

TO INFLUENCE OF ZEOLITCONTAINING SUBSTRATES AND FERTILIZERS ON SOME QUALITATIVE INDECES OF AGRICULTURAL PRODUCTS

T.G. Andronikashvili*, T.F. Urushadze**

**Petre Melikishvili Institute of Physical and Organic Chemistry*

In the paper considered questions connected with utilization of natural zeolites of sedimentary origin both singly and on background of mineral and original fertilizers in plantgrowing. Mainly attention in paper give effect their influence on biochemical composition of growing plants – increase nutrition's value agricultural.

SYNTHESIS AND INVESTIGATION OF MICRO FERTILIZERS CONTAINING MICROELEMENTS

**S.L. Urotadze, I. A. Beshkenadze, N.B. Zhorzholiani, M.A. Gogaladze,
T.N. Sakvarelidze, L.D. Gogua**

Petre Melikishvili Institute of Physical and Organic Chemistry

We synthesized environmentally safe fertilizers with micro essential nutrients. Produced compounds are composed of Mg, Mn, Zn, Co, Cu containing citrates with general formula $M \cdot HL \cdot nH_2O$. Based on synthesized compounds we prepared micro fertilizer with conditional name "C-1" and tested in the laboratory and field conditions on wheat crops. Micro fertilizer "C-1" showed positive results in biometric and chemo-qualitative parameters, as well as in harvesting wheat. Micro fertilizer "C-1" also showed positive results in preventing the development and spread of plant diseases (helminth osporosis, etc).

DEFINITION OF THE MINERAL NORMS OF SOIL PHOSPHATES UNDER APPLICATION OF THE DIFFERENT KINDS AND DOSES OF ORGANIC-MINERAL FERTILIZERS UNDER CONDITIONS OF ABSHERON

A.P.Aliyeva

Institute of Soil Science and Agrochemistry NAS of Azerbaijan

The paper gives the influence of organic and mineral fertilizers on revelation of mineral forms of phosphorus in the carbonic grey-brown soils of Absheron under utilization of acidity and alkaline extracts. It is established that the predominant form of phosphorus is calcium phosphate (Ca P) which is distinguished by stability and inaccessibility for majority of the cultural plants under utilization of four-different extra- gents in combination (a method by Chang-Jackson) in the tested soil. The laboratorial analyses on study of ion composition of the soil solutions under application of the different kinds and doses of the organic-mineral fertilizers showed that the forms of phosphorus containing combinations-di, and octocalcium phosphate which are characterized by alkalinity and carbonate were revealed in the tested soil and differences were established in the forms of the soils of phosphates of the given soil.

CYTOLOGICAL AND BIOCHEMICAL CHANGES OF SOFT WHEAT SPECIES OF ARMENIA UNDER INFLUENCE OF γ -IRRADIATION

R.R.Sadoyan, L.A.Minasbekyan

The paper investigates the influence of various doses of γ -irradiation on soft wheat seeds, which has genes of hybrid depression. We attempt to overcome hybrid depression in wheat by the use of radiation. Determined changes in biochemical composition of seeds, as well as the changes in cytogenetic characteristics are also obtained. Changes in the level of mitotic activity, pollen sterility and growth of seven-day seedlings are directly dependent on the dose of irradiation. The correlation between changes in biochemical composition of sub-fractions of the nucleus of the radiation dose and increase of the

chromosomal aberrations has also been revealed.

MECHANISMS OF TRANSFORMATION OF Fe IN OVERMOIST MINERAL SOILS

Yu. N. Vodianitsky

In mineral soils under the influence of over-moistening considerable changes of composition take place mainly owing to the transformation of iron compounds. Gleization is not the only process which takes place in over-moist soils. Olivization and hydro metamorphosis processes are totally distinguished from it. Eluvial gleization is accompanied by taking out of iron from profile, and at the same time the reddishness of soil reduces and brightness increases. Reductive gleization is expressed in accumulation of Fe(II)-minerals, often of dark color, when not only reddishness but brightness also decreases. In Fe(III) reduction not only biochemical, but also biological mechanism takes place with bacteria iron-reduction. This requires changes in formulation of the process of gleization.

REAL HUMIDITY FADING AND ITS ENERGETICALLY EQUIVALENT PARAMETER

L.A. Itriashvili, Kh. L. Kiknadze, E.S. Khosroshvili

In article examine questions of definition critical for normal development plants humidity. On the basis of the analysis of the numerous facts sheet it is established, that definition "fading by humidity" by multiplication of the maximal hygroscopic factors 1,34 do not give humidity of real results. It is shown, that 1,34 MG actually identically of flighty connected water, and humidity wilting contains also water not concerning to category. Reasonable, that real criteria size can be receiver by definition energetically equivalent for all soils moisture rates which is being a zone of forces of connection of water with soils corresponding 300 kPa. As required rates use maximal a molecular moisture capacity proves.

THE CHANGE OF MEADOW-CINNAMONIC COMPACT SOILS UNDER THE INFLUENCE OF DEEP TILLAGE

R.K. Mardaleishvili, M.V. Tvalavadze, M.R. Mardaleishvili

The results of unfavorable properties of meadow-brown compacter soils of Georgia have been considered in the article. When comparing ordinary arable variant with fields were deer tillage (0,4m) with organic fertilizers шы applied, the change of weight by volume, filtration factor and regime can be observed. The capacity of field crops increases only by 20-30%. These measures are preventing compacting processes of the soils for 4 years.

AMPELO-DESCRIPTIVE CHARACTERIZATION OF THE UZBEK TABLE GRAPE VARIETIES INTRODUCED IN NAKHCHEVAN AUTONOMOUS REPUBLIC

V. M. Kuliev, M. K. Musaev

The paper gives the ampelographic investigation of 4 Uzbek table grape varieties introduced in Nakhchevan Autonomous Republic. During the investigation the basic phenological phases of development, fruitful parameters and evaluation of adaptation were studied. The paper gives the productivity and economic efficiency of introduced grape varieties in comparison with standard grape variety Bandi. The recommendations have been given to use Uzbek Muscat, pink Tayfi, Parkent and Kara janjal in cultivation to increase productivity of various table grape varieties in Autonomous republic in the future.

Influence of mineral fertilizers and over-grassing on the crop yield and feed quality of trampled

pastures

B. Kh .Mezhunts

The paper is devoted to the study of the state of trampled foothill pastures of Ararat valley of Armenia and the effectiveness of different measures of their superficial improvement. The production rate, proportion of meadow plants, crude protein (CP), digestible organic matter (DOMD) and digestible energy (DE) contents were determined. It has been shown that the investigated pastures have low production rate (9 c/ha) and feed quality (CP – 85 kg/ha, DOMD – 515 kg/ha, DE – $9.8 \cdot 10^9$ J/ha), as well as marginal amount of legumes ($\approx 3\%$). The effect from the applied improvement measures as a whole was not higher: different combination of mineral fertilizers increased production rate by 24-62%, the parameters of energy and nutritive value – 24-69%; the over-grassing of pastures by legumes increased the yield and nutritive value insignificantly, meanwhile the proportion of legumes was the highest (10%); relatively higher effect was observed from the implementation of full mineral fertilizers ($N_{60}P_{60}K_{60}$) on the ground of over-grassing, where the yield of pastures was increased by 71%, the legume proportion – 7.6%, the contents of CP, DOMD and DE – within 69-88%.

PROBLEMS OF CULTIVATION OF SOME WILD EDIBLE VEGETABLE PLANTS

A. Sh. Melikyan, R.N. Nazaryan
Armenian State Agrarian University

Wild edible plants, which Armenia is rich in, are very important from the point of view of filling specific composition of plants used in food. Among them are field falcaria (*Falcaria vulgaris Bernh.*), turnip rooted chervil (*Chaerophyllum bulbosum L.*) and curled sorrel (*Rumex crispus L.*). Investigations were conducted for agro-biological and phonological traits and bio-measuring characteristics were given for these three types of plants based on field observations. At the same time, the experimental trails were established and the observations were continued. As a result, the cultivation complex technology was offered to organize the production which will provide high yield with high quality. The qualitative and chemical composition of the yield and other important traits were investigated.

VALUATION OF RELIABILITY OF AMELIORATIVE PUMPING STATIONS

E.I. Rustamov

The paper describes the method of reliability evaluation of ameliorative pumping stations depending on their group affiliation. The paper also depicts the succession of reliability calculation of pump sets and their optimum number. It was determined that during the design works of facilities and pumping stations their performance reliability was not taken into account. As a result, the quantity of pump sets in operating facilities was more than it was required. Moreover, it was revealed that in applicable regulatory documents reliability of pumping stations is not evaluated qualitatively and tolerable reliability levels are not developed.

RESEARCH OF WORK OF INCLINED CONVEYOR TSN-160 WITH A HYDRO DRIVE

T. Yu. Mamedov

The process of work of the inclined conveyor by a hydro drive for export of manure from various humidity is analyzed. It is established that application of a hydro drive on the inclined conveyor enables to change speed of a course of movement of the conveyor and to optimize a mode of export of manure weight from various humidity. The hydro drive enables to reduce metal consumption of transfer of movement of 156 kg by one conveyor.

RELAXATION OF THE MAIN COMPONENTS OF THE SECOND RANK RESIDUAL MACROTENSION INFLUENCED BY THE DOUBLE ULTRASONIC PROCESSING

L.H. Azizbekian, S.V. Gasparian

The present research work suggests the method of treating the ultrasonic waves, which provide total or partial relaxation of the second rank tension of the process in machines. According to the investigations the double ultrasonic treating passing through the axes of the given symmetry (first of all through X-s, then Y-s) activates the banned outlined and helical dislocations, making them easily removable and redistribution of macrotension is carried out with the help of sliding mechanism in atomic surfaces.

HISTOLOGICAL STUDY OF THE EFFECT OF NEMATODE-BACTERIUM COMPLEXON ON THE STRUCTURE AND VITAL ACTIVITY OF CABBAGE MOTH (*Pieris brassicae* L.) LARVAE

G. S. Kvinikhidze, G. A. Kakulia, M. A. Lortkipanidze, M. S. Kokhia
Institute of Zoology of Ilia University

Recent studies of the biological methods of controlling agricultural insect pests are of special consideration. Cabbage moth larvae (caterpillars), affecting cabbage leaves, harm this important vegetable. In this connection we have carried out trials on spraying cabbage moth (*Pieris brassicae* L.) larvae with suspension of entomopathogenic nematodes (EPNs) of the genera *Steinernema* - species *Steinernema carpocapsae*. Results of our experiments have shown that 48 hours after spraying with *S. carpocapsae* suspension death of haemolymph cells, degradation of fat-body and decay of cells of all organs and tissues of cabbage moth larvae are observed.

FASCIOLOSIS IN GEORGIA

Sh.O. Potskhveria*, L.M. Zirakishvili**

**Georgian State Agrarian University*

***Solomon Virsaladze Institute of Medical Parasitology and Tropical Medicine*

In 2000-2008 454 cases of fasciolosis were observed in Georgia, which makes on average 50,4 people per year. Among the population fasciolosis is more frequently registered in West Georgia (59,9%) than in East Georgia (40,1%). The most unfavorable epidemiological situation regarding fasciolosis, is observed in Imereti region, in the cities of Tbilisi and Kutaisi, where the index of invasion from the total number makes 49,1%, 32,6% and 12,3% correspondingly. The main factor of the communication of fasciolosis invasion is kitchen herbs which are widely used raw in food. Their invasion by adoleoscaria is caused by the use of irrigation ditch waters for irrigation which originate from irrigation reservoirs and ponds situated in the focus of fasciolosis. Fasciolosis is spread almost everywhere. Extensiveness of Invasion (EI) in cattle with *fasciola* makes 59,3%, among them in lowlands – 73,4%. In West Georgia these indexes make, correspondingly, 61,9 and 80,7%, in East – 56,3 and 64,6%. The most unfavorable regions regarding the fasciolosis in cattle are those situated on the Black Sea Coast (80, 5%), Samegrelo (73,8%) as well as regions adjacent to the rivers Alazani (70,4%) and Kura (68,0%). In Georgia cattle is mostly infested with *fasciola* at the age of three or older (83,3-93,3%). Seasonal dynamics of EI in cattle is not characteristic.

MAIN NEMATODOSES OF DIGESTIVE TRACT IN RABBITS AND STRAGGLE AGAINST ITS

M.A.Mosidze

The paper deals with the main nematodoses of digestive tract in rabbits in Georgia: passalurosis, trichocephalosis, trichostrongylosis. These diseases are spread everywhere in Georgia. The index of invasion extensity in rabbits with *passalirus* makes – 29,7%, with *trichocephalus* – 27,6% and with *trichostrongylus* – 19,9%. In climatic conditions of Georgia the above-mentioned diseases are not characterized by the seasonal dynamics of invasion extensity. The maximum invasion extensity with these helminths is reached at the age of 7–12 months. In epizootic process of all these helminths the factors of invasion transmission are invaded floors and feed manger.

APPLICATION OF SELENIUM IN AGRICULTURAL FOWL NUTRITION

M. K. Kurashvili, E. G. Melikia

The paper gives the data of selenium deficiency in fowl organism and its prophylactic methods. Measures to be taken for selenium deficiency prophylactic is to add selenite or selenite sodium and at the last stage Sel-Plex in fodder. The paper also gives the data of selenium toxicosis. The authors of the research recommend carrying out regular analysis of feed consisting of selenium. The optimum dose of selenium in feed for fowl is 0.1-0.3mg/kg, less than 0.1mg/kg is insufficient, while more than 0.3mg/kg is toxic according to the authors of the research. Currently in many European countries it is common to add 0.5mg selenium in 1 tone fowl feed.

COMPOSITION AND PROPERTIES OF ESSENTIAL OIL OF LEMON ARTEMISIA

N. Sh. Baghaturia, E. A. Uturashvili

Composition and properties of essential oil of Lemon Artemisia grown in Georgia, are given in the paper. It was stated that essential oil of Lemon Artemisia is rich in tzentralem and linololom, which shows that it is possible to use this oil as natural fragrant. Keeping raw material in refrigerator conditions in the polyethylene bag makes it possible to increase the content of essential oil, on average, by 14 %.

KINETICS OF CONSUMING CARBOHYDRATES BY YEAST OF SORT SACCHAROMYCES

G.J. Daraselia, A.Sh. Supatashvili

Contents of quantity of reducing and not reducing sugars in grape and water-melon juices are investigated. Kinetics of consuming sugars by yeast *Saccharomyces vini* and *Saccharomyces chodati* is established. Growth phases, development and accumulation of spirits are determined. It is proved, that culture *Saccharomyces vini* fermented carbonhydrates twice more intensively, than *Saccharomyces chodati*.

EXPLOSIVE CHEMICAL REACTIONS IN SOLID BODIES

H. Mkhitaryan, G. G. Arzumanyan, N. G. Avdalyan

This paper considers the study of exothermic chemical reactions underway in solid bodies during explosion on Bridgman anvils. Reactions of explosive interaction phenyl-propanoic acid and its methyl ether with potassium hydroxide on Bridgman anvil in conditions of single-axis compression. The explosive reactions of conversion of 3-bromine- 1, 3, 5 – tritretbutyl -6-oxo-cyclohexadiene-1, 4, as well as interaction 2, 5 – ditretbutyl- 3, 4 – dihydro-cyclohexadiene – 1, 5 with water and aluminum. It is shown that the reaction completely proceeds in the original tablet of the substance at the moment of explosion and not in the scattered powder after the explosion. It has been shown also that the field of dissemination of the reaction starts with the periphery of the tablet and not from its center.

CONCERNING METABOLIC PROCESSES AND GROWTH CONNECTION UNDER DIFFERENT VERDURE PRESSURE OF *Quercus macranthera*

V.A. Davtyan, V.V. Kazaryan, J.O. Hovakimyan

The method of regulating the verdure number on the stumps was applied effective rehabilitation of felling in 1993-1994 oak-groves in Northern Armenia in some variants. It was turned out that verdures number regulation is reflected on their assimilation ability and carbohydrate – nitrogen exchange. The greatest activity of photosynthesis is noted in variants with 2-3 verdures. Simultaneously it is observed slender convert of soluble-sugars into starch and high content of albuminous nitrogen in them. This phenomenon immediately affected on current growth and leaf surface indices. The maximum value of these parameters are also observed on the stumps with 2-3 verdures. The verdure loading has a complex effect on morpho-physiological condition of verdures which is directly stipulated by root-leaf integration level.

DENDROFLORA OF ADJARA (ADJARA FLORISTIC REGION)

Z.K. Manvelidze*, N.V. Memiadze*, D.Sh. Kharazishvili*, N. I.Varshanidze**

*** Batumi Botanical Garden**

**** Batumi Shota Rustaveli State University**

In the area under review, 185 taxa belonging to 104 genera and 58 families were identified. Spermatophytes contained 11 Gymnospermae and 174 Angiospermae taxa. The richest families are Rosaceae with 39 taxa, Leguminosae and Ericaceae with 9 taxa; Fagaceae with 8 taxa; Aceraceae, Oleaceae and Corylaceae with 6 taxa; Salicaceae and Betulaceae with 5 taxa. The richest genera are Rubus (12 taxa); Sorbus (7 taxa); Acer, Quercus, Rosa and Rhododendron (6 taxa). The rates of taxa included in certain phytogeographical regions were as follows: Euxinian element- 49 taxa – 26,5%; Asian element-31 taxa- 16,8 %; Euro-Siberian 28 taxa-15,0%; Mediterranean 17 taxa - 9,4%; European element-12 taxa - 6,5 %; N. America -6 taxa - 3,1 % and 42 taxa - 22,7% multiregional or of unknown phytogeographic origin. The life form spectrum of the taxa was as follows: Trees-65 taxa-33%; Shrubs-120 (with 6 lianas-67%. The alien flora is presented by 35 taxa - 19 % (adventive-3, invasive-3, subsponaneous-22, naturalized-7). The endemic flora is presented by 25 taxa - 13,5 % (Caucasian-6, Georgian -4, Colchetian -8, Adjara-Lazetian-6, Adjarian-1) 23 taxa included in Red List of Georgia; 3 taxa included in IUCN Red List.

INVESTIGATIONS OF *CRYPHONECTRIA PARASITICA* (Murrill) Barr.

T. Gokturk* Y. Aksu**

***Artvin Coruh University**

****Artvin Regional Forestry Management**

Chestnut branch cancer (*Cryphonectria parasitica* Murr. Barr) 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 Autonomous Republic of Georgia 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.

NEW RESEARCH TRENDS IN AGRICULTURE

N.I. Karkashadze, Sh. I. Chalaganidze

As a result of society development, scientific thinking has also transformed. The new methods and ways are established in research, among them is “system researches” where “synergetic research” is taking a leading role. In this paper this trend of research is discussed which could be used in agriculture. Some of the appropriate examples are also given.

SPECIFICATIONS OF EMPLOYMENT IN THE ECONOMY OF ARMENIA

F.N. Mailyan

The paper covers the issue of employment in the Republic of Armenia. It discovers the reasons of structural changes of employment and results of this process. The paper also analyses the structure of employment at the educational level. It focuses on analyses of standard employment and results of growing nonstandard employment.

FUEL-ENERGETIC BALANCE OF GEORGIA: TRANSFORMATION AND TENDENCY

T.E. Kandelaki, D. I. Chomakhidze

The study of the energy balance of Georgia is the objective of the presented paper. For this purpose the development of entire fuel and energy complex for the last 48 years has been analyzed. It covers actual parameters for 30 years including the Soviet period (1960-1990) and the years of independence (1991--2008). The study demonstrated that fuel and energy balance in Georgia from 1960 to 2008 was always negative. In particular years, the demand of the country was met with the local production resources as follows (in %)1960 – 31.2; 1970 – 14.6; 1980 – 45.1; 1990 – 10.2; 1995 – 37.2; 2000 – 47.5; 2005 – 39.8; 2006 – 37.6; 2007 – 40 and 2008 – 39.5.Thus, in the recent period the tendency of gradual decrease of the deficit is evident.

WATER INTENSITY OF ECONOMY AND EXPLOITATION INDEX OF WATER RESOURCES OF GEORGIA

Sh.N.Andghuladze, T.A.Lagidze, T.A.Sharashidze

The paper gives the results of the analysis of water intensity of Georgian economy and water exploitation index (WEI) in the state. It has been estimated that specific water expenditure per 1000 USD of GDP totals 65 m³, which is significantly higher than that in developed states. This testifies the availability of certain reserves for amelioration of the structure of water use and reduction of water capacity of GDP of Georgia. Determiner was WEI, which was estimated to be around 2%, pointing to unstrained regime of the water use. Recommendations are given for amelioration of the level of the state management of water resources in Georgia.

SOCIAL DEVELOPMENT AND DIRECTON OF POVERTY DECREASE IN AZERBAIJAN

Y.A. Abbasova

The paper analyses the condition of social development of the republic. Its reasons and the level of social security of the population are established. The separate scientifically-proved offers of the ways of overcoming the above condition are given. As a result of researches the development of social processes in Azerbaijan for 2001-2007 has been studied; the ways of improvement of a standard of living of agricultural population are analyzed.

POSSIBILITES OF PERFECTION OF GEORGIAN ECONOMIC AND POLITICAL RELATIONS (FROM THE INDEPENDENCE DAY IN 1991 UP TO AUGUST EVENTS 2008)

V.V. Kakabadze*, M.V. Papunidze**
**Aviation University of Georgia*

The article deals with the possibilities and evolution of the development of Georgian foreign economic relations and politics from the Day of Independence until the attempt of its re-annexation.