

## **DEGRADATION OF ANTHROPOGENIC CONTAMINANTS BY HIGHER PLANTS**

**G. I. Kvesitadze\*, E. G. Kvesitadze\*\***

Elimination of contaminants from the environment by microorganisms of different taxonomic groups is an evolutionarily determined property, which has already been widely discussed. Until recently, plants still occupying above 40% of the world land, were considered as organisms having only a limited potential for contaminants conjugation and accumulation within cell organelles. Analysis of experimental data of the last two decades revealed a great ecological potential of plants. There have been exposed deep degradation processes proceeding in higher plants and in the great majority of the cases leading to complete detoxification of anthropogenic contaminants: the enzymes carrying out oxidation and conjugation processes have been revealed and characterised; the ability of some plant varieties to accumulate huge amount of heavy metals and deposit them in cellular structures; formation of anthropogenic contaminants conjugated with endogenous compounds and enzymes participating in this process have been shown. Yet, there are uncertain questions closely related with the contaminants multistage degradation process in plants. Based on our 40' years experience in this area we made an attempt for the evaluation of different aspects of plants ecological potential from the modern understanding; to assume the mechanism of inter-replacement of enzymes participating in oxidative degradation of organic contaminants in higher plants; to stress the importance of phenoloxidase, enzyme hitherto unknown to participate in remediation processes (contaminants oxidative decomposition); to reveal the criterion for evaluation under the action of contaminants of such precise indicator of plant detoxification potential as deviations in ultrastructural level of plant cells.

## **ON THE EFFECT OF THE INFLUENCE OF ZEOLITECONTAINING ROCKS FROM GEORGIAN DEPOSITS ON GRAPE YIELD**

**T.G.Andronikashvili, V.G.Tsitsishvili, M.V.Alelishvili, N.M.Dolaberidze**

It has been stated that even little amount of zeolitecontaining rocks modified with cations of ammonium applied into the soil (100 g/plant) increases grape yield. The research shows that the nature (variety) of zeolite differently affects the increase of grape yield. In particular, applying analcimecontaining rocks increases grape yield by 67%, phillipsitecontaining rocks - by 80% and clinoptilolite-heulanditecontaining rocks - by 100% in comparison with a control (an absolute background). Suppositions are made that such a correlation is connected with the increase of void volume of zeolites in succession: analcime (18%) < phillipsite (31%) < clinoptilolite (34%). Applying zeolites into the soil somewhat affect on some of the quality indexes of grape juice. For example, titratable acidity grows by 23%, potassium content - by 13%.

## **SEPARATION STUDIES OF AMINO ACIDS ON SILICA GEL AMENDED SOIL LAYERS DEVELOPED WITH SURFACTANT MEDIATED SYSTEMS**

**A. Mohammad and R. Gupta**

Thin layer chromatography of twenty two amino acids was performed on layers of silica gel and silica gel amended soil using aqueous solutions of anionic (sodium dodecyl sulphate); cationic (cetylpyridinium chloride and cetyltrimethyl ammonium bromide); and non ionic (polyoxyethylene p-t-octylphenol) surfactants as mobile phases . In all ,eleven stationary phases and twelve mobile phases were used in order to examine the mobility pattern and to find out the best TLC system for the separation of amino acids from their multi component mixtures on thin layers prepared from the mixture of soil and silica gel. The addition of silica gel in to soil bed leads to increase the mobility and improves the separation possibilities of amino acids. Amongst surfactant used, Tx-100 at the concentration level 0.001M was found to be most effective for identification and separation of amino acids. The TLC system comprising of silica gel plus soil (6:4) as a stationary phase and 0.001M Tx-100 as a mobile phase was found to be most favorable for achieving better separation due to well formed and compact spot of amino acids. Furthermore, a good separation of L-Arginine, L-Histidine and L-Glutamic acid was realized on the selected stationary phase (silica gel plus soil , 6:4 w/w).

## **COMPARATIVE PRODUCTIVITY OF GRANULATING TRASH IN SOWING OF EARLY RIPING POTATO**

**E. M. Ghazaryan**

The explorations have been made in the meadowing grey watering soil of Ararat plain, in the sowing of early riping potatoe. It has turned out that using of trash contributes to the rising of potatoes crop. The increase of the crop with respect to the checking is 188-200 hundredweight per hectar (65,7-76,9%). The advantage of granulating trash is obvious with respect to the usual one. 32 hundredweight per hectar (11,2%). By granulating trash its keeping, replacement and usage is densed. The loss of their useful nutrition is identified.

## **ON DIAGNOSING OF ELEMENTARY SOIL PROCESSES AT A MICROLEVEL**

**L.G. Matchavariani**

Main micromorphological parameters for soils of Georgia (humid subtropical and dry subtropical zones, mountain-forest and mountain-meadow regions) were investigated. The comparative analysis of micromorphological parameters between rather close on morphochemical properties of soils – Vertisols and Mountain Chernozems, Brown Forest and Cinnamonic, Red Soils and Terra-rossa, Yellow Soils and Subtropical Podzols – has shown specificity of their microstructure. For revealing basic geographical features of classification for soils of Georgia, special attention was drawn to micromorphological diagnosing of basic elementary soil processes – profile formation processes (humusformation, siallisation, lessive, gleyformation, ferumformation, carbonformation). The groups of processes for each type of soils are most typically allocated. In particular, general parameters for Vertisols, Cinnamonic, Meadow Cinnamonic are the group of processes humusformation-gleyformation-carbonformation, for Grey Cinnamonic, Meadow Grey Cinnamonic, Salt Soils (Solonetz, Solonchak) and Raw Humus Calcareous – carbonformation with attributes gleyformation and lessive; for Yellow Soils, Subtropical Podzols and Subtropical Gley Podzols – lessive-gleyformation-ferumformation; for Red Soils and Alluvial Soils – lessive-ferumformation; for Mountain Chernozems – humusformation-siallisation; for Brown Forest – siallisation with attributes of ferumformation, lessive and ferumformation; in Mountain Meadow Soils are allocated lessive, partially gleyformations. The cartographical material is created which reflects distribution of main profile formation processes in soils of Georgia with application of the program ArcView GIS. The comparison of the given material with the types of landscapes of Georgia (humid, arid, semihumid, semiarid) has shown a rather original picture. The precise ratio is marked rather only in semiarid landscapes, where conducting EPP are humusformation, carbonformation and siallisation. Soils are special components of landscape, which not always submit to certain peculiarity. In formation of some soils quite often any factor can play the main role and the known process of soilformation, based on the complex influence of factors, can drop out the general geographical laws. Therefore, it is natural that in the named landscapes the smallest level appears in soil.

## **SMALL MOUNTAINOUS RIVERS OF ARMENIA: EVALUATION OF POLLUTION BY WASTEWATERS FROM THE SEWERS**

**G. H. Babayan**

New experimental data of collectors discharge waste water quality watching is obtained. New experimental data of collectors discharge waste water quality have been showed. Calculations of dilution and autopurification of wastewater is done by authors for the estimation and prediction of basic Armenian rivers water quality. Most changed water objects with represented indexes of contamination have been presented.

## **WATER BALANCE OF NATURAL LANDSCAPES OF ABKHAZIA**

**R.Sh. Meskhia\*, G.P.Gogichaishvili\*, T.T.Urushadze\*\***

The paper deals with the structure of the water balance of natural landscapes of Abkhazia. It shows the general regulations of the territorial distribution regarded from the height of the whole complex of landscape conditions according to the network observation data of 1961-1990.

## **ASSESSMENT OF CLIMATE POTENTIAL OF DESERTIFICATION**

**T. I. Tourmanidze\*, N. G. Chikhradze\*\*, M. A. Gigilashvili\***

Nowadays at the background of global climate warming the desertification of the farm lands develops on large areas in all parts of the planet, including the arid areas of the European continent. Desertification wins the heavy arid Southern and South-Eastern areas of Georgia as well. An attempt of the quantitative assessment of desertification the climatic potential based on the complex accounting of the aridity phenomena in the system «land – surface atmospheric layer» has been undertaken. The estimated numbers of the climatic potential of desertification for semi-desert (56-59), heavy arid (35-45) and arid (24-34) areas of Eastern Georgia have been received.

## **CLIMATE ZONING OF GEORGIA - A GIS-BASED REGIONALISATION OF LONG-STANDING PRECIPITATION AND TEMPERATURE DATA**

**M. Schaefer, E. I. Narimanidze, L. King**

Precipitation and temperature are decisive factors for a fruitful agriculture, and their distribution causes different conditions for land use. In Georgia you can find various climate regions within short distances. In this article a GIS-

based regionalisation of longstanding precipitation and temperature data from 1961 to 1990 is presented. A climate zoning of Georgia is worked out using the data of 101 climate stations and modern geographical methods.

### **STRUGGLE AGAINST DESERTIFICATION IN AZERBAIJAN**

**A.H.Babayev**

The article deals with the struggle against desertification in Azerbaijan. The struggle against desertification is carried out according to administrative areas. The paper gives main results in the field.

### **QUESTIONS OF EXOGENESIS IN THE MOUNTAIN-MEADOW ZONE OF AZERBAIJAN PART OF THE GREAT CAUCASUS**

**I.I. Mardanov**

In this article we decide to show natural and anthropogenic factors of the development of erosion and some exogenic processes – landslides, placers, mountain wastes etc. The mountain-meadow zone of Azerbaijanian part of Great Caucasus is the territory of more intensive soil erosion than mountain-forest zone and less than rock-nival zone. Exogenic processes have an intensive character in the basins of the rivers of the Central part of the Main Caucasus Range – Shinchay, Kishchay, Mazimchay, Katexchay. The high-mountainous territories of Kurmuxchay river basins and Filfilichay are the arena of destruction of mountain-meadow soils. The aero photo images of the territory allow speedy recognition of exogenic relief forms and making assessment of the level of intensity of these processes. The study of degradation of soil cover is important during the demographic and economic planning.

### **ON SOME CHANGES (SUCCESIONS) IN THE DESERTS OF JEIRANCHEL-AJINOUR AREA OF AZERBAIJAN**

**S.Z.Akhmedova**

The investigation of some successions in desert, semi desert, chalo-meadow and boggy ecosystems led us to the conclusion that the main factors causing them is a long-term effect of an anthropogenic factor through ecological regime.

### **DEVELOPMENT OF NEW INITIAL MATERIAL FOR THE SELECTION OF TRITIKALE IN GEORGIA**

**Ts. Sh. Samadashvili**

We undertook an attempt to develop new initial material of perspective *Triticale* forms on the basis of aboriginal species of Georgian wheat, selected from the collection and marked out by their individual indications. Various methods based on the process of recombination have been implied: 1) hybridization amongst octaploid and hexaploid *Triticale*; 2) hybridization amongst hexaploid the *Triticale* species of different geographical origin; 3) hybridization of hexaploid *Triticale* with mild winter wheat species. The ameliorated forms of *Triticale* are characterised by: an increase of the crop capacity of wheat-ear, an essential improvement of the quality of grain, shortening of the vegetative season and high-yielding variety of the wheat grain and of the green mass.

### **ZOOPLANKTON OF TRIBUTARIES AND LITTORAL OF LAKE SEVAN IN 2006**

**A.V. Krylov, S.H. Hakobyan, A.H. Hayrapetyan**

The zooplankton of some of areas of the littoral and tributaries of lake Sevan has been researched (October, 2007). 15 species of invertebrates: 8 – *Rotatoria*, 3 – *Copepoda* and 4 – *Cladocera* have been recognized. For the first time in the zooplankton of the lake and its basin the following nine species of invertebrates were revealed: *Polyarthra dolichoptera*, *Notholca squamula*, *Eudactylota eudactilota*, *Euchlanis lucksiana*, *Cephalodella* sp., *Eucyclops macruioides*, *Megacyclops latipes*, *Alona 3ectangular*, *Pleuroxus aduncus*. Maximum number of species was registered in the river head of Razdan, minimal - in the entry of Arpa canal. The main factors that determine the zooplankton condition of researched rivers has been revealed.

## **THE WAYS OF INCREASING EFFECTIVENESS AND QUALITATIVE CHARACTERISTICS OF *Valeriana officinalis L.***

**T. O. Kacharava, V. V. Esvanjia**

Gene pool of each country is its natural and historical wealth requiring permanent attention and following current problems connected with anthropogenic impacts and environmental changes caused by natural reactions. At the given stage, not only conservation of the permanently convergent world gene pool but its enhancement at the expense of intensification and rational application of resources – natural anthropogenic eco-system – is gaining particular importance for the mankind. Georgia, a comparatively small country, faces a rather difficult task in this regard and its resolution is strategically actual problem at each stage. *Valeriana officinalis L.* is used also as a spice, mainly in the European countries. In this article is given Caraway's *Valeriana officinalis L.* – site of spreading, biological particularity, stage of development, providing its enological phases during all the period of its ontogenesis, intercommunication of ecosystem parameters and technological means for qualitative characteristics, technology of reproduction and agritechnics in system of diagnostics – soil – medium- plant - fertilizer-crop, and application of pharmacologically active substances.

## **ON THE ISSUE OF THE DEVELOPMENT OF SERICULTURE IN THE SOUTH CAUCASUS**

**G.V.Nikoleishvili, E.D.Shapakidze**

The paper deals with the current state of Sericulture in the countries of the South Caucasus. It analyzes the stages of its development, dynamics and main reasons for its present sad state. The paper also gives the ways out of the crisis and the trends now to make it profitable.

## **EFFECT OF FODDER ON BIOTECHNOLOGICAL INDICES OF MULBERRY SILKWORM**

**N.K.Baramidze, M.O.Tsikhiseli, M.G.Khutsishvili**

Silk capacity of cocoon depends greatly on the quality of mulberry leaf. The richer the mulberry leaf (Gruzia) in proteins and nitrogen, the greater the mass of the silk gland, and respectively the ratio of silkworm and silk gland masses, which in the end is expressed in the silk capacity of the obtained cocoon.

## **ON THE CONTENTS OF MICROELEMENTS (B, Mn, Zn AND Mo) IN RAW HUMUS CALCAREOUS SOILS OF WESTERN GEORGIA**

**N.T. Nikoleishvili**

As a result of the researches in the settlement of Khorshi of Senaki district in West Georgia total and mobile forms of microelements of boron, manganese, zinc and molybdenum have been identified in the soil samples. It was identified that mobility of these microelements depends on a number of reasons; oxidation-reduction conditions, acidity of soil solution, humidity of soils, activity of soil microfauna, fixing of organic substances in soil.

## **THE INFLUENCE OF MINERAL FERTILIZERS AND MOLIBDENUM ON SOY-BEAN PRODUCTIVITY**

**O.Y.Zardalishvili, K.Sh. Rokva**

The paper considers optimum dosage of mineral fertilizers for the growth of soy-bean productivity. According to the research consequences on alluvial soils of Kvareli district and regarding temporary conditions in the field of fertilizer application the dosage  $P_{60}K_{45}N_{30}$  is considered to be the best for soy-bean.

## **THE INFLUENCE OF IRON AND COOPERON TRANSFORMATION OF PHENOL IN PLANTS**

**I. G. Abdushelishvili., Z.A. Kuratashvili**

The Influence of Iron (III) and Cooper(II) ions on transformation of exogenous phenol (hydroxybenzol) in sterile shoots of peas (*Pisum sativum*) and corn (*Zea mais*) is investigated. According to the received data, input of the above mentioned ions in tissue of a plant raises the speed of phenol detoxication, as a result of stimulation of the first step of

detoxication – hydroxylation of an aromatic nucleus. The given effect is achieved as a result of processings of both of the root system, and the elevated parts by a citrate complex of Iron (III) and Copper (II).

**ENHANCED BIODIVERSITY AND PERCEIVED RISK TO FOOD SAFETY:  
CAMPYLOBACTER AND POULTRY**

**J.O'Brien, L.Woodward and B.D.Pearce**

The article deals with enhanced biodiversity and perceived risk to food safety: campylobacter and poultry.

**THE 2001 FOOT AND MOUTH DISEASE OUTBREAK – THE ORGANIC MOVEMENT'S RESPONSE\***

**W. Lawrence**

The paper deals with the 2001 foot and mouth disease outbreak - the organic movement's response. The paper analyzes such issues as objects of disease, harmfulness, the results of mistaken diagnosis, legislative basis etc.

**ELECTROMAGNETIC SUBMERSIBLE PUMPS**

**R.I. Ksovreli, G.A.Javakhishvili**

Single and double tact electromagnetic vibrating submersible pumps with improved productivity and performance index are developed. Precise descriptions of the schemes are given. The pumps are reliable and easy to operate. Their moving parts never strike each other, which increases operating stability and reliability of the pumps.

**INVESTIGATION RESULTS OF MECHANICAL MIXING PROCESS  
IN BIOGAS PLANT**

**S.E. Margaryan, A.J. Aghasaryan, K.G. Yedoyan**

With the aim of intensification of liquid manure metan fermentation and increasing of biogas isolation speed it is necessary to mix it periodically. To define constructive parameters and power of mechanical activity of mixer resistance and tongue of wheel-paddle (axle-tree) are calculated, as well as the power necessary to lift manure mass.

**CHOICE OF OPTIMUM PARAMETERS OF SPRAY FURROWS AT BROADCAST WAY OF EMMER  
WHEAT**

**S.L.Sahakyan**

In the paper is offered and is analyzed the universal seeder unit for broadcasting of emmer wheat. The unit allow by its furrowers simultaneously close up seeds and open spray furrows so that they are satisfying the agro-technical requirements. Theoretically defined is also an optimum parameters of spray furrows, the implantation of which will promote an increase of productivity.

**TECHNOLOGY OF MANY YEARS CULTURES GROWING  
ON MOUNTAIN SLOPES**

**Sh. I.Chalaganidze**

The technology of use of perennial crops for forming terraces in mountain slopes and substantiation of their parameters are discussed in this paper.

**INFLUENCE OF FILTRATES IN CANALS ON THE GROUND  
WATER SCHEDULE**

**K.G. Bziava, Sh.Z. Kupreishvili, L.G. Javakhishvili**

In the article the operational hypothesis is offered according to which the hydraulically optimal section is characterized by a minimum of the wetted perimeter and a maximum of the area of effective section that corresponds to the maximal size of hydraulic radius, and the latter provides minimal seepage from the wetted perimeter of the canal. In view of the given condition the dimensions of the virtual canal of rectangular section are defined according to which the seepage flow of the unsteady movement for the non-supported hydro-geological loading scheme is determined.

## APPLICATION OF WHOLE MILK SUBSTITUTES IN CALVES' GROWING

G.H.Giloyan, L.G.Vardevanyan, V.A.Abrahamyan

Growing of calves on whole milk substitutes (WMS) is an accepted method in many countries. Application of WMS enables to separate calves from mothers' milk at the age of 5-10 days, sparing 230-240 hg milk calculated per head and get profit more than 15 thousand drams. Application of this method on the widest scale in cattle breeding is very important for sparing a significant amount of whole milk and increase of the production of milk products.

## THE EPIZOOTOLOGICAL ANTHRAX SITUATION IN ARMENIA

R.G.Tamrazyan, S.L.Grigoryan

The epizootological investigation over anthrax situation in the republic of Armenia has been carried for the 12 years. Thanks to systematic vaccination of animals against anthrax, the epizootic forms of infections were observed in certain into cases. A soil as nidus of infection has no any importance for vaccinated animals.

## TUMOROUS GROWTH INDUCED IN WHITE MICE WITH PROTOPLASTS AND LYSATES OF TOXIGENIC CLOSTRIDIA AND CLOSTRIDIAL RECOMBINANTS OF ESCHERICHIA

J.V. Nachkebia, E.J. Nachkebia, K. J. Nachkebia

The experiments have been carried out on the induction of tumorous growth in white mice with protoplasts and lysates of toxigenic *Clostridia* and clostridial recombinants of *Escherichia* and *Staphylococci*. Protoplasts and lysates of the above-mentioned microorganisms, as well as clostridial recombinants of *Escherichia* and *Staphylococci* injected into white mice hypodermically can cause tumorous transformation of microorganism cells in consequence of including in the genom of the cell of freed plasmid DNA – in one case, as free molecules, being in lysates, in the other – freed from protoplasts and cells of DNA recombinants, lysates and protoplasts of *Clostridia* and clostridial recombinants of *Escherichia* and *Staphylococci* were obtained by "freezing-melting" method [1-3], but clostridial recombinants of *Escherichia* and *Staphylococci* by means of their crossing [4-7], with this from *Clostridia* (donors) some biological properties were transmitted to *Escherichia* and *Staphylococci* (recombinants) – toxigenicity, hemolytic activity, antigenicity, sugarlytic activity, resistance to antibiotics. Consequently toxigenic *Clostridia* were directly the reason of tumorous growth as well as through *Escherichia* and *Staphylococci* as they are carriers of plasmid DNA transmitted from *Clostridia*.

## HEMATIC AND BIOCHEMICAL PARAMETERS IN PIGS AT SPONTANEOUS HEPATODISTROFIES IN CONDITIONS OF MODELLING THE PATHOLOGIES OF LIVER

L.A. Makaradze, A. B. Bokuchava, Z. L. Makaradze

Summarizing results of researches it is possible to conclude, that infringement of norms of feeding and maintenance, infringement of exchange processes in an organism lead to the development of hepatodistrophy. Hepatodistrophy is not of infectious origin and it is widely widespread among pigs in Georgia. It is marked at 40 % of the surveyed sows, at 7 % of the pigs received from them and at 5, 1 % of pigs during separation. Experimental modeling of pathologies of liver represents certain interest for the establishment of mechanisms of infringements of metabolism in animals' organism. With the purpose of studying the dynamics of an experimental hepatitis, heptoses and cirrhosis to 12 sows per oral entered oil solution of four-chloride carbon in a doze of 0, 05 ml/kg. Big compensation opportunities of liver are one of the main reasons of difficulties in clinical diagnostics of illnesses of liver. For the definition of functional condition a liver we have decided to approve a test with sulfuric acid copper and reaction of coagulation on Veltman.

## STIMULATING EFFECT OF SHEARING FREQUENCY IN YOUNG EWES ON SKIN INTGUMENT

Sh.A.Lolashvili

The article deals with the research materials of biopsied sheep skin, showing the regularity of their changes under the influence of thrice-repeated shearing for the first 15 months of their life. According to our own experiments it can be concluded, that the positive results depend not only on the inner factors, influencing formbuilding processes of skin (blood supply of skin, metabolism and so on), but also external factors – in the given case stimulating effect of shearing frequency.

## **PECULIARITIES OF GROWTH AND DEVELOPMENT OF CALVES KEPT IN HOUSES WITH IRREGULAR MICROCLIMATE**

**Ts.V. Kiliptari, D.V. Basiladze, N.G.Kurtsikidze, R.S. Mitichashvili**

The article deals with the study of keeping of calves in milking period. It has been determined, that the raising of young stock in half-opened houses in comparison with keeping them in group cages of calf-houses with irregular microclimate does not give considerable differences by the growth data. With this in calves, raised out of doors, gastrointestinal infectious diseases are decreased by 25%, the relative weight of their hearts are increased by 39% and lungs by 23% by simultaneous improvement of morphological indices of blood.

## **CONTENT OF GLUCOSE, CERULOPLAZMIN AND URINE ACID IN THE BLOOD OF DIFFERENT TYPES OF GOATS**

**G.Yu.Marmaryan, L.A.Hovakimyan, A.Gh.Sargsian**

Since the year 2000 intensive work on dairy goat-breeding has been carried out in Armenia. From all the possible data the following have been chosen for this purpose: glucose, ceruloplasmin, urine acid. The results of the experiences undertaken point out to the somewhat low level of the content of glucose in F1 cross-breeds in comparison with zaanen and local animals. By resuming the data concerning the content of urine acid, it must be mentioned that there is an obvious difference between zaanen goats and local types ( $P<0.05$ ), as well as local and F1 hybrids ( $P<0.05$ ), moreover the highest level has been observed in local animals which outnumbers zaanens by 2.2 times, and F1 hybrids by. The information above states the obvious difference in the content of urine acid between local and zaanen goats, which is the consequence of more pronounced reutilizations of purins by zaanen goats.

## **THEORETICAL BASIS OF PARAMETERS OF TECHNOLOGICAL LINE OF CORN-SPIRIT GRAIN**

**V. N. Yavruyan, R. A. Stepanyan, L. V. Yavruyan**

Based on brief review of current status of the issue prospective directions of development were selected. Theoretical prerequisites are shown regarding changes in quantities of initial raw materials- technological processing of corn-spirit grain by technology developed in AAU; mechanical dehydration by centrifuge and processing with multi-hydro-cyclone, gluing and dehydration by special absorber, mixing of liquid fractions of grain with waste fall out. The analytical outputs were obtained regarding quantities of raw materials before and after processing at each stage.

## **APPLICATION CHROMATOGRAPHIC COMPLEX METHODS OF INVESTIGATION ON GEORGIAN WINE**

**I.Sh.Shatirishvili\*, Sh.I.Shatirishvili\*, Sh.K.Gigilashvili\*, G.N.Zakalashvili\*\***

The complex of different chromatographic methods have been applied to investigate the composition of Georgian wine material. The paper describes identification of vapor phase on three detectors, the analysis of phenole-carbonate acids with the method of chromatography in a thin layer, the analysis of inorganic cations and anions of one column variant of ionic chromatography and gas chromatographic analysis of spirit-water mixtures of nozzle columns.

## **A SIMPLE APPROACH FOR THE CLIMATE-CHANGE INTEGRATED ASSESSMENT OF THE POTENTIAL DISTRIBUTION OF PLANT SPECIES ON A REGIONAL SCALE**

**N. Feske**

There is the need to assess possible impacts of the expected climate change on the flora or vegetation. Dependant on the objectives various methods exist to estimate those possible effects. In this study, a simple regional approach for the assessment of the potential distribution of selected plant species under the conditions of different climate change scenarios will be presented and discussed.

## **WOODY PLANTS - PHYTOFILTERS OF ENVIRONMENT POLLUTION IN YEREVAN**

**O.A. Juharyan, N.S. Torosyan**

The article deals with the woody plants as phytofilters of environment pollution in Yerevan. Plants are characterized by an ability to absorb and reduce concentration of toxic elements - heavy metals, chlorine-containing emissions of "Nairit" factory. As a result of scientific research, an assortment of emission-enduring woody plants and shrubs have been identified, which can be used for tree-planting in the "Nairit" technogenic zone.

## **PECULIARITIES OF YEW FOREST STANDS**

**I.T.Tvauri, N.D.Pasurashvili, A.T.Urushadze**

For the purpose to establish regularity of distribution of trees by stages of their height and thickness we have studied separate biogroups of mixed yew stands with beech and hornbeam trees. Analysis of processed material has shown that maximal number of yew trees (47.7%) lies within the limits of 25-27 m height and of 56-60 cm thickness. Maximal quantity of beech-trees (18.6%) in the stand is of 19-21m height and of 40-52 cm diameter. Outside the mentioned limits of stages in both cases the number of trees decreases according to the law of regular distribution of stands. The majority of beech and maple trees are of 13-15 m height and of 24-36 cm thickness. The majority of beech, hornbeam and maple trees is presented at medium and low natural stages of height and thickness that shows the existence of young and middle-aged trees in the stands. Brown forest soil is dominant under the yew forest stands which has been studied. These soils have same morphology and high fertility, though they differ at later horizon.

## **ON THE ISSUE OF FORMING NEW INFRASTRUCTURE OF AGRARIAN SYSTEM IN ARMENIA**

**V.G.Mkrtchyan**

Transition to market relations in the Republic of Armenia resulted in transformation of principles of activities of a great number of the institutions and their management. This refers to the agrarian system as well. The current structure of agrarian system is compared to soviet model as well as to the western one. The research shows that none of them describes adequately the agrarian system of the republic. The paper deals with the factors preventing the development of the agrarian system.

## **GENESIS OF PROBLEMS OF VITICULTURE – WINE MAKING AND DIRECTIONS OF THEIR SETTling**

**P.P. Koguashvili, G.V. Zibzbadze**

The article refers to the contemporary condition of viticulture and wine growing in Georgia. Issues concerning extentions of the area under vineyards, improvement of their assortment consistency and eradication of counterfeit production are being discussed. Suggestions on the necessity of intensifying the government role in the process of protection and support of wine growing and viticulture and combat counterfiting of wine producing are presented.

## **GIBBSITE IN THE CRUST OF WEATHERING OF COASTAL ADJARA**

**A.G.Chernyakhovski**

There are the favorable conditions for the development of the various kinds of crust of weathering in the humid subtropical landscapes of Maritime Adjara, including the formation of reduced ochreous kaolinit-gybbsite ones. The dependence of weathering crust profile on the composition of parent rock, mainly on their postmagmatic hydrothermal propilitization, and local hydrogeological conditions, is shown. Gybbsite in the weathered crust is formed due to the destruction of plagioclase of the weakly propilitized rock fragments. Weathering of chlorite formed under the hydrothermal propilitization leads to generation of stable kaolinite phase. In the propilite eluvia gibbsite mineralization does not proceed.