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2. Annals of Agrarian Science. – 2012. - vol.10, - # 4.
3. Akhali Agraruli Saqartvelo (New Agrarian Georgia). - 2012. - №11., 2013 - 2(22),4(24), 5(25)
4. New Economist. – 2012. - #4, - 2013, - # 1.
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7. The EU Eastern Partnership Programme and Prospects of Innovative Development of Georgia. Tbilisi. – 2011. 238 pp. geo.
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11. Caucasus International University Herald. - 2012
12. Beekeeping. G. Madzgarashvili. Monograph. - 2013
13. Metsniereba da Tskhovreba. – 2012. - #1(5).
14. Multi-Level Innovation Policy and European Integration. Techinformi. – 2010. 312pp., geo.
15. Novation. – 2012. - #10.
16. Results of Study of Farm Loan and Farm Insurance. Pub. House Elkana. - 2010
17. Bulletin of Forestry. – 2012. - #5.
18. Works of Georgian Academy of Economic Sciences. – 2012. – v. 10.
19. Bulletin of National Academy of Sciences of Georgia. – 2011. – v. 5. – #1-3; 2012. – v. 6. – #1, #2
20. Georgian Engineering News (GEN). – 2012. - #4.
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22. Transactions of Technical University of Georgia. – 2012. – #2(484), #3(485), #4(486)
23. The Role of Social Capital in Rural Development of Georgia. M. Muskhelishvili, L. Mezvrishvili, B. Natsvlshvili, M. Elizbarashvili. Monograph. - 2012
24. Subtropical Crops. – 2010. – #1-4
25. Food Safety and Quality. K. Laperashvili, G. Kuchukashvili. – 2011. 143 pp. geo.
26. Collected Papers of Institute of Water Management. – 2012. - #67
27. Bacteriophages and Probiotics – Alternatives to Antiriotics – Intern. Conf. Materials. - 1-4 July, 2012.

11.g9.1. GENERAL PROBLEMS OF AGRICULTURE

11.g9.1.1. Globalization and problems of specialization of Georgia's agriculture. /T. Kavtaradze, M. Kavtaradze/. *Ekonomisti (Economist)*. – 2012. - #1. – pp. 51-58. – geo.; abs. eng.

The work studies the problems of specialization of agriculture under globalization, reviews the stages of specialization development; defines an indicator of specialization at the national and regional levels. According to the indicator, the current level of specialization is comparatively lower than the one existing before the reform, the cause of which should be sought in paying major attention lately to the production of cereal, potato and livestock products, or staple foods. Appropriate measures aimed at raising the level of agricultural specialization and concentration are set out.

Auth.

11.g9.1.2. The country needs a new strategy for developing agricultural industry (main features and peculiarities of the current state of Georgian agricultural industry). /N. Chitanava/. *Works of Georgian Academy of Economic Sciences*. – 2012. – v. 10. – pp. 189-205. – geo.; abs.: geo., eng.

The article deals with such matters as the current situation in the agricultural sector development in Georgia, its main trends, features and characteristics; the cause-and-effect relations having resulted in a systemic crisis; the methodological and conceptual approaches to the development of a new strategy; a need to work out and implement a long-term program for secure and sustainable development of the rural sector.

Auth.

11.g9.1.3. Non-agricultural (urban) land ownership. /D. Egiashvili, A. Meskhishvili/. *Agrarian-economic Science and Technologies*. – 2012. - #3. – pp. 21-28. - geo.; abs.: geo., eng.

According to Georgian legislation, land which is not used for agricultural purpose is considered to be a non-agricultural land. Origination of the right of ownership on a non-agricultural land in Georgia was preceded by privatization of buildings and structures. After adoption of the Civil Code of Georgia (November 25, 1997), which united a plot of land and a building thereon in the concept of a single immovable property and excluded recognition of the plot of land and the building situated on it as two objects of different rights (Civil Code, Article 150), the issue of transfer of non-agricultural plots of land into private ownership became essential. Following are the forms of privatization of State owned immovable property (non-agricultural land): a) auction; b) direct sale and c) direct sale on the basis of a competitive selection. It must be noted that state owned land is not fully registered in Georgia. In case of privatization of land selected by the interested person the land is surveyed and registered in the Public Register in the name of the State or the local government and after that the privatization procedure of the real estate begins.

Auth.

11.g9.1.4. Opinions about land legislation. /A. Meskhishvili/. *Agrarian-economic Science and Technologies*. - 2013. - #1. – pp.37-44. – geo.; abs.: geo., eng.

The study deals with Georgian laws relating to land - real estate matters. The necessity of invalidating definite legal acts and adoption of new laws in this sphere, as well as proposals and opinions on making amendments and addenda to existing laws are given.

Auth.

11.g9.1.5. Natural processes that impede the development of agriculture in Adjara /N. Alasania, P. Naskidashvili/. *Bulletin of the Academy of Agricultural Sciences of Georgia*. – 2012. - #31. - pp. 296-299. – geo.; abs.: geo., eng., rus.

Adjara belongs to the regions of Georgia, where the hazardous natural processes such as erosion, eroding of coasts, events of landslide and avalanche, mudflows, snow slides have been activated in the last decades. The development of geological processes and worsening of the ecological situation greatly affect social conditions of the population and economy of the region. Ref. 5.

Auth.

11.g9.1.6. Prospects for the agricultural sector development in Georgia. /D.Gubeladze/. Metsniereba da Tskhovreba. 2012. - #1(5). – pp. 80-84. - geo.; abs.: geo., eng., rus.

Georgia has a possibility to solve the problem of food security, greatly increase the production of traditional export products, the food processing industry and rural development and employment with the effective functioning of the reclamation fund. Nowadays, the main task is to realize these possibilities practically.

Auth.

11.g9.1.7. The theoretical bases of state regulation of agriculture. /M.Badalyan/. Annals of Agrarian Science. - vol. 10, # 4, - pp.145-147 - rus., abs. eng., rus.

The state regulation of agriculture is analyzed and justified in the article and the theoretical bases for realizing this function are suggested in relation with the specific distinctions of land resources. Ref.3

Auth.

11.g9.1.8. Principles of base index determination for cadastral valuation of plough lands.

/A.Ezekyan/. Annals of Agrarian Science. - vol. 10, # 4, - pp.151-153 - rus., abs. eng., rus.

Cadastral valuation is performed according to the defined sequence: land-valuating zoning of territory, soil appraisal and grouping, processing of numerous data for land valuation. The above mentioned values are required to define the size of land tax, rent-charge and regulation of land relations. Fig. 2, Ref.4

Auth.

11.g9.1.9. Formation of rental income and the order of its establishment for land valuation purpose. /A. Ezekyan/. Annals of Agrarian Science. - vol. 10, # 4, - pp.154-157, - rus., abs. eng., rus.

Land cadastral valuation provides acquisition of required and true data on land capability of agricultural holdings. It is performed based on the land aggregate rental income. The valuation is required to solve numerous production and managerial targets aiming at efficient use of land resources. Fig. 4, Ref.5

Auth.

11.g9.1.10. Accounting issues of biological assets. /A.Tshughuryan, D.Gevorkyan/. Annals of Agrarian Science. - vol. 10, # 4, - pp.158-160 - rus., abs. eng., rus.

The paper deals with the issues related to the accounting by an enterprise of the biological transformation of living animals or plants (biological assets) for sale into agricultural produce or into additional biological assets. Basically, fair value can be measured reliably for a biological asset only on initial recognition for such market-determined prices. However, during the future period of exploitation, the fair values are not available and consequently suggested alternative estimates. In such a case, IAS 41 requires an enterprise to measure that biological asset at its cost less than any accumulated depreciation and any accumulated impairment losses. Once the fair value of such a biological asset becomes reliably measurable, an enterprise should measure it at its fair value less estimated point-of-sale costs. Ref.4

Auth.

11.g9.1.11. The Agrarian sector needs a strong base of scientific-innovation technologies.

/O.Shatberashvili/. New Agrarian Georgia. – 2012. - #11. – pp.6-7. – geo.

Activities of Irish Agriculture and Food Development Authority – TEAGASC and one of its research centers - Ashtown Food Research Center are reviewed. Testing of products is possible at the highest level here. Impressive tools of biophysical, biochemical, microbiological and other types of analysis are available. Highest qualification scientists and engineers work in the Centre. Food industry representatives fulfill product testing, establish parameters, etc. The center has training courses for farmers, food industry workers, small business assistance programs.

N.Chkhaidze

11.g9.1.12. The role of social capital in rural development of Georgia. /M. Muskhelishvili, L. Mezvishvili, B. Natsvlishvili, M. Elizbarashvili/. Centre for Social Studies. - 2012. - 130 pp. - geo.; abs.: eng.

The aim of the research carried out in 2010-2012 was to study economic relations in villages, collection of qualitative and quantitative data, statistical analysis of data obtained by sociological survey, institutional analysis of the field of relationship. As a result of the research, explored were the socio-economic and political processes that defined the current situation in villages in Georgia. The concept of social capital was analyzed and methodological principles for its determining were formulated, cooperation and social capital in rural areas were described and conclusions and recommendations for further reforms in the rural area were made.

M. Kopaleishvili

11.g9.1.13. EaP and innovation processes in agriculture. /O.Shatberashvili/. The EU Eastern Partnership Programme and Prospects of Innovative Development of Georgia. – 2011. – pp. 125-145. - geo.; abs.: geo., eng.

The rapprochement of economic policies between Georgia and the European Union, which represents an objective of the second (economic) platform of EaP, is impossible without consideration of the EU's agricultural policy and development of a corresponding policy for Georgia. At present, Georgia lacks such a policy. The realistic process ongoing in agriculture, in general, and in the agricultural innovation system, in particular, differs radically from the European one. Notwithstanding obvious achievements, they, in the EU, believe that the uniform agricultural policy needs to be changed, mainly in the direction of innovation and sustainability, so that it could meet new challenges, such as: the sustainable development under conditions of climate change; the development of organic agriculture; the escalating prices on food products; the necessity of biofuel production, etc. The next decade will see an increase in the assistance to farmers in the direction of innovation activities, such as the compliance with the environmental, food safety and security, and other standards. The innovation activities in rural development (not agricultural) will be enhanced. Such a scenario increases the importance of all components of an innovation system: education, research, the accumulation and transfer into production of commercialized knowledge. The components of the innovation systems available in Georgia are degrading by all parameters (research institutions, demonstration farms), whereas under a market economy conditions new necessary components (e.g. agricultural advisory service) are not created. This trend runs counter to the European and world practice, and recommendations of international organizations. Because of the above, the possibilities of not only the European integration but also of the revival of agriculture are called into question. In EU, at the national and regional level, there are many useful for Georgia models. The EaP can be successfully used for studying them. Fig. 4, Tab. 2.

Auth.

11.g9.2. AGRICULTURAL ECONOMY AND FARM ORGANIZATION

11.g9.2.1. Ways to improve structure of agricultural lands on the wetland soils of Kolkheti Lowland. /V. Shurgaia, I. Zaqidze, L. Kekelishvili/. Collected Papers of Institute of Water Management. – 2012. - #67. – pp. 198-202. – rus.; abs.: geo., eng., rus.

The article presents information on the state of the agricultural complex within the reclaimed area of Kolkheti Lowland. One-sided specialization of subtropical crops production failed to bring forth harmonious development of agricultural. Taking into account demand for wheat and the resultant increase in prices, also in order to provide population with staple food products a structural reform of agricultural lands in the central part of the Lowland is proposed. Increase of lands under cereals and forage crops at the expense of perennials requires the use of drainage techniques designated for one-year plants, given heavy permeable soils in this part of Kolkheti, such as the arrangement of a "bed" or combined drainage against the background of trenching. Ref. 3.

Auth.

11.g9.2.2. Diversification of farms in East European and Central Asian countries. /E. Kharashvili/. Economics and Business. – 2012. - #2. – pp. 95-108. – geo.; abs.: eng.

The article proves the necessity of diversification of the farms in East European and Central Asian countries, as well as in Georgia. The new trends and possibilities currently taking place in the course of diversification are analyzed and the main reasons of diversification identified. Based on the analysis of the rates of incomes and poverty of the farmers in the East European and Central Asian countries, including Georgia, a conclusion is made that overcoming the poverty and increasing the welfare of the rural population depend directly upon diversification of the farms. The article proposes the ways of diversification both within and out of the borders of rural areas. According to the bibliographic studies and experts' assessments, diversification of farms is considered as a real tool for increasing an added value in the agrarian sector. The article provides the rates of use of the workforce in the farms by regions, with and without diversification thereof. A level of expansion of the farms is assessed by the harvest diversification Index, while the latter is analyzed in reviews of the Eastern European and Central Asian countries and Georgia. The Article reviews a correlation between the harvest diversification Index (DI) and the added value on one hectare per one farmer, in the agricultural sphere. On the basis of analysis of diversification of the farms, the existing problems are identified and the recommendations for their settlement are provided. Fig. 9.

Auth.

11.g9.2.3. Concept for developing the agrarian sector of West Georgia's subtropical zone. /G. Glonti, S. Guruli, B. Dolidze/. Subtropical Crops. – 2010. – №1-4. – pp. 362-363. – geo.; abs.: eng., geo., rus.

Analysis of economic indices is given on the basis of a detail study of 100 typical family farms. The project of the program for developing commodity branches of plant growing is worked out, generalization of which is possible for subtropical zone of Georgia. Ref. 4.

Auth.

11.g9.2.4. Economic priorities of Georgia agriculture. /R. Kopaliani, V. Ugulava, T. Jobava/. Subtropical Crops. – 2010. – №1-4. – pp. 364-366. – rus.; abs.: eng., geo., rus.

The main directions of developing country's subtropical agriculture introducing resource saving intensive technologies, industrial specialization and cooperation, perfection of social infrastructure and system of specialists' professional qualification are given in the work. Tab. 1.

Auth.

11.g9.2.5. Analysis of the existing economic level of farming in Ozurgeti Region and main directions of its development. /N. Galogre, G. Glonti/. Subtropical Crops. – 2010. – №1-4. – pp. 367-369. – geo.; abs.: eng., geo., rus.

The economy level of plant-growing fields in Ozurgeti region is analyzed and prospects of further development of the said fields are determined on the basis of the reserves for production enhancement and efficiency improvement revealed as a result of the appropriate research findings. Tab. 1, Ref. 4.

Auth.

11.g9.2.6. Peculiarities of conversion of agriculture to capitalist relations. /A. Pavliashvili/. Ekonomisti (Economist). – 2012. - #1. – pp. 59-64. – geo.; abs. eng.

Against the background of the explicit data, the work "Peculiarities of Conversion of Agriculture to Capitalist Relations" reveals progressive changes that took place in agriculture of Georgia in the second half of the 19th century caused by gradual establishment of capitalist relations. Ref. 5.

Auth.

11.g9.2.7. Research of efficiency of economic structure and the necessity of structural reforming of agrarian sector of national economy of Azerbaijan. /M. Ibrahimov/. Ekonomisti (Economist). – 2012. - #3. – pp. 60-65. – rus.; abs. eng.

The gives an analysis and research of structural reforming of national economy by the example of agrarian sector of Azerbaijan Republic. The analysis of the economic structure of gross national product of agriculture of the country, economic activities of agricultural enterprises and farms is

given. As a result of the analysis, the structural problems, which decision can influence further growth of agricultural production, are identified. A need for consolidation of some industrial structures and further structural transformations on the basis of development of specialisation, cooperation and integration is outlined. Ref. 6.

Auth.

11.g9.2.8. Agriculture insurance in Georgia. /S. Tabatadze/. Ekonomisti (Economist). – 2012. - #4. – pp. 93-95. – geo.; abs. eng.

The risk factors characteristic of Georgian agriculture and a strategy for their management are established. Special attention is paid to insurance of agricultural sectors. A regression model is used to study the problem. Ref. 3.

Auth.

11.g9.2.9. Educational function and prospects of agro-tourism development in Georgia. /N. Sharabidze/. Ekonomisti (Economist). – 2012. - #4. – pp. 68-71. – geo.; abs. eng.

The article deals with the rich tourist potential of Georgia and prospects of development in the country of such tourist types as eco-tourism, agro-tourism, mountain tourism, wine tours, rural tourism, etc., which is the requisite factor for development of regional economy. Special attention is given to agro-tourism, its cultural and educational function and role for developing the tourist economy. In addition, the importance of agro-tourism as a means of involving the youth and provoking in them an interest in agricultural matters is outlined. Ref. 5.

Auth.

11.g9.2.10. Conceptual approaches to the organization of the investment activity of agricultural enterprises. /V. Slavin/. Ekonomisti (Economist). – 2012. - #4. – pp. 72-75. – eng.; abs. eng., rus.

The evaluation of assessment of the effectiveness of investment projects of agricultural enterprises is defined. The consequences of any risky decisions in evaluating the efficiency of investment projects are analysed. Ref. 6.

Auth.

11.g9.2.11. The formation of effective resource support of agricultural producers through the development of financial and credit relations in Ukraine. /L. Tihonchuk/. Ekonomisti (Economist). – 2012. - #4. – pp. 76-80. – eng.; abs. eng., rus.

In the article the basic problems of financial and credit relations in the agricultural sector of Ukraine at the present stage of development are revealed and the ways to achieve effective resource support of agricultural producers through the development of financial institutions are discussed. Ref. 7

Auth.

11.g9.2.12. Priority areas of improving the system of state regulation of business in the markets of food products. /E. Tubolec/. Ekonomisti (Economist). – 2012. - #5. – pp. 43-49. – eng.; abs. eng., rus.

The priorities for improving state regulation of business in the markets of food products are identified; the macro-and microeconomic factors that influence the development of food markets are revealed; the priority objectives of state regulation of business in the food markets in the medium term are determined. Ref. 5

Auth.

11.g9.2.13. Global practice of regulation and maintenance of food security and possibilities of its application in Ukraine. /E. Romanec/. Ekonomisti (Economist). – 2012. - #6. – pp. 22-26. – eng.; abs. eng., rus.

The global practices of regulation and support of food security are studied. A methodology for estimating sustainable mechanisms to ensure physical accessibility of food supply to population are justified. Ref. 6.

Auth.

11.g9.2.14. Increasing competitiveness of local products. /T. Kunchulia, P. Koguashvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 300-303. – geo.; abs.: geo., eng., rus.

Liberal trade policy and membership agreement with the World Trade Organization created favorable conditions for imports of subsidized products produced by using high technologies, which in its turn entailed disappearance of Georgian products from the market. Because of the above, the problem of raising competitiveness of Georgian products became very critical. Under the current conditions, the problem cannot be solved without a serious support from the state.

Auth.

11.g9.2.15. Sectoral strategy for production and processing of agricultural products. /T. Kunchulia, K. Mchedlishvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 304-308. – geo.; abs.: geo., eng., rus.

Nowadays, there are many factors in the country that impede development of sectorial programs and their reliability. Therefore, identification of future parameters using classical methods does not make any sense. In addition, given prioritization of agriculture and formation of a billion-worth agricultural fund, it is necessary that a respective sectoral strategy be developed and the efficient ways of agricultural production and processing be set on its basis for at least 5-10 years.

Auth.

11.g9.2.16. Considerations on co-operation of lands. /R. Pakhuridze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 309-311. – geo.; abs.: geo., eng., rus.

The importance of cooperation and setting up of cooperatives for consolidation of lands is discussed.

Auth.

11.g9.2.17. Using clusters to restructure Georgian depressed regions. /Z. Gudushauri, E. Baliashvili, I. Jelia, M. Kharkheli/. The New Economist. – 2012. - # 4. – pp. 43-46. – geo.; abs.: geo., eng.

Clusters are considered as a way of revival of Georgia's depressed regions: Racha-Lechkhumi, Samtskhe-Javakheti, Mtskheta-Mtianeti, Kartli and Kakheti in part. Basic productions (services) are identified for each region and the necessity of creation and financing of clusters by the government based on them is discussed. In Racha-Lechkhumi tourism is considered as a market sector, in Samtskhe-Javakheti – cattle breeding and its eco-safe products, in Kartli - ecologically safe vegetables, in Mtskheta-Mtianeti – eco-safe fruits and vegetables, and in Kakheti i-winegrowing and organic winemaking.

Auth.

11.g9.2.18. The problems of agriculture in Georgia. /M. Kutelia/. The New Economist. – 2012. - # 4. – pp. 62-66. – geo.; abs.: geo., eng.

Development of agriculture is of vital importance for Georgian economy. Nowadays it faces numerous problems and challenges; there are many things that must be improved. 46.8% of Georgian population lives in rural areas, but it produces only 9.3% of GDP. There are some main reasons causing this, such as lack of motivation to expand production, high interest rates, and limited access to credits, outdated technology, and insufficient knowledge of new production methods. The greatest problem is that agricultural lands are divided into many small parcels. It is important to develop agricultural insurance and make it affordable for small farmers. According to most experts, Georgia has a significant agricultural potential that needs to be better utilized. Growth in agriculture would also have a very positive social impact. Further development of the sector is thus critical in terms of the country's security and stability.

Auth.

11.g9.2.19. Georgian path towards the European Market. /M. Kakhidze, T. Shengelia/. The New Economist. – 2012. - # 4. – pp. 67-71. – geo.; abs.: geo., eng.

The European market is extremely important to Georgia, as the one third of its foreign relations is related to the European Union. Despite the fact that Georgia benefits from the EU's Generalized

System of Preferences (GSP), the structure of export has not changed significantly. Apparently the non-tariff barriers play immensely more important role. It is crucial that the government not only formulates the strategies but also translates it into reality and makes a step toward European integration. It mainly concerns the institutional reforms which are to provide removal of all the non-tariff barriers to the entry to European market for Georgia. The process of standardization, the issue of technical requirements and harmonization of customs legislation are of great importance.

Auth.

11.g9.2.20. Cheap fuel for farmers. /P. Koguashvili, T. Kunchulia/. The New Economist. – 2013. - # 1. – pp. 27-29. – geo.; abs.: geo., eng.

In Georgian agriculture the area of crops and plants, cattle, all kind of agriculture products and food security indicators are sharply reduced. Uncultivated area makes over 55-60% of arable land. This is caused by price increase of material resources necessary for reproduction, such as fertilizers, chemicals, agricultural machinery and fuel. Many countries return total (Sweden) or partial (U.S., Germany, etc.) price of fuel purchase to the farmers who are involved in government programs. Subsidies by indirect taxes such as excise duty and value added tax for purchased diesel fuel is most acceptable for Georgia. Hence, a transparent mechanism should be worked out and relevant law should be passed by the Parliament.

Auth.

11.g9.2.21. Private property as a determinant of economic freedom. /R. Gerliani/. The New Economist. – 2013. - # 1. – pp. 35-43. – geo.; abs.: geo., eng.

Private property is a major issue/element of the world economy as well as the economic policies of different countries. Private property is the basis for the creation of a free market economy. Economic history of the development of the world economy has experienced many forms of properties. However, for the most part, only private property reinforces the freedom and economic freedom. Both, economic freedom and private property issues are particularly interesting and relevant to the post-socialist space, including Georgia, because in the process of changes in political and economic structures followed by the transformation of state property into private one. Therefore, the need to protect private property, the dynamic nature of its in calculating the relevant indicators of the economic freedom study by international organizations. In conclusion, the overall situation of private property of a country's assets affects key indicators of economic freedom, and overall economic growth. Ignoring private property is a situation in which the free choice and the condition for a free market are restricted, and without them economic freedom is considerably lower. In summary, private property and economic freedom are closely related to each other and are mutually complementary.

Auth.

11.g9.2.22. Rules of World Trade Organization in the field of competition. /S. Petelava/. The New Economist. – 2013. - # 1. – pp. 65-69. – geo.; abs.: geo., eng.

The article discusses the history of the organization's formation and questions concerning Georgia. The role and importance of WTO for liberalization, equity and economic development are underlined. The rules of competition, taxes, anti-dumping and compensation measures that do not affect competition are discussed. The issues regarding trade relations of the WTO member states that are regulated by international treaties are considered as well as the problems faced by Georgia in connection with the above. Problems of harmonization of national laws with those of the WTO member states are highlighted.

Auth.

11.g9.2.23. The principles of building a classifier of accommodations suitable for rural and agro tourism. /T. Khutsishvili, D. Maisuradze, M. Kavrelishvili/. Caucasus International University Herald. – 2012. - pp. 198-210. - geo.; abs.: eng.

Rural and agro tourism are increasingly developing in industrialized countries. The criteria of selection of suitable accommodations are an important part of this process. The authors have built a classifier for rural and agro tourism accommodation points. The criteria involve 3 main components, each being defined by several parameters: a) the area adjoining the rural and farm house (parameters: landscape, distance from a populated point, sight-seeing places, etc.); b)

technical conditions and facilities of rural and farm houses (parameters: repair, electric power supply, heating, air-conditioning, water supply, bathroom, toilet, furniture, kitchen, parking, greenery, etc.); c) possibilities of additional services (parameters: additional meals, emergency, Internet, child care, participation in agricultural work, additional tours, etc.) Evaluation of each component is accomplished by grading of each parameter and by subsequent calculation of percentage with respect to the maximal grade of this component.

Auth.

11.g9.2.24. European innovation policy in agriculture. /O. Shatberashvili/. Multi-Level Innovation Policy and European Integration. – 2010. – pp. 245-280. – geo.; abs.: geo., eng.

Notwithstanding remarkable achievements, it is considered in the European Union that the common agricultural policy needs to be changed, mainly in the direction of innovation and sustainability because it is no longer possible to retain the "hothouse" conditions for farmers through subsidies, on the one hand, and there is a need to respond to new challenges, on the other hand. These are: sustainable development under global warming and climate change; development of organic farming; growth of prices on food; the necessity of bio-fuel production, etc. In the next decade, assistance to farmers in the direction of innovation activities will increase; these include: compliance with the environmental, food safety and other standards. Rural development (non-agricultural) innovation activities will be enhanced. Such a scenario is to enhance all the innovation system components - the significance of education, research, accumulation and putting into practice of the commercialized knowledge.

Auth.

11.g9.2.25. Results of study of farm loan and farm insurance. /D. Charkviani, T. Chincharauli, E. Shatberashvili/. Elkana. – 2010. – 48 pp. – geo.; abs.: eng.

This research studies recent conditions of farm loan and farm insurance in Georgia and develops general recommendations on the improvement of agricultural financing and insurance. After gaining independence the collective farms system in Georgia was dissolved and agricultural land was gradually privatized. This made agriculture to be mostly dominated by small subsistence farmers lacking accesses to rural credit and insurance. Current agricultural financial market and insurance is in the embryonic state that greatly hinders increase of production in the agricultural sector of Georgia. In the framework of the research 142 different size farms in five regions of Georgia (Adjara, Guria, Kakheti, Samegrelo, and Samtskhe-Javakheti) were studied with main aim to reveal demand on agricultural loan and insurance as well as farmers' awareness of agro credits and insurance. At the same time, semi-structured interviews with representatives of financial institutions (commercial banks, microfinance organizations, credit unions) and insurance companies were conducted to study their strategies, vision and perceptions on agro financing and insurance in Georgia. Critical review of Eastern European experience of transforming centrally financed agricultural sector of economy to the market-based one in order to make comparative analysis for elaboration of general recommendations for Georgian policy makers was the integral part of the research. The study revealed a number of similar problems facing East European countries during the transition period in the 90s with current condition of Georgian agricultural financing and insurance. Tab. 28, Ref. 13.

Auth.

11.g9.2.26. Agroinsurance and agrocrediting systems and general context of agricultural development in Georgia. /E. Shatberashvili, B. Alasania/. Biofarmer (Special edition). - 2011. - # 1 (16). - pp. 4-11. - geo.;

The agricultural insurance and crediting problems in Georgia are considered, their solutions are proposed. Two types of problems are defined: problems related to the development of farm economies (production) and product sales problems. Four types of primary production problems are considered: 1. General problems, 2. Agricultural infrastructure, 3. Access to knowledge, 4. Availability of investment capital. Infrastructural and marketing problems are considered as agricultural production problems. Are defined the ways of overcoming existing problems. Tab.1.

M. Kopaleishvili

11.g9.2.27. The development of agricultural insurance in Georgia. /I. Akhalbedashvili/. Biofarmer (Special edition). - 2011. - # 1 (16). – pp. 12-22. - geo.;

Agricultural insurance models operating in the world are considered: state-controlled (Greece), based on cooperation between the state and private sector (Spain and Portugal), controlled by private sector (Germany, UK). It is noted that agricultural insurance in Georgia encompassed only unsuccessful attempts of vine-growing insurance, and recently appeared wheat-growing and livestock insurance offers on the insurance market. Conditions hindering development of the insurance in Georgia, insurance schemes are considered, are given examples of insurance of the different types of products, and are defined insurance risks. Fig. 4, Tab. 3, Lit. 2.

M. Kopaleishvili

11.g9.2.28. Agricultural credits in Georgia: risks and opportunities. /M. Tokmazishvili/. Biofarmer (Special edition). - 2011. - # 1 (16). - pp. 23-36. - geo.;

It is noted that the share of the agricultural sector in total bank loans is up to two percents, the share of foreign direct investments is very low (2007 - 0.8%, 2008 - 0.5%, 2009 - 1.2%). Main barriers of agricultural credit line development are named and the possible schemes are proposed. Tab. 2, Fig. 4, Lit. 18.

M. Kopaleishvili

11.g9.3. SOIL SCIENCE

11.g9.3.1. Soil characteristics management using a polycomplex. /L. Itriashvili, Kh. Kiknadze, E. Khosroshvili, M. Shavlakadze, K.Dadiani/. Collected Papers of Institute of Water Management. – 2012. - #67. – pp. 121-127. – geo.; abs.: geo., eng., rus.

A mechanism of a polycomplex impact on soil characteristics and the resulting changes are considered. The qualitative and quantitative rates of the polycomplex determining the purposeful management of soil characteristics are given. Fig. 3, Tab. 6, Ref. 2.

Auth.

11.g9.3.2. Features of soil seepage. /I. Kruashvili, E. Kukhalashvili, I. Inashvili, K. Bziava, G. Natroshvili/. Collected Papers of Institute of Water Management. – 2012. - #67. – pp. 226-230. – geo.; abs.: geo., eng., rus.

Theoretical models determining seepage features in water supply canals under natural geotechnical conditions are applied in the isotropic water-permeable environment which limits the area of their application. Since the seepage factor is a permanently participating active component in formation of water balance of local agricultural (agro) systems, the determination of the water application rate is based thereon. Given the features of seepage, the questions connected with movement of water in porous systems of soil are the function of many interoperating factors. Hence, on the basis of the offered model, the calculation dependences of seepage velocity, seepage factor, water conductivity and porosity for real soils are obtained. Fig. 1, Ref. 5.

Auth.

11.g9.3.3. Studying the problems connected with anomalies of water seepage in soils. /I. Kruashvili, E. Kukhalashvili, I. Inashvili, K. Bziava, G. Natroshvili/. Collected Papers of Institute of Water Management. – 2012. - #67. – pp. 231-236. – geo.; abs.: geo., eng., rus.

In soils, presented by the dispersed-hydraulic porous system, the migrated water gets specific qualities; therefore, definition of characteristics of water seepage in soils becomes complicated. Soils, which represent the multicomponent environment, consist of different micro- and macro-particles and the water migrated in these particles gets different qualities. Based on the above and the proposed model, the range of change and optimum values of active and passive porosity have been determined and the seepage velocity, initial gradient and irrigation mode are obtained. Fig. 3, Ref. 4.

Auth.

11.g9.3.4. The effect of global climate change on soils. /Hans-Peter Blume/. Bulletin of Georgian National Academy of Sciences. –2012. - vol. 5. - #2. – pp. 106-112. – eng.; abs.: eng., geo.

With progressing earth history temperatures and precipitation have globally, regionally and locally changed. In addition to extraterrestrial reasons also terrestrial reasons like volcanism, forest fires, changes of global ice, snow and vegetation cover have caused such changes. For the last 100 years the global mean temperature has increased to actually more than 15°C, which is widely assumed to have not only natural but anthropogenic reasons: reduced water evaporation from agricultural land in contrast to natural forest, emissions of warmth and carbon dioxide especially in urban-industrial agglomerations, and the release of methane and nitrous oxide in agriculture are the most important impacts. It is assumed that in the 21st century the global mean temperature will rise by another 2-3 °C, mainly caused by a higher use of fossil fuels and an intensified conventional agriculture. Increased temperatures, higher CO₂-concentrations near the soil surface and higher precipitation rates lead in principle to a higher formation of biomass. More crop residues and higher temperatures also stimulate the activity of soil organisms. Higher soil temperatures also stimulate chemical weathering. On the other side higher rainfall can wash out more solved nutrients. But the expected climate changes and their effects on soils can vary to a large extent. The predicted rising sea level will increase the flooding of coastal soils, so that dikes have to be built or heightened. Higher temperatures in coastal soils will intensify the microbial formation of greenhouse gases. Permafrost soils will melt so that their agricultural use may be partly possible. Fig. 4, Tab. 2, Ref. 22.

Auth.

11.g9.3.5. Soil pathogenic fungi and their control. /N. Dzimistarashvili/. Subtropical Crops. – 2010. – №1-4. – pp. 256-258. – geo.; abs.: eng., geo., rus.

The main pathogenic soil fungi which cause rotting of roots, root collar, plant, tubers as well as plant withering are considered in the work. Ecologically safe methods such as agrotechnical, sanitaro-hygienic and chemical against aggressive organisms are worked out on the base of analysis. Biological preparations were tested for the first time: 0.3% cupric oxychloride-neoram, 0.3% maxim, 0.2% bacterophyt, phytosporin and 0.5% trichoderma, which showed good results. Ref. 3.

Auth.

11.g9.3.6. The importance of soil compaction, its types and used machinery and implements. /Sh. Chalaganidze, P. Naskidashvili, G. Mosashvili, T. Loladze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 15-23. – geo.; abs.: geo., eng., rus.

The article underlines the importance of pre-sowing and post-sowing soil compaction in the arid, semi-arid, wind and water erosion areas for the purpose of raising harvest of cereals (wheat, barley, oats, buckwheat, maize, etc.). The article speaks of the necessity of conducting relevant studies in Georgia. The presented data are based on foreign research and studies. Fig. 9, Ref. 3.

Auth.

11.g9.3.7. The effect of soil compaction on its humidity, thermal conditions, structure, the growth and development of plants. /Sh. Chalaganidze, P. Naskidashvili, G. Mosashvili, T. Loladze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 24-29. – geo.; abs.: geo., eng., rus.

The article shows different effects of soil compaction under different conditions and environment on such properties of soil and plants as: soil humidity, thermal conditions, structure, the growth and development of plants, as well as a number of other positive effects. Fig. 1, Tab. 7, Ref. 3.

Auth.

11.g9.3.8. The influence of the depth of the primary tillage of brown calcareous soils on the differential porosity. /J. Oniani/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 168-171. – geo.; abs.: geo., eng., rus.

The research revealed the influence of 80-, 60- and 30-cm depth tillage and 46 year-long use for vineyards on differential porosity of brown, medium-thick, highly calcareous soil in interrows, rows, vine interrows and virgin land. Tab. 1, Ref. 6.

Auth.

11.g9.3.9. Influence of man-made factors on water penetration of brown carbonate soils. /J. Oniani/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 172-176. – geo.; abs.: geo., eng., rus.

The research revealed that as a result of primary tillage of brown, carbonate soils on the depth of 60 cm, water penetration in interrows of vineyards considerably increased. The research findings obviously prove that the amount of the carried-out water several times exceeds the amount and intensity of a dropping-out precipitation in this zone that by itself excludes erosive processes. Tab. 1, Ref. 7.

Auth.

11.g9.3.10. On the matters of climatic and energy parameters of soil formation. /O. Ghorjomeladze, N. Turmanidze, G. Gogichaishvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 177-181. – geo.; abs.: geo., eng., rus.

The article analyzes some opinions and cases of climatic end energy issues in connection with soil formation. Fig. 2, Ref. 11.

Auth.

11.g9.3.11. Component water in the geographical environment and hydration water content in connection with soil formation process. /G. Gogichaishvili, O. Ghorjomeladze, N. Turmanidze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 182-184. – geo.; abs.: geo., eng., rus.

The article analyzes some cases of soil formation energy and opinions of different scientists on the above. Fig. 1, Ref. 8.

Auth.

11.g9.3.12. Energy outlays in the soil formation process. /O. Ghorjomeladze, N. Turmanidze, G. Gogichaishvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 185-192. – geo.; abs.: geo., eng., rus.

The role of different factors participating in the soil formation process and the relevant changes are analyzed in the work. Tab. 3, Ref. 26.

Auth.

11.g9.3.13. Land erosion and the results of stationary investigation. /O. Ghorjomeladze, N. Turmanidze, G. Gogichaishvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 193-198. – geo.; abs.: geo., eng., rus.

The work analyzes the finding of an investigation carried out on stationary demonstration lands of Khevi and Kitskhi villages. Ref. 3.

Auth.

11.g9.3.14. Systematization of yellow podzolic soils according to the World Reference Base for Soil Resources. /T. Urushadze, T. Kvrivishvili, E. Sanadze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 199-202. – geo.; abs.: geo., eng., rus.

Morphological, physical, chemical features of yellow podzolic soils spread in a humid subtropical zone of West Georgia have been studied. The conformity of yellow podzolic soils with soil groups of the World Reference Base for Soil Resources was established. Systematization of the investigated soils has been realized based on macro- and micro-morphological features and of the analytical of the diagnostic horizons. Tab. 2, Ref. 9.

Auth.

11.g9.3.15. The impact of man-made factors on chemical properties of brown calcareous soils. /J. Oniani/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 203-210. – geo.; abs.: geo., eng., rus.

The work deals with the impact of the 46-year use of brown calcareous soils on chemical properties. Tab. 3, Ref. 11.

Auth.

11.g9.3.16. The impact of man-made factors on physical and chemical properties of brown calcareous soils. /J. Oniani/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 211-216. – geo.; abs.: geo., eng., rus.

The research findings indicate that the use of brown calcareous soils during 46 years under the vineyards sharply reduces the stock of humus, the content of nitrogen and potash, also of phosphorus and potash. As for the contents of hydrolyte nitrogen and phosphorus, they tend to increase. Tab. 3.

Auth.

11.g9.3.17. Phosphorus regime of grey-brown soils of Apsheron. /A. Alieva/. Annals of Agrarian Science. – 2012. - vol.10, - # 4. – pp. 38-45. - rus.; abs.: eng.

Data of the study of the effects of the different kinds and rates of organic and mineral fertilizers on the content of mineral forms of phosphorus in carbonate grey-brown soils of Apsheron are studied. The predominant form of phosphorus in the investigated soil is found to be calcium-phosphate, being distinguished by its stability and accessibility for plants. The study of the degree of mobile phosphates “intensity” of the solution in the investigated soil creates a possibility to predict the supply of soils with phosphorus in the beginning of plant development. Application of organic and mineral fertilizers in soil accelerates a process of self-diffusion, transformation of phosphate ions from the solid phase into a soil solution. Tab. 4, Ref. 8.

Auth.

11.g9.3.18. Some aspects of land resources degradation in Georgia due to temporary climate change. /L.Shavliashvili, G.Kordzakhia, E.Elizbarashvili, G.Kuchava/. Annals of Agrarian Science. – 2012. - vol.10, - # 4. – pp. 49-51. - eng.; abs.: rus.

The paper deals with an increase in soil salinization and alkalization and wind-caused degradation under water impact which is associated with climate change in certain regions of Georgia. Adaptation measures for provision of sustainable management and development of the land resources in Georgia that will facilitate reduction of land degradation, improvement of socio-economic conditions of the population and alleviation of poverty are considered. Ref. 6.

Auth.

11.g9.3.19. On the productivity of alluvial soils in Samegrelo (Georgia). /R.Lortkipanidze, N.Santeladze/. Annals of Agrarian Science. – 2012. - vol.10, - # 4. – pp. 62-64. - eng.; abs.: rus.

The alluvial soils in Samegrelo (Nosiri) region have been formed on old alluvial deposits. They are characterized by average and great thickness profile, are stony, mild, consisting of carbonates and fizzing. According to the mechanic composition, the soil is mainly clayey. The quantity of physical clay fraction is about 32-67% which defines water, air and thermal features of this soil. Fig. 2, Tab. 3, Ref. 3.

Auth.

11.g9.3.20. The impact of organic and mineral fertilizers on an increase in fertility of the Apsheron lands. /S. Shukurov/. Annals of Agrarian Science. – 2012. - vol.10, - # 4. – pp. 74-78. - rus.; abs.: eng.

The article deals with positive outcomes achieved at a result of long-term cultivation and fertilization of soils used in the gardening sector of Apsheron peninsula. Application of organic and mineral fertilizers improves not only productivity of fruit and vegetables, but also the physical and chemical composition of soil. For this purpose the efficiency of a combined application of organic and mineral fertilizers was proved with tests and good results can be seen in the table given in the article. The fertility of the garden soils of Apsheron peninsula is substantiated through important agrotechnical measures and the combined usage of organic and mineral fertilizers in order to raise the fertility of the garden soils of Absheron peninsula can be considered important agrotechnic measure. Tab. 2, Ref. 6.

Auth.

11.g9.3.21. Monitoring heavy metals content in the “soil-plant” system. /I. Kavtaradze, G. Avkopashvili, E. Shengelia, L. Gvasalia/. Transactions of Technical University of Georgia. – 2012. – #3(485). – pp. 52-55. – geo.; res.: geo., eng., rus.

The auto monitoring of heavy metals (Cu, Zn, Cd) in the “soil-plant” system in the area of Kazreti (Madneuli) villages: Balichi, Ratevani, Nakhiduri was carried out. According to the results obtained, the content of heavy metals in soil is significantly higher than the allowable concentration limit. In spite of this, the content of Cu and Zn in the plants grown on this soil does not exceed the allowed concentration limits, whereas the content of Cd content was not observed. Fig. 2, Tab. 1, Ref. 4.

Auth.

11.g9.3.22. Investigation of soil contamination by metals within the stripe of Shida Kartli highway. /U. Zviadadze, N. Gachechiladze/. Transactions of Technical University of Georgia. – 2012. – #4(486). – pp. 16-21. – geo.; res.: geo., eng., rus.

Regularities of distribution in soil of toxic metals are characterized by the specific example of Tbilisi-Khashuri highway; the principal causes of their accumulation are identified and the contamination degree of the soil is quantitatively assessed. Fig. 1, Tab. 3, Ref. 8.

Auth.

11.g9.3.23. Land erosion dynamics during a year. /G.Gogichaishvili, O.Ghorjomeladze, N.Turmanidze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #30. - pp. 189–199. – geo.; abs.: geo., eng., rus.

The work analyzes the results of land erosion in different regions of Georgia. According to the seasons, the changes of land erosion, its sustainability and certain predictions are given.

Auth.

11.g9.3.24. On land erosion rates. /O.Ghorjomeladze, N.Turmanidze, G.Gogichaishvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #30. - pp. 200–207. – geo.; abs.: geo., eng., rus.

The work gives an analysis of land losses due to erosion of different kinds of lands and cultures according to the continents and countries. The work also analyzed the average indicators of solid drifts (floatables) in the river waters, the ways of land improvement and related opinions of different scientists.

Auth.

11.g9.4. MELIORATION

11.g9.4.1. On the effective and sustainable operation of water reclamation and management organizations. /M. Vartanov/. Collected Papers of Institute of Water Management. – 2012. - #67. – pp. 65-71. – geo.; abs.: geo., eng., rus.

The article describes the basic conditions for effective and sustainable functioning of water reclamation and management organizations. It is concluded that, due to imperfections in the system of financing of maintenance work a significant number of irrigation systems, including those rehabilitated in recent years, are being destroyed, leading to a substantial loss of irrigation water and reduced productivity of irrigated farmland. For the purpose of overcoming this tendency, further improvement and development of paid water supply system are necessary. The data describing the annual costs and the cost structure of reclamation work typical of the irrigation system in Georgian are given. Tab. 2, Ref. 4.

Auth.

11.g9.4.2. Ways of reducing freshet processes by the technology of anti-erosional irrigation. /V. Nanitashvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 217-221. – geo.; abs.: geo., eng., rus.

With a view to enhancing agriculture in Georgia’s mountainous and foothill regions, the paper presents the organization of irrigation systems equipped with sprinkling machines, ruling out

irrigational erosion and the risk of occurrence of freshets. Analysis is made of erosional conditions at sprinkling irrigation works, which directly depend on water infiltration in the soil during freshet processes. The greater the infiltration, the lesser is the possibility of accumulation of surface water. On the basis of the studies carried out, values of permissible intensity of sprinkling are obtained for slopes of various inclinations, according to soil type. Fig. 1, Tab. 2, Ref 4.

Auth.

11.g9.4.3. The optimal depth of processing soda saline soils of the Ararat Valley to chemical melioration depending on the mechanical composition and lithological structure of the profile. /V.Papayan/. Annals of Agrarian Science. – 2012. - vol.10, - # 4. – pp. 21-28. - rus.; abs.: eng.

Development of saline lands of the Ararat Valley has certain difficulties caused by the great heterogeneity of the mechanical composition. Before chemical melioration, the processing of soda saline - salt licks - was carried out, depending on the lithological structure and mechanical composition. The optimum depth of tillage of soils is established. In case the surface clay layer makes 0-25 cm, the conventional 25cm-tillage is proposed; where the clay layer is at 50 cm from the surface, the loosening takes place at the same depth, and if the clay layer is one meter depth along the entire profile, a deep loosening is recommended at the depth of 100 cm. Tab. 4, Ref. 6.

Auth.

11.g9.5. GRAIN CROPS

11.g9.5.1. Estimation of the natural resources and climate conditions of Kolkheti for the purpose of maize production. /G. Gagua, V. Gogitidze, T. Tskhakaia/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 45-50. – geo.; abs.: geo., eng., rus.

The paper sets out a correlation between the crop potential of the maize corn, the total sum of the required active temperature rates and the amount of atmospheric rainfall (precipitation) during a 90-day period from the sowing. Hereby we propose a method which enables to estimate an amount of maize corn production 2 months prior to the harvest period. Fig. 2, Ref. 12.

Auth.

11.g9.5.2. Influence of lentil sowing on the grain yield. /P. Vacheishvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 54-56. – geo.; abs.: geo., eng., rus.

The optimum lentil sowing period was studied at the Mtskheta Breeding Station of the Farming Institute on the basis of the collection material brought by the international organization ICARDA. Through individual selection the variety “Pablo” has been selected and zoned in 2005 and the variety “Tsilkani” in 2011. According to the study findings, the optimum sowing period for lentil can be considered the mid-November to the first decade of March. Tab. 1, Ref. 3.

Auth.

11.g9.5.3. Principles of managing the formation of spiked grains production determinants. /P.Naskidashvili, M.Naskidashvili, N.Merabishvili, I.Naskidashvili, T.Loladze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #30. - pp. 150–155. – geo.; abs.: geo., eng., rus.

It is shown that by regulating development of the main productivity determining components high yield of spiked grains can be achieved. Information concerning classification of the cereals development phases and the scales developed by different researchers in the world is given.

Auth.

11.g9.5.4. The current situation in cereals production and development prospects. /P. Naskidashvili, O. Liparteliani, G. Chkhutiashvili/. New Agrarian Georgia - 2013. - № 2 - p .11. - geo. The leading cereals in Georgia are incorporated in two groups: 1) bread grains and grouts; 2) legumes and sunflower seeds. At present, the yield of cereal is rather low in Georgia. The article lists several reasons that cause the lack of productivity. In order to dramatically increase

production of cereals, multilateral measures should be carried out, such as: introduction of modern, improved agro-technologies, high-quality seed production, testing and zoning of varieties, etc. By means of the above, Georgia will come closer to European average level of cereals yield and it will be possible to secure the country with food and seed materials.

N. Chkhaidze

11.g9.5.5. Immunological evaluation of wheat varieties with different methods against yellow spot under greenhouse conditions. /L. Gorgiladze, S. Meparishvili/. New Agrarian Georgia. - 2013. - № 4. - pp. 35-36. - geo.

In recent years, frequency and harmfulness of grain pyrenophora has noticeably increased. It damages plants during all phases and in a number of countries occupies the first place among wheat diseases. One of the most effective and environmentally safe ways of struggle against the disease is growing of resistant species. In 2009-2011 researchers studied the level of resistance of wheat samples by two tested methods. The research revealed usefulness of selected methods and obtained results were the same. In both cases, according to the types of plant response, several groups were distinguished: recipient (50.6%), high-recipient (29.5%), moderately resistant (12.5%), average recipient (5%). Absolute resistance against the pathogen was revealed only in 2.5% of cases. Lit. 8; Fig. 2.

N. Chkhaidze

11.g9.5.6. Selection of maize varieties and hybrids - seed-growing condition and prospects. /K. Lashkhi, G. Jinjikhadze, Z. Julukhidze, T. Japaridze. /New Agrarian Georgia - 2013. - № 4. - pp. 9-11. - geo.

The development of maize seed-growing prospects in Georgia are considered. In order to increase maize-growing areas up to the level that existed 8-9 years ago, 200-220 thousand hectares of abandoned and turned into pasture lands should be cultivated again. Two different varieties - food and fodder maize - should be sown. Georgian varieties of maize, mainly cultivated in the western part of Georgia popular selected during 350 years are listed. Selective preservation of each variety is carried out by maize farmers within their own farms. At a scientific level this activity was carried out at the Institute for Agriculture and Ajameti and Senaki experimental stations, which are now closed. The work in this direction should be restored. The article names food and forage hybrids grown in Lomtagora, which ensure high and stable yields. Generally, out of 200 thousand hectares of maize fields, 90 ha should be sown with bread grain and 110 ha – with fodder maize. The authors state that the country needs 2,200 tons of hybrid seeds, and therefore the Institute for Agriculture, producer of 10 hybrids, should be restored and other organizations should be involved. Tab. 1, Fig. 1.

N. Chkhaidze

11.g9.6. HORTICULTURE, FRUIT AND VEGETABLE-GROWING

11.g9.6.1. Study of the dynamics of accumulation of phenol compounds and of antioxidant activity of some vegetables and plants according to their growth and development phases.

/N. Gogia, Z. Bukia, I. Chkhikvishvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 40-44. – geo.; abs.: geo., eng., rus.

The work represents the data on selection of some plants and spices selections and on the dynamics of synthesis of bioactive substances according to their growth and development phases. The experimental data creates prerequisites for establishing the optimal period of accumulation of these substances. Tab. 1, Ref. 6.

Auth

11.g9.6.2. Useful properties of kiwi and prospects of its development in Georgia.

/G.Khetsuriani, E. Pruidze/. Novation. – 2012. - # 10. – pp. 98-101. – geo.; abs.: geo., rus., eng

In recent years the crop of kiwi (*Actinidia*) has occupied one of the major places among subtropical crops of Georgia. Preventive, dietary and medical properties of kiwi due to its unique biotechnical structure are confirmed today by many medical researches. Of special interest is the abundance

of vitamins and mineral substances. The fruit appeared in Georgia first in 1988. According to the Ministry of Agriculture of Georgia, in 2011 70% of kiwi sold on markets was of local origin. Kiwi plantations are intensively developing in the regions of Samegrelo, Guria, Ajara, Imereti and Kakheti (Lagodekhi). Kiwi plantations occupied more than 1,500 ha in 2010 Ref. 7.

Auth.

11.g9.6.3. Tomato crop varieties and peculiarities in Armenia. /S.Karapetyan/. Annals of Agrarian Science. – 2012. - vol.10, - # 4. – pp. 46-48. - rus.; abs.: eng.

In order to study agro-biological peculiarities of local and introduced tomato varieties, experiments were conducted in the Vegetable-Melon and Industrial Crop Research Center of the Ministry of Agriculture in Armenia. 16 sample varieties were investigated, from which 7 are introduced and 9 are local. The study resulted in a complex assessment according to main economic indicators and selecting varieties for purposeful use in canning industry. The varieties with high qualitative characteristics were selected from local tomato varieties. Tab. 1, Ref. 7.

Auth.

11.g9.6.4. For the Issues of restoration-expansion of the apple crop production in Georgia. /G.Gagua. V.Gogitidze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #30. - pp. 48–52. – geo.; abs.: geo., eng., rus.

The issue of restoration-expansion of the apple crop production in Georgia is given; given are the science-based recommendations on its production in mountainous: selection of frost resistant apple varieties and convenient expositions, planting of windbreaks.

Auth.

11.g9.6.5. Dynamics of detoxification of confidor and topaz in leaves and fruit of apricot. /L. Atshemyan, V.Mirzoyan, R.Hanisyanyan/. Annals of Agrarian Science. - vol. 10, # 4, - pp.124-127 - rus., abs. eng., rus.

The experiments were conducted on the apricot trees in Kotayk marz. The dynamics of detoxification of the most frequently used pesticides in Armenia (Confidor and Topaz) was studied in leaves when being sprayed both individually and jointly. The residual amount of the pesticides in the leaves and fruits of apricot was determined with the help of thin layer chromatography after 2 hours, then 7, 14, 21, 28, 35 days of treatment. The study on detoxification dynamics of apricot leaves of different pesticides showed a full detoxification of Confidor and Topaz within 25-28 days after the second application, while upon their integrated control - within 30-35 days. Fig. 3, Ref.2

Auth.

11.g9.6.6. Characteristics of stone-fruits package in polymeric pellicles. /E.Mailova/. Annals of Agrarian Science. - vol. 10, # 4, - pp.128-130 - rus., abs. eng., rus.

Changing lifestyle requires the usage of packaged food that is most convenient and efficient to use. Over time unpackaged fruit loses its quality as a result of physical, chemical and biological processes that constantly occur within food. With the aim to prevent spoilage and increase shelf life, fresh fruit are packed in polymeric pellicles/sheets, the usage of which is growing worldwide. In the paper the weight change of packed peaches and apricots within 30 days is considered depending on the type of polymeric materials. Fig. 3, Ref.7

Auth.

11.g9.7. VITICULTURE AND WINEMAKING

11.g9.7.1. Content of the biologically active trans-resveratrol and ϵ -viniferin in color vine varieties growing in Georgia. /M. Bezhuashvili, N. Vepkhishvili, T.Kobaidze, L. Shubladze, D. Okruashvili/. Bulletin of Georgian National Academy of Sciences. – 2011. - vol. 5. - #3. – pp. 61-65. – eng.; abs.: eng., geo.

Stilbene-containing plate preparations have been extracted from the skin of industrial red-grape vine (*Vitis vinifera* L.) growing in Georgia. These varieties are as follows: Saperavi, Saperavi

Budeshurisebri, Cabernet Sauvignon, Otskhanuri Sapere, Ojaleshi, Aladasturi, Chkhaveri, Aleksandrouli, Mujuretuli, Asuretuli Shavi. With the use of the high-performance liquid chromatograph (HPLC), their diversified stilbene spectra have been identified together with the identification of trans-resveratrol and its dimer ϵ -viniferin in them. There is a common regularity identified in the skin of all grape varieties; in particular, the concentration of trans-resveratrol much exceeds that of its dimer ϵ -viniferin. The quantities of identified stilbenes vary depending on the varieties and habitats of the vine. Studying the stilbene spectrum is the theoretical basis to explain the functional designation of grape and wines in respect of their curative and nutritional value. Tab. 1, Ref. 10.

Auth.

11.g9.7.2. Plastid DNA sequence diversity in a worldwide set of grapevine cultivars (*Vitis vinifera* L. subsp. *vinifera*). /T. Beridze, I. Pipia, J. Beck, Shih-Chung Hsu, M. Gamkrelidze, M. Gogniashvili, V. Tabidze, P. This, R. Bacillieri, V. Gotsiridze, M. Glonti, B. Schaal/. Bulletin of Georgian National Academy of Sciences. – 2011. - vol. 5. - #1. – pp. 98-102. – eng.; abs.: eng., geo.

DNA sequence diversity was investigated at two plastid regions (the trnH-psbA intergenic spacer and the rpl16 intron) in a geographically diverse group of 113 cultivated grape samples. This group included 40 samples from Georgia, home to over 500 grape cultivars and the earliest archaeological evidence of grape domestication. The Greater Caucasus region in which Georgia lies is widely believed to be the area in which grape domestication began, and the study of genetic diversity in this region is viewed as key to understanding grape domestication in general. Four plastid haplotypes are evident in the 113 samples, and are designated by their character-states at each of the 3 polymorphic positions: (AAA) – 23 samples, (ATT) – 29 samples, (GTA) – 26 samples, and (ATA) – 35 samples. The AAA haplotype was only observed in Georgian samples. The observation that the Georgian cultivars exhibited both unique plastid DNA variation (the AAA haplotype) and all other observed plastid haplotypes is consistent with previous studies that have observed both unique and high levels of genetic variation in wild grape (*V. vinifera* subsp. *sylvestris*) in the greater Caucasus region. Fig.1, Tab. 1, Ref. 13.

Auth.

11.g9.7.3. Polypeptide analysis of Georgian-type grapes and wine production in the process of technological development. /N. Baghaturia, T. Nanitashvili, N. Begiashvili, Ts. Shilakadze, B. Baghaturia/. Agrarian-economic Science and Technologies. 2012. - #3. – pp. 38-44. - geo.; abs.: geo., eng.

The quantitative and qualitative changes of polypeptides of Rkatsiteli-type grapes and European-type wines making and technological processing are investigated. It is estimated that in the technological processing of wines formation the polypeptides' composition change significantly, which should be considered when selecting optimal conditions of wine stabilization. Tab. 3, Ref. 6.

11.g9.7.4. The use of the yeasts of the genus *Schizosaccharomyces* for lowering acidity of high-acid grapes' must and wines. /N. Baghaturia, E. Ediberidze, N. Iomsadze/. Agrarian-economic Science and Technologies. 2012. - #3. – pp. 51-55. - geo.; abs.: geo., eng.

The process of reducing acidity of grape juices and wine materials using different ratios of the pure culture of the yeasts of the genus *Schizosaccharomyces* has been investigated. The yeast-based acidity reducing technique has been found to be more promising against the bacterial techniques employed in industry for the same purpose. Tab. 2, Ref. 3.

Auth.

11.g9.7.5. Biological and technological research of wine materials processing, ripening and aging from Saperavi grapes. /N. Baghaturia, T. Nanitashvili, N. Begiashvili, Ts. Shilakadze, B. Baghaturia/. Agrarian-economic Science and Technologies. - 2013. - #1. – pp. 61-72. – geo.; abs.: geo., eng.

Dynamics of changes and transformation of colors and main constituents in the process of storage, ripening and aging of wine materials obtained from Saperavi grapes are studied. These findings are of great importance for establishing main criteria of naturalness of red wines as well as the

optimum conditions of technological processing stabilization of these wines. The total content of colors in natural ordinary red table wines made of Saperavi grape variety should not be less than 380/400 mg/dm³, while in natural, red, table wines subjected to, a 3-year aging process the total content of colors should not be less 253/162 mg/dm³, which should be considered as one of the main criteria of naturalness of these wines. Tab. 3, Ref. 9.

Auth.

11.g9.7.6. Treatment of the must of Saperavi grape variety with nanosilver before alcoholic fermentation and enochemical investigation of wine. /N. Ebelashvili, M. Melikishvili, D. Okruashvili, M. Mdinardze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 395-398. – geo.; abs.: geo., eng., rus.

Treatment of the must of Saperavi grape variety before alcoholic fermentation was conducted with the application of various doses of colloidal silver and sulfur dioxide (kadifit, 50 mg/l). It has been established that treatment of the must by using nanosilver at concentration of 0.4 mg/l and with application of sulfur dioxide makes identical impact on enochemical parameters of the wine. Tab. 2, Ref. 8.

Auth.

11.g9.7.7. Results of using natural antiseptic in sedimentation process of the must. /N. Ebelashvili, M. Melikishvili, M. Mdinardze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 399-403. – geo.; abs.: geo., eng., rus.

The process of sedimentation of the must was realized (24 h) in its aging: at low temperature (3-5°C), with the use of different doses of natural antiseptic –nanosilver, as well as sulfur dioxide (kadifit, 50 mg/l). After racking off, the effect of antiseptics and low temperature on the basic chemical indices of the must was studied. It has been shown that the application of nanosilver at concentration of 0.4 mg/l has the same effect as sulfur dioxide. Tab. 4, Ref. 14.

Auth.

11.g9.7.8. The effect of physical-geographical characteristics of a site on wine materials (by the example of some grape varieties). /G.Gagua, V.Gogitidze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #30. - pp. 36–40. – geo.; abs.: geo., eng., rus.

Both the vine and wine, their final product is very sensitive to the environmental changes. This article describes the effects of geographical characteristics of Kakheti and Racha-Lechkhumi conditions on some grape varieties, specifically Manavis Mtsvane, Kindzmarauli and Khvanchkara. The climatic and soil conditions are the most important among the physical- geographical factors that together with the grape variety provide the wine specificity.

Auth.

11.g9.7.9. The prospects of utilization of local aluminum silicates to ensure wine quality. /Sh.Japaridze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #30. - pp. 41–44. – geo.; abs.: geo., eng., rus.

The article reviews the influence on stabilization and clarification of different types of white and red wines processed by local natural and modified aluminum silicates. It shows a perspective for using local modified bentonitic clays for this purpose.

Auth.

11.g9.7.10. Biological and technological investigation of rose wines making processes. /N. Baghaturia, T. Nanitashvili, N. Begiashvili, Ts. Shilakadze, B. Baghaturia/. Agrarian-economic Science and Technologies. - 2013. - #2. – pp. 68-76. – geo.; abs.: geo., eng.

The article discusses the prospects of making rose wines in Georgia as well as the influence of different technical factors on physico-technical solution and organoleptic characteristics of these wines. The necessity of working out optimal conditions and science-based wine-making technology with a view to increase production of rose wines in Georgia is outlined. Tab. 3, Ref. 7.

Auth.

11.g9.7.11. Does kvevri (amphora) clay influence the quality of wine? /G.Barisashvili/. - New Agrarian Georgia - 2013. - № 4 - pp .19-22. - geo.

The results of study of substances (heavy metals) contained in the fragments of unused kvevris made in 1910 and in 2010 are discussed. To achieve the main purpose of the research, which implies analysis of not only the substances contained in the kvevris, but also their impact on wine, samples of wines made in a glass container and kvevri were studied. The study was to answer the question whether heavy metals are transferred from vessel to wine above admitted level. The results showed that in both cases the concentration levels did not exceed the permissible limits. Lit. 2. Tab. 4

N. Chkhaidze

11.g9.7.12. Peculiarities of labour conditions of wine production workers. /R.Kverenchkhiladze, M.Arabidze, M.Kvatadze, M.Rizhinashvili, K.Khvadagiani/. Tbilisi State Medical University. Collection of Scientific Works. – 2012. – v. XLVI. pp. 50-51. – geo.; abs.: eng.

Within the framework of the 2011 State Program of Prevention of Occupational Diseases, at the base of Teliani Veli Enterprise, a complex study of labor conditions of workers was carried out for hygienic assessment of such conditions and working out of health promotion measures. the study results of various levels of harmfulness and their ranking by classes are discussed and the appropriate recommendations on the improvement of sanitary and technical conditions are given. Ref.5.

Auth.

11.g9.8. TEA AND SUBTROPICAL CROPS

11.g9.8.1. Perspectives of practical using of citrus remote hybrids. /B. Tutberidze, N. Kipiani/. Subtropical Crops. – 2010. – №1-4. – pp. 23-27. – geo.; abs.: eng., geo.

The remote hybrids of citrus, such as a frost resistant citrange, represent the perspective initial materials for selection. The new form citrange F₃ – “Anaseuli” is separated from citranges F₂ according to the phenotypic characters of motherplant. “Anaseuli” is noted for high frost resistance (-15-16°C), high productivity (45-50 t/ha). The citrus is rich in vitamins and other biologically active substances. Tonic juices made from citranges F₃ are not only refreshing and pleasant drinks but also possess medicinal properties. Tab. 3, Ref. 5.

Auth.

11.g9.8.2. Biological diversity of the wild orange gene pool and the current state in Georgia. /D. Baratashvili, N. Khalvashi/. Subtropical Crops. – 2010. – №1-4. – pp. 27-29. – geo.; abs.: eng., geo., rus.

The present state of wild orange gene pool in Georgia is researched. It is obvious that the private plants of the tangerine Unshiu that cover 80-90% of the citrus plantation of Adjara – Guria are heavily damaged: plantation sparseness is 30%, weeding – 35%, “biological pollution” – 20-30%. About 56 species of the wild orange – hybrid, clone and mutant forms are reproduced under the grant financed by the National Science Fund of Georgia. An arrangement of nurseries is envisaged on the basis of these species in Batumi Botanic Garden in 2010. Ref. 3.

Auth.

11.g9.8.3. Peculiarities of the growth intensity of vegetative organs in young forms of citrus produced as a result of remote hybridization. /N. Kipiani/. Subtropical Crops. – 2010. – №1-4. – pp. 30-32. – geo.; abs.: eng., geo., rus.

The results of a bio-morphological study of new forms of citrus produced by remote hybridization of some cultigens of citrus cultivated in Imereti region are discussed. Tab. 1, Ref. 2.

Auth.

11.g9.8.4. New crop – Azimina Triloba. /V. Goliadze/. Subtropical Crops. – 2010. – №1-4. – pp. 48-50. – geo.; abs.: eng., geo., rus.

Azimina trifoliata (Azimina triloba) is one of the plants among the enormous variety of tropical flora which grows and bears fruit in our conditions. The plant is resistant to frost to 25-29°C. This fruity

and decorative plant is cultivated for its unusual aromatic quality resembling banana. Some biological peculiarities of this plant are also stated in the article. Fig. 4, Ref. 3.

Auth.

11.g9.8.5. On the possible mechanism of strong spontaneous mutagenesis characteristic for citruses and the evolutionary significance of polyembryony. /A. Diasamidze, K. Dolidze, M. Koridze, N. Turmanidze/. Subtropical Crops. – 2010. – №1-4. – pp. 65-68. – geo.; abs.: eng., geo., rus.

The work concerns the evolutionary significance of the possible mechanisms of spontaneous mutagenesis and polyembryony in citruses. According to the intensity of spontaneous mutation processes, the genus of citrus class occupies one of the leading places among cultigen plants. The high level of mutation of citruses should be explained by the auto-mutagenic mechanism as an adaptation reaction of the plant to the unusual temperature conditions. Polyembryony in citruses is a secondary phenomenon facilitating their genetic stability. Ref. 18.

Auth.

11.g9.8.6. Studying tea meiosis and its genetic significance. /Z. Japaridze, N. Zarnadze/. Subtropical Crops. – 2010. – №1-4. – pp. 71-73. – geo.; abs.: eng., geo., rus.

Spectrum of chromosomic transmutation (reconstruction) is studied in some forms of tea family during the meiosis process. In consequence of the research it is ascertained that meiosis takes place untypically in different sorts of tea. High percentage of chromosomic transmutation is observed. Appearance of single or some separate fragments, formation of bridges and rings from structural abnormalities are marked. All these abnormalities are considered as potential inversions and translocations of the tea heterozygous condition. Ref. 2.

Auth.

11.g9.8.7. Quality indicators of oranges matured naturally and with application of ethylene. /E. Jakeli/. Subtropical Crops. – 2010. – №1-4. – pp. 73-76. – geo.; abs.: eng., geo., rus.

Biochemical and mechanical indices of Washington Navel oranges matured both naturally and by applying 250 mg/l of the ethylene-generating liquid hydrel and di-hydrel were studied. The output of yellow, yellowish-green and green fruit was determined. It is established, that the ethylene-generating liquid - hydrel and di-hydrel accelerated the ripening of orange fruits while preserving good quality indicators. Tab. 2, Ref. 7.

Auth.

11.g9.8.8. Study of tea caffeine, anthocyanins and flavonoid glycosides by high-performance liquid chromatography (HPLQ). /A. Kalandia, M. Ivanidze, D. Apkhazava/. Subtropical Crops. – 2010. – №1-4. – pp. 94-97. – geo.; abs.: eng., geo., rus.

HPLQ has been used to study the content of caffeine, flavonoid glycosides and anthocyanins in an (anthocyanin-pigmented) tea leaf. Fig. 4, Tab. 4, Ref. 3.

Auth.

11.g9.8.9. Achievements in tea biochemistry and efficiency of its use in progressive technologies and raising tea quality. /N. Oragvelidze/. Subtropical Crops. – 2010. – №1-4. – pp. 101-106. – geo.; abs.: eng., geo., rus.

Analysis of biochemical researches is carried out. The essential role of biochemistry in formation tea qualitative indices and biological values is shown. Progressive technologies worked out on the basis of biochemical researches and scientific researches carried out in technical biochemical laboratory of the Institute are given. It is shown that the content of valuable instant compounds in raw materials and tea is higher when agrochemical and agrotechnical measures are conducted, under conditions of keeping with the time and rules of leaf plucking and optimal parameters of processing. The factors of improving tea quality and field rehabilitation are shown. Tab. 2.

Auth.

11.g9.8.10. The effect of phosphorus fertilizers on the quality of tea leaf. /N. Kutaladze/. Subtropical Crops. – 2010. – №1-4. – pp. 151-154. – geo.; abs.: eng., geo., rus.

Phosphorus fertilizers applied against the background of nitrogen-potassium fertilizers besides increasing the yield of tea leaf essentially increase the content of tannin and extract substances in

tea leaf. Increase of tannin extract substances in P 180 sample (compared to background) in August 2006 made up 4.2% (background tannin – 21.9%) and 5.7% (background extract substance 37.9%). Content of tannin and extract substances in tea plant changes seasonally. Their minimum content is detected in May and maximal in August. Tab. 2, Ref. 4.

Auth.

11.g9.8.11. The Influence of rates of mineral fertilizers and ratio of elements on storability of Satsuma mandarin. /N. Nakashidze, V. Tsanava, Z. Mikeladze, L. Kutaladze/. Subtropical Crops. – 2010. – №1-4. – pp. 154-157. – geo.; abs.: eng., geo., rus.

Citrus productivity is mostly depended on the level of providing plants with feeding elements. Influence of nitrogen doses and NPK ratio on productivity and storability of Satsuma mandarin is studied. Increased rates of nitrogen and NPK 130-260 g/tree rates of ensure both high productivity and storability of the citrus. Tab. 2, Ref. 7.

Auth.

11.g9.8.12. Regeneration ability of old tea plantation against the background of heavy pruning. /Z. Gabrichidze, K. Chikashua, Ts. Mgeladze, E. Eliadze/. Subtropical Crops. – 2010. – №1-4. – pp. 212-215. – geo.; abs.: eng., geo., rus.

The article deals with the rehabilitation-regeneration ability of old overgrown tea plantation. It is established experimentally that 70-80 year-old tea bushes are characterized by high regeneration ability against the background of heavy pruning. Tea bushes give a large amount of sprouts already in the first year of pruning. Under conditions of optimal agrotechnical care the exploitation period of such plantation can be prolonged for 20-30 years. Tab. 1, Ref. 5.

Auth.

11.g9.8.13. Meteorological factors and productivity of subtropical crops. /Z. Gabrichidze, J. Loladze, K. Partenadze/. Subtropical Crops. – 2010. – №1-4. – pp. 195-199. – geo.; abs.: eng., geo., rus.

Dynamics of meteorological factors and their influence on bio-productivity of subtropical crops for the last 15 years in Ajara subtropical zone are discussed. Given the varied orography, soil and climatic conditions, the necessity of restoring agrometeorological stations in Guria, Samegrelo and Imereti zones in order to serve farming enterprises better is outlined. Tab. 3, Ref. 5.

Auth.

11.g9.8.14. Results of studying root system and tops of new prospective tea forms. /R. Jabnidze, V. Kutubidze, N. Jabnidze/. Subtropical Crops. – 2010. – №1-4. – pp. 221-223. – geo.; abs.: eng., geo., rus.

The study results of the root systems and tops of new prospective tea forms Nos. 59, 62, 101 are considered. According to the results, the underground and tops of the selective forms are better developed as compared with the control plants. The selective form #101 is noted for best results. Tab. 2, Ref. 5.

Auth.

11.g9.8.15. Samegrelo's natural-climatic conditions and scientific bases for cultivating subtropical crop. /G. Todua/. Subtropical Crops. – 2010. – №1-4. – pp. 224-227. – geo.; abs.: eng., geo., rus.

Samegrelo is located in the northern part of the subtropical zone of West Georgia, soil-climatic conditions of which are heterogeneous for growing subtropical crops with low frost resistant ability. As a result of many years' researches, Samegrelo regions have been divided into six microclimatic zones. Plant tests on the geographical plots have made in possible to establish borders of their distribution. Fig. 1, Tab. 1.

Auth.

11.g9.8.16. Tea production development directions. /T. Revishvili/. Subtropical Crops. – 2010. – №1-4. – pp. 269-272. – geo.; abs.: eng., geo., rus.

Analysis of the state of tea production in Georgia is given. The main directions of raising product quality and competitiveness and working out a complex technology based on rational use of the raw material resources and available technological potential are proposed. Tab. 3, Ref. 16.

Auth.

11.g9.8.17. Study of some psysico-chemical changes during tea leaf natural withering. /M. Choladze, I. Choladze, E. Magrakvelidze/. Subtropical Crops. – 2010. – №1-4. – pp. 272-275. – geo.; abs.: eng., geo., rus.

Changes in moisture, mass and in some chemical-organoleptic indices are researched during natural withering of leaf in the wood, cement and polypropelene surfaces at 16-25° temperature when layer thickness is 3-4 cm. Natural withering is recommended to be carried out in peasant farms and under home conditions on wood surface at 59-62% humidity. Fig. 2, Tab. 3, Ref. 4.

Auth.

11.g9.8.18. On rehabilitation of biologically aged (amortized) plants in citrus plantations. /R. Jabnidze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 30-36. – geo.; abs.: geo., eng., rus.

Raising the level of profitability of citrus production is possible by replacing the biologically aged (amortized) plants, introducing progressive agrotechnics, using correct organizational and economic factors, arranging nurseries, selecting high and regularly yielding, early ripening varieties and laying out new plantations ob their basis. Ref. 4.

Auth.

11.g9.8.19. Biomorphological relationship of different types of branches of broad-leaved Satsuma mandarin with bearing. /N. Kipiani/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 37-39. – geo.; abs.: geo., eng., rus.

The article discusses materials reflecting results of a study of the interrelation between the number of leaves of different branches of broad-leaved Satsuma mandarin and the fruit bearing. Tab. 2, Ref. 1.

Auth.

11.g9.8.20. The changes of physical indicators of orange fruits in connection with orographic factors. /N. Nakashidze, N. Alasania/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 51-53. – geo.; abs.: geo., eng., rus.

The present work deals with the changes of physical indicators of Washington Navel orange grown at the 50 and 150 m sea level during the period of growth and development and storage. We have established that the fruits at the 50 m sea level are characterised with better physical indicators, they reach the maturity period early and can be harvested about ten days earlier than the fruits grown at the 150 m sea level. Under the same storage conditions, the fruits grown at the 50 m sea level, due to the intensive metabolic procedures, are characterised with less storage capacity. During picking the oranges should be sorted according to the zones. Tab. 2, Ref. 5.

Auth.

11.g9.8.21. Multiple regeneration of lemon (*Citrus limonia*) in callus culture. /N. Zarnadze, E. Jakeli, K. Dolidze, Z. Japaridze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 59-62. – geo.; abs.: geo., eng., rus.

Conditions of introduction of a lemon embryo *in vitro* culture have been developed. Also were selected: concentrations of auxins and physical conditions for obtaining calluses' cultures; hormonal substances and their concentrations for regeneration; induction of regeneration in the area of artificial nutrient medium and obtaining of regenerants were achieved. Tab. 2, Ref. 4.

Auth.

11.g9.8.22. Florocoenotic complex of Caucasian rhododendron (*Rhododendron caucasicum* Pall.) in high-mountain ecosystems on the Greater Caucasus and its botanic-geographical diversity. /Sh. Shetekauri, D. Chelidze/. Annals of Agrarian Science. – 2012. - vol.10, - # 4. – pp. 29-37. - rus.; abs.: eng.

Botanic-geographical diversity of floristic complex of the Caucasian rhododendron (*Rhododendron caucasicum* Pall.) on the Greater Caucasus has been studied. When specifying typical, characteristic species of the florocoenotic complex (thickets) of Caucasian rhododendron the

distribution range of each species, coenotic role and coenotic links were taken into account. The research results have proved that despite quite frequent occurrence of around 100 species of various plants in rhododendron thickets on the Caucasus, the number of typical constant species of this complex is mainly composed of 14 species. These species are united in 11 genera and 8 families. The majority of these species (8 species) belong to Palearctic type of distribution range. In spite of the fact that by its bioecology *Rhododendron caucasicum* is close to *Rh.ponticum*, related to it and even often found in the composition of the Colchian forest as underwood, it cannot be considered to be a typical species of the Colchian forest. Typical hypsometric area of its distribution is subalpine and alpine zone between 1800-2700 m a.s.l. Fig. 1, Tab. 1, Ref. 32.

Auth.

11.g9.8.23. Table diagnostics of application of compound fertilizers on tea plantations. /I.Burchuladze, V.Tsanava, F.Chanukvadze/. Annals of Agrarian Science. – 2012. - vol.10, - # 4. – pp. 65-69. - rus.; abs.: eng.

Tests of new and perspective forms of compound fertilizers under conditions of red soils of tea plantations have shown their high efficiency in comparison with equal quantity of applied agrotechnic norms of simple (standard) fertilizers. Crop growth fluctuates within 13-22%. Appreciable improvement of a phosphorous nutrition of plants (increasing contents of P₂O₅ in flushes) in comparison with standard fertilizers is noted. However, in tea plants essential distinctions in NPK indicators between forms of compound fertilizers was not revealed. Tab. 3, Ref. 11.

Auth.

11.g9.8.24. Tea diseases. /L.Beradze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #30. - pp. 87–90. – geo.; abs.: geo., eng., rus.

50 kinds of different fungi were revealed by researches carried out in 2006-2010. We were the first to mark 18 kinds of fungi. Gray spot diseases, brown spot diseases, Cladosporium, Alternaria alternata, Cercospora theae are worth mentioning among tea diseases for their harmfulness and spreading.

Auth.

11.g9.8.25. Heterotic and heterobeltiotic studies in flue-cured Virginia (FCV) tobacco. /I.Ali, F.Mohammad, A.Khan/. Annals of Agrarian Science. – 2012. - vol.10, - # 4. – pp. 8-16. - eng.; abs.: rus.

The experiment was conducted at Khan Gari Station Mardan-KPK-Pakistan during 2008 to evaluate the heterotic performance of some tobacco genotypes. Seven tobacco genotypes (KHG22, Spt G 126, K399, NC606, KHG21, KHG24 and Spt G 28) were crossed in all possible direct and reciprocal combinations. Forty two direct and reciprocal crosses along with their seven parents were space planted in randomized complete block design. Data were collected for days to flowering, leaf area, leaves plant-1, green leaves kg- 1, green leaves weight plot-1, plant height, internodal length, cured leaves kg-1 and yield kg/ha-1. Desirable heterotic effects were observed in all the traits studied. Greater values were observed for yield and green leaves weight plot-1. The cross NC606 x KHG21 showed high values for yield and leaf area. Spt G 126 x KHG22 gave high values for days to flowering, Spt G 126 x KHG24 was best for leaves plant -1 and green weight plot-1 and KHG21 x K399 was best for cured leaves kg-1. Generally, the heterotic effects of traits indicated the possibility of exploiting the hybrid vigor of the tobacco genotypes for yield and its components. Based on the findings of this study, the above mentioned crosses have potential for the improvement of various traits like yield and leaf area. Tab. 9, Ref. 13.

Auth.

11.g9.9. ANIMAL HUSBANDRY, POULTRY BREEDING AND VETERINARY MEDICINE

11.g9.9.1. Prospects of pasture feeding of cattle in Georgia. /I. Sarjveladze/. New Agrarian Georgia. - 2013. - # 2 (22). - pp. 28-30. - geo.; abs.: eng.

Pasture and feeding-rack feeding of cattle are compared. Advantages of pasture feeding are considered. In Georgia, where the possibility of using arable lands for forage cultivation is limited, natural pastures remain as main means of forage production.

Auth.

11.g9.9.2. Agrarian reforms and perspectives of sheep farming development in alpine live-stock farming in western Georgia. /T. Kavtaradze/. Ekonomisti (Economist). – 2011. - #4. – pp. 42-48. – geo.; abs.: eng.

The article studies the issues of alpine live-stock farming development under conditions of the current agrarian reforms; analyzed are: the functioning mechanism of current agrarian reform in mountainous landownership in Pshavi – Khevsureti; the economic levels of mountainous and plain regions; recommendations on the arrangement of family farms in mountainous countryside are elaborated. Ref. 5.

Auth.

11.g9.9.3. The study of toxicity of the drugs UP and UPS. /M. Chikaidze, T. Kurashvili, Sh. Makaradze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 229-231. – geo.; abs.: geo., eng., rus.

The article gives the results of toxicological and biological studies of the preparations UP and UPS by rubbing the medication on the skin of rabbits. In the experiments the animals was taken as an average weight 2-2.5 kg, into two groups of three rabbits each. The study was conducted in two series in the early spring and summer in Kumisi Rabbit Farm. The study found that the drugs UP and UPS do not have toxic properties when being rubbed on the skin of rabbits and even a 2-5 fold increase in the doses of drugs did not cause an irritant action or other negative effects. Tab. 1, Ref. 4.

Auth.

11.g9.9.4. Role of gynecological clinical examination in the prevention and liquidation of sterility in cows and heifers. /G. Butskhrikidze, O. Parkadze, R. Chanturidze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 232-234. – geo.; abs.: geo., eng., rus.

The considerable decrease of epizootic death and the number of sick animals as well as liquidation of sterility and dryness in cows and heifers are important reserves for increasing productivity of animal husbandry. The damage caused by sterility becomes apparent through the deficiency of calves, decreased milk yield, extra expenses on food and treatment that considerably increases the cost price of production. For the prevention and liquidation of sterility in cows and heifers a gynecological clinical examination makes it possible to establish the causes and take preventive measures. Ref. 7.

Auth.

11.g9.9.5. Herbal infusion during dyspepsia of calfs. /A. Abdinova/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 235-236. – rus.; abs.: geo., eng., rus.

Results of experiments showed efficiency and expediency of using an infusion of flowers of a camoile and plantain leaves at the ratio (1:10) with intramuscular injection oxytetracycline hydrochloride 0.1 ml per 1 kg of body weight. In four-five days, clinical signs of dyspepsia disappear; physiological indicators are normalized and come to norm. Ref. 3.

Auth.

11.g9.9.6. On the issues of slaughter of young local breeds of cattle and buffalo. /G. Gogoli/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 243-246. – geo.; abs.: geo., eng., rus.

The paper analyzes the results of mass and output products of slaughter of young Caucasian Brown and of the Georgian (Caucasus) Buffalo. Found that the yield of the carcass, internal fat and slaughter yield of the Caucasian brown cattle higher is than that of the buffalo. However, the output of main products of slaughter is also higher in animals with higher body weight. In animals examined for each 100 kg of pre-slaughter live weight has 16.2-18.9 kg of food products (including 4.8 - 6.3 kg first and 11.3 - 12.8 second category). The output of slaughter by-products is slightly different. The exception is the skin, the output of which in the buffalo was higher by 3% on average compared to the same conventional cattle. This difference is most pronounced in animals with

large body mass, and the elderly. Tab. 2, Ref. 6.

Auth.

11.g9.9.7. Seasonal and age dynamics of the main horse helminthic diseases in East Georgia. /L. Avaliani/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 250-253. – geo.; abs.: geo., eng., rus.

The most common helminthic diseases in Khulari stud (Marneuli district) are digestive tract strongiliasis and parascaris. The mean of the extensive infection of horses of all ages are accordingly 64.1 and 24.5%. Mainly youth at the age of 6-18 month are infected with strongiliasis and parascaris (accordingly, 71.7-87.7%). Number of strongiliasis reaches maximum at the wintertime (76.1-87.7%) and summertime (78.9-91.8%). Seasonal dynamics of infection with parascaris is not clearly expressed; however we can note an increased number of parascaris in April-May (48.1-60.4%). Tab. 2, Ref. 6.

Auth.

11.g9.9.8. On the timing and survival of the invasive initial forms of strongyles and parascaris of the digestive tract horses in Eastern Georgia. /L. Avaliani, Sh. Potskhveria/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 254-260. – geo.; abs.: geo., eng., rus.

In pastures of Marneuli district (Eastern Georgia) suitable conditions for the development of invasive initial form of strongyles of the digestive tract and parascaris of horses are from April to October. In the summer months (average temperature, respectively, 20,1-23,5-23,4 °C) larvae of Strongyles and eggs of Parascaris reach the invasive initial form, respectively, for the 5-6 and 8-9 days. Their development stops in the first half of November. Eggs of Strongyles and Parascaris placed in the pasture during the winter months (average temperature, respectively, 2,2-0,2-1,2 °C), overwinter and in April after exceeding the average daily air temperature 8 °C begin to develop. In July-August, due to the high temperature, surface of the soil and drying none invasive larvae of Strongyles and eggs of Parascaris die out. Infective larvae of Strongyles migrate into the soil and accumulate on the roots of plants at a depth of 5-10 cm. In September they migrate back and are located on the stems of plants at a height of 5-10 cm from the soil surface. In October, after increasing the humidity in the pastures, the larvae migrate to the horizontal direction. On the stems of plants can be found within a radius of 10-15 cm from the test chamber. Ref. 2.

Auth.

11.g9.9.9. Using drugs to prevent the heating season in cats - factor for cancerous changes. /M. Chkhikvishvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 261-263. – geo.; abs.: geo., eng., rus.

Prevention of the heating season was implemented by hormonal preparations some studied cats. The article discusses the research results and the ways of eradication of the pathological changes. Ref. 4.

Auth.

11.g9.9.10. Anestrol – per oral hormonal preparation and its influence on cats. /M. Chkhikvishvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 264-265. – geo.; abs.: geo., eng., rus.

The article discusses the hormonal drug Anestrol and the effects of its test on 40% of the tested animals. Ref. 3.

Auth.

11.g9.9.11. Resistance of salmonellas discharged from sick and dead animals; establishment of sensitivity to antibiotics and selection of highly effective preparations. /Z. Chekurishvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 266-268. – geo.; abs.: geo., eng., rus.

According to the conducted researches, it was established that salmonellas are steady against salting, smoking and acids, and bacteria decay under thermal influence, in particular, at a temperature + 55-60°C they perish within 35-40 min. and at a temperature + 80°C and more they perish within 1-2 min. Also was confirmed that the elimination of salmonellas and preservation of

reliability of a product will be guaranteed by cooking pieces of meat for two or more hours. Salmonellas have a special sensitivity (100%) to Ciprofloxacin and Norfloxacin; it gives the chance of their wide application. Tab. 1, Ref. 7.Auth.

11.g9.9.12. The content of non-protein nitrogen and urea nitrogen in cows blood and milk when they are on summer pastures. /G. Basiladze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 269-271. – rus.; abs.: geo., eng., rus.

In the pastoral period the level of blood nonprotein nitrogen and urea nitrogen in all experimental cows (fertilized lots) compared to control group (nonfertilized lots) increased by 24.0; 30.6; 34.8; 37.6 and by 15.0; 26.4; 33.2; 43.2% respectively. An increase in the amount of non-protein nitrogen and urea in the milk of cows by their groups was as follows: in the first group - 0.004 and 2.5%; in the second group – 0.008 and 5.4%, in the third group – 0.009 and 7.0%, in the fourth group – 0.011 and 9.1%, and in fifth group – 0.014 and 11.0 respectively. Tab. 3, Ref. 2.

Auth.

11.g9.9.13. Course of bronchopneumonia in calves. /I. Parkadze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 275-277. – geo.; abs.: geo., eng., rus.

The results of cattle stock farm production activity of “Farm Margebeli” are described; the etiological factors of calves’ bronchopneumonia are identified. The course of calves’ bronchopneumonia in the farm in 2010-2012 revealed that in 2010 the illness constituted 24.5%, in 2011 - 5.4% and in 2012 - 11.1%. Characteristics of calves’ bronchopneumonia are studied. Fig. 1, Tab. 1.

Auth.

11.g9.9.14. Methods of correction of energy metabolism in animals during hypokinesia. /A.Grigroryan/. Annals of Agrarian Science. - vol. 10, # 4, - pp.104-108 - rus., abs. eng., rus.

The restriction of muscular activity is an important part of the hypokinetic syndrome. Hypokinesia leads to a reduction of energy consumption, reduction in bio-energy and intensity of structural metabolism in the muscles, the weakening of tonic impulses from the muscles, reducing the load on the skeletal system. The purpose of this paper is to study the dynamics of changes of some parameters of energy metabolism in rats and bulls with limited physical activity, approbation, and in an industrial environment adaptogenic drug Eleutherococcus extract. As a result of our studies, we observed a significant decrease in oxygen consumption, increased activity of catalase and glutathione content in the blood of experimental animals that is apparently due to a violation of mechanical ventilation and a decrease in the use of oxygen by the body tissues and cells, as well as changes in metabolism, indicating that shifts in the oxidation - reduction processes in the body and Eleutherococcus extract is the corrector of these negative changes. Fig. 3, Ref.7

Auth.

11.g9.9.15. Monitoring of acclimatization of Holstein breed of cattle in subtropical zone of Western Georgia. /L.Tortladze, T.Gabisonia, I.Antia, J.Javarashvili/. Annals of Agrarian Science. - vol. 10, # 4, - pp.113-119 - rus., abs. eng., rus.

The scientific researches have shown that the Holstein breed of cattle successfully adapted to the new conditions in subtropical zone, preserving the peculiarities of built of the breed, good reproduction capacity, health, lifetime and in heifers and cows the exterior and interior indices characteristic of dairy cattle. Milk productivity of cows corresponds to the level of feeding and the bull calves when raising intensively reach 500kg at the age of 19 months. In case of having good fodder resources the breed should be recommended for wide area of distribution. Fig. 6, Ref.16

Auth.

11.g9.9.16. Present status of buffalo breeding in Georgia and its development prospects. /G.Gogoli, G.Khatiashvili, G.Macharashvili, L.Tabatadze/. Annals of Agrarian Science. - vol. 10, # 4, - pp.120-123 - eng., abs. eng., rus.

Buffalos are distributed in all ecology-economic zones of Georgia. They belong to river buffalos. The Caucasian buffalo is distinguished by high live weight and satisfactory dairy efficiency. According to recent data, the number of buffaloes in Georgia is 29.5 thousand. Basically, they are bred in small backyard farms, their number in farms is up 50 heads. In the scientific experiments

we studied the economic and biological characteristics of the buffalo, including reproductive ability, milk production, growth and development of young animals, adaptability to changes. It was stated that while feeding with a small amount of silage and grain yield, average milk yield of dairy buffalos increased by almost 50% compared to pastures. Fig. 2, Ref.9

Auth.

11.g9.9.17. The rates of incubation of hunting-pheasant egg. /I. Shergelashvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 247-249. – geo.; abs.: geo., eng., rus.

The study of incubation and morphological rates of hunting pheasant egg showed that the morphological rates are not greatly changed at the period of laying eggs. The last impragnation of eggs: hatching from packing as from impragnated increases by 3-5%. Tab. 1, Ref. 6.

Auth.

11.g9.9.18. The current state of affairs of beekeeping in Georgia. /Z.Akhaladze/. Novation. – 2012. - # 10. – pp. 152-158. – geo.; abs. geo., rus., eng.

The work is devoted to beekeeping, which is the oldest, the most important and in many respects useful! branch of Georgian agriculture. Development of beekeeping has big economic value of the country and is important for revival of the local industry. Nevertheless, rates of development of the sector of beekeeping in Georgia lag behind the rates of development of other branches of the national economy. The purpose of the work was to study the present state of beekeeping and branch problems, also to develop proposals necessary for restoring the branch of beekeeping and its further development. Tab. 3.

Auth.

11.g9.9.19. Bacteriophages for differentiation of brucella species. /I. Antadze, S. Gunia, T. Burbutashvili, M. Dadunashvili, N. Balarjishvili, E. Tevdoradze, M. Kutateladze/. Bacteriophages and Probiotics – alternative to antibiotics. Intern. Conf. Abst. Tbilisi – 1-4 July 2012. - p.49 – eng.

Brucellosis, a bacterial disease caused by members of the genus *Rubella* is an important zoonotic disease worldwide. Eliava Institute has a large collection of phages against *Brucella* that were isolated from various sources and reveal selective Lytic activity against different bacterial strains. In the framework of the DTRA GG 17 project, several bacteriophages were isolated from *Brucella abortus* (N 141, 19, 9) and *B. suis* (N7sa and 11 sa) by UV induction. The Lytic activity of phages N19, 9, 14" 7sa, and 11 sa was studied on 36 strains of *Brucella* spp. (*B.abortus*, *B.suis* and *B.melitensis*)

Auth.

11.g9.9.20. Bacteriophage therapy in farmed Atlantic salmon. /M. S. Breke, H. P. Kleppen/. Bacteriophages and Probiotics – alternative to antibiotics. Intern. Conf. Abst. Tbilisi – 1-4 July 2012. - p.50 – eng.

Winter ulcers and yersiniosis are two diseases causing significant losses in farmed Atlantic salmon. The diseases are caused by *Moritella viscosa* and *Yersinia ruckeri* infections, respectively. Vaccination and classical antibiotics have been successfully to control the diseases. However vaccination does not provide complete resistance and there is an increasing emergence of bacteria observed which are insensitive to antibiotics. We are developing bacteriophage therapeutics as an alternative to classical antibiotics in the treatment of winter ulcers and yersiniosis in farmed Atlantic salmon. Here we present the characterization of novel therapeutic bacteriophages infecting both *M. viscosa* and *Y. ruckeri*.

Auth.

11.g9.9.21. Beekeeping. /G. Madzgharashvili/. Monograph. - 2013. – p. 178. - geo.

Topical issues of beekeeping are discussed, such as: bee biology, maintenance-keeping methods, diseases and treatment methods, honey flora and the main point of use of bee in plant growing, bee product processing and storage technologies. The achievements of science and technology in the field of beekeeping, recommendations on production and market introduction of high-quality

product are highlighted. The monograph is published by the United Nations Development Programme (UNDP).

Auth.

11.g9.10. FORESTRY

11.g9.10.1. Typology of East Georgian open juniper woodlands. /P. Togonidze/. Georgian National Academy of Sciences. – 2011. – v.5. - #3. – pp. 103-105. – eng.; abs.: eng., geo.

The paper provides new data on East Georgian open juniper woodland types and associations. The typology of open juniper woodlands has been studied on 8 sampling plots. Phytocenosis composition, average height and diameter, age, growth class, natural regeneration rate, status of forest understorey and herbaceous cover were determined. Ref. 6.

Auth.

11.g9.10.2. Utilization of Adjarian greenery resources. /A. Bajelidze, N. Mamuladze/. Subtropical Crops. – 2010. – №1-4. – pp. 383-386. – geo.; abs.: eng., geo., rus.

The article deals with the widespread plants in the forests of Adjara: sweetbrier, hawthorn, spring snowdrop, *Colchicum speciosum* and hop. The utilization of their products, making raw material under natural and cultured conditions is described. It is shown of that these raw materials are found both in Adjara and Turkey, which borders Adjara. All this makes it possible to found a joint enterprise for making raw material and producing the above-described products. Technological regulations of some products are tested in Georgia. Tab. 1, Ref. 4.

Auth.

11.g9.10.3. Pathological status of chestnut stands in Tkibuli Region (Georgia). /B. Tavadze, A. Supatashvili, G. Kapanadze, Ts. Mamukashvili/. Bulletin of Forestry. – 2012. - #5. – pp. 21-32. – geo., abs.: eng., rus.

Phytopathological investigations of chestnut forests in Tkibuli region were carried out in 2010. In different forest plots on the 27 routes total 3479 trees were recorded; of them healthy were 2068 trees or 59.44%, dying and dead - 1411 or 40.56%. This is indicative that the general phytosanitary status of chestnut stands in Tkibuli is very unsatisfactory requires the carrying out of sanitation measures. The investigation was financed by the Swiss National Science Foundation, (SCOPEs) - project #IZ73ZO-127922 and by the Ministry of Environmental Protection of Georgia. Fig. 4, Tab. 1, Ref. 22.

Auth.

11.g9.10.4. Sanitary status of coniferous forests in the surroundings of Bakhmaro resort and measures for their rehabilitation. /A. Supatashvili, N. Kobakhidze, G. Gagoshidze, N. Iordanishvili/. Bulletin of Forestry. – 2012. - #5. – pp. 33-40. – geo., abs.: eng., rus.

The 2008-2010 study of coniferous forests in the surroundings of the health resort Bakhmaro showed that total amount of dead and dying spruce and fir trees made from 10 to 25%. Among the most injurious pests mention should be made of *Dendroctonus micans* Kug., together with its entomophagous - *Rhizophagus grandis* Gyll., *Rhizophagus depressus* F., *Thanasimus formicarius*. In forests occur many quantity premature, hollow wind brake and, wind-fall trees. The measures of rehabilitation of coniferous forests in the surroundings of the health resort Bakhmaro are proposed. Fig. 4, Tab. 2, Ref. 5.

Auth.

11.g9.10.5. The effect of structure and resistance of eastern spruce stand (*Picea orientalis* L.) on dynamics of stem pest numbers (bark beetle) in the beech forest belt. /T. Berozashvili/. Bulletin of Forestry. – 2012. - #5. – pp. 41-48. – rus., abs. geo., eng.

Researches conducted in the beech forest belt (1000-1400 m a.s.l.) showed that the structure and biological resistance of stands of eastern spruce at moderate humidity mainly condition dynamics of numbers of biologically active bark beetles of economic importance, and an amount of harm. Therefore, it is necessary that the stands of middle (0,5-0,6) and high (0,7-0,8) thickness be preserved on areas as much as possible. The thinning of spruce stands affects their ecosystem and natural immunity. Tab. 4, Ref. 4.

Auth.

11.g9.10.6. The past and present of Nedzvi Gorge forests. /M. Zedelashvili, L. Kobakhidze, Z. Bliadze/. Bulletin of Forestry. – 2012. - #5. – pp. 65-73. – geo., abs. geo., eng., rus.

Nedzvi Gorge is situated in the region of Borjomi. This most beautiful land is rich in coniferous and larch forests, mountain streams and mineral waters. In the historical past there were three attempts of settling in Nedzvi Gorge. The first attempt was in the 9th-10th centuries and lasted about 120-140 years, the second in the 70s of the 19th century which lasted till 1950; the third attempt was in 1993-2003. During the periods of settling considerable damage was caused to the forests by fires and by unsystematic felling. In 2006 Nedzvi Gorge was joined to Borjomi-Kharagauli National Park, felling was stopped and strict reserve regime was established. Fig. 3, Ref. 5.

Auth.

11.g9.10.7. History of the resonance wood production in Georgia. /L. Arganashvili/. Bulletin of Forestry. – 2012. - #5. – pp. 77-79. – geo., abs.: eng., rus.

The history of the resonance wood production in Georgia shows that the locally grown oriental or Caucasian spruce, also known as Caucasian (silver) fir, has excellent acoustic properties and good prospects of being exported. Georgian forests are rather rich in these trees. In addition, the Caucasian fir timber is free from resin ducts, which makes it more valuable for acoustic properties. Tab. 1.

Auth.

11.g9.10.8. The status of patriarchal forests of Georgia. /T. Kandelaki/. Works of Georgian Academy of Economic Sciences. – 2012. – v. 10. – pp. 206-217. – geo.; abs.: geo., eng.

Under the presidential decree and in accordance with the Forest Code of Georgia in operation since 1999, the Patriarchate of Georgia has been transferred into use without the right of ownership 1617,3 ha of forests. The article considers the issues associated with the restrictions on the right of the Patriarchate to protect, plant, maintain and use forests and gives recommendations for improving the forest-related situation in Georgia. Tab. 2.

Auth.

11.g9.10.9. Some aspects of situation in Georgian forests. /G. Japaridze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 71-72. – geo.; abs.: geo., eng., rus.

The complicated situation in connection with Georgian forests due to unsystematic falling of trees and its individual aspects are considered. Ref. 1.

Auth.

11.g9.10.10. The natural renovation in the main types of beech forests of Adjara. /A. Dzirkvadze, G. Jabnidge/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 73-76. – geo.; abs.: geo., eng., rus.

The article considers the state of natural renovation in beech stands of low, middle and high density and provides the appropriate conclusions. Tab. 1, Ref. 4.

Auth.

11.g9.10.11. Natural renovation of spruce groves by forest types. /R. Vasadze, A. Dzirkvadze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 77-85. – geo.; abs.: geo., eng., rus.

The article considers natural renovation of spruce groves by forest types according to various altitudes above sea level, several ecotypes, exposition, slope inclination, density, age, and soils. Fig. 6, Tab. 1, Ref. 5.

Auth.

11.g9.10.12. Efficiency of the use of forest products in industry. /T.Khmelidze, T.Vanishvili/. Business-Engineering - 2012. - # 4 - pp.129-131 - geo.; abs.: eng., geo.

Provision of wood is an important task to ensure growth of the country's industrial capacity. Industry and construction annually increase demand on wood, but in Georgia reserves of forest fit for wood cutting are practically exhausted, so this issue needs optimal approach - increasing wood reproduction and rational use of existing reserves. First of all, preference should be given to the use of deciduous species, since 75% of forests are deciduous, and only 25% - coniferous. Besides, coniferous wood in Georgia is of low quality in comparison with European and Russian species because of large amount of callosities. Deciduous species of wood has been used in cities and villages for domestic purposes and for making agricultural tools. Examples of industrial consumption wood (so-called business-wood) are packaging tare, railway sleepers, mining tunnels pins and scaffoldings, cellulose-paper products, etc. The paper provides a general overview and recommendations for the use of wooden timber in these fields. The main focus is restoration of Ingiri cellulose-paper factory, wooden tile and tare manufacturing enterprises working with local raw material which will meet requirements of the internal market. Ref.4.

Auth.

11.g9.10.13. Determining carbon stock in forest stands of Caucasian pine and Oriental spruce in Georgia. /E. Nakaidze, G. Vachnadze, Z. Tiginashvili, G. Tsereteli, D. Gigauri/. Annals of Agrarian Science. - vol. 10, # 4, - pp.131-133, - eng., abs.: eng., rus.

The research studied the amount of deposited carbon in Borjomi-Bakuriani forest stands of Caucasian pine (*Pinus hamata* (Stev.) D. Sosn.) and Oriental spruce (*Picea orientalis* Link) in various stand-age classes. Carbon stock was also determined in young growth, sub forests, in soil live and dead covers, in soil humus. Annual wood increment in the region is 3.85 m³/ha.; annually fir stands absorb from atmosphere 2.48 tons CO₂, in which the deposited carbon stock makes 0.675 tons. Annual wood stock in spruce stands is 2.68 m³/ha., annually absorb 1.126 t/ha. CO₂, deposited carbon stock is 0.56 t/ha. By fir and spruce stands of Borjomi-Bakuriani district from atmosphere is absorbed and in biomass as carbon is concentrated 14856.01 thousand ton CO₂. Fig. 3, Ref.10

Auth.

11.g9.10.14. New data of spreading the European white birch (*Betula pendula* Roth) in the surroundings of Tbilisi. /N.Eradze, N.Lachashvili. T.Nadiradze/. Annals of Agrarian Science. - vol. 10, # 4, - pp.137-139 - eng., abs. eng., rus.

Area of *Betula pendula* Roth in the surroundings of Tbilisi has been studied. New sites of its spread in the gorges of the r. Vere and Digmistskali have been observed. About 140 grown ones are registered in the gorge of Vere, and 14 - in the gorge of Digmistskali. They are spread as the small numbers of groups and as unit of individuals in the abolished structure coenoses of different formation of the forest. We meet them rarely in the rank of ediphicator. Renovation does not go. General conformity with a law of spreading of B. Pendula in the surrowndings of Tbilisi, small phytocoenological description of habitats, participation and its ceonotic role in different communities is given as well as some parameters (height, diameter, age) of its individuals. Ref.14

Auth.

11.g9.11. BIOCHEMISTRY, BIOTECHNOLOGY AND AGRICULTURAL PRODUCTION

11.g9.11.1. Natural zeolites – one of the possibilities of transition from chemical to biological agronomy. /T.Andronikashvili, M.Zautashvili, L.Eprikashvili, N.Burkiashvili, N.Pirtskhalava/. Georgian National Academy of Sciences. – 2012. – v.6. - #2. – pp. 111-118. – eng.; abs.: eng., geo.

Some aspects of transition from chemical to biological agronomy are discussed in the article. Attention is focused on the questions of use of natural zeolites of sedimentary origin in practice of plant growing. On the basis of the researches carried out at the end of the 20th and at the beginning of the 21st centuries, positive influences of the natural zeolites on its physical and chemical properties, biological activity and efficiency are established. Ref. 34.

Auth.

11.g9.11.2. Consumer properties received from the vegetative raw materials products of tea types. /Z. Maisuradze, Ts. Javelidze, M. Salukvadze/. Subtropical Crops. – 2010. – №1-4. – pp. 85-88. – geo.; abs.: eng., geo., rus.

Grapes and subtropical persimmon leaves are nontoxic, non-polluting raw materials rich in biologically active substances. A technology enabling making of products with tea-like consumer properties from the said raw material has been developed. Tab. 3, Ref. 8.

Auth.

11.g9.11.3. Natural concentrates for preparing products with high food value. /M. Ardzenadze, V. Bolkvadze/. Subtropical Crops. – 2010. – №1-4. – pp. 106-109. – geo.; abs.: eng., geo., rus.

The data about main parameters of technology natural concentrated juice is cited in the article. The basic accent is made on the concentrated juice made from two pair cultivars “Seyanets Kiffera” and “Mikado”; the chemical composition of the juice and technologies of making drinks and compotes on their basis, as well as the prospects of their use for patients ill with diabetes mellitus are given. Tab. 3, Ref. 3.

Auth.

11.g9.11.4. Antioxidant bioproducts from tea fleshes. /I.Chkhartishvili, N. Seidishvili, V. Tsintsadze/. Subtropical Crops. – 2010. – №1-4. – pp. 282-284. – geo.; abs.: eng., geo., rus.

An optimal liquid green tea processing technology has been developed. The physico-chemical indices of the produced bio-product are studied. The making of juice required a 5-minute steaming of tea fleshes. The output of juice should make up to 20% of the tea raw material's initial mass. Tab. 2.

Auth.

11.g9.11.5. Research results of technological regulations of receiving black tea liquid concentrate. /Z. Dzneladze, V. Tsanova, N. Dzneladze, E. Gobronidze, I. Gaprindashvili/. Subtropical Crops. – 2010. – №1-4. – pp. 284-288. – geo.; abs.: eng., geo., rus.

Specifications of producing a new type of black tea liquid concentrate for making hot tea drink is worked out (technological instruction 155665268-001-08). To prepare a glass of hot tea drink, 2-2.5 tsp (tea spoon) of black tea concentrate is needed. The drink contains a consumption dose of water soluble extractive substances of black baikhovy tea and sugar. The enterprise engaged in industrial testing and introduction of liquid tea concentrate into production will provide standard technical documentations free of charge. Tab. 5, Ref. 3.

Auth.

11.g9.11.6. Study process of tea drying in vibro-fluidized bed. /T. Megrelidze, V. Gvachliani, E. Sadagashvili, G. Gugulashvili/. Subtropical Crops. – 2010. – №1-4. – pp. 292-295. – geo.; abs.: eng., geo., rus.

Process of tea drying in a vibro-fluidized bed is a novel up-to-date method. In order to study the mentioned process, experiments were carried out on the installation for drying in vibro-fluidized bed. The results of the carried out experiments showed high efficiency of drying tea in vibro-fluidized bed. The optimal temperature of the working agent at the first stage is 150°C and 120°C at the second stage. Duration of drying process is reduced to 8-10 min. Fig. 3, Ref. 3.

Auth.

11.g9.11.7. Making medicinal preventive products from soya. /D. Tavdidishvili, Ts. Khutsidze, N. Minadze, M. Pkhakadze/. Subtropical Crops. – 2010. – №1-4. – pp. 302-304. – geo.; abs.: eng., geo., rus.

The safety indicators of soya growing in West Georgia are investigated. The nutrition value and degree of satisfying daily requirement for basic food substances are studied. A technology of making soya drinks with fruit and bee product additives is worked out. The indicators of quality, storage and marketing conditions of the products as well as their medicinal and prophylactic properties are identified and justified. Tab. 2, Ref. 2.

Auth.

11.g9.11.8. Establishing optimal parameters of an extract of plant raw material composition to prevent and treat diabetes. /D. Narsia, M. Khomeriki/. Subtropical Crops. – 2010. – №1-4. – pp. 307-310. – geo.; abs.: eng., geo., rus.

A preventive medicinal extract for diabetes was produced on the basis of tea and local medicinal plant raw material. The content of extractive substances and tannins was studied both in separate components and the mixture of the composition. The extraction process was studied and optimal parameters of its conduct were established in order to receive an extract of high biological value. Fig. 2, Tab. 1, Ref. 13.

Auth.

11.g9.11.9. Results of technological and biochemical researches of raw material of liquid tea concentrates. /Z. Dzneladze, R. Takidze, I. Toidze, D. Narsia, M. Khomeriki/. Subtropical Crops. – 2010. – №1-4. – pp. 311-314. – geo.; abs.: eng., geo., rus.

New materials for receiving liquid tea concentrates (qualitative and less marketable products of black and green baikhovy teas, tea leaf processing waste, fibers, plates, dust) are studied. On the basis of the carried out research (organoleptic, chemical indices and heavy metals) it is established that the less marketable products of black and green teas and waste can, thanks to their content of water-soluble extractive substances, be successfully used for preparing different liquid concentrates. Tab. 3, Ref. 5.

Auth.

11.g9.11.10. Development of a black and green tea processing line for farmers. /V. Gvachliani, G. Gugulashvili, T. Tkeshelashvili/. Subtropical Crops. – 2010. – №1-4. – pp. 344-346. – geo.; abs.: eng., geo., rus.

Optimal technological schemes and equipment are offered for processing black and green teas from high quality raw materials. Research results are introduced in Tkibuli tea factory by company "Sando" and in Shemokmedi experimental enterprise. Fig. 1, Ref. 7.

Auth.

11.g9.11.11. Line for extraction tea lipids. /V. Khvedelidze, G. Gorgodze, M. Gachechiladze, A. Bantsadze/. Subtropical Crops. – 2010. – №1-4. – pp. 348-351. – geo.; abs.: eng., geo., rus.

A technological scheme of lipid extraction is designed, where the process is carried out at two stages with allowance for tea physical and chemical features of tea. The production line working on the given scheme and its apparatus design are worked out. It is shown that tea extraction is carried out by solvent in a closed cycle with maximum exclusion of getting of the solvent's steam into the air. The processing line enables to produce a concentrate rich in vitamin P through water extraction from the remaining oilcake. Fig. 2, Ref. 3.

Auth.

11.g9.11.12. Mathematical modeling of tea leaf roasting process. /B. Dolidze, Z. Andguladze, S. Guruli/. Subtropical Crops. – 2010. – №1-4. – pp. 346-348. – geo.; abs.: eng., geo., rus.

The dynamics of transformation of infrared radiant energy into thermal during its passing through the walls of roasting drum, heat transmission to tea mass from the walls of the roasting drum and volume exchange during tea leaf roasting is given. On the basis of the research findings a mathematical model for calculating the design and technological parameters of the installation is elaborated. Tab. 1, Ref. 6.

Auth.

11.g9.11.13. Natural plant flavours and their industrial application. /N. Baghaturia, E. Uturashvili, I. Kupatadze, M. Demeniuk, Z. Alania/. Agrarian-economic Science and Technologies. – 2013. – #1. – pp.56-60. – geo.; abs.: geo., eng.

In order to improve the product quality are widely used the aromatic compounds– the food additives, one of the important sources of which are, so called, fragrant-aromatic plants, in particular their essential oils that give the plants the specific aroma. The chemical composition of the essential oils of fragrant-aromatic plants: lemon sorghum, lemon basil and lemon wormwood are studied. It is established that the essential oils of the plants consist of α and β citral and

linalool, typical for lemon that causes the specific aroma and gives an opportunity to use them as natural food flavours. The alcoholic beverage made of lemon sorghum and lemon basil got the high degustation evaluation that proves the advisability of their usage in food industry. The use of essential oils of the given food products, instead of the expensive lemon essential oil, are quiet effective and profitable from the economic point of view. Tab. 1, Ref. 5.

Auth.

11.g9.11.14. Chemical composition and perspectives of use of fruits of the wild growing plants in Georgia – hawthorn, dog-rose, sea-buckthorn and jujube. /N. Baghaturia, N. Begiashvili, L. Kotorashvili, M. Ormotsadze, B. Baghaturia/. Agrarian-economic Science and Technologies. - 2013. - #1. – pp.51-55. – geo.; abs.: geo., eng.

In order to make the assortment of the functional food products wider the work investigates the chemical composition of wild-growing plants in Georgia: hawthorn, dog-rose, sea-buckthorn and jujube. The research results show that they are rich in sugar, vitamins β carotene and C ascorbic acid, pectin substance, etc. It is established that fruits of hawthorn, brier, sea-buckthorn and jujube can be used for industrial processing to produce hydro pectin and pectin-containing products. Tab. 2, Ref. 2.

Auth.

11.g9.11.15. New assortment of functional purpose shortbread. /E. Pruidze, G. Khetsuriani/. GEN. – 2012. - #4. – pp. 106-108. – geo.; abs.: eng.

The article deals with the elaboration of the technology of production of low-calorie shortbread of a new type. It is shown that this aim can be achieved by reducing the content of readily assimilated carbohydrates and increasing the nutritive value owing to the enrichment with biologically active substances of vegetable origin. For this purpose the powdered Jerusalem artichoke was used as an additive. The elaborated technology involves the replacement of some amounts of flour and sugar with the powdered Jerusalem artichoke. Tab. 2, Ref. 4.

Auth.

11.g9.11.16. On the possibilities of using barberries and haws for producing functional foods. /D. Tavdidishvili/. GEN. – 2012. - #4. – pp. 99-100. – geo.; abs.: eng.

The chemical composition and safety indices of barberries and haws were studied. It was found out that the berries of both types contained significant amounts of cellulose, pectin and biologically active substances. The content of vitamins and mineral substances in those berries and their level of providing the daily norm of intake make barberries and haws advisable for nutrition, especially for prophylaxis of ascorbic acid and iron deficiency. The technology of production of functional drinks and sauces using the barberries and the berries of hawthorn was developed.

Auth.

11.g9.11.17. Thermal treatment of grape must with infrared rays to increase the quality of wine materials. /M. Mikaberidze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 222-224. – geo.; abs.: geo., eng., rus.

The work is dedicated to the thermal treatment of grape must by the energy of infrared rays to improve the quality of wine materials. The experimental data identify the optimal conditions of such treatment. Fig. 1, Tab. 2, Ref. 3.

Auth.

11.g9.11.18. Study of the basic qualitative indicators of orange juice for the purpose of its further processing. /G. Kaishauri, T. Dzneladze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 225-226. – geo.; abs.: geo., eng., rus.

This work presents the results of a study of technical and chemical indicators of the Washington Navel orange grown in Georgia. It is established that the produced juice preserves all the substances contained in the fruit and is a high quality nutrition product with very good taste. Tab. 1, Ref. 5.

Auth.

11.g9.11.19. The results of the research of technical and chemical indicators of the actinidia cultivar “Monty”. /G. Kaishauri/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 227-228. – geo.; abs.: geo., eng., rus.

The cultivar of Actinidia (kiwifruit) "Monty", grown in West Georgian region of Zugdidi was studied. The organoleptic, technical indicators and chemical content show that the cultivar contains a considerable quantity (57.5 mg%) of vitamin C. Tab. 1, Ref. 6.

Auth.

11.g9.11.20. Cold storage of cheese produced from soya milk. /T. Megrelidze, V. Gvachliani, G. Gugulashvili, E. Sadagashvili, B. Gvachliani/. Transactions of Technical University of Georgia. – 2012. – #3(485). – pp. 67-71. – geo.; res.: geo., eng., rus.

A new technology process for making cheese from soya milk is described. It is shown that for preserving the cheese the cheese should be kept in a refrigerator. The optimal parameters for cold storage of the cheese made of soya are established. Fig. 4, Ref. 10.

Auth.

11.g9.11.21. Using the hydroelectric effect in making candied fruits. /G. Papunidze, S. Papunidze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 334-336. – geo.; abs.: geo., eng., rus.

The rational use of fruits, berries and non-traditional plant raw materials spread in Georgia for developing a functional and medicinal-preventive food production technology was studied. Fig. 1, Ref. 2.

Auth.

11.g9.11.22. Agricultural products' import-export tendencies in Georgia. /Sh.Chalaganidze, T.Kunchulia/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #30. - pp. 356–362. – geo.; abs.: geo., eng., rus.

The article deals with such issues as agricultural products' export-import tendencies in Georgia, the quantitative and structural changes of in the export, the results of the work on the promotion and extension of new commodity groups, the effect of the Russian Embargo on exports of Georgian wine and mineral waters. Under conditions of increased import of agricultural products, causes of reduction of local production are explained and the expediency of production of importable farm produce is explained. The agricultural products export-import statistics for the last 10 years are given in accordance with the Harmonized System of Nomenclature of Goods that are published for the first time and are to serve the investigators and experts of this sphere, as well as the general public.

Auth.

11.g9.11.23. Application of the electromechanical effect in the production of delicacy lamb products. /A.Nurgazezova, K.Amirkhanov, B.Asenova, G.Kozhibaeva, G.Nurimkhan/. Business-Engineering - 2012. - # 4 - pp.180-181 - rus.; abs.: eng., geo.

The use of electromechanical effects allows reduce duration of technological process, improve the organoleptic, physico-chemical, structural and mechanical properties of lamb and increase the biological and nutritional values of gourmet lamb meat product. Ref.4.

Auth.

11.g9.11.24. Biotechnology of production of new generation sour milk products. /B.Tuganova, S.Taraigirova/. Business-Engineering - 2012. - # 4 - pp.184-187 - rus.; abs.: eng., geo.

The research revealed that the developed new slurred sour milk products from secondary dairy raw material are biologically full value foods and may be recommended for functional use and prophylactic nutrition for all age groups of population. Ref.4.

Auth.

11.g9.11.25. Photochemical analysis of bilberry leaves. /R. Skhiladze, M. Sulaberidze, K. Batsikadze/. Transactions of the Technical University of Georgia.– 2012.-#2(484).-pp. 23-28.-geo.; abs.: geo, eng., rus.

For a systemic chemical study of bilberry leaves the content of glycosides, sugar and other reduced substances was investigated on the basis of a substance extracted from the bilberry leaves spread in Kazbegi and Vani regions: organic acids, colorant (chlorophyll), mineral

substances and tannins, saponins, etc. The bilberry leaves are found to contain 12-18% of reducing substances and 2 glycosides at least. The particular value of the bilberry leaves is their ability to reduce blood sugar (glucose). This effect is manifested on per oral administration (in contrast to insulin).

Auth.

11.g9.11.26. Probabilistic estimation of the diffusion process of extraction of vegetable raw materials. /Z. Japaridze, T. Kipiani, N. Tomadze/. Transactions of Technical University of Georgia. – 2012. – #2(484). – pp. 83-85. – geo.; abs.: geo., eng., rus.

The physical model of the diffusion process of extraction of vegetable raw materials is presented. Using the probability theory methods, a mathematical model of the movement of target components in the diffusion layers and extraction in the extragent is obtained. Fig. 1, Ref. 2.

Auth.

11.g9.11.27. Investigation of the kinetic process of extraction of vegetable raw materials. /Z. Japaridze, N. Tomadze/. Transactions of Technical University of Georgia. – 2012. – #2(484). – pp. 86-88. – geo.; res.: geo., eng., rus.

A mathematical model of the kinetic process of extraction of vegetable raw materials is proposed. The equations for the evaluation of the separation of the target component in the extragent are obtained. Ref. 1.

Auth.

11.g9.11.28. Technological and medical biological aspects of the problem of increasing the nutritional and biological value of food protein. /G. Grigorashvili, A. Khotivari, N. Iluridze/. Agrarian-economic Science and Technologies. - 2013. - #2. – pp. 43-56. – geo.; abs.: geo., eng.

The paper discusses the problems of development of a protein composition. Suggested is one of the ways of the optimal use of protein resources. A mathematical method of mutual enrichment of the two proteins (plant and animal) limited by different amino acids is analyzed. The method is based on a comparison of the amino acid scales of the mutually enriched proteins. Tab. 3, Ref. 24.

Auth.

11.g9.11.29. Using protein concentrates produced from the secondary raw material of industrial processing of grapes in the sausage production. /G. Grigorashvili, A. Khotivari, N. Iluridze/. Agrarian-economic Science and Technologies. - 2013. - #2. – pp. 57-67. – geo.; abs.: geo., eng.

The present work discusses a possibility of using the protein concentrate received from the nontraditional raw material – secondary raw material of grapes' secondary processing (grape skins and seeds). Characterization of the raw kind of proteins is given, their functional and technological features are studied, the recipes and technologies of new combined meat by-products using the grapes protein preparations are presented. Tab. 3, Ref. 7.

Auth.

11.g9.11.30. Study of a consumer attitude toward bee products and the products containing them. /D. Tavdidishvili, Ts. Khutsidze/. GEN. – 2012. - #4. – pp. 101-103. – geo.; abs.: eng.

The consumer attitude to honey and other bee products is studied. The monitoring results are analyzed. The advisability of production of confectionery, desserts and drinks containing honey and other bee products rich in essential biologically active substances is demonstrated. For this purpose, it is necessary to elaborate a science-based technology and recipes, which would extend the assortment of functional-purpose confectionery, desserts and drinks that are rather limited in Georgia today.

Auth.

11.g9.11.31. The effect of milk-contained heavy metals on Georgian cheese quality. /G.

Basiladze, E. Kalandia/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 272-274. – geo.; abs.: geo., eng., rus.

The content of heavy metals in milk and their effect on Georgian cheese quality has been studied in the region of Kvemo Kartli, specifically in the village of Mashavera (control group), Dmanisi region as well as in the village of Javshaniani (experimental group), Bolnisi region. The content of heavy metals (copper, zinc, lead) in the milk of the Caucasian Brown cows and its effect on the Georgian cheese quality were studied. Tab. 3, Ref. 3.

Auth.

11.g9.11.32. Effective microorganisms - M technology in agriculture. /S. Uchava, M. Odisharia/ New Agrarian Georgia. - 2013. - # 5. - pp. 17-18. - geo.

It is noted that the yield and quality of melons, vegetables, berries, fruit crop significantly improves as a result of M solution sprinkling or soil irrigation. All components of the M technology are produced from organic substances and any gardener can produce any fertilizer and biological agents for own land plot (for example, in the form of compost).

N. Chkhaidze

11.g9.11.33. The role of ethics and food safety in the food supply chain. /P. Raspor/. Bacteriophages and Probiotics – alternative to antibiotics. Intern. Conf. Abst. Tbilisi – 1-4 July 2012. - p.102 - eng.

Food production, processing, storage and distribution have all experienced profound changes in last decades due to forced globalization, shelf life extension, and often peculiar consumer demands. Manipulation of quality and safety terms along the food supply chain is prevalent. Food safety programs have to identify hazards, analyze them, evaluate the likelihood of their occurrence, and identify measures for their control. Being a food professional is a challenge and an opportunity to analyze processes and to understand how good and successful practices may be implemented and where food microbiology and its practitioners need to be actively involved in food safety management from "farm to fork": And with that, the food supply chain opens many dimensions of ethics considerations.

Auth.

11.g9.11.34. Microbiological aspects of food products hygiene. /R.Kurashvili, G.Kverenchkhiladze/. Tbilisi State Medical University. Collection of Scientific Works. – 2012. – v. XLVI. pp. 84-85. – geo.; abs.: eng.

During recent years, threat of microbiological contamination of foodstuff provoked international agencies and committees, among them WHO and FAO, to adopt a number of documents and guidelines/resolutions in the sphere of food safety. Analysis of medical and bacteriological study implemented by the controlling body of food safety – National Food Agency of the Ministry of Agriculture of Georgia during 2007-2012 showed that the basic violations is the presence of coliform bacterium with a tendency to grow. We believe that basic reasons of the present situation are violations of sanitary and hygiene conditions and technological processes by the producing enterprises and non-observance of personal hygiene by their employees. Ref.3.

Auth.

11.g9.11.35. Food safety and quality. /K. Laperashvili, Z. Kuchukashvili/. - 2011. – p. 143 - geo.

The book provides basic chemical components of food, food safety and quality policy in Georgia, general provisions on regulation in the European Union, main chemical and biological threats of food and food raw materials, technology of assessment of food safety and hygienic rating methods, food adulteration, modern food safety management systems - hazard analysis and critical control points (HACCP), traceability, fortified food, genetically modified food products and their safety evaluation, ethical issues of food biotechnology, the role of laboratories in food safety are considered. Fig. 8; Lit. 62.

Auth.

11.g9.12. AGRICULTURAL MACHINERY

11.g9.12.1. Determination of the normal reaction of the soil to the heels of adaptive self-propelled chassis. /Sh. Chalaganidze, R. Makharoblidze/. Georgian National Academy of Sciences. – 2011. – v.5. - #1. – pp. 92-97. – eng.; abs.: eng., geo.

The article considers the methods defining the normal reaction of the wheels of adapted self-propelled chassis in the case of balance suspension of the driving tandem wheels. The calculation formulae for the normal reactions of the front guide and rear driving wheels are deduced. It is established that the total normal reaction to the truck is distributed equally between the rear and front tandem wheels, thus having an impact on the reaction characteristics of the running system. The normal reactions of the wheels are determined by considering the assembly of the operating equipment allowing identifying the optimal locations of the technological working organs along the girders of the chassis by considering the minimization of the pressure of the wheels on the soil. Fig. 2, Ref. 4.

Auth.

11.g9.12.2. Technical facilities of complex mechanization of tea cultivation and plucking. /I. Bakanidze, R. Margalitadze, L. Lomtadze/. Subtropical Crops. – 2010. – №1-4. – pp. 317-320. – geo.; abs.: eng., geo., rus.

A short description of the early existing and present state of the mechanization of labor-intensive tea growing and tea plucking processes is given. It is noted that a perspective system of machines for complex mechanization works in the field of tea cultivation and plucking has been worked out at the mechanization laboratory of the Institute of Tea, Subtropical Crops and Tea Industry. The system lists the technical facilities, the production and introduction of which is necessary for restoring and rehabilitating of the tea sector. Ref. 6.

Auth.

11.g9.12.3. Technology and techniques to remove the pruned and crushed mass of tea bushes from plantations. /Z. Makharoblidze, R. Khazhomia, T. Sanikidze, I. Dzirkvadze, N. Dumbadze/. Subtropical Crops. – 2010. – №1-4. – pp. 320-323. – geo.; abs.: eng., geo., rus.

The work demonstrates the possibility of using the pruned and crushed vegetative mass of overgrown and degraded tea bushes for economic purposes and its efficient use in Georgia. The work demonstrates the technology to separate and bunker the crushed vegetative mass in the process of pruning down the bushes and technological module mountable on a heavy cutting-and-crushing apparatus. The calculation formula of the crushed mass and degree of crushing for calculating fan initial parameters of the technological module are worked out. Fig. 2, Ref. 4.

Auth.

11.g9.12.4. Mechanized rehabilitation of amortized and aged tea plantations. /Z. Makharoblidze, I. Bakanidze, R. Margalitadze, L. Lomtadze/. Subtropical Crops. – 2010. – №1-4. – pp. 324-328. – geo.; abs.: eng., geo., rus.

The necessity and measures of restoration and rehabilitation of tea growing - one of the most important fields of Georgian agriculture, are considered. It is noted that new machinery and technical facilities for rehabilitating the amortized, abandoned and wooded tea plantations are worked out in cooperation with the Georgian Institute of Mechanization and Electrification of Agriculture. The introduction and application of the mentioned technical facilities in tea industry will essentially contribute to the rehabilitation and restoration of the sector. Fig. 6, Ref. 4.

Auth.

11.g9.12.5. Solar dry kiln for fruit and vegetables. /R. Japaridze, I. Aptsiauri/. Subtropical Crops. – 2010. – №1-4. – pp. 351-354. – geo.; abs.: eng., geo., rus.

Power crisis created in the country put on the agenda the necessity of using local self-renewable power resources. Different variants of household solar dry kiln installations have been developed and experimentally tested at the Institute. The outcomes of these tests as well as the appropriate methods of applications are given. Fig. 2, Tab. 1.

Auth.

11.g9.12.6. Using small-scale mechanization for making forage (fodder) for cattle under mountain conditions. /M. Mamuladze/. Subtropical Crops. – 2010. – №1-4. – pp. 359-361. – geo.; abs.: eng., geo., rus.

An experimental model of small-scale mower of new design that can be used for making fodder under mountain conditions is presented. Fig. 3, Ref. 2.

Auth.

11.g9.12.7. Calculation of cubic equation for load-bearing rope of log dragging rope-way equipment. /Tr. Tkhemaladze, Z. Balamtsarashvili, P. Dundua, D. Nachkhebia, I. Gelashvili, B. Gogochuri/. Bulletin of Forestry. - 2012. - # 5. - pp. 10-15. - geo., abs. geo.

The equation in which by means of putting in the maximum rope droop value $f_{o(max)}$ and after corresponding transitions, the cubic equation of general state of a rope is calculated. In addition, the analogy received between the rope droop and bending moments of the beam is used to discover the f_o value for the droop case by action of own weight of the rope, when such weight, in the form of load, is distributed with q intensity on the span of chord line. The values of erection tension A_0 and working tension A loading factors were found. Representation of the general state of rope connecting rope tensions T_b and T_o – during any change of loads was received. Fig. 3, Lit. 9.

Auth.

11.g9.12.8. Calculation of total length of the load-bearing rope of log dragging rope-way equipment. /R. Tkhemaladze, Z. Balamtsarashvili, P. Dundua, D. Nachkhebia, I. Gelashvili, B. Gogochuri/. Bulletin of Forestry. - 2012. - # 5. - pp. 16-20. - geo., abs. geo.

Physical option is selected, wherein the elastic deformation occurs along the entire length of the rope evenly. On the basis of representation of the option of calculation of bending rope, which determines change of the length of the rope and shape of droop, an equation for determining the length of the rope after its load is received. In the received equation integral is represented as a sum and maximum droop, maximum tension and the maximum length of the rope after deformation is received during location of the load in the middle of span. A formula for determining the total length of the rope is obtained. Fig. 3, Lit. 9.

Auth.

11.g9.12.9. Determination of resistance occurring in a blender and calculation of strength. /O. Akopyan/. Annals of Agrarian Science. – 2012.- vol.10, - # 4. – pp. 84-86. - rus.; abs.: eng.

The paper deals with the determination of resistance on the blades of the screw and the wall of the mixer as well as the strength factor of working organs of the mixer. Fig. 1, Ref. 4.

Auth.

11.g9.12.10. The dependence of operational indices of machine-tractor aggregates (MTA) on the location of rectangular plot on the slope. /S. Papyan, A. Akopyan, V. Badalyan/. Annals of Agrarian Science. – 2012. - vol.10, - # 4. – pp. 87-92. - rus.; abs.: eng.

The complex outline of plot has a negative effect on the operational indices of machine-tractor aggregate, especially if the plot is located on the slope, because in the latter case the power stroke of aggregate is limited by the fact that it moves parallel to the horizons of the slope. In this respect, the connection between the MTA operational indices (particularly the coefficient of power stroke) and the loss coefficient of the curves with arbitrary location of rectangular plot on the slope (under some angle formed by any side of the plot and the slope horizon) are of great importance. It is revealed, that under this location of area those indices are getting worse. Fig. 4, Ref. 5.

Auth.

11.g9.12.11. On some modern farming technologies. /Sh. Chalaganidze, O. Bedia, G. Mosashvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 312-316. – geo.; abs.: geo., eng., rus.

The soil conservation and energy-saving technologies used in farming, such as the minimal and zero tillage are considered. The positive and distinctive properties of the specific technologies are compared with the conventional farming technologies. The attention is given to the application of combined machines, the use of which excludes damage to the soil structure and enables the carrying out of several operations for one pass of the unit. Ref. 16.

Auth.

11.g9.12.12. Passability of tandem-wheeled self-propelled chassis. /R. Makharoblidze, I. Lagvilava, O. Asatiani, A. Kobakhidze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 317-321. – rus.; abs.: geo., eng., rus.

The passability of a tandem-wheeled self-propelled chassis is evaluated by such relative indicators as passability of the ground-sunk wheels, passability by load-bearing capacity, passability by adhesion of wheels, passability by engine traction, tow-spacing and tea plantation passability. The passability indicators give the possibility to take into account the soils rheological properties and the parameters of adaptive tandem wheeled self-propelled chassis. Ref. 5.

Auth.

11.g9.12.13. The theory of soil compaction by running gear of an adaptive tandem-wheel self-propelled chassis. /R. Makharoblidze, I. Lagvilava, O. Asatiani, A. Kobakhidze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 322-327. – rus.; abs.: geo., eng., rus.

The theory of soil compaction by the running gear of an adaptive tandem wheel self-propelled chassis is developed. Based on the soil rheological properties and parameters of an adaptive two-wheeled self-propelled chassis in the deformation distribution zone, the functional dependency between the average soil density and the running gear of the self-propelled chassis is established. The methods of calculation of all physical values to assess the impact of the running gear on the soil as prescribed by standards are developed. These parameters serve to compare the experimental and serial self-propelled chassis. Ref. 5.

Auth.

11.g9.12.14. Modern resource-saving technologies - an important soil conservation measure. /E. Shapakidze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 328-333. – geo.; abs.: geo., eng., rus.

The article considers modern tillage technologies, the implementation of which will ensure: decreases in the production price, expenses on combustive-lubricating materials, the quantitative and qualitative improvement of products, improvement of physico-mechanical properties and productivity of soil, significant reduction of water and wind soil erosion. Fig. 6, Tab. 1, Ref. 13.

Auth.

11.g9.12.15. Preparation of roughage by using small-scale mechanization under mountain conditions. /M. Mamuladze, F. Abuselidze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 337-339. – geo.; abs.: geo., eng., rus.

An experimental design of a small-power moving-machine with rectilinearly movable segments that can be used for preparing fodder on small-contour plots and under mountain conditions is presented. Fig. 3, Ref. 3.

Auth.

11.g9.12.16. The use of small-scale mechanization for cultivating and harvesting hazelnuts on small farms. /M. Mamuladze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 340-344. – geo.; abs.: geo., eng., rus.

The article considers new designs of experimental small-scale mechanization facilities that can be used for cultivating and gathering hazelnuts on slopes, ensuring thus a significant reduction of manual labor, raising the labor productivity and decreasing its costs. Fig. 11, Ref. 3.

Auth.

11.g9.12.17. The design formula for calculating the amount of grape mass to be processed in a continuous winepress. /G. Miruashvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 345-348. – geo.; abs.: geo., eng., rus.

The article considers a new design of continuous winepress and the theoretically derived formula which, based on the structural parameters of the installation and the selected shape of its main working body - drum, makes it possible to calculate the amount of grape mass to be

simultaneously fed to the winepress for processing. Fig. 1, Ref. 6.

Auth.

11.g9.12.18. The impact of the guide turn on processed grapes. /G. Miruashvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 349-354. – geo.; abs.: geo., eng., rus.

The article analyzes the working processes of different continuously acting belt presses, specially designed for grape processing. The disadvantages of the device are given and a completely new principal scheme of a winepress is proposed. The linkage between the constructive and technological parameters of the given installation is established and the efficiency of the installation upon use of drums of different design is justified. Fig. 5, Ref. 4.

Auth.

11.g9.12.19. Universal hand cutter and harvester. /N. Maglakelidze, I. Dzirkvadze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 355-358. – geo.; abs.: geo., eng., rus.

A universal electric-motor propelled hand cutter and harvester equipped with electric batteries is proposed for using on tea plantations as well as a lawn-mower. The working body design enables simultaneous cutting and transportation of the cut mass in its bunker. The hand cutter is designed under the rectilinear block-modular principle and can be used as a combo machine as well as a single operation performing module. Fig. 2.

Auth.

11.g9.12.20. Dynamic study of a heavy tea pruning motoblock. /Z. Makharoblidze, I. Dzirkvadze, N. Dumbadze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 359-364. – geo.; abs.: geo., eng., rus.

The dynamic process of working bodies has been studied. The formulas of changeability of the angular velocity of the motor shaft and dynamic loads as a function of time have been derived according to the mechanical characteristics of the motor and the load on the working body. Fig. 1, Ref. 5.

Auth.

11.g9.12.21. Theoretical study of the process of sawing. /N. Dumbadze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 365-370. – geo.; abs.: geo., eng., rus.

The dynamic interaction between the saw teeth and the processed material during the sawing process have been studied. Fig. 2, Ref. 5.

Auth.

11.g9.12.22. Hazelnut harvester's dynamics. /R. Margalidze, F. Varshanidze, M. Mamuladze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 371-382. – geo.; abs.: geo., eng., rus.

The article describes the dynamic processes on the driving shaft of a hazelnut harvester. The design formula of the optimal values of the reduced moment of inertia is derived. Fig. 4, Tab. 4, Ref. 7.

Auth.

11.g9.12.23. Hazelnut harvester's economic and technological test indicators and calculation of economic efficiency. /R. Margalidze, F. Varshanidze, M. Mamuladze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 383-389. – geo.; abs.: geo., eng., rus.

The article gives the results of economic and technological tests of a hazelnut harvester conducted for the purpose of determining reliability of its entire design and its individual components as well as calculating economic efficiency of the unit. Tab. 2, Ref. 2.

Auth.

11.g9.12.24. Experimental study of a tandem wheel self-propelled chassis performance. /B. Basilashvili, I. Lagvilava, O. Asatiani A. Kobakhidze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 390-394. – geo.; abs.: geo., eng., rus.

The result of field testing of an adaptive two-wheel self-propelled chassis designed and built at the Institute are considered. Fig. 1, Tab. 1, Ref. 5.

11.g9.12.25. A new apparatus for freezing of fruit by fluidization method. /T. Megrelidze, V. Gvachliani, E. Sadagashvili, G. Gugulashvili/. Transactions of Technical University of Georgia. – 2012. – #2(484). – pp. 88-92. – geo.; res.: geo., eng., rus.

The principle scheme of a new apparatus for freezing fruits by the fluidization method is presented. It is shown that the freezing process in the proposed apparatus is carried out without any contact with the aerated layer, providing thus the maximum preservation of the product quality Fig. 1, Ref. 9.

Auth.

11.g9.13. GENETICS - SELECTION

11.g9.13.1. “Gorda”- a new short-stemmed botanical and genetic variety of soft wheat (*Triticum aestivum* L.) obtained by induced mutagenesis. /P.Naskidashvili, G.Chkhutiashvili, D.Bedoshvili, M.Naskidashvili/. Georgian National Academy of Sciences. – 2012. – v.6. - #2. – pp. 134-137. – eng.; abs.: eng., geo.

Short-stemmed super dwarf wheat “Gorda” is obtained via treating seeds of the French bred winter variety “Ducat” (released for distribution in Georgia) by 0.01% solution of chemical mutagen NMU – nitrosomethylurea. “Gorda” is a mutant form of winter wheat. The plant is bunch forming with reduced numbers and lengths of internodes and its maximal height is 26-27 cm. The leaves are broad and erect. The stems are short, firm and they hardly bend. The spikes are awnless, short (4-5 cm), flat and dense, in which grown underdeveloped florets are densely arranged on the spike rachis. The glumes of the spikelet are convex. “Gorda” is a late variety for as many as 10-12 days as compared to the regular local check varieties. It is susceptible to leaf rust and powdery mildew. Grain is shriveled and therefore the mass of its thousand kernels does not exceed 30 g. Grain raw gluten content is about 27-28%. “Gorda” represents breeding material of new inheriting property, which can be used as initial material for developing short-stemmed varieties with 2-3 height reducing genes. Fig. 5, Ref. 7.

Auth.

11.g9.13.2. Starting material for selection of mulberry varieties tolerant to leaf dwarf in natural populations of Kartli. /P. Naskidashvili, L. Mdzeluri, T. Dalalishvili, K. Mchedlidze/. Georgian National Academy of Sciences. – 2011. – v.5. - #2. – pp. 113-117. – eng.; abs.: eng., geo.

Among the integrated methods of struggle against mulberry leaf disease – leaf dwarf – the most efficient and economically justified one is diversity of varieties – obtaining and identification of new starting selection material, which, according to their preliminary diagnostic and correlation indices, would be characterized by high potential for resistance. The present paper offers structural-anatomical characteristics of the mulberry hybrid forms revealed in the zone free from infection, in Kartli region, on the basis of morphological description, which to a certain extent, condition their resistance to extreme environment conditions and are in positive correlation with leaf nutritive values. Fig. 3, Tab. 1, Ref. 5.

Auth.

11.g9.13.3. Formation of pecan forms by using mutagens. /Ts. Kashakashvili/. Subtropical Crops. – 2010. – №1-4. – pp. 62-64. – geo.; abs.: eng., geo., rus.

Using chemical mutagens (Knish; Nash; DMS) in pecan selection causes acceleration and intensification of the processes of form formation. Mutagens #1 and #2 are received from the initial form Indiana, but are different from it by phenotypic marks. Biological peculiarities of the organism's growth and development are changed by influence of mutagens. Tab. 2, Ref. 3.

Auth.

11.g9.13.4. The collection of plant genetic resources of annual legumes. /A. Gulbani/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 57-58. – geo.; abs.: geo., eng., rus.

The mandate of a gene bank is to secure the conservation of the collected plant genetic resources and provide access to them. There has been collected around 2000 accessions by organizing collection missions, requesting seed materials back to country from different international gene banks. All the collected material has been evaluated, characterized, multiplied and conserved. The Georgian plant genetic material is freely available for the farmers and breeders. These collections represent as far as possible the gene pools of our crop plants, that is, the genetic basis of agriculture and horticulture. Ref. 3.

Auth.

11.g9.13.5. Polpala (*Aerva lanata*) micro-propagation in *in vitro* culture. /N. Zarnadze, E. Jakeli, K. Dolidze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 63-65. – geo.; abs.: geo., eng., rus.

The conditions for introducing Polpala in *in vitro* culture were developed. Selected were: conditions for getting viable aseptic cultures (namely at the stage of micro-clonal propagation food is mineral composition), hormonal substances and their concentrations; the organogenesis induction was achieved on the artificial nutrient medium area to obtain micro-clones. Tab. 1, Ref. 5.

Auth.

11.g9.13.6. Biodiversity of maize culture and results of its breeding in Georgia. /P. Naskidashvili, O. Liparteliani, T. Epitashvili, B. Liparteliani/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 143-147. – geo.; abs.: geo., eng., rus.

The results of diversity of maize variety, caused by influence of the human and the nature are given in this paper. Fig. 3, Tab. 1, Ref. 4.

Auth.

11.g9.13.7. New maize hybrid “Kazbegi”. /L. Kirikashvili, T. Kodua, A. Mumladze, Z. Jinjikhadze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 148-149. – geo.; abs.: geo., eng., rus.

The maize crop covers around 200-220 thousand hectares in Georgia, of which approximately 80-100 thousand ha are located in the subtropical zone, where widely spread is the maize leaf disease *Helmintosporium turcicum* which greatly affects the introduced hybrids and declines yield from 4% to 50%. Therefore, the maize varieties of local selection are generally cultivated in the area. By using genetic methods and donors, the first maize hybrid of this disease-resistant type called “Kazbegi” has been selected. In 2012 It was sent the Georgian Patent Office for patenting. Ref. 3.

Auth.

11.g9.13.8. Values of Georgian wheat. /M. Naskidashvili, I. Naskidashvili, T. Loladze, K. Mchedlishvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 150-152. – eng.; abs.: geo., eng., rus.

The genetic and breeding values of endemic wheat varieties and their importance in the creation of modern type varieties and hybrids are given. Ref. 3.

Auth.

11.g9.13.9. Bio-morphological and economic characteristics of prospective nucellar seedlings obtained by crossing the Washington Navel orange citrus with citrus *ichangensis*. /V. Kobalia/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 153-157. – geo.; abs.: geo., eng., rus.

The nucellar selection is one of the effective ways to increase frost-resistance and productivity of orange, also to improve its quality. The study is based on the results of a study of the biology, morphology, performance and hardiness of nucellar seedlings of the Washington Navel orange under conditions of Adjara. The nucellar forms of the Washington Navel orange are recommended as the starting material. Tab. 4, Ref. 5.

Auth.

11.g9.13.10. Nucellar selection of citruses and some related biological aspects. /Z. Bukia, Sh. Lamparadze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 158-161. – geo.; abs.: geo., eng., rus.

The paper presents the arguments pointing to the fact of improvement of the assortment of citruses by classical breeding methods. Among the methods of selection, the predominant role is played by nucellar selection of citruses as a reliable way of producing new promising varieties. The literary and practical data prove that the nucellar generation of citruses is represented by a great diversity of forms, which differ from the parent plant and are valuable economic signs. The paper presents the study results and expresses an opinion on the nucellar selection as the most reliable method of renovation and enhancement of the viability of varieties at the present stage. Ref. 4.

Auth.

11.g9.13.11. Urgency of renovation of citrus varieties (mandarin - *C reticulata* BL, orange - *C sinensis* Osb., lemon - *C limon* Burm). /Z. Bukia, Sh. Lamparadze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 162-167. – geo.; abs.: geo., eng., rus.

The role of hybridization, nucellar breeding and apomictic reproduction in enhancing viability and deteriorated potency of citruses is analyzed. It is noted that the renovation/upgrading of citrus varieties has no alternative at the current stage and needs to be practically implemented. Fig. 3, Tab. 1, Ref. 4.

Auth.

11.g9.13.12. Some forms of biological and economic characteristics of early-ripening Satsuma mandarin. /Sh. Lamparadze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 404-409. – geo.; abs.: geo., eng., rus.

The morphologic description, biometric data, starting and ending of the first growth, starting and ending of blooming, starting fetal-ripening and massive ripening, productivity and mechanical and biochemical composition of the fruit, particularly: average weight, the percentage ratio of the skin and pulp, squeezing the sap from the pulp and fruit, dry substance, titrated acidity, ascorbic acidity (vitamin C) and sugars of the long-term-plan forms of industrial species of the wide-foilage mandarin Unshiu "Shavishvili" and "Natsarishvili" are described in the work. The wide-foilage Satsuma mandarin variety widely cultivated in the citrus growing area has been taken as control. Tab. 5, Ref. 4.

Auth.

11.g9.13.13. Genetics and breeding of Georgian wheat. /P.Naskidashvili, M.Naskidashvili, T.Loladze, I.Naskidashvili, K.Mchedlishvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #30. - pp. 163–167. – geo.; abs.: geo., eng., rus.

It is shown that Georgia is noted for a great diversity of wheat (*Triticum*) varieties as compared with other countries of the world. Out of 24 wheat varieties, 14 (65%) have been found in Georgia; out of 6 elite varieties, 5 (over 83%) are in Georgia, for which reason Georgia is characterized of a high degree of endemism of natural wheat varieties. In addition, based on the endemic Georgian wheat varieties, many new immune species, varieties and forms have been selected. Georgia has been also recognized as a homeland of hybrid necrosis genetic phenomena and discovery of genes. The endemic varieties of Georgian wheat have played the most important in the evolution and selection of the wheat genus (*Triticum*).

Auth.

11.g9.13.14. Crossability of endemic species and aboriginal varieties of Georgian wheat and traits in F1. /P.Naskidashvili, I.Naskidashvili, M.Naskidashvili, T.Loladze, K.Mchedlishvili,

N.Gakharia/. Bulletin of Georgian National Academy of Sciences. – 2012. – vol. 6. - #1. – pp. 137-142. – eng.; abs.: geo., eng.

The research shows that Georgia is a primary centre of the origin and diversity of cultivated wheat, distinguished from other countries by a high level of endemism. It is proved that Georgian endemic species of wheat have played an important role in the evolution of the genus *Triticum* and the process of wheat selection on a global scale. New species, genera, cultivars and varieties of wheat have been obtained on the basis of wheat species endemic to Georgia. Their genotype bears genes which allow obtain wheat species of a new type with high immunity and quality features. Issues of crossability of endemic species of Georgian wheat with other species as well as with aboriginal and selection varieties of soft wheat, germination capacity of obtained hybrid grains and viability of plants of the first generation are discussed in the present paper. Peculiarities of inheritance of economically important morphological traits in the first generation of plants are shown.

Auth.

11.g9.14. PLANT PROTECTION

11.g9.14.1. Tea plant micobiota. /I. Beradze, N. Motskobili/. Subtropical Crops. – 2010. – №1-4. – pp. 240-243. – geo.; abs.: eng., geo., rus.

Monitoring has been carried out to reveal micobiotic complexes causing tea plant diseases. We investigated over 250 massive tea plantations in Ozurgeti, Lanchkhuti, Chokhatauri, Khobi, Senaki, Kobuleti and Khelvachauri. 51 different kinds of fungi of parasitic and saprophytic nature were revealed on tea plants as a result of the carried out investigation. Out of them 18 kinds of fungi were revealed for the first time. Ref. 9.

Auth.

11.g9.14.2. Disintegration dynamics of effective preparations in lemon fruit against citrus pest spread on citrus crops. /E. Orjonikidze, M. Machavariani, K. Bezhanishvili, Kh. Bezhitashvili/. Subtropical Crops. – 2010. – №1-4. – pp. 247-249. – geo.; abs.: eng., geo., rus.

The research results of the disintegration dynamics of preparations: Actelic, Imidor Max, Calypso, Talstar in lemon pulp and rind are given. It is proved that Actelic disintegrates within 20-25 days, Poligor – 30-40 days, Imidor max – 30 days, and Talstar disintegrates within 20 days. Tab. 2, Ref. 6.

Auth.

11.g9.14.3. Citrus drying-control method. /A. Giorbelidze, M. Giorbelidze/. Subtropical Crops. – 2010. – №1-4. – pp. 253-255. – geo.; abs.: eng., geo., rus.

Drying of citrus plants is widely spread in the humid subtropical zone of West Georgia. Disease is of chronic character and is caused by fungi: *Fusarium oxysporum* Schlecht. Emend. Synd et Hans and *F. javanicum* Kood. var. *radicicola*. The following measures are recommended for its control: sanitary-hygienic, prophylactic, biological as well as control measures which raise citrus resistance against disease. Sanitary-hygienic and prophylactic measures should be carried out in order to reduce infectious beginning as much as possible. Timely conduct of agrotechnical measures according to standards ensures normal growth and development of a plant and promotes plant resistance to diseases. Introduction of the antagonist *Trichoderma lignorum* tode in the soil of nurseries is recommended. The antagonist is used against the fungus which causes rotting of roots. The complex fertilizer “Red Crystalone” is recommended for raising citrus resistance to drying. Ref. 3.

Auth.

11.g9.14.4. Biology of *Miscantus sinensis* Andress and control methods. /G. Gogoladze/. Subtropical Crops. – 2010. – №1-4. – pp. 266-268. – geo.; abs.: eng., geo., rus.

Miscantus sinensis Andress is a perennial weed shrub of 60-150 cm height. In general, it is propagated by seed and partially vegetatively. In West Georgia it is met everywhere. Vegetation

begins at the end of March. From the mechanical forms of control effective are digging out before seeds ripen, moving down and then mulching. More effective is the chemical method, namely spraying with 2% working solution of herbicide Klin or its analogues. Fig. 1, Ref. 1.

Auth.

11.g9.14.5. Measures for hail-protection of Kakheti vineyards and dealing with the hailed vine. /V. Gogitidze, B. Abashidze, G. Gagua, T. Tskhakaia/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 66-70. – geo.; abs.: geo., eng., rus.

It is not recommended to permanently cover vineyards with nets in the Kakheti hail-danger zones in order to protect them from hail during the vegetation period. Instead, coverage of vines should be made by way of Capron nets only during the hail-danger situations, in a mechanized way. Fig. 2, Ref. 4.

Auth.

11.g9.14.6. Results of study of citrus whitefly (*Dialeuroides citri* Ashm) and its natural enemy *Serangium* (*Serangium percesetosum* Sic) under Adjara condition. /G. Aleksidze, A. Murvanidze, N. Chanukvadze, T. Epatashvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 86-92. – geo.; abs.: geo., eng., rus.

Some questions of distribution of citrus whitefly (*Dialeuroides citri* Ashm) and its natural enemy *Serangium* (*Serangium percesetosum* Sic.) are given together with the questions of its introduction, acclimatization, multiplication and technical efficiency of *Serangium*. Tab. 6, Ref. 16.

Auth.

11.g9.14.7. Investigation of predator-prey system by using phase flatness. /G. Aleksidze, L. Nozadze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 93-95. – geo.; abs.: geo., eng., rus.

One of the methods of study of the biological system predator-prey providing the use of phase flatness is discussed. The establishment of optimal initial values will enable to control in the citrus agrocenoses the number of useful insects (ticks). Fig. 2, Ref. 3.

Auth.

11.g9.14.8. Integrated prevention of citrus cultures from harmful organisms. /G. Aleksidze, E. Orjonikidze, A. Murvanidze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 96-98. – geo.; abs.: geo., eng., rus.

The work highlights the importance of an integrated prevention of citrus crops aimed at controlling harmful insects. Ref. 9.

Auth.

11.g9.14.9. New invasive species *Cameraria ohridella* Deschka & Dimic (Lepidoptera: Gracillariidae) in Georgia. /A. Supatashvili, M. Kereselidze, H. Goginashvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 99-101. – geo.; abs.: geo., eng., rus.

The morphology, biology details, host plant and spread area of the new invasive pest insect horse-chestnut- *Cameraria ohridella* Deschka&Dimic in Georgia is reviewed. Fig. 2, Ref. 10.

Auth.

11.g9.14.10. The effect of feeding with different immunizers on the hardiness citrus infected with citrus tristeza virus (CTV). /D. Giorgadze, M. Alania, A. Murvanidze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 102-106. – geo.; abs.: geo., eng., rus.

The article deals with the chemical changes in CTV-infected citrus fed with different immunizers. Fig. 3, Tab. 1, Ref. 13.

Auth.

11.g9.14.11. The effect of temperature and continuous humid period on the germination of *S. nodorum* spores /S. Meparishvili, L. Beradze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 107-109. – geo.; abs.: geo., eng., rus.

Stagonospora glume blotch caused by fungus *Stagonospora nodorum* is a worldwide epiphytic dangerous disease of wheat. The aim of the research was to determine the effect of temperature and continuous moist period on the germination of *S. nodorum* spores. It has been determined that the optimal temperature for spores germination is +20 – 30° C, though their vitality is also fixed at +5–35° C.. Tab. 1, Ref. 7.

Auth.

11.g9.14.12. Species composition of Septoria disease of wheat and its spread in Georgia. /S. Meparishvili, L. Gorgiladze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 110-112. – geo.; abs.: geo., eng., rus.

In Georgia two wheat Septoria diseases causal agents have been fixed: *Stagonospora nodorum* and *Septoria tritici*. *S. nodorum* prevails in the pathogenic complex of disease. Fig. 2, Ref. 2.

Auth.

11.g9.14.13. Testing of modified insecticide acaricide “Antipest” against green peach aphids. /L. Tskhvedadze, O. Lomtadze, D. Kakashvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 113-116. – geo.; abs.: geo., eng., rus.

The article deals with the test results of the insecticide acaricide “Antipest” modified against green peach aphids *Myzus persicae*, *Hyalopterus pruni*, *Pterochloroides persicae* Cholodk at the institute of Physical and Organic Chemistry.. Tab. 3, Ref. 2.

Auth.

11.g9.14.14. Intraspecies differentiation of the Georgian population of Blumeria graminis causing barley powdery mildew. /Ts. Tsetskhladze, Z. Sikharulidze, G. Meparishvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 117-120. – geo.; abs.: geo., eng., rus.

The virulence of 1150 single coloni isolates of the fungus *Blumeria graminis* from different Georgian regions was analyzed on the European differential set (24 Pallas isogenic lines and 11 varieties) including the resistance genes. The results of virulence survey of barley powdery mildew population have shown that Georgian population is highly virulent. The following effective resistance genes were detected: MI-a7+MILG2; MI-a7+MIk; MIa7+MI-No3, MI- a7+MI(Tr3)+MI(AB); MI-a13+MI(Ru3); MI-a22; MI-nn; ml-05. It is possible that these genes will be the good sources of resistance for use in breeding programs. Fig. 1, Tab. 2, Ref. 7.

Auth.

11.g9.14.15. Spread and virulence structure of wheat powdery mildew in Georgia. /M. Gabaidze, Z. Sikharulidze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 121-124. – eng.; abs.: geo., eng., rus.

The causal agent of wheat powdery mildew *Blumeria graminis* is spread throughout the wheat growing regions of Georgia. Testing of 484 mono-colonial isolates for virulence to differential set with 11 single-gene lines showed the rare incidence pp 2, pp 3b, pp 3d, pp 4a and high virulence to genes Pm1, Pm 3a, Pm 3c, Pm 4b, Pm 5, Pm 6, and Pm 8. Twenty pathotypes were identified in population. Frequency of prevalent pathotype with virulence formula 2,3d,3b,4a/1,3a,3b,3c,4b,5,6,7,8 was 65.5%. Fig. 2, Tab. 1, Ref. 7.

Auth.

11.g9.14.16. Features of the biology of flowering of the cucumber "Mukhranuli" in the greenhouse. /N. Kharkhelauri/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 125-128. – geo.; abs.: geo., eng., rus.

There are 3 flowering types in the species “Mukhranuli”, one of them is the same as found in literature, with many male and few female flowers, the second has an average number of male and female flowers, the third - the most interesting - has a gynoeocious habit of flowering, presumable as a result of artificial selection. Fig. 1, Tab. 3, Ref. 7.

Auth.

11.g9.14.17. The impact of soil mulching on the growth and yield of the cucumber variety "Gilani". /N. Kharkhelauri/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 129-133. – geo.; abs.: geo., eng., rus.

The article discusses the benefits of using polyethylene mulching of soil on the growth and early

yield of cucumbers under conditions of Georgia. Tab. 3, Ref. 6.

11.g9.14.18. Influence of nutrition area on the spread of diseases and pests in the cucumber variety “Mukhranuli”. /N. Kharkhelauri/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 134-138. – geo.; abs.: geo., eng., rus.

For the prevention of diseases and pests, it is necessary: to create optimal conditions for the growth and development of cucumber: microclimate, optimal nutrition area, proper and timely formation, schemes of preventive spraying against pests and diseases, frequent replacement of insecticides and fungicides to avoid resistance, and use of insecticides depending on the phases of development of pests. Fig. 1, Tab. 3, Ref. 7.

Auth.

11.g9.14.19. The harmfulness of cereal flies and measures to control them in Eastern Georgia. /G. Gikorashvili, K. Pavliashvili, M. Machavariani/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 139-142. – geo.; abs.: geo., eng., rus.

The most harmful cereal pests: Swedish fly (*Oscinosoma frit* L.), Gesenskaya fly (*Mayetiola destructor* Sou.) Zelenoglazka (*Chlorops pumilionis* Bierk) with the date on their phenology, biology and population dynamics, as well as the measures to control them are presented. Tab. 2, Ref. 10.

Auth.

11.g9.14.20. Negative influence of mistletoe lectin on the survival of the moths *Apamea sordens* and *Agrotis segetum* (Lepidoptera, noctuidae). /M. Gaidamashvili, N. Keburia, E. Khurtsidze/. Annals of Agrarian Science. – 2012. - vol.10, - # 4. – pp. 17-20. - eng.; abs.: rus.

The insecticidal activity of *Viscum album* chitin-binding lectin (MChbL) against *Apamea sordens* Hufn. and *Agrotis segetum* Schiff. larvae was investigated. MChbL exhibited proteinase inhibitory and chitinase activities and affected larval development and survival at different growth stages. N-terminal amino acid sequencing of MChbL showed homology to osmotin-like protein from *Hevea brasiliensis* and α -amylase/trypsin inhibitor from *Zea mays* with 60% homology. The results show that mistletoe chitinbinding lectin has potential as entomotoxic agent for the control of Lepidoptera pests. Fig. 3, Ref. 11.

Auth.

11.g9.14.21. Fertilizers and plant protection products on the market of Georgia - their efficiency and environmental safety. /Sh.Macharashvili/. New Agrarian Georgia - 2013. - # 5. - p .12. - geo.

The article considers the issues of fertilizers and plant protection agents offered on the Georgian market, their efficacy, as well as the negative environmental factors. The focus is made on the necessity of expert examination and state registration of supplied fertilizers and plant protection agents before they enter the market. The users are advised to select the products supplied by well-known European companies and consult a professional.

N. Chkhaidze

11.g9.14.22. Control of bacterial diseases of plants by phages. /E. Andriychyk, Y. Bilokon, E. Mas, V. Polischuk/. Bacteriophages and Probiotics – alternative to antibiotics. Intern. Conf. Abst. Tbilisi – 1-4 July 2012. - p.47 - eng.

Experts are constantly faced with the problem of bacterial diseases when growing or storing plant products. It is of utmost importance to develop new, environmentally friendly crop protection approaches. Bacteriophages have no significant drawback. They prevent spread of infectious diseases in plants when used in small amounts. The work is aimed at obtaining high efficiency and environmentally friendly antibacterial preparation based on bacteriophages for bacterial plant diseases control. The stability of bacteriophages and their molecular biological properties were studied during the experiments. Using the collection of the most active phages an environmentally safe product for use in agricultural practice will be developed.

Auth.

11.g9.14.23. Biological approaches for protection of plants from *Orchidaceae juss* family based on phages of plant pathogenic bacteria. /E. Andriychyk, O.Puhach, V. Polischuk/. Bacteriophages and Probiotics – alternative to antibiotics. Intern. Conf. Abst. Tbilisi – 1-4 July 2012. - p.48 - eng.

Bacterial diseases are particularly dangerous for plants as they may cause complete and irreversible degeneration that leads to heavy losses of yields. The aim of this research was to study the properties of phages of plant pathogenic bacteria causing bacterial diseases of *Orchidaceae* plants, and to explore the artificial introduction of laboratory phages into protected soil (in greenhouses). We focused on the prospects of phage as factors which contribute to reducing the negative impact of pathogenic microorganisms on decorative plants.

Auth.

11.g9.15. AGRICULTURAL CHEMISTRY

11.g9.15.1. New substrate of prolonged action on the basis of natural zeolite and brown coal for growing agricultural crops. /T. Andronikashvili, M. Zautashvili, L. Eprikashvili, N. Pirtskhalava, M. Dzagania/. Georgian National Academy of Sciences. – 2011. – v.5. - #2. – pp. 101-105. – eng.; abs.: eng., geo.

On the basis of brown coal and natural zeolite (heulandite-clinoptilolite containing tuff) modified by ammonium and potassium cations a substrate has been developed; the bioproduction of plants grown on this substrate is 2.9 times higher than that grown on soil. This substrate is characterized by long continuous utilization in plant growing. Tab. 3, Ref. 16.

Auth.

11.g9.15.2. Influence of natural adsorbents - zeolites on some properties and fertility of soil. /M. Gamisonia/. Subtropical Crops. – 2010. – №1-4. – pp. 160-163. – geo.; abs.: eng., geo., rus.

Influence on some soil properties of Western Georgia of zeolites mordenite-philipsite and analcime is researched. It is found that they render a comparatively slight impact on rising of pH level of soil solution. However, to a great extent it influences the value of reduction-oxidation potential of the soil, increasing the portion of reduction reaction. They also lead to an increase in retaining capacities of the soil regarding such nutritional elements of mineral fertilizers as nitrogen and phosphorus. Tab. 4, Ref. 10.

Auth.

11.g9.15.3. Local ores of Georgia and prospects of their use for fertilization of agricultural crops. /O.Zardalishvili, T.Urushadze, M.Zardalishvili/. Annals of Agrarian Science. – 2012. - vol.10, - # 4. – pp. 57-61. - rus.; abs.: eng.

Local ores of Georgia (phosphorite, limestone, mergel, chalk, dolomite, gypsum, magnesium containing ore), organic fertilizers (bog peat, brown coal, bitum and loam slate), micro fertilizers (boron, manganese, copper, cobalt, molybdenum, zinc) and other local agronomic raw materials (bentonite clay, zeolites) are analyzed and the ways of their rational use are presented. Tab. 1, Ref. 8.

Auth.

11.g9.15.4. Efficiency of application of nitrogen fertilizer received on the basis of smoke gas emissions of the power enterprises for agricultural crops. /M. Seyidov/. Annals of Agrarian Science. – 2012. - vol.10, - # 4. – pp. 70-73. - rus.; abs.: eng.

In Georgia, thermal power plants generate the bulk of electrical energy. The Ali-Bayramly HPP emits into atmosphere 120 mln m³ of smoke, which pollutes the environment every day. In calculation for fertilizers, it would form 300,000 ton of nitrogen fertilizer every year. At present, under way is the work to develop a technology of getting nitrogen fertilizer from the HPP smoke-gas emissions by means electrochemical and chemical reactions. The advantage of this method is that it is less power-consuming. Tab. 5, Ref. 6.

Auth.

11.g9.16. AGRICULTURAL RADIOLOGY AND AGRO-ECOLOGY

11.g9.16.1. Controlling soil erosion by narrow strips of *Vetiveria zizanioides* – an Israel-Georgia project. /N. Dudai, G. Gavardashvili, Ts. Mirtskhulava, M. Ben-Hur/. Collected Papers of Institute of Water Management. – 2012. - #67. – pp. 54-64. – eng.; abs.: geo., eng., rus.

For the purpose of soil erosion control, the results of scientific research works implemented in Israel and Georgia on the use of narrow strips of the plant *Vetiveria zizanioides* are given. The issues of growth dynamics of the plant *Vetiveria zizanioides* are considered, taking into account the climate and soil characteristic of Israel and Georgia. It has been estimated workshops, internships and business trips of scientific workers of project in Israel and Georgia and scientific works published by them. The project has been implemented with the financial support of the US National Academy of Sciences (NAS). Fig. 11, Ref. 20.

Auth.

11.g9.16.2. The laboratory research of soil erosion control blankets GeoMat “Nesfile” and “Nesgeo”. /G. Chakhaia, Sh. Bosikashvili, Z. Varazashvili, R. Diakonidze, I. Khubulava, L. Tsulukidze, T. Supatashvili, M. Shavlakadze, F. Lortkipanidze, G. Omsarashvili/. Collected Papers of Institute of Water Management. – 2012. - #67. – pp. 203-208. – geo.; abs.: geo., eng., rus.

The article deals with the development and application soil erosion control blankets/mats in Georgian agriculture. The benefits of such blankets and their positive effects of the growth and development of agricultural crops are discussed.. Fig. 8, Tab. 1, Ref. 2.

Auth.

11.g9.16.3. Ecologization of an integrated system in reducing citrus and tea pests to obtain organic farm products. /A. Nikolaishvili/. Subtropical Crops. – 2010. – #1-4. – pp. 260-263. – geo.; abs.: eng., geo., rus.

The prospects of production of organic tea and citrus crops are discussed: the use of biological agents by seasonal colonization and settlement in controlling agricultural pests is recommended.. Ref. 6.

Auth.

11.g9.16.4. The optimal ratio between production and ecology in terms of sustainable rural development. /A. Antonov/. Ekonomisti (Economist). – 2012. - #4. – pp. 81-85. – eng.; abs. rus.

Analyzed are the actual state of operation of agricultural production, rural social sphere as well as the state and problems of the environment. The economic mechanisms to ensure environmental safety in rural areas of Ukraine are proposed. Ref. 7.

Auth.

11.g9.16.5. The environmental factor in the system of priorities of the state economic policy. /O. Hinde/. Ekonomisti (Economist). – 2012. – #5. – pp. 37-42. – eng.; abs. eng., rus.

The environmental factors in the system of priorities of the state economic policy are substantiated. The economic evaluation of the natural resources in the system of indicators for the development of the country is determined. Ref. 5.

Auth.

11.g9.16.6. Ecological condition of vegetables raised on arable lands adjoining the highway in Kvemo Kartli. /U. Zviadadze, N. Gachechiladze/. Transactions of Technical University of Georgia. – 2012. – #4(486). – pp. 21-26. – geo.;res.: geo.,eng., rus.

The chemical composition of the vegetables grown on the areas adjoining the highway in Marneuli and Bolnisi municipalities and their possible impact on humans are experimentally established. Fig. 5, Tab. 2, Ref. 8.

Auth.

11.g9.16.7. Information and some ideas on the project of a hydropower station on the Tergi (Terek) River. /G. Japaridze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #31. - pp. 281-282. – geo.; abs.: geo., eng., rus.

The opinions of some NGOs on the construction of a hydropower station on the right tributaries of the Tergi River (Brolistskali Khidistskali, Khistura) in Kazbegi region and the environmental protection measures to be taken are discussed.

Auth.

11.g9.16.8. Ascertainment of the biological value and food safety of local and imported citrus crops in terms of their echo-chemical examination. /G. Danelia, T. Palavandishvili, Z. Chankseliani/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. - #31. - pp. 283-295. – geo.; abs.: geo., eng., rus.

As a result of the ecochemical examination, the home-grown fruits of citrus plants were studied together with the imported ones (Satsuma tangerines and lemons “Newgeorgian” from Ajara, lemons from Greece, Washington Naver oranges from Ajara and Greece). Also analyzed were their ability for preservation, biochemical structure in dynamics, the structure of potential toxic and heavy toxic elements, taking into account the biological value and food safety. As a result of the research, it was determined that in concord with the standard the structure of gliitsinec and vitamins C in the fruits grown in Georgia is higher than in the imported ones. As for the organic acids, raw materials of the cellulose and pectine, they were found to be more in the Greek products. The storeability of both the Georgian and Greek citrus plants was the same. The content of heavy metals Cu, Zn, Fe, Co, Mo, Pb, As, Hg, Cd, Cr did not exceed the permissible level. Dangerous nucleids Cs₁₃₇ and Sr₉₀ were not identified as well. According to the results of tasting, locally grown crops have a priority over the imported ones, for which reason they should be competitive both on the domestic and foreign markets, which are interested in getting ecologically safe and biological full-value products. Fig.6, Tab.7, Ref.4.

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