DEVELOPED AGRICULTURE AS A GUARANTEE OF THE INDEPENDENCE

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

Ivane Javakhishvili Tbilisi State University, Petre Melikishvili Institute of Physical and Organic Chemistry
****Agricultural University of Georgia, Mikheil Sabashvili Institute of Soil Science, Agrichemisty and Melioration***
*****Agricultural University of Georgia***

Agriculture is mainly based on two interrelated and interdependent branches: plant-growing and animal husbandry. These branches can serve as a foundation for the development of other agronomic trends. Currently in the world there is a tendency to shift from plant-growing to the construction of multi-storey factories (greenhouse) plants. In discussing the issue of "Plant-growing under of a roof", where there are opportunities to control all the factors affecting the growth and development of plants should also point out that in these closed systems are easily solved issues related to the environment and clogging with the highest concentration of energy and technology for the production units square. At present have developed new version of a closed ecological system - a three-story circular building allows to combine both plant-growing, poultry farming, animal husbandry and fi sh-farming. Another trend, which can be successfully developed is the use of organo-zeolitic fertilizer with prolonged action. The basis of these fertilizers are natural zeolites of sedimentary origin, large deposits of industrial scale are well represented in the various regions of Georgia. The great advantage of organo-zeolitic fertilizer unlike mineral fertilizers is also the fact that they are characterized by so-called "aftereffect", and the ability to have a positive effect on the growth and development of plants after application to the soil for several years (two or three years, and sometimes more). From animal husbandry branches, in Georgia is in the fi rst place, it is necessary to develop the poultry farming, as it is one of the most precocious and dynamic branches of agriculture.

COMBINING ABILITY ANALYSIS OF DIFFERENT YIELD ATTRIBUTES IN *FLUE CURED VIRGINIA (FCV)* TOBACCO

Ayaz Khan*, Imtiaz Ali*, Naveed ur Rahman, Javid Iqbal***, Aamir Iqbal****, Anees Afsar*******

Department of Plant Breeding and Genetics, KPK Agricultural University
****Department of Pharmacy, University of Peshawar***
*****Department of Environmental Sciences, University of Peshawar***
******Center of Excellence in Biotechnology and Microbiology, University of Peshawar***
*******Department of Agronomy, KPK Agricultural University***

All F1 hybrids of seven lines of Flue Cured Virginia (FCV) tobacco obtained from complete diallel crosses during July 2007 along with their parents were raised in non replicated block during March 2008 under fi eld conditions at Pakistan Tobacco Board, Mardan-KPK-Pakistan. Signifi cant GCA mean squares of combining ability were recorded for all traits except internodal length and leaves plant-1. Similarly, signifi cant SCA mean squares were recorded for all traits. Days to fl owering, green weight plot-1, cured leaves kg-1, cured weight plot-1 and yield were signifi cant for reciprocal effects. Cultivar KHG22 recorded highest desirable positive GCA effects for leaf area, leaves plant-1, green leaves weight plot-1 internodal length and yield ha-1 while days to fl owering, green leaves kg-1 and cured leaves kg-1 were desirable negative effects and reported as best general combiner. KHG24 showed desirable positive and negative GCA value for internodal length and days to fl owering. Speight G 126 showed positive GCA effects for days to fl owering, leaf area, green leaves weight plot-1, internodal length, yield ha-1 and

negative for leaves plant-1, green leaves kg-1 and cured leaves kg-1. The cross KHG22 x NC606 showed highest desirable positive SCA effects for yield, leaf area, cured leaves kg-1, leaves plant-1, green leaves weight plot-1, green leaves kg-1 and internodal length. In reciprocal crosses desirable positive effects was recorded in Speight G 28 x NC606 for yield ha-1, leaf area, cured leaves kg-1, days to fl owering, leaves plant-1 and green leaves kg-1.

FEATURES OF MICROBOCENOSES FORMATION IN VIRGIN AND CULTIVATED CHERNOZEMS OF UKRAINIAN STEPPE NATURE RESERVATION (DEPARTMENT "KHOMUTOVSKA TSILYNA").

O.L.Tonkha, O.Y. Bykova, T.V.Ievtushenko

National University of Life and Environmental Sciences of Ukraine

The number of eco-trophic and taxonomic groups of microorganisms were studied in ordinary chernozem of the Ukrainian Steppe Nature Reservation (Department "KhomutovskaTsilyna"). It was established that due to insuffi cient crop residues and energy material income in the soil, the number of humate-destructive microorganisms in arable land plot increases 4 time sand 1.8 times compared with the absolute and mowed virgin plots respectively (layer 0-40 cm).

THE INFUENCE OF THE EROSION PROCESSES ON MOUNTAINOUS CHERNOZEMS FERTILITE IN THE KEDAK DISTRICT OF AZERBAIJAN

R.A. Sadigov

Institute of Erosion and Irrigation of ANAS

The soils of the Kedabek district mountainous chernozems are exposed to different degree of erosion process. Accounting that relief of the locality is mountainous in this zone the surface erosion occupies the largest area. Erosion, being formed in the mountainous chernozems, destroys soil structure, infl uences fertility parameters, reduces useful effect of farm lands. As a result of the researches, the infl uence of the erosion process on soil fertility was studied and detailed information was given with the purpose of their improvement. The research showed that increase of the specifi c and capacious weight was observed in the soils of the experimental area depending on texture. Reduction of humus and nitrogen indices that were confi rmed in the erosion process was determined over all profi le.

WINTER PASTURES OF THE ARID ZONE OF EAST GEORGIA: VALUE, CONDITION, IMPROVEMENT AND RATIONAL USE

G. D. Agladze

Academy of Agricultural Sciences of Georgia

The paper describes the materials on the characteristics of winter pastures in arid zone of eastern Georgia, the current state of their economic condition, land typological structure, yield and productivity of vegetation, grazing value for livestock, mainly sheep farming of the country. The issue of improvement of semi-desert and dry steppe winter pastures has been analyzed. In addition to individual methods of surface improvement (fertilization, weed, harmful and toxic plant control, sowing relevant xerophytic grasses, shrubs and subshrubs, other agrotechnical measures), the most effective solution is to gradually carry out fundamental improvements, create irrigated land, mostly hayfi elds. The requirement for

receiving a high effect is widely used systems of rational use.

THE INFUENCE OF TWO-YEAR REST OF HEAVILY TRAMPLED PASTURES ON BIOPRODUCTIVITY OF GRASS ASSOCIATIONS

B.Kh. Mezhunts

Centre for Ecological-Noosphere Studies of NAS of Armenia

The paper is devoted to the problem of recovery of vegetation and raising the biomass productivity of trampled foothill pastures of Ararat Valley of Armenia. It has been shown that 2-year rest of overgrazed experimental plots as a whole positively impacted on increase of biomass of above- and underground parts on both annual and perennial grass species. It was also established that the extent of influence of this measure was mainly determined by biological peculiarities of species studied. In addition, the biomass yield and energy yield potential per unit area of studied plant associations with predomination of annual and perennial forms increased correspondingly by 1.4-1.9 and 2.4-2.9 times.

THE QUALITY INDEXES OF WILD GROWING SAINFOIN SPECIES (*ONOBRYCHIS MILL.)* OF ARMENIA*

M.A. Navasardyan

Centre for Ecological-Noosphere Studies of NAS of Armenia

Irrational use of mountain ecosystems of Armenia resulted in an acute reduction of the proportion of legume forages which are distinguished with high feed quality. That is why the investigation of this systematic group of plants, apart from the ecological, has also important agronomical meaning. In the paper the results of studies on biochemical composition and some macro- and microelements of 10 wild growing sainfoin species of the country are presented. It has been shown that some wild growing species exceed signifi cantly the cultivated ecotype by the content of crude protein, crude fat, phosphorus and calcium. The studied sainfoin species substantially differ from each other by absorption capacity of microelements, which is evident from obtained data on coeffi cients of biological absorption.

THE GENETIC EFFECTS OF THE FOOD ADDITIVE FROM *GINKGO BILOBA*

E. A. Yolchuyeva

Institute of Botany, NASA

The genetic and cytological effects of the plant extract obtained from the leaves of *Ginkgo biloba*, as well as its mixture with vinpocetine have been studied. The studied complex contained 24% fl avonoids, 6% of lactones and 8% vinpocetine (EGB + VP). The horse bean (*Viciafaba*)cells were used as a test object. The aim of this study was to assess the potential of studied plant extracts as a food additive or food supplement with gene-protective properties. For this purpose, the infl uence of plant extracts on the spontaneous and induced by aging and gamma rays mutation process has been studied. The processes of cell proliferation were also controlled. The level of mutation of chromosomes in *Viciafaba* cells and the nature of cell proliferation in control and after exposure (natural aging, gamma irradiation, and the studied extracts) was used as indicator of infl uence. The results of experiments have shown that

an extract of *Ginkgo biloba*, and its mixture with vinpocetine in all studied doses did not increase the level of mutations. Cell division is also not affected. It was found that the test extract and its mixture with vinpocetine have antimutagenic, geroprotective and radioprotective properties. Identifi ed geneprotective and geroprotective activities of extracts *Ginkgo biloba* in combination with vinpocetine can be considered as a potential dietary supplement having protective properties.

THE CONTENT OF MOISTURE AVAILABLE FOR PLANTS DEPENDING ON AGGREGATION AND DENSITY OF THE SOIL

A.Ts. Nazaretsyan, U.K. Kazaryan, G.A. Hamparyan

Branch of Armenian National Agrarian University, Scientifi c Center of Soil Sciences, Agrichemistry and Melioration after Hrant Petrosyan

As a result of scientifi c laboratory researches of heavy-loamy, aggregated and densifi ed black soils of Shirak region it is found that in the course of decrease of aggregation and rise of density, occurs reduction of moisture available for plants, that is connected with reduction of marginal fi eld moisture capacity, increasing of HSW specifi c wilting humidity related with reduction of general porosity, quantity of large porous and with the growth of capillaries with the diameter of >5mk. It is also found that the change indensity from 1.0to 1.2g/cm3 does not affect water properties of soil, in particular moisture available for plants.

CALCULATION OF SCALE FACTORS AT THE DESIGN OF THE INVESTIGATED PROCESSES

B.B. Basilashvili, Z.K. Makharoblidze, I.M. Lagvilava

Agricultural University of Georgia

Taking as an example process of shock wear it frequently occurs in knots and interfaces of movable details and mechanisms of agricultural machines. However, as compared to other processes, the question of shock wear of these objects is not studied up-to-the-mark and this unforeseen factor often results in distortions at the calculation of similar knots or machine on the whole. On the basis of dimensional analysis of main factors and parameters, infl uencing the process of shock wear, their dimensionless correlations are received and by a decision made from these correlation of equalizations similarity, certain scale factors were determined allowing to study a process in model-transformation and received results can be spread on the similar phenomena. The experiments carried on the special laboratory setting with the application of model samples, allow to determine the authenticity of value of scale coeffi cients.

TENSION CONDITION OF THE THICK-WALLED PIPES UNDER THE INFLUENCE OF PRESSURE OF THE MOVING LIQUID

A.R.Minasyan

Armenian National Agrarian University

The paper deals with the problem of determination of thick-walled pipe dynamic tension depending on the liquid speed, taking into account plastic tensions. Final formulae are worked out for determination of the liquid speed and the dynamic normal tensions dependence. The results of the numerical calculations as well as the dependence of the liquid speed on the dynamic tension values and the strength of the

material are introduced. A new method was elaborated for theoretical determination of dynamic tension along the thickness of the admitting plastic deformation caused by the liquid movement within.

INCREASE OF PRODUCTIVITY OF THE SOIL-CULTIVATING UNITS BY MEANS OF OPTIMIZATION OF OPERATIONAL PARAMETERS

P. A. Tonapetyan

Armenian National Agrarian University

The dependences, which allow to achieve maximum productivity and minimum traction resistance of the soil-cultivating unit, by optimization of the working speed of movement and width of capture are obtained and studied in the article

INNOVATIVE METHODS OF ENVIRONMENTAL EDUCATION AND THE MANAGEMENT OF THIS PROCESS IN HIGHER EDUCATION IN UKRAINE

G.A. Belavsky*, T.V. Saenko, O.N. Nagorniuk*****

****State Ecological Academy of Post-graduate Education and Management of the Ministry of Ecology and Natural Resources of Ukraine***
*****National Aviation University***
******National University of Life and Environmental Sciences of Ukraine***

The ways of modernizing of environmental education at high schools during competency paradigm and fi nal phase of the Decade of Education for Sustainable Development (2011-2014). In pedagogical experiment proved that the use of active innovative educational technologies, in particular ecocreative model preparation of future specialists of technical specialties universities, based on the use of systematic and systemic independent cognitive activity of students, i.e. on the use of interactive and polylogue methods, "brainstorming", greatly expanding their ecological outlook, effectively forming ecological thinking, consciousness, ethics, culture, respect for the opinions of others, as implemented in the practical implementation of the learning process of environmental knowledge.

SOIL BIOLOGICAL ACTIVITY IN THE ORGANIC AND CONVENTIONAL FARMS IN GADABAY DISTRICT

N.T. Ibrahimli

Azerbaijan State Agrarian University

The aim of this study was to evaluate microbial activity in soils under conventional and organic farming systems. Soil samples were collected from pilot farms under conventional management, organic management in Gadabay district. Soil microbial activity and biomass were signifi cantly greater in organic compared with conventional farm. Soil bulk density decreased three years after adoption of organic system. Soil organic carbon was higher in the organic farms than in the conventional. The soil under organic agricultural system presents higher microbial activity and biomass and lower bulk density than the conventional agricultural system.

SCREENING OF GENETICALLY MODIFIED PLANTS BY DUPLEX PCR

T.V. Kutateladze*, I.I. Gabriadze*, N.T. Datukishvili *,, M.V. Karseladze*, T.M. Zaalishvili***

I. Beritashvili Center of Experimental Biomedicine

****Ilia State University***

Two duplex polymerase chain reactions were developed for screening genetically modifi ed plants. The certifi ed reference materials as dried powders containing 0-5% Roundup Ready soybean and maize MON-810 were used for optimization and validation of PCR methods. The genomic DNAs were extracted by Qiagen DNeasy plant mini kit and analysed using species-specifi c and GMO-specifi c uniplex PCR. The PCR products were evaluated by agarose gel electrophoresis. Different combinations of the GMO-specifi c primers were verifi ed for their suitability for duplex PCR. Two duplex PCRs were developed and optimized, that allow simultaneous detection of two common transgenic elements, such as: caulifl ower mosaic virus (CaMV) 35S promoter and Agrobacterium tumefaciens nopaline synthase (NOS) terminator. The developed duplex PCRs are effective tools for rapid and cheap screening of transgenic plants.

QUALITATIVE STRUCTURAL FEATURES OF PHYTOPLANKTON COMMUNITY IN THE LAKE SEVAN AND ITS CATCHMENT BASIN

A.A. Hovsepyan, T.G. Khachikyan, L.R. Hambaryan, A.E. Martirosyan

Institute of Hydroecology and Ichthyology of the Scientifi c Center for Zoology and Hydroecology of the National Academy of Sciences of Armenia

Increasing pollution levels in Lake Sevan catchment basin is the main cause of anthropogenic eutrophication. It is generally known that the environmental state of the reservoir catchment area directly affects the processes occurring there. In order to characterize the current ecological status of Lake Sevan and its catchment basin, phytoplankton community composition has been investigated. Furthermore, the specifi c aim was to identify similarities in the qualitative composition of the algal community in Lake Sevan and its main tributaries according to Jaccard similarity index, and to show the possible infl uence of qualitative parameters of rivers on catchment basin to form fl oristic composition of phytoplankton community in Lake Sevan.

CARBON FOOTPRINT ESTIMATION RESULTING FROM BEEF CATTLE AT THE CENTRAL IRRIGATED VALLEY, BIO-BIO REGION, CHILE

J. E. Celis*, N. Sandoval*, G. Wells**

Universidad de Concepción, Facultad de Ciencias Veterinarias
****Universidad de Concepción, Facultad de Agronomía***

Carbon footprints have become a common measure of environmental impact in the agricultural and food production industries. While the value of cattle to world food production is well known, new research shows that beef industry has a great impact on the environment through greenhouse gases (GHG). The main GHG from livestock are those related to C and N global cycles, as methane (CH4), carbon dioxide (CO2) and nitrous oxide (N2O). Farm based studies indicate that there are large differences among countries and regional variations in cattle production and related GHG emissions. In Chile, no local emission factors are available in livestock, so is quite diffi cult to determine GHG inventories. The objective of this study was to determine the carbon footprint on 1 kg product basis (liveweight) of

two beef cattle production systems: pasture and feedlot. This work was based on empirical information provided by the Intergovernmental Panel on Climate Change (IPCC). Sources of GHG emissions included were enteric fermentation, manure management, direct and indirect N2O soil emissions, cultivation of organic soils, liming, fossil fuel used in farm labors, and fertilizer production. In both productive systems, the highest emissions corresponded to enteric fermentation with 40.7% and 36.4% for pasture and feedlot, respectively. Carbon footprint of cattle on pasture was 29.4 kg CO2-eq/kg live weight, whereas cattle in feedlot produced 23.9 kg CO2-eq/kg live weight. It means that extensive beef cattle production at farm level impacts more on the problem of the global warming than intensive beef cattle production.

TRICHINOSIS IN GEORGIA

Sh. O. Potskhveria, N. G. Ghlonty

Agricultural University of Georgia

In Georgia trichinosis is spread in focuses, mainly in lowlands, foothills and forest zones. 1,7% of investigated pigs (1,9% – in East Georgia, 1,5% – in West Georgia) are infested by trichinosis. The age of infested pigs is six months and older. There is no distinct seasonal dynamics of extensive infestation of pigs by trichinosis. However, it is mainly observed in colder periods of a year – October-March. In Georgia, the major rile in epizootic process of trichinosis is played by synanthropic animals such as rodents.

BREEDING, SELECTION AND DYNAMICS OF THE QUANTITY OF TROTTING BREED HORSES IN UKRAINE

I.A. Suprun*, A.A. Shynkarenko**

****National University of Bioresources and Nature Use***
***** Kiev Hippodrome***

The analysis of the quantityof trotting breed of horses in Ukraine during 2005-2011 was conducted. It is shown that in Ukraine nowadays Orlov trotting breed in spite of its unique status hasa number of complications. In the hippodrome tests the amount of Orlov trotters isnot more than 40%, because of the advantages of the Russian trotting, American standartbreed and French breed in playfulness and precocity. By the state of 1.01.2011 in Ukraine there are 4 stud farms and 10 pedigree studfarm registered on breeding of horse of Orlov trotting breed. In the indicated pedigree economies 911 heads of horsesare counted, including 54 stud stallion- and 300 mares. It was stated that the quantity of Orlov and Russian trotting breeds diminished in the last 5 years by about 20%. It was also noted that due to systematic selection-breeding work precocity, playfulness, exterior indicators in the Orlov trotting breed was improved in Ukraine.

PRODUCTION OF LACTOSE HYDROLYZATES WITH THE USE OF YEAST β-GALACTOSIDASE *SACCHAROMYCES FRAGILIS*

A.K. Tsereteli*, L.P. Daushvili*, T.Sh. Buachidze, N.G. Butskhrikidze****

Agricultural University of Georgia, Sergi Durmishidze Institute of Biochemistry and Biotechnology Georgian Technical University

The paper shows that β-galactosidase of yeast *Saccharomyces fragilis* can conduct hydrolysis of lactose in thickened cottage cheese whey at 500C within several hours without losing enzymatic activity. It was revealed that after processing of cottage cheese whey by ionites, it is possible to conduct hydrolysis

of lactose and process of a condensation of whey simultaneously that will allow to reduce quantity of applied enzyme preparation of β-galactosidase *Saccharomyces fragilis* in whey and also will reduce the price of the received end-product. It is assumed that the received enzyme preparation from *Saccharomyces fragilis* can be successfully used for hydrolysis of lactose of whey.

PATHOLOGICAL STATUS OF CHESTNUT STANDS IN GEORGIA

B. L. Tavadze*, A. Sh. Supatashvili*, D. Rigling,**
K. Sotirovski* , Ts. I. Mamukashvili*, S. T. Chitia***

Agricultural University of Georgia, Vasil Gulisashvili Forestry Institute
****Swiss Federal Institute for Forest, Snow and Landscape Research***
*****Faculty of Forestry-Skopje University***

The article is devoted to the study of present pathological status of chestnut forests in Georgia (Caucasus) in connection with distribution chestnut blight, to decline of chestnut stands and to found hypovirulence strains for biocontrol against of this disease. The itinerary investigations were carried out in 2010 – 2011 in some district of Georgia. Below are given data about of present pathological status of chestnut forests in some districts of Georgia.

CONTEMPORARY MODELS OF REGULATING FOREIGN ECONOMIC RELATIONS OF THE STATE

D. V. Harutyunyan

M. Kotanyan Institute of Economics National Academy of Sciences of the Republic of Armenia

The paper investigates contemporary models of regulating foreign economic policy of the state. The experience of other countries shows that in regulating the current account implementation of required reforms increases the effi ciency of performance of the economy; however, the implementation of those reforms requires trade liberalization and lowering levels of protectionism. More attention should be paid to the impact of trade reforms on budget and macroeconomic stability; required infrastructure and legislative base, and programs promoting export need to be created and need to be designed. Export promotion and growth in the long-run will create new opportunities for structural transformation and will ensure economic growth.

PROBLEMS OF THE AGRICULTURAL POLICY OF GEORGIA

P.P.Koghuashvili

Georgian Technical University

The article gives new vision of development of agriculture in Georgia which means correction of economic policy, defi nition of priorities, ideological provision of the population, knowledge, eradication of defi ciency of credit resources, insurance of crops and formation of purchasing system of the received product. Attention is paid to the formation of the integrated system of associations and cooperatives, formation of the organizations of production service, price control with the use of market mechanisms, improvement of tax system and stimulation of export of production.

THE ROLE OF ECO-ECONOMIC ASSESSMENT OF THE FOREST RESOURCES IN THE CONCEPT OF THE SUSTAINABLE DEVELOPMENT

Z. D. Giorgaya

St.Andrew First-Called Georgian University of the Patriarchy of Georgia

The paper deals with the need of determination of the general economic value of natural resources, in particular forest, the protective and recreational functions of which are estimated. The methodology of the economic assessment of these functions is given. On the example of the forests of Samtskhe-Javakheti region the cost of their functions is determined by deposition of dioxide of carbon.

THE ROLE OF PRECIOUS METAL COINS IN CONTEMPORARY CIRCULATION

M.G. Muradyan

Central Bank of the Republic of Armenia

It is known from the history of money circulation that precious metal coins were in circulation yet in the BC period. The circulation volume and the role of such coins constantly changed with time. They acquired new qualities resulting, especially, from the circulation of banknotes and non-preciousmetalcoins.This paper presents themodernroleofpreciousmetalcoin production and circulation.