Organic Farming Day 2018

BOOK OF ABSTRACTS

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"Organic Farming and Sustainable Development"

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BOOK OF ABSTRACTS

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Abstract: Providing financial resources through lending by commercial banks is one of the main sources of funding for farmers and agriculture in Bulgaria. Practice shows, that loans for working capital mainly derive from the seasonal and campaigning nature of agricultural production. Turnover credits are mainly aimed at carrying out the current agricultural activity of the farmer. The granted investment credits have a longer term and are mainly related to the implementation of the investment projects from the RDP measures, for the most part they are aimed at the implementation of European funding. Banks seek to gain the trust of farmers and become their partners not only through the allocation of financial resources but also through assistance and counseling in the preparation of their project proposals.

Keywords: bank credit, turnover credits, invest credits, leasing of agricultural machinery, gratis period, credit lines.

БАНКОВОТО КРЕДИТИРАНЕ НА ЗЕМЕДЕЛСКИТЕ ПРОИЗВОДИТЕЛИ

Огняна СТОИЧКОВА¹, Виржиния ЖЕЛЯЗКОВА², Яким КИТАНОВ²

¹Висше училище по агробизнес и развитие на регионите - Пловдив
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Резюме: Осигуряването на финансови средства чрез отпускането им от търговските банки под формата на кредити е един от основните източници за финансирание на земеделските стопани и селското стопанство в България. Практиката показва, че основно се отпускат кредити за оборотни средства, което произтича от сезонния и кампаниен характер на селскостопанското производство. Оборотните кредити са насочени предимно към осъществяване на текущата земеделска дейност на фермера. Отпусканите инвестиционни кредити имат по-дълъг срок и са свързани главно с изпълнение на инвестиционните проекти от мерките от ПРСР, т.е. в по-голямата си част те са насочени към реализирането на европейското финансиране. Банките се стремят да спечелят доверието на земеделските стопани и да станат техни партньори не само чрез отпускане на финансови средства, а и чрез оказване на помощ и консултиране при изготвянето на проектните им предложения.

Ключови думи: банково кредитиране, оборотни кредити, инвестиционни кредити, лизинг на земеделска техника, гратисен период, кредитни линии.
Discussion panel 1

New incentives in organic sector development

Presentations from

Namik Kemal University, Tekirdağ, Turkey

Moderators:

Prof. Dr. Ognyana STOICHKOVA
Assoc. Prof. Dr. Virginya ZHELYAZKOVA
COMPARING THE EUROPEAN COUNTRIES AND TURKEY FOR SOME ORGANIC PRODUCTS

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Abstract: Organic agriculture is a production system that sustains the health of soils, ecosystems and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects.

The regions with the largest areas of organic agricultural land are Oceania (22.8 million ha, which is almost 45% of the world’s organic agricultural land) and Europe (12.7 million ha, 25%). Latin America has 6.7 million ha (13%) followed by Asia (4 million ha, 8%), North America (3 million ha, 6%) and Africa (1.7 million ha, 3%).

Organic agriculture in the world is developing rapidly. In 2015, organic agriculture is made in 179 countries on 51 million hectares. European and North American countries have the largest market share in 75.7 billion Euros organic product market.

In this study, comparative production advantages of selected organic products in European countries were calculated as an index on the basis of countries. The index used in the calculation is based on Balassa's index. Therefore, organic and non-organic production quantities of selected products were used. These selected products were olives, grapes, apples, wheat, barley and potatoes. The data is obtained from the FAO and EUROSTAT databases covering the years 2012-2016.

According to the results, Slovenia has the largest share of organic olive production in European countries. The other countries that are leading in other organic production are: Belgium in organic grape production, Estonia in organic apple production, Italy in organic wheat and organic barley production, and Lithuania in organic potato production. The countries with the highest ratio of total organic crop area to total agricultural area are Liechtenstein, Austria and Sweden respectively.

Keywords: Balassa, European countries, agricultural production, organic farming.
WHAT EXTERNAL AND INTERNAL FACTORS AFFECT ORGANIC FOOD SECTOR?

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Abstract: The aim of this study is to analyse the external and internal factors affecting organic food industry in Turkey. Organic food industry used to be a niche market segment where one can only find it at particular food section or retailers. But in the late 1980s, organic food demand has grown tremendously. This study used the framework suggested for the purpose of analysing the organic food industry in the Turkey. Based on the macro environment framework, the model used the PESTLE analysis and besides; SWOT analysis tends to be more product specific as an individual or an entity conducts this analysis based on that products. SWOT analysis helps to interpret the findings of the PESTLE analysis to determine the business’s strengths and weaknesses, and opportunities and threats. It is important, as a part of the internal focus, to conduct the SWOT analysis prior to completing organic food industry plan.

In this study, firstly, at the macro-environment level for organic food industry, we have discussed about the PESTEL mode, which is useful for management to run an analysis on the environment the company is sitting in. Lastly, at the organic food sector level, we investigate the SWOT analysis model. The model is powerful as it matches both the internal as well as external factors in the analysis. By considering the situation inside the organization, the model suggests how a company can exploit opportunity in the external environment.

Keywords: organic, food, Turkey, market.
New incentives in organic sector development

AN OVERVIEW OF ORGANIC PRODUCER ORGANIZATIONS IN TURKEY

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Abstract: As a result of globalization, large and industrialized enterprises have taken the place of small and local businesses in the food sector. These big enterprises provide cheap products anywhere in the world including underdeveloped countries. They also allow consuming out of season products. Large enterprises are getting more efficient and effective than small and local businesses and are making products cheaper. Small firms that cannot compete in the market are started to give up their production. Other small business owners who do not give up prefer organizing and ensuring the continuity of natural production.

There is an increasing trend in natural, healthy and local products in the world. Organic agriculture is intended to meet the needs of consumers of these products. In addition, organic farming ensures the sustainability in agriculture. Turkey has started organic farming for some products such as dried figs and grapes with the demand of the European organic products market. Then legislation on organic agriculture was introduced in Turkey.

Developments in organic farming have also affected cooperation positively. The producers that carry out organic farming activities are organized by associations, producer associations and cooperatives. These associations are established by partners/members such as producers, consumers, industrialists and researchers. Producers' associations were established on the basis of product group in provinces and districts according to the relevant law. There are different types of cooperatives, such as consumption cooperatives and laboring women's cooperatives, which are mainly engaged in purchasing from producers and delivering to consumers.

In this study, the organization types and purposes of organic producers in Turkey were evaluated. For this purpose, the organic producer organizations were examined.

Keywords: organic farming, organic producer, Turkey, associations, producer organizations, cooperatives, organizations.
New incentives in organic sector development

SUPPORT POLICIES FOR ORGANIC FARMING IN TURKEY

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Abstract: Organic farming is a technique, which involves cultivation of plants and rearing of animals in natural ways. In other words, organic farming is a farming method that involves growing and nurturing crops without the use of synthetic based fertilizers and pesticides. Organic farming aims to protect the life-sustaining resources and natural life by maintaining the natural balance. Organic production in Turkey started in the 1980s in the Aegean region due to a demand for organic goods in Europe. Since then, organic production and export in Turkey have increased. Turkey, according to the latest (2016) statistics in 523 777 hectares, 67 878 farmer by 2 473 600 tons of organic product is obtained. In 2004, the Organic Agriculture Law in Turkey was put into practice to provide a legal framework for the organization and enhancement of the organic sector. The objective of the law is to lay down principles and procedures for relevant measures to be taken in relation to the production of organic products and inputs so as to provide high quality and safe organic products to consumers. This law is also important as a part of European Union (EU) harmonization.

In Turkey, using intensive inputs (especially agricultural chemicals and fertilizer) in the agriculture the balance of the nature gradually is disturbed. Although the unconscious use of agricultural chemicals and fertilizers has led to increase in crop production, it has resulted in products that are of poor quality and threaten human health in Turkey in recent years. Therefore, organic farming is important to optimize the health and productivity of interdependent communities of soil life, plants, animals and people. Organic farming is supported by government in Turkey. The subsidies for organic food are an important factor in the economic viability of organic farming and play an important role in sustaining the income of farmers. In 2017, organic agriculture support was given to producers for fruits and vegetables as 100 TL/decare and for field crops as 30 TL/ decare. When these ratios were compared with 2013, they have increased by 2 times in fruits and vegetables and increased 3 times in field crops. Despite the supports and efforts to promote organic production, domestic consumption and awareness of organic products remain relatively limited. Organic products are often viewed by consumers as a luxury crop because they are expensive. Agricultural policies have an important role to play in facilitating organic agriculture. Turkey should provide production growth in organic agriculture products and develop effective trade policies by considering both the domestic market and international markets. In addition, the supports given by the state for organic farming should be increased every year and producers that passing to the organic farming should be encouraged.

In this research, the current situation and support policies for organic farming were evaluated and solutions were offered regarding these problems.

Keywords: organic farming, organic production, support policy, Turkey.
THE ROLE OF ORGANIC AGRICULTURE IN RURAL DEVELOPMENT

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Abstract: Regardless of the economic system in any country, concepts such as economic growth and development are the basic concepts that should be emphasized on each country. Developed countries are striving to improve their economies, developing countries to improve their economies and underdeveloped countries, to develop policies and to prepare development programs its economies.

In the first years of the development concept, it was understood that the programs predominantly addressed by the industry and industry sectors were inadequate and the importance of developing rural development in parallel with the industrial sector was emphasized. In particular, countries where rural populations are concentrated have emphasized rural development.

Today, each country has created rural development policies and rural development strategies. Among the main objectives of rural development policies is to increase the income level of the rural population, to provide better living conditions, to employ the rural population in its own village, to provide a sustainable agricultural production that respects the environment.

Organic agriculture is an agricultural production activity that can play a role in fulfilling these purposes. Organic agriculture treats producers as a centre, allows producers to control their own resources, and contributes to the self-reliant and reliable nutrition of rural people in the food chain.

The purpose of this study is to examine how organic agriculture can play a role in rural development. While determining the advantages of organic farming in the study, the benefits of sustainable agriculture sensitive to environment should be discussed, by raising the incomes of the rural population by setting out the relation with rural development policies and strategies.

As a conclusion that agricultural production without the use of synthetic chemicals; will ensure that future generations become healthier individuals. For this reason, organic farming; be adopted as a necessity of rural development and become a system of values. Family farming that will make organic agricultural production should be supported from production to marketing. Organic agriculture should be transformed into a production scheme that will create employment. Integration of rural tourism activities should be ensured in marketing of organic products so that the society can be consumed by wider segments.

Keywords: sustainable agriculture, rural development, organic farming, rural policies and strategies.
GREEN MARKETING APPROACHES TO THE DEVELOPMENT OF SUSTAINABLE RURAL TOURISM ACTIVITIES

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Abstract: Rapid urbanization and industrialization caused individuals to have a city-centered life. Urbanization trends lead to reductions in welfare and income levels of rural residents. In many territories and countries, rural areas are less developed and have specific situations.

The stress and pressure of urban life have caused people to become more involved in rural areas. One of the essential characteristics of modern society is to focus on sustainable development. Sustainable development is a multidimensional concept that targets the development of rural areas. Rural tourism, one of the major tools for rural development, has the potential for growth in the future.

The key to the development of rural tourism is to create tourism products using natural resources and to present them to tourists, benefiting from the local people who produce cultural and historical values. It leads to the rethinking of the basic principles of marketing regarding increases the environmental issues, need for environmental protection and sustainable development. Green marketing concept was born as a result. Briefly, green marketing is the whole set of activities aimed at meeting human needs or demands, aiming at satisfying these needs and desires in such a way as to create the least harmful effect on nature. In practice, it is based on strategies such as creating and developing environmentally sensitive market segments, creating new environmental standards and launching new environmental initiatives, adopting environmental forms of product labeling and evaluating all market activities based on the latest environmental conditions and standards.

In this study, combining rural tourism with green marketing approaches aiming at the rational use of natural resources, which is one of the tools of rural development is examined.

Keywords: sustainability, rural tourism, green marketing.
New incentives in organic sector development

THE IMPACT OF LOCAL FOOD PRODUCTS ON RURAL DEVELOPMENT

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Abstract: With the diversity of agricultural products combined with cultural richness, local food products are gaining importance. The impact of local food products development has increased over time. People living in rural areas mostly provide a livelihood for farming, agriculture and livestock are made intensively. Therefore, the locals can contribute to the rural development of the region by marketing local food products that reflect their own food culture, tradition, as well as producing their food requirements.

Saroz Bay, located in northeastern Turkey, is an important region regarding reflecting the diversity of agricultural products to food products with its cultural richness. In this study, locally produced food products and how they affect development are investigated. For this purpose, 271 questionnaires were applied to the tourists who visited Saroz Gulf, and the results were analyzed and interpreted through charts. As a result, it was mostly preferred to purchase the regional food products as visitors participated in the region, and the sale of foodstuff produced in the region is considered important.

Keywords: rural development, local food, local people.
A COMPARISON BETWEEN TURKEY AND EU COUNTRIES ABOUT POTENTIAL ORGANIC RED MEAT PRODUCTION

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Abstract: The aim of this paper is to provide an overview on the potential for organic red meat production in some European Union (EU) countries along with Turkey. The study analyzes figures on bovine, sheep, and goat animal and annual production amounts in that context for the first time. The production of the top five countries in quantities are particularly presented with the highest proportional increase in a time span. The countries with the highest increase in animal numbers have been identified as well. The study reveals that animal numbers and organic red meat production have both grown significantly since 2012 to 2016. In many countries, bovine animal numbers have high organic shares within the organic red meat sector. The consumer prices analyzed on organic red meat in Turkey depict that the ratio of organic red meat prices to conventional red meat prices is virtually twice. We also determined that the consumer prices on organic red meat increased about 86% between 2012 and 2018 in Turkey. Statistics on the number of organic animals and relevant production are incomplete and do barely allow giving a complete picture of the sector. However, the available information on the organic animal sector is developing both in the European Union and Turkey. The study offers some recommendations on the issue for Turkey as a suitable location for organic livestock farming in terms of its natural resources, climate conditions, and pasture ground as well.

Keywords: organic red meat, livestock farming, Turkey, EU.
ORGANIC FRUIT AND VEGETABLE POTENTIAL AT RETAIL CHANNEL IN TURKEY

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Abstract: Organic farming activities starting in the 1980s in Turkey and developed by the years so that it has become an important sector recently. But the market for organic goods in Turkey, although small, is growing and has great potential for future. Organic farming, which started with foreign market demand, accelerated with interest of domestic consumers that emerged as a necessity for the distribution channels to meet this demand. Hence, export potential and higher profit of organic farm products aimed to producers towards organic farming system. Most of the organic production in Turkey is targeted for export, with the European Union as the largest potential market. Despite support and efforts to promote organic production, domestic consumption and awareness of organic products remains relatively limited.

Organic farming also support sustainability of agricultural production and natural resources. At this work, world and domestic trade system of organic farming products examined regarding flow of distribution. Furthermore, marketing issues of these organic products at the retail level should be evaluated. At the result of this paper, Turkey has a better share of organic products’ market on the world trade. Due to opportunity of the increasing domestic demand, retailers should be more emphasize and manage the organic food category line.

Keywords: organic farming, consumer, category management, foreign trade.
Discussion panel 2

Current research in organic farming

Presentations from

Çanakkale Onsekiz Mart University, Çanakkale, Turkey

Moderators:

Prof. Dr. Ognyana STOICHKOVA
Assoc. Prof. Dr. Virginiya ZHELYAZKCOVA
FREE RADICAL SCAVENGING CAPACITY AND PHENOLIC CONTENT OF SOME ORGANIC FRESH CITRUS FRUITS

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Abstract: Citrus fruits are significant since they have a high potential both as fresh fruits and also can be used in processed food products. Citrus fruits are known to be very good sources of vitamins and they also contain bioactive compounds having antioxidant properties. Since citrus fruit consumption is highly appreciated all over the world, with the development of the organic agriculture, organic mandarin and orange cultivation has also gained significance. Therefore, in the present study, the total phenolic, flavonoid and carotenoid content, as well as the DPPH free radical scavenging capacity of organic mandarin and orange was evaluated. It was found out that organic orange had significantly higher total phenolic and carotenoid content when compared with organic mandarin. On the other hand, both samples had similar total flavonoid contents. In this study, it was found out that organic mandarin and orange are good sources of bioactive compounds.

Keywords: orange, mandarin, phenolics, carotenoids, free radical scavenging.
THE EFFECTS OF DIFFERENT HERBICIDES AND THEIR APPLICATION SEASONS ON CONTROLLING OF ASPHODELUS AESTIVUS

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Abstract: Summer asphodel is widely found in Mediterranean Rangelands. For being poisonous, it also causes a negative impact on rangelands quality. Therefore, a study has been carried out in order to prevent the growth of this weed plant depending on the application of different herbicides at different seasons. The research was conducted in the Gerlengeç village of Biga District at Çanakkale Province in 2016. Since there is no selective and specific herbicide in the chemical control with this weed plant that is why this study was conducted by using the active ingredients of five different herbicides in order to determine the most appropriate herbicide and its application season. Those of chlorosulfuron, dicamba+triasulfuron and tribenuron methyl+thifensulfuron methyl herbicides are effective against broad leaves while metsulfuron methyl+iodosulfuron methyl is used for narrow leaves and glyphosate is used for all types of herbaceous weed plants as a total herbicide. In addition, the herbicides were applied in two different seasons i.e., spring (March 2015) and autumn (November 2015). The research was established according to the randomized complete block design using three replications. The total experimental area was 100 m² and each plot consisted of 3 m² of the area in the experiment. The growth of Asphodelus australis has been observed after the application of above mentioned herbicides during the experiment. According to overall results of this research, the applied herbicides and their application seasons have been statistically significant on the investigated characteristics (number of plants, plant height, number of leaves, leaf diameter and length) of this weed plant. Consequently, the significant achievements were obtained from the plant in terms of herbicides and their application seasons.

Keywords: Asphodelus australis, herbicide, plant growth.
DETERMINATION OF THE EFFECTS OF DIFFERENT HERBICIDES AND THEIR DOSES ON TUBER DEVELOPMENT OF ASPHODELUS AESTIVUS

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Abstract: This study has been conducted into the rangelands of Mediterranean climatic zone aim to control the commonly found Asphodelus aestivus Brot. weed plant having poisonous characteristics due to the presence of glycosides inside it. The research was carried out in Gerlengeç village of Biga District at Çanakkale Province, Turkey. Herbicide application was done in the month of April in 2015 while the tuber samples were collected in the month of April in 2016. The following five different herbicides were used in the control of A. aestivus due to the non-availability of any selective and specific herbicide that has being used in the chemical control of this weed species. In general; chlorosulfuron, dicamba+Triasulfuron and tribenuron methyl+thifensulfuron methyl herbicides affect the broad-leaved, metsulfuron methyl+lodosulfuron methyl is used in the control of narrow-leaved, while glyphosate is an all-rounder herbicide that is used in the control of broad as well as narrow-leaved weed plants. In addition, two different doses (applied and double) of the above mentioned herbicides were selected to apply. The research was established according to the randomized complete block design (RCBD) by using three replications. The effects of applied herbicides have been investigated on tuber characteristics of A. aestivus in this research. As a result, the applied herbicides showed significant effects on the weight, length, diameter and the number of tuber while the applied doses were found with significantly important effects only on the weight and number of tuber. It concluded that the most effective herbicides were chlorosulfuron and glyphosate, and the best effective dose was observed as the ‘double dose’ in the chemical control of summer asphodel.

Keywords: Asphodelus aestivus, herbicide, dose, number of tuber, tuber weight.
PREVENTING PHASE SEPARATION PROBLEM WITH NATURAL WAXES IN SESAME PASTE

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Abstract: The first aim of this study was to prevent phase separation in sesame paste and the second aim was to prepare spreadable sesame paste products. For this reason, commercially obtained sesame paste was supplemented with certain concentration of sunflower (1 and 3%) and beeswax (1, 3 and 5%). The samples were stored at 25 and 35°C for 21 days. Centrifugation stability, oil leakage, textural properties, viscosity and consumer test of the samples was analysed. The beeswax and sunflower wax added samples when compared with plain sesame paste (control) had lower oil leakage values. Viscosity measurement showed that control and beeswax (1 and 3%) added samples exhibited pseudo-plastic rheological behaviour. The textural measurements showed that sesame paste prepared with 3% sunflower wax was firmer and stickier than the sesame paste prepared with 1% sunflower wax and 5% beeswax. Additionally, the textural properties of the samples were significantly influenced by storage temperatures. Moreover, 1 and 3% sunflower and 5% beeswax added samples were spreadable while the 1 and 3% beeswax added samples were fluid. In conclusion, sunflower and beeswax addition were not only restricting phase separation in sesame paste, but also sesame paste was converted into spreadable form depending on the wax concentration.

Keywords: sunflower wax, beeswax, sesame paste, consumer test.

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MINERAL CONTENT OF SUN-DRIED EGGPLANT AND OKRA

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Abstract: Vegetables comprise a significant portion of human diet, especially in the Mediterranean region. Consumption of vegetables is usually recommended by dieticians, since they are rich in nutrients, such as vitamins, minerals and fiber, and also may have positive effects in preventing cardiovascular diseases, cancer, obesity and osteoporosis. Thus, it is of significance to consume vegetables at all daily meals. Since vegetables are mainly produced during summer and autumn, special preservation methods are applied, so that vegetables can be consumed throughout all seasons. Drying is one of the oldest known preservation methods, applied to both fruits and vegetables. With technological developments, different drying methods such as drying in green house or oven, and infrared drying are being widely used industrially, but the oldest and most traditional one is sun-drying. Therefore, in the present study, the mineral content of sun-dried eggplant and okra were investigated, in order to determine the extent to which these food products contribute to human nutrition in terms of mineral supplementation. The results revealed that dried eggplant had significantly higher amounts of sodium and magnesium, while dried okra contained higher calcium, phosphorus, copper, iron, zinc, cobalt, nickel and chromium. Both analyzed dried vegetables did not differ in terms of potassium and cadmium concentrations. The present study revealed that dried vegetables could positively contribute to meet the human mineral requirements.

Keywords: dried eggplant, dried okra, mineral content.
EFFECTS OF ORANGE PEEL OIL ON QUAIL (COTURNIX COTURNIX JAPONICA) GROWTH-PERFORMANCE, EGG QUALITY AND BLOOD PARAMETERS

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Abstract: In food industry, citrus peels are emerging as waste during processing of the fruits to juice or canned food. Thus, significant amounts of citrus peels are obtained each year all over the world. The aim of this study was to investigate the effects of orange peel oil on quail growth-performance, egg quality and blood parameters. First, essential oil was extracted from orange peel and then different amounts of essential oil (200, 400 and 600 ppm) were mixed with quail feed. Essential oil-containing and essential oil-free feeds were individually supplied to 3-5 day aged 36 quails during 9 weeks. Growth performance parameters, egg weight, shell thickness, shell strength, Haugh Units and some blood parameters of the quails were determined. The gas chromatography results revealed that limonene was the main volatile, aromatic and bioactive component of orange peel essential oil. Orange peel essential oil addition did not significantly affect growth performance of the quails. Moreover, essential oil addition influenced egg weight, b* values of yolk and a* values of albumen. Additionally, supplementation of 600 ppm essential oil increased monounsaturated fatty acids ratio and reduced the total saturated fatty acids ratio. In terms of blood parameters, essential oil addition affected quail blood parameters such as GLC, ALP, GOT, GPT, LDH values, while ALB, TPROT, CH and TG values of the quails were not affected. In conclusion, orange peel oil may be used as valuable alternative natural additive for poultry feed.

Keywords: essential oil, limonene, egg quality, blood parameters, quail, feed.

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ORGANIC AQUACULTURE PRODUCTION IN TURKEY: A BRIEF REVIEW

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Abstract: The value of fisheries used as human food is increasing day by day. Aquaculture has also been influenced by organic demand and gained importance all over the world. Turkey has less polluted water sources compared to the countries that intensively apply the traditional farming methods and the countries where industrialization has occurred in advanced levels. This provides a great opportunity for organic production. It is clear that, in Turkey, many water sources and many facilities are structurally suitable for organic aquaculture. In the organic fish production method, the health status, welfare and wastes of the fish products are taken into account. The aim is to sell healthier, high-quality and reliable fish to consumers. The prohibition of the use of harmful chemical compounds in the production and processing of fish is an indication that these fish are of good quality and safety. Organic aquaculture production is a very important opportunity for the sustainable development of fisheries and should be supported for its development.

In this study current situation and general application in organic aquaculture in Turkey have been investigated.

Keywords: aquaculture, organic, fisheries, Turkey, sustainable development.
ALGAE USES FOR ORGANIC LIFE

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Abstract: The power of the sea has been known since ancient times and marine resources have even benefited mankind when technology was less developed. The use of these resources, both for health and nutritional purposes, is increasingly spreading to other fields today.

Algae produce their own food and have a vital value for life. For this reason, these organic resources have great potential for use in many areas. They are mainly used for medical and food purposes, as fertilizer in agriculture and as a feed source for some animals. Their high levels of protein, vitamins and minerals make these living things valuable as an important source of energy. Containing omega-3 fatty acids, essential for nutrition and development for all living things, provides their usage as food and feed ingredients. In particular, the high amounts of lipid in some microalgae show promise in areas such as biofuels.

This study focuses on the applications of algae based on nutritional and chemical value.

Keywords: biodiesel, cosmetics, feed, fertilizer, food, lipids, microalgae.
ANTIOXIDANT ACTIVITY OF FIVE SEAWEED EXTRACTS

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Abstract: In this study, aqueous extracts of five seaweeds collected from Çanakkale, Turkey were studied for free radical scavenging activity and phenolic compounds. The extracts of two brown algae (Cystoseira barbata, Scytosiphon lomentaria), two green algae (Ulva rigida, Enteromorpha intestinalis) and one red algae (Gigartina acicularis) were prepared with boiling. The extract of S. lomentaria demonstrated greater antioxidant potential with a low IC50 (2,67 mg/g Ext.). It was also determined that the free radical scavenging activity of other seaweed extracts were close to this value. The total phenolics, flavonoids and carotenoids of the aqueous extracts ranged from 0,10 (G. acicularis) to 0,66 (C. barbata) mg/g Ext., 1,15 (S. lomentaria) to 1,30 (E. intestinalis) mg/g Ext. and 414,2 (U. rigida) to 2194,5 µg/g Ext. (C. barbata) mg/g, respectively. It was determined that seaweeds collected from Çanakkale exhibited high free radical scavenging capacity. We also found that, the aqueous extracts of brown algae C. barbata had high amounts of phenolic compound. According to our results, aqueous seaweed extracts could be use as organic fertilizers to increase antioxidant levels of agriculture products.

Keywords: seaweed, extraction, scavenging activity, phenolic compounds, organic fertilizer.
THE CHARACTERIZATION OF GELATIN EXTRACTED FROM SEA BASS (DICENTRARCHUS LABRAX)

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Abstract: In the recent years, increasing the value of fish by-products has become an important issue in the industry. Currently, some part of the fish skin as a by-product is converted to fish flour that used for animal feeding. In addition to fish flour, gelatin extraction from the fish skin has been developed due to the significant use of gelatin in industrial applications such as food packaging, drug delivery, and tissue engineering. In Turkey, sea bass (Dicentrarchus labrax) production constitutes approximately the 25% of the total aquaculture products. In our study, we extracted gelatin from sea bass (Dicentrarchus labrax) and characterized the structure of the gelatin by proton NMR spectroscopy.

Keywords: sea bass gelatin, biopolymer, fish protein isolate, nuclear magnetic resonance.
Discussion panel 3

Organic farming and sustainable development in Bulgaria

Moderators:
Prof. Dr. Zlatka GRIGOROVA
Assoc. Prof. Dr. Dimitar YAKIMOV
THE ROLE OF MUNICIPALITIES IN PROMOTING SUSTAINABLE PRODUCTION AND CONSUMPTION

Ralyo Ralev
Municipality of Plovdiv, BULGARIA

Abstract: The report presents a new perspective on the role of municipalities, focusing on activities to promote sustainable production and consumption. Opportunities for influencing local production direction and increasing the competitiveness of local business are analyzed in the context of the strategic priorities set at European and national level for achieving sustainable development. Building on the notion that only measures to promote sustainable production are sufficient to achieve sustainable development, the study also makes suggestions for concrete action on increasing sustainable consumption. Stimulating the production, supply and demand for organic food and products is recommended as the main activity in municipal plans and development strategies, with particular attention being paid to the link with health and environmental protection activities.

Keywords: sustainable development, local self-government, sustainable production, sustainable consumption.
Organic farming and sustainable development in Bulgaria

EUROPEAN POLICY FOR SUPPORT OF SMALL AND MEDIUM BUSINESS IN THE FIELD OF ORGANIC PRODUCTION

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Abstract: The European Union takes various measures aimed at promoting organic farming and creating a better business environment for the small production. These are policies developed by the Community which have not only an overall impact on the whole development of small and medium businesses in the European Union but also have their regional aspect and impact on individual countries or regions in the Union. One of the main principles underpinning European Union policy on small and medium businesses is "think small first". This principle is an expression of the understanding that small and medium business requirements can be met by large organizations, but the opposite is not always true. It is well known that small and medium businesses are much more limited than large companies. This puts them in a much more difficult situation and reduces their competitiveness. The conclusion is even more true when the legislative, fiscal and administrative framework as a whole is not sufficiently favorable to the development of organic farming.

Keywords: organic farming, small and medium business, competitiveness.

ЕВРОПЕЙСКА ПОЛИТИКА ЗА ПОДКРЕПА НА МАЛКИЯ И СРЕДНИЯ БИЗНЕС В ОБЛАСТТА НА БИОЛОГИЧНОТО ЗЕМЕДЕЛИЕ

Наталия СТОЯНОВА

Висше училище по агробизнес и развитие на регионите - Пловдив

Резюме: Европейският съюз предприема различни мерки, които целят популяризиране на биологичното земеделие и създаване на по-добра бизнес среда за малките производства. Става въпрос за политики, разработвани от Общността, които имат не само цялостно влияние върху общото развитие на малкия и среден бизнес в Европейския съюз, но също така имат и своя регионален аспект и отражение върху отделните държави или райони, обособени в Съюза. Един от основните принципи, залегнали в политиката на Европейския съюз, насочена към малкия и средния бизнес, гласи „think small first“ или „мисли първо за малкия“. Този принцип се явява изразител на разбирането, че изискванията, отнасящи се до малките и средните, могат да бъдат изпълнени и от големите организации, но обратното невинаги е вярно. Известно е, че малкия и средния бизнес е с доста по-ограничени възможности от големите компании. Това го поставя в много по-затруднено положение и намалява неговата конкурентоспособност. Изводът е още по-верен, когато законодателната, данъчната и административната рамка като цяло не са достатъчно благоприятни за развитието на биологичното земеделие.

Ключови думи: биологично земеделие, малък и среден бизнес, конкурентоспособност.
Organic farming and sustainable development in Bulgaria

ORGANIC PLANT PRODUCTION IN BULGARIA

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Abstract: Organic farming is a system of farm management and food production that combines best practices with regard to environmental protection, maintaining a high level of biodiversity, preservation of natural resources and the application of higher welfare standards to animals and production methods tailored to the preferences of a certain part of consumers towards products made using natural substances and processes.

The objective of this report is to present an overview of the emergence and development of organic production of plant products in Bulgaria and to highlight the impact of the financial assistance from the EU and national subsidies.

The main conclusion is that the considerable increase in the areas of individual organic cultures (vegetables, perennial crops, grassland) is not connected only with the increased subsidy but follows the positive market dynamics - the highest growth is in products grown organically where the demand on the domestic and the foreign market is the greatest.

Keywords: organic farming, organic plant growing, Bulgaria.

БИОЛОГИЧНО ПРОИЗВОДСТВО НА РАСТЕНИЕВЪДНИ ПРОДУКТИ В БЪЛГАРИЯ

Вълко СТОИЛОВ, Керанка НЕДЕВА

Висше училище по агробизнес и развитие на регионите - Пловдив

Резюме: Биологичното земеделие е система за управление на земеделието и производство на храни, в която се съчетават най-добрите практики по отношение опазването на околната среда, поддържането на висока степен на биологично разнообразие, опазването на природните ресурси и прилагането на високи стандарти за хуманно отношение към животните и методи на производство, съобразени с предпочитанията на определена част от потребителите към продукти, произведени чрез използване на естествени вещества и процеси.

Целта на настоящия доклад е да се направи обзор на възникването и развитието на биологичното производство на растениевъдни продукти в България и да се изтъкне влиянието на финансовото му подпомагане по линията на европейското и националното субсидиране.

Основният извод е, че значителният ръст при площите на отделни биокултури (зеленчуци, трайни насаждения, ливади и пасища) не е свързан единствено с увеличената субсидия, а следва положителната динамика на пазарите - най-високият прираст е при продукти, отглеждани по биологичен начин, при които търсенето на вътрешния и на външния пазар е най-голямо.

Ключови думи: биологично земеделие, биологично растениевъдство, България.
THE PLACE OF ORGANIC AGRICULTURE IN THE EU COMMON AGRICULTURAL POLICY

Ekaterina ARABSKA
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Abstract: The report presents a study on the place and role of organic farming in the EU’s Common Agricultural Policy (CAP), considering it as a top priority in the oldest and the most expensive policy of the European Union, which has undergone changes over the years and once again it is subjected to public discussions and political debates among affected parties and partners. The future of the CAP is one of the most important issues on the agenda in the EU and requires a common understanding on objectives and instruments. The presented study highlights the potential of organic production in the application of the general principle ‘public money for public goods’, which is the key in uniting the views of key figures and society on the future of the EU Common Agricultural Policy and on the sustainable development achievement. The report was prepared in the framework of the project "Development of the Common Agricultural Policy of the European Union" implemented in the period January - October 2018 according to the Plan of scientific and research activities in the University of agribusiness and rural development - Plovdiv.

Keywords: organic farming, Common agricultural policy, sustainable development.

MEYSTOTO NA BIOLOGICHNOTO ZEMEDELIE V OBCHATA SELSKOSTOPANSKA POLITIKA NA EC

Екатерина АРАБСКА
Висше училище по агробизнес и развитие на регионите - Пловдив

Резюме: Докладът представя проведен изследване върху мястото и ролята на биологичното земеделие в Общата селскостопанска политика на ЕС (ОСП), разглеждайки го като основен приоритет в най-старата и най-скъпата политика на Европейския съюз, претърпяла изменения в годините и отново подложена на обществени обсъждания и политически дебати между засегнати страни и партньори. Бъдещето на ОСП е един от най-важните въпроси на дневен ред в ЕС и изисква постигане на общо съгласие по отношение на цели и инструменти. Представеното изследване подчертава потенциала на биологичното производство в приложение на общи принцип „обществени пари за обществени блага“, който се явява ключов за обединяване на позициите на ключовите фигури и обществото относно бъдещето на Общата селскостопанска политика на ЕС и постигането на устойчиво развитие. Докладът е подготвен в рамките на проект „Развитие на Общата селскостопанска политика на Европейския съюз“, изпълняван в периода януари – октомври 2018 г. съгласно План за научноизследователската работа във Висше училище по агробизнес и развитие на регионите – Пловдив.

Ключови думи: биологично земеделие, Обща селскостопанска политика, устойчиво развитие.
Organic farming and sustainable development in Bulgaria

FARMERS MARKETS AND ORGANIC PRODUCTION - ACCESSIBILITY, QUALITY AND SUSTAINABLE DEVELOPMENT

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Abstract: The report presents the characteristics of farmers markets as a variation of alternative food networks, which are summarized as follows: local and authentic food is offered directly by the producer; local communities are encouraged to support small family farms and to care for human health and protect the environment; raising awareness and motivation for sustainable production and consumption; contributing to the preservation of local culinary traditions and authentic food qualities; leading to the development of social capital. Among the identified economic benefits are: stimulating the local economy, increasing the incomes of producers, increasing productivity per unit area and stimulating co-operation between producers. The social effects include: increase in the confidence among producers and consumers, ensuring clean food and health, increasing rural attractiveness and sustainable development through social and cultural change in society's food habits, production and consumption by promoting healthy eating as a culture of nutrition, experience and co-experience, training and engagement, etc.

Farmers markets are particularly suited to small producers, organic operators, or experimenting with small volumes of new products that would be at risk for large industries. The benefits of the farmers markets can be seen in several aspects: the consumer (a wide choice of fresh and affordable food and the opportunity to meet friends), the farmer (better opportunities for sales, diversification and consumer contact than other channels - both in terms of prices and in terms of synergies and acquisition of business skills); for the society (link between production and consumption, building clustered societies, promoting and preserving local productions, traditions and culture, etc.). In addition, farmers markets contribute to ensuring diversity in agricultural production, overcoming strong specialization and food security. Farmers’ markets in Bulgaria are a good practice for establishing a new type of relationship between farmers and consumers of farm and organic food and can be a successful business model with the potential to contribute to sustainable development.

The report was prepared within the framework of the project "Farmer markets - a sustainable business model for rural development” implemented in the period January - October 2018 according to the Plan of scientific and research activities in the University of agribusiness and rural development - Plovdiv.

Keywords: farmers markets, organic farming, sustainable development.
Резюме: Докладът представя характерните черти на фермерските пазари като разновидност на альтернативните хранителни мрежи, които се обозначават по следния начин: предлага се местна и автентична храна директно от производителя; насърчават се местните общности да подкрепят малките семейни стопанства и да се грижат за здравето на човека и опазват околната среда, т.е. повишават информираността и мотивацията за устойчиво производство и потребление; имат принос за съхраняването на местни кулинарни традиции и автентични качества на храната; водят до развитие на социалния капитал. Сред идентифицираните икономически ползи са: стимулиране на местната икономика, повишаване на доходите на производителите, повишаване на производителността на единица площ и стимулиране на кооперирането между производителите. Социалните ефекти се изразяват в повишаване на доверие между производители и потребители, осигуряване на чиста храна и здраве, повишаване на привлекателността на селските райони и устойчиво развитие чрез социална и културна промяна в навиците на обществото за хранене, производство и потребление чрез популяризиране на здравословното хранене като култура на хранене, опит и съпреживяване, обучение и ангажираност и др.

Фермерските пазари са особено подходящи за малки производители, биологични оператори или експериментиране с малки обеми от нови продукти, които биха били рискови за големи производства. Ползите от фермерските пазари могат да бъдат разглеждани в няколко аспекта: за потребителя (богат избор на прясна и достъпна храна и възможност за срещи с приятели), за фермера (по-добри възможности за продажби, диверсификация и контакт с потребителя отколкото по други канали – и по отношение на цени, и по отношение на взаимодействия и придобиване на бизнес умения); за обществото (връзка между производство и потребление, изграждане на сплетени общества, насърчаване и запазване на местни производства, традиции и култура и т.н.). Освен това фермерските пазари допринасят за осигуряване на разнообразие в земеделските производства, преодолявайки силната специализация, и хранителна сигурност. Фермерските пазари в България са добра практика за установяване на нов тип взаимоотношения между производители и потребители на фермерски и биологични храни и могат да бъдат успешен бизнес модел с потенциал за принос към постигането на устойчиво развитие.

Докладът е подготвен в рамките на проект „Фермерските пазари – устойчив бизнес модел за развитие на селските райони“, изпълняван в периода януари – октомври 2018 г. съгласно План за научноизследователската работа във Висше училище по агробизнес и развитие на регионалите – Пловдив.

Ключови думи: фермерски пазари, биологично земеделие, устойчиво развитие.
THE NATIONAL SECURITY SYSTEM IN THE CONTEXT OF SUSTAINABLE DEVELOPMENT - ECONOMIC AND FINANCIAL DIMENSIONS

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Abstract: The report presents an analysis of changes in the security environment in the context of increasing asymmetric threats and difficult predictability of potential sources of threats to international order and security in the context of the economic and financial dimensions of sustainable development. The goals of its achievement are an integral part of security in modern world and the sharing of responsibility for the protection of human life and the rights of present and future generations, the rule of law, peace and security throughout the world and free economic relations. The national interests of the Republic of Bulgaria defined in the framework of the national strategic defense review are considered: sovereignty, independence and territorial integrity; constitutionally established order, rights and freedoms; economic and social stability and prosperity; international security, stability and peace; principles and norms of international law, paying particular attention to the opportunities for economic growth and financial stability. Strategic risks and threats to the country's security and defense are directly related to today's environmental threats and challenges, outlining possible solutions to address them internationally and nationally and highlighting the potential of organic production by looking at it as an example of the application of sustainable interdisciplinary approaches and a holistic system to provide environmental, economic and social security at the regional level.

Keywords: national security, sustainable development, financial stability.
СИСТЕМАТА НА НАЦИОНАЛНАТА СИГУРНОСТ В КОНТЕКСТА НА УСТОЙЧИВОТО РАЗВИТИЕ – ИКОНОМИЧЕСКИ И ФИНАНСОВИ ИЗМЕРЕНИЯ

Йордан РОГАЧЕВ

Висше училище по агробизнес и развитие на регионите - Пловдив

Резюме: Докладът представя анализ на промените в средата за сигурност в условията на нарастващи асиметрични заплахи и трудна предсказуемост на потенциалните източници на заплахи за международния ред и сигурност в контекста на икономическите и финансовите измерения на устойчивото развитие. Целите за неговото постигане са неделима същност от сигурността в съвременния свят и споделянето на отговорността за защита на човешкия живот и права на настоящите и бъдещите поколения, върховенството на закона, мира и сигурността в целия свят и свободните икономически отношения. Разгледани са националните интереси на Република България, дефинирани в политическата рамка на стратегическия преглед на отбраната: суверенитет, независимост и териториална цялост; конституционно установен ред, права и свободи; икономическа и социална стабилност и просперитет; международна сигурност, стабилност и мир; принципите и нормите на международното право, като се обръща специално внимание на възможностите за икономически растеж и финансова стабилност. Стратегическите рискове и заплахи за сигурността и отбраната на страната са представени в пряка връзка със съвременните екологични заплахи и предизвикателства, като са посочени възможни решения за справяне с тях в международен и национален план и са изтъкнати потенциалите на биологичното производство, разглеждайки го като пример за приложение на устойчиви интердисциплинарни подходи и холистична система за осигуряване на екологична, икономическа и социална сигурност на регионално ниво.

Ключови думи: национална сигурност, устойчиво развитие, финансова стабилност.
Organic farming and sustainable development in Bulgaria

OPPORTUNITIES FOR IMPROVING THE HIGHER SCHOOLS FINANCING SYSTEM BY APPLYING GLOBAL SUSTAINABILITY OBJECTIVES

Menda STOYANOVA

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Abstract: Higher education is a powerful tool for the development of humanity, helping to achieve economic, social and political stability in individual countries. Due to growing public needs on the one hand and on the other hand resource constraints, the development and funding of institutions in the higher education system is a problem not only in Bulgaria but also worldwide. In the process of adapting to the increasing pressure exerted by the crisis in funding systems, governments and institutions should focus on tools and methods to optimize the system so that higher education institutions provide and be able to offer the full range of services needed to satisfy relevant public needs. Sustainable progress in higher education is a mission critical to delivering training and research products. The ongoing reform of higher education and science programs and policies must continue to follow European values of institutional autonomy and academic freedom, modernize national policies, achieve concrete successes to meet the challenges and opportunities of globalization, development, new learning sources, learners and type of learning. Among the possible approaches for that are discussed: priority increase of budget resources for higher education and science, tax incentives for sponsoring and investing in education and science, elaboration of a strategy for social dimensions in higher education, incl. and institutional strategies, measures to improve access to higher education, the international activities of higher education institutions, the establishment of technology centers and scientific parks, regional cooperation structures, the introduction of new requirements in relation to global sustainable development objectives, etc. This report presents the problematic areas of the funding system for higher education institutions in Bulgaria and makes suggestions for its improvement by developing new tools and financial incentives for the application of sustainable practices in the different spheres of activity of higher education institutions.

Keywords: higher education, financing, sustainable development.
ВЪЗМОЖНОСТИ ЗА УСЪВЪРШЕНСТВАНЕ НА СИСТЕМАТА ЗА ФИНАНСИРАНЕ НА ВИСШИТЕ УЧИЛИЩА ЧРЕЗ ПРИЛОЖЕНИЕ НА ГЛОБАЛНИТЕ ЦЕЛИ ЗА УСТОЙЧИВО РАЗВИТИЕ

Менда СТОЯНОВА
Висше училище по агробизнес и развитие на регионите - Пловдив

Резюме: Висшето образование е мощен инструмент за развитие на човечеството, подпомагащ постигането на икономическа, социална и политическа стабилност в отделните държави. Поради нарастващите обществени потребности от една страна, а от друга – ресурсни ограничения, развитието и финансирането на институциите в системата на висшето образование е проблемен въпрос не само в България, но и по света. В процеса на адаптиране към нарастващия натиск, оказал от кризата във финансирящите системи, правителства и институции трябва да се фокусират върху инструменти и методи за оптимизиране на системата, така че висшите училища да осигуряват и да бъдат способни да предлагат пълния набор услуги, необходими за задоволяване на съответните обществени потребности. Устойчивият прогрес на висшите училища е мисия с критично значение за предоставянето на обучителни и изследователски продукти. Протичащата реформа на програмите и политиките за висше образование и наука трябва да продължи да следва европейските ценности за институционална автономия и академична свобода, модернизиране на националните политики, постигане на конкретни успехи, така че да се отговори на предизвикателствата и възможностите, свързани с глобализацията, технологичното развитие, новите образователни източници, обучаеми и тип на учене. Сред възможните подходи за това са дискутирани: приоритетно повишаване на бюджетните средства за висше образование и за наука, данъчни облекчения за спонсориращи и инвестиращи образованието и науката, разработване на стратегия за социалните измерения във висшето образование, вкл. и институционални стратегии, мерки за подобряване на достъпа до висше образование, международната дейност на висшите училища, изграждане на технологични центрове и научни паркове, структури за регионално сътрудничество, поставяне на нови изисквания във връзка с глобалните цели за устойчиво развитие и т.н. Настоящият доклад представя проблемните области в системата за финансиране на висшите училища в България и прави предложения за нейното усъвършенстване чрез разработване на нов инструментариум и финансов стимулиране на приложение на устойчиви практики в различните сфери на дейност на висшите училища.

Ключови думи: висше образование, финансиране, устойчиво развитие.
LUMBRECO: NATURE’S CHOICE

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Abstract: The report presents Lumbreco’s experience in the production of liquid organic fertilizers. The beginning was established in 1996 with the establishment of one of the first red worm farms in Bulgaria. The business was launched with the idea of reducing organic waste from different types of production. For that time, the product of red worm (biohumus) was imposed as a known fertilizer in the country. Over time, Lumbreco has been upgraded, and with the help of established partnerships with farmers and universities, as well as many years of experience, has succeeded in improving its product and successfully starting production of concentrated liquid extraction enriched by other organic materials. The products are recognized as an indispensable agricultural assistant.

Keywords: Lumbreco, organic fertilizer, red worm.
IRRIGATION IN ORGANIC GREENHOUSE VEGETABLE PRODUCTION

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Abstract: A key challenge for organic farming is to optimize the use of natural resources, including water for irrigation. Considering the fact that in the greenhouse vegetable production the supply of the needed water to the plants relies only on the irrigation system, the issues related to the effective use of water are of particular importance. Efforts should be directed towards saving water and improving the efficiency of water use for irrigation. This report presents water saving irrigation technologies applicable to organic greenhouse production and some aspects of optimizing irrigation management.

Keywords: irrigation, greenhouse, organic farming.
EVALUATION OF THE INITIAL MATERIAL AND BREEDING LINES FOR ORGANIC POTATO PRODUCTION

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Abstract: Studies on the agrobiological response of six potato initial forms and four breeding lines have been conducted at two different systems for organic production including: (1) growing plants in natural soil fertility without using plant-protection products and (2) growing plants by fertilization with organic products authorized for use in organic production and use of biopesticides for plant protection. The control variant of the experiment is conventional production – growing through the use of herbicides, mineral fertilization and plant protection with chemical fungicides and insecticides. The experiments were conducted in the experimental plots of the Maritsa Vegetable Crops Research Institute-Plovdiv, during the period 2014-2017.

Significant differences in the characters of the morphological and economic description are registered in the organic production of initial material and potato breeding lines included in the study. They are characterized by a lower number of tubers, a lower average weight of tubers, a lower total and standard yield than that obtained from conventional production. Losses in yield for different genotypes range from 13 to 34%.

The results of the conducted study identify a suitable initial material for potato organic breeding - variety Pavelsko, D1811 and E1504, characterized by relatively high productivity under conditions of organic production, very good morphological qualities and specific insusceptibility to late blight (Phythophtora infestans), early blight (Alternaria solani), bacterial leaf spot, viral diseases and Colorado beetle (Leptinotarsa decemlineata).

Breeding lines (E766, E1026, E1100 and E1811) have been created for organic potato production. Breeding lines E1026 and E1811 combining relatively high productivity level (over 2000 kg.da⁻¹), very good organoleptic qualities and specific insusceptibility to late blight (Phythophtora infestans), early blight (Alternaria solani), bacterial leaf spot, viral diseases and Colorado beetle (Leptinotarsa decemlineata), are described with complex value in organic potato production.

Keywords: potato, organic production, initial material, breeding lines, yield, insusceptibility to diseases and pests.
ОЦЕНКА НА ИЗХОДЕН МАТЕРИАЛ И СЕЛЕКЦИОННИ ЛИНИИ ЗА БИОЛОГИЧНО ПРОИЗВОДСТВО НА КАРТОФИ

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Резюме: Проучена е агробиологичната реакция на шест изходни форми картофи и четири селекционни линии, отглеждани в две системи на биологично производство, включващи: (1) естествено плодородие на почвата без защита на растенията и (2) отглеждане чрез торене на растенията с биохумус и използване на биопестициди. Контрола на опита е вариант (3) на конвенционално производство - отглеждане чрез използване на минерални торове и защита на растенията с пестициди с химичен произход. Експериментът е изведен през периода 2014-2017 г. в опитното поле на Института по зеленчукови култури „Марица“ - Пловдив.

Включеният в проучването изходен материал и селекционни линии картофи се различават съществено по признаците от морфологичната си и стопанска характеристика при различните системи на производство. Те се характеризират с по-малък брой клубени, по-ниско средно тегло на клубените, по-нисък общ и стандартен добив в сравнение с този, получен при конвенционалното производство. Загубите в добива при различните генотипи варират от 13 до 34%.

Резултатите от проведеното проучване идентифицират подходящ изходен материал за биологична селекция при картофи - сорт Павелско, Д1811 и Е1504, характеризиращ се с относително висока продуктивност при условията на биологично производство, много добри морфологични качества и относително слаба възприемчивост към причинителите на алтернария, мана, бактериоза, вируси болести и колорадски бръмбар.

Създадени са селекционни линии (Е766, Е1026, Е1100 и Е1811) за биологично производство на картофи. С комплексна ценност се характеризират Е1026 и Е1811, съчетаващи сравнително високо ниво на продуктивност (над 2000 кг/да) с относителна невъзприемчивост към алтернария, мана, бактериоза, вируси болести, колорадски бръмбар и много добри органолептични качества.

Ключови думи: картофи, биологично производство, изходен материал, селекционни линии, добив, невъзприемчивост към болести и неприятители.
VALUABLE LOCAL FORMS OF GENUS *PIRUS L.* SUITABLE FOR ORGANIC PRODUCTION

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**Abstract:** In 2015 and 2016, an expeditionary study was conducted in the region of the town of Gabrovo in Bulgaria. The aim was to find valuable local forms and cultivars of *Pirus domestica* L. Two vigorous trees were found at different places over 80 years old. Their fruit is valuable and ripen in summer. The trees grow without chemical plant protection, without pruning and without soil treatment. Local people have used that fruit for pear juice and vinegar. The following indicators were studied: size and average fresh fruit weight; dry matter was determined refractometrically; yield/kg/tree. Fruit of Form № 1 ripen during the period of 25-30 July, and those of Form № 2 ripen in the period of 1-10 August. The average fruit weight for the two-year period in Form № 1 was 38.1 g, where as in Form № 2 it was 85.8 g. The dry matter in Form № 1 was 14.65% and in Form № 2 – 15.45%. The fruit of Form № 1 is not very large, which makes it suitable for processing in different products (for drying, for juice and vinegar, according to local people) and the fruit of Form № 2 is suitable for fresh fruit consumption and also for processing in compote and juice. These forms deserve to be thoroughly studied and propagated as cultivars for organic production of pears and their products.

**Keywords:** summer pears, organic production, traditional food.
Organic farming and sustainable development in Bulgaria

ЦЕННИ МЕСТНИ ФОРМИ ОТ РОД PIRUS L., ПОДХОДЯЩИ ЗА БИОЛОГИЧНО ПРОИЗВОДСТВО

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Резюме: През 2015 и 2016 г. се проведе експедиционно проучване в Габровския регион на България за издирване на ценни местни форми и сортове от Pirus domestica L. Бяха открити две жизнени дървета, отглеждани на различни места, на възраст над 80 г., които имат ценни плодове, узряващи през лятото. Дърветата се отглеждат без прилагане на химическа растителна защита и без резитба и без обработки на почвата. Местните хора са използвали тези плодове за сок от круши и за оцет. Бяха проследени следните показатели: размери и средна маса на свежи плодове; сухо вещество, определено рефрактометрично; добив/кг от дърво. Плодовете на форма № 1 узряват през периода 25-30 юли, а тези на форма № 2 узряват в периода 1-10 август. Средната маса на плода при форма №1 е 38,1 г, а при форма N 2 – 85,8 г средно за двегодишния период. Сухото вещество при форма № 1 е 14,65%, а при форма № 2 – 15,45%. Плодовете на форма № 1 не са много едри и това ги прави подходящи за преработка в различни продукти /за сушене, за сокове и оцет, по данни от местни хора/, а плодовете на форма № 2 са подходящи за консумация като свежи плодове и също за преработка в компоти и сокове. Тези форми заслужават да бъдат подробно изучени и размножени като сортове за биологично производство на круши и продукти от тях.

Ключови думи: летни круши; биологично производство; традиционни храни.
CONTROLLING THE GAME DAMAGES TO AGRICULTURAL CROPS

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Abstract: Various measures to prevent damage to game crops have been introduced in the report. Various types of repellents have been considered to reduce the damage by game. An economic analysis of unit area protection values has been made using different techniques and sustainable development. Specific recommendations are given on how to apply the different types of repellents, as well as the period of their application in order to ensure the most effective protection in organic farming.

Keywords: protection against game damage, prevention, repellent, economic analysis, agricultural crops, organic farming, sustainable development.

КОНТРОЛ НА ПОВРЕДИ ОТ ДИВЕЧ НА СЕЛСКОСТОПАНСКИ КУЛТУРИ

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Резюме: В доклада са представени различни мерки за превенция на повреди от дивеч на селскостохопански култури. Разгледани са различни видове репеленти, чрез които би могло да се осъществи намаляване на повредите от дивеч. Направен е икономически анализ на стойностите за предпазване на единица площ при използване на различни техники и устойчиво развитие. Дадени са конкретни препоръки за начина на прилагане на отделните видове репеленти, както и периода на прилагането им с оглед обезпечаване на най-голяма ефективност на защитата, в биоземеделието.

Ключови думи: защита от повреди от дивеч, превенция, репелент, икономически анализ, селскостопански култури, биоземеделие, устойчиво развитие.
PROBLEMS OF THE INTRODUCTION OF DERIVATIVE INSTRUMENTS ON THE BULGARIAN STOCK EXCHANGE

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Abstract: The capital market in Bulgaria is significantly behind the EU market. It is characterized by low market capitalization, a small number of listed companies and a scant interest in financing by both institutional investors and individual investors. Of course, this fact can be explained by the insufficient awareness of the population about the opportunities this market offers, and that would be true, but it would not be enough. The crunch in the development of the capital market in Bulgaria leads to a number of important consequences for the economy, perhaps the most significant of which is the strengthening of the role of commercial banks as the most important sources of credit resources. The report monitors the state of the Bulgarian capital market and seeks opportunities for the widespread penetration of derivative instruments that will increase the interest of investors and lead to attracting additional capital to the capital market in the country.

Keywords: financial market, stocks, trades, derivative instruments, risk management, hedging, options.
Poster Session

Moderators:
Prof. Dr. Zlatka GRIGOROVA
Assoc. Prof. Dr. Dimitar YAKIMOV
Poster Session

APPROACHES OF INTRODUCING THE PRINCIPLES ABOUT THE BIOLOGICAL (ORGANIC) AGRICULTURE ON ECHINACEA PURPUREA FOR CONTROL OF VIRAL DISEASES

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Abstract: Echinacea purpurea (L.) Moench. is cultivated as medicinal, ornamental, honey-bearing, essential oil-bearing and it is economically usefull culture for leading in crop- rotations in different regions. Alfalfa mosaic virus (AMV), Cucumber mosaic virus (CMV), Tomato spotted wilt virus (TSWV), Tobacco mosaic virus (TMV) and Potato virus Y (PVY) were established on E. purpurea in Bulgaria, as pathogens causing virus diseases that decreased the yield of leaves, roots and seeds.

CMV, PVY, TSWV were established as viral pathogens in Ukraine by different virological methods. Biological (organic) cultivation of purple coneflower was used in Ukrainian private farm “Merkuriy”, Poltava district in 2016 and 2017. High humus content was achieved by different methods of the organic agriculture: using of compost, crop rotations, fallow land. The humus content of the black earth soil after 8 years with organic agriculture in “Merkuriy” farm was 5,7% in comparison with the control field of black earth soil with the conventional agriculture and the humus content – 2,6%. Purple coneflower plants with symptoms of virus diseases did not observed in the “Merkuriy” farm, but in the control plantation Echinacea plants with chlorotic spotting were observed. The yield of leaves, stems and flowers from purple coneflower, cultivated by organic agriculture was 4,58 t/ha on the second year in comparison with 3,93 t/ha for virus infected plants growth under conventional agriculture. The yield of roots was 1,97 t/ha and 1,41 t/ha respectively.

Keywords: medicinal plants, Echinacea purpurea, viral diseases, effect of the organic agriculture.
PERСПЕКТИВИ ЗА ВНЕДРЯВАНЕ ПРИНЦИПИТЕ НА ОРГАНИЧНОТО ЗЕМЕДЕЛИЕ ЗА КОНТРОЛ НА ВИРУСНИ БОЛЕСТИ ПО ECHINACEA PURPUREA

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⁴Опитна станция по лекарствени растения към Института по агроекология и използване на природните богатства, с. Березоточа, Полтавска област, Украина

Резюме: Echinacea purpurea (L.) Moench. се отглежда като медицинска, декоративна, медоносна и етеричномаслена култура, а също е полезна за участие в сеитбообращенията на различни области.

Вирусът на люцерновата мозайка (Alfalfa mosaic virus - AMV), вирусът на обикновената краставична мозайка (Cucumber mosaic virus - CMV), вирусът на доматената бронзовост (Tomato spotted wilt virus - TSWV), вирусът на тютюновата мозайка (Tobacco mosaic virus - TMV) и картофеният инпилон вирус (Potato virus Y PVY) бяха установени по E. purpurea в България като патогени, причиняващи вирусни болести, които намаляват добива от листа, корени и семена.

СМV, PVY, TSWV бяха установени чрез различни вирусологични методи като вирусни патогени в Украина. Отглеждане на пурпурна ехинацея при условия на биологично (органично) земеделие беше приложено в украинското частно зemedелско предприятие „Меркурий“, Полтавска област през 2016 и 2017 години. Високо хумусно съдържание беше постигнато чрез някои способи на биологично земеделие: торене с оборски тор, сеитбообращение, черна угар. След 8 години с органично земеделие в зemedелското стопанство „Меркурий“, Полтавска област хумусното съдържание на чернозем беше 5,7% в сравнение с контролно поле на чернозем с приложено конвенционално земеделие, където хумусното съдържание беше 2,6%. Растения ехинацея със симптоми на вирусни заболявания не бяха наблюдавани в стопанството „Меркурий, докато в контролното насаждение бяха забелязани растения ехинацея с хлоротично напетняване по листата. Добивът от листа, стъбла и цветове на пурпурна ехинацея, култивирана чрез органично земеделие беше 4,58 т/ха на втората година в сравнение с 3,93 т/ха за контролно насаждение с конвенционално земеделие. Добивът от корени беше 1,97 т/ха и 1,41 т/ха респективно.

Ключови думи: медицински растения, Echinacea purpurea, вирусни болести, ефект от органично земеделие.
MONITORING OF GOOD AGRICULTURAL PRACTICES IN TRADITIONAL AND NONTRADITIONAL CROPS IN CONDITIONS OF ORGANIC AGRICULTURE

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Abstract: Good agricultural practices have been presented in the cultivation of traditional and non-traditional crops in the conditions of organic farming through the example of the unconventional ancient cereal crop *Eragrostis tef*. Some recommendations and peculiarities of its cultivation are presented.

Key words: organic farming, non-traditional crops, *Eragrostis tef*.

МОНИТОРИНГ НА ДОБРИТЕ ЗЕМЕДЕЛСКИ ПРАКТИКИ ПРИ ТРАДИЦИОННИ И НЕТРАДИЦИОННИ КУЛТУРИ В УСЛОВИЯТА НА БИОЛОГИЧНО ЗЕМЕДЕЛИЕ

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Резюме: Представени са добри земеделски практики при отглеждане на традиционни и нетрадиционни култури в условията на биологично земеделие по примера на нетрадиционната древната зърнена култура теф *Eragrostis tef*. Изведени са препоръките и особеностите в неговото отглеждане.

Ключови думи: биологично земеделие, нетрадиционни култури, *Eragrostis tef*.
INFORMATION ACCESS TO PLANT GENE FUND IN THE SUSTAINABLE CONSERVATION AND MANAGEMENT SYSTEM

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Abstract: Plant gene fund is a public resource, the benefits of which must be used in the interest of society. In this context, information activities are at the core of ensuring a comprehensive approach and interaction among all stakeholders. During the period 1982-2017 the fund of National Genebank in IPGR Sadovo is enriched with 51,556 accessions. Documentation system Phyto 2000 optimizes the management of plant genetic resources in order to their targeted storage, study, reproduction, free exchange and use. 9,626 accessions are collected from expeditions, included local varieties and populations of private gardens and small farms and wild forms from their natural habitats. There are 36,108 genotypes, introduced by international free exchange. 5,822 breeding materials – lines and varieties, are registered. Collections from cereals, leguminous, technical and fodder crops, vegetables, medicinal and aromatic plants are created. All seed samples are recorded, according to the international standards of FAO and Bioversity International. Passport data includes taxonomic descriptions, biological status and eco-geographical origin of the accessions. Existing European cooperation in the ECPGR allows better coordination between genebanks and the users of the plant gene fund. The EURISCO electronic catalogue provides free information access to the stored ex situ collections in Europe. The AEGIS initiative focuses on the conservation of local plant genetic resources - an inexhaustible source of useful qualities for improvement of crops and a basis for development of sustainable agriculture.

Keywords: plant genetic resources, national register, international data bases, European collaboration.
ИНФОРМАЦИОНЕН ДОСЪТЪП ДО РАСТИТЕЛНИЯ ГЕНОФОНД В СИСТЕМАТА ЗА УСТОЙЧИВО ОПАЗВАНЕ И УПРАВЛЕНИЕ

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Резюме: Растителният генофонд представлява публичен ресурс, ползите от който трябва да бъдат използвани в интерес на обществото. В тази връзка информационните дейности са в основата на гарантирания на цялостен подход и взаимодействие на всички заинтересовани страни. През периода 1982-2017 г. фондът на Националната генбанка на ИРГР Садово е обогатен с 51 556 образци. Документационната система Phyto 2000 оптимизира управлението на растителните генетични ресурси с оглед целенасоченото им съхранение, проучване, размножаване, обмен и използване. Колекционирани от експедиции са 9 626 образци – местни сортове и популации от лични градини и дребни земеделски стопанства, както и диворастящи форми от естествените им хабитати. Заведени са 36 108 генотипа, интродуцирани по пътя на международния безвалутен обмен. Регистрирани са 5 822 селекционни материали – линии, сортове. Изградени са колекции от зърно-житни, зърно-бобови, технически, фуражни, зеленчукови, медицински и ароматни култури. Всички семенни образци са заведени съгласно международните стандарти на FAO и Bioversity International. Паспортните данни включват таксономично описание, биологичен статус и еколо-географски произход на образците. Съществуващото европейско сътрудничество в ECPGR позволява по-добра координация между генбанките и потребителите на растителния генофонд. Електронният каталог EURISCO осигурява свободен информационен достъп до съхранените ex situ колекции в Европа. Инициативата AEGIS поставя акцент върху опазването на местните растителни генетични ресурси – неизчерпаем източник на полезни качества за подобряване на културните растения и основа за развитието на устойчиво земеделие.

Ключови думи: растителни генетични ресурси, национален регистър, международни бази данни, европейско сътрудничество.
AGRONOMIC CHARACTERS OF SOME FOREIGN WINTER BREAD WHEAT CULTIVARS (*TRITICUM AESTIVUM L.*)

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**Abstract:** The study is carried out in the experimental field of Institute of Plant Genetic Resources “Konstantin Malkov” - Sadovo, Bulgaria during 2015-2017 growing seasons. Seven Italian, seven Czechian, two Francian, two Portugal and two Polish cultivars were evaluated for six agronomic traits. In general the evaluated foreign cultivars had later date to heading than the national standard Enola. An exception was cultivar Bilancia which had the same length of vegetative growth phase as Enola. Bohemia had the longest spike. Italian variety Alcione had the highest number of spikelets per spike. The Czech cultivars Bohemia and Seladon and Polish variety Kobra Plus had the highest thousand grain weight. Relatively the highest yield was recorded for Jordao and Coa from Portugal and Carisma from Italy. K-means cluster analysis permitted to group the cultivars in four clusters. The standard variety Enola with other six cultivars was grouped into second cluster including 35% of total genotypes. The maximum average inter-cluster distance was found between cluster I and cluster III. So, the crossing between these two highly diverse cluster parents would be fruitful for getting heterosis cross combination. The results of this study will support efforts of utilization of foreign cultivars in winter bread wheat breeding programs.

**Keywords:** winter bread wheat, cultivars, agronomic characters, k-means cluster analysis.
CONTENT OF CRUDE PROTEIN AND LYSINE IN GRAIN OF INTRUDUCED RICE VARIETIES

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Abstract: During the period 2015-2017 on the territory of Maritsa Vegetable Crops Research Institute, Plovdiv it was held a field trial. Five imported rice varieties, introduced into the Bulgarian production, have been tested. A biochemical assessment of grain quality was made. The Turkish variety Gala has the highest crude protein content in the grain, which is also accompanied by high lysine content. The studied Italian varieties (Brio, Linche, Kameo) are characterized by lower crude protein levels in the grain than the standard. With the highest concentration of lysine on average for the period is distinguished the variety Brio - 0.31%.

Keywords: rice, introduced varieties, crude protein, lysine.

ÇЪДЪРЖАНИЕ НА СУРОВ ПРОТЕИН И ЛИЗИН В ЗЪРНОТО НА ИНТРОДУЦИРАНИ СОРТОВЕ ОРИЗ

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Резюме: През периода 2015-2017 г. е проведен полски опит на територията на „ИЗК“ Марица, гр. Пловдив. Изпитани са пет интродуцирани сорта ориз, внедрени в българското производството. Направена е биохимична оценка на качеството на зърното. Турският сорт Гала е с най-високо съдържание на суров протеин в зърното, което е съпроводено и с високо лизиново съдържание. Изследваните италиански сортове (Брио, Линче, Камео) се характеризират с по-ниски стойности на суров протеин в зърното от стандарта. С най-висока концентрацията на лизин средно за периода се отличава сорт Брио – 0,31%.

Ключови думи: ориз, интродуцирани сортове, суров протеин, лизин.
REACTION OF INTRODUCED RICE VARIETIES TO THE CAUSATIVE AGENT OF FUSARIUM IN THE PANICLE

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Abstract: During the period 2016-2017 it was studied the resistance of five rice introduced varieties to the causative agent of *Fusarium culmorum* to the panicle. The study was carried out on a permanent rice cell on an open field in the Institute of Vegetable Crops, Maritza, Plovdiv under field conditions and artificial infection. Immune varieties to the (*Fusarium culmorum*) agent to panicle in the rice genotypes have not been established. Resistance to the fungus have three varieties, and it is the highest in the Italian variety Luna. Least variation in the absolute mass of infected seeds and persistent type of infection is characterized by the Turkish variety Gala.

Keywords: rice, introduced varieties, *Fusarium culmorum*.

REAКЦИЯ НА ИНТРОДУЦИРАНИ СОРТОВЕ ОРИЗ КЪМ ПРИЧИНИТЕЛЯ НА ФУЗАРИОЗА ПО МЕТЛИЦАТА

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Ключови думи: ориз, интродуцирани сортове, *Fusarium culmorum*.
STUDY OF THE RELATIONSHIPS BETWEEN QUANTITATIVE CHARACTERS BY PATH-ANALYSIS IN SECALE CEREALE

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Abstract: The aim of the present study is the preparation of a complex evaluation of rye specimens from the National Collection in the phase “ear formation” with a view to their future use and conservation. The experimental work was conducted in the period 2009-2012. 54 specimens were objects of research. The study was conducted in the experimental field of the Institute of Plant Genetic Resources (IPGR) – the town of Sadovo. By the parameter $P_0$, the mathematical data processing was determined by the influence of unspecified factors ($P \leq 0.15$) by the formula $P_0 = \sqrt{1 - (P_1^2 + P_2^2 + ... + P_{n-1}^2 + 2P_1P_2r_{12} + ... + 2P_{n-2}P_{n-1}r_{n-1,n-2})}$, where $P_j$ (j = 1, 2, ..., n-1, j = 2, 3, ..., n) - Path the coefficients of the individual signs; $r_{ji}$ (i = 1, 2, ..., n-1, j = 2, 3, ..., n) - coefficient of correlation between the signs.

Keywords: Secale cereal, rye, path analysis.

ПРОУЧВАНЕ ЗАВИСИМОСТИТЕ МЕЖДУ КОЛИЧЕСТВЕНИТЕ ПРИЗНАЦИ ЧРЕЗ PATH-АНАЛИЗ ПРИ SECALE CEREALE

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Резюме: Целта на настоящето изследване е комплексна оценка на образците ръж от Националната колекция във фаза изкласяване с оглед на тяхното бъдещо използване и опазване. Научноизследователската работа е проведена през периода 2009-2012 година. Обект на проучване са 54 образции. Проучването беше извършено в опитното поле на Института по растителни генетични ресурси (ИРГР) – град Садово. Чрез показателя $P_0$, с математическата обработка на данните беше определено влиянието на неотчетените фактори ($P \leq 0.15$) по формулата $P_0 = \sqrt{1 - (P_1^2 + P_2^2 + ... + P_{n-1}^2 + 2P_1P_2r_{12} + ... + 2P_{n-2}P_{n-1}r_{n-1,n-2})}$, където $P_j$ (j = 1, 2, ..., n-1, j = 2, 3, ..., n) - Path коефициентите на отделните признаки; $r_{ji}$ (i = 1, 2, ..., n-1, j = 2, 3, ..., n) - коефициент на корелация между признаките.

Ключови думи: Secale cereal, ръж, Path анализ.
MATHEMATICAL APPROACHES FOR GROUPING TOPCROSS MAIZE HYBRIDS WITH PHK-42 AND DK-16/G2 PATERNAL LINES

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Abstract: A three-year study of 38 maize crosses obtained with the paternal lines PHK-42 and DK-16/G2 and the hybrids Kn-435, PR-9578 and Lg-3475 as a standards (checks) was carried out. Through cluster analysis, the test-crosses with paternal component PHK-42 were divided into two clusters-one larger and one smaller with differentiated 4 subgroups. The analysis shows that the grouping of samples is based on the average values of yield obtained in the relevant cluster. The impact of the yield and its elements, determined by applying the factor analysis, shows that of the possible 10 components, the analysis is presented to the second, explaining 77,0% of the total variation. DK-16/G2 crosses clustering results show that, depending on the relative distance between them, the test-crosses are also grouped into two clusters - one larger and one smaller. The distribution of the variants here is also based on the average yields obtained for the respective group. Crosses: A9E0371xDK-16/G2, 88BM29xDK-16/G2 and 88BM34xDK-16/G2 exceed the Kn-435 and Lg-3475 standards as well as all other variants. Using the factor analysis at crosses with DK-16/G2 paternal line, the variables are grouped into three components as they explains for 65,5% of the total variation.

Keywords: test-crosses, cluster analysis, basic components, average yield.
МАТЕМАТИЧЕСКИ ПОДХОДИ ЗА ГРУПИРАНЕ НА ТОПКРОС ХИБРИДИ ЦАРЕВИЦА С БАЩИНИ ЛИНИИ РНК-42 И ДК-16/G2

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Резюме: Извършено е четиригодишен проучване на 38 кръстоски царевица, получени с участието на бащини линии РНК-42 и ДК-16/G2 и хибридните сорове Kn-435, PR-9578 и Lg-3475 като стандарти (контроли). Чрез кластер анализ тесткросите с бащин компонент РНК-42 бяха разделиeni в два кластера – един по-голям и един малък с диференцирани 4 подгрупи. Групирането на образците е базирано на стойностите на средния добив, получен в съответния кластер. Силата на влияние на добива и неговите елементи, установена чрез прилагането на факторния анализ, показва, че от възможните 10 компонента анализът е представен до втория, обосноваващ 77,0% от общото вариране. Резултатите от кластеризирането на кръстоските с бащина линия ДК-16/G2 показват, че в зависимост от относителното разстояние между тях тесткросите също са групирани в два кластера – един голям и един по-малък. Разпределението на вариантите и тук е базирано на стойностите на средния добив, получен за съответната група. Кръстоски A9E0371хDK-16/G2, 88BM29xDK-16/G2 и 88BM34xDK-16/G2 надвишават по добив стандарти Kn-435 и Lg-3475, както и всички останали варианти. С помощта на анализ на главните компоненти при кръстоските с баща ДК-16/G2 променливите са групирани в три компонента, тъй като с тях се обясняват 65,5% от общото вариране.

Ключови думи: тест-крosi, кластер анализ, основни компоненти, среден добив.
POSSIBILITIES FOR USING PEA (*PISUM SATIVUM L.*) FOR FOOD AND FEED

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**Abstract:** The article is an overview analysis on the opportunities for using pea in different directions. Short historical facts for its growing are presented and its significance as a cultural plant. The facts show that pea is a valuable plant from the group of protein crops and has multilateral use: for food for human and animals; as a food chain source; an important precursor on agricultural crops for improving the soil fertility.

The pea is rich in starch – 45%-50%, crude protein – 25%-30% and contains from 1,4% up to 1,8% lysine. The matured pea seeds nutrients and caloricity exceed the meat over 3 times; the fish – 4 times; the rye and wheat bread – 1,5 times; potatoes – 3,5 times; and cabbage – over 6 times. The pea is an important source of plant protein.

The publication contains information about the national collection from pea, stored in the Institute for Plant and Genetic Resources – Sadovo, which is exclusively diverse in phenotype and genotype. The carried out assessment on crude protein content and some other indicators in dry seed and fresh mass allows to all users to choose the most suitable variety, depending on their interest: scientific-theoretical, breeding and production.

**Keywords:** Pea (*Pisum sativum L.*), seed quality, direction of use.
ВЪЗМОЖНОСТИ ЗА ИЗПОЛЗВАНЕ НА ГРАХА (*PISUM SATIVUM L.*) ЗА ХРАНА И ФУРАЖ

Мария СЪБЕВА, Сийка АНГЕЛОВА

Институт по растителни генетични ресурси „Константин Малков“ – Садово

Резюме: Статията е обзорен анализ за възможностите на използване на граха в различни направления. Представени са кратки исторически факти за отглеждането и значението му като културно растение. Изнесените факти показват, че той е ценно растение от групата на протеиновите култури и има многостранно използване: за храна на хора и животни; като суровина по хранителната верига; важен предшественик на земеделските култури за подобряване на почвеното плодородие.

Грахът е богат на скорбяла - 45-50%, суров протеин - 25-30%, и съдържа от 1,4 до 1,8% лизин. По хранителни вещества и калоричност зрелите грахови семена превъзхождат местото почти 3 пъти; рибата - 4 пъти; ръжения и пшеничен хляб - 1,5 пъти; картофите - 3,5 пъти; а зелето - почти 6 пъти. Грахът е важен резерв на растителен протеин.

В публикацията е включена и информация за националната колекция от грах, съхранена в ИРГР-Садово, която е изключително разнообразна по фено и генотип. Направената оценка по съдържание на суров протеин и някои други показатели в сухото зърно и свежата маса позволява на всички ползватели да изберат най-подходящия сорт в зависимост от техните интереси: научно-теоретични, селекционни и производствени.

Ключови думи: грах (*Pisum sativum L*), качество на зърното, направление на използване.
ESTIMATION OF YIELD AND STABILITY OF VARIETIES OF COMMON WINTER WHEAT GROWN UNDER ORGANIC AND CONVENTIONAL AGRICULTURE

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Abstract: In the period 2012-2015 IPGR - Sadovo examined the yields and stability of 24 varieties of winter wheat (Triticum aestivum L.). The experiments were carried out on the experimental field of the IPGR - Sadovo under the conditions of organic and conventional agriculture. The purpose of the study is to assess the yield and stability of varieties of common winter wheat grown under the conditions of organic and conventional farming. The results of this test give us the right to recommend varieties of common winter wheat as suitable for organic farming.

The influence of the climatic differences of the years on the yield of grain from winter wheat varieties is the strongest – 46.7% of the total variation. The effect of the type of farming is (organic and conventional) is 27.9% and the varieties – 5.5%. In the conditions of organic farming, the varieties of Sadovo 1, Momchil, Ioana, Niki, Prelom, Diamant, Boryana, Yunak, Petya, Guinness, Geya 1, Lucyl, Tsarevets and Enola received positive assessments. These varieties could be grown in organic farming. They combine better grain yields with better stability over the years of the study.

Keywords: winter common wheat, yield and yield stability: conventional agriculture, organic farming, selection of varieties.
ОЦЕНКА ПО ДОБИВ И СТАБИЛНОСТ НА СОРТОВЕ ОБИКНОВЕНА ЗИМНА ПШЕНИЦА, ОТГЛЕЖДАНИ ПРИ УСЛОВИЯТА НА БИОЛОГИЧНО И КОНВЕНЦИОНАЛНО ЗЕМЕДЕЛИЕ

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Резюме: През периода 2012-2015 г. в ИРГР - Садово са изследвани добивите и стабилността на 24 сорта зимна пшеница (Triticum aestivum L.). Опитите са изведени на експерименталното поле на ИРГР - Садово при условията на биологично и конвенционално земеделие. Целта на изследването е оценка по добив и стабилност на сортове обикновена зимна пшеница, отглеждани при условията на биологично и конвенционално земеделие. Резултатите от това изпитване ни дадат право да препоръчаме сортове обикновена зимна пшеница като подходящи за биологично отглеждане. Влиянието на климатичните различия на годините върху добива на зърно е най-сильно - 46,7% от общото вариране. Силата на влияние на типа на отглеждане (биологично и конвенционално) е 27,9%, а на сортовете – 5,5%. В условията на биологично земеделие положителни оценки получават сортовете Садово 1, Момчил, Йоана, Ники, Прелом, Диамант, Боряна, Юнак, Петя, Гинес, Гея 1, Люсил, Царевец и Енола. Тези сортове биха могли да бъдат отглеждани в биологичното земеделие. При тях се съчетават по-добри добиви на зърно с по-добра стабилност през отделните години на проучването.

Ключови думи: конвенционално земеделие, биологично земеделие, подбор на сортове, зимна обикновена пшеница, добив и стабилност на добива.
EVALUATION OF SEED DEVELOPMENT AND STERILIZATION OF VARIOUS GRAIN LEGUME CROPS (PEA, CHICKPEA AND BITTER VETCH) UNDER IN VITRO CONDITIONS

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Abstract: Grain legumes are protein crops that occupy an important place in the structure of agricultural production. Their use has two aspects - human food and grain and green fodder. Besides being rich in protein, they are important for natural soil fertility.

The sterilization of pea, chickpea and bitter vetch seeds is carried out with 10% calcium hypochlorite solution for 20 minutes under sterile conditions in a laminar box. The sterilized explants are cultivated on nutrient medium - Murashige & Skoog.

In the initial reporting period, most of the pea seeds survive after the sterilization. On the 15th day of experience the percentage of contamination is increased. After this period there is no change in the sterilization of pea seeds. Other sterilizing agents should be used in varying concentrations. The use of 10% calcium hypochlorite solution for 20 minutes has very good results in introducing the bitter vetch under controlled growth and development conditions. In the first reporting we have 30% contaminated chickpea seeds. In subsequent reporting, the percentage of contamination reaches to 60%, which requires at the next introduction in vitro to be changed sterilization procedures and to be search other sterilizing agents.

The purpose of this study is to trace the sterilization and seed development of various grain legumes (pea, chickpea and bitter vetch) under in vitro conditions and their subsequent testing with plant hormones added to the nutrient medium.

Keywords: pea, chickpea, bitter vetch, sterilization, in vitro conditions.
ОЦЕНКА НА РАЗВИТИЕ И СТЕРИЛИЗАЦИЯ НА СЕМЕНА ОТ РАЗЛИЧНИ ПРЕДСТАВИТЕЛИ НА ЗЪРНЕНО-БОБОВИ КУЛТУРИ (ГРАХ, НАХУТ И БУРЧАК) ПРИ IN VITRO УСЛОВИЯ

София ПЕТРОВА, Станислава СТАТЕВА

Институт по растителни генетични ресурси „Константин Малков“ – Садово

Резюме: Зърнено-бобовите култури са протеинови култури, които заемат важно място в структурата на земеделското производство. Тяхното използване има два аспекта – за храна на хората и за зърнен и зелен фураж. Освен че са богати на белтъчини, те има важно значение за естественото почвено плодородие.

Стерилизацията на семена от грах, нахут и бурчак се извършва с 10-процентен разтвор на калциев хипохлорид за 20 минути при стерилини условия в ламинар–бокс. Така стерилизираните експланти се култивират върху хранителна среда – Murashige & Skoog.

В началния период на отчитане голямата част от семената на граха оцеляват след стерилизацията. На 15-ти ден от zalагане на опита се увеличава процентът на замърсяване. След този период няма промяна в стерилизацията на семената от грах. Налага се да се използват други стерилизиращи агенти във вариращи концентрации. Използването на 10% разтвор на калциев хипохлорид за 20 минути е с много добри резултати при въвеждане на бурчака в контролирани условия на растеж и развитие. При първото отчитане имаме 30% замърсени нахутени семена. При следващите отчитания процентът на замърсяване достига 60%, което налага при следващи въвеждания in vitro да се промени стерилизационната процедура и да се търсят други стерилизиращи агенти. Целта на това изследване е да се проследи стерилизацията и развитието на семената на различни представители на зърнено-бобови култури (грах, нахут и бурчак) при in vitro условия и последващото им изпитване с растителни хормони добавени към хранителната среда.

Ключови думи: грах, нахут, бурчак, стерилизация, in vitro условия.
OPPORTUNITIES FOR IN VITRO INTRODUCTION AND STORAGE OF ASCLEPIAS TUBEROsa L.

Stanislava STATEVA

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Abstract: Bulgaria is renowned for its wealth of wildlife medicinal plants. Intensive collection of medicinal plants in recent years has to be addressed to preserve them. The plant species *Asclepias tuberosa* L., commonly referred to as butterfly, is a perennial species found on rocky forests. In order to avoid the disappearance of the species and the search for an accelerated propagation rate, it requires its research in vitro. When introducing seeds under controlled conditions, the effectiveness of different sterilizing solutions is tested. A method of shooting with ethyl alcohol and bleach at different concentration and exposure was applied.

Keywords: *Asclepias tuberosa* L., medical appearance, sterilization, in vitro.

ВЪЗМОЖНОСТИ ЗА IN VITRO ВЪВЕЖДАНЕ И СЪХРАНЕНИЕ НА МЕДИЦИНСКИЯ ВИД ASCLEPIAS TUBEROsa L.

Станислава СТАТЕВА

Институт по растителни генетични ресурси „Константин Малков“ – Садово

Резюме: България е прочута с богатството си от диворастящи лечебни растения. Интензивното им събиране през последните години налага да се обърне внимание за запазването им. Растителният вид *Asclepias tuberosa* L., обикновено наречен пеперуда, е многогодишен вид, срещащ се по скалисти гори. За да се избегне изчезването на вида и търсене на ускорени темпове на размножаване, се налага проучването му в in vitro условия. При въвеждане на семена в контролирани условия се изпита ефективността на различни стерилизиращи разтвори. Прилагана е методика за стерилизация с етилов алкохол и белина в различна концентрация и експозиция.

Ключови думи: *Asclepias tuberosa* L., медицински вид, стерилизация, in vitro.
CURRENT VIEWS IN PRODUCTION AND MARKETING OF CLEAN HERBAL PRODUCTS

Valentin STOYANOV, Bogdana MATEVA

Herbalcan EOOD, Berkovitsa, BULGARIA

Abstract: The presentation presents herbal products that consist of natural ingredients, without artificial additives, colorants, sweeteners and harmful chemicals. Herbalcan branded products have been tested and approved for sale by various commercial partners.

Keywords: herbal products, production, marketing.

АКТУАЛНИ ВЪЗГЛЕДИ ПРИ ПРОИЗВОДСТВОТО И МАРКЕТИНГА НА ЧИСТИ БИЛКОВИ ПРОДУКТИ

Валентин СТОЯНОВ, Богдана МАТЕВА

Хербалкан ЕООД, Берковица

Резюме: Презентацията представя билкови продукти, които се състоят от натурални съставки, без изкуствени добавки, оцветители, подсладители и вредни химикали. Продуктите с марката Хербалкан са тествани и одобрени за продажба, предлагайки се от различни партньори в търговската мрежа.

Ключови думи: билкови продукти, производство, маркетинг.
ORGANIC FARMING - A MARKETING FACTOR FOR SUSTAINABLE DEVELOPMENT OF TOURIST DESTINATION

Veselina ATANASOVA

University "Prof. Dr. Assen Zlatarov", Burgas, BULGARIA

Abstract: Scientific research analyzes the interrelations between organic farming, marketing and tourist destination. It defends the thesis that organic farming combined with marketing activities has a significant impact on the sustainable development of the tourist destination. As a result, there is a need for a theoretical rationale for the specific issues in order to outline some opportunities for sustainable development of the tourist destination.

Keywords: marketing, sustainable tourism, sustainable development.

Poster Session

ORGANIC FARMING - A MARKETING FACTOR FOR SUSTAINABLE DEVELOPMENT OF TOURIST DESTINATION

Veselina ATANASOVA

University "Prof. Dr. Assen Zlatarov", Burgas, BULGARIA

Abstract: Научната разработка анализира взаимовръзките между биологичното земеделие, маркетинга и туристическата дестинация. Защитава се тезата, че биологичното земеделие в съчетание с маркетинговите активности оказват съществено влияние върху устойчивото развитие на туристическата дестинация. В резултат на посоченото се поражда необходимост от теоретична обосновка по конкретната проблематика с цел да се очертаят някои възможности за устойчиво развитие на туристическата дестинация.

Keywords: маркетинг, устойчив туризъм, устойчиво развитие.
PRESSURE LOSSES FROM FRICTION AND LOCAL RESISTANCE FOR TURBULENT FLOW REGIME IN PE PIPES Ф16/2

Roumen Gadjev

Institute of Soil Science, Agrotechnologies and Plant Protection “Nikola Poushkarov”, Sofia, BULGARIA

Abstract: This paper presents the results obtained from laboratory experiments for total pressure losses in turbulent flow regime with drip irrigation smooth pipes PE16/2, 12.7 mm in diameter. Relationships for determination the sum of friction and local pressure losses in drip laterals with differently spaced local resistance (drippers) are presented. The relationship for determination of total coefficient of resistance and head losses obtained from the experimental and analytical studies is shown as well.

Keywords: pressure flows, flow regimes, pressure losses, flow coefficient of resistance.

ЗАГУБИ НА НАПОР ОТ ТРИЕНЕ И МЕСТНИ СЪПРОТИВЛЕНИЯ ПРИ ТУРБУЛЕНТЕН РЕЖИМ НА ТЕЧЕНИЕ В ПЕ ТРЪБОПРОВОДИ Ф16/2

Румен Гаджев

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Резюме: Настоящата разработка представя резултатите, получени от лабораторни експериментални изследвания относно общите загуби на напор за турбулентен режим на течение при гладки тръби ПЕ ф16/2 за капково напояване, 12.7 mm светъл диаметър. Представена е зависимост за определяне на сумарните загуби на напор от триене и местни съпротивления в поливни крила при различни разположения на местните съпротивления (капкообразуватели). Представена е също и зависимост за определяне на обобщения коефициент на съпротивление и общи загуби, получени след експериментални и аналитични изследвания.

Ключови думи: напорни течения, режим на течение, загуби на напор, коефициент на съпротивление.
Organic Farming Day 2018

Jubilee International Scientific Conference
"Organic Farming and Sustainable Development"

BOOK OF ABSTRACTS

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