining pressure. In shortage of fresh organic matter, humic substances, localized on the surface of mineral particles, are mineralized, their hydrophilic surface is revealed, the efficiency of hydrophobic interactions within the aggregate decreases, and it is dispersed by water.

THE VERMIC FEATURES IN MEDITERRANEAN SOILS

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This work presents a soil developed in Mediterranean climate which is evident the mesofauna activity (vermic characteristics) on the soil morphology. Its physical, chemical and mineralogical characteristics are compared with other soils in the same area but they do not have so clear signs of zoopedoturbación. The comparative analysis of these soils concludes that wildlife action is not only important from a morphological point of view, but it also influences the development of the profile now that it slows down the processes of differentiation and formation of mollic and argillic horizons, typical of the other soils in the same area. Due to the importance of the vermic characteristics on soil development, and after to do a comparative systematic between the soils in Soil Taxonomy and WRB we conclude that it would be interesting to include the vermic characteristics in the Xereps and the Cambisols respectively.

NATURAL ZEOLITES AS CARRIERS (FILLERS) OF PESTICIDES AND CERTAIN OTHER CHEMICALS USED IN PLANT-GROWING

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The paper is a review which shows the advantage of application of pesticides in granulated form with natural zeolites in comparison with usual traditional methods of soils and plant cultivation. Such combination of pesticides with natural zeolites is characterized by increased activity, prolonged effect influence, ability to limit migration of this toxic chemical in soils and plants and also permit (allow) diminish doses of its use in plant-growing

ECOLOGICAL MODELS OF FERTILITY MANAGEMENT OF SOILS UNDER PASTURES IN NAKHCHIVAN AUTONOMOUS REPUBLIC

G. Sh. Mammadov, S. A. Hajiyev

The paper deals with the modelling of the ecological soil fertility in two soil types (brown and chestnut soils) under pasture soils in Nakhchivan Autonomous Republic. The ecological conditions which affect the model soils, physical-chemical properties and capability were analyzed, the ecological soil fertility modelling in two types of soil of the Autonomous Republic was created. As a result, the theoretical and practical significance of the ecological fertility modelling was developed in two types of soils under pastures in the Nakhchivan Autonomous Republic.

THE NUMERICAL METHOD OF FLOOD WAVE IN RIVER SYSTEMS

D.N. Kereselidze, V.Z.Trapaidze, M.Sh. Alaverdashvili, G. I. Bregvadze

The mathematical model of avalanche streams movement is the system of differential equation of Sen-Venan with the initial and boundary conditions. The solution of this system is two functions – the expenditure and depth of water in the rivers system. The problem is solved by the computations realizing on the computer. Thus we receive the approximate values of unknown functions, which are important for forecast of beginning of avalanch streams.

PHYSICAL-GEOGRAPHICAL ANALYSIS AND RECREATIONAL ESTIMATION OF HEALTH RESORT BAKHMARO'S ENVIRONMENT

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The article gives the results of carried out researches of geological, orographic, hydrological, climate, soil, biogenic and landscape characteristics as well as the natural resources, resort-tourist -recreational activity problems, economic and landscape functions of Bakhmaro resort. The recommendations have been developed for solution of the Bakhmaro resort adjusted area problems and development of tourism and recreational activity.

THE INFLUENCE OF AGRICULTURAL CROPS ON COLMATATIONAL SOILS OF KOLKHETY LOWLAND

O.P.Kiria, D.P.Tsurtsunia, K.O.Kiria

The paper considers the influence of agricultural crops on the content of gross forms of NPK and humus transformation in colmatational soils of Kolkhety lowland. It is shown that in colmatational sediments in rather a short term there was a considerable accumulation of gross forms of NPK and humus. At usual agricultural use colmatational soils (corn crops) without application of organic fertilizers led to decrease in the content of humus and gross forms of NPK. Improvement of hydrothermal and air modes of soils promoted increase of the group of

humic acids in humus content. In colmatational soils with long and plentiful fertilization with mineral and organic fertilizers (an orange plantation) the content of humus and gross forms of NPK essentially increased, and a ratio of Ch: Cf extended.

THE RESULTS OF STUDIES OF WINTER WHEAT PERSPECTIVE VARIETIES IN AGRICULTURAL ZONE OF ZANGEZUR OF ARMENIA

G. S. Khachatryan

From 2008 to 2010, the level of efficiency of Bezostaya 1, Nairi 68 and Umanka winter wheat varieties were studied in Zangezour agricultural zone at 1500, 1750 and 2000 m. above sea level. Nairi 68 wheat variety exceeds Bezostaya 1 and Umanka varieties. Thus, organization of elite seed production is suggested aimed at diversification of cultivated winter wheat varieties in the mentioned zone.

IMPACT OF CLIMATE CHANGE ON RIVER RUNOFF IN GEORGIA

N.A. Begalishvili, T.N. Tsintsadze, N.N. Begalishvili, N.T. Tsintsadze

Global warming processes on the Earth especially intensified in the second half of the 80s of the last century. Though, tendency of climate change in specific regions of the world differed from each other and often had an opposite direction. Consequently, the following was expected to take place: different reaction of river runoff on global warming; change of hydrological regime of rivers and the water resources in Georgia in whole. As a result of statistic-correlation analysis of 40-50 year-old synchronous rows of air temperatures in river basins, total precipitations on water collectors and runoffs in the closing cross sections, empirical-statistic and water-balance models of formation of basic river runoffs in Georgia have been received. On the basis of these models, reaction of runoffs on climate change in basins has been defined and sensitivity of runoffs linked with climate variations assessed.

CONTEMPORARY STATE OF THE MIL PLAIN SOILS AND METHODS OF THEIR IMPROVEMENT

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The paper deals with the changes in the soils as a result of the anthropogenic effect and the methods of their prevention. The researches show that being unsatisfactory the collector-drainage and irrigation nets in the Mil plain and incorrect using of the soils are a cause of reduction of productivity. It was defined that an average quantity of salts is 0,164-0,730 %, humus is 1,02-1,76%, total nitrogen is 0,10-0,14 %, special weight is 2,68-2,72 g/cm³, density of soil is 1,32-1,45 g/cm³ and indices of the physical clay are 33,02-65,28 %. The results show that the complex agro-ameliorative measures system is widely used to get high product.

PHYSICO-CHEMICAL CHARACTERISTICS OF THE BASIC SOILS OF MOUNTAIN SHIRVAN OF AZERBAIJAN

A.A. Khalilov

In the given article the results of the analyses, carried out field and cameral-laboratorial investigations on study of physical and chemical varieties of the basic soils (mountain-forest-brown, mountain-brown and mountain-grey-brown soils) of Mountainous Shirvan. The soils of Mountainous Shirvan is widely used under different agricultural plant.

COMPARATIVE EVALUATION OF THE KNOWN METHODS AND THE DEVELOPMENT OF AN OPTICAL METHOD FOR MEASURING THE DYNAMIC DEFORMATION PARAMETERS OF ROTATING SHAFTS

D. P. Petrosyan, S. M. Grigoryan, S. E. Mikaelyan

A comparative analysis of non-contact methods of measurement of dynamic deformation parameters of rotating shafts: twisting, displacement and vibration has been realized. An optical method for measuring with the use of modern radio components is proposed: opt couplers of transmitted and reflected light which has simple design, reliability, availability, compatibility with the means of microelectronics.

QUALITY INDICATORS OF OVERHEAD IRRIGATION IN THE ABSHERON AREA

R.N. Rashidov

The paper gives the result of the researches of influence of wind on a quality of operation of rain devices. Effectiveness of watering depends on quality of rain that is its turn is defined by intensity of distribution of rain on the area. On the base of the received laboratory field data taking into account over-lapping, distribution maps of intensity and monograms of duration of watering with simulated rain were developed.

TO FIND OUT THE GREATNESS OF PRESSURE AND THE INFLUENCE ON THE INTERNAL SURFACE OF CYLINDER OF SHNECHOPLASTIKE MIX FODDER

H. T. Hakobyan

To find out the strength of pressure in the internal sides of the cylinder mixer before mixing the high moisture straw mass and find out the greatness of cylinder's thick sides.

BIOPHYSICAL METHODS FOR EXPRESS DIAGNOSIS OF THE PHYSIOLOGICAL STATUS OF PLANTS

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The bioelectric characteristics of plants (on the example of grapevines and citrus) in relation to their physiological and pathological state, external factors and time, biostimulation and curative dosages have been studied and experimentally proved. The paper also defines the correlative dependence of plants' activity on the level of diseases and frost damage, level of electrophysical influence, change of vegetation period and external factors. It has been experimentally and theoretically proved that a correlative indicator of physiological status of plants is a constant (invariable) figure and does not depend on the time of measuring or vegetation period. The methods of definition of bioelectric potentials for different components of plants under vegetation and their root system have been elaborated.

CAROTENOID PIGMENTS OF NOKARDIO- AND CORYNEFEROUS BACTERIA

G.J. Daraselia, A.Sh. Supatashvili, M.S. Burjanadze, E.E. Nakaidze

Carotenoid pigments of mycobacteres and rhodococcus were isolated and identificate. Established, that investigation species were synthesis different carotenoids as a epiphase and hypophase, carboniferous carotenoids and acid xanthophylls as well. The composition of pigments are individually and they are characters only for typical species. Experimental results suggest that, along with the use such as signs peptidoglycan, GC-composition, mycolic acids, quinone, fatty acids, phospho and glycolipids, by presented carotenoids are possible diagnoses species of mycobacteres and rhodococcus as well and set up their phylogeny commons.

INFLUENCE OF TOXIGENIC CLOSTRIDIA ON BIOLOGICAL PROPERTIES OF

D. V. Nachkebia, K. D. Nachkebia, E. D. Nachkebia

Pathogenic clostridia of *Cl.perfringens*, *Cl.septicum*, *Cl.oedematiens*, *Cl.chauvoei* kinds, by the conjugation are capable to transfer the escherichia and staphylococusses the toxigenic properties, haemolytic activity, antigene determinants, fermento-saccharolytic properties, resistance to antibiotics. Indipendence in transfer of these properties and possibility of independent separate and simultaneous transfer of the named signs has been revealed.

Associated growth of toxigenic anaerobes with avirulent of escherichia with the following selection of pathogenic species-recombinants through the body of white mice, gives us the possibility to isolate the transconjugants which has the expressed severe toxigenic properties. During the combined freezing of toxigenic clostridia with the avirulent escherichia and staphylococci, the pathogenic properties, was not transferred, but the haemolytic activity and resistance to the antibiotics have been revealed.

SENSITIVITY OF *CLOSTRIDIUM PERFRINGENS* CONCERNING SOME ANTIBIOTICS

M.A.Sargisyan

The qualities of the 11 strains of the *Clostridium perfringens* are described in the article. The sensitivity of this strains concerning different antibiotics were revealed. It was found that ceftriaxon is the antibiotic which shows the most antimicrobe properties against all strains of the *Clostridium perfringens*.

VETERINARY AND HYGIENIC MEASURES TO PREVENT TUBERCULOSIS AMONG ANIMALS

K.A. Mikadze

General veterinary-hygienic and sanitation methods together with the special anti-epizootic measures are the main factors of prevention and liquidation of Tuberculosis and Brucellosis among the farm animals. We developed and enhanced methods for disinfection of the farm premises, sanitation of the farm territory, including efficient decontamination of manure. Through this procedures Tuberculosis and Brucellosis agents are neutralised at the farm premises as well as in the surroundings. This helps to prevent zoonothroponosis, microbes do not get into the environment through dung and liquid manure. In result this helps the ecological state of the environment. Improvement of leaving conditions and breeding of the new generations of farm animals free from the infection helps the process of treatment of the whole herd.

TREATMENT OF SHEEP INFECTED WITH MONIEZIOSIS

C.A. Abdullayev

Infection of sheep by monieziosis in Azerbaijan makes 38,0-42,0%. Application of unimint for sheep monieziosis at the doze of 4,0 ml per animal and levozan at the doze 5,0 ml per animal provided 86,7% and 80,0 % effectiveness respectively. The preparations at the therapeutic doze did not have any side effects on the animals.

RESISTANCE OF BODY DURING CAPILLARIOZ AND ASCARIDIOZ OF BIRDS

S.Y. Bairamov

The monosytogams of birds of different age groups in norm and at mixed invasion were investigated. Researches have shown that the ratio of groups of monocytes at mixed invasion sharply change in comparison with norm, accordingly monocytograms at associative streaming of illness is oppressed, i.e. natural resistance of an organism goes down.

COMPARATIVE ASSESSMENT OF MICROBIAL ANALYSIS IN DIAGNOSIS OF NEWCASTLE DISEASE

Sh.K.Zeynalova, E.M.Agayeva

The detection of specific antibodies to Newcastle disease virus is a routine activity of avian virology laboratories. Generally speaking, serological assays are carried out to evaluate the immune response following vaccine administration or to detect seroconversion following natural infection. We used quantitative assay is the HI test, ELISA, PCR and virus isolation in embryonated eggs.

THE INFLUENCE OF VERDURE LOAD ON THE DEVELOPMENT OF PHOTOSYNTHETIC ACTIVITY UNDER THE CONDITIONS OF GREEN ZONE OF YEREVAN

V.A. Davtyan, K.Sh. Sargsyan

Coppices have intensively grown on the 21-, 31-, 41- years old stumps of felled black locust (*Robinia Pseudoacacia*), Caucasian lime, English oak (*Quercus robur*) and white willow (*Salix alba L.*) and four years after stumping an investigation was carried out by us with the regulation of 1, 3, 5 coppices on the stump. The definition of the chlorine content showed that with the decrease of coppice/shoot/ quantity the chlorious content “a” had a little increase, whereas “b” had a considerable increase. As a result the general content of chlorine was decreasing, whereas the relation of a/b was increasing. The change of green pigments’ content directly correlates with the intensity of the leaves’ photosynthetic activity with only a difference that the greater assimilation of CO₂ was observed with the 3 coppices on the stumps. As a rule, the aging of the stump from 21-41 years old had a positive effect on the leaves’ photosynthetic activity. The revelation of a difference is viewed in terms of the change of coppice/shoot/ light regime, adaptation of the objects of investigation and their root system development.

TAXUS BACCATA STANDS OF AYGEDZOR (ARMENIA)

B. L. Badalyan

Investigations carried out in forests of village Aygedzor at Berd region (basins of Khndzorut and Hakhinja rivers, tributaries of Kura River) show that common yew (*Taxus baccata L.*) grow there as single trees, as well as with small and large groups. Found yew stamp, with 120 cm in diameter, is evidence that this species grows there more than one thousand year. Ecological conditions theoretically are very suitable for common yew's growth and development in the investigated area. New and detailed investigations are necessary for clarification of this tree's distribution borders in this region.

THE IMPACT OF THE ENVIRONMENTAL PROTECTION STRATEGY ON ECOLOGICAL-ECONOMIC DEVELOPMENT

M.A. Grigoryan

Nowadays in the Republic of Armenia one of the urgent tasks for social – economic development is protection and improvement of the environment. Successful solution of this important task needs serious measures directed to regulation of industrial pollution penetration into the atmosphere and natural environment. The following article is devoted to this problem. On the basis of the researches in the course of years the authors have tried to define the impact of environment protection activity on the economic growth with the application of dynamic model of production development. In the issue of practical calculations the impact of atmosphere and reservoirs pollution on the optimum stationary structure of ecological-economic system was revealed. The two processed strategies of the environmental protection and antipollution activity and the results of the task solution are presented in the article in four variants.

CONVERGENCE ISSUES OF LEASING FINANCIAL STATEMENT IN ARMENIA

B. T. Balayan

The paper deals with the basis of the review of Armenian companies’ financial statement preparation, substantiation is made regarding the convergence of leasing statements to ISFS. Particularly, 4-stage approach of leasing financial statement transformation is suggested, such as: shifting assets to balance lessees, assessments, future recognitions and corrections of articles of accountability.

THE LIMITATION PROBLEM OF RESOURCES FROM THE ASPECT OF THE HYPOTHESIS OF IDENTICAL BIOLOGICAL CYCLES OF THE INDIVIDUAL AND SOCIETY

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The paper considers the limitation problem of resources from the aspect of the hypothesis of identical biological cycles of the individual and society. As resources are limited and needs are unlimited, everyone tries to make optimal decision and to use limited means most effective. From this point of view the society's and the individual's developmental stages are examined during their organic evolution: birth, childhood, adolescence, juvenescence, maturity, old age, death. Of course, there can be some deflections in this process, but in this case as everywhere exceptions confirm regularity.

THE FACTORS CONDITIONING EFFICIENCY OF THE SYSTEM OF PUBLIC ADMINISTRATION IN THE REPUBLIC OF ARMENIA

A.G. Safaryan

In any country like Armenia after gaining independence, it is of high importance to carry out reforms in the system of administration, especially in public sector. The latter is closely interrelated with executive, legislative and municipal bodies of administration. In the paper we put as a main goal to research and to disclose the above questions taking as a basis the graphs shown in the paper.