

THE EFFECT OF MINERAL FERTILIZERS ON NUTRIENTS CONTENT IN SOILS UNDER STRAWBERRY

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The paper gives the results of investigations of the influence of foliar application the complex fertilizer ESPO-combitop and ESPO-top on the dynamics of nutrient content in soil under strawberry in the conditions of pellicle greenhouses.

NATURE MANAGEMENT ZONING OF UPPER SVANETI GEOGRAPHICAL ENVIRONMENT

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On the basis of analysis and revision of natural and anthropogenic factors geographical environment zoning of Upper Svaneti was carried out for the first time, which distinguished the regions (subregions), differing from one another by their hypsometrical location, landscapes spatial location, agro-climatic features and by their forms and scale of anthropogenic impact, also by the quality and nature of agricultural usage of their territory. The distinguished units are united in two agro-climatic belts.

AGRICULTURAL USE OF SOILS OF MODERATELY DRY SUBTROPICS OF SOUTH CAUCASUS AND PROBLEMS OF THEIR PROTECTION

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Agricultural value of soils of moderately dry subtropics of Transcaucasia in recent years has considerably increased. However, the low level of study of these soils and the opinion which has developed about them, prevent agriculture experts to use them rationally. Even now, at drawing up the large-scale soil maps, the meadow-gray-cinnamonic and meadow-black soils are not separated from gray-brown and black soils, most often they are allocated under the general name – chestnut and chernozem soils, and meadow-cinnamonic in some cases is called alluvial – meadow. In work are resulted recommendations about rational use of soils of moderately dry subtropics of Transcaucasia in which is proved reorientation of agriculture with the account of properties and ecological features of soils; for increase of profitability of agriculture is recommended cultivation of valuable and highly profitable cultures.

ABOUT THE THERMAL CHARACTERISTICS OF SOME TYPES OF THE SHIRVAN STEPPE SOILS

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In this work the results of researches of thermo-physical properties of the Shirvan steppe soils of Azerbaijan are presented. It is established that thermo physical characteristics of soils naturally change with change of humidity, density, texture. Experimentally received regularities of change of thermo physical characteristics of the soil depending on various parameters of soils found physical interpretation. Parametrical dependences of thermo-physical characteristics of soils against a set of properties of the soil are given, in particular, organic and mineral substances, capacity of absorption, physical clay, etc.

OPTIMIZATION OF CULTIVATION CONDITIONS OF QUINCE VEGETATIVE STOCKS *IN VITRO*

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The optimum sterilization conditions for primary explants of quince plants were selected. The maximum explants sterility was determined on quince BA 29 in variant with using 0,6 % silver nitrate solution at exposition 45-60 sec. The mineral and hormonal content of nutrient mediums for quince plants proliferation stage were modified. The optimum BAP (2 mg/l) and kinetin (3,0 mg/l) concentrations were offered which increase quince types propagation coefficient. The optimum nutrient medium for rhizogenesis *in vitro* of quince types was M-S (modified), which contained 9,8 mkM IBA and 10,0 mkM NAA. The authentic correlation dependence between auxins content in nutrient medium and basic and additional roots quantity – $r = 0,87$ and $r = 0,67$ was established.

METABOLISM OF SUGARS AND PHYTOHORMONES IN LEAVES OF PLANT SPECIES OF GENUS *AESCULUS L.* DURING STRESSFUL INFLUENCE OF HORSE CHESTNUT LEAF MINER (*CAMERARIA OHRIDELLA DESCHKA ET DIMIĆ*)

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In horse chestnut and Baumannii horse chestnut leaves, during infructescence and fruit ripening phases, sugar, cytokinin and auxin contents decrease and quantity of abscisic acid stressful hormone increases compared to red horse chestnut or red buckeye plants not capable of horse chestnut leaf miner infestation. The genus *Aesculus L.* plant reaction was detected in phytohormonic balance biochemical indicator changes. The high level of it was observed in leaves of red horse chestnut or red buckeye. In horse chestnut and Baumannii horse chestnut plant leaves capable of HCLM infestation, more than twofold reduction of biochemical indicator Bp was recorded. Sucrose is the basic sugar transport form in leaves of *Aesculus L.* plant species. The greatest amount of sucrose was recorded in red horse chestnut or red buckeye leaves, the lowest – in Baumannii horse chestnut plant leaves.

EXPEDIENCY OF APPLICATION OF ZEOLITE AND ITS MIXTURES ON FERTILIZERS OF GREEN BEAN YIELD

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The rational use of natural zeolites from Noyemberyan region of Armenia in agriculture has been studied. As it is well known the composition and properties of Armenian diatomite is more high-quality compared with foreign ones, so the study of its rational use in agricultural farm sand determination of its optimal concentrations for increase of yields is an important task for Armenia. The effect of natural zeolites and its mixtures with different fertilizers on the yield of green kidney beans has been investigated. It has been established that the best use of zeolites is its addition to the soil at the rate of 5t/ha which increased green bean yields, raised its resistance to drought and increased protein content in beans.

KINEMATICS OF MECHANISM OF THE PLOW FORCED VIBRATION

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This paper presents the description of the method of work and the mechanism of hinged connection of plow (plough) frames, allowing them to make an oscillating motion along the adjusted parameters. The activator of loadings subjecting to fluctuation of plow frames is the variability of specific resistance of soil and casual firm inclusions in an arable layer. Construction of hinged connection of plow is a four-bar mechanism, which yoke contains a longitudinal elastic element with adjustable rigidity. At forced vibration of one frame, the second (paired) frame also is exposed to vibration thanks to the four-tier mechanism. Vibrations of frames promote reduction of traction resistance of a plow and increase in extent of layer loosening. As a result of the analysis of kinematics of mechanical system the optimum geometrical and kinematic parameters of the four-bar mechanism are established which provide the necessary quality of plowing, with the smallest power expenses.

MODELING OF RUNNING ABILITY INDICATORS OF TANDEM WHEELED SELF-PROPELLED CHASSIS

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Mathematical models for describing the engine, transmission and chassis propeller operation have been defined for modeling and studying of key indicators of tandem wheeled self-propelled chassis running ability, intended for farmers and developed at the level of author inventions by scientists and technicians of the Agricultural University of Georgia, based on its structural scheme, using the methods of the similarity and dimensions theory. In the form of criteria equations the relationship between the investigated parameters and influencing factors has been compiled. The mathematical modeling of running ability indicators of machine-tractor units and including in it components represents the necessary prerequisites of improvement of effectiveness of works on perfection of agricultural equipment and its application methods.

NEW EDITION OF THE RED DATA BOOK OF ARMENIA

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Being a mountainous country with distinct altitudinal zonality, Armenia retains high diversity and endemism of plant and animal species. New edition of the Red Data Book represents an important official document and a guide towards the efficient conservation of Armenia's unique fauna which demands for the large-scale work on the improvement of legislative background, implementation of population monitoring, early detection of imminent threats, and development of the regional strategy of genetic resources conservation. The goal of this article is to present Amphibians and Reptiles included in the new edition of Red Data Book of Armenia.

ABOUT THE SELF-SUFFICIENCY LEVEL OF POULTRY

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In this paper the authors analyzed the impact of the factors that affect the self-sufficiency level of poultry meat based on the national food balances of RA 2001-2011, showed the impact of the change of the share of non-egg-laying hens and the extent of losses on the self-sufficiency level. The share of non-egg-laying hens up to 2009 is computed by the authors based on the aggregated regional data. The analysis shows that there is a strong connection between the studied cases and 36.8% of variations of poultry meat self-sufficiency level is due to joint variations of the factors included in the model.

CURRENT STATE OF MEGRELIAN POPULATION OF THE GEORGIAN HONEYBEE

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In order to maintain authenticity of the Georgian honeybee, massive study – examination of the local honeybee families was carried out in the areas of its traditional distribution. A relatively purely preserved material was revealed. On the basis of the exterior research of worker honeybee samples and economic indicators its current state was determined, which appeared to be similar to the previous analogous values.

OXIDATIVE-REDUCTION FORMATION OF BIOLOGICALLY ACTIVE QUERCETIN AND DIHYDROQUERCETIN (TAXIFOLIN) DURING WINE FERMENTATION AND WINE FORMATION

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Oxidative-reduction transformation of quercetin and dihydroquercetin is studied during alcoholic fermentation of musts made from Rkatsiteli and Tsolikouri wine varieties and also during Kakhetian and Imeretian type wine formation. Alcoholic fermentation was conducted using wine yeasts: *Sacch. vini – Kakhuri 42* and *Sacch. vini – Tsolikouri 13*. The reduction transformation of quercetin into dihydroquercetin during alcoholic fermentation was observed, which is intensified due to the increase of titrable acidity. During wine formation dihydroquercetin is oxidized into quercetin.

IDENTIFICATION OF ACETOVANILLONE (APOCYNIN) FROM WATER-ETHANOL EXTRACT OF THE STEM OF SAPERAVI VINE VARIETY

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Individual substance was extracted by preparation from water-ethanol extract of the stem of Saperavi vine variety. The spectrum examination was done, the melting temperature was determined (114-115°C) and the substance was identified as acetovanillone (apocynin). The characteristics were determined using liquid chromatography (RT – 20,545 min.) and optimal wave length was revealed – 269 nm. The concentration of acetovanillone in the water-ethanol extract of Saperavi vine variety stem was defined as 5.2 mg/l. Antioxidant activity of acetovanillone (EPMR) is 33%. Its content in the stem extract is a positive feature for functional purpose of the target product due to its curative-prophylactic value.

THE LINSEED FLAX PROCESSING PRODUCTS IN THE PRODUCTION OF BAKED GOODS

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The paper dwells on the problem of using the linseed flax processing products in the production of bread and flour confectionery goods of functional purpose. There are studied the raw materials chemistry, fatty acid composition of linseed oil, and an influence of linseed flax processing products on the quality of bread and sugar biscuits. It was determined that polyunsaturated fatty acids prevail in the fatty acid composition of linseed oil, and 52,8-59,4% (of aggregate amount of fatty acids) are accounted for linolenic acid. A positive influence of linseed flax processing products on the quality of wheat bread and sugar biscuit has been determined. The new sorts of bread “Argo” and biscuits “Kolkhida” and “Lazika” have been developed with improved nutrition value.

SYNTHESIS OF THE CHELATES CONTINUING AMINO ACIDS AND CITRIC ACID FOR CREATION OF NEW GENERATION PREMIXES

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Role and importance of the biometals in the living processes have been shown. Priority of chelate forms of biometals over their simple inorganic forms in animal and poultry feeding has been shown. The conditions of the synthesis has been given and chelate compounds containing amino acids methionine (Mt) and glutamic acid (Gl), oxoacid –citric acid (H₄L) with the general formulas: $M_2 \cdot Mt_2 \cdot L \cdot nH_2O$, where $M = Mn, Zn, Fe, Co$; $n = 2-6$. $M \cdot (Mt)_2 \cdot nH_2O$, where $M = Ca, Mg, Cu$; $n=2-4$, and $Ca \cdot Gl \cdot 4H_2O$, $Mg \cdot Gl \cdot 4H_2O$ have been obtained. Composition and individuality of the synthesized components have been established by the method of microelemental analysis and measuring the melting points. Influence of the synthesis's conditions on the composition and properties of the chelate compounds has been shown on the basis of the experiments.

NOURISHING–THERAPEUTIC FEATURES OF THE FEIJOA FRUIT AND THE WAY OF PROLONGING ITS STORAGE

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The paper deals with the chemical composition data of the feijoa fruit. It shows that the feijoa fruit has chemically rich and unique composition that gives an opportunity to use them for food and medical prophylactic purposes as well. In order to prolong the shelf life of the feijoa fruit we used the method of quick freezing. The effectiveness and expediency of the given method for fruit storage have been proved.

RARE AND OTHER REMARKABLE TREES IN NATURE AND CULTIVATION IN GERMANY

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According to the Red List of Germany only *Acer opalus* is classified in the category “Extremely Rare”. But, there are several local endemic *Sorbus* species with a very limited distribution, some only with a single occurrence. They are apomicts originating from hybridization *Sorbus aria* × *Sorbus torminalis* (*S. latifolia* group) or *Sorbus aria* × *Sorbus aucuparia* (*S. hybrida* group). In the Red List they are classified as species for their conservation Germany is particularly responsible. Several of them were incorporated into the IUCN Red List (e.g. as Critical Endangered *Sorbus decipiens*, *S. parumlobata*). In a federal research project 10 species were selected as rare for the investigation of genetic resources. Only two of them (*Quercus pubescens*, *Taxus baccata*) are classified by the German Red List as threatened. Among the worldwide very rare species that have been included in the IUCN Red List are some only rarely cultivated in botanical gardens and arboreta of Germany (e.g. *Abies nebrodensis* of Sicily, *Picea maximowiczii* and *P. koyamae* of Japan), while others (e.g. the Spanish fir *A. pinsapo* or the Serbian local endemic *Picea omorika*) are popular ornamental trees. The only 1994 in Australia discovered *Wollemia nobilis* (less than 100 mature trees survived in nature) due to an Australian propagation program as well as international marketing is in culture since 2005, also in Germany. Examples for species which are extinct in the wild, but preserved by cultivation are *Franklinia alatamaha* (U.S.) and *Sophora toromiro* (Easter Island), also cultivated in some German botanical gardens and arboreta. *S. toromiro* survived

only in some specimens in a few botanical gardens. After its discovering and propagation in the Botanical Garden Bonn, an attempt is made to re-introduce it in its natural habitat on Easter Island. Furthermore the article is dealing with a Champion Tree project of the German Dendrology Society and the Society German Arboretum. In the project a systematic approach was started to register “tree champions”, individuals of native and introduced species and varieties with “thickest” stem (girth). Meanwhile on the project’s website 411 national champions are visible. On European level a so-called European Champion Tree Forum was established 2010 in Belgium, to try also an European approach to remarkable trees in Europe.

TO THE ENERGY OF A PINE TREE

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As a result of a complex analysis of process of growth of a 100 years old pine tree was defined the energy of the current and annual average gain in height, thickness, volume and mass (weight) of a tree during certain interval of time - 10-20-30 years, and also was defined the potential and thermal energies (by means of a formula $\varepsilon = \text{vam}$). It was clarified that the worked out the energy even in small quantity considerably increases viability of a tree. Energy of a tree remains in a tree trunk in the form of the current gain which confirms the law of conservation of energy. As a result of research it was established that the pine tree is not the material, but an energetic body.

ANALYSIS OF BIOFUEL GENERATIONS WITH THE VIEW OF APPLICABILITY FOR GEORGIA

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The article represents the analysis of the present state of the worldwide production of biofuel. Here are given the characteristics of the main types of biofuel and the methods of their extraction, as well as, the classification by generations. In terms of natural conditions, it has been revealed that the most acceptable type of biofuel production in Georgia is biofuel of the second generation.

CASH PROCESSING SPECIFICS IN CENTRAL BANKS OF THE REPUBLIC OF ARMENIA

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Cash is counted and sorted upon return from circulation to the central bank. Sorted out worn banknotes do not return into circulation any longer but get destructed as per the due procedure. Banknotes which are still valid for circulation are packed and prepared to be returned into circulation. Apart from central banks commercial banks also perform cash counting and sorting. In some countries special licensed cash servicing centers and collection centers perform the same operations. Significant factor in raising economic efficiency of organization of cash circulation is the validity (usage) period of currency in circulation. Thus central banks are always focused on issuing high quality currency of longer lifecycle. This article provides an overlook to such issues at the Central Bank of the Republic of Armenia as counting, sorting, destruction, and extension of banknotes lifecycle.

LAND AS A NECESSARY BASE OF NATION'S EXISTENCE

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In the present world problem of the resources increase made more aggravated. In the first this touch the land and especially the agricultural lands, because this more reduce under influence of anthropogenic pressure and this take place on the fast growth of planet population. As a result, majority of countries very look out to question property of agricultural lands and some case mark out with strict regulation. The paper concern to this problem. Author try to analyze situation which created in Georgia and mention to that dangers, what may call full liberization of the land markets. At the same time marked that sale lands to the citizens of foreign countries one of argument – draw investments are deprive logic and with this to interest foreign not increase investments and not help to grow of agricultural farming. Contrary, often buy the land by speculation capital is good means to insert financial resources and it is not interested to produce farming, which increase effectiveness of the land use.

LONG-TERM ENVIRONMENTAL STRATEGY AS A GUARANTEE FOR FOOD SAFETY

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On the basis of generalization of world and regional developments there are close links between food security, agrarian resource, natural resource, development trends and consequences of expected anthropogenic threats. The results of agrarian resource use, nature preservation and short-sighted anthropogenic activities may bring to the understanding that in terms of local and global aspects the solution of food problem is impossible without ecologization of the economy, especially agriculture, environmental protection, formation of the culture of nature preservation.

RECENT TRENDS OF FINANCIAL INCLUSION

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