

INTERACTIONS BETWEEN SOIL FEATURES OF MOUNTAIN GEOSYSTEMS AT REGIONAL LEVEL (CENTRAL CAUCASUS)

V.V. Razumov, E.N. Molchanov

Under study are interactions between structural-functional properties of different mountain soil types and ecological factors (climate, relief, parent materials, etc.) which are most valuable for their functioning. It is evident that the definite edaphic characteristics are highly dependent on parent materials and climatic indices. The obtained investigation results allow a deeper understanding of soil formation processes under different conditions in the mountain part of Central Caucasus. They can serve as evidence of the most precise diagnosing the mountain soils, forecasting the changes in structural-functional properties of mountain soils due to changes in the environment and global climate change in particular as well as preparing a system of measures for rational use and land conservation and the program of monitoring over the mountain soils (lands) in Central Caucasus.

INVESTIGATIONS OF THE FLUVIAL DYNAMICS IN EASTERN GEORGIA AS A CONTRIBUTION TO PALAEOENVIRONMENTAL RESEARCH OF THE REGION

Hans von Suchodoletz*, Dominik Faust, Daniel Wolf****

**Leipzig University, Institute of Geography*

***Technical University of Dresden, Institute of Geography*

Fluvial systems are important recorders of environmental change. Thus, using field and laboratory methods the past fluvial dynamics in two regions in eastern Georgia (Marneuli and Alazani depression) is investigated. Based on the literature and first field studies in the Marneuli depression, a preliminary model of the Cenozoic landscape evolution could be built up for the region. Although physical age determinations are still largely missing, these first results point to a strong change of the fluvial dynamics in the Marneuli depression during the Late Quaternary, amongst others probably in connection with tectonic activity in the region.

MICROBIAL IRON CYCLE IN CORROSION MATERIAL OF DRINKING WATER PIPELINES

J. Lin*, S. Ratering, S. Schnell****

**The University of Melbourne, School of Anthropology*

***Justus-Liebig University Giessen, Institute of Applied Microbiology*

In corrosion material of steel drinking water pipelines a full microbial iron cycling was found including microbial iron oxidation and microbial iron reduction. Iron(II) oxidation rates in corrosion material were highest at low oxygen concentrations (1% and 5%). At 1% oxygen in the gas phase microbial iron oxidation was 12-times higher than under sterile condition which reflects the chemical part of iron oxidation. In anoxic incubations high potential iron(III) reduction activity was observed. Iron reduction activity was stimulated in addition of ferrihydrite and pyruvate or lactate or glucose whereas acetate showed no effect. After 28 days of anoxic incubation the bacterial cell number was higher in the assay with lactate compared to control assay without an amended carbon source. From an enrichment culture started with corrosion material after anoxic incubation with pyruvate a pure culture could be isolated which was affiliated to *Anaeromyxobacter dehalogenans*.

Abbreviations: DAPI - 4',6-diamidino-2-phenylindole

INCREASE OF WATER-RETENTIVE ABILITY OF SOILS-GROUNDS WITH APPLICATION OF A NEW POLYMINERAL COMPOSITE

L.A. Itriashvili, E.Z. Khosroshvili

The results of researches are brought on the establishment of the influence of new water storage poly-mineral composite PMC on a water-retention capacity and water-physical properties of sandy, sandy-loam and loamy soils. It is shown, that addition of 3-5% PMC provides substantial growth of the content and preservation in these soils of productive water during simultaneous reduction of water resistance, increasing plasticity and adhesion.

COMPLEX REGULATION OF WATER AND NUTRIENT SOILS MODES DURING IRRIGATION WITH NON-TRADITIONAL WATERS

G. Sh. Mammadov, O. A. Zeynalova, S. A. Eminov

The given activity was conducted within Apsheron with the purpose of the scientific substantiation of capability of ecologically secure usage of sewages of Baku city for irrigation of agricultural crops during complex regulation of water and nutrient soils modes.

IDENTIFICATION AND EVALUATION THE DWARF VARIETIES OF PEAR

Y.V. Suleymanova

The biomorphological specifications and economic indicators of these varieties of pear have been researched. We divided 22 varieties of pear into 5 groups according to their projection volume and the area of crown and the height of pear-trees: very dwarf varieties, dwarf varieties, medium dwarf varieties, medium varieties. The coefficient of productivity of crown of the varieties of pear was 1,5...3,0 times greater of tall varieties of pear.

ORGANIC MATTER AS PREDICTOR OF SOIL HYDRAULIC PROPERTIES IN VOLCANIC ASH SOILS OF CHILE

C. Quezada* , M. Sandoval* , N. Stolpe* , C. Cerda* , E. Camacho**

**University of Concepción, Faculty of Agronomy*

***University of Córdoba*

Organic matter improves the water-holding capacity, hydraulic conductivity (K_{fs}) and infiltration rate (IR) of the soil. With the objective to evaluate the organic matter as predictor of soil hydraulic properties, a study was conducted in the Central Valley at Chillán, Chile, in volcanic ash soils of the Arrayán Series (medial, amorphic, thermic, Humic Haploxerands). The total organic matter (OM) content and the OM in the silt+clay-sized fraction, unsaturated hydraulic conductivity (K_{fs}) and infiltration rate (IR) were measured, under different crop rotations. The measurements of K_{fs} and IR, were measured using a Guelph permeameter and a double ring infiltrometer, respectively. The OM total and OM in the silt+clay sized fraction and K_{fs} , showed significant differences for each rotation ($P \leq 0.05$), but no differences were found for the IR. The hydraulic conductivity K_{fs} and total OM were positively correlated; but there was a negative correlation between total OM and IR. The OM in the silt+clay-sized fraction showed a low correlation with hydraulic conductivity and infiltration rate in volcanic ash soils of Chile. Therefore, organic matter is not a good predictor of soil hydraulic properties and is recommended directly measure K_{fs} and IR in the soil. Nevertheless, further research is needed to assess its overall effect on water movement in soil.

THE INFLUENCE OF BIOGASIFICATION OF WASTES OF CATTLE-BREEDING FARMS ON THE ECO-CHEMICAL PARAMETERS OF WATERS OF THE RIVER KHOBI INFLOWS

G.D. Supatashvili, T.N. Davitaia, N.D. Sulamanidze

The environmental pollution in waters of the river Khobi and its inflows was investigated before and after biogasification waste of the small cattle-breeding farms. The ecological efficiency of using agricultural waste objects as raw materials for biogas substances is quantitatively shown. Emission of biogenic substances have decreased by 50-70 %; the part of mineral substances have increased three times in the remainder, and the mass fraction of organic carbon has reduced by 1,3 points.

RICK ASSESSMENT OF SLOPE SOIL DEGRADATION

G.P. Dokhnadze*, G.S. Metreveli, N.Sh. Tsivtsivadze**, L. D. Lagidze****

***Georgian Technical University, Water Management Institute**

****Ivane Javakhishvili Tbilisi State University**

The paper presents the results of conducted laboratory and expedition researches with the purpose to study the ongoing erosion processes in different natural conditions. They showed the small deviation of calculated values under hydro-mechanic method from the measured ones, i.e. its preciseness and high reliability. Based on the held researches, equation of threshold erosion has been received considering soil resources, soil self-production intensity and plants' viable layer. Since the soil slope washing down is a random process, its assessment will be more successful through application of probability methods. We assume it expedient to replace fixed values of some parameters with probable values in the forecast equation of slope soil surface erosion. Such scientific approach will give an opportunity of different risk assessment of soil degradation or its total destruction. The carried out researches enable us to prove that based on the hydro-mechanic method and probable modeling of erosion process determining factors, it is possible to design digital maps of relevant risk levels, also select-implement erosion preventive measures in the conditions of different probability precipitation for specific catchment basin.

CONTENT OF HUMUS AND NUTRIENT ELEMENTS IN ARABLE LANDS

V. A. Alexanyan

The article deals with the results of the study on humus and nutrient content in arable lands. The content of humus in the upper horizon A of the studied lands fluctuates between 3.1-5.6%, decreasing in horizons B and BC to 2.4-3.4% and 1.2-1.9% respectively. The lands are less secured on nitrogen, less and average – on phosphorus, average and well – on potassium. For regulating the content of humus and nutrients it is necessary to systematically introduce high norms of manure, green and mineral, particularly, potassium fertilizers into lands, as well as rational system of soil cultivation.

NEONICOTINOIDE PESTICIDES IN GEORGIA

L.D. Mikadze., L.P. Mamaladze., I.Kh. Gakhokidze E.I. Gakhokidze

Optimization of the application of pesticides in agriculture, the assortment of the preparations undergoes continual changes and requires study of its ecological safety regarding economic efficiency. New neonicotinoid group of pesticides is one of the perspective preparations. The paper gives the results of both field and laboratory observations, which testify that they are quite useful for agricultural purposes in Georgia.

PREVALENCE OF AGENTS OF ANOPLOCEPHALYATES OF SHEEP IN NAKHCHIVAN AUTONOMOUS REPUBLIC

E.N. Mammadov

In paper presents the results of carpological and helminthological dissect of sheep of different areas of Nakhchivan AR. In the 3 regions of Autonomous Republic 4 kinds of anoplocephalyates were detected. The specific structure and a degree of contamination of sheep with anoplocephalyates in local climatic conditions are established. As a result of the researches extensiveness and intensity invasion were revealed. In the territory of these regions anoplocephalyates are spread as high, EI of sheep % 34.33, II – 2.94 specimens. Four anoplocephalyata species, namely *Moniezia benedeni* (% 37.73), *M.expansa*_(%33.00), *Avitellina centripunctata* (%18.86) and *Thysaniezia giardi* (%10.37) were identified in sheep.

THE FIGURE AND CONSTITUTION PECULIARITIES OF PUREBRED BLACK MOTLEY AND BLACK MOTLEY HOLSHTEIN INTERBRED COWS IN MOUNTAINOUS ZONE CONDITIONS OF THE REPUBLIC OF ARMENIA

L. M. Minasyan, A. Kh. Simonyan

The indices of almost all the measurements of figure of interbred cows received from the crossing of black motley and holshtein genus in „Ranchpar,, farm (village Ltchashen,region Sevan district Gegharkunik) have considerably surpassed 6.1 - 10.6% the purebred black motley cows of „Ser,, farm (village Karsi,region Hrazdan district Kotayk), that is conditioned by the greater measure of holshtein cow genus. In both cow genotypes the sizes of measurements rise in parallel to their growth. It is also defined that the alteration factor (Cv) of almost all the measurements of all lactation cows is higher in the interbreds. It is getting clear from the simultaneously received data that the indices of bodybuilding the cows of both genotypes differ slightly from each other and according to the bodybuilding type they can be considered as animals of milk productivity.

THE STUDY OF THE INFLUENCE OF PLANT IMMUNOSTIMULANT “ECHINACEA HEXAL” AND PLANT ORIGIN SUBSTANCE ON THE MUSCLE TRICHINELLOSIS OF RATS

H.V.Zanginyan

The paper deals with the study of the influence of plant immunostimulant and plant origin substance on the structure and microfunctional state of the muscles of rats during the mixed infection with larvae *Trichinella spiralis* and *Trichinella pseudospiralis*.

RECOVERY OF NATURAL POPULATIONS OF AMPHIBIANS AS A WAY OF BIODIVERSITY CONSERVATION

E. M. Yeghiazaryan*, A. L.Aghasyan**

**Yerevan State University, Department of Zoology*

***Scientific Centre of Zoology and Hydroecology, National Academy of Sciences*

Captive breeding and reintroduction serve for recovery of wild populations of animals, particularly amphibians. This study was aimed at the assessment of today's status of the northern banded newt *Ommatotriton ophryticus* (Berthold, 1846) and the eastern spadefoot *Pelobates syriacus* Boettger, 1889 in Armenia and the features of growth and development of these species in captivity. In the Red Data Book of Animals of Armenia, as per IUCN criteria the newt is classified as Critically Endangered and the spadefoot as Vulnerable. The paper describes the development of newts in a population originated from 19 founders captured near the Shamlukh village, Alaverdi district. We also consider the metamorphosis and development of captive spadefoots and their release into the Azat Reservoir.

MEMBRANE HYDROPHOBICITY EVALUATION IN *LACTOBACILLUS RHAMNOSUS* AND STARTER CULTURES (*L. Acidophilus* & *Bifid bacterium*) DURING MEMBRANE SPECTROPHOTOMETRY

Sh. Shahbazi

State Agrarian University of Armenia

The article deals with the benefits of improvement of the intestinal flora, prevention or shortening of diarrhea, control of serum cholesterol, and reduction of inflammatory bowel disease [1].

AGGRESSIVE SOCIAL ENVIRONMENT, CHRONIC STRESS, PATOLOGICAL AGGRESSEN AND FOPMATION OF KILLER ORGANIZMES

N. G. Aleksidze

Ivane Javakhivili Tbilisi State University

The influence of aggressive social environment on formation of chronic stress, pathological aggression and killer organisms has been studied. It is shown that during natural and pilocarpine induced aggression the concentration of dopamine and norepinephrine increases approximately 1.5-2.0 times. At the same time the concentration of serotonin decreases approximately by 50%. We developed an effective test for detection of aggressive organisms on the level of stressed rat's erythrocyte membrane by lectin binding technique.

GENETIC RESOURCES OF CATTLE BREEDS IN GEORGIA AND PROSPECTS OF THEIR USE

L.A. Tortladze, G. D. Agladze, G.J. Khatiashvili

The paper considers the materials about the characteristic of local cattle breeds raised in Georgia. The data about the areas of their rearing, productivity, product quality, more practical methods of their use and improvement are given. The formation of scientific Council of the Countries of Southern Caucasus with the purpose of coordination of researches carried out in the region for subsequent studying, improvement and use of gene pool of animals with this for wide use of genetic potential of aboriginal and endemic cattle breeds in selective and pedigree work is assumed.

WATER RESISTANT PATTERN ON NATURAL LEATHER

R.A. Azaryan

It is experimentally proven that the application of organofluorine latex of the model of LF-M in the pattern garnish brings to increase in water resistance of image printing on the obtained leather, however it also brings to a sharp improvement in the physical-mechanical indicators (cover resistance to wet friction). The usage of water resistant latex LF-M in pattern painting results in hydrophobic and strong images on leather-gallantry products.

ON THE STORAGE OF SOME FRUITS

**N.G. Kalabegashvili, L.O. Samkharadze, D.K. Ioseliani, G.I. Balarjishvili,
K.G. Ebralidze, O.G. Lomtadze**

Ivane Javakhishvili Tbilisi State University

Petre Melikishvili Institute of Physical and Organic Chemistry

In order to extend the storage life of fruits some works have been carried out on tkemali (wild plum), mandarin and vine-leaf. Noteworthy results have been obtained on wild plum (storage life 25 days) and on vine-leaf (storage life \geq 1year) in hermetically closed plastic containers at 20°C temperature. In case of mandarin by use of moisture absorber (natural clinoptilolite) and antiseptic agent (sodium metabisulfite) under 8-12°C conditions storage life has been extended almost to 75 days.

THE EFFECT OF DIFFERENT TECHNOLOGICAL MEANS AND FINING AGENTS ON THE COLLOID STABILITY OF WINE

I. Sh. Shatirishvili, M. R. Makharoblidze, Kh. Sh. Chkhikvadze, B. S. Tsereteli

Despite various kinds of new methods and means used in the practice of winemaking to avoid colloid and biological turbidity, stabilization of grape processing products is still a problem. In order to solve the problem, we used the following processing methods: with combigel, gelatin, bentonite, polivinilpirolidon, diatomite, natural zeolite sorbate (mordenite). From the experimental research we can conclude: in order to avoid colloid turbidity of

wine materials, it is necessary to process the patterns with the mixed composition of zeolite-gelatin-polivinilpirolidon (60:20:20). $1/2\text{m}/\text{dm}^3$ is needed for precipitation $1\text{g}/\text{dm}^3$ colloid. By the above mentioned system we found out the exact time of processing and concentrating wine materials.

RESEARCHES ON CRYPHONECTRIA ENDOTHIA PARASITICA (Murrill) Barr. THAT THREATENS GEORGIA CHESTNUT FORESTS

T. Gokturk*, Y. Aksu**

**Artvin Coruh University*

*** Artvin Regional Forestry Management*

Chestnut branch cancer (*Cryphonectria parasitica*) disease factor is in the quarantine list in Georgia like in many other countries around the world.. A part of chestnut forests of Georgia and Turkey constitute border in the working area. Chestnut branch cancer turned up 100 years ago and has caused more than 3,5 millions chestnut trees to die and still has bad influence. In Adjara chestnut, being a restricted type of tree, has been subject to danger as a result of damage caused by the Chestnut branch cancer. Trying to remove the conditions of creating epidemia in the domain due to this fight back, density of the cancer has been dropped by mechanical fight back and the environment necessary for multiplication of hipovirulent virus has been secured in the fight back area.

ON THE PROBLEM OF CONSERVATION OF SOME RARE PLANTS AND PLANT COMMUNITIES IN LORI REGION OF ARMENIA

G.M. Fayvush, H.A. Ghulijanyan, K.G. Tamanyan

The article provides information on rare and endangered plant species included in the Red Data Book of Armenia growing in the vicinity of Odzun village of Armenia's Lori region. On the basis of the provided data it is proposed to give the status of high conservation value forests to the specified area.

EVALUATION OF THE HUNGARIAN TRANSITION MODEL OF THE AGRICULTURE AFTER THE ECONOMIC AND POLITICAL CHANGES

Vasa Laszlo

Szent Istvan University, School of Economics and Social Sciences

Institute of Regional Economics and Rural Development

In this paper the structural changes of Central and East European and Hungarian agriculture caused by the political turnover of 1989-1990 are surveyed. The countries of Central Europe form "the lands between" both in their geography and in their patterns of long-term economic development. It is shown that the demolition of the former co-operatives caused the emergence of small farms which are now the main form of farms dominating Hungarian agriculture. The restructuring caused many disadvantages and the system itself is still changing. After 1990 the EU accession was the largest transformation. As a result, a new agricultural policy was introduced; the current structure has many malfunctions, including inefficient land size, lack of capital and up-to-date technology.

THE PERFECTION OF THE ECONOMIC MECHANISM OF MANAGEMENT IN AIC

N. I. Nasibova

The current state of manufacture is substantially caused by the structure and the level of development of the economic mechanism of management. The current agrarian reform in the form it is being realized, has led to cardinal and hasty crash in developed economic mechanism of management in AIC that has resulted in the necessity for its perfection. The necessity and the basic ways of perfection of the economic mechanism of management in AIC are considered in the above paper.

THE EFFICIENCY OF APPLICATION OF TWO-LEVEL MODELS FOR REGULATION OF ECONOMIC-ECOLOGIC PROCESSES

B.A. Shakhnazaryan, M.A. Grigoryan

Scientific sources offer a game model of two-level system for regulation of industrial processes. The structure of this model lets to use it only for describing a wider circle of events and incompletely describes number of situations. Nowadays, every country strives to widen the net of joint organizations, all characteristic features of which point that for the modeling of processes to make a decision in sphere of international cooperation the game models with hierarchic structure are very convenient. In this paper we have attempted to study two-level system consisting of upper level- center and elements of lower level and to ground scientific-practical meaning of two-level models for regulation of economic-ecologic processes and to experience the possibility of their practical application.

BASIC STEPS OF CADASTRAL VALUATION OF TILLAGE IN THE REPUBLIC OF ARMENIA

A.S. Ezekyan

Since land privatization in the Republic of Armenia the activities have been carried out to specify land standard price on the basis of concrete cadastral value. The size of land price depends on soil properties and other factors which under mountainous conditions have zonal character.