Faculty of Agriculture
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University of Sarajevo
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Faculty of Agriculture
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25th INTERNATIONAL SCIENTIFIC-EXPERTS CONGRESS ON AGRICULTURE AND FOOD INDUSTRY
25 - 27 SEPTEMBER 2014

BOOK OF ABSTRACTS

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Sponsored by

İzmir/Turkey
September 25 - 27, 2014

25th Scienific-Expert Congress on Agriculture and Food Industry

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World Sustainable Energy Concept; Biomass Production and Energy Crops

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Abstract

The magnitude of energy consumed per capita has become one of the indication of the "Modernization" and progress of a country. This energy issues and policies have been strongly concerned with increasing the supply of the energy. Since the strategic and environmental consequences of energy consumption pattterns have been neglected for a long time, today, it is estimataed that more than two billion people worldwide lack access to modern energy resources, The world continues to seek energy to satify its needs without giving consideration to the social, environmentaly economic and security impacts of energy use.

It is now clear that current approaches to energy are unsustainable and not renewable. Of all renewable energy sources generally the largest contribution, especially in the short and medium range, is expected to come from biomass. Fuels derived from energy crops are not only potantialy renewable, but are also suffeciently similar in origin to the fosil fuels to provide direct substitution. Together with water, wind, solar, tidal and geotermal energy sources biomass can be considered as an essential key to future renewable energy strategies and biomass currently contributes almost 15 % of global primary energy consumption.

Crop production strategies need to be developed that are as efficient as possible in capturing sun light (**solar radiation**) and storing it in plants (**solar Battery**). Nowadays More than 450 000 plant species have been identified worldwide approximately 3000 of these are used by humans as sources of food, tools and other fuel feedstocks. About 300 species have been domecticated as crops for agriculture, of these, 60 species are of major importance.

Some major energy crops from a long list are **Aleman grass**(*Echinochloa polysttachya*), **Alfalfa**(*Medicago sativa*), **Bamboo**(*Bambusoideae*), **Banana**(*Musa spp*.), **Cassava**(*Manihot esculenta*), **Giant Reed**(*Arundo donax*), **Maize(**Zea mays)**,Miscanthus**(*Miscanthus spp*) **Sorghum**(*Sorghum spp*)**, Soybean**((*Glycine max),* **Sugarcane(***Saccharum officinarum)* **Switchgrass (***Panicum virgatum***), Elephantgrass** (*Pennisetum purpureum)* and **Microalgae** (O*leaginious).*

Here, we aimed to rewiew sustainable energy concept in the world and some experimental results of promising energy crop material tested under Mediterranean ecological conditions of Ege University Agric. Faculty Experimental fields İn İzmir/Turkey.

Keywords: Renewable energy, biomass production, energy crops.

Sustainability of Powdered Materials from Farm to Fork

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Abstract

The requirements for faster product development cycles, lower product cost and environmental sustainability are ever increasing in today's globally competitive market. Cleaner production and sustainability are of crucial importance in the field of manufacturing processes where great amounts of energy and materials are being consumed. In Food technology and production there are a lot of new technologies that enables products with changed basic nature of material and they have constantly been studied. To observe new technologies, like nanotechnology, one has to be familiar with basic properties of those materials in a raw state as well as in finished products. Majority of materials are in a powdered, grained or granulated form during the process of food product formation. Their properties and quality characteristics are investigated while they are presented from farm to storage silos, from production chain to table. They have to be grinned or mixed for formulation or nutritional reasons. They show different properties before and after they have been processed (extrusion, thermal treatment). It is essential to know their physical, rheological, geometrical, behavioural and sensorial properties. Powders behave the way no other materials, that's the reason why their characterisation is necessary for every new production application. Powder manufacturing technologies allow us to manufacture products with high quality values according to consumers needs. They put a great pressure on food industry to create products with added values, good texture, new taste or smell and at the same time with a reasonable price. For that reason industry sector collaborates closely to research institutions. Insofar as environmental considerations become an important issue in our society, as well as legislation obligations, those processes have to be evaluated in order to make easier its acceptance in the industrial world. Therefore there is a constant need to evaluate the risks of novel properties of raw materials to ensure their safe production, handling, use, and disposal.

Keywords: Powders, safety, new technologies.

Management of the SPS Risk in the Fresh Produce International Trade

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Abstract

Fresh produce international trade is concerned with two major SPS issues : pesticides residues in excess over the product and pests considered as quarantine in the importing country that can be introduced from the exporting country. The first one is regulated by public and private standards over the product and over the agricultural practices, which tend to be partially universal (Codex or regional MRL harmonization, Global GAP) although there is room for differentiation in some demanding countries such as Germany or Netherlands. The second one is less universal and depends on the specific situation of the two partner countries. To bypass (overcome) the phytosanitary barriers erected by the importing country, protocols have to be negotiatied within the WTO SPS agreement by the two exchanging countries. Compliance with both sanitary and phytosanitary standards requires the implementation of a tight coordination all along the supply chain, especially at the production/shipping level.

Keywords : SPS risk, fresh food, international trade.

ORAL SESSION
PLANT PRODUCTION

Detection of Nitrogen Status in Cotton Using an Image Processing Approach

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Abstract

In this study, we investigated the utilisation of leaf colour for predicting leaf chlorophyll (Ch) and nitrogen (N) status of field grown cotton (*Gossypium hirsutum* L.) crop. We propose in this paper a new, non-destructive and easy to use approach for detecting N levels in cotton. Five N treatments were applied for cotton growth, which are: N0 (control, i.e., 0 N), N1 (80 kg N ha^{-1}), N2 (160 kg N ha^{-1}), N3 (240 kg N ha^{-1}), and N4 (320 kg N ha^{-1}). Data on N status was collected from the topmost fully expended leaves during different growth stages i.e. late vegetative, peak reproductive and late reproductive growth phases. The actual leaf N contents of cotton were measured in the laboratory, and the proposed algorithm was utilised along with two other non-destructive estimation devices; namely the SPAD-502 and Handheld crop sensor GreenSeeker (Trimble), to estimate N contents in cotton plants. We found that our proosed image processing technique, and to a slightly less degree the SPAD 502, can give a good indication of N levels in cotton, while the GreenSeeker did not provide very competitive results. We have also conducted an experiment to differentiate between the five N treatments, which again show that that our proposed method and the SPAD-502 achieving superior performance compared to the GreenSeeker.

Keywords: Spad, nitrogen, cotton, image processing, trimble.

Evaluation of Agronomical and Quality Traits of Triticale Genotypes in Spring Planting, under Dry Conditions of Gumushane

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Abstract

This study was conducted in spring planting, under dry conditions of Gumushane, in a farmer field which was rented by the Vocational School of Siran, Gumushane University, in 2013 year. The trial was arranged according to the completely randomized block design with three replications. Some evaluated agronomical and quality traits such as plant height (58.3-71.4 cm), spike length (4.80-6.27 cm), test weight (73.0-77.7 $kghl^{-1}$), grain moisture (11.6-13.0 %), starch ratio (61.6-64.7 %) and hardness (101.3-110.9 unit) were found statistically significant differences; however, other traits like biological yield (4271-4979 $kgha^{-1}$), grain yield (1302-1637 $kgha^{-1}$), grain number per spike (22.3-29.2 no), spike yield (1.60-1.82 g $spike^{-1}$), thousand kernel weight (32.6-38.1 g), protein ratio (11.6-13.0 %), wet gluten content (28.0-30.5 %), zeleny sedim (35.7-47.4 ml) and alveographic energy (203.7-235.2 Joule) had non statistical significant variations. Also, significant relationships of spike yield as a yield component with thousand kernel weight (r = 0.438*), protein ratio (r = -0.394*), and grain moisture (r = -0.423*) at probability of 0.05 and sharp relations of protein ratio with starch ratio (r = -0.853**), wet gluten content (r = 0.884**), zeleny sedim (r = 0.971**), and energy (r = 0.714**) at $P < 0.01$ have drawn attention. Especially, the strong significant negative correlation between starch ratio and protein content has indicated that starch accumulation instead of the protein in the grain have decreased the protein ratio.

Keywords: Triticale, quality, yield components.

Variability of Sweet Chestnut Fruit (*Castanea sativa* Mill.) in the Area of Bosnia and Herzegovina

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Abstract

In the flora of Bosnia and Herzegovina and the Balkan Peninsula, sweet chestnut (*Castanea sativa* Mill.) is regarded as a relict and regressive species. Sweet chestnut in Bosnia and Herzegovina belongs to the part of the indigenous area which extends from Slovenia across Croatia and our country. This paper presents intrapopulation and interpopulation variability of natural populations of sweet chestnut (*Castanea sativa* Mill.) and the populations of introduced cultivars in the area of Bosnia and Herzegovina (Goražde, Cazin, Bužim, Bradina, Velika Kladuša, Zukići, Buturović Polje, Kreševo, and cultivars "Pontecosi", "Carpinese" and "Cardaccio"), as well as one population from Montenegro. The variability was determined on the basis of eight morphological characteristics of fruits and six derivative ratios, whereby the descriptive and multivariate statistical methods were used. The intrapopulation variability is greater than the one on the interpopulation level, suggesting that each population has roughly the same number of genotypes. The differences manifest only in survival, which is probably closely related to environmental factors prevailing in the habitats of the studied populations.

Keywords: *Castanea sativa* Mill., Bosnia and Herzegovina, intrapopulation and interpopulation variability, fruits.

Evaluate the Quality of Potato Minituber Changes During Storage Period After Application of Salicylic Acid and Methyl Jasmonate in Maternal Plant and Minituber Before Storage

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Abstract

A study in 2010 was carried out to evaluate the effect of pretreatment of minituber with methyl jasmonate and salicylic acid on the reducing sugar, starch and protein percentage in potato minitubers (Agria variety) after 15 weeks storage period. It was a factorial experiment based on a completely randomized design with three replications. The first factor was four methyl jasmonate levels (0, 2, 6 and 10 µl/l) and the second was salicylic acid at four levels (0, 0.2, 0.6 and 1 mM). This study was carried out in three group. Maternal plants (which were produced from tissue culture) in first group (A) was sprayed weekly and their tubers were transferred to storage without any treatment. The second group of maternal plants (T) not only were sprayed weekly but also their minitubers were treated before transferred to storage and in third group (D) only produced minituber were treated. Maternal plant were cultured in pots containing peat moss and cartridges were fed with Hogland solution during cultivation and growth. The results showed that the main effects of methyl jasmonate and salicylic acid was significant on the reducing sugar, starch and protein percentage in minituber potato at 1% probability level. To use 6ppm concentration of methyl jasmonate (3.96%) and 0.2 mM of salicylic acid (3.72%) caused the highest reducing sugar percentage in minituber in the T group. Application of 6 ppm of methyl jasmonate (8.97%) and 0.6 mM of salicylic acid (9.14%) caused the best values in minituber starch content in the T group. But the best result in tuber protein percentage was caused by 2 ppm of methyl jasmonate (3.79%) and 0.2 mM of salicylic acid (3.53%) in A group.

Keywords: Potato minituber, methyl jasmonate, salicylic acid, storage period.

Melatonin Content of Endemic *Tanacetum cadmeum* (Boiss.) *Heywood* ssp. *cadmeum* from Turkey

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Abstract

The genus *Tanacetum* belongs to Asteraceae (Compositae) family, comprising 44 species in Turkey. *Tanacetum cadmeum* (Boiss.) *Heywood* ssp. *cadmeum* collected from Isık Mountain in summer 2012. Melatonin (N-acetyl-5-methoxytriptamine) is a neurohormone synthesized from L-tryptophan via serotonin. The presence of melatonin in higher plants has been reported and concerning with the physiological and pathophysiological functions including regulation of circadian rhythms, prevention of ischemia – reperfusion damages, relief of chronic pain, enhancement of immunity, oncostatic effects, treatment of the neurological disorders such as migraine and antioxidative properties were reported. Many plant species contain melatoninin as microgram per gram range or much lower. The plant leaves were exracted with methanol-water and sonicated in ultrasonic bath and then analyzed with HPLC-UV at 280 nm. In this study, melatonin content was found 8,12 ug/gr in *T. cadmeum* ssp. *cadmeum*.

In conclusion, melatonin content was detected for the first time in this wild *Tanacetum* species from Turkey. This taxon include higher melatonin content once compared with previous literatures about *Tanacetum* species.

Keywords: *Tanacetum cadmeum* ssp. *cadmeum*, melatonin, HPLC-UV.

Education of Teachers in the Field of Ecological Food Production and Management

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Abstract

The project *Education of teachers in the field of ecological food production and management* (EDUECO) is developed to build up educational capacities in universities in Serbia, Bosnia Herzegovina and Montenegro to support sustainable economic development of food production based on ecological principles as well as to meet the expected increase of consumer demands on ecological food through improved teaching at non-university educational institutes. This Tempus project is addressing the 'Europe 2020' program priorities, especially the 'Smart growth' (develop educational systems), 'Sustainable growth' and 'Inclusive growth' (develop strong connection between job market demands and education). Within the EDUECO project will help the universities to develop their life-long-learning programs, as well as for teachers of non-university schools and for other specialists. The consortium consists of 5 universities from the partner countries (2 in Serbia, 2 in B&H and 1 in Montenegro), 4 EU universities, 1 EU research institute, 6 agricultural schools spread over the three countries and 1 NGO with large experience in business networking in ecological agriculture. In B&H are involved six agricultural schools, representing 70 teachers and 1500 pupils. The activities of partners from Sarajevo University were focusing on the specific objectives: capacity building and professional network development among Western Balkan universities in the field of ecological food production and management, development and implementation of vocational training programs in organic production for teachers of secondary agricultural school (4 courses), development of vocational training programs for end-users by university teachers, non-university teachers and trainers from related NGO's and dissamination of results.

Keywords: EDUECO, Tempus project, ecological food production and management, training programs, secondary school.

Low Temperature Tolerance of Leaf Tissues in Cold-Acclimated Strawberry Plants

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Abstract

Frigo seedlings of Camarosa and Cal-Giant 3 (CG3) strawberry cultivars were grown in greenhouse for 8 weeks (until they had 5-6 leaves). Plants were then transferred to a climate chamber (5°C, 60% humidity, 12 h photoperiod) for cold acclimation for 15 days. Leaf tissues collected from cold-acclimated and non-acclimated plants were exposed to controlled freezing test (0, -5, -10 and -20°C) for 12 hours in manually-controlled low-temperature freezer. Following each temperature test, the activity of antioxidant enzymes catalase (CAT), ascorbate peroxidase (APX) and glutathione reductase (GR) were analyzed. The activities of enzymes increased according to increment of temperature and reached to the highest level at -20°C. In addition, the results indicated that the enzyme activities of cold-acclimated leaf tissues were lower than non-acclimated ones.

Keywords: Strawberry plants, low temperature, cold-acclimation, enzyme.

Development of Flow Rate Prediction Model for Small Seeds Metered by Fluted Rollers

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Abstract

Fluted rollers are the one mostly used in seed and fertilizer metering devices in random seeder. Small seeds planted in Turkey have high costs and planting such seeds should be achieved in order to adjust the seed rate accurately. Hence, designers need some prediction functions that include variables related to construction, operating conditions along with the physical properties of the seeds used for the flow rate calculations in designing random seeders.

Hence a study was conducted and the objective of this study was to develop a general prediction function for the flow rate prediction for small seeds. Published data (5535 data points) obtained by using uncoated onion, carrot, alfalfa, red clover, canola and coated canola seeds in the laboratory were used to develop the prediction model. The variables used in the model were related to the roller geometry, properties of the material being metered, and the roller operating conditions. The flow rate prediction model developed accounted for the 96% of the variation and it could be considered as an appropriate prediction model for the flow rate of small seeds as metered by fluted rollers.

The model may be used to study parameter interaction effects on the roller performance, which may be useful in the design and selection of random seeder.

Keywords: Mathematical modelling, random seeders, seeding, prediction.

Effects of Nitrogen Levels on the Grain Yield and Related Characteristics of Sweet Sorghum (*Sorghum bicolor* (L.) Moench *var. saccharatum*) in a Mediterranean Environment

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Abstract

Increasing the share of world energy that comes from renewable sources is critical in stabilizing the global climate. Among renewable energy sources, only biomass can provide fuel and electricity in a form and scale that is compatible with existing transportation and power generation infrastructure. Unlike wind and solar energy, biomass can be converted directly into liquid fuel (ethanol) by a variety of conversion routes, as is current practice with petroleum, or it can be stored to generate electricity on-demand, as is the current practice with coal. It also provides raw material for renewable alternatives to fossil-based products. Biomass is also the only available source of renewable carbon for products currently made from fossil carbon sources. Ethanol is the number-one biofuel currently produced mainly from maize and sugarcane or sugar beet. Sweet sorghum is similar to grain sorghum, having fast growth, high biomass production and wider adaptability and is known to have great potential such as 2-3 t ha^{-1} in ethanol production.

In an attempt to evaluate the effect of six N levels (0-75-150-225-300-375 kg ha^{-1}) on the grain yield, thousand grain and hectolitre weight of sweet sorghum (*Sorghum bicolor var. saccharatum*), an experiment was carried out at the Bornova experimental fields of Field Crops Dept. of Agriculture Fac., Ege Univ., Turkey, during 2010 and 2011 second crop growing season. The field experiment was assessed in randomised complete block with three replications. Results indicated that the effects of N treatments on plant height, grain yield and hectolitre weight were significant except year effect on thousand grain weight. The highest grain yields were obtained with the application of 225 kg ha^{-1} N in sweet sorghum cv. Keller under second crop production system.

Keywords: Sweet sorghum, N level, grain yield, thousand grain weight.

Pre-study on Some Morphological Properties of Endemic *Fritillaria fleischeria.*

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Abstract

Turkey is a very rich country in point of plant diversity. It has about 11 000 plant species involving approximate 3000 endemic plants. 700 of them are geopythes. These are called natural flower bulbs. Bulbous, tuberous and rhizomed plants are all referred as bulbous plants in general. Turkey has 40 genuses of natural flower bulbs. One of these is *Fritillaria fleischeria,* spreading in Sultandağı Mountain, 1665m above the sea level, Afyonkarahisar. This study was conducted to determine some morphological properties of *Fritillaria fleischeria* in 2013. *Fritillaria fleischeria* is a bulbous plant and blooms from April to May with purple tepal whose length (20.29mm) and width (11.50mm). Number of tepal is about 6. Stem length of *Fritillaria fleischeria* is 18.10cm and stem diameter is 2.90mm. Bulb diameter is between 8.65mm and 17.65mm and bulb weight about 0.90g. *Fritillaria fleischeria* has green leaves and number of leaf is 5.71 and leaf length is around 5.83mm. It contains one pistil and six stamens. Stamen length is 13.09mm and it is shorter than pistil. *Fritillaria fleischeria* can be used as an ornamental plant.

Keywords*: Fritillaria fleischeria,* endemic plant, ornamental plant, geopythes, morphology.

A Hyperspectral Imaging System for Plant Water Stress Detection: Calibration and Preliminary Results

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Abstract

Much progress has been made on optimizing plant water supply based on several methods of irrigation scheduling, in both open-field and greenhouse cultivations, such as real-time measurements of solar radiation and soil or substrate moisture. However, only a limited number of such methods use plant-based physiological indicators to detect plant water stress and adapt irrigation scheduling accordingly. In addition, even fewer indicators can be estimated by non-contact, remote sensors (RS) that do not disturb the cultivated plants. Hyperspectral imaging technology could be an accurate remote way to detect moisture content of plants, taking into account crop characteristics. In this work, a methodology of hyperspectral imaging calibration and acquisition is presented. The method uses the reflectance characteristics in hyperspectral bands from 400 to 1000 nm and incorporates the appropriate radiometric and geometric corrections. The basic statistical parameters of mean and standard deviation values are used to estimate spatial and spectral correlation of each band on the extracted areas/pixels of interest. Several statistical techniques are used for the selection of optimal features that will lead to the development of appropriate plant water stress indices that could be used for incipient water stress detection in optimal irrigation scheduling systems.

Keywords: Hyperspectral imaging system, imaging calibration, water stress detection, greenhouses.

Soccer Playing Characteristics of Some Soccer Fields Around Izmir/Turkey under Mediterranean Conditions

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Abstract

In Modern World, in addition to the turf quality characteristics, playing quality testing now forms a significant part of turf research programmes. There has also been an increasing interest in the use of performances standards, incorporating playing quality measurement.

In an attempt to test the soccer playing characteristics of soccer pitches around Izmir province/Turkey, 10 different soccer fields, (Ataturk, Alsancak, Bayindir, Cesme, Alacati, Urla, Gaziemir 1, Gaziemir 2, Ege University, Halkapinar) were visited in each season during 2012-2013, and related characteristics were investigated. Some soccer playing quality traits like ball rebound (cm), ball roll (cm), force reduction (%) and vertical deformation (mm) were assessed in four different seasons using "Club Set" of Deltec Equipment on the playing grounds of those soccer fields.

Overall data obtained from the experiment were analysed statistically and significant differences were found among tested soccer pitches and their seasonal performances.

Soccer playing characteristics differed with the turf grass type and cover, wetness (season) and texture of the root zone soils of soccer fields depending on the construction techniques and uncontrolled uses in different seasons. Some of the soccer playing quality parameter scores were generally out of acceptable ranges, indicating many problems of turf preference, construction and maintenance in tested soccer fields.

In this article, results related to soccer playing quality parameters of tested soccer fields, problems and mitigation measures will be discussed.

Keywords: Soccer fields, soccer playing characteristics, mediterranean ecology.

Determination of the Most Convenient Cool Season Turfgrass Species and Turf Performance for Mediterranean Conditions

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Abstract

This study was conducted at the experimental area of the Field Crops Department of Cukurova University in Adana (37° 57' N, 35° 30' E), located on the Mediterranean Region of Turkey. The field trial was conducted for 30 months (between November, 2004 and April, 2007), arranged in experiment; cool season turf grass species that sole stands of 21 cultivars belonging 9 species. That was arranged in a complete randomized block design with 3 replications. In the study, plant canopy height, green and dried yield, turf cover, color and quality traits were determined. Quality characters of these cool season turfgrass cultivars were evaluated by using a visual score (1-9).

At the end of the research, among the cool season turfgrasses; tall fescue (*Festuca arundinacea* Schreb.), colonial bentgrass (*Agrostis tenuis* Sibth.) and creeping bentgrass (*Agrostis stolonifera* L.) had consistently high values in terms of turf quality, color and cover; followed by perennial ryegrass (*Lolium perenne* L.).

Perennial ryegrass and tall fescue are also maintained the high values in terms of plant canopy height, green and dried herbage yield. Apache, Cochise, Tracenta, Highland, Ovation, Delaware dwarf, Raymond, Medina and Franklin cultivars were found to be superior when compared to other varieties used in this study.

Keywords: Adaptability, bentgrass, perennial ryegrass, tall fescue.

A General Discussion on Green Tobacco Sickness in Turkey Tobacco Farmers

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Abstract

The purpose of this study was to examine the presence of green tobacco sickness in tobacco producers living in Manisa, Tokat, Amasya and Samsun province and their level of knowledge of green tobacco sickness. In this study, simple random sampling was employed to gather and analyze the results of the surveys that had been conducted face-to-face with tobacco producers. As a result, it was understood that tobacco producers living in all location province did not have knowledge of green tobacco sickness. The main reasons why green tobacco sickness is not encountered in the region are common usage of protective equipment during harvest, low amount of rainfall and drizzle in vegetation period, and growing tobacco with low nicotine content. It is required to make up deficiencies in relation to green tobacco sickness and occupational health and safety and to make agricultural mechanization widespread in tobacco growing.

Keywords: Green tobacco sickness, oriental tobacco, *Nicotiana tabacum* L., nicotine, Turkey.

Case Study of Organically Produced Mint (*Mentha piperita*) in the Republic of Macedonia

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Abstract

The objective of this paper is to present the soil and climate conditions, applied production technology and to demonstrate the economic viability of irrigated, organically grown Mint (*Mentha piperita*). The obtained yield results are in reference to the open field growing conditions. Following analysis methods were applied: analytical, mathematical, statistical and comparative.

The results that are presented in this paper are from the two-year trials (2009 and 2010) in the region of Ovche Pole - central part of the Republic of Macedonia. In the first growing season (2009), two cuttings were performed and the yield of 3500 kg / ha above-ground dry mass has been recorded. In the second growing season, there were three cuttings, yielding 5155 kg / ha of above-ground plant dry mass.

Economic analysis proves that profitability in organically produced Mint (*Mentha piperita*) is obtained in the second growing season year, recording profit of 8125 € ha^{-1}.

Keywords: Mint, organic farming, yield, profitability.

Rainfall Erosivity in Bosnia and Herzegovina

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Abstract

The problem of soil erosion has been recognized as one of the most important problems of soil degradation nowadays. Despite significant predisposition for the development of soil erosion, the studies of this phenomenon are poorly represented in Bosnia and Herzegovina. At the same time they are necessary in order to define ways to combat this problem. The most commonly used models for predicting soil erosion worldwide are USLE and RUSLE in which rainfall erosivity is one of the factors necessary for soil erosion assessment. Rainfall erosivity represents potential ability of rain to cause loss of soil.

The aim of this study is to determine rainfall erosivity in Bosnia and Herzegovina on the basis of several models applied around the world to compare their applicability in the research area. All models as input data use monthly and/or annual precipitation. We used data from 68 meteorological stations with different data series (5-39 years). Using Geographic Information System (GIS) interpolation of values was performed and maps of spatial variability of rainfall erosivity in Bosnia and Herzegovina were obtained.

Keywords: Rainfall erosivity, (R)USLE, GIS, Bosnia and Herzegovina.

Chemical Composition and Allelopathic Effects of Essential Oils of Flowering Tops and Leaves of *Crambe orientalis* L. from Iran

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Abstract

Crambe orientalis L. (Brassicaceae) ,a perennial herb, is indigenous to Iran. It is a perennial herb, up to 1.5 m, with undulate leaves that may reach to 0.5 m in length. Sepideh is a common name for *Crambe orientalis in* Iran. Different species of crambe may used as vegetable, animal food, potherb or a industrial herb for yielding oil in the different parts of the world. In the present work, flowering tops and leaves of *Crambe orientalis* were collected from Ardabil during may 2010. The essential oils of flowering tops and leaves of the plant were hydrodistilled using a clevenger type apparatus and were evaluated by GC-MS. Our results showed that while 2-methyl-5-hexenitrile (19.5%) and benzyl cyanide (16.9%) were the major components of flowering tops oil, the oil of leaves was dominated by octyl acetate (54.3%) and butenyl-4- isothiocyanates (22.6%). The GC-MS results obtained with the essential oil of leaves in this study was considerably different from the previously published results for the samples collected from central parts of Iran. Tthe difference in the quality and quantity of the essential oil components of *C. orientalis*, collected from different locations, is consistent with the fact that plants often produce different phytochemicals when grown in different habitats. The oils exhibited modest allelopathic effects on lettuce. Because isothiocyanates can easily penetrate across biomembranes, they consider as bioactive compounds. So that, allelopathic effects of the leaf oil should be due primarily to presence of isothiocyanates in the oil.

Keywords: Crambe orientalis, essential oil, phytotoxicity.

Development of Edible Oil Quality in Kale (*Brassica oleracea* var. *acephala*), a Traditional Vegetable at the Black Sea Region

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Abstract

Kale (*Brassica oleracea* var. *acephala*) is an traditional vegetable plant at the Eastern Black Sea Region and mainly the leaves of this plant are used to prepare traditional meal. On the other hand, we know that cabbage (*B. oleracea* L.) is one of the diploid parents of rapeseed (*B. napus* L.). The traditional oil quality of rapeseed have been changed using the low erucic acid mutants found in the gene pool of rapeseed (*B. napus* L.) and with time the 00-qualiy forms were developed in rapeseed (*B. napus* L.). İn *B. oleracea* low erucic acid mutants were detected in the 1990's and these cabbage genotypes were used to develop interspecific hybrids with low erucic acid content. These three cabbage genotypes, namely Kashirka, Ladozhskaya and Eisenkopf will now be used to transfer the edible oil quality to kale (*B. oleracea* var. *acephala*) using classical and biotechnological methods within the frame of a new staring project with the aim to develop a kale plant (*B. oleracea* var. *acephala*) with double use for the Eastern Black Sea Region.

Keywords: Kale, Brassica, vegetable, quality breeding.

Improved Root Growth and Early Arbuscular Mycorrhizal Root Colonization of Cereals by Seed Treatments with Natural Biostimulants

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Abstract

Arbuscular mycorrhiza is a mutualistic symbiosis between roots of higher plants and soil born fungi of the phylum Glomeromycota. They are naturally found in more than 70% of all terrestrial plants including all cultivated cereals and grasses. The symbiosis has many benefits for the plant, including better root health and nematode tolerance, the most important however are the improved phosphate (P) and micro-nutrient uptake. Phosphate uptake at the start of the growing season can be decisive for cereal yields; it is therefore that high phosphate fertilizer applications are carried out at the beginning of the crop cycle. To make more efficient and optimum use of such P fertilization one approach can be to stimulate early root and mycorrhizal development. We carried out cereals seed treatment experiments with biostimulants (various natural products and plant growth promoting rhizosphere bacteria, PGPRB) in laboratory and field experiments. Natural products, like formononetin and energized dolomitic limestone, as well as PGPRB, like *Bacillus* spp., increased early root growth and mycorrhizal colonization of wheat and barley varieties. Seed treatments with combinations of fungicides and microbial products were also very positive for root growth. Seed treatment with biostimulants is an economic method to make agronomic use of natively occurring mycorrhizal fungi for more efficient nutrient uptake and to improve cereals growth in a sustainable way.

Keywords: Natural products, cereal yields, wheat, barley, phosphate nutrition.

The Comparison of Phenotypic Characteristics of Improved and Wild Blackberry Genotypes

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Abstract

The aim of this study was to compare the major pomological and antioxidant properties of fruits that were comparatively studied in wild blackberries from natural habitats and commercially important varieties grown in the Una – Sana Canton (Bosnia and Herzegovina): Navaho, Jumbo and Loch Ness. It also aims to point out the potential superiority of the wild forms, how they are rich in vitamin C, phenol and anthocyanins, so that they would be considered as a potential source of natural antioxidants. It was found that, according to morphometric characteristics of the fruit, the fruits of wild blackberry exhibited significantly lower values, while the chemical composition of the fruit showed superiority. The highest value of vitamin C was found in wild species *Rubus fruticosus* L. (23.06 mg/100g). The high content of anthocyanins (238.7mg/100g) was found in Navaho blackberry. In the case of the examined blackberry genotypes, species or variety was not a factor that affects the content of phenol and anthocyanins in the fruit, so it can be assumed that the original features of these components have not been lost during the selection and breeding of new varieties. The variety Jumbo proved to be a variety with a very large fruit, and thus can be recommended to blackberry growers because of its attractiveness and the possibility of achieving high yields. Wild blackberry genotypes constitute the genetic potential of particular importance for the conservation of biological diversity of certain areas, as well as for the selection and breeding of cultivated fruit.

Keywords: Blackbarry, antioxidant properties, pomological properties, genetic resources.

Effects of Gibberellic Acid (GA_3) on Morphological Characteristics of Pelargonium (*Pelargonium x hortorum*)

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Abstract

Pelargonium (*Pelargonium x hortorum*) is extremely popular perennial because of its features which enable simple cultivation. Besides that, pelargonium inflorescence picked in the right moment, with only few apical flowers being opened, can be maintained fresh in water for longer period. Since pelargonium inflorescence stems are short, they cannot be used in combination with the other cut flowers, the aim of this paper was to follow effect of gibberellic acid (GA_3) application on plant height and stem elongation. Size of leaves and inflorescence was monitored as well, in order to check possibility of use of pelargonium as cut flower. Sample consisted of three groups of plants and control group. The plants were treated with three different concentrations of gibberellic acid (GA_3) 10 ppm, 20 ppm and 40 ppm. Neither one of used concentrations was not showed as toxic for pelargonium; neither results indicate that effect of use of gibberrellic acid (GA_3) on length and size of size and inflorescence was statistically significant, while there was no significance on plant width.

Keywords: Pelargonium (*Pelargonium x hortorum*), giberellic acid (GA_3), inflorescence stem.

The Influence of Land Use Change on Some Soil Parameters

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Abstract

A study was conducted to examine the impact of land use on soil fertility in different soil type under different soil management practice in Bosnia and Herzegovina. The natural grasslands served as a control against which changes in soil properties were compared. Soil samples were collected from the soil profile genetic horizons. For every defined soil horizon analysis of pH in KCl solution, soil organic carbon (SOC), adsorption capacity, available phosphorus (P_2O_5) and potassium (K_2O) were obtained. Average value of available K_2O (14.4%) and SOC (15.0%) for all investigated sites were greater in Ah horizon of grassland soils, compare to upper 10 cm of Ap horizon of cultivated soils. Values of P_2O_5 (29.9%), pH (7.2%) and base saturation (12.6%) were greater in cultivated soil. In order to assess influence of soil management practice on SOC we also calculated SOC stocks within 30 cm of soil depth, which showed greater values in grassland soil.

Keywords: Land use change, soil parameters, fertility.

Comparison of the Alkaloid Production of *In Vitro* Propagated Indian Tobacco (*Lobelia inflata* L.) under Both Laboratory and Open Field Conditions

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Abstract

Lobelia inflata L. is a medicinally important species of the Lobeliaceae family. It is native to North America and contains numerous piperidine alkaloids. The main alkaloid lobeline has been used as a respiratory stimulant. The aim of our studies was to compare the lobeline production of *in vitro* propagated *L. inflata* under both laboratory and open field conditions. As a result of fertilization, the highest lobeline content of in open field treatment was 682 µg/g (150 kg/ha N treatment). The highest alkaloid content of the herb was in the control (875 mg/100 g). Lobeline content was higher in herb of cultures cultivated on MS medium containing halved amount of KNO_3 (D1) than on control. Administration of magnesium at 740 mg/l resulted in the highest lobeline contents in the herb.

Keywords: *Lobelia inflata*, lobeline, total alkaloid, in vitro.

Allelophatic Effect of Sunflower Parts Extract in Different Growth Stages on Germination and Seed Production of Redroot Pigweed (*Amaranthus retroflexus*)

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Abstract

Because of prevalence and importance of redroot pigweed (*Amaranthus retroflexus*) in most fields, a factorial experiment in three replicates was conducted in greenhouse conditions. The examined factors were extracting of different parts of sunflower (leaf, stem, root and whole plant), different extract concentration in 5 levels (extract as 1:20, 1:15, 1:10, 1:5 and control) from different growth stages as vegetative, inflorescence and seed filling. Results showed that leaf extract in inflorescence stage had the most reduction effect on radicle and plumule length, germination percent and germination time spread. Greenhouse results indicate that the effect of extract of different parts of sunflower decreased significantly plant height, root length and dry weight, leaf area, shoot dry weight, 1000 kernel weight and seed production of redroot pigweed. Leaf extract in vegetative stage of sunflower had the most reduction effect. Decreasing germination percent was 87% and seed production was to 74% by sunflower extract. Therefore, the sunflower allelopathic potential can reduce pigweed in the field.

Keywords: Allelopathy, extract, pigweed, seed, sunflower.

Strengthening Human Capacity–Tool for Overcoming Decrease in Interest for Organic Farming

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Abstract

Anno Domini 2001 is the year considered as official beginning of organic farming in the Republic of Macedonia. Naturally, predeceasing this moment there were individual pioneers of organic movement but in 2001 supported by Swiss' SDA everything got 'in order'. Trainings were conducted, farmers associations were established and an umbrella National Association was established. In 2005, organic farming got under the national subsidy program, but the very next 2006 was abandoned. Then, next year again and since then without interruptions organic farming enjoys steady and increasing governmental support. Since 2007, two National Programs were developed while the area under organic and number of organic growers recorded steady growth. Up to 2012, when first signs of losing the pace is recorded by having a drop in number of ha under organic was recorded and the number of organic growers too. The next year, 2013 was another disappointment for the sector, since the government had reduced the volume of support from € 2113000 in 2012 to € 1089430 in 2013. Reasons for the drop in interest are naturally various but one of the most significant is insufficient competent support farmers were receiving. Since this sector is specific with its holistic approach it is of utmost importance farmers are covered with competent source of information upon which they can make decisions. Unfortunately, the national advisory service has very limited human capacity on this matter, and private advisors are much too small in number to cover the demand for advice.

Keywords: Organic farming, advisory service, human capacity, improving competitiveness.

ORAL SESSION
ANIMAL PRODUCTION

Application of ET in the Livno Canton

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Abstract

The idea of applying embryo transfer in cattle breeding is based on the desire to maximize reproductive potential of animals, to achieve genetic progress in a short period through genetically high quality breeding animals. Bosnia and Herzegovina has no tradition of raising beef cattle, and has a large pastures that are unused. In order to improve the cattle breed composition of beef cattle breeding in Bosnia and Herzegovina, an attempt was made to contribute to increased breeding meat cattle breeds by the ET embryos of italian beef cattle breed Marchigiana. Implementation of ET in cattle was carried out in the period from August 2013 to April 2014, in the area of Livno Canton (Cantons 10) in Bosnia and Herzegovina. The results showed that there is great variation between the cow recipient and the farms on which ET has been carried out with ET efficacy of 30 % in the project area. Overall results also indicate great potential for further selection work and improvement of meat cattle breeding in Bosnia and Herzegovina.

Keywords: Embryo transfer, cattle, beef breeding, Marchigiana.

A Study on Adopting Probit Method for the Calculation of Lethal Concentration (LC-50) Regarding Aquatic Organisms

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Abstract

Some substances that are thrown into water or mixed in water have a lethal effect on aquatic organisms. Due to the fact that living organisms may resist until the concentration reaches a certain level. These chemicals do not show a lethal effect until a certain concentration ratio. This resistance varies depending on the species, the morphological and physiological conditions of the living organisms and on the characteristics of the contaminant and characteristics of the habitat. Nevertheless; the aforementioned resistance has a limit. When that limit is exceeded, mortalities are observed. To a certain concentration, mortality rate increases gradually and afterwards, the whole population dies.

The amount of a substance found in water is called concentration. In other words, concentration defines the quantity of a substance in a certain volume. Therefore, it is more appropriate to use the term lethal concentration for aquatic organisms. Dose is used for determining the amount of substance given to the organisms by means of injection or by mixing it into feed. Probit analysis is preferred method for calculating the concentration that kills 50 % of the organisms within a certain time. This study examines the Probit method that enables Lethal Concentration (LC-50-24h) to be determined.

Keywords: Probit method, lethal concentration.

Composition, Somatic Cell Count and Yield for Morning and Evening Composite Milk in Holstein Cows Milked with Unequal Intervals

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Abstract

The aim of this study was to investigate composition, somatic cell count (SCC) and yield for cow composite milk in Holstein cows milked with unequal intervals in dairy cattle herd of Department of Animal Science, Faculty of Agriculture, Ege University in Bornova, Izmir, Turkey. Cows were milked twice daily at 08:00 h in morning and 16:00 h in evening with milking intervals of 16 (nighttime) / 8 (daytime) h. A total of 300 cow composite milk samples (154 from morning and 146 from evening milkings) were taken at about monthly intervals between 2009 and 2012 from 12 cows with parities ranging from 1 to 6. Milk components were determined using Bentley 150 Infrared Milk Analyzer and somatic cells were counted with flow cytometry method using Bentley Somacount 150 device (Bentley Instruments, Inc., Chaska, MN, USA). Milk components, SCC and yield data were analyzed with univariate GLM procedure in SPSS using a model including random effect of cow, fixed effects of milking time, sampling year, sampling season, parity, lactation stage and SCC group (not included in model for SCC). Estimated marginal means for milk yield, percentages of total solids, fat, true protein, total protein, lactose and solids-non-fat and $\log_{10}$ SCC for morning and evening milkings were 13.28 and 6.95 kg ($P < 0.01$), 11.99 and 13.06% ($P < 0.01$), 3.16 and 4.27% ($P < 0.01$), 3.21 and 3.24% ($P > 0.10$), 3.41 and 3.44% ($P > 0.10$), 4.77 and 4.79% ($P > 0.10$), 8.83 and 8.80% ($P > 0.10$), and 4.83 (antilog 67,764) and 5.08 (antilog 119,950) cells/mL ($P < 0.01$), respectively. Results showed that milk yield increased whereas fat and total solids percentages and SCC decreased at morning milking, after a preceding milking interval of 16 h.

Keywords: Holstein, composite milk, composition, somatic cell count, milking interval.

Aquaculture and Induced Triploidy

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Abstract

Aquaculture (aquafarming) involves cultivating freshwater and saltwater populations of aquatic organisms (such as fish, crustaceans, molluscs and aquatic plants) under controlled conditions, and can be contrasted with commercial fishing, which is the harvesting of wild fish and other aquatic species. The use of transgenic and ploidy manipulations are techniques used in aquaculture in order to exchange particular characteristics of farmed aquatic species. Techniques for producing sterile salmon and triploids have been investigated since the mid-1970s, but in Bosnia and Herzegovina – the first experiments of obtaining triploids of rainbow trout (*Oncorhynchus mykiss*) by applying heat shock were performed in the mid-1980s. Triploids are organisms that have three chromosome sets (3n) and they are, generally, sterile. Differences between triploids and diploids have been assessed and are well documented, as well as the techniques for producing triploids. By applying cold- or heat-shocks, high pressures, or certain chemical treatments, the second division of meiosis is prevented and the "extra" set of maternal chromosomes is retained. The resulting embryos have one paternal and two maternal chromosome sets and are, therefore, triploid. Female triploid salmonids do not produce ovaries and it was proven their faster growing in comparison to female diploids, whereas male triploid salmonids undergo considerable secondary sexual development. Generally, triploids do outperform diploids, including stress and disease resistance. They are very useful when the interbreeding or reproductive competition of escaped or intentionally planted fish is undesirable, in hybridisation between fish species that normally do not produce viable offspring, and so on.

Keywords: Aquaculture, triploidy, salmonid fishes, growth.

Aquaculture Potential and Inventory of Fish Species in Central African Republic

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Abstract

Located in the heart of Africa, the Central African Republic (CAR) has an area of 623.000 km^2. The Country has relatively abundant natural resources and generally favorable to agriculture and livestock agro -ecological conditions. The climate in the country is favorable rain fed agriculture with relatively long cropping cycles. Rainfall is fairly abundant and ranges from 1200 to 1800 mm per year with peaks of 2000 mm locally in the extreme. Agricultural potential of 15 million hectares of arable land of which only about 800.000 hectares (ha) are grown each year, corresponding to 5.3% of the total and less than 0.5 ha operated on average farm assets.

The CAR has two major river systems: the basins of the Chari and Logone where about 195 species of fish and finally the Ubangi basin which has 206 ones. Fish is an especially good source of protein intake. Fish proteins are highly digestible and contain a high concentration of essential amino acids. Fish also contains significant amounts of vitamins and minerals and is rich in polyunsaturated fatty acids (PUFAs). With the exception of the northern part of the country, the supply of fish in each region is below to demand. Domestic demand for farmed fish would be of the order of 5000 kg / day or 1825 tons / year. The main commercial species are *Alestes sp*., *Clarias sp*., *Hydrocynus sp*., *Lates sp*., *Heterotis sp*. *Tilapia nilotica* is introduced specie. The current national fish production is around 300 tons of tilapia per year. The total annual fisheries potential is currently estimated at 5000 tons. Most of fishery products are smoked from the North to the South and do not compete directly with fresh fish ponds, which are very popular in the markets.

Keywords : Central Africa, aquaculture, fish.

Preliminary Study for Utilization of Some Invasive Aquatic Plants as Raw Material for Aquaculture Feeds

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Abstract

The aquaculture industry in Turkey has been grown up for twenty years and reached to two hundred thousand tonnes per year (2012) production capacity. Commonly cultured species need to the mixed feeds which contain many raw materials inside. Proximately %80 of these raw materials is exported and this is also a problem for national economy. The main protein source in mixed feed is fish meal. Because of limited natural resource the usage of fish meal will be in danger in the future. As an alternative to fish meal, aquatic plants (especially freshwater species) can be used in fish feeds after some processes. However with their water purification capacity, they have an invasive character which has an eutrophication threat for environment and water resources. For minimize their harmful effects, some combat methods (mechanic, biological, etc) are indispensable. But after harvesting methods, the plant wastes may cause environmental problems also.

In this study, some invasive aquatic plants; *Eichornia crassipes, Cyperus sp., Lemna minor, Pistia stratiotes, Hottonia sp., Nasturtium sp., Typha sp*. have been examined to be utilized as a raw material in fish feed possibilities for imparting to the economy after the harvest in order to prevent environmental damage they cause. With biochemical analysis of these plants, eleostearic acid ratios and structures are investigated as raw materials possibilities for fish feeding. In addition, thus plants and their wastes were been integrated into the economy and intended for the protection of environmental sustainability.

Keywords: Aquatic plants, aquaculture feeds, raw material, eleostearic acids, fatty acids.

Effects of Quarter Individual and Conventional Milking Systems on Teat Condition

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Abstract

The aim of the present study was to determine whether or not teat condition improved after installation of a new quarter individual milking system in a healthy udder dairy herd that was previously milked in a state-of-the-art conventional milking system. Therefore, an auto-tandem milking parlor made by GEA® with the conventional milking cluster (CON) and a single tube milking system called MultiLactor® (MULTI) from Siliconform GmbH were tested on farm.73 Cows with healthy udders were used. To evaluate teat condition, the teat color, ring formation at the teat base and formation of teat end hyperkeratosis were assessed with the appropriate scoring system. The collected data were then statistically analyzed with generalized linear mixed models. Differences between the two milking systems were found regarding the effect on teat color and ring formation at the teat base. The initial frequencies of teat color scores were 70.8 %, 18.8 % and 10.4 % for scores 1, 2 and 3, respectively, in the CON milking system, and 83 %, 14 % and 3 % for scores 1, 2 and 3, respectively, in the MULTI milking system. On the other hand for ring formation the results of MULTI were significant worse than these of CON. There were no significant differences between the both milking systems with regard to teat end hyperkeratosis.

Keywords: Hyperkeratosis, quarter individual milking, teat end condition, milking system.

The Effect of Feed Supplementation During Mating, End of Pregnancy and Milking Stage on Fertility, Birth Weight and Blood Parameters of Moghani Ewes

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Abstract

This study was conducted to investigate the effects of supplementary feeding on the fertility of Moghani ewes, birth weight until weaning, weight and some blood parameters of ewes, in three flocks. In every flock, the halves of the ewes were selected in control group and were fed according to usual nutrition in this place without receiving of supplemental food. The else half of the ewes of this three flocks, were received supplemental diet in three experimental stages consist: 1) Mating season, 2) 1.5 months of the end of gestation, and 3) Milking stage. Body weight and body condition score on whole of the ewes were measured before of the flushing in mating season and at the end of it. The fertility in the control and supplemental feeding treatment ewes were 85.29% and 94.44% respectively ($P<0.01$). The supplemental feeding had the significant effect on the birth weight to weaning weights of lambs. The means of the birth weight of lambs were 3.38 kg for the control group and 4.09 kg for treatment. The means of the weight of lambs of one to three months in the control group were 9.16, 12.99 and 22.65 kg and in the group of supplemental feeding were 11.23, 16.55 and 27.21 kg that to be the significant difference between them. The rates of blood urea nitrogen and blood sugar were 11.18 and 53.72 mg/dl in control group whereas in supplemental feeding treatment group were 16.09 and 65.54 mg/dl, respectively ($P<0.01$).

Keywords: Moghani sheep, supplemental nutrition, lamb weight, blood parameters.

ORAL SESSION
FOOD TECHNOLOGY

Production of Functional Cheese by Replacement of Milk Fat with Hazelnut Oils

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Abstract

Hazelnut oil contains essential fatty acids, phytosterols, antioxidants and minerals. Full-fat dairy products such as cheese have been reported as a major risk factor in heart attacks due to its cholesterol and a high proportion of saturated fatty acids which have negative health effects. In this study, because of mentioned reasons fat in white brined cheeses was substituted with hazelnut oils at levels of 50% and or 100% w/w; full-fat cheese (FFC) was made as a control. Fatty acids profile, vitamin E, lipolysis index, total count of starter bacteria and sensorial properties were determined during 80 days of storage at intervals of 20 days. Results showed that white brined cheeses containing hazelnut oils had significantly ($P<0.05$) lower amounts of saturated fatty acids and higher levels of unsaturated fatty acids and vitamin E compared to FFC controls. Lipolysis index significantly ($P<0.05$) increased in all samples during ripening and the control cheese had significantly ($P<0.05$) higher lipolysis value than the experimental cheeses containing hazelnut oils at the end of ripening period (80th day). Total count of lactococcus spp. increased during 40 days of ripening but then decreased slightly, whereas total count of lactobacillus spp. decreased during 40 days of ripening but then increased slightly. Moreover, sensorial properties of white brined cheeses made with hazelnut oil at fat replacement levels of 100% was more acceptable than the other samples. Results showed that cheese can be made from skim milk and hazelnut oils with new healthy and functional properties.

Keywords: Milk fat, cheese, hazelnut oil, fatty acids profile, vitamin E.

Sensory Acceptability of the Autochthonous Fruits of Bosnia and Herzegovina-Challenges and Possibilities for Food Industry

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Abstract

The autochthonous fruits present challenges for experts breeders because this fruits could grow with little care and without the use of costly agricultural inputs. In the same time, traditional fruits are challenges for the fruits processing industry providing some specific and different sensory touch for the fruit products. Therefore there is the need for value-added processing of these fruits into shelf-stable products to reduce postharvest losses and promote their utilization and cultivation. The main objective of this study was to sensory evaluated autochthonous apples and pears from an ex situ collection. A total of 56 fruit were analyzed, 28 apples and 28 pears of which are 3 commercial cultivars for both fruit species. The samples were evaluated by Quantitative Descriptive Analysis (QDA) by eight trained panel. Sensory analysis was performed in 2012 and 2013 years. All samples were served in duplicate. The two way ANOVA (cultivar x year) was applied. Differences between means were tested for significance using Fisher's least significant difference (LSD) values. Principal component analysis was performed for the visualization of all sensory attributes concerning their relationship within samples. The averages sensory score of all investigated traditional and commercial cultivar have showed significance differences depending on cultivar and harvest years. Pears Jeribasma and Hambarka were characterized by extraordinary floral flavor whereas Begarika showed the best overall flavour. Those cultivars could use for aromatizing fruits products e.g. distillates, juices and jam. Among 28 investigated apple cultivars Prijedorska zelenika, Bukovija, Paradija and Đulabija had the best scores for most flavor attributes. From the other side Samoniklica and Prijedorska zelenika were sweeter than other apple cultivars.

Keywords: Sensory analysis, autochthonous fruits, flavor, apples, pears.

Using Particle Size Index Hardness in Biscuit Wheat Selection

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Abstract

Particle size index hardness measured from whole meal in NIR for bread wheat is commonly used in breeding programs in Turkey. It gives important information in terms of bread-making quality selection together with other quality parameters and measuring particle size index hardness from whole meal in NIR is easier and more practical compared to classical method. While low values, means hard kernel, show suitability of bread-making quality genotypes which have high values, means soft kernel, are selected for biscuit-making quality. This study was done to investigate the suitability of particle size index hardness used for bread wheat breeding in biscuit wheat selection. For this purpose, 19 lines, promising for biscuit-making quality, and 5 varieties were grown both rainfed and supplemented irrigated conditions. After particle size index hardness measurement from whole meal in NIR some flour, dough, starch and biscuit properties were determined in the samples. Some dough rheological properties from alveo-consistograph, farinograph, extensograph, mixolab, damaged starch, some starch pasting properties gave important correlation with particle size index hardness. High particle size index hardness values had positive influence on biscuit physical properties. In supplemented irrigation conditions particle size index hardness took place in equations obtained from stepwise analysis using to predict biscuit spread ratio. It predicts approximately 40 % variation in biscuit spread ratio alone. According to results particle size index hardness from whole meal in NIR can be used successfully in biscuit wheat selection.

Keywords: Particle size index, biscuit wheat, quality, breeding, near infrared reflectance.

Non-Starter Lactic Acid Bacteria and Cheese Quality

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Abstract

Many microorganisms are associated with cheese quality and they can be mainly divided into two groups, consisting of starter and secondary flora. The secondary flora is composed of mixtures of bacteria, yeasts and moulds where non-starter lactic acid bacteria (NSLAB) are a significant proportion of this microbial population. Although the principal source of NSLAB is raw milk, they gain access to cheese through milk-processing environment so known as adventitious bacteria. These contaminants are always non-pathogenic species of LAB and pose no threat to human health. Modern sanitation practices help keep NSLAB to very low levels in fresh cheese but these bacteria unavoidably begin to grow and can reach high numbers within a few months of ripening. However the number, extent of growth and heterogeneity are depending on processing factors and the storage temperature of the cheese. They do not contribute lactic acid production during cheese manufacture but impact on flavour development in the cheese ripening. The main bacterial groups involved are non-starter mesophilic lactobacilli, pediococci, leuconostocs and enterococci. The developments in molecular methods and systematic approaches to strain selection are resulting in detailed information about NSLAB populations in cheese and identification of adjuncts with the potential to influence cheese quality.

Keywords: Non-starter, lactic acid bacteria, cheese, ripening.

Application of Bacteriocins in Dairy Products

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Abstract

Lactic acid bacteria have been assisting people from ancient times during the food preparation and for bio-conservation by fermentation process. Their selected strains are capable to produce antimicrobial peptides - bacteriocins, which are keeping their broader usage as natural preservatives, especially in products suffering from short shelf life. Our research was focused on the inhibitory effect of bacteriocins (enterocin, pediocin and plantaricin), produced by bacteria *Enterococcus faecium*, *Pediococccus acidilactici* and *Lactobacillus plantarum* against *Listeria innocua* as an indicator microorganism. Among the concerned bacteriocins, applied as the microbial preparations of the corresponding bacterial producing strains and tested both by the agar well-diffusion assay and by the traditional spread plate methods, plantaricin exhibited the highest antilisterial effect. Pediocin also demonstrated distinct inhibitory effect but enterocin has shown to be thermolabile and its efficiency has been suppressed by the refrigerator conditions. Plantaricin demonstrated its bactericidal impact by reducing the counts of *Listeria innocua* by 1 log in dairy spread made from cheese and quark. As discovered in case of different production rate of plantaricin by *Lactobacillus plantarum* strain, the formation of bacteriocins by its producing strain can be substantially influenced by the way of its cultivation in stage of the mother culture and by manufacturing of microbial preparation before freeze-drying process. The application of bacteriocins into foodstuff by addition of the protective culture via *in situ* method seems to be a perspective way to enhance food quality and safety.

Keywords: Bio-conservation, protective culture, lactic acid bacteria, bacteriocin, *Listeria* spp.

The Influence of Producer and Stage of Maturity on the Physico-Chemical, Microbiological and Sensory Characteristics of Autochthonous Travnik/Vlasic Cheese

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Abstract

Travnik/Vlašić cheese is a traditional Bosnian white brined cheese, and originally produced on mount Vlašić in central Bosnia. This cheese is made of raw sheep's milk. Ripening and storage of cheese is done in brine and last optimally two months. The technological process is not standardized, so the common variations in the chemical, microbiological and sensory parameters are largely depend on the producers themselves, but also on the ripening period of cheese. The aim of this study was to investigate the influence of producers and stage of maturity on the physico-chemical, microbiological and sensory characteristics of Travnik/Vlasic cheese.

The used materials were samples of cheese in brine from three different producers in the area of mount Vlašić. Samples were taken from each producer, and chemical as well as microbiological analysis of cheese were carried out after 5, 30 and 60 days of ripening. Sensory analyzes were carried out after 30 and 60 days of ripening

Results obtained showed that Travnik/Vlašić cheese belonged to the group of soft, full-fat cheeses. The total count of mesophilic aerobic bacteria in the samples after 60 days of maturation amounted to 7,11 $\log_{10}$ cfu, yeasts and molds2,61 $\log_{10}$ cfu, *Staphylococcus* spp. 3,29 $\log_{10}$ cfu, the total count of coliform bacteria 4,28 $\log_{10}$ cfu and the total count of fecal coliform bacteria 4,48 $\log_{10}$ cfu.The presence of *Proteus* spp. and *Clostridia* was not confirmed. According to sensory scoresclassification one sampleout of three 60 days agedcheeseswasclassified in extra class while two remaining samples belonged to the first class. ANOVA showed a statistically significant impact of the maturity period on the content of fat in cheese, water activity, pH value, the total count of yeasts and molds, the count of *Staphylococcus* spp. and the count of coliform and fecal coliform. Different producers had a significant impact on the content of fat in dry matter.

Keywords: Travnik/Vlašić cheese, quality, brined cheese.

Association Between Socioeconomic and Nutritional Status in Relation to the Place of Residence

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Abstract

Socioeconomic status (SES) is expressed by a number of indicators and the most commonly used are occupation, education and income. In this research are used: employment, education and income. Numerous studies have shown the impact of SES on the nutritional status of the individuals by which obesity is associated with low socioeconomic status.

The aim of this study is to assess the influence of three indicators of SES on the nutritional status of male adolescents (aged 14-15 years) in relation to the place of residence.

Nutritional status is expressed by BMI-for-age percentiles.

The correlation has been demonstrated in adolescents from rural areas of Sarajevo Canton in relation to father's employment, showing that all obese boys and 87.5% overweight boys are from families where fathers are employed. Regarding urban adolescents significance has been demonstrated in relation to the monthly income. The highest percentage of malnourished boys (62.5%) come from families whose income is less than 1000 BAM and the highest percentage of obese (42.1%) come from families whose income is 1000 to 2000 BAM.

Keywords: Socioeconomic status, adolescents, BMI, place of residence.

Perception and Satisfaction with the Body Image According to Nutritional Status among Adolescent Boys

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Abstract

Adolescence is a very sensitive period of life which is characterized by intense growth and development, increased energy needs and experimentation with independence. It is also the period in which body perception is developed as well as appearance dissatisfaction leading to risky behavior. It is considered that mostly girls pay attention to their appearance and in this research boys are chosen as respondents.

The aim was evaluation of their satisfaction with appearance based on the actual nutritional status and tendency to risky behavior that leads to eating disorders. Boys were divided into groups according to the place of residence (rural *vs*. urban).

The results showed that there is in both groups a statistical significance in relation to the attempt of reducing body weight ($p < 0.0005$) and in relation to being on a weight reduction diet ($p = 0.002$ for rural, $p < 0.0005$ for urban). Regarding urban adolescents, nutritional status also affects the satisfaction of their appearance ($p < 0.0005$).

Detailed results suggest that most of the boys in all weight categories are not satisfied with their appearance, most of the boys with normal body weight and underweight tried to reduce their body weight and were on a weight reduction diet, which means that adolescent boys do not have a proper perception of body image and their nutritional status.

Keywords: Adolescents, body perception, nutritional status, weight reduction diet.

ORAL SESSION
AGRICULTURAL ECONOMICS

Examination and Comparing of Technical, Allocative and Economic Efficiency of Date Producer in Baravat and Rostamabad Region from Bam Township, Iran

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Abstract

Bam province is one of the main regions for Mazafati date production in Iran country. According to limitation of date production factors in Bam province it is necessary to do a optimum management on production of this product and consumption of production inputs. Therefore it is necessary to calculate inefficiencies by calculate of efficiency of agriculture units of date producers in Bam province and be taken in consideration planning and making policy for production increasing. In this research Baravat region as the high-yield region and Rostamabad region as the low-yield region have selected. This research's information is about years of 2012 - 2013 that have obtained by interview and questioners. For calculating the efficiency of agriculture units from data envelopment analysis method is used. The average efficiencies of technical, allocative and economic of Baravat region respectively equal: 91.88, 40.03, 37.45 and the average efficiency of technical, allocative and economic of Rostamabad region respectively equal: 91, 36.5 and 33.8. The results show that efficiencies of management and scale of two regions are the same, but efficiencies of allocative and economic of Baravat region is more than Rostamabad region.

Keywords: Efficiency, date, orchard, Bam, Iran.

Better Cotton Initiative Approach for Sustainable Cotton Production: A Case Study of Turkey

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Abstract

Cotton cultivation often puts stress on the planet's natural resources and undermines the long-term sustainability of the sector. By helping farmers to grow cotton in a way that reduces stress on the local environment and improves the livelihoods and welfare of farming communities, Better Cotton Initiative aims to create long term change. It is a global approach that provides a solution for the mainstream cotton industry, including both smallholders and large scale farmers. The BCI aims to make global cotton production better for the people who produce it, better for the environment it grows in and better for the sector's future. BCI Retailer and Brand members represented almost 10% of the world's total cotton consumption at the end of 2013. In 2013, there were 240,000 farmers producing 'better cotton', 700,000 hectares under 'better cotton production', which produced a total of 810,000 MT of better cotton lint. In 2011, leading actors in the Turkish Cotton Sector approached BCI with the aim of starting production of Better Cotton in Turkey.

Although increasing worldwide Better Cotton supply, there is less information related to BCI. This paper will provide an introduction to the Better Cotton approach, how it has evolved, where it is going, and a brief description on BCI's agronomic and economic result indicators by some countries. For the development of the sustainable cotton production, a more detailed study in understanding the tendencies of companies engaged in Better Cotton is required. The purpose of this paper is also to gain information about textile companies' tendencies toward Better Cotton. To measure companies' tendencies towards Better Cotton, it will be interviewed face to face with the companies engaged in Better Cotton. For this purpose it will be investigated a sample of Turkey which is one of the Better Cotton producing countries in the world.

Keywords: Better cotton, sustainable cotton, textile companies, tendency, Turkey.

How do Domestic Policies Affect the Integration of Ethiopian Fertilizer Markets with World Markets?

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Abstract

Many policy shifts occurred on fertilizer market in Ethiopia. The last one was the introduction of a monopoly on each stage of the supply chain in 2008, alongside with government credit schemes and stockholding programmes. In order to assess the effect of these policies on the integration of domestic markets with world markets, this paper uses dynamic regression models. Time series data of DAP and urea prices on world, import and retail markets between 1971 and 2012 are used. The results show high transmission from world market to import prices for both DAP and urea. However, between import and retail prices, while for DAP full price transmission is concluded, for urea there is no evidence of cointegration. This result can be traced back to the various policies implemented on the fertilizer market. Whereas for DAP these policies ensure the efficient distribution to farmers, for urea, they lead to large stocks that act as a buffer between import and retail prices. Therefore, the study suggests to reduce the stocks, especially for urea. Additionally, the demand estimation process needs to be revised.

Keywords:Price transmission, vector error correction models, fertilizer, agricultural trade policy, Ethiopia.

An Ecological Footprint Analysis and Sustainability of Turkish Agriculture

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Abstract

Natural resources have begun to use in an extreme way because of unplanned growth of population. Contrary to popular belief, natural resources are not infinite. In fact, many resources are on the verge of extinction. As a result of excessive and irresponsible use of available resources, natural resources are become unavailable, and some even began to run out. In today's world many countries has reached their ecological limits. The Ecological Footprint is a resource accounting tool that helps countries understand their ecological balance sheet and gives them the data necessary to manage their resources and secure their future. To protect the future of humanity the countries should know their ecological capacity and response to questions such as how we use natural resources and how we should use, which is important to calculate their ecological footprint. The aim of this study is to review Turkey's ecological footprint reports, interpret the data and compare with other countries, as well as by making various calculations with integrated data, to advance proposals for improving the current situation. In doing so, by revealing the role and importance of agriculture in ecological footprint, the various assessments will be made for sustainability of agriculture.

Keywords: Ecological footprint, agricultural sustainability, assessment, Turkey.

The Dimensions of Traditional Foods in the Global Markets

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Abstract

The production of traditional foods, which are the indicators of a country's cultural wealth, contributes to the economy by creating employment, tourism, and income. Therefore, their protection within the scope of cultural heritage and their sustainability is also important. Today, consumers' environmental awareness and food safety sensitivity also influences their tendency to choose traditional products instead of industrial products.Traditional foods are nostalgic foods found in the search for new products and to promote and protect them from imitation and disappearance from commercial life, different prevalent systems employed should be explored. In this study, supply structure, factors influencing the demand for traditional foods, possible strategies employed to sustain this demand, and the importance and methods of protecting these foods from increasing market competition, related legislation are discussed.

Keywords: Traditional food, branding, marketing, geographical indication.

Comparison of Cost and Profitability of Major Field Crops in Adana Province

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Abstract

Cropping pattern of Çukurova Region has undergone important changes since 2000. Profitability of crops plays a very important role in crop pattern changes. This study analyzes profitability of major crops in Çukurova region as an initial step towards an analysis of crop pattern changes in the region. The costs of major field crops (wheat, cotton, first and second crop maize and sunflower) grown in Adana Province were estimated and compared in terms of profitability. Break-even yields were also calculated in order to determine profitable yield levels. For this purpose a questionnaire study was conducted between 2010 and 2011 production season in the region. A total of 213 farmers were interviewed. Farmers were selected through stratified sampling method with Neyman distribution approach. According to the results of the study first crop maize was found to be the most advantageous crop in terms of both gross and net return. On the other hand, sunflower is the most advantageous crop in terms of relative profitability. When break-even points were considered, yields of all selected crops, except cotton, the current level of efficiency allows to be profited. It is seen that cotton farmers cannot afford their production costs without government supports. Relative advantages of selected crops were interpreted together with recent changes in their share in crop pattern within the region.

Keywords: Field crops, cost, profitability, break-even point.

Implications of the Current Structure of Livestock Herds from Romania upon Food Self-Sufficiency

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Abstract

In Romania, following the land restitution to former owners, which began in the year 1991 and continued up to the present moment, a huge number of farms emerged, out of which most farms are small and very small. Agricultural land fragmentation also determined the fragmentation of livestock farms, so that at present most herds, mainly bovines, pigs and goats are raised on the small farms, which have only a few animals. The paper investigates the effects of CAP adoption, in 2007, upon these farms and upon the supply of animal products (meat, milk). These effects are evaluated on the basis of certain indicators calculated on the basis of the published data of the two successive general agricultural censuses (GAC 2002 and GAC 2012) and from the farm accountancy data network (FADN). The main results reveal the diminution of livestock herds, mainly in bovines and pigs, and at the same time the beginning of herds concentration into large farms, mainly in the case of pigs. At the same time, the sheep and goat herds significantly increased and sheep in particular began to be concentrated on large-sized farms. Throughout this period, the domestic meat supply in Romania was deficient, due to the increase of domestic demand, and meat imports increased.

Keywords: Romania, livestock farms, CAP adoption, food self-sufficiency.

The Relation between the Food Price and the Climatic and Agricultural Factors in the Republic of Niger

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Abstract

In the republic of Niger, the food price is very important for the farmers because the agricultural and livestock activities represent the most part of the income of rural population. Furthermore, the temporary disruptions (climate, environment) influence the food price. The target of this paper is to demonstrate the link between the annual food prices and the annual temporary disruptions with different factors. The first factor is the food price of the principal cereals because they are the principal food consumed by the rural population of Niger. The period taken into consideration is twenty years. The second factor is the annual precipitation and the number of rainy days. Whereas, the third factor is the agricultural area of cereal production studied and the yield of these. In the first time, we analyze the time series of each factor with an ARIMA model. In the second time, an ANOVA is established to compare the "environmental" factors with the food prices series. In conclusion, the time series studies of each factor have demonstrated the cycle of these and the annual variations. Furthermore, the comparison with an ANOVA has showed the significant difference between the factors studied and the price of cereal. In the future, the food price of each region will be studying with the other factors. The distribution of food price in each region of the Republic of Niger is very important to promote a local strategy of the price management

Keywords: Niger, food price, climatic and agricultural factors.

A Comparative Analysis of Consumers' Current and Future Preferences Toward Organic Products

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Abstract

In many countries, consumers prefer organic products with the concern that conventional products disturb human health and natural stability. Recently producers began to engage in crops and animal products that are expected not to damage nature, agricultural areas and human being. Consumers also expect organic production methods that respect biologic diversity, animal welfare along with food safety, quality and affordable prices. This study will provide us, a comparison of consumers' current and future preferences taking into account the features of production and consumption of organic food products such as fresh fruit and vegetables, bread, olive oil, dairy products and meat products, and alike. The data were collected from households in Karsiyaka/Izmir and analyzed by applying Multi Dimensional Scaling Method (MDS) in order to examine common features of organic food products.

Keywords: Organic product, consumer preference, Multi Dimensional Scaling Method.

Consumer's Perception of Risk in Foodstuffs: Some Evidence from Izmir

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Abstract

Safe food is the risk-free food physically, chemically and biologically during their production life. Consumers prefer food supply that is free from herbicides, pesticides, drugs, hormone, etc. The ecologic products are produced under the control according to the organic production rules and does not contain any hazard residues for the human health. This study shows the measurement of consumer perception of risk in various foodstuffs such as fresh fruit and vegetables, dairy products, meat products, dried and canned products and alike, as well as the significance of the ecological products for the sustainable generation. In the study, a random sample based on the questionnaires of Mavisehir households and sample sized was calculated as 118. Ordered logit method was used to analyze the data for identifying the variables in various food products that affect the risk perception of the consumers.

Keywords: Consumer perception, safe food, ecologic product, hazard residue, ordered logit.

The WTO Integration and Agricultural Policy in BIH - What We Can Expect

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Abstract

Strategic political and economic goal of Bosnia and Herzegovina is the integration in Euro-Atlantic structures. However, integration in the international or regional associations apart from opportunities can also bring real risks, especially for the developing economy such as the one in Bosnia and Herzegovina. Experiences of the previous integrations are not positive for the agricultural sector in BiH. For these reasons, it is not surprising that the forthcoming BiH membership in the WTO is anticipated with fear and skepticism among the local farmers. Because of this, the aim of this paper is to estimate the effect of the WTO integration on agriculture and agricultural policy in BiH. Special attention is devoted to agricultural policy reform in BiH after gaining WTO membership.

In the first part of this paper we describe the model of agricultural policy in BiH and theoretical aspects of WTO integration in agriculture. In the second part we analyze agricultural policy in BiH using AMS methodology. Using the WTO database and reports we compared our agricultural policy with the policy of selected member countries. The results of the work show that BiH agriculture is less protected when compared to the selected countries. The findings also show that domestic support measures in Bosnia and Herzegovina are mainly based on measures which are restrictive in terms of the WTO rules. Domestic support for several key agricultural products exceeds the de minimis threshold of 5%, which can be a problem especially after gaining membership in the WTO. Finally, the paper considers how to prevent the negative effect of the membership with a proposal for the local policy reform.

Keywords: Agriculture, Bosnia and Herzegovina, WTO-AMS, agricultural policy.

The Importance of Strategic Planning for Agricultural Sale Cooperatives Unions and Benefits to the Rural Development: A Case of Taris Olive and Olive Oil Cooperatives Union

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Abstract

Cooperatives are foundations, which have potentials to make strategic planning capability by combining material and spiritual power, holding people combining their intelligence and dexterity to reach common ideals. In developed countries for example in France where the cooperatives are very powerful, wine cooperatives owe their success to good organization facilities and good strategic planning capability. French wine cooperatives strategic plans which guide for 10 years affects both their sector and EU's agriculture politics favour to the producers. This is also similar to strategic plans for 5 years USA's with big volume marketing cooperatives had been developed till 1970's, which are, also has a contribution to rural industry's development.

In Turkey's agriculture's one of the most important organization, Agricultural Sale Cooperatives and their Unions are faced to tutelage of government from 1960 to 2000. Sale Unions in Turkey planning function had been a facility, which could be done only by the government. That caused, Agricultural sale cooperatives to be enable to develop well organize management facilities, especially the marketing function. This situation reverberated negatively to member, cooperative and union relations.

TARIS Olive and Olive Oil Union evaluated the autonomy period in 2000's as an opportunity and build strong cooperative-strong union vision. This vision focused to "to reinforce cooperatives to have a strong union". In fact, in Turkey it was like "Agricultural sale union having its power from government" and the impressive thing was to develop a vision like that in such a period of time.

Keywords: Cooperatives, strategic planning, rural development.

The Current Situation and Marketing Problems of Cut Flower Sales Units in Adana Province of Turkey

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Abstract

The purpose of this study is to find out the current situation, marketing structure of enterprises engaged in sales of cut flower and to determine the marketing problems with the enterprises' future trends and expectations. The main material of this study is the primary data obtained from the face to face interviews with 51 sales unit of cut flower. In this study, frequency and averages were used for socio-economic issues; Likert Scale was used for marketing problems. In the result of the study, it was found that a significant portion of sales units of cut flower (66.7%) have not any trouble with the cooperatives they worked with but the most important marketing problems are unregistered production (41.9%) and lack of demand (27.9%). For the development of the sector, encouraging the production policies and SME (small and medium size enterprises) supports should be increased and awareness of consumers should be raised in terms of demand.

Keywords: Cut flower, cooperatives, marketing, Adana, Turkey.

The Fruit and Vegetable Common Market Organization Reforms in EU: An Overview and Future Perspective

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Abstract

In Europe, the Common Agricultural Policy (CAP) was emerged from the idea of establishing a common market for agricultural products. Therefore the Common Market Organizations (CMO) are used in order to reach the CAP objectives. The fruit and vegetable (F&V) CMO (or regime) is the one of 21 organizations which are generated by European Union (EU) Council. The regime was initially set up in 1962 and a regime of processed F&V has been developed since 1968. Through the regime, domestic markets and the income of producers are protected without neglecting satisfy of consumers. The European Commission keeps the market under constant review in order to help producers to keep them pace with the changing needs of the marketplace and international trade demands.

For several years the F&V sector has struggled aganist negative trends, hence a need for alteration generated. The F&V regime is such a dynamic process that the policy is continuously updated. The purpose of reforms briefly is to improve the competitiveness and the market orientation of the sector, increase quality and marketing standards for the future opportunities and contribute to sustainable production. Besides, The EU is the biggest importer and the second largest exporter of F&V, Turkey is one of the top five supplier countries in the EU market. For the adaptation of Turkey to the CAP, the F&V CMO reforms are crucial. In this study, the reform process of F&V CMO will be analyzed starting with the first extensive reform in 1996 and discussed in terms of Turkey.

Keywords: European Union, fruit and vegetables, common market organization, reform, Turkey.

The Problems and Suggested Solutions about Farmer's Organizations in Dairy Cattle

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Abstract

One of the primary problems on dairy cattle is insufficiency of the farmer's organizations. It is obvious that in the developed countries the sector is mostly dominated by strong producers organizations with a considerably high awareness level. Even when only European countries considered, the importance of the producers organizations in dairy cattle sector draws attention. For instance, the market share of the cooperatives in England is 100%, also 97% in Ireland, 82% in Holland and Portugal, 60% in Germany, 38% in Italy, 20% in Greece, while it is only 5% in Turkey. It is pointed out that the tasks of the producers organizations are not defined in accordance with the laws in Turkey and the competition between the producers is weakened.

This study aims to highlight the analysis of regulations of Cattle Breeders Association, Milk Producers' Union, Cooperatives (HAY-KOOP and KOY-KOOP) in Turkey, and the share of milk marketing. Essentially, which organization model is required for Turkey will be studied, especially in order to formulate it according to the advanced models of organizations in developed countries.

Keywords: Dairy cattle, farmer's organization, organization model, Turkey

Economic Aspects of Dairy Goat Farming in Turkey

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Abstract

According to the data of FAO for 2012 there are approximately 996 million goats in the world. Countries having the large number of goats are respectively China (18.57%), India (16.06%), Pakistan (6.32%), Nigeria (5.72%) and Bangladesh (5.52%). The share of Turkey in the global goat population is 0.73%. Production of goat milk in the world between 2000 and 2012 has increased 39.21%. Most important countries in goat milk production in 2012 are respectively India (26.67%), Bangladesh (14.61%), Pakistan (4.36%), Mali (4.00%), France (3.49%) and Spain (2.48%). Share of Turkey in global goat milk production in 2012 is 1.79%.

Goat breeding in Turkey has been performed either within an agricultural facility or in form of village herd or migratory herd. However intensive organizations providing milk for the dairy farms producing cheese have performed their activities for the matter involved also in recent years. According to the data of Turkish Statistical Institute (TurkStat) for 2012 there are still 8.35 million goats in Turkey. Hair goats which are available in every region of Anatolia constitute approximately 98% of goat population. Hair goats are bred commonly in the inner parts and on the side of forests. Other than hair and Angora goats in Turkey comparatively a little number of Maltase goats and cross breeds and Kilis cross breeds have been produced respectively at Western Anatolia coastline and in Kilis and its vicinity. In the recent years, Saanen cross breeding have been observed to be developed in Aegean and Marmara Regions.

Main purpose of this study is to analyze the economic aspects of dairy goat farming between 2003 and 2012 in Turkey and to offer solutions for the encountered problems. Statistical data for 2003-2012, used in the study have been obtained from FAO and TurkStat. Data obtained have been shown in the tables and graphs issued by the use of percentage and index calculations.

Keywords: Goat breeding, small ruminant, goat milk, goat cheese, goat milk marketing.

Understanding Consumers' Attitudes Toward Fruits and Vegetable Attributes a Multi-method Analytic Approach

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Abstract

Results from previous work indicated that consumers in making purchasing decisions pay more attention to freshness, taste and hygiene attributes of fruits and vegetables than they do price and nutritional value, when these attributes are considered individually. To shed light on the underlying factors that shape the pattern of reported preferences, fresh fruit and vegetable attributes derived from a FPC model were separately regressed using five doubly censored Tobit models in which the attributes:nutrition value, hygiene, taste, price and freshness as dependent variables and a number of demographic and personal characteristics as explanatory variables.The sample was designed following the protocol described by Dillman et al. (2009). The sample was drawn proportionate to population size by county in Georgia, North Carolina and South Carolina. Data were collected from a random sample of 412 respondents.Results show thathigher levels of education and income donot affect the level of importance consumers'accord tothe nutritional value of fresh fruits and vegetables.The relative lack of difference among consumers as classified in the model, along with the results that show consumers giving a higher preference rating to hygiene, taste and prices offer support for the notion that the nutritive value attribute plays a subsidiary role in consumers purchasing decisions. Results also show that education makes little difference in consumers' evaluation of this attribute. This finding seems to explain the increasing realization that education alone may not be effective in persuading consumers to eat more fresh fruits and vegetables.

Keywords: Consumer prefence, fresh fruit and vegetable.

Financing of the Agricultural Sector via Cooperatives in Turkey and in the World: Review of Literature

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Abstract

Agricultural enterprises which intend to continue their activities within the framework of economic principles need regular financing like other enterprises. Agriculture's own structure shows itself in financing need, particular importance is given to agricultural sector's financing. Many establishments like banks, the state, agricultural insurance organizations, factoring companies, cooperatives work in the agricultural sector's financing. Cooperatives of these establishments are seen as the third sector in economic system and they are getting important. This report is about how the agriculture sector is financed by states via cooperatives in Turkey and in the world. Unlike the samples in the world, that there is not any cooperative bank which finances the agriculture is seen as the most important deficiency. And the agriculture and the other sectors are expected to provide an effective financing with a cooperative bank to be founded.

Keywords: Agriculture, finance, cooperative.

Agricultural Potentials in Central African Republic

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Abstract

The Central African Republic has relatively abundant natural resources and agro-ecological conditions generally favorable to agriculture and livestock. The Central African Agriculture employs about 75% of the total population and contributes above 55% to the national GDP. It contains food production (29%), cash crops (1.7%), livestock (13.3%), hunting and gathering (3.1%), fishing (1.8%) and forestry (6%).

The Agricultural potential (crops and livestock) of the country is one of the highest on the African continent. Over 25 % of the land is arable and more than 35 % of the land covered by good quality pasture. Agro-demographic potential land is about 80 million people, while the population of the country is 4.5 million. It is the same case in animal production whose office is currently at least three times lower than the potential burden. Central African rain forests cover an area of 5.300.000 ha or 0.85 % of the national territory. It houses one of the richest fauna of Central African region with the presence of large mammals, predators and several species of game.

This unfortunately has not allowed Central African Republic to achieve food self-sufficiency due to socio- political, technological and economic problems. The main goal of the new authorities of the country is to implement a new agricultural development policy in order to achieve sooner food self-sufficiency.

Keywords: Agriculture, potentials, CAR.

Analysis of Balance Sheet and Income Statement of Meat Processing Companies in Bosnia and Herzegovina

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Abstract

Balance sheet and income statement form the core components of the financial statements that business entities are required to constitute. In addition to the obligations, business entities constitute these balances in order to realize their financial position i.e. to realize the value of assets, obligations and capital of a legal entity, or the success of work and creating added value. Meat processing sector in Bosnia and Herzegovina makes a very important branch of the food industry.

The aim of the work is reflected in the analysis of balance sheet and income statement of meat processing in the territory of FBiH and RS in the period 2008-2010. The collected data or financial statements have been processed in accordance with the scientific-research methodology and very interesting results were obtained.

This is confirmed by the fact that there has been an increase in the value of assets of 14.33 %. The growth is based on increasing the value of the current and fixed assets. In liabilities, the growth of 14.33 % is based on the dominant growth of capital value. The dominant growth in revenues over expenditures led to a growth of 56.48 %. Profit was accomplished about 70% of meat processing.

Keywords: Meat processing, business analysis, balance sheet, income statement, size of business.

Input/Output Price Parity of Maize and Wheat in Federation of Bosnia and Herzegovina

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Abstract

This paper examines the inputs/output price parity of wheat and maize, being two strategic agricultural products during two time periods (2002/07 and 2008/12). The comparison of price parities allows us to define the status of producers before and after the global economic crisis. The research results indicate variation of the farmers' economic position in both studied periods which did not contribute to a better quality of life of rural population. All this indicates a necessity for introducing proper mechanisms of FBiH agrarian policy which will improve economic efficiency and reproductive capabilities of the overall sector as well as the living conditions of farmers.

Keywords: Price parity, farmers, agrarian policy.

Building Database for Bosnia and Herzegovina AGMEMOD Model: Challenges and Solutions for Application of Common Methodology

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Abstract

Since Bosnia and Herzegovina (B&H) is a potential candidate country for European Union (EU) accession an adoption of EU analytical tools is an important step towards well based assessment of likely impacts of B&H EU integration. One of analytical tools is AGMEMOD model, which belongs to the category of partial equilibrium (PE) models and has been developed to obtain medium term outlook for agricultural markets as well as to capture the likely impact of changes in agricultural policies and macroeconomic situation. In order to build the AGMEMOD model for B&H a consistent database containing agro-food balances, direct support and trade policy and macroeconomic indicators has to be built at the first step. To be incorporated into the AGMEMOD modelling system it has to follow common templates and methodology. Availability and quality of data remains the main problem for database completion work regarding B&H AGMEMOD model. The paper deals with the review of AGMEMOD database construction methodology with respect to B&H situation comparing data sources used for EU countries, looking for similar data providers in B&H and making suggestions regarding other sources from where necessary data can be obtained, e.g., international statistical and projects databases, case studies and literature review. Statistical and expert validation of data from alternative sources is taken into account. The paper also provides description of adapted methodology applied for completing supply-demand balances of B&H cereals and oilseed sectors as well as filling policy data and macroeconomic template which allows for calculation of derived indicators needed for further modelling work.

Keywords: Data, modelling, agriculture.

Understanding the Motives Behind Organic Food Consumption in Bosnia and Herzegovina

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Abstract

Increasing awareness of food quality impact on public health and environmental issues concerning food production contributed to increase of interest for production and consumption of organic food products (OF). Consumers, along with researchers, became interested on OF, on their respective angles: consumers searching for the best overall benefit/price ratio, and researchers searching for factors that promote or limit consumption of such products, than for factors that significantly shape involvement and loyalty of buyers and their attitudes towards OF. In spite of increased interest, availability of research focusing consumers' motives and attitudes towards OF at emerging markets are very limited. Therefore the aim of this study is to determine motives shaping OF purchase in Bosnia and Herzegovina, and by so, to define generic paths in marketing strategy creation as a way for future, sustainable, development of OF production and consumption. Conventional sample was created (400 respondents) and the consumer survey was conducted in December 2013, in Bosnia and Herzegovina. Statistical analysis was performed by PAST and Lisrel 8.8 statistical packages, and it included exploratory factor analysis (EFA), confirmatory factor analysis (CFA) and structural equation modeling (SEM) along with descriptive statistics. OF purchase and consumption motives are driven by common lifestyle defined by concern for social equality and consumers' belief that OFs are basis for their health. Study shows that public and private promotion/marketing policies for OF need to be designed in a way that strongly emphasizes their symbolic meaning that elicits in consumers feeling of belonging to both local community and their family.

Keywords: Organic food, purchase motives, Bosnia and Herzegovina.

Underlying Factors Shaping Level of Market Orientation of Food Companies in Bosnia and Herzegovina

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Abstract

High level of trade deficit indicates low competitiveness of B&H agribusiness. It brings the question whether B&H agribusiness low competitiveness is shaped by companies' low market orientation, i.e. capability to apply integrated business philosophy which ensures adequate competitive advantages and sustains development of companies. To answer that, a survey of 50 B&H food companies was conducted by using a MKTOR scale to measure level of market orientation in the period May – December 2013. Statistical analysis was done using SPSS, and it included reliability test, exploratory factor analysis and confirmatory factor analysis, along with the tests of statistical significance and descriptive statistics. B&H food companies are only partly market-oriented (3.43 out of 5,00). Level of market orientation of small (3.511) and large companies (3.364) was statistically different, meaning that the smaller companies are less capable to understand the market. Factor analysis revealed three market orientation factors: intelligence generation (0.393), intelligence dissemination (0.503) and responsiveness (0.522). However, there is statistically significant difference between the values of three main market orientation factors depending on company size ($p>0,05$). Generally speaking, B&H food companies lack ability to collect and use key information about the market. Furthermore, omissions in internal organization and lack of knowledge about marketing prevent efficient use of collected (often disorganized) market data to develop communication and to discover the new ways to create added value which will serve as a sustainable competitive advantages.

Keywords: Market orientation, MKTOR, B&H food industry.

Evaluation of Food Security About Some of the Main Food Products in Turkey

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Abstract

Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life. This widely accepted defination points to the following dimensions of food security; food availability, food access, utilization and stability. However, it is possible to say that the main dimensions of food security are focused food production and consumption.

According to Food and Agricultural Organization (FAO)'s data, there are enough supply quantity for daily dietary energy per capita in Turkey. But, food insecurity generally occurs because of that; lack of animal products consumption in Turkey.

Turkish feeding behaviour mostly based on bread and other products which are produced from cereals with regard to previous studies. Thus, 50% of daily energy demand provides by bread and the other cereals products. Even though meat and meat products are important sources of protein, the rates in total food consumption is only 10% for 2007-2009 years in Turkey.

The aim of this study is to evaluate food security in terms of food availability and food accessibility for basic agricultural and food products (such as cereals, sugar, meat and egg, milk and milk products) which are important for Turkish feeding behaviour. Food availability go about production, domestic utilization, import, export, self sufficiency and food economic access to put forward the rate of poverty, food expence rate for total expenses.

Keywords: Food security, milk, meat, cereals, sugar.

An Appraisal of Watermelon Marketing in Ondo State, Nigeria

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Abstract

The study appraised watermelon marketing in OndoState, Nigeria. The specific objectives of the paper are to: examine the socio economic characteristics of the watermelon marketers, determine the structure of watermelon marketing, determine the profitability of watermelon marketing. Primary data were collected from one hundred and twenty (120) randomly selected watermelon marketers with the aid of well-structured questionnaire. Data collected from the field were analysed descriptive statistics, Gini Coefficient, Regression and profitability analysis. The paper revealed among others that: watermelon marketing is a new enterprise, as attested by 80% of the respondents having between 1-5 years of marketing experience. It is a perfect market with free entry and exit characterized by little or no role played by marketer's association as 88% of the respondents were not members of the association. Gini-Coefficient of 0.7318 obtained in this study indicates a high level of concentration of watermelon market and hence high inefficiency in the market structure. Analysis of the market conduct revealed that factors such as cost of acquisition plus margin, demand and supply and quality were the determinants of the prices set by the respondents. The result of the marketing function for watermelon marketers in the study area showed that the independent variables accounted for 79.7% in the variation in the income of the water melon marketers. The profitability analysis revealed that watermelon marketing is profitable with a return ofN90, 480.9 per marketer per month in the study area.

Keywords:Appraisal, watermelon, marketing, Nigeria.

Costs and Returns Associated with Plantain Processing in Ondo State, Nigeria.

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Abstract

This paper examined the economics of plantain processing in Ondo State, Nigeria .The specific objectives of the paper are to: describe the socio-economic characteristics of plantain processors, examine the various products plantain is processed into, determine the costs and returns of plantain processing, and highlight the problems encountered in the plantain industry. Primary data were collected from one hundred randomly selected plantain processors with the aid of structured questionnaire and analyzed with use of descriptive statistics, frequency, percentages, charts and gross margin. The paper revealed among others that: majority of plantain processors were female (92.5%), the processors (43.6%) have quite appreciable experience in the processing of plantain products ranging from 6-10 years. 78.8% of the respondents engaged in processing plantain and other agricultural products, 92.5% sourced their supplies directly from farmers while the remaining 7.5% of the respondents sourced their supplies from their own farms. The commonly processed plantain products are "boli", plantain flour and plantain chips with "boli" having an average gross margin of □8010.40 per processor per week, plantain flour with a gross margin of □6036.84 per processor per week while plantain chips has an average gross margin of □9772.72 per processor per week. The plantain processor admitted that they were faced with problems of inadequate storage facilities, bad road network (43.8%), inadequate capital (53.8%) and price instability (17.5%).The paper recommended among others that government and other relevant agencies should encourage the plantain processor by providing credit facilities and basic infrastructures such as storage facilities and good road network.

Keywords: Profitability, plantain, processing, Nigeria.

Recent Developments in WTO Negotiations on Agriculture and Position of Turkey

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Abstract

Last conference of negotiations on agriculture was held in Bali, in December 2013. During the negotiations on agriculture, a great deal of discussion has been made about reduction of tariffs, reducing domestic supports and elimination of export subsidies, however, a final agreement was not reached. Despite this fact, some decisions was made during the negotiations such as reduction/removal of export subsidies, development of sensitive and special product concepts against adverse effects of reductions in tariffs, reduction in domestic supports in developed countries to a significant extent. These developments are also important in terms of position adopted by Turkey in negotiations on agriculture. Turkey has been protecting its agriculture considerably via tariffs. Bound and applied tariff rates are 61.0 % and 41.2% in agricultural products of Turkey. For this reason, position adopted and to be adopted by Turkey in the negotiations is important. Tariff rates applied by Turkey for animal and dairy products are over % 100. Therefore, issue of sensitive and special products is very important for Turkey. Turkey has no obligation about domestic supports but if a position is adopted in the negotiations towards substantial decreases in developed countries, this can increase chances of competition in international markets for Turkey. Export subsidies of Turkey are at a negligible level. However, if developed countries eliminate their export subsidies, Turkey can get a set of gains for its import products in long run. This study evaluates Turkey's position in negotiations on agriculture and reflections of decisions taken during the negotiations on turkey's agriculture and agricultural policies. Furthermore it also makes some suggestions for Turkey for not being affected adversely and even getting some gains from the process.

Keywords: WTO, negotiation on agriculture, Turkey, agricultural policies.

The Relationship Between Gender and Poverty in Rural Areas of Turkey

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Abstract

Poverty is the inability of people to meet their basic requirements for survival. However, different people and institutions have come out with different definitions and measurement of poverty like; absolute poverty, relative poverty, subjective poverty and etc.

In terms of definition and content, poverty is related to both rural dwellers and their gender composition. This relationship has not been given much focused attention as other concepts. Its discussion has normally been interwoven with other concepts. In 1978, Diane Pearce introduced the concept of "feminization of poverty" by detecting that two-thirds of the poor in America were women.

Rural women compelled to live alone as a result of immigration, death of husbands (widowed) or divorce (separated from their husbands). Because of this, they undertake all agricultural activities alone in the state of rural poverty. This conditions led to the emergence of the terms "feminization of agriculture" and "feminization of poverty". These concepts mentioned above should be explained from the gender perspective. Otherwise these concepts would not be meaningful.

In this study, the concept of poverty is examined from a gender perspective in the context of basic socio-economic characteristics of rural areas in Turkey. Secondary data was used and listed in chronologically order and there were some suggestions about the reasons and the elimination of gender-related poverty.

Keywords: Rural poverty, gender, Turkey.

The Use of Geographical Information System in Agricultural Biodiversity Conservation: The Case of Aegean Region

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Abstract

In-situ conservation of plant genetic resources is critically important in order to maintain the genetic diversity of plants, to determine the priorities and strategies for ensuring the sustainable use and management and their implementation on a national scale. The relationship between the areas which are not suitable for wheat farming and the use of local wheat varieties has been examined, within this research area composed of eight villages in Manisa, Afyon, Uşak and Kütahya provinces. In the study to analyze and assess of suitable areas for wheat production, Geographical Information System (GIS) was used. As a result of overlay of considering the soil properties such as slope, depth, salinity and alkalinity with the research are, the areas which are not suitable and suitable for the cultivation of wheat are obtained. According to suitability map derived from overlay it is seen that the natural conditions of the villages forcing wheat farming. In respect of data, in five villages of total of eight, local wheat varieties were found. It was determined that the local wheat varieties are no longer available, in the remaining three villages. According to this, in the research field, the areas which are not suitable for wheat farming are the majority areas for local wheat cultivation.

Keywords: Geographic Information System (GIS), agricultural biodiversity, local wheat variety, in-situ conservation.

Analysis of Attributes Considering for Meat Preference of Consumers: A Case of Izmir, Turkey

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Abstract

The purpose of this research is to investigate the consumer preferences of beef, one of the foods of animal origin, which has an important place in nutrition particularly in the province of Izmir. The study was based on the beefs by the production techniques such as conventional, organic, certified and imported. The data obtained through the surveys that were conducted with the meat consumers residing in the province of Izmir via interviews constitute the main material of this study. The study sample size was determined as 121 with proportional sampling, 90% confidence interval and 7.5% error margin. The basic descriptive statistics were applied in order to achieve the objectives of the research. Furthermore, the Best-Worst method was utilized for the consumers' preferences of different types of red meat according to meats' characteristics. According to the research results it was found that generally the meat type that is mostly preferred by consumers according to meats' features is conventional beef while the least preferred one is imported beef. While the conventional beef is the most preferred meat in terms of the price, taste, nutritional value and freshness; the least preferred meat is imported beef.

Keywords: Consumer, preference, best-worst.

Improving the Effectiveness of Needs Assessment Techniques in Agriculture Extension Activities

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Abstract

Farming even though considered a business is not to be treated as any other business because of its unique characteristics and their intricate relationship with the social settings. In comparison with commercial or industrial farming which operates as an economic unit with higher efficiency and productivity, small scale farmers who comprise most of the world farmers operate as both an economic and a social unit. Farming is directly related to all aspects of their lives and the vice versa. Any decision to be taken in their agricultural life is strictly related to their whole livelihood. In short, separating agriculture from their social, cultural, religious and economic lives is almost impossible.

This unique feature makes the performance of an agriculturally oriented need assessment very difficult as compared with others, especially in the context of agricultural extension. It requires a setting under which the farmers freely accept, adopt, participate and possibly implement whatever an extension program has to offer. Farming means their whole livelihood and for that matter proper care and attention must be taken by the implementer not to be seen in a least attempt of imposing anything on them.

This paper looks at some selected ways of assessing the needs of this complex society for agricultural extension purposes. This is to enhance their free acceptance, adoption, participation and implementation of programs that result from the needs assessment.

Keywords: Needs assessment, agriculture extension, effectiveness.

The Wine Industry in Greece: Does Market Orientation Affect Wineries' Performance?

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Abstract

Past research devoted to various industry sectors help us enrich our knowledge about market orientation. However, research efforts at the wine industry sector are extremely scarce. This study explores in which extent the Greek wineries are market oriented, and the degree of its influence on winery's performance. The role of marketing both as a function or a bundle of activities and dominant organizational culture in Greek wineries has grown as they face intensive competition, changes in consumers' demographics and environmental conditions. Applying the MARKOR scale to the winery sector, the research provides empirical evidence for a direct link between market orientation and organizational performance and highlights that wineries need to proceed by gathering and disseminating internally information relative to consumer needs, competitor tactics and environmental factors in order to respond effectively to the market. Findings support the notion that market orientation is an important determinant of firm's performance.

Keywords: Market orientation, performance, wineries, Greece.

New Trends in Geostrategies of Food Multinationals: Rise of Emerging Powers

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Abstract

Important changes are occurring within the composition of world food oligopoly formed by the largest food processing multinational companies. According to the 2012 ranking of the 150 largest food processing multinational companies, three main features stand out : there is a change in the capital structure of these multinational corporation : more family owned companies are stepping out aside those registered in principal stock exchanges like New York, Chicago, Paris, London or Tokyo. Secondly there is a new shift towards agribusiness. Companies that are operating in the primary transformation of agricultural raw materials for food or nonfood purposes are increasing in number amid the food oligopoly. Those new agribusiness giants are also originating from emerging economies. An increasing number of the 150 largest food processing multinational companies are rooted in Latin America, in Asia, or in the Middle East, challenging the well-organized multinational corporations originating from the mature Western markets.

The paper describes this world's food oligopoly; analyses the geo-strategies of the 150 multinational corporations based on data concerning their overall and food sales, international investments and mergers and acquisitions in the different macro-regions of the world, and concludes with the spill-over effects on the food value chains in the Mediterranean.

Keywords: Food multinational corporations, foreign investments, firm strategies, spill-over effects.

Analysis of the Turkish Domestic Market for Organic Products under the Light of Consumer Studies

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Abstract

With the increasing sensitivity of the consumers regarding health related and environmental issues, development of organic agriculture has gained a worldwide momentum. In Turkey, as well, consumer awareness towards organic products has increased in recent years. However, although there is no precise data to assess the state of the domestic market, it is considered that the market is still rather export-oriented and the development in the domestic market is limited. The main reasons preventing the domestic market from a faster development are said to be the differences between retail prices of conventional products and organic products; the low level of consumer income; insufficient availability of the organic products in the market place and the consumers limited level of awareness regarding the organic products.

Undoubtedly, development of the domestic market is closely related to the consumer demand. Besides, examination of the factors affecting demand would uncover the main deterrents and encouraging aspects in the market. For these reasons, attitudes and behaviors of consumers toward organic food products have become a popular topic, elaborated in numerous research studies all over the world. It is observed that consumers' approaches to organic products varied from one country to another and along the time in the same country.

In this study, an attempt will be made in order to put forward an evaluation on the Turkish domestic market of organic products through a comprehensive review of the research findings on consumers' attitudes and behaviors toward organic products in Turkey. Using all the available data and information on the development of the domestic market for organic products as well, the interaction between the consumer behavior and the development of the domestic market will also be analyzed.Keywords: Turkey, organic products, domestic market, consumer behavior.

Keywords: Turkey, organic products, domestic market, consumer behavior.

Recent Developments on Economics of Milk and Dairy Products in the World and Turkey

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Abstract

Significant developments on economics of milk and dairy products in the world are now in motion. Furthermore, applied policies should be reviewed as the countries are turning to new policy instruments. Dairy market livens up in developing countries because of the increase of demand in dairy sector. Constraints in the supply of milk and dairy products, obligation to provide increased quality and climate changes increases the price of milk in the worldwide.

While examining milk prices in the world; fluctuations of prices during the period July 2005-October 2013, particularly increases during July 2007-July 2008 and then decreases again, and the record high price in 2013 draws attention. Developments in producer prices differ from developed countries to developing countries. While the increase on the price in developed countries is observed in the recent period, the price in developing countries decreased. According to IFCN data (78 country ratings), average milk production cost for 100 kg milk production is $40.6 in 2011. Particularly, it is indicated that increase in feed costs and then the costs of labor, energy and fertilizer have caused significant increases in the costs in the last five years.

In this study, production, consumption, prices, comparisons between the countries, developments in the external trades and the expectations about the future of milk and dairy products will be evaluated. Besides, agricultural policy measures of the countries within the framework of the new developments will be studied, the policy measurement for possible issues that arise will be evaluated.

Keywords: Milk, dairy products, economic developments, world, Turkey.

Bosnian and Herzegovinian Dairy Sector Position at Croatian and Serbian Markets

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Abstract

Bosnia and Herzegovina (BH) is implementing liberal trade policy with the aim of creating export opportunities for domestic producers. The effects of trade liberalization on competitive capabilities of BH dairy sector have not been explored in detail, therefore, this research aims to determine dairy industry position at markets of two BH major foreign trade partners: Croatia and Serbia. In addition to determination of dairy sector competitive performances, dynamics of performance change will be part of this research. Position of BH dairy sector has been determined by two indicators: Grubel-Lloyd IIT and revealed comparative advantage (RCA). The base of competitive advantage (price or quality characteristics) has been determined by the four categories of foreign trade flow, while Markov's probability matrix was used to determine the likelihood of trade flows change. BH dairy sector has a certain competitive advantages at markets in Croatia and Serbia, based on the price and quality characteristics of the products. GLIIT index, although rising, indicates low level of integration of the sector at more sophisticated markets, such is Croatian market. Generally, BH dairy sector market position is vulnerable and there is a high likelihood of trade flows change: from successful to non-successful price competitiveness (especially at Croatian market), suggesting that future public policies should encourage sector to work on capabilities to increase level of market orientation and capabilities to improve innovativeness, recognition and quality of the products

Keywords: BH dairy sector, revealed comparative advantage, competitiveness.

Economic Potential of Sewage Sludge Use in Primary Agricultural Production: Case Study of Wastewater Plant Žepče, Bosnia and Herzegovina

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Abstract

Almost every wastewater treatment plant produces sewage sludge which has to be treated and disposed in a proper manners. Sewage sludge can be used in agriculture, where it has a huge value, because of its properties. Although, when using sludge in agricultural purposes care should be taken of the nutrient needs of plants, without impairing neither the quality of the soil nor the surface and ground waters. Therefore, every sewage sludge should be examined and treated before any kind of use. The aim of this paper is to examine sewage sludge nus-produced in a Wastewater treatment plant Žepče, and to propose a proper use in agriculture, or a proper disposal method, with approximation of economic potential of such uses. As Bosnia and Herzegovina aspires to become a European Union member, all analysis were conducted in governance by Council Directive No. 86/278/EEC, and they included dry matter, organic matter, pH, nickel, copper, nitrogen, phosphorus, zinc, mercury and chromium. Results showed that all of the examined parameters were in line with mentioned Directive. Several primary agricultural productions could benefit the use of sewage sludge from this Wastewater plant. However, economic potential varied with the level of treatment of the sludge: use of primary sludge shows great economic results, while, use of treated, dried secondary sludge shows very poor economic results, because, almost half of the cost goes to sewage sludge treatment.

Ecological benefits of properly management of sewage sludge are much more difficult to economically estimate, but it is in frame of good agricultural practices and in the favour of better environmental condition.

Keywords: Sewage sludge, economic potential, agriculture, Bosnia and Herzegovina.

Estimation of Demand for Macronutrients and Food Diversity in the Slovak Republic

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Abstract

In last few decades nutrition security has become very important and plays decisive role in everyday living, to achieve basic food´s needs and on the other hand to have healthy lifestyle with balanced nutrition. These nutrition requirements are different and depend on society of living, but mostly on incomes. Based on the facts, households with lower incomes have a tendency to consume a higher amount of lipids and they do not have diversified diet. Therefore in our article we focus how macronutrients (proteins, carbohydrates and lipids) are related to food and nutrition security and health. We use regression analysis to analyze how is the consumption of macronutrients affected by incomes; family size, type of municipality; education and by amount of children. We chose these factors to represent determinants of individual nutrition behavior. Our analysis has not taken into account age of individual household members. We assume, that economic development in the country (e. g. GDP per capita; unemployment rate; incomes in selected counties; etc.) also affects demand for food. And finally we are using Berry index to calculate food diversity by individual counties in year 2011. To summarize, our article confirms generally known facts and research findings in case of the Slovak republic.

Keywords: Nutrition security; macronutrients; individual nutrition behavior; food diversity.

Factors Affecting Consumer Preferences Between Red Meat and Chicken Meat; A Case of Izmir

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Abstract

The problems experienced on livestock sector in Turkey affected the demand of consumer preferences on red meat and chicken meat in the recent years. The problems experienced in the supply of beef affect the production and consumption of dairy cattle and poultry sector. Red meat imports in Turkey have been realized on the grounds that the red meat price is high in the recent years. It is considered that the consumer preferences on chicken meat are affected in the same period. In this context, consumers (200 respondents) doing shopping in the hypermarkets were questioned to determine the factors affecting consumer preferences on red meat and chicken meat in Izmir province.

Unlike the other studies, the factors which determine the consumers that prefer red meat or chicken meat will be taken into account in this study. The variables of income, gender, number of household, average household age, household education and whether in the households of cardiovascular diseases will be analyzed. For data analyzing, logistic regression models (where appropriate logit, multinomial logit, probit, tobit, ordered logistic regression etc.) will be used.

Keywords: Red meat, chicken meat, consumption, logistic regression, Izmir.

Determination of Environmental Attitudes of Farmers in the Aegean Region

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Abstract

In this study, determination of environmental attitudes of farmers in the Aegean Region was aimed. For this purpose, the New Environmental Paradigm (NEP) was applied to 270 farmers living in Izmir, Manisa and Aydın provinces. New Environmental Paradigm is designed to measure the environmental concern of groups of people using a survey instrument constructed of fifteen statements. The NEP is considered a measure of environmental world view.

According to the preliminary results, the environmental attitude of the farmers in the research area is calculated as 3,94. Environmental attitudes of farmers are statistically different according to the education level. The average of environmental attitudes increases with the level of farmer's education. In addition, the factor analysis was employed to reveal the main factors of the farmer's environmental attitudes. Five different groups were elicited regarding the environmental attitudes. Factor analysis scores were used in the cluster analysis which refers to three different groups.

Keywords: New Environmental Paradigm; farmer, environmental attitudes of farmers; Aegean Region.

ORAL SESSION
LANDSCAPE ARCHITECTURE

Assessing the Availability of the Health Datasets and the National Land Cover to Provide Useful Results Regarding Health and Green Space Studies

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Abstract

Due to the lack of the social and public health response to global environment and health problems now demands for an ecological approach which addresses the need of human health. That is because ecological public health calls for perspectives regarding the interconnections between the environment and human health so that many countries developed different services in recent years. The United States has also developed various national datasets. However, although the USA national datasets Behavioral Risk Factor Surveillance System (BRFSS) and the National Land Cover Database (NLCD) have been available since 1992, few researchers have used them to investigate the relationship between green space and health. It was investigated whether these datasets are suitable to support national and regional studies of green space and health issues. First, I reviewed the BRFSS and the NLCD and how researchers have used similar European national datasets. Then, I looked into reliability, validity, and accuracy of the datasets. I also examined the results of a study I conducted about the associations between green space, mental health and health employing the BRFSS and NLCD datasets. My investigation revealed that the BRFSS data are moderately valid and highly reliable. Overall, the accuracy of the NLCD 2006 data is 80%, but some certain classes have accuracy higher than 80%.

Keywords: BRFSS, NLCD, reliability, validity, green space, health.

The Influence of Foreign Designers on the Turkish Garden Culture Izmir Culture Park

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Abstract

The 18th century Ottoman Empire turned its interest to western countries. As a consequence Ottoman Palace Gardens became designed according to French Baroque Style. With the political reforms of 1839, modernisation and renovation processes began. The interest to create new garden styles arose from the attention Ottoman Sultans paid to garden cultures in France, England and Germany.

At the end of 19th century and in early 20th century, foreign garden designers were commissioned to redesign Ottoman Palace Gardens. Their arrangements, designs and applications caused great changes in Ottoman garden culture.

In 1923 with the proclamation of the Republic, Turkey moved from a sultanate to a lay republic. The founders of the Republic aimed to establish an order quite different from the Ottoman Empire. One of their goals were new and modern cities with parks and green areas.

In this Study is the general characteristic of the Turkish garden culture explained. In the first part of the study, you can find illustration of comparison between Izmir Culture Park, Gorky Central Park of Culture and Leisure in Moskow and the Tiergarten in Berlin. In the second part is the influence about the foreign designers explained which take Izmir Culture Park as a model.

Keywords: Garden culture, influence of foreign designers, Izmir Culture Park.

Analyzing Urban Agriculture Pattern; The Case of Bornova

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Abstract

In urban landscapes, besides food production agricultural lands have also important environmental functions such as providing green areas in the city, reduction of urban heat islands, sustaining wildlife, reduction of ecological footprints, and facilitating sustainable storm water management. However, it is the case that agricultural lands within and near urban settlements have mostly been considered as reserves areas for future urban development. Likewise, trajectory of urban development in Izmir as a metropolitan city between 1963 and 2005 confirmed the fact that built-up areas mostly sprawled over agricultural areas.

Bornova is one of the districts in the İzmir metropolitan city. This study aims to analyze urban agriculture pattern of Bornova between 1963 and 2005. For this purpose, the land use maps derived from 1963 CORONA and 2005 IKONOS satellite images and the composition and configuration of urban agriculture pattern were analyzed by using landscape shape metrics.

The results revealed that the configuration of agricultural patches was changed significantly over time. The agricultural patches on the plain and lower slopes were converted to urban fabric. The agricultural patches in the urban landscape became more scattered and fragmented. On the other hand the new agricultural lands were created by clearing shrub and forest vegetation on the hilly slopes on peripheries of Bornova.

Keywords: Urban agriculture pattern, urban landscape, Bornova.

The Analysis of User - Space Relations in terms of Environmental Psychology: Urla Urban Settlement

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Abstract

It is important to execute the qualification and interaction between the members of the physical environment by approaching visually to offer solutions for existing and potential problems and to increase the quality of life while encouraging the local people to socialize. Urla, one of the important centers of İzmir with its historical background and touristic potential has been visually analyzed and by examining its characteristics the relationship between the physical environment and the users has been interpreted.

This study has been conducted at three steps in downtown and in north coastal settlement, basicly in two sub - region. At the first step, each sub - region has been photographed generally and the first impressions of the striking elements, factors which increase and reduce the visual quality and the distinguishing characteristics of the aforesaid environment have been examined visually. At the second step the area has been evaluated spatially and sensually. At the third step, the sub - regions of the study area have been photographed based on environment - user - behaviour observation. During the observations; considering the characteristics of the users the social interaction types and behaviours have been evaluated, the mobile / stable activities done by the users have been determined and interpreted, and the parts that are used or not used of the area have been stated. Finally, by relating the environment and the user behaviours, the positive and negative environmental drivers that affect the user behaviours have been interpreted.

As a result of this study, differences have been determined between the downtown and coastal settlement locations of Urla according to user behaviours as well as spatial characteristics and it has been foreseen that the improvements which will not ruin the traditional structure of the study area will contribute the local people to socialize.

Keywords: Environmental psychology, user - space - behaviour relationship, Urla.

Determination of the Behaviour and Opinions of the Local Community Towards Tourism Advancements

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Abstract

Cincin Village, which shares the unique values of Aydın City, has an economy based on agriculture and breeding and is a settlement rich in natural and cultural resources. Its history goes back to Cihanoğulları Beylic.

It is thought that the economy and the tourism of the village will improve if the historical potential of its castle, which was built from rubble stone in the 18th century, is evaluated from the aspect of tourism. The aim of this study is to determine the behaviour of the local community of Cincin towards advancing tourism and to reveal their point of view on the subject. In this context, in this settlement where tourism activities have not yet started, the socio – economic features and tourism perspectives of the local community and the tourism potential of the village are examined via face to face questionnaires.

It aims to determine the most valuable features of the settlement and the local community in terms of tourism. The formula for a proportional sample volume is used to determine the number of people with whom the questionnaire are answered; A 90 % confidence level, and 10 % sampling error, are taken as the basis of the calculations, with 63 people questioned. The opinions of the local community about the settlement are found by addressing open ended and close-ended questions (demographic questions, restricted elective and Likert scale questions). The behaviour and opinions of the local community towards tourism development are obtained from the data acquired from the questionnaire and proposals are made according to the results.

Keywords: Tourism, local community, behavior.

Design Recommendations for iParks

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Abstract

Communication devices, which are one of the most important materials of our daily lives, have been rapidly changing and developing with each passing day. The more laptops, smart phones, tablet pc's evolve; the more people need internet in anywhere and anytime. Many applications on smart phones require internet connection; otherwise there are no differences between old fashioned cell phones and smart ones. As a consequence of this situation, internet is needed to become more accessible. Therefore, as an important parameter on the design of public open space has started to show its effect. iParks – internet parks or Wi-Fi parks in some resources – are getting more popularized by municipal election campaigns and by clarifying the design principles it would get more common all over the world. This is a public service; that's why, in line of demographic characteristics of the users shape the ultimate design, after surveying and determining users' profile and intensity of use. The internet which is used by people heavily transforms from an indoor recreation to outdoor recreation and this would increase the usage of the parks. In addition to this, Wi-Fi antenna types to be used in park must be placed to cover all parts of the park where would be expected to connect the internet connection. With the identity of landscape architect, it cannot be decided the types of antenna connection, speed, density, energy source and forms such as telecommunication engineer; but they can design the park according to the signal direction of antennas and coverage or integrate it into the existing park. Therefore, iParks require multidisciplinary work.

Keywords: iParks, Wi-Fi parks, wireless internet connection, design recommendations.

POSTER SESSION
PLANT PRODUCTION

Determination of Nutritive Value of Sweet Potato Aerial Parts and Some Associated Weed Plants in Potato Fields

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Abstract

The objective if this study was to determination of nutritive value and metabolizable energy of aerial parts of sweet potato and some associated weed plants in potato fields by chemical analysis, and gas test methods. The samples of sweet potato aerial parts and its assotiated weed plants were taken randomly from 9 potato fields in ardabil province of Iran. The associated weed plants that investigated were Redroot pigweed (*Amaranthus retroflexus),* Commom lambsquarters (*Chenopodium album*) and European bindweed (*Convolvulus arvensis).* Samples of whole of aerial parts and each of associated weed plants were analyzed for dry matter, organic matter, crude protein, ether extract, and ash content by proximate analysis and for oranic matter digestibility (OMD) and metabolizable energy (ME) content by gas test method. The protein content and OMD of European bindweed were significantly higher than other plant samples in potato feilds ($P<0.01$). The metabolizable energy contents of sweet potato aerial parts, Redroot pigweed, Commom lambsquarters and European bindweed that estimated by gas test method were 7.80, 9.36, 7.99 and 9.81 MJ/Kg DM, respectively. Also, the metabolizable energy content was sinificanly higher in European bindweed samples ($P<0.01$). The obtained results showed that the aerial parts of sweet potato and the associated weed plants have the relatively high dry matter digestibility that indicate their high nutritive value. Generally, the results of present study showed that the aerial parts of sweet potato and also its associated weed plants have relatively good nutritive value and can be used in animal nutrition.

Keywords: Nutritive value, sweet potato, aerial parts, weed plants, potato field.

Influence of Row Spacing and Seeding Rate on Seed Yield of Sainfoin (*Onobrychis sativa* Lam)

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Abstract

Sainfoin (Onobrychis sativa Lam), also known as holy grass or holy hay, is deep-rooted and very drought-resistant forage legume and can be grown in areas that are not suitable for most productive legumes. It is also very palatable and of high feeding value. However, seeding rate for sainfoin is very high, increasing production cost. Under the Bosnian climatic conditions, seed production is more suitable if it is performed from second vegetable cycle (second cut), due to the higher number of sunny days and good possibility for both pollination and seed setting. So, first cut may be used for production of roughage (sometimes also 3 rd cut) and in that way make cheaper produced seed. The aim of this paper was to point out the influence of different seeding rate (60 and 80 kg ha $^{-1}$), row spacing (20, 40 cm) and phosphorus application (0 vs 80 kg ha $^{-1}$) on seed yield from second cut. Results of three years of investigations suggest that the row spacing of 40 cm and seeding rate of 60 kg ha $^{-1}$ had positive, but application of phosphorus some negative effect on seed yield. In total, seed yield ranged from 162,68 to 639,92 kg ha $^{-1}$. But, it should be noted that the significant yield of biomass (2,3 to 11,5 t ha $^{-1}$ DM) can be obtained within seed production.

Keywords: Sainfoin, row spacing, seeding rate, seed yield.

Spatial Distribution of *Tuta absoluta* (Meyrick) (Lepidoptera: Gelechiidae) in Nevsehir Province

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Abstract

In this study, distribution and population density of tomato leaf miner [(*Tuta absoluta* (Meyrick) (Lepidoptera: Gelechiidae)] in Nevşehir province were investigated with delta-type pheromone traps, in July-August period of 2013. A total of 33 traps were established in Acigol (3), Avanos (4), Derinkuyu (4), Gulsehir (5), Hacibektas (3), Kozakli (5), Merkez (4) and Urgup (5) districts in order to homogenously cover the entire Nevsehir province and traps were counted every two weeks. Evaluations were based on mean of all counts of each trap. According to the results, highest population density was in Kozaklı district with a mean of 67.4 individuals, which is followed by Derinkuyu (59.67), Acigol (40.33), Merkez (39.33), Hacibektas (27.22), Gulsehir (24.8), Urgup (20.33) and Avanos (9.58) districts. The data were stored in a geographic information systems database and estimated distribution of the pest was modelled at province scale by utilizing Inverse Distance Weighting (IDW) algorithm. The model map indicated the aggregation of the pest is particulary higher in certain parts of Acigol, Derinkuyu and Kozakli districts. In Nevsehir, there are wide potato plantations along with locally grown tomato. Potato fields are denser around Derinkuyu and Acigol districts where the trap counts were found higher, as expected. On the other hand, it is considered the high population level in Kozakli, where the field vegetable production is relatively lower, is sourced from a number of greenhouses utilized for tomato production. In the further stages of the study, more traps will be established within the areas of higher populations indicated by the distribution model, in order to precisely reveal the points where the pest is most clustered.

Keywords: *Tuta absoluta*, spatial distribution, pheromone trap, IDW.

Distribution of *Papaver* Species from the Macrantha Section in Ardabil Province of Iran

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Abstract

Macrantha section within the *Papaver* includes of the *P. orientale*, *P. pseudo-orientale* and *P. bracteatum* species. This study was conducted to study the distribution of these species in Ardabil province of Iran and characterization of them through chromosomal studies. Accordingly, in the spring and summer of 2012 seeds of these species were collected from natural habitats. For chromosomal studies, root tips of germinated seeds were used. Survey of different habitats of Ardabil province showed that these species are growing in five regions of this province in the cold and wet mountains with an altitude of 1749 to 2995. Chromosomal studies on more than 50 plant samples collected from the studied area showed that the chromosome number of the plants are 2n=42 and therefore belong to the *P. pseudo-orientale* species. Only in the Meshgin Shahr region plants were found with the chromosome number of 2n=28, belonging to the *P. orientale*. The results showed that in Ardabil province the *P. pseudo-orientale* is the dominant species of the Macrantha section of *Papaver* genus which has capsules with or without bracts. The principal components analysis of chromosomal characteristics of the populations indicated that the first three components explained 88.2% of the variation. The cluster analysis of populations divided them into two main groups: G1 population of the *P. orientale* located in the first group and the populations of *P. pseudo-orientale* being in the second group were divided into four subgroups.

Keywords: Biodiversity, chromosomal variation, medicinal plants, papaveraceae.

In vitro Induction of Polyploidy in *Sorghum bicolor*

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Abstract

In this study the effect of different colchicine concentrations (0.025, 0.05, 0.1 and 0.2%) and its treatment time (8, 24 and 48 h) on survival of shoot tips of *Sorghum bicolor* and its *in vitro* polyploidy induction was investigated as a factorial experiment based on completely randomized design with three replications. Polyploidy induction confirmed by chromosome counts, size and number of stomata and other morphological characters. By assessment the different media, it was revealed that the suitable medium for regeneration of shoot tips in *Sorghum bicolor* is MS medium supplemented with 0.1 mg l^{-1} IBA (indole-3-butyric acid) and 1 or 2 mg l^{-1} BAP (6-benzylaminopurine) or 2 mg l^{-1} TDZ (thidiazuron). In addition, MS medium supplemented with 1 mg l^{-1} NAA (1-naphthaleneacetic acid) and 0.5 or 1 mg l^{-1} IBA lead to maximum rooting of plantlets. With increasing colchicine concentration and its treatment duration, explants survival and their rooting considerably decreased. The results revealed that 0.1% concentration of colchicine with 48 h of treatment established the maximum amount of the *in vitro* induced tetraploid plantlets. The derived tetraploids had bigger stomata with lower density. Chlorophyll content in tetraploid plantlets was significantly higher than diploids and they also showed the elevated level of antioxidant enzymes, protein and soluble carbohydrate contents as compared with diploids.

Keywords: *Colchicine,* polyploidy, *Shoot tip culture*, *Sorghum bicolor*, stomata.

Study of Polyploidy Induction in *Nigella sativa*

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Abstract

Nigella Sativa is an annual plant from *Ranunculacea* family. Its seeds consist of protein, alkaloids, kinons, saponin and volatile essence used as antibacterial agent and treatment of some diseases. At the present research, polyploidy induction in *Nigella sativa* via seed treatment in a greenhouse condition and via in vitro treatment of callus and stem nodes with colchicine at the concentrations of 0, 0.025, 0.05, 0.1, and 0.2 percent for 8, 24 and 48 hours was studied. Polyploidy induction confirmed by chromosome counts, size and number of stomata and other morphological characters. In greenhouse condition, the most efficient combination of concentration and exposure time of colchicine for tetraploidy induction was 0.05% for 48 h. Colchicine treated plants had higher plant height, internodes length, capsule wide, and length than control plants. In addition, they had larger stomata with diminished number as compared with diploid plants. In polyploidy induction of callus, the highest percentage of polyploidy was obtained at a colchicine concentration of 0.1% and treatment duration of 24 h. The increasing in concentration of colchicine led to decrease in survival rate of callus. Calli lost their survival capability at colchicine concentrations of 0.1% at 48h and of 0.2% at treatment time of 24h and 48h. The percentage of shoot regeneration, and number of nodes and leaves decreased as increasing of the colchicine in treatment of stem nodes with colchicines under in vitro conditions. The highest number of polyploid plants was obtained at the 0.1 and 0.2% colchicine concentration.

Keywords: Colchicine, in vitro culture, *Nigella sativa*, polyploidy.

The Effects of Municipal Sewage Sludge Application on Soil Salinity, pH, Inorganic N, P and Heavy Metal Concentrations in Four Different Soils

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Abstract

This research was carried out to determine the effects of sewage sludge levels on four major soil types (texture, lime differences) properties such as reaction (pH), electrical conductivity (EC), available N (NH_4 and NO_3), P and DTPA extractable microelement and heavy metals. Five different sludge levels (0, 40, 80, 120 and 160 tone ha^{-1}) were applied. 150 days incubation period of experiments have been conducted.

Generally, soil pH reduced and EC value increased according to the level of sludge application. NH_4-N, NO_3-N, available P, exchangeable cations, and DTPA extractable heavy metal amounts increased with application rate of sewage sludge. NO_3-N content increased according to time of incubation while NH4-N content decreased. Other examined parameters varied according to soil properties and incubation periods.

Keywords: Sewage sludge, soil properties, heavy metal, incubation.

Effects of Foliar and Soil Nitrogen and Zinc Treatments on Zinc and Iron Concentrations of Wheat Grains

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Abstract

The present study was conducted under greenhouse conditions to investigate the effects of foliar and soil (N) and zinc (Zn) treatments on zinc accumulation of wheat grains. Two different nitrogen doses (200 mg kg^{-1} N and 500 mg kg^{-1}N) and two zinc doses (0.1 mg kg^{-1}Zn and 1 mg kg^{-1} Zn dose) were applied to soil. For foliar applications, only the flag leaf was immersed into 0.5% $ZnSO_4$ and 0, 0.1, 0.5 and 1% urea solutions containing 0.01% surfactant (Tween) and leaves were remained 20-25 seconds in these solutions. Immersion of the leaves in the solutions was repeated 6 times with a single day intervals. Plants were harvested at kernel maturation and grain samples were analysed for N, Zn and Fe.

Results revealed in general that N and Zn-nutrition had significant effect on grain Zn and Fe concentrations. When the plants were supplied with sufficient Zn, both soil and foliar nitrogen treatments increased grain Zn concentrations. It was concluded that sufficient Zn and high N rates promoted Zn and Fe uptake and also their re-mobilization from the vegetative tissues into grains.

Keywords: Nitrogen, zinc, iron, wheat, remobilization.

Effects of Foliar Nitrogen and Zinc Treatments at Grain-Filling Period on Nutrient Transport to Wheat Grains

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Abstract

The present study was conducted under field conditions to investigate the effects of late-period foliar spray (after flowering; early milk-stage and early dough-stage) of nitrogen and zinc on grain concentrations of zinc (Zn), iron (Fe) and nitrogen (N) of wheat. There were six different foliar treatments as of: control (-Zn and -Urea), only + Zn, only + Urea, first Zn + than Urea, first Urea + then Zn and Zn + Urea together. Foliar spray of 0.5% $ZnSO_4$ solution was realized together with 0.5% Urea in the same solution.

The experiments were conducted under field conditions at three different locations. There were not significant differences among the grain N concentrations of the foliar treatments at all three locations. However, foliar Zn treatments greatly increased grain Zn concentrations in all three locations. Zinc and Zinc-Urea combined treatments had significant effects on grain Zn and Fe concentrations. Single Urea treatments did not have clear effects on grain Zn and Fe concentrations. Effects of treatments on grain yield were also found to be significant at all three locations.

Keywords: Wheat, nitrogen, zinc.

Effect of Some Microbial Preparations on *Tuta absoluta* (Lepidoptera: Gelechiidae)

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Abstract

Calgard® and Calraid® microbial preparations contain spores of *Fusarium* spp. fungi, and they are a combination of microorganisms, alkaloids and metabolites. Aforementioned preparations work on the nervous system of pests to immobilize and kill them in a short time.

This present study aimed to find out effects of Calgard® and Calraid® to Tomato leafminer, *Tuta absoluta* (Lepidoptera: Gelechiidae), which is a key pest of tomato.

For this purpose, egg-laying of mated female adults of the pest on tomato with 6-7 leaves was provided. Larvae, reaching the fourth-stage after hatching were used in the experiment. As a control to compare with the microbial preparations, distilled water was used, and in the experiment, recommended dosages (10 g/1 l) were applied by dipping, spraying and residual methods. Also, the effects of microbial preparations on the pest were evaluated according to mean number of survival individuals at the 1st, 3rd, 5th and 7th days after applications.

As a result of the study, microbial preparations began to impact on *T. absoluta* at the 3rd day after applications and they had affected on the pest in all three methods, has been determined. The lowest effect of Calgard® according to the control was obtained as 42.00% at the 1st day after application by residual method. The highest effect of Calgard® was occurred as 100.00% from the 3rd day on residual method, from the 5th day on dipping and spraying methods. The lowest effect of Calraid® on *T. absoluta* with 9.50% was obtained at the 1st day after application by dipping method. The lowest effect of Calraid® with 100.00% was found at the 7th day after application by spraying method. Consequently, according to the data obtained, Calgard® and Calraid® microbial preparations have an effect on *T. absoluta* and can be used within the scope of environmentally friendly integrated pest management (IPM) programs in controlling the pest has been understood.

Keywords: Calgard®, Calraid®, tomato, tomato leafminer, *Tuta absoluta*.

Effect of Calmyte® Microbial Preparation on *Tetranychus urticae* (Acarina: Tetranychidae)

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Abstract

The present study investigated the effect of Calmyte® microbial preparation on *Tetranychus urticae* (Acarina: Tetranychidae). This microbial preparation specialized on *Tetranychus* spp. and other mites, containing spores of Fusarium spp. fungi, and it is a combination of microorganisms, alkaloids and metabolites. Aforementioned preparation works on the nervous system of pests to immobilize and kill them in a short time.

In this study investigated the effect of Calmyte® to *T. urticae*, dipping and spraying methods were used. In both methods, 3 different doses of the microbial preparation were used, including 0.25 gr/100 ml, 0.125 gr/100 ml and 0.0625 gr/100 ml. As a control to compare with the microbial preparation, distilled water was used.

As a result, according to the evaluation based on mean number of survival individuals at the 1st, 3rd, 5th and 7th days after application of different doses of the microbial preparation, it was determined that all doses used in the experiments have an effect on the mite in both methods from the 3rd day. The highest effect of the microbial preparation was obtained as 100.00% at the 7th day after application by spraying method at 0.25 gr/100 ml dose, and the lowest effect was found as 27.59% at the 3rd day after application by spraying method at 0.0625 gr/100 ml dose. Consequently, according to the data obtained, Calmyte® microbial preparation has an effect on *T. urticae* and can be used within the scope of environmentally friendly integrated pest management (IPM) programs has been understood.

Keywords: Bio-insecticide, Calmyte®, bean, microbial preparation, *Tetranychus urticae.*

Comparison of Herbicide Application Methods for Weed Controlling in Corn Cultivation in term of Technical and Economical Aspect

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Abstract

Weed control is one of the most important components of a corn production system, especially for reducing yield and increase the costs of production. Controling weed in maize is managed by integration of various ways, crop rotation, mechanical methods, herbicide applications etc. Herbicides are preferred as a most effective techniques in Turkey and in many other countries. In herbicide applications post-emergence herbicides are commonly used for corn cultivation. The post-emergence herbicides applications are done by using domestic cone nozzles extensively in Turkey. But, making spraying by this type of nozzles are not effective, and moreover, are not controlling weed efficiently. In recent years, new generation nozzles and spraying equipment have been developed which allows low drift and high coverage and increased in chemical control of weeds. Especially XR nozzles and air induction nozzles are provides a high success in weed control. Another technique called band spraying is also used increasingly. Especially this technique consist more nozzle and these nozzles are making spraying in the same time and provide effective controlling of weed. Some prototype of general nozzles and band spraying techniques are developed by the project supported by TAGEM (numbered asTAGEM-BS-12/12-03/03-01). The purpose of this study is to compare both in point of application techniques and cost effective-economical analysis of these techniques.

Keywords: Herbicides application, band application, weed control, maize cultivation.

Chemical Composition of Essential Oil of *Laurus nobilis* L. in Urla / Izmir Turkey

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Abstract

Bay laurel (*Laurus nobilis* L.) belongs to the family Lauraceae, which comprises numerous aromatic and medicinal plants. *Laurus nobilis* L. native to Mediterranean regions is also known as sweet bay, bay laurel, Grecian laurel, true bay, and bay. Bay laurel has been used as a spice since antiquity, primarily because of its oil content. In Turkey, *Laurus nobilis* L. grows in the Marmara, Aegean and Mediterranean regions. In this study, essential oil content of trees in Urla – İzmir which is western part of Turkey was determined. The samples of two years old leaf were taken in June, July, August and September from 50 different genotypes. After collection samples were dried at room temperature and each sample was subjected to hydro distillation by Clevenger apparatus and analyzed by gas chromatography.

Seventy six compounds were found in the leaf and 33 of them were found in all genotypes. The major component was 1.8-Cineole and there were not significant differences between genotypes. The highest amount of this component was found in September.

Keywords: Bay laurel, *Laurus nobilis* L., essential oil.

Effects of Aminoethoxyvinylglycine and Naphthalene Acetic Acid on Pre-Harvest Fruit Drop and Fruit Quality of 'Jersey Mac' Apples

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Abstract

The aim of this research was to determine the effects of pre-harvest aminoethoxyvinylglycine (AVG), naphthalene acetic acid (NAA) and AVG+NAA treatments on the pre-harvest fruit drop and fruit quality of 'Jersey Mac' apple. For this purpose, 125 ppm dose of AVG, 20 ppm dose of NAA and 125 ppm dose of AVG + 20 ppm dose of NAA were sprayed on the fruits 15 days before commercial harvest (DBH). Fruit maturity was delayed about 6 days in AVG and AVG+NAA applied fruits. The NAA-treated fruits were ripened after 3 days compared to control fruits. The pre-harvest drop was decreased with all applications. However, AVG and AVG-NAA-treated fruits were dropped less than NAA-treated fruits. All treatments increased the fruit size and fruit weight of 'Jersey Mac' apple. AVG and AVG+NAA increased the fruit firmness than NAA-treated and control fruits AVG and AVG+NAA applications also decreased ethylene production and the respiration rate of fruits. As a results, AVG treatments were determined to be more effective compared to only NAA treatment on pre-harvest fruit drop and fruit quality of 'Jersey Mac' apples.

Keywords: AVG (aminoethoxyvinylglycine), NAA (naphthalene acetic acid), pre-harvest fruit drop, fruit quality, apple.

Effects of Aminoethoxyvinylglycine (AVG) on 'Williams' Pears Leaf Characteristics

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Abstract

The aim of this research was to determine the effects of pre-harvest aminoethoxyvinylglycine (AVG) treatments on the leaf area, leaf chlorophyll (Spad values) and nutrients components in leaf of 'Williams' cultivar pears. For this purpose ReTain® (AVG %15) within concentrations of 100, 125 and 150 ppm was applied as a spray 7, 21, 30 days before commercial harvest (DBH) over 2-year period in Eğirdir Fruit Research Station orchard. It was determined that leaf area was increased with 21 DBH AVG dosage treatments. The Spad values of 'Williams' pear leaf increased after AVG treatments and the highest Spad values were found in 7 DBH+150 ppm (46.92). Magnesium contents were observed significantly by only AVG application times ($P \leq 0.05$) in first experiment year. Overall results indicated that ReTain (15 % AVG) plant growth regulator is thought to have reducing and increasing effects on mineral substances for 'Williams' pear.

Keywords: AVG (aminoethoxyvinylglycine), leaf area, leaf chlorophyll, nutrients components, pear.

Effects of Different Fertilizer Application on the Yield of Izmir Tobacco

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Abstract

This research was carried out in 2012 at Torbalı district of İzmir with İzmir-Ozbaş tobacco variety was used. Two different composite fertilizers (8:16:24+%2Mg 4 and 7:14:21) and one plant nutrient (Terra-sorb) were applied on seedbed and field period and the effects of these application on yield were investigated. The trial was conducted on the basis of Randomized Completely Block Design. The plant number per decare, leaf number per plant, leaf width (cm), leaf length (cm), plant height (cm), dead and alive plant number per decare and yield were measured. Maximum plant height and leaf number were obtained 76.4 cm ve 26.0 respectively by using 8:16:24+%2Mg and 7:14:21 fertilizer. Tobacco yield was varied between 103-123 kg/da. In the experiment, 8:16:24+%2Mg composite fertilizer exhibited beter performance in terms of yield and yield parameters in both seedbed and field period.

Keywords: İzmir-Ozbaş, yield, fertilizer, tobacco.

Scientific Evidences (pro and contra arguments) on GM and Organic Food Production

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Abstract

The end of the 20th century has seen the shaping of a new framework in the food industry. Genetically modified (GM) food products and/or organically produced food products, are two controversial topics that raise many current debates between science and society worldwide. People are confused with susceptible topic which production method is sustainable and acceptable for future generations, and vulnerable with converse information's that are daily released. There are common misconceptions and unanswered questions about organic farming and GM food production, as this paper presented main arguments scientists and agriculturalists have pro and contra GM and organic food production in the scope of sustainability, environmental and health impacts. It would be unfair to forget the huge step that biotechnology has made for food production thanks to the wealth and resources of corporations they could indeed have an answer to the problem of how we will feed the growing population. It is also very important to notice that people have a too idealized image of organic farming. The main misconception is that organic produces are better for health. Apparently no serious study can prove that an organic produce is healthier. Indeed, the nutritional quality and taste depend on the way of producing. Furthermore, we have to consider all the forms of farming for the future of agriculture. For agricultural economists, the development of agribusiness with implementation of new technologies brings the same number of problems as solutions.

Keywords: GMO, organic food, sustainability, environment.

Biological and Productive Characteristics of Grape Variety "Red Traminer" in Vinegrowing Subregion of Niš

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Abstract

This study has been aimed to investigate growth, productivity and grape yield of the observed grape variety in the conditions of Niš vinegrowing subregion. Examinations were carried out in a collection vineyard of the Viticulture and Wine Production Center of Niš. The collection vineyard was planted in 1995, with planting space of 3 x 1.2m. Examinations continued three years (2004-2006). A detailed ampelographic description of Red Traminer was also provided according to O.I.V. descriptors. The obtained results point to possibility of successful growing Red Traminer in the vinegrowing subregion of Niš. The average grape yield varied from year to year depending on weather conditions. The highest grape yield was observed in the first year of investigation (2004), while the best wine quality was reached in the second year of the study (2005). Best vines of Red Traminer were selected for further studies and multiplication. On the basis of the obtained results it can be concluded that the form Red Traminer has shown positive productive properties in the conditions of Nis vine subregion.

Keywords: Ampelographic description, productivity, red traminer, variety.

The Effects of *Peudomonas fluorescens* Bacteria Inoculation on Tomato Growth

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Abstract

The aim of this study is to investigate the effects of P*seudomonas fluorescens* bacteria inoculation on seedling and plant growth. In this content, experiments were conducted in pots and viols with 'Albeni' tomato variety' seeds and seedlings.

At the end of the experiment, in seed and seedling period, plant and root length, fresh and dry weight and dry matter content parameters were researched at different inoculation applications. It is seen the plant growth parameters increased statistically significantly with applications.

Keywords: *Pseudomonas fluorescens*, microbial fertilizer, tomato.

The Effect of Pro-Ca (Prohexadione Calcium) Application on the Shoot Growth and Fruit Characteristics of 'Scarlet spur cv.' Apple

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Abstract

In this study, the effects of prohexadione-Calcium % 10 (Pro-Ca) applications on the vegatative growth and some pomologic characteristics of the Scarlet spur apples, growing on MM 106 semi-dwarfing rootstocks were investigated. Trees were sprayed with the single application of 62.5, 125, 250 g/100 L water Pro-Ca in the annual shoots 5 cm with three weeks interval in the spring (Çıtak-Denizli region). Pro-Ca applications decreased the growth of annual shoots and shoot length of apple trees. Pro-Ca applications reduced the shoot length of apple trees. Parallel to developments in the reduction of shoot the distance between nodes is reduced. Three weeks intervals of application Pro-Ca applied shoot 125 and 250 g/100 L water dosage is more effective in terms of reducing the development. Apple fruits characteristics were not find effect by Pro-Ca applications. The Pro-Ca applications were found to be effective in controlling the vegetatif growth of apple trees.

Keywords: Prohexadione-calcium, 'Scarlet spur cv.', apple, vegetative growth control, fruit quality.

Effect of Bud Loads on Mechanical Composition of Cluster and Chemical Content of Must in Victoria Table Grape Variety (*Vitis vinifera* L.)

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Abstract

The two-year experiment (2008 and 2009) on new introduced table grape variety Victoria was carried out in the commercial vineyard in the conditions of Nerezi vine district, Capljina Municipality. This study the influence of different bud load levels was investigate on grape quality of cv. Victoria under given environmental conditions. The experiment was conducted by random selection method in four variants with different bud load levels per grapevine (19, 24, 28 and 33 buds per grapevine), each variant being repeated four times with 6 vines repeating.

Variant II(24 buds per grapevine) had, in two-year experiment, the average value of the largest cluster weight (599.78 g), the cluster berry weight (573.25 g), and the mass of the cluster stems (12.5 g). The average content of sugar in the grape must was slightly higher in variants I and II (14 %) compared to other variants, while the highest average content of total acids had variant III (4,06 g/l).

Keywords: cv. Victoria, bud load, mechanical composition of cluster, chemical content of must

The Impact of Substrate and Fertilization on Growth and Development of *Viola odorata* L.

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Abstract

In order to achieve more successful breeding of the sweet violet, special attention should be given to the substrate and fertilization since nitrogen affects the foliage mass, and phosphorus, calcium and magnesium affect the quality. Better results are achieved when plant species are grown in peat-based substrates than in soil-based. With the aim to obtain better information about selecting the most favourable substrate and the optimal dose of fertilizer, an investigation was conducted with five different types of commercial substrates, garden soil and soil from natural habitats and the foliar nutrition in four fertilization treatments (control, 0.1% NPK-Mg, 0.2% NPK-Mg and 0.2% NPK-Mg + 4% $MgSO_4$). Chemical analysis of the soil showed that the soil with less organic matter, higher pH reaction and richer in potassium compared to a commercial substrate. The results of the measurements show that the plants grown in soil were larger in diameter and height, but had a smaller number of leaves. Fertilization increased plant diameter by 6% and number of leaves by 13%, while plant height was not affected. Selection of the most appropriate substrate and optimal fertilization indirectly reduce the destruction of this nutritionally valuable and ornamental plant species in its natural habitats.

Keywords: Growing media, fertilizers, morphometric properties, colour of leaves.

Effect of Deficit Irrigation on the Biomass Yield and Related Characteristics of Giant King Grass (*Pennisetum hybridum*)

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Abstract

Water shortage is an issue of considerable concern in some region under Mediterranean climate where water supplies are limited, precipitation is low, and population growth is high. The water requirements of forage crops grown in those regions are quite high due to warm, semiarid climate which generates high rates of evaporative demand, limited precipitation, and mild winter temperatures that allow year round culture of forage crops. Increasing plant production per unit of water is one of the greatest challenges facing the researchers especially in arid and semi-arid areas, which have limited water resources and in tropic and sub-tropics, characterized by hot dry weather. *Pennisetum hybridum* is a high quality fodder grass with high output and high protein which was introduced from Colombia and South America into China. *P.hybridum* can be reaped in 2-3 months after being planted in spring and will keep growing with the reaping. It can be harvested 6-7 years and cut 4-6 times per year. The output per year for each hectare is up to 25-30 tons.

This study was conducted in order to determine the effect of deficit irrigation on the biomass yield and some other yield components of giant king grass (*Pennisetum hybridum*) under glasshouse conditions in 2012. Four irrigation treatments were applied in the experiment, the first treatment was 100% of the field capacity (FC) as a control, and, the others were received 80%, 60% and 40% of the FC, respectively as deficit irrigation treatments. Results indicated that deficit irrigation significantly reduced the biomass yield and other growth parameters compared to the control. Average number of tiller per plant or crude ash and protein content decreased with decreasing irrigation level. The FC-80%, 60% and 40% treatments reduced biomass yield by 10%, 38% and 72% compared to control, respectively.

Keywords: *Pennisetum hybridum*, deficit irrigation, biomass yield, CP content.

Optimization of *in vitro* Culture Conditions Influencing the Initiation of Primocane Raspberry (*Rubus ideus* L. cv. Polka) Tissue Culture

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Abstract

Recent years recorded a considerable raspberry production increase in Bosnia and Herzegovina. Red raspberry (*Rubus idaeus* L.), a member of the bramble group, is considered as one of the most valuable fruit crops in Bosnia and Herzegovina with an annually production of over 9.000 tons and an expected further production increase. Regarding these facts, there is a need for optimization of production process for quality and healthy planting material. One of the ways of meeting the demand for high-quality plants is the method of tissue culture, or *in vitro* propagation, which involves the use of nutrient media, as well as fully aseptic and controlled conditions.

The purpose of this investigation was to determine appropriate conditions for induction of primocane raspberry (cv. Polka) tissue culture. A number of experiments were undertaken to examine the influence of medium content and to identify the most favourable conditions, including light and temperature intensity, for optimal raspberry plantlet growth. To initiate the culture, regarding the influence of media content, two different concetrations of MS media were used (4,4 and 2,2 g/l), while the concentration of plant growth regualtors were equal (1 mg/l). The MS media for multiplication was modified by addition of different hormone concentrations. BAP was used in two different concentrations (1 and 2 mg/l) while the influence of auxin (IBA) was equal for both modificated nutrient media (0,4 mg/l). Depending on the media content, plants have shown differences in its growth potential. With further experiments on growth dinamics of raspberry plantlets, regarding to temperature and light intensity, significant differences were observed.

Keywords: Raspberry, polka, micropropagation, favourable conditions, BAP, IBA.

Non-Chemical Control of Slugs in Lettuce Using Plant Extracts

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Abstract

Vegetable suffer a great damages caused by slugs. In Croatia slug *Arion lusitanicus* Mabille, 1868 has become the most frequent **s**pecies, which is very hard to control. Current control methods rely on molluscicides that are often ineffective and harmful to non-target organisms. In order to evaluate the efficacy of some non-chemical treatments based on plant extracts of rosemary, lavender, garlic and caffeine, laboratory experiment was conducted in February 2014. Plant extracts were prepared by using 1 l of boiling water poured on rosemary (100 g of dry rosemary), lavender (5 g of lavender oil), garlic (70 g fresh clove of garlic) and coffee (100 g of roasted coffe). Plant extracts mixtures were left 24 hours in a covered pot and were applied to lettuce leaves using hand sprayer next day. There were four replicates per plant extracts treatments and control. Specimens of *A. lusitanicus* were fed on treated lettuce leaves in flower pots for seven days. Food consumption (leaf damage in cm^2) was measured daily and data were subjected to ANOVA and Duncan's MRT (P=0.05). All plant extracts treatments were significantly different from the control from the first day onwards. On the first day after treatment feeding was not recorded on the coffee treatment. The effectiveness of coffee decreased by time. At the end of the experiment there was no significant difference between plant extract treatments. Because the tolerance level to slug damages in lettuce market is effectively zero, these results indicate the need for integrated control of slugs.

Keywords: *Arion lusitanicus*, slugs, lettuce, control, plant extracts.

Green Biotechnology: Opportunities for Sustainable Development under Climatic Change

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Abstract

Green biotechnology is a rapidly developing field within biotechnology areas. Developments of plant biotechnology, renewable energy sources, recycling and agro-technological improvements are some of the applications of green biotechnology. Green biotechnology involves the exploitation of plants and algae for the sustainable agricultural products and their utilization as a source of renewable energy as a biofuel. In addition generation of pharmaceuticals and other novel products using plants and algae is the important parts of green biotechnology. Developing more environmentally friendly processes compared to traditional industrial agriculture or chemical industry methods is also one of the purposes of green biotechnology. The technologies of plant genetic engineering and explore how these are used to generate more efficient crop plants, healthy and nutritious foods, and other commercially attractive products are discussed considering the global climatic change in the presentation.

Keywords: Plant biotechnology, global warming, algae, biofuel, renewable energy.

Inventarisation and Evaluation of Autochtonous Genotypes of Almond (*Prunus amygdalus*) in the Area of Dubrave Plateau

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Abstract

The aim of this paper was inventarisation and evaluation of autochthonous genotypes of almond (*Prunus amygdalus*) in the area of Dubrave plateau, Bosnia and Herzegovina. This research presents a first step of determination and preservation of genotypes of this fruit type. Evaluation of autochthonous almond genotypes was done with IBPGR descriptor, describing and determining features of trees, leaves and fruit. Sample consisted of 30 leaves, taken from every tree. The research comprehended 16 bio-physical features of fruit in total: fruit size, fruit shape, easiness of harvest shell retention, shell colour intensity, marking of outer shell, suture opening of shell, shell consistency, softness of shell, kernel size, kernel colour intensity, kernel taste, kernel content (in %). From the aspect of market and marketing, the most important features of almond are softness of shell, kernel colour intensity, taste and shrivelling of kernel. Out of the total number of 13 individuals in this genefond, positive features such as soft shell, low percentage of twin kernels, optimal content of kernel, and sweet taste was determined for only two individuals (B6 and B7).

Keywords: Almond, evaluation, genotypes, inventarization, individual.

Assessment of Different Fertilizer Doses on Yield in Izmir Tobacco Variety under Irrigated and Non-Irrigated Conditions

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Abstract

The search was carried out in Tavas-Denizli where is the important place for tobacco production in Aegean Region of Turkey, in 2012. This study was aimed to determined effects of the different fertilizers (Microalg, 15:15:15+ Ammonium sulphate and 8:16:24+%2 Mg) on the yield of İzmir-Ozbaş tobacco variety under both irrigated and non-irrigated conditions. The effects of different fertilizer on the Izmir-Ozbaş tobacco plant height (cm), number of the leaves (number/plant), number of the living plants (number/2m^2), number of the died plants (number/2m^2), leaf width (cm), leaf height (cm) and leaf yield (kg/da) were investigated. According to the results, the highest leaf width (7.1 cm) and leaf height (12.8 cm) were determined 15:15:15+ Ammonium sulphate fertilizer application. Besides plant height, number of the leaf, leaf width and leaf height were increased which is irrigation treatment. Although irrigation was negative effect on the number of the died plant which is increased under the irrigation condition. Leaf yield was 78.9-130.9 kg/da in this research.

Keywords: Irrigation, fertilizers, İzmir-Ozbaş, tobacco yield and Aegean Region.

Distribution of Tomato Moth (*Tuta absoluta*) in the South Region of Bosnia and Herzegovina

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Abstract

Tomato (*Lycopersicum esculentum* Mill.) is one of the economically most important vegetable species in Bosnia and Herzegovina (B&H). Under the climatic conditions of B&H the production of tomato is organized at open fields and in greenhouses. According to statistics at the state level the annually production of this valuable crop is 45.000 tons, whereas the south region of the country participates in the production with cca. 20.000 tons. Production of tomatoes depends on the proper selection of varieties in relation to climatic conditions, soil properties, proper fertilization, treatment and care of plants and the successful protection against pests and pathogens. In the past few years a very dangerous pest is threaten the production of tomato in the southern part of B&H. Leaf tomato moth (*Tuta absoluta*) was first reported in Višić (area of Herzegovina) in 2010, as well as in countries of the region (Croatia, Montenegro and Serbia). The aim of this research was to determine the dynamics of leaf moth in two different varieties of tomatoes grown in a protected environment at various locations in the southern part of B&H during the year of 2012. To monitor the leaf miner Csalomon pheromone traps were used. Adult insects were observed at both locations in the first decade of May. The highest number of leaf moths was found in August. According to implemented protection programs, differences in the intensity of pest attacks on both sites were accompanied and registered.

Keywords: Leaf tomato moth, *Tuta absoluta*, tomato, pheromone traps.

The Effect of Salinity on Leaf Chlorophyll Content of Satsuma Mandarin cv. Owari onto *Poncirus trifoliata* Rootstock

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Abstract

Salinity is a severe and increasing constraint on crop productivity. Salt stress occur in areas where soils are naturally high in salt and precipitation is low or where irrigation, hydraulic lifting of salty underground water. Salt stress is a major abiotic stress that can affect yield, plant growth, physiological and biochemical activities. The decline in photosynthesis due to salinity stress could be due to lower stomata conductance, depression in carbon uptake and metabolism, inhibition of photochemical capacity or a combination of all these factors.

Citrus known to be sensitive to saline conditions are threatened the most since the major growing areas are in the coastal regions. But the tolerance to salinity varies among different citrus species and depends on the rootstock.

In this study, effect of salinity on leaf chlorophyll content of satsuma mandarin cv. Owari onto *Poncirus trifoliata* rootstock was investigated. The trees were irrigated with five levels (0.65-2.00-3.50-5.00 and 6.5 dS m^{-1}) saline water. The result showed that there was clear effect of salinity concentration on the leaf chlorophyll amount of satsuma mandarins. Chlorophyll a, b and total were differed with salinity concentration, leaf age and periods.

Keywords**:** Salinity, satsuma mandarin, *Poncirus trifoliata*, leaf chlorophyll content.

Performances of Some Maize and Sorghum Hybrid Cultivars in Different Soil Textures under Mediterranean Conditions

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Abstract

In an attempt to investigate the agronomical performances of some maize (ÇT-1, Helen, C-955 and Brasco) and Sorghum hybrid cultivars (Hay-day, Grazer-N2, El-Rey and ES-526), a field experiment was conducted using randomized complete block design with four replications and some agronomical characteristics such as plant height, fresh herbage yield, dry matter content and yield were determined at main crop season in the experimental fields of Ege University Agricultural Faculty and Odemis Training College/Izmir, Turkey during the years of 2005-2006.

Results of the study indicated that the variation among cultivars were statisticaly significant and cultivar x soil texture interactions were also significant with regard to green and dry matter yield traits. Sorghum hybrid cultivars were superior than maize cultivars in terms of many aspects, mainly in light soil conditions of Odemis location. Allthough maize cultivar C-955 was the tallest cultivar among the tested material, Sorghum hybrid cultivars Graze-N2 and El-Rey had higher yield performances than the other tested cultivars. Considering the significant interaction, it was also determined that cultivar El-Rey had highest fresh and dry matter yields in light soils of Odemis location.

In this article, two years average results of our study will be discussed.

Keywords: Mediterranean climate, soil texture, agronomical traits.

Determining the Greenhouse Fuel Consumption in Mersin Climate Conditions

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Abstract

Greenhouses should be heated if the temperature degree is less than 12 °C to get high quality yield. The heating allows the reduction of pesticide use. Therefore, it helps to make an environment friend production. In greenhouse production heating, necessary for providing convenient climate conditions for crop demand, has advantages on providing fast grow up and high quality products. It has high energy costs, however. The aim of this study is calculating the mean yearly fuel consumption for assessing the economic situation if greenhouses are heated. The mean fuel consumption was calculated for necessary heat request for a multi-span and single PE film covered (u=7 W/m^2K) block greenhouse which has design inside temperature t_{id} = 16 °C in Mersin. The values assumed as; the rate of the surface of greenhouse cover to the greenhouse floor area Ac / Ag= 1.33, design inside temperature t_{id} = 16 °C and the temperature increase by heat storage from day to night t_{st} =2 °C in calculations. The climate data used in calculations, obtained from DSİGM.

The yearly heat consumption (Q_{year}) was calculated as 41.7 (kWh/m^2year) for heated months in Mersin. The fuel's, used in determining the heat consumption, heat capacity as 10 kWh/l fuel oil and the heat system efficiency as 80% were considered. Assuming that the heating is necessary mainly during night hours in Mediterranean climate zone, the mean fuel consumption is $Q_{fuel\ oil}$=5.2 (l/m^2year) for the winter months in Mersin. In other study, it was found in Almeria (Spain) 4,4 (l/m^2year) and Catania (Italy) 5,8 (l/m^2year) respectively. As a result of this study, even though all locations are on nearly the same latitude, there are some differences between their fuel consumption values.

Keywords: Greenhouse heating, greenhouse fuel consumption, greenhouse heat request.

Identification of *Tomato spotted wilt virus* (TSWV) on Pepper Plants in Isparta and Burdur Provinces, Turkey

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Abstract

Tomato spotted wilt virus (TSWV) is a member of the genus Tospovirus. TSWV is a important viral disease affecting pepper production worldwide. This study was carried out of determine the presence TSWV in pepper growing areas during growing seasons of 2012- 2013 in Isparta and Burdur provinces of Turkey. Leaf samples were collected pepper plants showing virus-like symptoms (mosaic, deformation, rolling of leaves, yellowing). Totally 333 samples composed of 94 from Burdur province, and 239 from Isparta province were collected, subjected to the assay. According to the results of Double Antibody Sandwich Enzyme Linked Immunosorbent Assay (DAS-ELISA) tests, 31 leaf samples infected with TSWV in 94 samples taken from Burdur province, and 20 leaf samples infected with TSWV in 239 samples taken from Isparta province. Totally 51 samples (15.31 %) were found to be infected by TSWV.

Keywords: Pepper, TSWV, DAS-ELISA.

Effect of Different Fertilizer Application on the Yield of Izmir-Ozbas Type Tabocco

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Abstract

This reserch was carried out in 2012 at Torbalı district of İzmir with İzmir-Özbaş tobacco variety was used. Three different fertilizers (microalg, ammonium sulfate and 10:20:20 composite) were used and effect of fertilizers yield and yield parameters such as; plant lenght (cm), leaf number per plant, leaf lenght (cm) were investigated. The trial was conducted on the basis of Randomized Completely Block Design. With regard to yield and yield parameters maximum; plant lenght by using 10:20:20 composite fertilizer (77.5 cm), leaf number per plant by using microalg feritilizer (26.5 number), leaf lenght by using 10:20:20 compsite fertilizer (17.5 cm) were appeared at this study. The best result has been get 10:20:20 composite fertilizer by yield and yield parameters.

Keywords: Izmir-Ozbas, yield, 10:20:20 composite fertilizer.

Application of Biotechnology in the Production of Medicinal Plants

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Abstract

Approximately, 80 % of the world population has been supported from traditional medicine. At least 25 % of drugs that are used for modern medicine have been provided from plant and remaining drugs have been produced as prototype inspired by the plants. Substances such as aspirin, atropine, artimesinin, chalcosine, digoxin, ephedrine, morphine, pilocarpine, quinine, quinidin, reserpine, taxsol, vincristine and vinblastine which have been commonly used in pharmaceutical industry, derived from plants from past to present. Biotechnological methods became popular for genetic transformation and micropropagation of medicinal plants during the last decades. In the producing pharmaceutical, nutraceutical and plant secondary metabolides opened a new era especially, combining tissue culture and genetic engineering methods which is based on gene transfer techniques. Many plant species and varieties i.e. *Withania somnifera*, *Hoslundia opposita*, *Cinchona ledgeriana, Digitalis* spp., *Rauwolfia serpentina*, *Catharanthus roseus*, *Chlorophytum borivilianum*, *Datura metel* and *Bacopa monnieri* micropropogated successfully by tissue culture methods. Direct gene transfer to improve medicinal properties of plants i.e. *Artemisia annua, Taxus* spp*., Papaver somniferum, Ginkgo biloba* and *Camptotheca acuminata* achieved in last decades. Moreover, indirect gene transfer by *Agrebacterium tumefaciens* on *Atropa belladonna, Azadirachta indica* and *Echinacea purpurea* plants have been obtained. The purpose of this study was to review researches carried out on medicinal plants about genetic transformations and micropropogation.

Keywords: Biotechnology, medicinal plants, in vitro regeneration, genetic transformation.

Ascochyta Blight *(Ascochyta Rabiei (Pass.) Labr)* in Winter Crop Chickpea *(Cicer arietinum L.)* Varieties at Çukurova Conditions and Investigation of Correlation among Certain Characteristics with Multi Regression Method

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Abstract

Ascochyta Blight (Ascochyta Rabiei (Pass.) Labr) and certain characteristics like canopy width, canopy height, primary branches, secondary branches, tertiary branches, leaflet count, 100 seed weight, leaflet length, leaflet width have been observed with 170 different local chickpea (Cicer arietinum L.) variety populations planted in year 2002 at Çukurova region. Different correlations have been defined in regards with characteristics observed.

Ascochyta Blight is taken as Y dependent variable; observed characteristics are taken as X dependent variable (X_1= canopy width; X_2= canopy height; X_3 =primary branches; X_4=secondary branches X_5= tertiary branches; X_6= leaflet count; X_7= 100 seed weight; X_8=leaflet length, X_9= leaflet width) and investigated with multi regressions ($y=a+bx_1+bx_2..$) in order to discriminate direct and indirect interaction degrees and define in detail. Following values have been observed at Ascochyta Blight and observed characteristics with multi regression; Ascochyta Blight = 7,32 – 0,0585 (canopy width + 0,0170 (canopy height) – 0,458 (primary branches) +0,104 (secondary branches) - 0,170 (tertiary branches) + 0,0018 (leaflet count) + 0,0277 (100 seed weight) + 0,0090 (leaflet height) - 0,0778 (leaflet width) and (R^2= % 4,5). A negative correlation has been observed between Ascochyta Blight and canopy width, canopy height, primary branches, tertiary branches, leaflet width and leaflet height. Values of these characteristics decreased when Ascochyta Blight increased. A positive correlation has been observed between Ascochyta Blight and canopy height, secondary branches, leaflet count, 100 seed weight and leaflet height.

Keywords: Chickpea, ascochyta blight, multi regression.

Adaptation Abilities of Chickpea (*Cicer arietinum* L.) in Çukurova Conditions

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Abstract

During the study, adaptation capacity of 18 chickpea varieties that took place at yield trials conducted in years 2001, 2002 and 2003 at two different locations in Çukurova region were studied, it has been observed that studied characteristics are significantly affected from trial locations.

Chickpea varieties used in the yield trial, demonstrated different adaptation capacities to different environmental conditions in terms of studied characteristics. According to adaptation criteria and results taken according to this criteria, which were based on yields of chickpea varieties FLIP 82-150C, FLIP 93-144C, FLIP 94-88C, FLIP 92-142C and FLIP 93-176C varieties demonstrated to all environmental conditions**.** As a result above-mentioned varieties should be considered when breeding new varieties suitable for the Çukurova region.

Keywords: Chickpea breeding, yield.

Soil Analysis of Different Dose Gibberellic Acid (Ga_3) and Fertilizer Use in Sultani Çekirdeksiz Grape Variety and Analysis of Their Nutritional Value

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Abstract

The aim of this research is the examination of mineral nutrition uptake by foliar analyses in Sultani Çekirdeksiz (Sultana) applied of the different doses of fertilizer and gibberellic acid. This study was conducted own rotted Sultani Çekirdeksiz experiment vineyard at Manisa Research Station in Alaşehir province.

Five different GA_3 and four different fertilizer doses including controls were applied on Sultani Çekirdeksiz in the completely randomized block design with split plots as three replications. Each replication had 6 vines. Applications were made for 3 years in 2010, 2011 and 2012 and nutrient values were identified with soil analysis.

The GA_3 applications were 0, 35, 70, 140, 210 ppm and suggested dose for fertilization was determined by the soil analysis. Four doses were formed by multiplication of suggested dose and 0, 0.5, 1, 1.5 coefficients.

Soil samples were taken at flowering, verasion and harvest times and two different depths (0-30, 30-60cm). Total N content was obtained by using kjeldahl methods, available P (phosphorus) by the method of Olsen spectrophotometer readings are made.Changeable K (potassium), Ca (calcium), Mg (magnesium) of 1 N ammonium acetate by the method of atomic absorption spectrometer reading is performed.Useful Fe (iron), Zn (zinc), Mn (manganese) and Cu (copper) according to the method of the amount of DTPA in Atomic Absorption Spectrometer readings were made. Results are obtained in mg kg^{-1}.

Keywords: Sultani çekirdeksiz, gibberellic acid (GA_3), fertilizer, soil analysis, macro and micro elements.

Environmental Risk Phytoaccumulation of Arsenic in *Spinacea oleracea* and *Lactuca sativa*

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Abstract

Pollution of the environment, particularly the soil, appears to be one of the major contemporary issues. In addition, many studies point to the involvement of ecological risk of heavy metals into the food chain through edible plants like *Spinaceae oleraceae* and *Lactuca sativa*. This paper presents the results of the ex situ application of phytoacumulation on the soils of contaminated terrain using the plant species of spinach (*Spinacea oleracea*) and lettuce (*Lactuca sativa*). Sequestration of arsen from the soil by these plant species was observed through phytoaccumulation factor – PF and limit values (mg/kg). The main task and objective of this research was to establish the level of accumulation of toxic element As from the soil by plants and to calculate the PF factor of transfer. The experiment was set up in the control conditions where the soil from eight contaminated locations was placed in the experimental containers. The AAS method was used to analyze heavy metal in plant material and soil. PF factor values ranged from 0.1 to 1.0 which indicates that the spinach and lettuce plants rechargeable moderate compared to arsenic.

Keywords: Phytoaccumulation*, Spinaceae oleraceae, Lactuca sativa,* arsenic.

Results of Maize Production and Maize Processing in Hungary

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Abstract

Maize production in Hungary had slow development for decades with low yields, hardly exceeding 2-3 t ha^{-1} between 1900 and 1950. The subsequent five decades showed exceptional tripling in maize yield (6-8 t ha^{-1}) due to genetic development, general use of hybrid sowing seeds, increase in fertiliser use, field water management, high production technology standards and outstanding expertise. Maize is an outstanding fodder, economically producible energy resource and industrial feedstock. The starch content of maize is 63-66%; therefore, it is primarily an energy resource. In Hungary, industrial use amounts to 8-10% of the yearly maize yield. The future lies in producing high quality, healthy and infection-free maize to facilitate high quality animal husbandry, meat processing and a competitive market. The production purpose, end product utilisation, production site and plant endowments have to be considered to select the proper variety and technology to implement efficient production. Successful production also needs stable and predictable market background. Quality and nutritional value of products are even more important, providing outstanding quality, higher processability market and profitability of products. Maize hybrid filter programs show that certain hybrids are of significantly higher standards. In energy use, High Total Fermentable hybrids, break-resistant grains and disease resistance are the main factors. Maize hybrids more favourable in terms of increasing demand and innovative production technologies will have a more important role in the future.

Keywords: Maize, yields, large-scale use.

Testing of Maize Hybrids, Bioenergy

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Abstract

Maize became one of the main crops of the world due to its fundamental role in feeding the population and quick growth of its production. Maize is known as food and fodder, but less known as bioenergy. The quantity of maize above the food and fodder demans should be provided to bioethanol plants either stored or freshly used. This use type should be modern, effective, economical and profitable for producers. Therefore, utilising new scientific findings is important. Currently, biomass can cover around 2% of the world's and a maximum of 4% of Europe's fuel use. There is a lot to be done to reach the EU's objectives. The long-term field experiment – which is unique in Europe – established at the Látókép Experiment Site of the Centre for Agricultural Sciences of the University of Debrecen involves various testing of more than 300 hybrids each year (cultivation, fertilisation, plant number, irrigation). When examining different genotypes, 5-7% difference was shown in fermentable content, i.e., bioethanol output. Therefore, selecting the proper genotype is also important in addition to technology, as a 5-7% surplus is very favourable. The aim of maize utilisation is to reach as efficient bioethanol extraction as possible, i.e., the highest possible fermentable content. The amount of byproducts in bioethanol production is around 40%. Due to its high nutritional value, this amount should be used as fodder, provided that it is not infected. Healthy, high quality feedstock, properly selected genotypes and hybrids provide a perfect basis for an efficient production technology and practice.

Keywords: Maize hybrids, testing, bioenergy, field experiments.

Effect of GA_3 Administration on the Nutrient Content of Japanese Plum Angelino

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Abstract

It is commonly known that various plant growth regulators containing gibberellins play a role in improving fresh fruit quality. Based on tangible information, gibberellins prevent the flesh of dry plums from nigrescence. This study was conducted with the aim of investigating the effect of GA_3 on macro-micro nutrient content of 8-year-old Angelino plum varieties that are grafted on wild plum seedlings. GA_3 was administered at fixed concentrations of 50 and 75 ppm on branches by spraying at 4 different time periods after the blooming period. Fruits were appropriately harvested upon ripening following the application and were analyzed. Nutrient element analyses of fruits yielded the following results: the highest nitrogen content (%0.78) was determined for the samples treated during the first time period; the highest phosphorus (% 0.20), potassium (% 1.22), calcium (% 0.05), magnesium (% 0.049), zinc (% 3.80), copper (% 4.06) and manganese (% 2.67) contents were determined for the control group. Additionally, the highest iron content (% 83) was determined in the samples that were treated after the fourth time period.

Keywords: Japanese plum, GA_3, nutrient content, plant growth regulators.

Field Performances of Large and Small Size Potato Tubers in Minituber Production

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Abstract

The study was conducted in the tissue culture laboratory of the Department of the Field Crops of the Faculty of Agriculture, the Ege University from 2012 to 2013. At first *in vitro* plantlets were produced via meristem culture in the laboratory using the MS medium (Murashige and Skoog 1962). The meristem plants were micro-propagated to obtaine virus free minitubers by growing in the greenhouse in the plastic pots. After harvesting, minitubers were classified into two different groups as large (28-30 g) and small (3-5 g). The large and small size minitubers of 3 potato genotypes (Agria, Granola and Hermes) obtained in the greenhouse were grown in a field trial in the fall, 2013 in order to compare their field performances. The trial was set up in the Randomized Complete Block Design arranged in Split plots with 3 replications. The plant and yield characteristics were measured during the growing season.

Large tubers had significantly higher mean than that of small size minitubers for plot yield (3.4 kg vs 3.2 kg). The yield characteristics such as plant height, tuber number, single tuber weight, plant yield and tuber size had similar means for the large and small size tubers. It could be concluded that small size minitubers could also be used in the field multiplication of minitubers in the seed potato programs instead of storing them for the production of next season.

Keywords: Potato, minituber size, greenhouse, field performance.

Effect of Different Nitrogen Fertilizer Forms on Yield and Quality of Wheat (*Triticum aestivum* L.) Varieties

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Abstract

The use of nitrogen is important not only for yield and quality in agricultural crops, but also in environmental impressions. Therefore, it is particularly important to increase efficiency of nitrogen uptake by the plants because of the fact nitrogen efficiency can provide increasing yield and quality parameters and leading minimal loss to the environment. The aim of this study was to analyze the effect of three different nitrogen (N) sources on yield, yield components and some quality parameters of five different wheat (Triticum aestivum L.) varieties. Significant differences could be found among the grain yields of the varieties in terms of nitrogen sources. The highest grain yield (4430 kg ha-1) was achieved in variety Sagittario, whereas the lowest yield (3560 kg ha-1) was measured in variety Cumhuriyet-75. The new variety Anopa has the highest protein content (14.1%) in the experiment. On the other hand, other varieties could also give relatively good protein levels. The lowest value (13.5%) was obtained in variety Kaşifbey. The diverse nitrogen sources could not ensure significant differences in grain yield and quality parameters. Use of stabilized nitrogen fertilizer form not only provides consuming lesser effort and fewer dosages but also represents nearly equal yields and quality characteristics in comparison to the usual fertilizer forms. In summary, environmental responses should be regarded in the use of stabilized nitrogen compared to usual mineral fertilizer.

Keywords: Wheat, yield, quality, nitrogen forms, varieties.

Effect of Mowing Heights on the Performances of Some Turf Alternatives in Mediterranean Ecology

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Abstract

This study was conducted on the experimental fields of Field Crops Department, Agriculture Faculty of Ege University, in the duration of a vegetation period in between 2011-2013. Pure sowing of *Festuca arundinacea* and mixed with *Lolium perenne* alternatives and traditional mixture including *Lolium perenne*, *Festuca rubra rubra*, *Festuca rubra commutata*, *Festuca ovina* and *Poa pratensis* were investigated. Peculiarities of these turf alternatives under different mowing heights (12-22 -32 mm) and performances during various seasons (spring, summer, autumn, winter) were also tested. The traits like leaf texture (1-9 point), leaf color (1-9 point), visual turf quality (1-9 point) and weed invasion (1-9 point) were recorded.

According to the results; the plots including *Lolium perenne* showed higher performance in terms of color and texture, but these plots ranked lower than *Festuca arundinacea* plots in terms of visual turf quality points under different mowing heights which represents higher heat and drought resistance of this turfcrop during summer period. *Festuca arundinacea* performed better than others in terms of regenerative capacity, adaptability to regional drought and heat conditions and showed beter visual turf quality. The plots containing *Lolium perenne* displayed better performance with regard to texture and pure *Festuca arundinacea* and the mixture of 60% *Festuca arundinacea* + 40% *Lolium perenne* alternatives had beter overall performance. We have also concluded that mowing height of 12 mm was preferable for high quality turf and 22 or 32 mm for higher persistance and longer maintanance.

In this article, soccer playing characteristics of three different turf alternatives will be discussed.

Keywords: *Festuca arundinacea*, *Lolium perenne*, mowing height, visual turf quality.

Investigations on Injuring Levels of Two Spotted Spider Mite, [*Tetranychus urticae* (Koch)] on Bean Plants Associated with Mite's Population Development

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Abstract

Two spotted spider mite, [*Tetranychus urticae* Koch] (Acari: Tetranychidae) in most countries is a major pest for plants, especially in bean, eggplant and pepper. Because of that, in those plants, the spider mite populations should be brought under control with appropriate methods, before the injury level of the spider mite outreach the economic injury threshold. In order to do that, the spider mite populations should be counted and estimated. Due to the fact that, the mites are too small, it is hard to collect and count them. Therefore, instead of counting mite's populations directly, the method of counting them indirectly had to be developed. For this purpose, in this study, the bean plant [*Phaseolus vulgaris* L. (Fabaceae) Magnum c.v.] was used. The spider mite females had been infected preternaturally per leafs of the plant, and the number of egg, larva, and adult individuals had been counted in the 7th, 14th, 21st and 28th days. In these same days, the proportion of yellow spots and decolourization had been determined. Therefore, the relation between the spider mite populations and indications of injury had been determined by regression analysis. According to results; while r^2=0,944 had been calculated depending on increasing in the number of spider mite, r^2=0,191 had been calculated which depends on the rate of egg population in the end of 14th day for the plants. According to the observed regression formulas, the number of mobile mite at every injury level had been estimated close to its real number. In conclusion, by using formulas that we observed and injury images that show every injury levels, producers and agriculture engineers can determine the population of *T. urticae* in bean without pluck any leaf or count the number of, the spider mite, in the field. In the future, based on this study's results, indirectly counting methods can be developed both for this or similar harmful mites and the results can be confirmed by making more practise in the nature.

Keywords: Spider mite, injured, population, indect counting, method.

Effect of Partial Defoliation on the Skin Phenolic Composition and Antioxidant Activity of Cabernet Sauvignon Grapes (*Vitis vinifera* L.) Grown in Serbia

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Abstract

The selective removal of grapevine leaves around berry clusters can improve the quality of ripening fruits by influencing the phenolic content at harvest. The outcome depends strongly on the timing of defoliation, which influences the source–sink balance and the modified microclimate surrounding the berries. We removed the basal leaves from Cabernet Sauvignon *Vitis vinifera* L. grapevine variety in Serbia (Rajački vineyard region). Partial defoliation only from east side of the row at the full-bloom (early defoliation) and veraison (late defoliation) stages was applied. Concentrations of total phenols, hydroxycynnamoyl esters, flavonols and anthocyanins in the skin extracts, during berry ripening and their antioxidant activitity, were assessed by spectrophotometry. According to the results, early defoliation allowed achieving highest content of these phenolic compounds in the berry skin and highest their antioxidant activity, while late defoliation made to lower content of polyphenols and antioxidant activity compared to control (untreated) vine. Thus, the best period for defoliation of the Cabernet Sauvignon grapevine variety was after full blooming, in order to increase polyphenolic skin content and antioxidant activity.

Keywords: Cabernet sauvignon *Vitis vinifera*, defoliation, berry ripening, phenolic composition, antioxidant activity.

Evaluation of Pomegranate Cultivars Grown in Croatia

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Abstract

Pomegranate (*Punica granatum* L.) is a fruit species traditionally grown in the area of the southern Dalmatia and west Herzegovina, where a large number of autochthonous and introduced cultivars are not evaluated. The current production is small and the selection of appropriate cultivars is a problem. Scarce information is available about pomegranate production in Croatia and about the genotypes. Since there is no intensive farming on the Croatian market pomegranates are imported from Spain, Turkey, Israel and Egypt. Variability among the cultivars has been seen in fruit size, fruit color, aril color, hardness of seeds, time of ripening, juice yield and dry matter content and total acidity. In Croatia, a numerous synonyms and homonyms are present. The name of the cultivar is word we find related to place, color, peel thickness or flavor of the fruit. Characterization of regional cultivars is important for the progress of the region's agriculture and status of the farmers. Due to descriptor for pomegranate 16 different cultivars have been evaluated.

Keywords: Pomological characteristics, *Punica granatum* L., total soluble solids, total acidity.

Effect of Leaf Litter on Morfological Characteristics of Thyme *(Thymus vulgaris)* Seedlings

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Abstract

Leaf litter is an organic material made of decomposed leaves and other plant parts accumulated on the top of the forest soil. Because of good physical and chemical characteristics, leaf litter can be used as a substratum for the seedlings production.

This paper presents two-year research abaut the effect of leaf litter as a substratum component on morphological characteristics of thyme seedlings. The seed of thyme was sown in four different substratum/mixtures: commercial Klassman substratum; leaf litter and livestock manure; leaf litter and vermicompost; garden soil and livestock manure.

The highest values in most of the observed parameters in the first year of research were recorded at seedlings grown in Klassman substratum and in the second year of research in the substratum mixture made of leaf litter and vermicompost in volume ratio 70%:30%.

Keywords: Leaf litter, thyme seedlings, substratum.

Furanocoumarins from the Roots of *Ferulago angulata* (Schlecht) Boiss.

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Abstract

Ferulago angulate (Schlecht) Boiss is a perennial herb of Apiaceae family distributed in central parts of Iran. Chevil is the common name for the plant in Iran where it has used in folk medicine from ancient time as sedative, tonic and for treatment of ulcers, snake bite, headache and digestive panics. In the present work, the plant materials were collected from Kuhkiloye ve Boyer Ahmed province. Air-dried and powdered plant roots were extracted with n-hexan, dichloromethane and methanol, respectively, using a soxhlet apparatus. The n- hexan extract was subjected to preparative thin layer chromatography (P-TLC) using chlorophorm: aceton (95:5) as solvent system to yield two linear furanoocoumarins, prantschimgin and oxypeucedanin. The structure of isolated compounds was eluciated by spectroscopic data such as ^{1}HNMR, ^{13}CNMR, UV and IR. Up to our knowledge, this is the first report on root phytochemicals of *F. angulata.* It was assumed that biological and pharmacological activities of the plant might be contributed to the prescence of furanocoumarins. The comparision of our results with the literature showed that prantschimgin and oxypeucedanin are presented in other species of the genus and could be used as a chemptaxonomic marker of genus .

Keywords: *Ferulago angulate*, furanocoumarin, prantschimgin, oxypeucedanin.

Phenological Sensitivity of Wine Grape Varieties Grown in the Region of Sremski Karlovci, Serbia

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Abstract

The study aimed to assess phenological sensitivity of 20 wine grape varieties, grown in the region of Sremski Karlovci. An identification of varieties differences in phenological sensitivity is important for selection of varieties that are adapted for growing under changing climate. Phenological sensitivity was calculated as the shift in phenological event date per degree of temperature change using long-term observations (1986–2007). Four phenological stages of grapevine were examined: beginning of budburst, beginning of flowering, beginning of veraison and harvest. There were no considerable differences in the phenological sensitivity among varieties for the beginning of budburst (from –2.0 to –3.9 days per 1°C of increase in average January–March temperature) and for the beginning of flowering (from –4.1 to –5.5 days per 1°C of increase in average April–May temperature). The veraison date showed –6.0 to –8.9 day response per 1°C of increase in average April–July temperature, while the harvest date displayed the greatest advancement, ranging from –6.2 to –14.6 days per 1°C of growing season (April–September) warming. Overall, the autochthonous variety Beli Medenac exhibited the smallest and Pinot Noir the greatest phenological sensitivity.

Keywords: Grapevine, phenological sensitivity, climate change, Serbia.

The Effect of Different Colours of Light on the Germination Properties of Some Crops

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Abstract

Light as an energy source for plant life is known to affect plants dually. It affects photosynthetic rate and assimilate accumulation, thereby playing a substrate role; it also controls growth and development, in that way, it plays a regulatory role. Different wavelengths of light in the visible spectrum have varying effects on the growth of photosynthetic plants. This is because the different chlorophylls and carotenoids present capture and use only certain specific wavelengths of light in the visible spectrum. This is particularly intriguing because in the instance that only certain isolated wavelengths of light are provided for a plant, the resulting effect on the plant's growth may differ greatly from the plant's characteristic growth. The characteristics of light such as intensity, quality (colour) and duration determine to some extent the level of its interaction with matter.

This study was conducted in order to determine the effect of different colours of light on the germination properties of some crops under laboratory conditions in 2013. Six treatments were applied in the experiment; the first treatment was in dark as a control and the other were received white, red, green, blue and yellow lights. Five various seeds of crop were used as material that had some problematic like embryo dormancy or coat-imposed dormancy, such as *Lathyrus sativus*, *Petroselinum crispum*, *Phacelia tanacetifolia*, *Stevia rebaudiana* and *Vicia villosa*. The results showed that different colours of the applied light for three week have variety impacts on seedlings features. Data indicated that germination rate of *V.villosa* and *P.crispum* crops were 94.4% and 93.2% under dark and white colours respectively among other treated light colours instance blue, green, yellow and red colours. Data illustrated various hypocotyl lengths among examined plants which was highest in *V.villosa* in dark and lowest hypocotyl length in *P.tanacetifolia* and *S.rebaudiana* plants under blue colour treatment. Radicle lengths were significant between the colour of light and radicle length distinguished among plants.

Keywords: Colour of light, germination, hypocotyl and radicle length.

Isoprenoids: Terpenoids in Medicinal Plants

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Abstract

Isoprenoid derivatives are one of the largest groups of natural products; naturally occurring terpenes and terpenoids which are derived from isoprene units with five-carbon assembled and modified in thousands of ways.

They are located in the cytoplasm of the plant cell. Mono and sesquiterpenes have distinctive smells and odours that they have been found in most common fruits and vegetables, they are idendified as volatile constituents and also volatile terpenes are the essential oils. Terpenoid essential oils have been used in natural parfumes and also in food industry as spices and flavourings because of having characteristic scent and odour. Diterpenoids, divided into three groups; resin diterpenes, toxic diterpenes and the gibberellins. Triterpenoids have cyclic structures, squalene and can be divided into four classes such as, true triterpenes, steroids, saponins, and cardiac glycosides. Saponins, are glycosides of triterpenes and sterols. Carotenoids, are tetraterpenoids which occur in many different kinds of tissue. Two main functions of pigmnets in plants has been recorded: they take part as accesory pigments in photosynthesis and form colors of plants. Lastly, plant terpenoids are usually used for their aromatic qualities. Terpenoids have therapeutic effects against inflamatory diseases and cancer. In additionally, they play a role in traditional herbal remedies and have been investigated for antibacterial, antineoplastic, and other pharmaceutical functions. Morever, some of the terpenoids are used as agricultural pesticides. The purpose of this review study is to exhibit the importance of various aspects of isoprenoid derivatives.

Keywords: Isoprenoids, terpenoids, medicinal plants.

Endemic Plants Belonging to the Asteraceae Family in Rize Province and Possible Use in the Folk Medicine

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Abstract

Turkey is one of the world's richest countries in terms of endemic plants focussing its geographical zone. Endemic plants showing narrow distribution in our country have been maintaining their life with a certain mountain and mountain chains in certain habitats. Black Sea Region with 220 endemic plant species is in the fourth place in geographic areas and its surrounded with high mountains. Rize is considered as a place with high rates of endemism. The Asteraceae (Compositae) family is the richest family in terms of 115 endemic taxa from total of 26 families in Rize. 24.3 % (28 taxa) of these endemic taxa belongs to the Asteracaea family, while the part of the 10.4 % (12 taxa) belongs to the Poaceae family and a part of 7.0 % (8 taxa) to the *Scrophulariaceae* family.

This review broughts research conducted previously on the endemic plants from Asteraceae family in Rize province together, the use of these plants (such as *Centaurea armena* Boiss, *Centaurea helenioides* Boiss., *Centaurea appendicigera* C. Koch. and *Helichrysum chionophilum* Boiss. Et Bal.) and their major components will be discussed in detail.

Keywords: Asteracea, endemic plants, treatment.

Variation of Polyphenol Profiles of *Vaccinium corymbosum* L. by Different Solvent Extraction

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Abstract

Vaccinium corymbosum L. (Blueberry) from *Ericaceae* family is considered to be potent source of antioxidant compounds such as polyphenols. The aim of this study was not only to illuminate polyphenol composition of Blueberry fruits but also to determine the changes of polyphenolic profiles of their different solvent extracts.

The fruits of a blueberry cultivar, which are grown in Blueberry Application and Research Center Located in the village Sutluce of Rize Province in Turkey, harvested in 2012. Soxhlet extraction method was performed using methanol, ethanol and acetone solvents separately. Obtained extracts were fractionated with liquid-liquid extraction using equal amounts of dichloromethane, diethyl ether, ethyl acetate and butanol respectively. Each organic fraction were evaporated until dryness and solved with methanol for HPLC-UV analyses. The standarts of gallic acid, protocatechuic acid, *p*-hydroxybenzoic acid, catechin, chlorogenic acid, vanillic acid, caffeic acid, syringic acid, epicatechin, *p*-coumaric acid, ferulic acid, rutin, *o*-coumaric acid, quercetin and kaempferol were used to identify and quantify phenolic compounds of each extract by HPLC-UV. Total phenolic content of fractions of methanol and ethanol extracts were determined using Folin-Ciocalteu's reagent and expressed as mg quercetin/gallic acid equivalent per mL extracts.

Chlorogenic acid, being most abundant phenolic compound, was found highest amount in butanol fractions according to HPLC-UV analyses. Other phenolic acids were also found most abundant in butanol fractions of the extracts except from catechin, epicatechin, o-coumaric acid, rutin and kaempferol, which were not detected in the extracts. The highest total phenolic contents were found in their butanol fractions as well. The total phenolic content and amounts of phenolic compounds of fractions have followed the same sort descending as butanol, ethyl acetate, diethyl ether and dichloromethane.

Keywords: Blueberry, extraction, phenolic compounds, treatment.

Apple Cultivars Sensitivity on the Fire Blight (*Erwinia amylovora* (Burrill) Winslow et al.) in the Central Bosnia

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Abstract

Erwinia amylovora (Burrill) Winslow et al., is the causal agent of fire blight, which is considered as the most serious disease affecting pear and apple cultivars in many countries around the world. This bacterial disease is included in the EPPO A2 and the EU Annex II/A2 list, but also many other (non-EU) countries quarantine lists implicate it in order to prevent further spread. This bacteria cause typical tissue necrosis and in optimal conditions this can lead to complete destruction of the plant. Destruction degree depends of plant sensitivity on *E. amylovora*. In Bosnia and Herzegovina the occurrence of fire blight is confirmed on some commercial apple cultivars, whereas local cultivars are considered to be tolerant or less sensitive to this bacterial disease. It should be noted that there are no official data for the presence of fire blight in Bosnia and Herzegovina, yet. Although, typical symptoms simplify the identification of the disease by visual inspection, for a concrete diagnose and presence confirmation of this quarantine pathogen laboratory tests are necessary. The aim of research was to contribute the first official confirmation of regional distribution of the fire blight. During the growing season in 2012. apple samples with symptoms were collected in several orchards located in the central Bosnia region. After seeding on culture media, three samples which had shown typical colonies were further tested for the presence of the bacteria by some methods prescribed by EPPO diagnostic standards. The applied nutritional and enzymatic identification tests showed positive reaction in two samples of commercial apple cultivars (Idared and Golden delicious), while sample of the local cultivars Senabija was found to be free of any infection. The results of this research confirmed the presence of fire blight in Bosnia and Hercegovina, but also indicate a potential tolerance of local apple cultivar Senabija on this hazardous bacterial disease.

Keywords: Bacterial disease, *Erwinia amylovora*, fire blight, apple, quarantine lists.

Determination of Grafted Success for Some New Registered Grape Varieties

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Abstract

This study was conducted in order to determine the success ratio of omega bench grafting for 5 new grape varieties which were grafted onto 2 different rootstocks (1103P and 1613C).

Research has conducted in the nursery of Manisa Viticulture Research Station and 5 new cultivars (Sultan 1, Sultan 7, Manisa Sultanı, Altın Sultani, Saruhan Bey) were used as plant materials which were registered by the Directorate of Manisa Viticulture Research Station.

There were 3 replications per each varieties which were grafted on 1103P and 1613C rootstocks. Also 30 grafted cuttings were produced per each replication. After grafting, they were kept for 3 weeks in callus (germination) room and they were planted in black polyethylene bags for rooting.

At the end of this period the rootstocks had different effects in terms of callusing ratio (%), rooting and sprouting ratios (%), callusing levels (0-4), number of roots, the ratio of grafted cuttings having planting quality (%), root development level (0-4), root thickness (mm), root length (cm), shoot development level (0-4), shoot thickness (mm), shoot length, and productivity of grafted vine (%).

As a result all parameters were considered together for both grape varieties in callus room and 1103P was found to be optimal rootstock. In addition the highest value on productivity of grafted vine were obtained from Sultan 7 grafted on 1103P (81.11%) although the lowest value was determined from Saruhan Bey grafted on 1613C (15.56%) rootstock.

Keywords: Grafted vine, omega grafting, new cultivars, 1103 P, 1613 C.

The Influence of Foliar Fertilization with Liquid Organic Fertilizers on Potato Yield Grown in Strumica Region

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Abstract

It was studied the effect of foliar fertilization with liquid organic fertilizers on potatoes yield grown in Strumica area, in the vicinity of the village Kuklis in the period of year 2011-2012. The experiment was set in four variants and three repetitions. The variants in the experiment were:

1. Control (untreated variant);
2. Humusil (organic matter 1.86%; organic carbon 1.08%; humins acids 0,14%; N 224 mg/L; P_2O_5 71 mg/L; K_2O 1024 mg/L; CaO 180 mg/L);
3. Humustim (organic matter 58.63 %; dry matter 12.38 %; humins acids 20.40 %; fulvo acids 2,15%; N 3%; P_2O_5 1,02%; K_2O 7,92%; Ca 3.70 %; Mg 1,03%);
4. Ingrasamant foliar (N 0 %; P_2O_5 130 g/L; K_2O 130 g/L; ME in chelated form and plant extracts 0,005 g/L).

The experiment was arranged in 12 rows and in each variant and replication were involved 100 plants, total in all experiment were involved 1200 plants. The planting was made in rows at a distance of 60 cm row by row and 20 cm in the rows. The row's length was 20 m. Three foliar treatments were applied with given above fertilizers at a concentration of 0.4%.

Before setting up the experiment was carried agrochemical analysis of soil in which were concluded good fertility with three basic macrobiogen elements. After the harvesting and yield measuring was concluded that the foliar fertilization have a positive influence on potatoes yield. In named three variants treated with different organic fertilizers was found a higher yield of potatoes compared with control variant. The highest potatoes yield of 54.62 t/ha was established in variant 4th treated with organic fertilizer Ingrasamant foliar (N 0 %; P_2O_5 130 g/L; K_2O 130 g/L; ME in chelated form and plant extracts 0,005 g/L). The results obtained in all variants with different fertilizers are statistically significant at the LSD (0.01) level, and in variants 3 and 4 the statistical significance at the LSD (0.05) level.

Keywords: Potatoes, foliar fertilization, yield.

Characterization of Stomatal Sensitivity to Water Deficits of Several Apple Genotypes

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Abstract

Climate changes and increases in air temperature pose a considerable threat to fruit growing. In view of such forecasts, selection and breeding for resistance of to high temperature and drought has received particular impetus. Among the various approaches used, selection of drought tolerant genotypes is a major area of efforts. Because of the central role that stomata have in the control of water loss, much efforts have concentrated on the use of stomatal characters in breeding for drought tolerance. Among these stomatal characters is stomatal response, selecting a genotype that is effective in closing its stomata in response to drought. Using a model based on a parameterized Penman – Monteith equation for stomatal conductance we have characterized the stomatal response of several apple cultivars. The experimental set up consisted of several saplings of three apple cultivars on the same rootstock on which a series of sap flow sensors were installed combined with a meteorological station. The results show a change in stomatal behaviour, in particular stomatal closure, due to increases of vapour pressure deficit. Another advantage is that the model can be used to screen germplasm collections or for trait breeding for many fruit tree species.

Keywords: Stomatal conductance, transpiration, apple, selection, drought resistance.

Stomatal Response Kinetics in Various Apple Cultivars under a High Radiation Environment

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Abstract

Perhaps the most consistent and well-documented stomatal response is the opening that occurs in most species as irradiance increases. Maximum aperture is usually achieved with irradiances greater than about a quarter of full summer sun. The rate of stomatal response to changing light is a variable, though closing responses tend to be more rapid than opening. The present research sought to investigate the stomatal response kinetics of various apple cultivars. We selected three apple cultivars, namely Golden Delicious, Gala and Pink Lady with different ecophysiological characteristics planted as young saplings under a high radiation location in Western Plain of Albania. Using a model based on a parameterized Penman – Monteith equation for stomatal conductance we have assessed the stomatal kinetics, especially stomatal opening. We have used diurnal courses of variables instead of commonly used daily means bringing more details to the analysis of stomatal response. The results showed that the cultivars changed in their behaviour to stomatal opening in terms of photon flux density. The model could be used for assessing the genotype–to–environment interactions especially in relation to the stomatal response to abiotic factors as well as a proxy physiological marker in selection for resistance.

Keywords: Stomatal kinetics, genotype–to–environment interactions, apple.

Spelt Wheat Represents an Important Genetic Resource for Increasing Grain Zinc Concentration

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Abstract

Zinc (Zn) and iron (Fe) deficiencies are growing concern in human populations with serious health complications, especially in developing countries. Today, around 3 billion people are affected from micronutrient deficiencies. Impairments in brain function and development, immune system and physical development are particular health problems associated with Zn and Fe deficiencies in humans, particularly in children. Major reason for the problem is related to low dietary intake of those micronutrients. Cereal-based foods with very low concentrations of Zn and Fe are main source of daily calorie intake in developing world. Therefore, enrichment of cereals with micronutrients represents an important global challenge. Increasing evidence is available showing that spelt wheat could be an important genetic resource to improve human nutrition with Zn and also for improving modern wheat with Zn through breeding.

In this study, 9 spelt wheat-derived lines from CIMMYT were grown under field conditions with and without foliar Zn applications. The results obtained show existence of an important genetic variation for Zn to be exploited in breeding programs. Spelt wheat genotypes have also significantly responded to soil and particularly to leaf applications of Zn fertilizers. Increases in grain Zn concentration by foliar Zn applications are more than 2-fold indicating that agronomic approaches could be very important in improving grain Zn concentration and thus human nutrition.

Keywords: Zinc, iron, deficiency, spelt wheat, field conditions.

An Investigation of Determination for Correlation of Yield and Yield Component in Peanut

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Abstract

This study was conducted during 2005-06 growing season to assess performance of peanut in Cukurova Region. The objective of this study was to explore the extent of the yield and yield components correlations at *NC-7 Peanut variety*. The yield of peanut crop depends on not only breeding of adapted varieties from different ecological conditions and cultivation applications, but also yield and yield components.

In this research, of which field experiments were layout as to *NC-7 Peanut variety* in Cukurova region, positive correlation between pod yield and 100 seed weight (0.871), 100 pod weight (0.789), pod yield per plant (0.696), internal ratio (0.858), weight of second quality pod (0.700) and ratio of oil (0.842) was concluded, while there exists negative correlation between pod yield and number of pod per plant. Our results provide an initial step toward the identification of peanut varieties that may be useful for the development of high-quality peanut cultivars.

Keywords: NC-7, peanut, variety, correlation.

Efficient Use of Soil and Water Resources in Isparta-Turkey

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Abstract

The efficient use of soil and water resources, which are among the limited natural resources, is of extreme importance for sustainable agriculture and sustainable irrigation. The resources concerned must be efficiently used particularly in the areas with high potential for agricultural production. Isparta is a province with high potential for agriculture that allows growing many products thanks to its climate and ecological features. The total agricultural land in the province is 251,286 ha. The quantity of land opened for irrigation is 108,870 ha.

In this study, the studies for the development of agricultural infrastructure in the province were examined; the large irrigation schemes were evaluated by means of such indicators as irrigation ratio, irrigation efficiency, and water supply ratio; and solutions were proposed.

Keywords: Irrigation ratio, irrigation efficiency, water supply ratio, Isparta.

A Radiosensitivity Study on Sultana Grape Variety in *In Vitro*

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Abstract

To induce mutation in a plant material is being done by using physical and chemical mutagens. Before mutation breeding, the determination of the material sensitivity to the mutagen is the necessity for the success of the breeding program. By the development of *in vitro* methods, mutation breeding studies have being done in *in vitro* and it has been possible to get results in a shorter time than in *in vivo***.** In this study it was aimed to determine the radiosensitivity of Sultana grape variety in *in vitro* by applying different gamma ray doses. Two different MS medium that contains 2 µM (MS1) and 5 µM (MS2) BAP were used. Radiation treatments were done by two months intervals, and three different doses (2+2 kRad, 4+4 kRad, 8 kRad) were applied. Observations and measurements were made before each subculture and plant height, plant number and multiplication ratios were recorded. Plant reactions to radiation were generally appeared as reduction of growth and multiplication, drying of the shoot tip or whole plant. Height reduction of plants that were totally 4 kRad radiation applied was 20% while in 8 kRad applied group the reduction was %50 or more, in respect to control. The similar reductions were also recorded in plant number and multiplication ratios. Generally, the plants in MS1 medium showed slightly more dramatic reductions than the plants in MS2 medium. It was determined that the application of a high dose at once is more effective than the intermittent application of the same dose. Despite the higher doses were increased the mutation frequency, the regeneration capacity of the plant dramatically reduced.

Keywords: Vitis, Sultana grape, radiosensitivity, *in vitro*.

POSTER SESSION
ANIMAL PRODUCTION

Performance of Beef Cattle Grown on an Artificial Pasture over Two Consecutive Years under the Mediterranean Conditions

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Abstract

It was aimed to determine the performance of Holstein breed beef animals grown on an artificially established pastures over two consecutive years (2011 and 2012) under the Mediterranean climate conditions. For this purpose, 20 Holstein breed beef cattle with an average of 6 months old were assigned equally to two grazing paddocks established as a 3 ha-artificial pastures. Pasture 1 (P1) was composed of *Medicago sativa* L. (20%) + *Bromus inermis* L. (40%) + *Agropyron cristatum* L. (30%) + *Poterium sanguisorba* (10%); and Pasture 2 (P2) had mixtures of *Medicago sativa* L. (15%) + *Onobrychis sativa* Lam. (15%) + *Agropyron cristatum* L. (35%) + *Bromus inermis* L. (35%), respectively. The first year experiment lasted for 90 and the following year 70 days.

The results showed that there were no effects of the years and the pasture types on the performance of the animals. The total weight gains of the animals were 98 and 88.5 kg at the end of the first year grazing and the second year respectively. Daily liveweight gains (DLWG) of the animals were as follows: 1.089 v. 0.983 kg, respectively. Similarly, the total weight gains of the animals grazed on P1 and P2 were 95 and 91 kg respectively. DLWGs were 1.058 and 1.013 kg for P1 and P2 respectively. Consequently, both type of artificial pastures can be recommended for beef cattle production in the region.

Keywords: Holstein, artificial pasture, performance, beef production.

Laying Hen Behaviour and Welfare in Housing Systems

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Abstract

Poultry behaviour is a reflex of their welfare status at a particular moment, and it is related to physiological and environmental factors. Considering layer behavioural needs in the design of housing facilities optimize their welfare. Laying hen housing systems must provide feed, water, light, air quality, space and sanitation that promote good health and welfare for the hens. There are a lot of different housing systems for egg layer. But most models are cages, enriched/furnished cages, outdoor housing systems use and more under development. All housing systems should provide for expression of important natural behaviours, protect the hens from disease, injury and predation, and promote food safety. But commercially housed hens in both cage and colony systems; cages can provide a highly controllable environment that protects hens from a range of health and injury problems; however, they afford limited space and behavioural enrichments and also frequently show behaviours that are not observed in wild or feral chickens. The enriched/furnished housing systems provide a wider range of behavioural opportunities, while conserving many of the advantages of a conventional cage. The outdoors systems provided hens are able to perform the broadest range of naturalistic behaviours, but they may also be exposed to climatic extremes, toxins and disease. In this review aims is to discuss behaviour of laying hens that rearing in different housing systems. Laying hens have an innate behavioural rhythm for certain behaviours such as; feeding, drinking, foraging, scratching, nesting or perching. Therefore the opportunity to perform these behaviours at the right time may be an important for animal health. Feather pecking, cannibalism, dust bathing, locomotion activities, and aggressive behaviours are also the most frequently observed in layers and therefore, monitoring their incidence may contribute to measure poultry welfare.

Keywords: Egg layer, behaviour, housing systems, abnormal behaviour.

Egg Handling and Incubation Conditions Affect Hatching Success and Survival of Chicks in Ostrich (*Struthio camelus domesticus*)

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Abstract

In ostrich (*Struthio camelus domesticus*) industry, the high rate of embryonic mortality during artificial incubation and the low hatchability of ostrich eggs are recognized as major concerns worlwide. Some important factors that cause a reduction in the hatchability in ostrich are failures in egg collection, cleaning and storage conditions during pre-incubation period and insufficient incubation conditions, especially in the way of temperature and humidity. During incubation, insufficient egg weight loss results in high rate of embryonic mortality due to oedema and malposition. As well as, these failures in egg handling and incubation conditions also result in poor quality of chick and early term chick mortalities due to oedema, anasarca, unabsorbed yolk sac, unhealed navel, omphalitis, leg problems. In that respect, knowing the egg characteristics and physiological requirements of developing embryos is crucial for obtaining optimum hatchability and producing maximum number of healthy hatchling. It is essential for successful and profitable breeding. In this study, it is aimed to discuss the egg handling and incubation conditions and the possible effects of these practices on the hatching success and survival of chicks in ostrich.

Keywords: Ostrich, handling, incubation condition, hatchability, chick quality.

Analyses of the Milk Yield and Milk Composition of Different Genotypes Latvian Breed Goats

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Abstract

The most popular goat breed in Latvia country is Latvian breed goats (LVK). The breed was developed in the 19th century by crossbreeding local goats with Russian and Megrel breed buck. The aim of the present research was to evaluate the affect of different genotypes and also environmental factors on the goat milk yield, fat and protein contents. Data of 4043 lactation records from 1508 Latvian breed goats of six different genotypes were analyzed in the period of 2002 to 2012. The milk yields in Latvia were recorded by the ICAR A4 method. The highest milk yield from Latvian breed goat (620.5±12.16 kg) was obtained in 2003, the highest fat content (4.26±0.08%) – in 2002, but highest protein content (3.30±0.02%) – in 2008 ($p<0.05$). Milk yield was significantly higher in goats, which LVK blood was from 87.5 to 93.75% – 537.4 ± 8.51kg, but the fat and protein content of the goats with LVK blood up to 25% –4.05±0.02, and 3.30±0.01% ($p<0.05$). Latvian goat breed improvement has been with, Saanen, Alpine, Toggenburg and Thuringian goat breed buck. The local LVK breed goat (LVK bred blood 100%) analyzed 557 of lactation with the average milk yield 516.7±6.82 kg and the average fat 3.86±0.03% and protein content 3.20±0.02%. Goat milk yield and compositions were significantly affected depending on the calving year, lactation and the region ($p<0.05$).

Keywords: Goats, milk yield, milk composition, breed.

Analysis of the Piglets Loses in First and Later Parities in Latvian Landrace

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Abstract

The number of born alive and weaned piglets as well the number of parities per year maximise profitability of the pigs breeding herds. The aim of this study was to investigate number of piglets born alive (NBA), number of piglets dead (ND), number of piglets weaned per litter (NW) and number piglets died until weaning (NDW) and determine factors affecting these traits on large data set in the 1st and later parity of Latvian Landrace sows. 14577 of the 1st parity and 27359 records of the later parities (2 – 12parity) were collected from 2000 till 2012 and were included in the analysis. For statistical analyses of the sows' reproduction traits a liner mixed model was performed. All analyses were carried out using R programm. The average of NBA in the first parity was 9.9 piglets with maximum 20 alive piglets per litter. In the later parities were 11.2 piglets with maximum 22 piglets per litter. Low mortality during the 24 h after birth at the first and later parities – 1.2 or 12.9% and 1.3 or 14.38% piglets also is good indicator for the nucleus heard. NBA piglets increase with parity ($p<0.05$), but ND piglets does not differ with parity. In analysis of NW and NDW piglets parities with cross-fostering was not include. The average NW piglets in the first parity were 9.7 piglets per litter; mortality of piglets during the suckling period was 1.5 piglets or 12.5%. 35.7 % of the sow's had no piglets loses and 24% loss 1 piglets per litter. The highest NW piglets were for the 1st to 4th parities. For later parities the average NW piglets were 10.3 piglets per litter, the weaned piglets decrease with parity number ($p<0.05$) and in the 8th -12th parities the NW was less than 10 piglets (8.8 – 9.9 piglets). In later parities mortality of piglets during the suckling period was 1.9 piglets or 13.9%.

Keywords: Litter size, mortality, pig, reproduction.

Metabolic Profile of Cow Race Bush During Cold and Warm Periods of the Year in the Sandzak Region in Serbia

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Abstract

Given the importance of conservation strategies of indigenous breeds of cattle genome Bush, the goal of our study was that in one village herd of Bush cows in critical period of the year for nutrition (winter - summer), exam MPT (Metabolic Profile Test) as a complement to control of cows diet. MPT testing was conducted on a total of 42 cows (21 in winter and 21 in summer), which are divided into three categories of seven cows: 1) cows in late pregnancy (n = 7 + 7); 2) cows in puerperium (n = 7 + 7); 3) cows in the second month of lactation (n = 7 + 7). For testing the TMP levels in blood serum there were determined concentrations of: glucose, total protein, urea, beta-carotene, vitamin A, calcium and inorganic phosphorus. The analysis of these parameters in the puerperal cows determined hypoglycemia and hypophosphatemia during the winter, and hypoglycemia during the summer feeding period. During the winter in all three categories of cows was established hipocarotenemia and lower levels of vitamin A than normal. Slightly higher level of urea was in high pregnant and puerperal cows in the summer, and there was hyperproteinemia in cows of all three categories in this period. Based on the results of the TMP can be concluded that the cows in the herd during the winter are not getting bulky food of good quality, and in the summer period there is a unbalanced ratio of the amount of energy and protein in cows diet.

Keywords: Cows, Bush, blood, winter, summer.

Chick Weight, Length and Post-Hatch Performance in Male and Female Broilers from Different Breeder Ages

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Abstract

This study was carried out with the aim of determining the effects of broiler breeder age and hatchling sex on chick weight, length at hatch and post-hatch broiler performance. A total of one-day old 180 chicks (90 females/90 males) were randomly selected at hatch from each Ross 308 broiler breeder flocks at 36 and 52 weeks. All selected and weighed chicks were placed in pens. Daily mortality, weekly feed consumption and live weight at 7, 21 and 42 d were recorded. The effects of broiler breeder age and sex on chick hatching weight and length were found ($P<0.01$). Heavier and longer chicks were obtained in 52 wk old age flock and also male chicks. At 1 d, the chicks from 52 wk old age were heavier than others from 36 wk old age ($P<0.01$), whereas female and male chicks were similar. At 42 d of age, heavier live weight was observed in males from 52 wk old with a value of 3320.0 g ($P<0.01$). At the end of the growing period, the cumulative feed consumption was found to be higher as 5368.8 g in males, whereas a higher feed convertion ratio was higher in females as 1.81 ($P<0.01$). A higher mortality with a value of 5.56% was observed in male broilers due to faster live weight gain compared to females (1.94%, $P<0.05$). Results indicate that broiler breeder age and chick sex affected chick weight and length that are indicators of one day old chick quality and broiler performance.

Keywords: Broiler, breeder age, chick weight, chick length, live weight.

Determining the Optimum Replacement Policy and Herd Life for Holstein Dairy Herds in North West of Iran Using a Dynamic Programming Model

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Abstract

The objective of this study was to determine the optimum replacement strategy using dynamic programming for dairy herds in north west of Iran. The objective function was maximization of the net present value for cows over a 10 lactation planning horizon. State variables used to describe the dynamic programming of lactation in cows at level 10, 3 levels of productivity and reproductive performance in four levels. The Markov chain simulation was used to estimate the expected statistics under the optimal policy. The decision to the optimum culling was made by comparing the present value of future cash flows of the current cow to the present value of cash flows of its alternative heifer. The animal with the highest present value should occupy the solt. The optimal average age of the herd was determined as 4.99 years. this is slightly longer than the average actual herd life in Iranian herds. In this study, reducing milk price and reduction in the price of replacement heifers, leads to reduced optimal age of the herd. In the investigated model, the only factor which was influenced by the discount rate was discount factor. So that as this factor increases (discount rate reduction) older cows are culled more than younger ones, and hereby the percent of culled cows increases. Finally, future value was calculated using the results of dynamic programming for the three groups of animals studied under the discount rate of 20%. Increase production and reduce the calving interval the net present value of expected cows will increase.

Keywords: Dairy cow, optimization, replacement, dynamic programming.

Assessment of Manure in Livestock Managements in Turkey

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Abstract

Manure is composed from combination of waste materials as urine, feces of livestocks and some litter materials. Manure management includes the process of the removal of livestock manures from farm field and the appropriate storage of these manures for plant growing. Nutrients within the manure when is stored in an appropriate conditions, provide a possibility to producers for growing better of crops. On the other hand, the manure is arisen in livestock managements, if it is left uncontrolled in environment without processing in appropriate conditions. It becomes harmful even of it is useful for plant production. In this respect, the assessment and the removing of manure in livestock managements is an issue which should be seriously considered. In this paper, it is aimed to explain the amount of manure production and the assessment of current manure management systems and practices of livestock managements in Turkey.

Keywords: Livestock, shelter, manure, manure management**.**

Nutritional Adjustments to Minimize the Effects of Heat Stress in Dairy Cows

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Abstract

Heat stress is often defined as incorporating two or more of the primary components of environment, eg. temperature, humidity, radiation and wind. The most common stress indicator is temperature humidity index (THI). A THI level exceeding 68 is considered stressful and requires management intervention. Metabolic heat associated with high productivity can also contribute to heat stress, which means high yielding dairy cows are likely more prone to thermal stress in summer months and need extra attention. The result of heat stress is that as feed intakes decrease, the risk of rumen acidosis increases, as cows selectively reduce forage intake, milk and component yields drop sharply.

This paper describes environmental and nutritional modifications that help re-establish homeostasis and prevent nutrient deficiencies that decrease animal productivity. There are a number of options to ameliorate the adverse effects of heat stress on dairy cows (adjustment of rations, environmental modifications and selection of heat tolerant breeds). One of the most effective options to minimize the negative impacts of heat stress is through ration manipulation. The first step is to recognise the heat increment of feeds and then formulate rations for reduced nutrient intake. Accordingly, a common strategy is to increase the energy and nutrient density (reduced fiber, increased concentrates and supplemental fat) of the diet without compromising rumen health. Furthermore, protein supply must also be adjusted to decrease excess rumen degradable protein (RDP). Hence, the disposal of protein increases energy requirements and produces more heat. The ration will also need to supply extra minerals and certain feed additives may also be considered (aspergillus oryzae, yeast culture or live cell yeast, niacin, dried brewers yeast and fat soluble vitamins).

Keywords: Heat stress, nuritional adjustments, feed additives, dairy cows.

POSTER SESSION
FOOD TECHNOLOGY

Bioactive Compounds Content and Antioxidant Activity in Cornelian Cherry Jam During the Storage

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Abstract

Recently, consumer interest in helathy food has increased the demand for high quality fruit such as cornelian cherry and related products which are rich in natural antioxidant substances, such as vitamin C, anthocynins and phenolics. Cornelian cherry jam was investigated for antioxidant capacity, total phenols (TP), total anthocyanins (TA) and polymerized colour in regard to growing locality (Gorazde and Konjic), production type (with cooking and without cooking) and storage duration up to six months. Antioxidant capacity was determined using FRAP and ABTS method. Total phenols were determined according to Folin-Ciocalteu method. A high linear correlation existed between antioxidant capacity (determined as FRAP and ABTS) and total phenol content (r= 0.9483 and r = 0.9753). FRAP values were in range from 42.28 ± 1.64 mm TE/g fresh sample to 70.17 ± 2.80 mm TE/g fresh sample, and ABTS values were in range from 32.26 ± 0.7 % Inh to 60.31 ± 1.54 % Inh. The highest total phenol content was observed in Gorazde Cornelian cherry jam (3172.9 mg GAE/100 g). The growing locality of raw material for jam processing had a significantly high influence at total anthocyanin wherein Konjic Cornelian cherry jam showed higher total anthocyanin content. The growing locality did not affect total phenols content in Cornelian cherry jam. Storage duration showed statistically significant impact on total anthocyanin content in jam, while there was no statistically significant influence at total phenols and polymerized colour content observed.

Keywords: Cornelian cherry, jam, storage, bioactive compounds.

Microflora Contributed to Ripening of Cheeses Produced in Aegean Region

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Abstract

Many of food products are still produced according to age-old practices and traditional methods in Turkey. Cheese is one of the most important traditional foods in Turkish cuisine. Many kind of cheese which produced only in restricted geographical areas are consumed locally in large quantities in our country. Aegean Region, which is on the west coast of Turkey, has distinctive food products; and also it is rather rich in terms of traditional cheese varieties. It is estimated that approximately 20 cheese varieties are known as local in Aegean Region. The most traditional cheeses are usually produced under poor hygienic conditions with different manufacturing technologies that are dependent on the geographical location. Numerous cheese types with different taste, shape, texture and color are produced in this region. The main flavor forming pathways in cheese includes proteolysis, lipolysis or glycolysis and the enzymes which catalyse them originate from; milk, coagulant, starter lactic acid bacteria, non-starter lactic acid bacteria, adjunct secondary cultures and exogenous enzymes. In this region, 7 varieties of these local cheeses were identified microbiologically which contain Koponesti Cheese, İzmir Teneke Tulum Cheese, Armola Cheese, Posa Cheese, Sepet Cheese, Sepet Loru Cheese, Afyon Tulum Cheese. In addition, there are a few more traditional cheese types in Aegean Region, too. The aim of this study is giving information about microflora contributed to ripening of some local cheese those belonging to Aegean Region.

Keywords: Traditional cheese, Aegean Region, non-starter bacteria.

Determination of Total Phenols and Antioxidative Activity in Teas of Wild Thyme and Mint Depending on Duration of the Extraction

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Abstract

The aim was to determine the content of total phenols (TP) and antioxidant activity in teas of wild thyme (*Thymus serpyllum*), and mint (*Mentha piperita*). Analyses were conducted for different tea packages (teabags and bulk package) and duration of extraction (15, 30, 45 and 60 minutes). The content of TP was determined spectrophotometrically using Folin-Ciocalteu method, and the antioxidant activity by pFRAP method.

The content of TP in the tea of wild thyme (n=10) was in the range 134.83 - 808.28 while the mint tea (n=10) was 227.35 - 866.41 mg GAE/100 g. In the teas of wild thyme showed that the samples in teabags with the extraction of 45 minutes had significantly the highest TP content, while the samples in a bulk package with the extraction of 15 minutes had significantly lowest TP content. In the mint teas in a bulk package with the extraction of 30 minutes had significantly highest TP content, and extraction (15 minutes), was significantly lowest.

The antioxidant activity in the teas of wild thyme was in the range (61.37 - 334.45), while the mint teas were 106.54-308.24 mgGAE/100g.

The extraction of 30 minutes had significantly highest antioxidant activity and for the both of teas in a bulk package with the duration of the extraction of 60 minutes had significantly lowest.

Results showed the significant differences in the content of TP and antioxidant activity analyzed teas, dependent of duration of the extraction.

Keywords: Teas, wild thyme, mint, total phenols, antioxidant activity.

Comparison of Physical Properties of Sugar and Milled *Stevia rebaudiana* Leaves Particle Size Fractions

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Abstract

Sugar is one of the most widely used food ingredients nowadays. Form of the sugar used, crystal or powder, strongly influences product rheology, which is of great importance for sugar and food handling industry. Recently, consumer's demands for food containing less sugar and better functional properties are rising. *Stevia rebaudiana* Bertoni is mentioned as a sugar substitute which also possesses antioxidant properties. Since the milling process of sugar and dried Stevia leaves represents the first stage of their usage in the food industry (sugar) or in the subsequent extraction process (stevia), this research was designed to produce different particle size fractions of sugar and stevia and to compare their basic physical properties. Different particle size fractions of sugar and stevia were obtained by milling and sieving. Flow properties, bulk density and reconstitution properties of sugar and stevia fractions were determined.

Stevia particle size fractions exhibited slightly higher cohesion index and reconstitution times in comparison with sugar particles of the same size. Sugar particle fractions exhibited higher bulk densities and greater differences between compression and decompression forces of different particle size fractions, as well as a significant difference between number of positive and negative peaks on the force/distance curve which could be explained by crystal breakage. Stevia did not show a great divergence in flow properties in comparison to sugar particles, as long as the particle size of ground leaves is carefully selected for the type of process it is being subjected to.

Keywords: Sugar, *Stevia rebaudiana* Bertoni, particle size, milling.

Threshold of Sensory Perception of Sulphur Dioxide in Herzegovinian White Wines

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Abstract

Due to its antimicrobial and antioxidant properties sulphur dioxide is almost inevitable tool in the modern production of grape wine. In addition to certain negative impacts on the consumers' health, sulphur dioxide used in large doses may compromise the smell and taste of wine. The aim of the study was to determine the threshold of sensory perception of odour of sulphur dioxide in six white Herzegovinian wines and model wines obtained by adding increasing amounts of potassium metabisulphite in those wines to the largest concentration of 400 mg/L. The results showed that in different wines smell of sulphur dioxide was sensory registered at different concentrations (in the range of about 73 to about 168 mg/L) and that concentrations of total sulphur dioxide a bit above 100 mg/L, just after adding of a solution of potassium metabisulphite, affect observed wines by recognizable, sharp, and unpleasant odour. It was interesting that wines with higher sensory scores for overall quality and higher scores for flavour had lower thresholds of sensory detection of sulphur dioxide.

Keywords: White wine, sulphur dioxide, threshold, sensory perception.

The Fatty Acid and Antioxidant Stability Cold Pressing Oil Obtained by Different Olive Varieties

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Abstract

Location olive cultivation and varieties are one of the factors that affects the content of fatty acid and antioxidation stability oil. Olives are grown in southern Herzegovina. The aim of this study was to determine whether there are differences in the quality of oils. Indicators on the basis of which will determine the presence of content fatty acid, phenols, chlorophyll and carotenoids, from the oil obtained by different olive varieties Drobnica, Lastovka, Krvavica and Oblica. Processing oil is made on the principle of cold pressing. The t-test showed that the oil Drobnica and Lastovka contains a great amount of total phenols (306.55 and 323.72 mg/kg) in comparison with oil Krvavica and Oblica (137.67 and 262.41 mg/kg) . Also, the t-test showed that the oil and the variety Drobnica and Krvavica contain significantly greater amount of chlorophyll (19.09 and 18.85 mg/kg) and carotenoids in relation to oil Lastovka and Oblica (7.98 and 8.09 mg/kg). The content of chlorophyll and carotenoids are not significantly different between the oil Oblica and Lastovka. Towards for on the content of fatty acids, oil Lastovka has the highest content of oleic fatty acid (63.6 %) and lowest oil Oblica (58.6 %).

Keywords: Olive oil, fatty acid, phenols, chlorophyll, carotenoid.

Consumer Perceptions During Food Chain Crises

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Abstract

The aim of the research was to analyze consumer perception of food safety immediately after the public became aware of a food chain crisis (aflatoxins in milk and horse meat sold and labeled as beef), and to establish whether there is a difference in consumer perception prior to and during a crisis. 352 subjects filled out an online questionnaire and thus participated in the research within a time frame of 50 days. The data was analyzed using the SPSS 19.0. system. An increase in consumer concern during food chain crises was established, as well as a decrease in consumer trust towards sources of information about the risks. The most common reactions to information about the existing crises were avoiding the food for certain amount of time (aflatoxins in milk) and ignoring the news (horse meat declared as beef).

Keywords: Consumer perception, food chain crises, risk communication.

Importance of Probiotics in Functional Dairy Products

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Abstract

The interactions of the gastrointestinal microflora with human health have been the subject of considerable debate in recent years. Disruption of the ecologic equilibrium of the normal intestinal flora may result in gastrointestinal diseases. Functional foods, which are used in prevention and treatment of some intestinal diseases, are defined as "foods that may provide health benefits beyond basic nutrition". Probiotics are constituted an important part of functional foods. They are live microbial food supplements that affect the host beneficially by improving its intestinal microbial balance. It is widely accepted that sufficient level of probiotic bacteria should be in a product throughout its shelf life, to achieve the claimed health benefits. Probiotics must also be alive during transit through the acidic conditions of the stomach, and resist degradation by hydrolytic enzymes and bile salts in the small intestine. The growth and survival of probiotics during gastric transit is affected by the physico-chemical properties of food carriers. Gastric acid, juices and bile tolerance, adherence to gastrointestinal epithelium and the acid production of probiotics are also affected by the food ingredients used in probiotic delivery. The functional properties of probiotic strains can improve by the presence of different food ingradients such as prebiotics that encourage the growth of probiotic bacteria. The appropriate combination of prebiotics and probiotics manifest higher potential for a synergistic effect in functional food technology. In dairy industry, probiotics have a promising field for the extension of dairy products like yoghurt, cheeses, beverages, ice creams, and other desserts commercially.

Keywords: Probiotics, prebiotics, functional dairy products.

Some Phenolic Compounds and Antioxidant Activity of Apple Peel and Dried Apple Pomace

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Abstract

The antioxidant activity and phytochemical properties were determined in apples skin, flesh, raw juice and pomace of two different apple cultivars (red cultivar 'Starkrimson Delicious' (SD) and yellow cultivar 'Stark Spur Golden Delicious' (SSGD) and industrial apple pomace (IAP) also apple pomaces dried with two different methods. Antioxidant activity (AA) was investigated with the Ferric reducing antioxidant power (FRAP) method, total phenolics with using Folin–Ciocalteu method and flavonoid content was determined by a colorimetric method. Chlorogenic acid, epicatechin, quercetin glycosides, procyanidin and phloridzin were quantified using an HPLC-UV method. AA values of the samples ranged from 0.29 to 29.34 g trolox equivalents (TE)/100 kg dry weight (DW). The total phenolic and flavonoid content ranged from 12.33 to 570.92 mg of gallic acid equivalents (GAE)/100 g DW and 6.70 to 368.87 mg of catechin equivalents (CE)/100 g DW respectively. Chlorogenic acid was determined highest level in the flesh of SSGD, epicatechin in industrial pomace, phloridzin in industrial pomace and in SSGD of pomace, quercetin glyocosides in industrial pomace, procyanidin in SD of skin.

Keywords: Phenolic compounds, antioxidant activity, apple pomace, dried apple pomace, HPLC.

Analysis of Essential Oils in Mastic Gum (*Pistachia lentiscus* v. Chia) Using Head Space GC-MS

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Abstract

The essential oil and gum of Pistachia lentiscus var.Chia, commonly known as the mastic gumtree, are natural antioxidant, antimicrobial agent that have found extensive uses in food, beverages and medicine in recent years. In this work, the chemical composition of the hydro - distilled essential oil of mastic gum was evaluated by gas chromatography – mass spectrometry (GC-MS) technique and the majority of their components were identified.Twenty -nine compounds were identified and quantified, representing over 95 % of the total oils. The gum oil contained 90% monoterpenehudrocarbons, 2-3% sesquitepenes, and also oxygen-containing monoterpenes. The main constituents of the gum oil is a-pinene (45.7-80.6%), b-pinene (1.9-2.66%) and β-myrcene (17.4-19.01%).Essential oil of Mastic gum is valuable product in food industries and in folklore medicine due to its antimicrobial and antimutagenic activity.The aim of this study was to evaluate the principal congeners of this valuable natural resin tears of the tree which used to flavouring liquors, food, pharmaceutical and cosmetic industries.

Keywords: *Pistachia,* essential oil, mastic gum.

Composition of Trans- Anethol and Other Aromatic Volatiles in Anisated Alcoholic Beverage by Head-Space GC-MS Chromatography

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Abstract:

Aniseed distillates, like, ouzo in Greece, Raki in Turkey, pastis in France, arak in Syria, are very popular in Mediterranean countries. This flavoured alcoholic beverage are produced by extraction and distillation of fermented grape pomaces with herbal seeds from aromatic plants like *Pimpinella anisum* L., *Foeniculum vulgare*, *Illicium verum* and other plants and also are characterized by the presence of congeners which arise during fermentation process. Trans –anetholeand its isomer cis-anethol are the main volatiles and are responsible for aroma properties of this traditional aniseed distillates. The aim of this research work, was to find the concentration of special aromatic agent, trans -anethol and cis- anethol and also the major aromatic substances which are responsible for the aromatic quality. The majority of their identified components isolated by extraction and distillation from different commercial brands and home made samples. Totally 24 constituents were identified by GC-MS in this traditional spirit. The major constituents in ouzo extracts was also trans – anethol (90,1-97,9%±0.1).

Keywords: Trans-anethol, anis, distillates, ouzo.

Investigation of Methods Using in Deacidification of Edible Oils

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Abstract

Major parts of food, are water, carbohydrates, proteins, and fat. Fat is regarded as an important component of the diet, because it is an important source of energy, as well as of essential fatty acids, and of fat soluble vitamins such as vitamins A, D, E and K.

Today, in the oils industries, deacidification of oils and fats is important not only for consumer acceptance, but also because it has the highest economic impact on production. There are some methods for deacidification of oils and fats. Chemical, physical, and miscella deacidification methods have been used in the oil industries.

There are several difficulties associated with these conventional deacidification processes. Some of these new approaches that may be tried out as alternatives to current industrial practices are biological deacidification, reesterification, solvent extraction, supercritical fluid extraction and membrane technology. These new methods, independently, or in combination with current technology may be useful to overcome major difficulties. Besides being eco-friendly, they could also lead to savings in energy and reduction in oil losses. Some of these methods could very well replace the existing technology in the years coming.

Keywords: Chemical and physical deacidification, membrane technology, supercritical fluid extraction.

Production of Koruk Juice Concentrate and Determination of the Effects of the Process on Quality and Antioxidan Activity

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Abstract

Grape (*Vitis vinifera* spp.) is one of the most widely grown fruit in the world. Annual production of grapes in the worldwide is approximately 67.7 million tons while this figure is 4.2 million tons in Turkey. Koruk is the immature form of the grape fruit. It has high acidity, sour taste, low pH, low sugar and high phenolic contend. In this study, the production of koruk concentrate and the effects of the process on the quality and antioxidan activity were investigated.

In this respect, unripen Sultani Çekirdeksiz grape that obtained from Manisa Viticulture Research Station was used. Post-harvest, koruks crushed and pedicels detached. Crushed berries were pressed and koruk juice was obtained by the elimination of pomace. Then koruk juice was subjected to pre-precipitation, depectinization, gelatin and bentonit application, detartarization, clarification and filtration respectively. Obtained clear koruk juice concentrated to 45 °brix by vacuum evaporator at 50 °C. Free radical scavenging activity of the koruk juices was determined by using 2,2-Diphenyl-1-picrylhydrazyl (DPPH•) method Brand-Williams et al (1995). Results are expressed as ml sample/mg DPPH• and mMol Trolox/L. AE values were calculated and showed as 1/EC50.

In concentrate, pH 2.48, °brix 44.63 and acid% 23.90 (tartaric acid) were determined. AE and $1/EC_{50}$ values were recorded between 0.145 – 1.19 mMol TE/L and 3.28-22.37 respectively.

Keywords: Grape, koruk, concentrated juice, quality, antioxidant activity.

The Effect of Transglutaminase on Some Properties of Bread

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Abstract

In this study; along with some quality characteristics such as loaf volume, bread yield, baking loss of the bread, which is produced by adding transglutaminase (TG) to Type 650 bread wheat flour in different proportions, it is aimed to be researched of the texture profile characteristics like hardness, adhesiveness, cohesiveness, chewiness, springiness, gumminess and resilience.

According to the enzyme-free control bread it was determined that the loaf volumes (respectively; 450, 480, 585 $cm^{3)}$ and the yields (respectively; 122.7, 131.5, 131.2 g) of the breads which were produced with the addition of 50 and 100 ppm TG were higher, and the baking loss was lower.

In regard to the texture profile analysis, with the addition of TG, it was identified that the firmness value of the breads were increased significantly while their volumes were not effected from the different levels of TG. Adhesiveness, cohesiveness and the chewiness of breads were not changed with the enzyme addition and also from enzyme levels. It was found that springiness of berads were decrease by the incorporation of TG. The gumminess were shown a change only in the addition of 100 ppm enzyme and in parallel with this result, the resilience value has shown a decrease in the addition of 100 ppm enzyme.

It has been concluded that while the loaf volume and the other physical characteristics has been affected positively in parallel with the TG addition. 50 ppm enzyme addition has affected the texture profile of breads positively without the need to the increase of the enzyme level. Since the usage of TG has given positive results in the characteristics of the bread, it is suggested to be used at 50 ppm level in the baking industry.

Keywords: Transglutaminase, texture profile analysis, bread.

Denitrification Dairy Wastewater with Microbial Cultures of Nitrificants and Denitrificants

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Abstract

The paper provides a research on dairy wastewater used in the process of denitrification conducted by means of microbial cultures of nitrificants and denitrificants. The microbial culture of nitrificants and denitrificants was previously adapted to the dairy wastewater, and was used for reduction of nitrate NO_3^-, using organic compounds of wastewater as an electron donors. Initially denitrification microbial culture utilizes readily biodegradable COD and achieves better denitrification. Further degradation rate of denitrification decreases. The concentration of organic compounds, expressed as COD value was 750 mg / L in the initial phase, while in the final stage was 35 mg / L.

Keywords: Denitrification, dairy wastewater, microbial culture of nitrificants and denitrificants.

Modeling of Microwave Drying of Sugar Beet

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Abstract

Drying behaviour of sugar beet was investigated in a microwave dryer. Microwave drying of sugar beet was explored and the effects of processing conditions such as microwave power, slice thickness on sugar beet slice characteristics were studied. The effects of microwave drying (180, 360, 540, 720 and 900W) on drying time, drying rate of sugar beet slices have been investigated. Microwave drying was done in two different sugar beet thickness (3mm and 5 mm). The drying data were applied to nine different mathematical models, namely, Newton, Page, Henderson and Pabis, Logarithmic, Wang and Singh, Verma, Two Term, Two Term Exponential, Midilli-Kucuk Equation Models. The performances of these models were compared according to the coefficient of determination (R^2), standard error of estimate (SEE) and residual sum of squares (RSS), between the observed and predicted moisture ratios. It was found that the Midilli-Kucuk model described the drying curve satisfactorily in all drying methods.

Keywords: Sugar beet, microwave, modelling.

Microwave Drying of Leek Slices and the Determination of the Some Quality Parameters

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Abstract

Drying characteristics of leek slices was experimentally studied in microwave dryer. Leek slices weighing 100 g (±0,03) were dried using five different microwave power levels: 180W, 360W, 540W, 720W and 900W. The effects of microwave drying on drying time, drying rate of leek slices have been investigated. The drying data were applied to nine different mathematical models, namely, Newton, Page, Henderson and Pabis, Logarithmic, Wang and Singh, Verma, Two Term, Two Term Exponential, Midilli-Kucuk Equation Models. The performances of these models were compared according to the coefficient of determination (R^2), standard error of estimate (SEE) and residual sum of squares (RSS), between the observed and predicted moisture ratios. It was found that the Midilli-Kucuk model described the drying curve satisfactorily in all drying methods.

Keywords: Leek, microwave, modelling.

Carotene Content in Rainbow Trout Filet from Neretva River Fish Farms

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Abstract

Consumers have preferences for red-colored products of salmonid fishes because of positive effects of astaxanthin on growth and disease resistance may be related to carotenoid antioxidant activity. The carotene could change this fact as carotenes not only help fish meat looks more fresh and esthetically appealing, but they also have a positive effect on human health. For determination of the concentration of carotene and chemical composition it has been used two groups (54 samples in total) of rainbow trout body weight up to 800 grams from local fish farms at the Neretva River.

Study was conducted where one fish group fed by feed with the carotene additive in their feeding while the other one did not. The spectrophotometric analysis showed there was a statistical significance in the amount of carotene ($p>0,05$) between these two groups. Content of carotenes were 0,383 to 2,366 µg/g in white group, while in red group were from 2,027 to 4,671 µg/g.

There were no statistical significance in the amount of moisture content, fat, protein and ash ($p>0,05$), moisture content white group 74,08%, red group 74,17%, fat white group 6,01% red group 5,23%, protein white group 17,13% red group 18,51%, and ash white group 1,98% red group 1,77%.

Keywords: Carotene, astaxanthin, canthaxanthin, chemical analysis, spectrophotometry.

Comparison of Qualities Properties of Fresh, Frozen and Solar Drying Chokeberry Fruits

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Abstract

It was examined the chemical content in fresh, frozen and dried chokeberry fruits. Chokeberry, *Aronia melanocarpa*, is grown in mountainous Maleshevia in the Republic of Macedonia. Harvesting is carried out in September, under full technological maturity of the fruits. Drying of chokeberry fruits is made in solar drier. Following parameters were determined: total solids, total acids, vitamin C, sugars after inversion, content of anthocyanins, color density and polymeric color. The content of total solids is the highest in the dry fruits (52.29 %) and lowest in fresh fruits (26.33 %). The content of total acids was higher in fresh and frozen chokeberry fruits (1 %) compared to dried chokeberry fruits (0.90 %). The content of vitamin C amounts to 17,52 mg/g in fresh chokeberry fruits and 15,64 mg/g in the dried fruits. In the fresh chokeberry fruit was determined 6.35 % sugars, and their concentration in frozen fruits is lowest and equals 4.35 %. The content of anthocyanins accounted for 106.38 % in the fresh chokeberry fruits, and 30.05 % in the dried fruit. The highest density of color (1.22) was determined in fresh fruits and the highest content of polymeric dyes (0.58) was determined in frozen chokeberries fruits.

Keywords: Chokeberry, solar drier, chemical content.

A Preliminary Study for the Survival of Different *Lactobacillus plantarum* Strains in Mineral Salt Medium with Chlorpyrifos and Deltamethrin

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Abstract

There is a growing interest for biodegradation since it is a reliable and cost-effective technology for removing pesticides from food products. Bacteria more commonly metabolize organic pollutants and use them as sole source of carbon and energy. The aim of this study was to determine the survival and population growth of different *L. plantarum* strains in the presence of chlorpyrifos and deltamethrin and their ability to utilize these insecticides as C source. The growth of *L. plantarum* strains was monitored in mineral salt medium (MSM) containing chlorpyriphos or deltamethrin both with spectrophotometer and plate count methods. The number of cells was counted on De Man Rogosa Sharpe (MRS) agar plates periodically, and the absorbance changes were detected kinetically with 15 minutes intervals during 24 hours at 30^{o}C. The results of both methods showed that, *L. plantarum* strains displayed a better growth pattern in MSM with chlorpyriphos than the blank which was MSM containing no carbon source. Although deltamethrin is rich in carbon and there are previous research reports about its utilization by different soil bacteria, in the current study, no significant growth of *L. plantarum* strains were detected in deltamethrin containing MSM compared to the blank. Despite promising results were obtained with this study, it is necessary to support them with the detection of chlorpyrifos concentration changes in the *L. plantarum* containing MSM in the future. However, more investigations on different strains and experimental conditions are needed for the utilization of deltamethrin by lactic acid bacteria.

Keywords: Chlorpyrios, deltamethrin, biodegration, bacteria, pesticide residue.

Dietary Habits of Preadolescents from the Perspective of a Child and Parents

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Abstract

Non-communicable diseases, including obesity account for over 63% of deaths globally, with worldwide incidence in constant rise. The main causes of obesity in childhood are imbalance between energy intake, energy spent for basic physiologic processes, and the activity. Also, socioeconomic status, family, peers and the knowledge on healthy diet were found to significantly affect the quality of child's nutrition. The aim of this study was to assess causative relations between dietary habits, lifestyle and body mass of children aged 9 to 12 years. Children (n=123; 42.3% boys, 57.7% girls) and their parents (n=246) completed a questionnaire which was special designed to cover the study aims. The questionnaire included questions on child's dietary habits, physical activity in the school and spare time. Generally, children think that their diet is of higher quality than their parents do (70.7% vs 58.5%). The number of meals and eating breakfast reports differ between children and their parents. 64.2% of parents reported that their child eats 4 to 5 meals per day, with 48% of children reporting the same thing. Also, regular breakfast consumption was reported by 90.2% of parents, while 80.5% of children reported the same. Majority of children gladly attend physical activity classes in school (94.3%), and 77.2% of children is involved in other sports activity in their spare time. Additionally, boys spend more time in front of the computer than girls do. The results show that diet-related and lifestyle behaviour reports differ between children and their parents, suggesting significant influence of peers.

Keywords: Preadolescents, parents, dietary habits, lifestyle behaviour.

Quality Characteristics of Rock Partridge (*Alectoris graeca*) Meat

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Abstract

The Rock Partridge (*Alectoris graeca*) is a gamebird that belongs to the pheasant family *Phasianidae* within the order *Galliformes*. Rock Partridge is endemic to Europe, occurring only in the Alps, the Apennines, Sicily and the Balkans. Rock Partridge is on the game hunting list in the Republic of Croatia and Bosnia and Herzegovina. The officially determined number or the status of the parent fund in the territory of the Republic of Croatia entails 11 231 animals and a cull of 5 341 animals and in the territory of Bosnia and Herzegovina the determined fund status is about 14 000 animals with a cull of 760 animals. Their dark meat has a distinct game aroma and has always been a delicacy but there is a lack of data in literature on chemical composition of Rock Partridge meat. The aim of this research was to determine chemical composition and fatty acid profile of the Rock Partridge from four different regions in Croatia. Water, protein and fat content, color (CIE L* a* b*) and fatty acid composition of the meat were determined.

The meat of rock partridge has very low fat content, below 1% with average relatively high protein content above 20%. Fatty acid profile revealed high content of unsaturated fatty acids.

The lightness (L* values) varied between 36,22 and 47,6, a* values from 4,05 to 4,1 and b* values from 9,49 to 11,37.

Keywords: Rock Partridge, meat composition, fatty acid profile.

Effect of Sodium Chloride Addition During Distillation on Azeoptropic Ethanol – Water Change

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Abstract

Primary task of researchers and producers of strong alcoholic beverages is to achieve better and balancing evaporation of components during distillation in shortest possible time and with less cost. One way to achieve this is by adding salt during distillation. Salt (NaCl) as a surface inactive component distorts azeotrope that changes the dynamics of the evaporation of volatile components.Therefore, the aim of research is twofold: first, to determine the effect of salt addition during distillation on distillation time and second, to determine the effect of salt addition during distillation on dynamics of evaporation of certain components. For this purpose William brandy was produced. Three distillations of fermented mash were performed: one in a conventional manner, the second with the addition of 2% salt and the third one with the addition of 5% salt into the raw distillate. Fractionation of distillate was performed and fifth fractions were separated during distillations time. The content of alcohol, methanol, ethyl acetate, acetaldehyde and acetic acid were determinate in fractions.The results indicate that the addition of salt during distillation has an impact on the balance of other volatile compounds during the distillation and distillation time was shorter with the addition of salt.

Keywords: Williams pear, distillation, salt, volatile.

The Volatile Aroma Compounds of Fresh Lovran's Marrone Cultivar

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Abstract

Chestnut has been cultivated in the Istria (Croatia) since the Roman Empire. Latterly sweet chestnuts (Castanea sativa Mill.) is regaining interest among consumers due to its nutritional qualities and potential health benefits, on account of a high amount of carbohydrates and the presence of essential fatty acids, minerals, vitamins and also fibre. In fruits the volatiles representing their characteristic flavor are generally esters, aldehydes, alcohols, terpenes or their derivatives. The volatile aroma compounds of Lovran's marrone cultivar collected in the area of the Istria, which have not been studied prior to this report, were determined by headspace solid-phase micro-extraction (HS-SPME) by the application of a specific fiber (DVB/CAR/PDMS fiber) with a mass selective detector. Freshly harvested chestnuts were manually peeled and after that milled in a laboratory blender. The sample contained 48.1% dry matter, 0.55% crude proteins, 1.6% crude fibre, 6.1% fats and 4.1% ashes. Volatile fraction was composed of 34 main compounds. Esters (66.90% of the total peak area), alcohols (17.6%) and ketones (5.3%) appear to be the most important contributors impacting essence aroma of fresh chestnut. The main constituents was ethyl acetate (49.4%) with pineapple, ethereal aroma, followed by 3-methylbutyl acetate (6.8%) with fruity, pear, banana-like odour. The second most abundant compounds were alcohols, with the leading components ethanol (5.7%) with alcoholic odour and 1-octanol (5.2%) with fruity-flowery, sweet soap, orange, waxy, sweet note.

Keywords: Chestnut aroma; chestnut volatile; solid phase micro-extraction.

The Traditional Turkish Beverage: Koumiss

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Abstract

Koumiss which is a traditional drink originating in the Central Asian is a very popular fermented dairy product for the people of Mongolia, Kazakhstan, Kirgizstan, the province of Xinjiang in China and some regions of Russia (Bouriatie, Kalmoukie and Bashkirie).

It is usually produced from mares' or camels' milk by spontaneous fermentation of lactose to lactic acid and alcohol. Conventionally, cultures were obtained it by inoculating fresh milk with a small volume of already fermented milk. Three types of koumiss exist as 'strong', 'moderate' and 'light' koumiss according to the lactic acid content.

In previous studies showed that the koumiss consists of fat 1.75%, lactose 2.80%, protein 2.00%, alcohol 2.20% (v/v), amino acid 1.77%, fatty acid 1.65%, acidity 110.00 °T and vitamin C 78.40 mg/kg.

The koumiss has been known as a wholesome beverage for centuries. The operation of a range of body organs and processes, including the alimentary canal, metabolism, the circulatory and nervous systems, blood-forming organs, the kidneys, endocrine glands and the immune system is improved with consumption of koumiss improves. As known, the major components of koumiss are probiotics such as lactobacilli and various yeasts. It is observed that koumiss regulates intestinal flora by preventing colonization of pathogen microorganism in colon due to its antimicrobial properties and lowering pH of the colon.

Nowadays, koumiss is a beverage that belongs to the family of functional foods and provides health benefits beyond or in addition to basic nutrition. So, there is increasing interest in the manufacture of koumiss at an industrial level.

Keywords: Health, koumiss, traditional beverage.

Comparative Analysis of Quality of Juice; Brand "Sole mio"

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Abstract

Production of juice represents a separate branch of industry in terms of its importance and demand. In industrially developed countries, this branch is increasingly developing from industrial and technical as well as from scientific and technological standpoint. Nowadays, the fruit processing and production of fruit juices has reached perfection, the emphasis is on the top quality and the consumer safety.

Juices are one of the most important final products of the food industry in the market and they have important place in everyday diet of both adults and children. Although, the task of each manufacturer is to carry out the analysis of quality of final product, the market control by independent analysis is significant, because obtained results confirm both quality and storage conditions of these products in retail.

The goal of this survey is to create an image on microbiological and chemical quality of three juice sample available on the market of the City of Mostar, brand Sole Mio, from manufacturer "Hepok d.d." Mostar. Sampling was carried out at random on "Multivitamin", "Nectar blueberry" and "Nectar apple".

These juices have an important place when it comes to consuming these kinds of product and obtained results are of great importance in terms of health and hygienic as well as chemical product quality. Microbiological results have proven that three analysed samples meet the standards set in Official Gazette of Republic of Bosnia and Herzegovina 2/92 and that in terms of their quality they deserve their place on the market.

In terms of chemical analysis, we have included the content of dry mater, total sugar and acidity, pH value and presence of artificial colours. Pursuant to the Rulebook (Official Gazette of Bosnia and Herzegovina 83/08) and literature statements, obtained results indicate that all three analysed samples meet the quality of final food product and that as such can be found in sales on free market.

Keywords: Juice, microbiologic analysis, chemical analysis, market, quality.

Fat Bloom Resistance of Pralines Depending on Different Ways of Tempering

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Abstract

Migration fat bloom remains a major problem in the production of coated confectionary products where a layer of chocolate is added around a filling with cacao butter or other fat containing substrate.

A praline designates the product in single-mouthful size, consisting of filled chocolate provided that chocolate constitutes not less than 25% of the total weight of the product. In small handicraft praline production tempering could conduct on simple ways using water-bath with strictly controlled temperatures regimes or on marble plate according consistency changes of melted chocolate mass, which base on subjective experience and skill of producer.

The main objective of this paper was to determine sensory quality parameters of praline samples from dark and milk chocolate shell, where the tempering of liquid chocolate mass was performed on two ways: tempering in water bath and on marble plate. Quality of pralines produced from dark and milk chocolate liquid mass without tempering was determined, too. Changes on praline samples were evaluated by sensory evaluation after a day on all samples, and after 15 and 30 days on tempered samples, and by colorimeter (*Chrome Meter* CR-400). Cycle-thermo test ($32/20^0$C) during 10 days was performed on tempered samples.

Obtained results showed clear differences between tempered and no tempered samples of all evaluated samples even after a day of storage. According to cycle-thermo test more favorable performances on praline samples with milk chocolate coat were found on samples tempered on marble plate. However, dark chocolate coated praline samples tempered on water bath were showed better resistance to fat bloom.

Keywords: Praline, fat bloom, sensory evaluation, cycle-thermo test of fat bloom.

The Opium Poppy (*Papaver somniferum*) & Industrial Uses

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Abstract

The opium poppy (*Papaver somniferum*) is an annual herb native Central Asia and the Mediterranean Area e.g. China, India, Czech Republic and Turkey. The poppy plant is grown predominantly in the province of Afyonkarahisar, Uşak, Denizli, Eskişehir, Kütahya, Isparta, Hatay, Konya and Burdur in Turkey. It has grayish-green leaves and variously colored (white, pink, red or purple) flowers. The unripe capsules are used in the production of opium, just as the mature poppy seeds used in the food industry are free of opium. Poppy seeds are also range over a wide variety of colors from white to brown.

Poppy is produced mainly for its content of seed and oil. Te seeds are used especially for their oil. They contain up to 50% oil and are as a rich source of linoleic and oleic acids. Palmitic, linolenic and stearic acid are found in small quantities. Poppy consists of high amount of mineral substance such as Ca, Cu, Fe, K, Mg, Mn, Na, P and Zn.

Poppy and poppy seeds are thought to assist treatment of diarrhea, insomnia, asthma, high cholesterol level and kidney stone. In poppy plant, natural opium alkaloids such as morphine, codeine, thebaine, noscapine, oripavine, papaverine and narceine are found. Those alkaloids are used widely for medicinal purpose. The seeds are used in pharmacy for making emulsions. They rarely cause allergic reaction.

The seeds and oil which can be extracted from the seed do not possess narcotic properties. They are commonly used in the food industry for decorating breads and baked goods. Poppy seeds are also a potential source of anti-cancer drugs. The valuable seed oil is widely used as edible cooking oil and in the manufacture of high quality picture paints, varnishes, soaps and cosmetics.

The production of poppy seed and its oil should be given to importance much more due to utilizing from them in many application area is from food industry to pharmacology.

Keywords: Opium poppy, *Papaver somniferum*, poppy seed, poppy seed oil.

Bioactive Components in Sheep Milk

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Abstract

In recent years, consumers look food concept from different perspectives. For instance there is an increasing demand for foods that provides health benefits owing to the presence of certain compounds like bioactive components. Among these foods may be the most popular group is milk and milk products. From nutritional point sheep milk is better than goat and cow milk and rarely used for drinking but utilized actually for cheese production, and for yogurt. It generally contains higher total solids and major nutrient contents. To address these compounds we can focus mainly on lipids and proteins of sheep milk, with emphasis on the different bioactive compounds present in these fractions. Medium-chain triglycerides and conjugated linoleic acid are the most important lipid components in sheep milk which possess healthy properties. Enzymatic hydrolysis of milk proteins during gastrointestinal digestion and/or milk processing can release fragments, known as bioactive peptides. Functionalities of these compounds in sheep milk and milk products include antimicrobial, antihypertensive, opioid, antioxidative, immunomodulatory and mineral binding activities. Other bioactive components in sheep milk include oligosaccharides, minerals, and vitamins etc.

Keywords: Sheep milk, bioactive peptides, CLA, health.

Geographical Indications and Rural Development in the EU - Cheese Sector

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Abstract

Geographical indication (GI) is the name of a region or locality and designates a product which originates in that region. We can think GI as a sign used on products that have a specific geographical origin. Protected designation of origin (PDO), and Protected geographical indication (PGI) are the two branches of GI. For rural development GI has a great importance. GI may bring value to a region by promoting region as a whole. GI can also have indirect economic benefits. The product can create an interest in the region and thereby can have a positive impact on tourism. GI preserves traditional knowledge and production methods as well. Cheese sector is the most important sector of GI and in 2010, the sales volume of cheeses under GI in the EU 27 was approximately 866.000 tons and 6.3 billion euros. The cheese sector is the most important and growing PDO/PGI sector in France. In 2003, the turnover for the PDO-dairy sector which contains 3 types of butters and 40 different cheeses was 2 billion euros. The most important PDO cheeses in France are Comte, Roquefort, Cantal and Reblochon. Like France cheese sector is also the most important PDO/PGI sector in Italy. Grana Panado, Parmigiano Reggiano, Gorgonzola, Mozzarella di Bufala, Pecorino Romano are the main GI cheeses of Italy. In Spain, the largest sectors are the fresh meats, processed meats and cheeses. Cheese production is the second largest sector in Portugal, and always increasing.

Keywords: Geographical indication, cheese, rural development.

Traditional Production and Processing of Milk in Sjenica-Pester Area

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Abstract

Sjenica - Pester plateau has excellent conditions for livestock production with dominant large and healthy pastures and meadows ofhigh-quality. The main branch of agriculture is livestock breeding and within it dominates the production and processing of milk into cheese. Worldwide known Sjenica cheese, which belongs to a group of white cheese in brine, is dominant by quantity and quality of production. It is producted by indigenous technology on individual farms, from fresh whole sheep and cow milk, and the process of making cheese starts immediately after milking. Bearing in mind the potential and importance which this cheese has for this area, it is necessary to meet and investigate all the specifics of indigenous technology, working on its preservation and development and to determine chemical composition and quality of mature white cheese. Indigenous technology for making white cheese is quite simple. The very process of making milk into cheese lasts up to 1.5 hours, and the clot is not cut, but the whey is separated by dripping that lasts several hours. Chemical composition of white cheese is characterized by a high content of water as a result of making time and clot processing way. An average of it is 52.07 % for sheep cheese and 56.99 % for cow cheese. The fat content in dry matter in cheese was too high and had average values 56.46% for sheep cheese and 53.14 % for cow cheese, which means that these kinds of cheese belong to the group of fatty cheese. Titratable acidity average stood 220 ^{0}T for sheep cheese, and 208 ^{0}T for cow cheese.

Keywords: Sjenica cheese, indigenous technologies, chemical composition.

Microbial Criterias of Traditional Turkish Sausages Produced by Using Isolated Lactic Acid Bacteria

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Abstract

In this study, microbial aspects (Lactic acid bacteria (LAB), total mesophilic aerobic bacteria (TMAB), total *Enterobacteriaceae* and yeast-mould counts) of traditional Turkish sausage "sucuk", which were obtained at the end of a 12 day fermentation period by adding isolated lactic acid bacteria from various sucuk samples, were investigated. Four groups of sucuk were produced by using three different types of lactic acid bacteria (*Lactobacillus sakei, Lb. curvatus, Lb. plantarum*) beside an uninoculated control group.

LAB value changed in all samples between 8.38-8.79 log cfu/g at the end of the fermentation period. The lowest value of LAB observed in control samples and 8.38 log cfu/g was relatively low in comparison with LAB values of cultur inoculated samples ($p < 0.05$). TMAB counts ranged between 8.59-9.02 log cfu/g at the 12th day of fermentation in all sucuks. It was determined that uninoculated sucuk had the lowest TMAB value and this amount was relatively very low with respect to others ($p < 0.01$). 3.15-4.29 log cfu/g range was recorded for *Enterobacteriaceae*. Sucuk which included the combination of *Lb. curvatus* + *Lb. sakei* species had the highest total *Enterobacteriaceae.* Total yeast and mould variated in 4.10-4.70 log cfu/g interval and 4.10 log cfu/g value belonged to the uninoculated sample.

However culture inoculation into the production of fermented sausage had statistically significant impact on some microbial characteristics, it was concluded that, more detailed studies ought to be conducted in this way.

Keywords: Sucuk, microbial attributes, yeast, mould, lactic acid bacteria.

Chemical and Fatty Acid Composition of Fat in the Sheep's Cheese of the Una-Sana Canton

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Abstract

The aim of this study was to evaluate chemical composition and contents of fatty acid of fat in sheep's chees of the Una –Sana Canton. Fatty acid contents of cheese was determined by gas chromatography. Amount of water, dry matter, fat, crude protein was respectively: 54.54%, 45.46 %, 23.00%, 16.94 %. Contents of total n-3 fatty acids expressed as mg/100 g of chees was 430.10, and contents of total n-6 fatty acids was 644 mg/100 g of chees. Contents of CLA (conjugated linoleic acid) was 496.80 mg/100 g of chees. The values of 1.50 obtained for the ratio n-6/n-3 fatty acids is recommended guideline for the human diet.

Keywords: Sheep's cheese, chemical composition, fatty acids contents.

Impact of Cultivar and Processing Stage on the Distribution of Polyphenols in Apples and Their Juices

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Abstract

Apple is a fruit of great medical importance because of rich antioxidant profile due to the high content of bioactive components, such as polyphenols. Since the apples are increasingly consumed in the form of various products, the content of polyphenols in apple products is directly dependent on the cultivar and type of processing. This research was undertaken to investigate the differences in content of individual polyphenol compounds among peel and pulp of three traditional apple cultivars from Bosnia and Herzegovina and two international varieties. The other aim of the study was to monitor and compare the distribution and changes of polyphenols troughout the different stages of apple juice production (apple – raw juice – final cloudy and clear juice). Quantitative analysis of phenolic compounds was carried out by using high-performance liquid chromatography with diode-array detection. Among individual polyphenols, chloregenic acid, epicatechin, phloretin and 4-*p*-coumaroylquinic acid were predominant in analysed apples and their juices. The obtained results showed significant differences in polyphenols content between traditional and international apple cultivars, where traditional varieties (cv. Prijedorska zelenika and Limunika) showed significantly higher level of these compunds comparing to international cultivars. Furthermore, screening of apple cultivars revealed large differences in polyphenols amounts depending on the part od apple, where those components were dominantly present in the apple peel. The results generated from the analysis indicated that there is notable decreasing trend in the content of polyphenols during apple juice production, which is dominantly observable in the case of clear juices rather than in cloudy apple juices.

Keywords: Polyphenols, distribution, apples, juices.

Antioxidative and Phenolic Content of Commercial Apple Cider Vinegars in Turkey

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Abstract

Recently, people are becoming more interested about the positive health-promoting effects of nutrients and their components. It is now widely accepted that the protection supplied by vegetables, fruits and medicinal plants against many diseases is due to the presence of various antioxidant compounds, especially phenolic compounds. It has been demonstrated that phenolics display antioxidative, anti-inflammatory, anti-carcinogenic, anti-atherogenic, anti-allergic, antimicrobial, and cardioprotective effects. Antioxidant compounds could provide additional protection via counter-acting the damaging effects of free radicals and reactive oxygen species (ROS) by breaking radical chain reactions, limiting or preventing cellular damage, especially protective effect on brain degenerative processes.

Apple cider vinegar has been used for centuries as a folk remedy. Previous studies have shown that the presence of phenolics in vinegar had positive health effects because these products express a significant antioxidant capacity, in particular certain hydroxycinnamic acids, such as caffeic acid and *p*-coumaric acid, and their ester derivatives.

Vinegar can be produced by different methods and from various raw materials, such as wine (white, red, and sherry wine), apple cider, fruit musts, malted barley, or pure alcohol. In Turkey, the predominant types of vinegars are wine and apple vinegars. In comparison to other vinegars apple vinegar has the second highest antioxidant activity and total phenolic content after balsamic vinegar. Therefore, the aim of this study was to evaluate the antioxidant activity and total phenolic content of commercial apple cider vinegar samples.

Keywords: Antioxidant activity, DPPH, total phenolic content, apple cider vinegar.

POSTER SESSION
AGRICULTURAL ECONOMICS

Economic Analysis of Processing Date Growing: The Case Study of Bam Township, Iran

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Abstract

Iran is the world's leading producer accounting for about 30% of world Dates supply. Dates production is the single most important economic activity (monoculture) and income resource of rural households in the Persian Gulf Region. The purposes of this study are to economic analyzed of Date growing in Bam province and to determine it's profitable for producers. Data were collected by survey from 142 farmers by using random sampling. In economical analysis, cost and net profit of Date production were calculated. According to results of this study, average size of the Date orchards was 0.98 ha. Average date production ha^{-1} and $tree^{-1}$ were determined to be 9612.33 kg and 43.7 kg. Average Date price that received by the farmers was determined to be 0.633 \$ kg^{-1}. Total cost ha^{-1} of date production was calculated to be 4178.43 \$ ha^{-1}. Net profit obtained ha^{-1} and $tree^{-1}$ from Dates were determined to be 1872.17\$ and 6.09 \$, respectively.

Keywords: Date, orchard, monoculture, economic analysis.

A Study of the Income Gap Between the Two Approaches Produce Greenhouse Traditional and Semi Modern Management of the Province Isfahan – Iran

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Abstract

Greenhouse production techniques including intensive agriculture is more controlled and efficient use of factors of production to increase yield and quality, will be used. Given the economics of the greenhouse method is further emphasized. So in this way, especially in the production of traditional management and semi modern approaches of the developing countries is vital. The purpose of this study, Evaluation of greenhouse production income gap between traditional management and semi modern approaches of the city Branch shahreza and Falavarjan Isfahan, Iran. The research unit of greenhouse producers melon crops regions constitutes the required information through interviews and completed questionnaires of the 150 units in the greenhouse crops obtained 2013th. The results showed that the production of greenhouse crops in the area where both methods of economic management, But they have a huge income gap. So that the annual net income generated in the traditional way at $ 76450 per ha, in semi modern per ha was $ 104110. Factors influencing the income gap in this area of research, prices, cost and manpower are depreciation. Comparison shows that the income gap greenhouse production units in semi modern compared to traditional manufacturing units in the regions 36.18 percent is more economical.

Keywords: Greenhouse production, income gap, management approach, Isfahan, Iran.

The Challenges of a Common Market Albania – Kosovo for Agricultural Products

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Abstract

Both Albania and Kosovo have too small market, the latest being very important in terms of effectiveness, lower prices and competitiveness with foreign markets. History, tradition, customs, language and political will is bringing both countries and their markets together, sharing also the typicality of a dominating rural and agricultural sector. Despite the political willingness for removing any tariff and non – tariff barriers in trade, there has been a trade crisis between the two countries especially due to custom reference prices for key agricultural products, like potatoes, grapevine and dairy products. The research presented here shows the results of an analysis of this 'common' agricultural market, key products and draws some conclusions and recommendations for the policy–makers of both countries that are in the process of establishing such common market.

Keywords: Common market, agricultural trade, tariff and non-tariff barriers.

Agri–Environment Policy Design for Environmentally–Sensitive Areas of Agricultural Importance

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Abstract

There are several areas of both environmental and agricultural importance in Albania where the balance of development and conservation is very difficult. No special consideration is given to these areas in policy or strategic documents, like agricultural development strategy. Therefore, common objectives of such strategies like reaching fertilizer target rates, increase of mechanization level have deteriorated the nature of these areas, also with consequences to tourism. We have analyzed the agricultural development of the last twenty years or lowlands around Skadar Lake and assessed the trend in the use of mechanization, fertilizer, pesticides as well as changes in the structure of crops and livestock. The analysis has enabled us to properly evaluate the environmental performance of agriculture in this particular region. Based on this analysis and best experience, especially from the Common Agricultural Policy of the European Union as series of actions are recommended for the agricultural and rural development policies, with particular focus on the application of agri-environment indicators and agricultural systems with fewer impacts on agri-environmental resources. Other recommendations are particularly focused on the re-designed of governmental support, especially subsidies, to agriculture to use it as an instrument for environmental objectives.

Keywords: Agri-environment indicators, agricultural policy, nature conservation.

Situation in Laboratories for Seed Quality Control in the Republic of Croatia - Starting Point for Accreditation

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Abstract

Laboratories for seed quality control test the quality of domestically produced and imported seeds. There are 16 laboratories in Croatia registered in the Register of laboratories for seed quality control. Laboratories conduct the testing of seed quality parameters, such as: seed purity, determining the presence of other species and weeds, seed moisture, energy and germination, weight of 1000 seeds, health condition of seeds and seed rinsing test – determining the presence of *Tilletia* spp. spores.

Given that Croatia is a full member of the EU as off July 2013, the question arose about the need for accreditation of laboratories according to internationally recognized standards HRN EN ISO / IEC 17025 and about whether Croatian laboratories for seed quality control are ready for the introduction of quality systems and laboratory accreditation according to HRN EN ISO / IEC 17025 standard.

The goal of this research is to determine the current state of laboratories for seed quality control in the Republic of Croatia and possibilities of laboratory accreditation according to internationally recognized HRN EN ISO / IEC 17025 standard. A questionnaire for laboratory managers was conducted for that purpose. The questionnaire was composed of three parts. The first part contains general laboratory information, the second part is related to laboratory equipment and qualifications of employed staff while the third part presents the views of laboratory managers on the importance of accreditation according to the HRN EN ISO/IEC 17025 standard.

Keywords: Laboratories for seed quality control, accreditation, HRN EN ISO/IEC 17025.

Assessing Wheat Growers' Adoption, Motivation, Attitude, Knowledge and Awareness of Sustainable Environmental-Friendly Practices

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Abstract

The present study aimed to assess wheat growers' awareness, knowledge and adoption level of sustainable agricultural practices and also to measure their attitude and motivation. The study was conducted in Varamin County, with sample size of 72 wheat growers. The respondents were interviewed by well- structured and pre- tested questionnaire. Suitable statistical techniques were used to analyze the collected data. Based on the results, majority of respondents had medium level of knowledge on sustainable environmental- friendly practices, while a major percent of them were quite aware about the impacts of such practices on the environment. Attitude, motivation and adoption levels of majority of wheat growers toward these practices were moderate. Correlation analysis showed that awareness and knowledge regarding sustainable environmental friendly practices at farm level were positively and significantly ($P<0.01$) correlated with adoption level of sustainable environmental friendly practices at farm level amongst wheat growers.

Keywords: Sustainable practices, wheat growers, adoption, Varamin, Iran.

Consumers Behavior and Attitudes Toward Dairy Products

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Abstract

Dairy products are considered the basic food indispensable in human nutrition. These products have an important role in human health. Given that today's consumers are focusing on all health priorities, this work has investigated the behavior of consumers of dairy products as well as their attitudes with regard to the mentioned products. The data obtained from the survey can be used by representatives of the dairy industry to enhance the work of the company in which they work, offering consumers products what customers want. The study was conducted in the Sarajevo Canton on a sample of 100 consumers of dairy products. Respondents were interviewed at points of intersection in the shopping malls. Data obtained from the survey were processed by the statistical program SPSS 17.0 and analyzed using descriptive statistics and analysis of variance (ANOVA) to determine the relation between socio-demographic factors on the behavior and attitudes of consumers of dairy products.

Keywords: Consumer behavior, consumer attitudes, milk products.

Trends in Foreign Trade of Bosnia and Herzegovina in Live Animals, Meat and Meat Products

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Abstract

Given the importance of international trade and considering that B&H is included in these flows there is a need for analysis of foreign trade. In this paper, an analysis of trade in live animals, primarily on produced meat and meat products in the period 2006-2010 was carried out.

The collected secondary data were processed in accordance with the scientific research work and has led to significant results. The total observed trade increased by 60.26 %, while imports increased by 46.43 % and export by 222.82 %. But continuous deficit and its growth by 30.04% was observed as well.

Price changes contributed to the reduction of the trade deficit only in exchange of meat products. Trade of live animals recorded a growth of 106.72 %, mainly due to the growth in imports which led to a rise in trade deficit of 85.35%. Trade of fresh meat increased by 55.26 %. As imports had dominant influence on this growth, thus increase in the trade deficit of 24.69 % was recorded. Exchange of meat products increased by 26.70 %.Thanks to the increase of exports the trade deficit recorded a decrease of 52.70 %.

Keywords: Foreign trade, foreign trade balance, imports, exports, live animals, meat and meat products.

The Results of Declining Trends in Cotton Production of Aegean Region

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Abstract

The cotton fields in Turkey, in which the most qualified cottons of the world are produced, were decreased 50 percent within last decade. Particularly in Aegean region, the farmers gave up to plant cotton, and they continue to give up. The aim of this study is to locate why cotton production was abandoned particularly and to analyze the impacts of this process in Aegean region, when demand vitality is high in Turkey which has a significant presence of textiles & garments investments. This analyze is to be conducted within the context of production, support and marketing policies within the frame of cotton market organization. This paper intends to examine the demand which has risen due to population increase, improvement of living standards, and to determine the impacts of abandoning the cotton production which has a significant economic importance due to high value added it has created, in terms of national economy, and on the basis of producer. In the last section of this study, it is aimed to design a series of suggestions to be used for reversing the declining trends in cotton production and promoted as a profitable venture.

Keywords: Cotton, production, marketing, Turkey.

Model of Organic Agriculture Integration into the Official Agricultural Academic Education

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Abstract

Recently, organic agriculture is more and more recognized as a food system that provides added economic and environmental services to the society as whole. Consequently, the growth of organic agriculture has been accelerated, changing its nature form alternative to mainstream food production, distribution and consumption system. To support this change the stronger cooperation of scarce and disperse expertise is required to develop pull of very specific information, knowledge, technologies and innovations. One step in this direction is integration of organic agriculture issues into the official agricultural academic education. That process is, in fact, focus of the project SCOOPS (2009/12) „Advancing training and teaching of organic agriculture in South-East Europe (Albania, Bosnia and Herzegovina, Kosovo, Bulgaria, Hungary)“, financed by Swiss National Science Foundation and implemented by FiBL (CH), Faculty of Agriculture and Food Sciences, Sarajevo (BA), Agricultural University Tirana (AL), Agricultural University in Plovdiv (BG), Department of Ecological and Sustainable Farming Systems of the Corvinus University of Budapest (HU), University of Prishtina, Kosovo.

The main project results are: multi-language curriculum and teaching material, which can be easily integrated within existing official academic education on B.Sc. or M.Sc level in SEE region and interactive e-platform for on-line teaching, which connects researchers, teachers, experts, students and other stakeholders and forms innovative social-network able to communicate, exchange experience, innovate and think „out of box“ to face existing and future challenges regarding organic agriculture development.

Keywords: Organic agriculture, agricultural academic education, SEE region.

Winery Waste Managment in Serbia: Black Burgunday Grape Residues as Source of Antioxidants

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Abstract

The winemaking leads to the generation of large quantities of grape waste (around 5-9 million tons per year, worldwide). The grape pomace contain a polyphenols that might protect against human diseases related to oxidative stress. Recent studies in animals, as well as some human studies, have shown that polyphenols possess a broad spectrum of biological, pharmacological and chemo protective properties. In this work is to evaluate phenolic compounds and antioxidant capacity of Black Burgundy *Vitis vinifera* L. grape waste (skins, stems and seeds), after obtaining corresponding red wine in "Vršački vinogradi" winery (Serbia), growing seasons 2010 and 2011. The results of analysis of investigated extracts show significant content of polyphenols reflecting their expellant antioxidant activity. It was concludes that the grape by products constitutes a very cheap source for the extraction of phenolic compounds, which can be used as dietary supplements or food preservatives, thus providing an important economic advantage.

Keywords: Black Burgunday grape residues, phenolic compounds; antioxidant activity; economic potentials.

Production of Cold-Pressed Oil from Pumpkin Seeds (Cucurbita Pepo)

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Abstract

Justification of manufacturing of cold-pressed oil from pumpkin seeds (Cucurbita Pepo) in the Una-Sana Canton is explained in this paper. Besides extremely high prices it has greater use from year to year, especially because of the fact that it has positive impact on human health. This paper presents the research results of the needs for this type of oil of the male population aged over 40 years, required area for planting, as well as opportunities of squeezing on already installed oil presses by municipalities of the Una-Sana Canton. The study included the effects of the introduction of this culture on employment of the population.

Keywords: Pumpkin, cold-pressed oil, pressed, health.

Economic and Legal Analysis of Financial Derivatives in terms of Increasing Certainty in Agricultural Production in Serbia

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Abstract

The Republic of Serbia is characterized by a surplus of production regarding domestic needs, resulting in uncertainty of farmers and impossibility of long-term planning based on predictive parameters. One of the reasons for the excessive market surpluses in the period after harvest (mainly of wheat and maize) is the lack of developed stock exchange on which it would be possible to trade futures. Excessive offer after harvest would be relaxed by the fact that a substantial part of the goods would be realized through financial derivatives, in the form of futures that would be traded on the stock exchange. In order to create a developed, well-organized market of futures, it is required to regulate this area by the law related to the stock exchange. In addition to the legislation, it is necessary to educate marketers, both large farmers, and stock market professionals. It is necessary to transfer the experiences which exist in this field to comparative law and economic practice.

This paper analyzes the necessary steps to create legal and economic conditions for greater certainty in agricultural production in Serbia. It also analyzes the financial derivatives as a "tool" for overcoming the disproportion that may be created by the existence of high-quality agricultural products on the one hand, and economic unprofitability to the verge of bankruptcy of their producers, on the other hand. The experiences of countries that have developed forwards sale indicate that without this segment it is difficult to establish stable agricultural production in modern conditions.

Keywords: Financial derivatives, legal analysis, agriculture, risk, uncertainty.

The Socio-Economics Characteristics of Fish Consumers in Antalya

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Abstract

In meeting the nutritional needs of a rapidly growing population, which is one important source of food for consumption of fishery products such as awareness of proper nutrition and healthy living is directly related to the development of countries is clear that criteria. However, in the group of Developing Countries Turkey, which despite being rich in aquatic resources from aquatic products as human food is still not benefit. In this context, with this study education, tourism, agriculture and fisheries important cities of the province of Antalya city center living in families' socio-economic structures and fish consumption characteristics and habits to put forward have been made. 2011-2012 during the years of work performed material, Konyaaltı, Muratpaşa and Kepez district that is located in central of Antalya in the 165 neighborhood residents and proportional stratified random sampling method is determined by a total of 208 families face to face with survey-derived data form. According to the survey; In the period surveyed the families of monthly fish consumption is around 4.8 kg per person per month is around 1.4 kg of fish consumption has emerged. Families are especially anchovies in the fish they consume in total, respectively, trout, sea bream culture, the culture of sea bass, mackerel and red sea bream have been identified which include. Fish consumption and family income status and level of education is directly proportional, the most important factors affecting the consumption of fish, especially fish is a healthy food, high in nutritional value and delicious, it was determined that due to the fact.

Keywords: Consumer, habits, fish, consumption, Antalya.

The Place and Importance of Fishery Cooperatives in Aquaculture Marketing in Turkey: The Case of Antalya

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Abstract

Fishery Cooperatives; are organizations that provides and serves about production, processing, storage and marketing issues of all kinds of aquatic products' partners and established to provide their needs of common fishing gears, supplies and equipment. Therefore, cooperative system is seen one of the most appropriate tool for eliminating the problems that aquatic products sector currently within, besides, to sustain aquatic products stocks and the fishermen communities (mostly fisheries are cooperative partners). In our country, there are still 574 fisheries cooperatives in 600 producer organization in aquatic products sector, while the number of shareholders are 30893, such cooperatives are not effective enough. On the other hand, only 2.2% of sea products are being marketed by cooperatives and associations.

In our country, as well as Antalya province there are quite a little cooperatives which can profit and distributes it to their members at the end of the year, and there are few cooperatives functioning regularly, which meets the needs of low interest loans and fisheries nets and materials. While the share of Antalya in the total number of aquatic products cooperatives in Turkey is 2.6%, the share of aquatic products cooperatives shareholders is approximately 1.8%.

However, all the authorities accept that through fishery cooperatives, even a supervision system can be installed which includes an auto-control system by ensuring the active participation of fishermen. Moreover, if all the services are hold in cooperative, the tax incomes will remain inside the cooperative and this will affect the producers positively.

Fishery cooperatives have got quite an important potential in order to watch over the benefits of the fishermen and to organize the fishing sector. All the authorities accept that a control system including an efficient self-control mechanism might even be established providing the active participation of the fishermen by means of the fishery cooperatives. Moreover, if all the services are hold within the structure of the cooperative, the tax incomes will possibly remain inside the cooperative and this will affect the producers positively.

In this study fishery cooperatives functions, members' problems and expectations are examined comparatively within the example of Antalya province' cooperatives in aquaculture marketing. Despite all the problems experienced in the province of Antalya, the reason for the reduction of activity will be discussed, still gradually increasing number of fisheries cooperatives.

Keywords: Fishery, cooperatives, aquaculture, marketing, Antalya.

Strengthening of Local Identity Through Evaluation of Traditional Regional Products

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Abstract

Production in rural area should be cost-effective, ecologically eligible, socially fair and technologically up to date. Traditional products are part of general strategy of sustainable development considering their possibility to revitalize and develop rural area, strengthening entrepreneurship and entrepreneurs networking as well as creating advantageous environment via higher incomes and creating local, regional, national and international partnerships. Products of traditional agriculture embrace primary agricultural products taken from traditional soil tillage procedures and traditional derivatives. Demand for recognized products and products of added values constantly increases. Very important for preparing such products for market is identification of factors affecting consumers' attitudes and preferences. Researching and evaluating of ideas for traditional products is conducted via two groups of criteria concerning commercialization potential and usefulness for rural area. Commercialization potential is evaluated through following criteria: product's originality, quality, natural conditions for production, production experience and competence, experience and knowledge in production organization and sale as well as existing production. Criteria for rural area usefulness evaluated were: employment of rural farms, preserving environment, economic cost effectiveness, time needed for starting production and sales and creating image of production area. Increasing of production amount and services of traditional products is possible by means of entrepreneurship marketing and targeting market segments. Model of evaluation and encouraging of traditional production plus adjusting law regulations and standardization can help in further development of traditional products on agricultural households and increasing competitiveness of total Croatian agriculture.

Keywords: Traditional products, local identity, evaluation model.

POSTER SESSION
LANDSCAPE ARCHITECTURE

Scrutinizing the Working Conditions in Greenhouses within the Frame of Ergonomic Criteria

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Abstract

Ergonomics is defined that "the physical environment in the study area made available to people as the process. In this sense, ergonomics, with many scientific discipline approach is a set of shared workspaces. The greenhouse is one of the agricultural production areas that require labor-intensive activities. This sector labourers work under time pressure with hand-arm- body strength improper posture at long-hours. Therefore, based on the heavy labor constitutes the most important factor of production ergonomic working conditions for the sake of ensuring productivity at work is very important. Non-ergonomic conditions; especially tillage, maintenance, harvesting and so on. jobs are becoming more apparent during the study. There are very few studies from Turkey focusing on ergonomic obstacles of greenhouses and examining the antropometric data on labours in this field.

In this study have been made about suggestions that examined in the context of the current state of ergonomic criteria greenhouse production environment to be made available to labourers of greenhouse. For this pupose, different greenhouses with diverse usages have been investigated and the obtained data has been examined in the context of ergonomic principles. Some recommendations have been submitted for encountered problems.

Keywords: Ergonomics, greenhouse, technical characteristics of greenhouse.

Miniaturk Recreation Area and the Evaluation of User Views About Miniaturk's Landscape

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Abstract

Miniature park consists of small scale models of buildings and attractive landscaping areas. Miniature park is located within public open green spaces and didactic functions in addition to provide recreational activities. Miniatürk is the first miniature park in Türkiye. his area is 60,000 m2 width and 02.05. Was opened to visitors in 2003. In this area, which is an open air museum, Turkey and the Ottoman geography selected from 122 works are on display. There are different areas such as, a small shopping center, a playground, train, chess and maze area etc. except for the model area for visitors. Model areas and other sections designed in conjunction with each other is a small landscape areas. In this study, visitor's reviews for the field of landscape features of Miniaturk that importance as a showcase of Turkey were evaluated. The questionnaires were applied to 100 selected visitors randomly. The area of landscape persperctives and the general expectation of visitors has been evaluated and made recommendations.

Keywords: Miniaturk, recreation, landscape, user view.

Tree Cadastre as a Tool of Preserving of Urban Green Area

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Abstract

Trees in the cities are exposed to extreme living conditions. The physiological changes such as drying of buds and shoot at the margin of the tree top and partial or complete loos of assimilation organs were come on the trees. Thus weakened trees were easier subject to disease and pest attacks resulting in a positive correlation between the strength of the attack with the weakening of the biological potential of the tree. All those reduce ecological and aesthetic value of trees. In order to reduce the negative effects there is a need of making tree cadastre that would incorporate all the information about every single tree in the city. This tree cadastre becomes a tool of preserving of urban green area and making recommendations which species are the best for planting in urban areas. The pilot project to establish a tree cadastre included three categories of green area in city of Mostar: central park, avenue and city district. In the field, all trees are planned to be recorded, measured height and breast diameter, estimated age, vitality. These and all other observations are planned to be integrated in cadastral card with photos for each tree. The exact positions are marked by GPS and recorded on a map of Mostar in the GIS system. Also with simple search it will be possible to find out how much some tree species are present in Mostar, kind of health, where they are, and see their photos.

Keywords: Mostar, tree cadastre, green area.

The Analysis and Comparison of Green Areas of Three Mosques in Sarajevo

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Abstract

The green areas in the immediate vicinity of the mosques were formed under the strong influence of oriental style, and during the reign of the Ottoman Empire in Bosnia and Herzegovina they were the only public green areas. Those green areas represent the valuable document of culture and time in which they were formed, and given the fact that they are one of the most specific and recognizable elements of Sarajevo, it is necessary to give them the full attention and care. The aim of this paper is to analyze presence, composition and condition of garden elements which are distinctive to the oriental green areas - water, color and scent - in green areas around three mosques in the city of Sarajevo: Havadže Duraka mosque, Ali-pasha's mosque and Dobrinja mosque and monitor the change of appearance of these green areas, depending on the time and place when they were formed.

Keywords: Mosque, green area, Sarajevo, garden elements.

Greenways on the Urban Design and a Sample from Kocaeli

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Abstract

One of the most significant components of urban ecosystems is greenways. Greenways are ecological, recreational and cultural / historical linear open spaces that are for use. Protecting the relationship between man and nature, making cities livable places and improving the quality of humans' life are being contributed by them.

In this study; a sample from the city of Kocaeli has evaluated and made recommendations emphasis on greenway concept, design principles and functions. According to the results, the road where converted from an abandoned railway route into a pedestrianized zone is a qualified greenway because of the lineaments, binding, allowing recreational activities, creating habitats for various creatures, contributing ways to urban ecosystems. However, transportation which is focused on vehicles around this road is still going on and this situation leads to disruption on the greenway network. These recommendations are presented for the elimination of deficiencies.

Keywords: Urban landscape ecology, greenway, urban greenway, designing of urban greenway.

Ecological Approach in the Design of Open and Green Spaces

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Abstract

Increasing environmental problems, which threaten the future and leads to destruction of ecosystems by moving away from the target of sustainable cities. As long as human being stays alive, he will need nature and resources increasingly. However these resources and nature is not infinite. Sustainable cities is possible with the ecological planning and ecological design. Open and green spaces designed in consideration of the ecological approach, the integration of urban dwellers with nature to reduce the consumption of energy and resources, to spread the use of environmentally friendly technologies, providing biological comfort, increasing the awareness of environmental protection and related alike issues such as these.

In this context, this study ecological approach in the design of urban open and green spaces have been analyzed and recommendations are developed dramatically. With specified criteria and recommendations, which have an important place in the city is quite open and green areas of the ecological approach in the design of these spaces and will provide huge gains for the whole city.

Keywords: Open and green spaces, sustainability, ecological design criteria.

Post-Harvest Usage of Invasive Aquatic Weeds for Economic Profit

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Abstract

Aquatic weeds are the plants which live in, on or edge of the wetlands. These plants are natural parts of aquatic systems. Aquatic weeds are divided into four categories based on their growth form and features: free floating, rooted floating, submerged and emergent plants. They constituent a great feeding and breeding storage and a habitat for the other living aquatic forms. Aquatic weeds can be tolerated when they are in small numbers. But particularly in summer, by their invasive character, they make excessive growth that they become a nuisance. Uncontrolled amounts of these plants may cause eutrophication and serious damages by blocking sun lights in to water. Controlling of these weeds is relatively easy in small amounts of water like little ponds. But it is quite difficult in larger ponds, lakes and wetlands. Harvesting is an effective mechanical control method for aquatic weeds with periodically repeats. On the other hand a large amount of plant waste appears after harvesting. The usage of these wastes is important for environmental protection and also for local communities to earn some economical profits.

In this study; aquatic weed's threats, the control methods of these invasive species and different utilisations of post-harvesting wastes of these aquatic weeds will be investigated. In local and global scales; multiple samples from different industries for post harvesting utilisation of these weeds will be presented and discussed by economic and environmental perspectives

Keywords: Aquatic weeds, post- harvest usage, wetlands, economic profit.

Determining the Recreational Opportunities of Ege University Campus with Regards to the View of Landscape Architecture Students

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Abstract

The aim of the study is to determine the awareness and satisfaction of students towards recreational opportunities at Ege University campus by using an on-site questionnaire. The other main aims are putting forward recommendations for improving the recreational opportunities and determining alternatives.

With this purpose, the study is considered in four main sections, namely, data collection, development of questionnaire form, findings, evaluation and synthesis. After an initial search of the literature, a questionnaire form that evaluates the awareness and satisfaction of the students' on recreational opportunities was prepared. In order to compare the awareness level, the questionnaire was conducted to 1st, 2nd, 3rd and 4th year students of Landscape Architecture of Ege University where the period of undergraduate study is four years. "Simple Random Sampling Method" was used in determination of the number of the students on which questionnaire would be conducted, 95 % confidence level and 5 % sampling error were taken as basis in the calculations. In the calculation, according to the total number of students which is 305 was used as "Population Size (N)" and the number of students on which questionnaire would be conducted was determined as 217 at the end. It was aimed to put forward the students' awareness and satisfaction of the subject by means of these questions.

The literature studies on the subject and the information found from the questionnaires were analyzed and finally, recommendations to improve the existing opportunities and to create new opportunities for the research area were made.

Keywords: Recreation, awareness – satisfaction, Ege University, campus, Izmir.

25th INTERNATIONAL SCIENTIFIC-EXPERTS CONGRESS ON AGRICULTURE AND FOOD INDUSTRY

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