II. INTERNATIONAL EURASIAN AGRICULTURE AND NATURAL SCIENCES CONGRESS

11 - 15 SEPTEMBER 2018
AZERBAIJAN - BAKU

BOOK OF ABSTRACTS

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EFFECT OF DIFFERENT IBA APPLICATIONS ON ROOTING OF *Corylus colurna* L.

ALİ İSLAM

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Abstract:

This study was carried out in the hardwood cuttings of *Corylus colurna* known as Turkish hazelnut. The cutting were taken on December 15 and it was treated with IBA solution prepared at 0 ppm, 1000 ppm, 2000 ppm, 4000 ppm and 8000 ppm., 3 replications were used for each application, totaling 320 cutting. The hardwood cuttings were planted with heat and mist. After 90 days it was removed. The number of live cutting, rooted cutting, callus formation, number of roots and root length were determined. Accordingly, the highest live cutting rate and the number of roots were obtained from the 4000 ppm dose of IBA. The highest average root number in the cuttings was found 4.83 in 8000 ppm application. The high rooting rate was obtained by 4000 ppm. Considering all the findings as a result of this research, 4000 and 8000 ppm IBA are recommended for the rooting of *Corylus colurna* hardwood.

Keywords: Hazelnut, rooting, hardwood, *Corylus colurna* L.

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DETERMINATION ON POMOLOGICAL AND MORPHOLOGICAL CHARACTERISTICS OF *Vaccinium spp.* GROWN IN GİRESUN

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Abstract:

It was carried out on *Vaccinium myrtillus* and Vaccinium arctostophlos in Giresun, Turkey. A total of 49 genotypes were determined. In the study, pomological and morphological properties of the genotypes were examined. 35 different *Vaccinium arctostophlos* and 14 *Vaccinium myrtillus* genotypes were identified in the middle and high altitude areas in Giresun province. According to the evaluation results, the majority of *Vaccinium arctostophlos* genotypes were found to be vertical, and *Vaccinium myrtillus* genotypes were erect and vertical growth in terms of growth type in plant population. The plant size was between 39.3-393.0 cm in *Vaccinium arctostophlos* genotypes and 13.66-57.66 cm in *Vaccinium myrtillus* genotypes. The yield per shoot was at DK24 genotype with a maximum of 189.49 g in *Vaccinium arctostophlos* genotypes. DK24 were the biggest genotypes of berry size. The maximum fruit weight was 63.52 g / 100 in DK24 genotype. The fruit weight was measured as 51.53 g / 100 in the genotype DK45. The TSS ratio ranged from 3.90% to 11.95% in *Vaccinium arctostophlos* genotypes. The pH values were measured between 1.99 and 2.89. The TSS rate ranged from 6.10% to 14.50% in *Vaccinium myrtillus* genotypes. The pH values were measured between 2.49 and 3.17.

Keywords: Pomology, vaccinium, vilberry, whortleberry

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EFFECTS OF BACTERIA INOCULATION ON YIELD, YIELD COMPONENTS OF PEPPER (*Capsicum annuum L.*) IN GREENHOUSE CONDITIONS

ATİLLA DURSUN*, ERTAN YILDIRIM, MELEK EKİNCİ, FAZİLET PARLAKOVA KARAGÖZ, RAZİYE KUL

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Abstract:

PGPRs have great potential for plant growth promotion have been considered important in sustainable agriculture. PGPRs induce and/or synthesize various growth-promoting and biocontrolling chemicals such as phytohormones, antibiotics, enzymes, etc. This study was designed to determine the influence of three different formulation of preparing with bacteria strains of *Paenibacillus polymyxa* (TV-12E), *Bacillus megaterium* (TV-91C), *Pantoea agglomerans* (RK-92), *Bacillus megaterium* (TV-87A), *Bacillus subtilis* (TV-17C), *Bacillus megaterium* (M3), *Bacillus pumilus* (TV-73A) and *Mega Flu* (microbial fertilizer) on yield and some quality parameters of pepper (*Capsicum annuum L.*) grown under greenhouse conditions. In this study, the cultivar of üçburun pepper was used, and the seedlings were planted in the second week of May 2016. The experiment was conducted according to randomized plot design with three replications and 12 plants in each replicate. According to the statistical analysis, yield (kg da^{-1}), number of fruits per plant, fruit weight, fruit diameter, L (fruit brightness), water soluble dry matter and dry matter ratio were found as important while colour parameters a (Redness) and b (Yellowness), ascorbic acid content, pH and plant height were not shown importance.

Keywords: Pepper, PGPR, yield, growth characters

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EFFECTS OF DIFFERENT PGPR FORMULATIONS, CHEMICAL FERTILIZERS AND THEIR COMBINATIONS ON SOME PLANT GROWTH CHARACTERISTICS OF POINSETTIA

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Abstract:

This study was carried out in order to determine effects of different PGPR formulations, chemical fertilizers and their combinations on some plant growth characteristics of poinsettia. The research was conducted in climate controlled research greenhouse between July 2015 and July 2017. In the study, rooted cuttings of poinsettia (*Euphorbia pulcherrima* Willd.ex Klotzsch cv. Christmas Feelings) were used as plant material. The applications were created as control, formulation 1, formulation 2, formulation 3, formulation 4, the full amount of commonly used chemical fertilizer (100% KG) and by combining the reduced amount of chemical fertilizer by 50% with each bacterial formulation. Bacterial formulations were inoculated in the rooted cuttings by dipping method. Plant height, main stem diameter, number of bract, length and diemeter of root, fresh and dry weight of plant were evaluated in the experiment. According to KG and Control applications, BIV + KG application was increased in the number of bract leaves between 14,76% and 29,32%; and it was also increased in plant height between 2.87% and 5.27%, respectively. The highest plant fresh weight (16,93 g) was obtained from BII and KG applications. The highest average fresh (4,69 g) and dry (1.57 g) root weight were determined in BII application. It has been determined that bacterial formulations BIV + KG and BII, which have positive effects on some plant growth and quality characteristics of poinsettia, can be used in poinsettia production stage. Thus, bacterial formulations may allow to be reduced the using chemical fertilizer in its cultivation.

Keywords: Poinsettia, Plant Growth Promoting Rhizobacteria, bract, rhizobacteria formulation, pot, ornamental plant

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TRANSFERABILITY OF IPBS MARKERS FOR GENETIC VARIATION EVALUATION IN THE WILD RHUBARB POPULATION (*Rheum ribes* L.) COLLECTED FROM LAKE VAN BASIN

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Abstract:

Rheum ribes L. (wild rhubarb) is one of the wild vegetables and consumed widely in Eastern parts of Turkey. Retrotransposon markers including IPBS have been commonly applied in a large number of evolutionary and genetic studies with general applicability and genetic stability properties. Retrotransposons are abundant throughout the genome, especially in eukaryotic cells including plant species. In the present study, the genetic diversity of 80 wild rhubarb accessions and one rhubarb (*Rheum rhabarbarum L.)* genotype were investigated through IPBS retrotransposon markers. Total 340 polymorphic bands were obtained from 23 IPBS markers and all of them were polymorphic. Averages of 14.78 bands per primer were calculated for markers; however, the primer 2253 gave the highest # of bands and the primer 2388 had the lowest band number (respectively 23 and 5). IPBS markers produced high polymorphism information content value (PIC) and these values changed from 0.66 to 0.97. To get clear picture, UPGMA analysis based on the Jaccard genetic distance was applied that grouped all genotypes grouped into three clusters A, B and C. The Group C is the smallest one. This is first report exploring the diversity and genetic structure of *R. ribes* L. in Lake Van Basin of Turkey using IPBS molecular markers. Variations obtained in this study can be applied to investigate the various traits of interest that can be used for the *R. ribes* L. breeding in near future.

Keywords: IPBS, Retrotransposon, Rheum ribes L, Van Lake Basin, Wild rhubarb

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THE IMPACT OF EMBRYO RESCUE TECHNIQUE ON INCOMPATIBLE CROSSING OF WINTER SQUASH (*Cucurbita maxima* Duch.) AND PUMPKIN (*Cucurbita moschata* Duch.)

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Abstract:

The hybrids of *C. maxima* x *C. moschata* are widely used as rootstock in watermelon, melon and cucumber cultivation all over the world. Unfortunately, many potential parent lines with desirable agronomic and economic traits are lack of fruit and full seed set in interspecific hybridization due to complete or partial incompatibility generated by prezygotic or postzygotic barriers. Therefore, embryo rescue technique was investigated to overcome these incongruities and produce a wide range promising hybrids rootstock candidates. Six winter squash (female) and two pumpkin (male) dihaploid lines produced by irradiated pollen technique were hybridized (thirty-six different combination) and embryos at different stages were cultured on E20A medium combined with 0.1 mg/l IAA and 0.1 mg/l GA_3. A total of 461 flowers were pollinated and 117 hybrid fruits, 864 embryos and 137 F1 hybrid lines were developed. These promising hybrids candidates will be tested for rootstock potential, subsequently, highly compatible hybrids will be evaluated for resistance to biotic (*Fusarium* spp. and *Meloidogyne* spp.) and abiotic (salinity, drought and low soil temperature) stress conditions in our future breeding efforts.

Keywords: Interspecific hybridization, embryo rescue, rootstock, winter squash, pumpkin

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CROSSING OF ALPHONSE LAVALLEE AND REGENT GRAPE CULTIVARS FOR DOWNY MILDEW RESISTANT GENOTYPES

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Abstract:

Crossing for disease resistance of grape cultivars is one of the main interests of grape breeding. Downy mildew (DM) is one of the destructive diseases of grapevines. Marker assisted selection and phenotyping make it possible the identification of resistant genotypes at the early breeding stages. Main goal of this study was to develop hybrid grape genotypes with resistance to downy mildew disease and testing the resistance of these genotypes by phenotyping and genotyping methods for selecting resistant offsprings.

Alphonse Lavalle (susceptible) and Regent (resistant) grape cultivars were crossed to obtain resistant F1 progenies. Hybrid seeds were soaked in Gibberellic acid (GA_3, 1000 ppm), Benzylaminopurine (BAP, 1000ppm) and Hydrogen peroxide (H_2O_2, 1 M) solutions and water (control) for 24 hours after stratification (4 months at 5ºC) and then sown in Perlitte : Peat moss (1:1) potting soil. Germination was carried out in the plastic boxes with constant temperature (27ºC) and relative humidity (99%). Progeny of genotypes were genetically analyzed by two SSR markers of GF18-06 and GF18-08. These markers previously were developed from the downy mildew resistance locus Rpv3 (Regent). In addition, offsprings were tested for downy mildew resistance on detached leaves by measuring sporulation area (mm2) and determining sporulation severity as visual.

Total germination ranged from 60.39% to 78.32% in the control and GA_3, respectively. GA_3 significantly increased total germination when compared to the other treatments. No sporulation was revealed in five offsprings by phenotyping. The genotypes had different resistance levels ranging from 0% (extremely resistant) to 100% (extremely sensitive) and 0 mm^2 (extremely resistant) to 28.60 mm^2 (extremely sensitive) for sporulation severity and sporulation area, respectively. Offsprings with resistance-related alleles were selected by genotyping.

Keywords: Vinifera, breeding, phenotyping, genotyping, grapevine

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INFLUENCE OF CAPSAICIN APPLIED TO SEEDS ON THE EMERGENCE AND SEEDLING GROWTH OF TOMATO AND EGGPLANT

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Abstract:

Tomato and eggplant seeds were treated with capsaicin at different doses prior to sowing to determine the effect of capsaicin on emergence and seedling growth. The doses of capsaicin applied were 0 (control), 0.1, 1, 10, 25, 50, 100 and 200 ppm. There was no emergence at eggplant seeds treated with 100 and 200 ppm capsaicin, while emergence was not observed at tomato seeds treated with 200 ppm capsaicin. At tomato, the seedling fresh weight and length at all capsaicin doses were more than control and highest value of them was obtained from seeds treated with 50 ppm capsaicin. Although the difference among treatments did not statistically important, highest leaf number, seedling diameter, fresh weight, length and root length were determined at seeds treated with 25 ppm capsaicin in eggplant. According to the results of this research, it could be said that capsaicin has a potential as priming agent, especially at low doses.

Keywords: *Solanum lycopersicum*, *Solanum melongena*, Seed treatment, Emergence, Seedling

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DETERMINATION OF PLANT AND NUTRITION CHARACTERISTICS IN YELLOW FLOWER GÖKBAŞ (*Centaurea balsamita Lam.*) COLLECTED FROM DIFFERENT DISTRICTS

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Abstract:

Centaurea balsamita Lam. belonging to the genus Centaurea of the family Asteraceae, is naturally grown in Turkey. In many studies conducted in the province of Konya, where the districts Çumra, Seydişehir and Yalıhüyük. This research was carried out to determine some plant characteristics of this species and to evaluate possibility of using it as a forage crop.

According to the results of the research; the maximum values obtained for each parameter and district were as follows. Plant density in square meter (19.25 plants) in east of Çumra, plant height first branch (57.75 cm) in west of Seydişehir; plant dry weight (240.75 g)) in south of Yalıhüyük; bract wet and dry weight (116.00 g and 65.75 g respectively) and flower number (29.75) per bract in the north of Seydisehir. The protein ratio in stem(13.34%) and the highest protein ratio (15.80%) from samples taken from Çumra. The highest crude oil ratio (10.71%) was from the plants of north of Seydişehir. Saturated fatty acids (33.05%) and sum of unsaturated fatty acids (50.04%) were found in Yalıhüyük.

Centaurea balsamita Lam. has been found to be suitable for use as a forages crop according to the results of some of the plant characteristics examined and the results obtained in terms of oil content. It is suggested that plant can be evaluated as feed by shredding or applying different treatments

Keywords: *Centaurea balsamita* L., plant characteristics, protein ratio, crude oil content, saturat and unsaturated fatty acids, forages crop.

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COMPARISON OF LACTONES CONCENTRATIONS DURING FRUIT GROWTH AND DEVELOPMENT IN SOME PEACH AND NECTARINE VARIETIES

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Abstract:

There are several thousand varieties of peaches (*Prunus persica* L.) grown worldwide, and they represent a wide range of aromatic compounds including different volatiles. One of the most important criteria of fruit quality of peaches and nectarines is flavor. The formation of aroma constituents in fruit growth, development and maturation is a very dynamic process, because volatile substances are continuously synthesized and developed during growth and ripening, so the volatile composition changes both qualitatively and quantitatively. C6 compounds, aldehydes, esters, alcohols, ketones, terpens, lactones and some other compounds account for most of the important flavor volatiles in fruits. Many investigations showed that volatile constituent concentrations increased with development of peach and nectarine fruits. Lactones have the specific importance as volatile compound in peaches and nectarines. It is known that lactones play the character impact compound role in peach and nectarine flavor. Lactones are synthesized after fruit growth following June drop and then development through maturity. In the present study, three peach and nectarine varieties commercially grown in Çanakkale - Turkey (Cardinal peach, White nectarine and Armking nectarine) were studied for their lactone constituents and concentrations. Analyses were made on aroma isolates from Cardinal peach, White nectarine and Armking nectarine fruits at different growth and maturity stages by using SPME (Solid Phase Micro Exraction) technique by GC/MS (Gas Chromatography/Mass Spectrometer). The detected lactones are γ-hexalactone, γ-heptalactone, δ-octalactone, γ-octalactone, γ-nonalactone, γ-decalactone, δ-decalactone and 7-decen-5-olide. Particularly δ-decalactone and γ-decalactone were most abundant lactones in the varieties. The white nectarine fruits had more lactone constituents than the other varieties. The highest concentrations of total lactones were 399.6 µg/kg in White nectarine fruits; 329.8 µg/kg in Armking fruits and 286.6 µg/kg in Cardinal fruits. High values of lactones showed that White nectarines have great importance for flavor improvement in peach and nectarine breeding programs.

Keywords: Prunus, fruit quality, volatiles, chromatography

Oral presentation / II. International Eurasian Agriculture and Natural Sciences Congress

THE EFFECTS OF DIFFERENT IRRIGATION PERIODS ON SOME SEED CHARACTERISTICS IN MELON (*Cucumis melo* L.)

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Abstract:

In vegetable production, the seed is the preliminary propagating material. The high seed quality and the use of certified seeds provide increases in yield from 20% to 100%. It is well known that there is a significant increase in the seed market every year and this increase will continue with acceleration. Turkey dominates 1.7% of the seed market in the world. Konya plain is the vast plain which is the most important seed producing region with 269 911 tones according to the data of 2015 in Turkey. The Konya Plain has limited water resources and an arid and semi-arid climate prevails in the plain. Thus, the efficient using of water resources has a great importance for sustainable agriculture. This study aimed to determine the effects of different irrigation periods on seed yield and some quality parameters in melon for Konya plain which has great importance for both growing and seed production. Study was conducted at the experimental field of Agriculture Faculty of Selçuk University in 2015 and 2016 for two years. In total, 8 irrigation treatments were established according to 3 different phenological stages [vegetative development period (V), flowering-fruit set period (Ç) and fruit development- maturation period (O)]. Seed yield (g/fruit), seed width (mm), seed length (mm), 1000-seed weight (g), seed nutrient contents, germination rate (%), germination speed, emergence rate (%) and emergence speed were determined. Eventually, seed yield and quality were influenced by irrigation periods in melon and the highest seed yield was obtained from ÇO and VÇO periods.

Keywords: Melon, irrigation, seed yield and quality, nutrient content

Oral presentation / II. International Eurasian Agriculture and Natural Sciences Congress

CURRENT STATUS, PROBLEMS OF VEGETABLE PRODUCTION IN KYRGYZSTAN AND PROPOSAL OF POSSIBLE SOLUTION

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Abstract:

Vegetable is an important production category in Kyrgyzstan. In this respect, determining the current situation, status and problems has the fundamental importance for researchers. Kyrgyzstan is divided into 7 regions in terms of agricultural production. This article is discussed the current status and problems of vegetable production and also discussed proposal of possible solutions for this problems in all 7 regions of Kyrgyzstan. The results are shown and evaluated in the form of charts and graphs.

Keywords: Kyrgyzstan, Vegetable Production, Yield, Production Problems.

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THE IMPORTANT POINTS ON PERSIMMON STORAGE AND POSTHARVEST TECHNOLOGIES

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Abstract:

Persimmon has become popular fruit specie as an alternative with a big increase on production in Turkey and Azerbaijan. However the most important factor that prevents this increase in production and marketing is postharvest losses. In this context, the astringent and non- astringent cultivars should be separated including postharvest issue. The most popular and intense postharvest Technologies on fruits are 1- Methylcyclopropene, modified atmosphere packaging and controlled atmosphere. However these technologies have very different effects and results on persimmon. Besides, all of the postharvest Technologies are due to many different factors. Thus the results of these Technologies may differ. Removing the astringency is also very important on marketing of astringent cultivars and related on many different factors. As a result, low production costs, good quality of new cultivars and has a few periodicity problem are the main reasons of the positive side of this fruit specie. Thus prolonging the storage period and shelf life with keeping the quality including the remove of astringency will increase the popularity of this fruit specie in both two countries for local markets and export potential.

Keywords: Persimmon, astringency, storage, quality, postharvest technologies

Oral presentation / II. International Eurasian Agriculture and Natural Sciences Congress

THE EFFECTS OF CALCIUM CARBONATE ($CaCO_3$) TREATMENTS ON QUINCE GENOTYPES IN *IN VITRO* CULTURE CONDITION

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Abstract:

The quince is used for rootstock both quince and pear, but it is susceptible to high lime content in the soil. In this study, two quince genotypes were used for plant materials which were selected from quince orchard at the University of Selçuk, Faculty of Agriculture and Horticulture Department. One of these quince genotypes is susceptible and other is tolerant to high lime content. In vitro culture conditions were prepared to determined responses of the genotypes against different lime content. Four lime contents such as control, 2.5%, 5.0% and 10.0% were treatment on quince genotypes. The plant height, root number, root length, fresh and dry plant weight, leaf relative water content (LRWC), membrane permeability and chlorophyll content were investigated. The genotype-1 which was observed tolerant to the high lime soil in orchard condition was found less susceptible to lime than genotype-2. Under 10.0% $CaCO_3$, plants height of the genotype-1 was measured at 16.87 mm while the genotype-2 plants' height was measured 10.77 mm. The genotype-1 was rooted in all $CaCO_3$ treatments, while the genotype-2 only was rooted in control treatment. The membrane permeability was found higher in genotype-2 with 87.74% than genotype-1 with 55.32%. In terms of the plant features examined, the genotype-1 was found promising for both quince and pear rootstock.

Keywords: Lime, *In vitro*, Quince, Rootstock

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THE EFFECTS OF DEFICIT IRRIGATION CONDITIONS ON MORPHOLOGICAL AND PHYSIOLOGICAL DEVELOPMENT IN BLACKBERRY (*Rubus fruticosus L.*)

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Abstract:

This study was carried out in a controlled growth room at the University of Selçuk, Faculty of Agriculture and Department of Horticulture. In this study, it was aimed to determine effects of deficit irrigation conditions on morphological and physiological parameters such as shoot length, root length, fresh shoot weight, dry shoot weight, fresh root weight, dry root weight, chlorophyll content, stomatal conductance, membrane permeability and leaf relative water content (LRWC) in blackberry cultivar "Jumbo". The homogeneous blackberry plants were propagated by nodal tissue culture technique in vitro culture condition. The blackberry plants were acclimated outdoor environmental condition after propagation and rooting stages. The blackberry plants were subjected by deficit irrigation conditions with full of field capacity, 80, 60, 40 and 20% of field capacity. The irrigation was performed in once every three days. The longest shoot length was found in 40% and 60% of deficit irrigation with 49.94cm and 51.09cm, respectively. The similar to shoot length, the longest root were obtained 40% of deficit irrigation (45.93cm) and 60% of deficit irrigation (46.50cm). The largest leaf was measured in 60% of deficit irrigation with 20.10cm2. In the physiological parameters, the 60% of the field capacity was found the highest. The decreased water amount affected negatively chlorophyll content (34.31 SPAD Units), stomatal conductance (20.45 mmol m-2s-1), membrane permeability (72.45%) and LRWC (35.48%) comparison with 60% of the field capacity that was found higher values. As a result, the 60% of the field capacity was found suitable for irrigation of the blackberry.

Keywords: Blackberry, Deficit Irrigation, Morphology, Physiology

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HAND THINNING APPLICATION EFFECTS ON FRUIT QUALITY IN SOME JAPANESE GROUP (*Prunus salicina* L.) PLUM TREES

Mürüvvet ILGIN

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Abstract:

Japanese group (*Prunus salicina* L.) plum fruit variety has been very popular in recent years by consumers and therefore producers. For this reason, cultivation of Japanese group plum fruit in our country is increased day by day. As well as in many fruit species, plum fruit also has a lot of flowering, and when there is no problem in fertilization and pollination during reproductive stage, fruits are produced from most of these flowers. Due to the excess amount of product loading, fruit quality and the physiological state of the tree can be affected this year as well as the product of the next year. Thinning is the process of removing buds, flowers, or fruits from the tree with different ways because any of them are found in a tree more than normal capacity. Thinning both increase fruit quality (frit size and color) and prevent tree from branch breakage. For investigating thinning effects on fruit yield and quality, Japanese group plum varieties Red Beauty, Golden Plamza and TC Sun are thinned at 50% and 70% in terms of small fruits. Trees without thinning application are used as control in this study. As a result, the highest fruit weight was determined as 120.6 g in TC sun plum with 70% thinning. The soluble solid content of varieties varied between 16.33% and13.5%.

Keywords: Plum, Hand Thinning, Fruit Weight, Soluble Solid Content

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IDENTIFICATION OF KIDNEY BEAN GENOTYPES RESISTANCE TO THE POTYVIRUSES BEAN COMMON MOSAIC VIRUS (BCMV) AND BEAN COMMON MOSAIC NECROSIS VIRUS (BCMNV) BY MOLECULAR MARKERS

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Abstract:

Bean common mosaic virus (BCMV) and bean common mosaic necrosis virus (BCMNV) are widespread with in Phaseolus species as the primary host plants. Primary studies conducted at common bean genotypes and resistance mechanism and molecular markers developed at common bean individuals. Molecular genetic studies demonstrated that, recessive genes of bc gene family which are located at third chromosome and I gene is located at second chromosome of common bean have epistatic relationship for controlling resistance to the BCMV and BCMNV pathogens. Breeding strategies are challenging for plant breeders without marker assisted selection for epistatic genes to increase disease resistance in long terms. Common bean is the main objective of breeding effort for BCMV and BCMNV resistance and all marker assisted selection markers designed for specifically common bean genome.

The objective of this study; is transferring BCMV and BCMNV resistance identification markers (which were developed in common bean genetic resources) to kidney bean genotypes for screening the disease resistance statues. In this study 55 kidney bean individuals genotyped by eIF4E, SW13, SBD5 and ROC11 markers tightly linked to bc and I genes for BCMV and BCMNV resistance. Resistance statues for 55 genotypes screened with those PCR based molecular markers on QIAxcel Advanced capillary system. Five of the 55 genotypes were homozygosity resistant to the BCMV and BCMNV for both genetic loci which were successfully amplified in kidney bean genotypes. Importantly in our knowledge that this is the first report for transfer of these molecular markers to kidney beans for screening the BCMV and BCMNV resistance situation.

Keywords: Kidney bean, BCMV, BCMNV

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THE CURRENT BREEDING PERSPECTIVES AND UTILIZATION OF DESIRABLE BREEDING CHARACTERISTICS OF SOME CUCURBITA SPECIES (*C. pepo*, *C. maxima* and *C. moschata*)

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Abstract:

The present study was conducted to guidance for breeders which concentrated on summer squash (*C. pepo*), winter squash (*C. maxima*) and pumpkin (*C. moschata*). The main objective of plant breeding is eliminated any deficiency of a genotype via current requirement or generated a new genotype with respect to desirable agronomic and economic traits. Hence, a series of important issues must be organized such as character traits, inheritance, donors (or source), transmissibility and suitable breeding methods. In this study, desirable traits of aforementioned species were evaluated in view of breeding goals, and inheritance, source, transmissibility, and breeding methods of these desirable traits were given in particular.

Keywords: *Cucurbita* spp., breeding, inheritance traits

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THE EFFECT OF ARBUSCULAR MICHORIZAL FUNGUS AND WHEY APPLICATIONS ON THE GRAPEVINE (*Vitis vinifera* L.) CUTTINGS EXPOSED TO SALT STRESS

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Abstract:

This study was carried out in order to determine some morphological and physiological reactions of Arbuscular Mycorrhizal Fungus (AMF) and Whey (W) applications which were used against the negative results of salt stress in the cuttings of Ercis grapevine cultivar. The cuttings were rooted in the pots having perlite with no drainage. Once the cuttings w ere burst and the shoots were elongated, the salt application was initiated. The burst cuttings were irrigated with 1% Hoagland Nutrient Solution added with three different NaCl concentrations (0 mmol NaCl, 50 mmol NaCl and 100 mmol NaCl). Moreover, AMF, W and AMF+W were applied and the reactions of the burst cuttings against salt stress were monitored. The parameters such as shoot diameter, shoot height, root width, root length, number of leaves, fresh shoot weight, dry shoot weight, fresh root weight, dry root weight and leaf water content (LWC) were investigated and the salt amount in the growth media was measured. At the end of the study, it was seen that AMF, W, and the combination of AMF + W had positive effects on the majority of parameters compared to the control group.

Keywords: Arbuscular Mycorhizal Fungus, Grapevine cuttings, Salt stress, Whey

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GENETIC AND AMPHELOGRAPHIC CHARACTERIZATION OF AUTOCHTHONOUS GRAPEVINE CULTIVARS FROM BURSA, BALIKESIR AND BILECIK PROVINCES

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Abstract:

Turkey has been recognized as one of the most well-known germplasm of grapevine cultivars in the world. South Marmara region has an important role in commercial grape production. Genetic characterization as well as amphelographic description is widely used in identification of grapevine cultivars in the last decades. The aim of this study was to assess genetic diversity among of all important autochthonous grapevine cultivars in Bursa, Balıkesir and Bilecik provinces of South Marmara Region by using simple sequence repeat (SSR) markers. Therefore, amphelographic data were obtained and all leaf samples for molecular analysis were collected from National Collection Bond in Tekirdağ Viticulture Research Institute. Besides, molecular and amphelographic data were evaluated together in order to determine homonymy and synonym cases among these cultivars. This study indicated that SSR markers have proved to be an efficient tool for assessment of genetic diversity among grapevine cultivars. Besides, the results of this study revealed that this rich grapevine germplasm might be used in future grapevine breeding programs and these autochthonous grapevine cultivars should be re-cultivated and preserved in Bursa, Balıkesir and Bilecik provinces.

Keywords: Ampelography, microsatellite markers, simple sequence repeats, *Vitis vinifera* L.

DETERMINATION OF BIOCHEMICAL PROPERTIES OF WILD RHUBARB (*Rheum ribes* L.) SPREADING IN THE LAKE VAN BASIN BY HPLC METHOD

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Abstract:

This study aimed to investigate the biochemical contents of wild rhubarb (*Rheum ribes* L.) populations naturally distributed in The Lake Van Basin, Turkey. For this purpose, the samples (flower stems) from 80 genotypes were collected by taking GPS and passport data from 4 different locations where the plants were distributed and the samples were stored at -20 ºC till analysis. Analyzes of phenolic, organic compound, sugar and vitamin C content in the collected plant samples were carried out in HPLC system. In addition to Vitamin-C content, 4 organic acids (Malic acid, Oxalic acid, Citric acid and Succinic acid) and 11 phenolic compounds (Resveratrol, Protocatechuic, Vanillic, Rutin, Gallic, Chlorogenic, Syringic, P-coumaric, Ferulic, Q-Coumaric and Phloridzine) and 2 sugars (Fructose and Glucose) were detected. As a result of the obtained data, these genotypes were found to be rich in organic acids, phenolic compounds, sugar and vitamin C contents, and it was observed that there was significant biochemical diversity among the genotypes in 4 locations.

Keywords: HPLC, Organic acid, Phenolic compounds, *Rheum ribes* L., Sugar,

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THE EFFECTS OF DIFFERENT CALCIUM CARBONATE ($CaCO_3$) LEVELS AND IRON SOURCES ON MYROBOLAN 29C ROOTSTOCK IN *IN VITRO* CULTURE CONDITION

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Abstract:

This study was conducted at Laboratory for Plant Tissue Culture in Horticulture Department at the University of Selçuk, Konya, Turkey. It was aimed to determine effects of the different calcium carbonate ($CaCO_3$) levels on the uptaking iron by Myrobolan 29C. The four $CaCO_3$ levels (500, 1000, 1500 and 2000 mg l^{-1}) and two iron sources (FeNa EDTA and $FeSO_4$) were used individually and combined. The plants were micropropagated by tissue culture techniques "nodal culture". The $CaCO_3$ was applied in two media stages including full strength (bottom) and ¾ of full strength (top). For the root growth, the ¾ of full strength media was used. The plant height, fresh and dry plant weight, leaf relative water content (LRWC), membrane permeability, chlorophyll content, proline content and protein content were determined. The FeNa EDTA increased morphological parameters and physiological parameters such as plant height (3.50cm), fresh plant weight (0.420g), dry plant weight (0.059g), LRWC (51.11%), chlorophyll content (13.56 µg g-1 TA) and protein content (17.39 µg g-1 TA). The membrane permeability was higher in 2000 mg l^{-1} $CaCO_3$ treatment (86.27%). The proline content was found higher in 2000 mg l-1 $CaCO_3$ treatment (278.53 µg g-1 TA) than other treatments

In conclusion, the increasing $CaCO_3$ levels dramatically decreased plant growth and development in both FeNa EDTA and $FeSO_4$ conditions. However, FeNa EDTA was more effective than $FeSO_4$ in plant growth and development.

Keywords: $CaCO_3$, Iron, Myrobolan 29C, Physiology

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EFFECT OF CARBOHYDRATE AMOUNT ON GERMINATION RATE IN SOME WALNUT (*Juglans regia* L.) CULTIVARS

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Abstract:

This research was conducted to determine the effect of some walnut varieties on the germination rate of the total carbohydrate amount in the seed. Seeds of Balaban, Bilecik, Chandler, Fernor, Kaman-1, Midland, Pedro, Serr, Yalova-1 and Yalova-3 walnut varieties were used in the study. In the research, germinatio power of seeds, starch, sugar and total carbohydrate values of seeds were determined. In the average of the years, the highest germination rate was detected in the Kaman-1 range with 79.07%, followed by Bilecik 78.44%, Pedro 78.13%, Yalova -1 76.25% and Yalova -3% 72.50 respectively. The lowest value was found at 55.00% in Fernor cultivar.

The total carbohydrate content values of the seeds used in the study were in Pedro variety with the highest value of 9.81%, while Yalova-3 (7.84%), Kaman-1 (7.59%), Fernor (7.54%), Yalova- Charder (6.46%), Serr (5.95%), Bilecik (5.87%), Midland (5.37%) and the lowest value (4.47%) were determined in the seeds of Balaban cultivar. A positive correlation (0.6740) between the total carbohydrate content (%) and the germination power (%) of the seeds was determined. The calculated correlation was statistically significant ($P < 0.05$). Carbohydrate content was found to contribute to germination in walnut seeds.

Keywords: Walnut, Germination, Seed, Carbohydrate

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EFFECT OF SEED WEIGHT ON GERMINATION RATE IN SOME WALNUT (*Juglans regia* L.) CULTIVARS

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Abstract:

This study was carried out to determine the potential of some walnut cultivars for seedling rootstock. The seeds of 10 walnut cultivars (Balaban, Bilecik, Chandler, Fernor, Kaman-1, Midland, Pedro, Serr, Yalova-1 and Yalova-3) were used as plant material in the study. In the research, germination rate and seed quality characteristics of seeds were determined. The width, thickness, height and weight characteristics of the seeds are determined.

The highest germination ratio according to the average value of years was obtained from Kaman-1 cultivar (79.07%) and Bilecik (78.44%), Pedro (78.13%), Yalova-1 (76.25%) and Yalova-3 (72.50%) respectively. The lowest germination rate was evaluated from Fernor cultivar with 55.00%. Yalova-1 (14.71 g), Kaman-1 (14.19 g) and Yalova 3 (14.03 g) were the highest values among the cultivars in terms of the seed weight, while Serr (11.17 g) was the lowest value among the seeds belonging to determine. In the study, it was determined that there was a positive correlation (P = 0.0247) between seed weight gain and germination rate.

Keywords: Walnut, Germination, Seed,

Oral presentation / II. International Eurasian Agriculture and Natural Sciences Congress

EFFECTS OF SILICON APLICATION ON PLANT GROWTH AND CHLOROPHYLL CONTENT OF GALIA F1 MELON GROWN UNDER SALINITY STRESS

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Abstract:

Salinity stress is known as one of the most important stress factor that effects yield and plant growth. In this study, the effects of silicon on growth performance of melon plants under salinity stress were carried out. The seeds were sown in a liter pots filled with peat and perlite (2:1). Silicon and salt were applied when seedlings had 2 or 3 true leaves. The silicon was given as 0.5 mM, 1 mM and 2 mM concentration and the plants were exposed to salt stress (50 mM-100 mM-150 mM, two days for each concentration and 200 mM for final concentration). Plants were watered with nutrient solution prepared to be as 177.2 ppm N; P 52.70 ppm, 240.44 ppm K, Mg 53.46, 120.30 ppm Ca; 3:36 ppm Fe; 0.85 ppm Mn; 0:45 ppm B; 0:50 ppm Zn; 0,10 ppm Cu and 0.05 ppm Mo. The experiment was set up a plant in a pot, and 15 plants in each replication with four replications. In this study, number of leaves, shoot and root length, total fresh and dry weights, and chlorophyll content were investigated. While decreasing of chlorophyl content of 200 mM NaCl aplication was -61.94% , as receiving the highest value, the value of 2 mM Si2+ + NaCl aplication was -34.58%. While the lowest plant fresh weight of 200 mM NaCl application was 9.99 g, the aplications of 1 mM Si2+ + NaCl , 2 mM Si2+ + NaCl , 0.5 mM Si2+ + NaCl were 33.63 g, 33.48 g and 11.49 g, respectively. According to the results, plant biomass and chlorophyll content generally were less affected by salt stress by increasing silicon concentration.According to the results; plant biomass and chlorophyll content generally were less affected by salt stress by increasing silicon concentration.

Keywords: Silicon, salt stress, melon, plant growth, chlorophyll content

Oral presentation / II. International Eurasian Agriculture and Natural Sciences Congress

THE EFFECTS OF SILICON APPLICATION ON SOME PLANT NUTRIENTS CONTENT OF GALIA F1 MELON CULTİVAR UNDER THE SALT STRESS CONDITION.

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Abstract:

The salinity stress is known as the most important abiotic stresses which restricts plant growth and reduces yield in crop production. In this study, plant growth, Si2+, Na+, Cl-, K+ and Ca2+ amount of leaves and roots of the melon seedlings which are silicon application under salt stress were investigated. Melon seeds were sown in a 1 liter plastic pots filled with peat :perlite by ratio 2: 1. Silicon were 0 mM-0.5 mM-1 mM and 2 mM concentration and salt (NaCl) started at 50 mM NaCl in the beginning for two days then 2 days as 100 mM, two days 150 mM and reached final concentration of 200 mM. The study was ended after 12 days of reaching final concentration. In the plants which was applied silicon, the Cl- content of root was found less than the control application.It was found that silicon application reduced transporting of Na+ and Cl- to the leaf but caused an increase amount of K+ and Ca2+ of the leaves of plants grown under salt stress.

Keywords: Melon, silicon, salt stress, plant nutrient

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SCREENING FOR *Podosphaera xanthii* RACE 5 TO RESISTANCE OF SUMMER MELON INBRED LINES

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Abstract:

Podosphaera xanthii, having been identified of several physiological races, is main causal agent of powdery mildew and is also a significant problem which restricts melon production in the world. Control of powdery mildew is quite difficult without using chemicals because of its hyperparasite feature. Although various studies have been carried out to improve resistance summer melon variety, there is still no resistant variety which has been developed to *Podosphaera xanthii* of race 5. In this study, a hundred six summer melon lines improved using resistant parent PMR6 were tested against race 5 by classical method. PI4147230 with PMR6 and ÇA with H01 were used as resistant and susceptible controls respectively. Method of random coincidence parcels with three repetitions, and five plants in each replicate was utilized to conduct of experiment. The disease symptoms were evaluated according to the 1-4 scale values. The inbred lines with numbers of 89, 16, and 1 were separated in scale 1, 2 and 3 separately. These results proved that these summer melon inbred lines can be good source as parents to develop resistant variety for *Podosphaera xanthii* of race 5.

Keywords: Melon, tolerant, *Podosphaera xanthii*, race, test, cultivar

Oral presentation / II. International Eurasian Agriculture and Natural Sciences Congress

EFFECT OF NANO TECHNOLOGY IN COMBINATION WITH SOIL SOLARIZATION TO CONTROL PANAMA DISEASE OF BANANA IN JORDAN VALLEY.

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Abstract:

Soil solarization was applied for a field which was planted with infected banana seedlings. Spreading transparent plastic sheets of 80 µ thickness was done from August, 1 until October 12, 2017 at the University Farm in Jordan Valley. Soil solarization was effective in elimination of all phytopathogenic propagules at 30 cm depth. Then clear plastic sheets were removed and the solarized land was planted with healthy banana seedlings cultivar Grand Naine. Banana plantlets were chemically treated as soil drench with Nano particle solution of 200 and 400 ppm of Silver Nano particles (AgNPs), two fungicides, Revanol and Tachigaren, Sodium Hypochlorite in addition of irrigation of one treatment with treated waste water. Biological control included three treatments; Endomycorrhiza, Trichoderma as a commercial product (BioHealth) and plant growth promoting rhizo-bacteria. Fresh chicken and sheep manure was added to two treatments. Twelve treatments were distributed randomly in randomized complete block design. Endomycorrhizal inoculation with Glomus, 200ppm of AgNPs, Revanol and Tachigaren treatments of banana seedlings were the most effective in completely protecting banana plants from Fusarium wilt during the whole experimental period. Several applications of Trichoderma, waste water and 400 ppm of AgNPs were effective in maintaining some infected banana seedlings nine months after planting very healthy. Sheep and chicken manure treatments resulted with 60 and 40% disease incidence with Fusarium wilt respectively and 20% of disease incidence in Hypex, PGPR and control treatments. Waste water, Nano particles 200ppm and endomycorhizal treatments gave the highest ratio of sword sucker development. We recommend soil solarization and use of integrated program to control Panama disease of banana in Jordan.

Keywords: Panama disease, Fusarium, Trichoderma, Soil Solarization, Endomycorrhiza, AgNP.

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EFFECTS OF SOME PLANT EXTRACTS ON ADULT, EGG AND EGG-LAYING PREFERENCE OF *Callosobruchus maculatus* (COLEOPTERA: CHRYSOMELIDAE)

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Abstract:

Cowpea weevil (Callosobruchus maculatus (Fab.)) is a major pest of stored legumes seeds like chickpea, cowpea, lentil, soybean, bean in many countries. Larvae of this insect pest enter and feed within one seed. Insecticides for chemical control of stored product pests are commonly used but there are negative impact of these chemicals on the environment and human health and insect pests have developed resistance to insecticide. Therefore, importance of human and environmental friendly bio-pesticides has increased. This study was conducted to determine the residual and ovicidal effects of nettle (*Urtica dioica*), basil (*Ocimum basilicum*), hops (*Humulus lupulus*), spurge (*Euphorbia cyparissias*) methanol extracts against *Callosobruchus maculatus* adults and eggs. In addition, effect of extracts on female egg-laying preference was determined. The experiments were conducted at 28±0.5˚C, 55±5% RH and dark conditions. In the tests of residual effect to adults and ovicidal effect, the concentrations of 2.5, 5 and 10% (w/w) of the plant extracts were used. In the test of effect on female egg-laying preference the extract concentration was 5 % (w/w). In the test of residual toxicity, at the end of 24 and 48 hours *Urtica dioica* extract was found to be more toxic than other plants extract. *Urtica dioica* and *Ocimum basilicum* extracts were the highest and equal toxic effect on eggs of *Callosobruchus maculatus*. In free-choice tests it was not difference in the total number of laid egg among plant extracts. Urtica dioica extract have potential as used bio-insecticide in control of *Callosobruchus maculates*.

Keywords: *Callosobruchus maculatus*, plant extract, effect, adult, egg, egg-laying preference

ANTIBACTERIAL EFFECTS OF SOME MEDICINAL AND AROMATIC PLANT EXTRACTS ON PATHOGENIC BACTERIA ISOLATED FROM PEAR ORCHARDS

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Abstract:

Bacterial diseases are very destructive and cause economic losses on pears. Plant extracts for the management of plant diseases are environmentally safe, long-lasting and extracts of certain plants contain alkaloids, phenolic compounds and phytoalexins. In this study, bacteria were isolated from different parts of pear exhibiting characteristic symptoms of bacterial diseases from the Central Anatolia, Turkey. Pathogenic bacteria were identified by morphological, physiological, biochemical and molecular methods as *Erwinia amylovora* (39%), *Pseudomonas syringae pv. syringae* (22%), *Rhizobium radiobacter* (1%) from different pear cultivars, and determined virulence levels of the pathogens with pathogenicity tests. The air-dried 25 plant material was ground into fine powder and extraction was performed at room temperature by maceration with 80% (v/v) methanol/distilled water. MIC values were determined by using modified disc diffusion method at five different concentrations and streptomycin sulphate was used as control chemical on TSA medium. Antimicrobial activity was evaluated by measuring the inhibition zones in reference to the test organisms. Among the tested plants, *Origanum vulgare, Hedera helix, Satureja hortensis*, *Rhus coriaria, Eucalyptus globulus, Rosmarinus officinalis, Ocimum basilicum, Salvia officinalis, Cuminum cyminum* and *Thymus vulgaris* showed a good antibacterial activity and they inhibited the growth of the pathogens with inhibition zone diameter ranging from 7 to 27 mm at 20% (w/v) in vitro. In vivo, the highest efficacy was determined as 27% on reducing tumor formation of R. radiobacter, and 48% and 41% on reducing shoot blight of *E. amylovora and P. s. pv. syringae* on pear seedlings, respectively. Obtaining data indicated that some plant extracts may be used against the bacterial diseases on pome fruits within sustainable and organic management programs.

Keywords: Bacteria, eco-friendly management, organic, pear, plant extract, Erwinia, Pseudomonas

This study was supported by Selcuk University Scientific Researches Coordinators (BAP)

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RESISTANT APPLE GENOTYPES TO *Venturia inaequalis* Cooke (Wint.) FROM EASTERN BLACK SEA REGION IN TURKEY

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Abstract:

Apple scab caused by *Venturia inaequalis*, is one of the major fungal disease of apples varieties in almost all areas. In this study, 200 local apple cultivars adapted to climatical conditions of coastal line, where the highest rainfall and humidity measurements have been recorded, were collected from Ordu province to Georgian border in Black Sea Region. The apple cultivars grafted on MM106 rootstock in vitro were accustomed to outdoor conditions before inoculation. Between 2011 and 2014 years, two V. inaequalis strains of highly widespread were used to determine the susceptibility of genotypes. As control plant, a universally susceptible standard apple variety "Royal Gala" to apple scab was used in all the experiments. Inoculum density was adjusted to 107 conidia mL^{-1} and the inoculations were made to 5 plants of each genotype under greenhouse conditions at 18-20 ºC and about 100% relative humidity for 2 days and then the plants were taken into open air conditions covered with sun blinds. In 2015 and 2016, the pathogen isolates obtained from more than 5000 leaves and fruits were collected from apple orchards in Isparta Province. The conidiospores located around lesions on the primary leaves were washed with sterile distilled water and the concentration of conidial suspension was adjusted to107 conidia mL^{-1} in sterile water and fungal suspension was sprayed to the all genotypes. In 2017, all genotypes were transferred to Egirdir district where the disease was most prevalent in Isparta province, planted in the field conditions and subjected to natural inoculum conditi ons. After 3 weeks of inoculation, apple scab symptoms were observed and the number of spore forming leaves was observed and susceptibility of the genotypes were evaluated using the scale of 0-4, and susceptibilities of the genotypes were classified in different levels. According to the obtained data, the presence of a large number of resistant apple genotypes was determined in the disease. The findings on the resistance of the local apple cultivars will assist growers in making appropriate selections for their disease situation and to aid breeders in the selection of parental plant material for breeding purposes as well as sustainable, organic and eco-friendly agriculture.

Keywords: Apple scab, resistance, genotype, *Venturia*, breeding

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VIRUS DISEASES OF EDIBLE SEED SQUASH (*Cucurbita pepo* L.) IN AKSARAY PROVINCE (TURKEY)

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Abstract:

Cucurbits (the Cucurbitaceae family) include 119 genera and 825 species distributed primarily in tropical and subtropical regions of the world. The major cultivated cucurbit species such as melon (*Cucumis melo* L.), cucumber (*Cucumis sativus* L.), squash (*Cucurbita pepo* L.), and watermelon (*Citrullus lanatus* (Thunb) Matsum. & Nakai) are important vegetable crops worldwide. Squash is grown for fresh consuming and its seeds are used as a snack in Turkey like some Mediterranean countries and Germany, Hungary, Austria and China. Virus diseases are one of the most destructive diseases on squash which is grown for seeds in Aksaray province. In this study, it was aimed to determine the virus infections in major squash growing areas in Aksaray province. Totally 153 plant samples with common virus symptoms like mosaic, curling, blistering, mottling, distortion, shoestring, stunting and vine decline were collected from squash plants during 2014. In this study, DAS-ELISA method is used for identifying the virus infections on the plant samples. According to the results of the DAS-ELISA, 84.96 % of plant samples were infected with *Zucchini yellow mosaic Potyvirus* (ZYMV), *Watermelon mosaic Potyvirus-2* (WMV-2), *Cucumber mosaic Cucumovirus* (CMV), *Papaya ringspot Potyvirus-watermelon strain* (PRSV-W) and *Squash mosaic Comovirus* (SqMV). ZYMV was predominant in the research area with the ratio of 66.01 %. WMV-2 was the second important virus disease in the surveyed area and it was detected on the samples at the ratio of 57.51 %. Also, mixed infections of those virus infections were detected commonly in squash. Especially, ZYMV+WMV-2 mixed infections were common. *Cucumber green mottle mosaic Tobamovirus* (CGMMV) was not present in the research area.

Keywords: Aksaray, DAS-ELISA, edible seed squash, WMV-2, ZYMV

HEPATOTOXIC EFFECT OF *Teucrium orientale* L. ON HEP3B CELLS

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Abstract:

Aim: Teucrium species have many biologically significant impacts such as antioxidant, antimicrobial, inflammatory, proapoptotic, antiproliferative, antipyretic, hypoglycemic, larvicidal, antinociceptive. In addition to these features, the discovery of anticancer properties made these species very important. Recent studies have also shown that Teucrium species own hepatotoxic effects. But there was no information about cytotoxic/anticancer effect on *Teucrium orientale* L. in the literature. So, in our study it was aimed to search the toxicity of this species on Hep3B (Human hepatocellular carcinoma cells).

Methods: *Teucrium orientale* L. extract was prepared by using Soxhlet extraction method in the distillate water. Stock solution of the extract was arranged as 5mg/ml in Dimethyl sulfoxide at different concentrations for determination of inhibitory concentration %50 (IC50) value. Hep3B cells were seeded in 96 multi-well culture plates as 104cells/well concentration and incubated at 37^{o}C in 5%CO_2 for 3 and 7 days. IC50 values were calculated from dose-response curve. MTT cell-viability colorimetric-assay test kit was used to observe cytotoxic effect of the extract. Cell morphologies were evaluated by inverted microscope.

Results and Discussion: According to the results of MTT, 10 µg/ml concentrations was found the most effective on cancer cell death. Cell viability of Hep3B was observed 57% on 3rd day and 7% on 7th day. IC50 value of *Teucrium orientale* L. on 3rd and 7th days were observed 8.77 and 5.37, respectively. The Hep3B cells were found as more dense colonies on 3rd day than 7th day. In the 7th day there was a partial decrease in the number of colonies, but no change in morphology was determined. In T. Orientale L. application group, on day 3, there was a decrease in colony count and increase in overgrowth cell morphology, while rounded-shape cells were noticeable on the surface in the 7th day. It is noteworthy that there is no typical cell morphology also.

Conclusions: It can be concluded that *T. orientale* L. extract is hepatotoxic at low concentration. But there is more studies needed to understand the anticancer mechanism of this plant.

Keywords: *Teucrium orientale* L., Hepatotoxic, liver cancer, Hep3B

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THE INVESTIGATION OF USING BARKS OF THE POPULUS L. SPECIES, AS A MAIN RAW MATERIAL FOR COMPOSTS, IN THE *Pleurotus ostreatus* CULTURE

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Abstract:

In this study, the possibilities of using the barks of Populus L. species in the production of Pleurotus ostreatus were investigated. In the study, the poplar barks obtained from the lumber industry were used as raw and small pieces separated. Mixtures obtained by using additional nutrients as additives as well as production experiments in raw form have been used in production experiments. Wheat stalk, poplar sawdust (fine), wheat bran and cotton pulp were used as additional additives. In the study, the fungus has been grown from the raw poplar barks, from the crushed barks and in all media obtained by mixing the additional nutrient. If the raw poplar barks are compressed into blocks, the yield will increase. Mushrooms were also obtained in the milled barks obtained from the poplar barks but caused problems with aeration in compost. The most yields were obtained from the milled poplar barks + wheat stalks + wheat bran + poplar sawdust (fine). As a result, it has been found that poplar barks, generally garbage, are a substrate that can be used in Pleurotus ostreatus culture, and an area where an unevaluated material can contribute to the economy has been identified.

Keywords: *Pleurotus ostreatus*, Poplar barks, Culture, Konya, Turkey

BIOTECHNOLOGICAL MANAGEMENT TO PREVENT WASTAGE OF PLANT PRODUCTS IN STORAGE-TRANSPORTATION CHAIN FOR THE CONSUMER

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Abstract:

Today, due to the significant losses in post-harvest, preservation and transportation of fruit and vegetables, it is needed healthy alternatives for the effective and sustainable marketing of agricultural products. It is important to look at every stage of agricultural problems from production to the table. In this study; biocompatible protective film and biocomposite protective coatings that retard biodegradation and retard ripening, reduce water loss and respiration, prevent toxic effects that reduce microbial invasion and loss of taste on foods, retard nutrient depletion and also support plant vitamins and minerals , For this purpose, after the harvest in a concentration of 0.25%, 0.5%, 1.0%, 2.0%, 4.0%, a new synthesis product with different amino groups using bacteriostatic-bactericidal action to 100 m³ Storage area of peach, pomegranate and grape fruits applied. Solids were prepared and activity studies were done with dry mist. The most successful results were obtained with a 45% increase in shelf life for 2.5% aqueous solution products.As a result of this project, after application of synthesis product as dry spray before storage after fruit and vegetable harvesting, it has been found that the shelf-life of each fruit and vegetable product were increased and losses during storage is reduced or eliminated by 75-80% , There is no problem that could pose a risk for the sale and sustainable management of the product, which is attracted to the product sector and demanded by the market, and which should solve the existing problem in this context and keep it low compared to its competitors.

Keywords: Biotechnological Management to Prevent Wastage of Plant Products in Storage-Transportation Chain for the Consumer

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REMOVAL OF NOVACRON BLACK BY PHOTO FENTON PROCESSES: EFFECT OF FE^{2+} AND H_2O_2

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Abstract:

Dye removal studies to reduce the damage to the nature due to the direct discharge of wastewater containing dye recently without treatment compose the majority of the investigations. Dyes are a material used to color an object and are frequently used in many industries such as textiles, pharmaceuticals, food, printing and cosmetics. The majority of synthetic dyes used in the market compose azo dyes which have toxic, carcinogenic and mutagenic properties. These paints have a high accumulation potential in the environment because they are resistant to degradation due to the azo bonds they contain. More environmentally friendly methods are being developed for the treatment of textile wastewaters by using physicochemical and advanced oxidation methods such as adsorption, filtration, sedimentation, fenton, electro-fenton, photo-fenton. Advanced oxidation processes are based on the formation of highly effective hydroxyl radicals. The complete mineralization of the organic material leads to the formation of end products such as CO_2 ve H_2O gibi son ürünlerin oluşmasını sağlamaktadır. AOP processes are frequently used in color removal. In this study, the effect of Fe^{2+} ve H_2O_2 concentrations on the removal of novacron black reactive dye by photo-fenton (Fe2+/H2O2/UV-C) method was investigated.

Keywords: Photo-Fenton, Novacron Black, Removal, Textile Dye

CO-IMMOBILIZATION OF GLUCOAMYLASE AND GLUCOSE ISOMERASE AS CROSS-LINKED ENZYME AGGREGATE AND ITS CHARACTERIZATION

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Abstract:

In the food industry, in order to obtain fructose syrup, first the glucose syrup is obtained from starch, then fructose syrup is obtained from glucose syrup. In the industry, this process is done in three stages. In the first stage, the starch is gelatinized by using alpha amylase (EC 3.2.1.1) or pullulanase (EC 3.2.1.41). In the second stage, glucose syrup is obtained by using glucoamylase (EC3.2.1.3). In the third stage, fructose syrup is obtained from glucose by using glucose isomerase. Free enzymes used commercially are for single use and have limited usage areas. By using enzymes multiple times, enzyme immobilization technology provides great financial advantages for the industrialists in terms of economic sense. In this study, glucoamylase (GA) and glucose isomerase (GI) were co-immobilized as cross-linked enzyme aggregates (combi-CLEA(GA+GI)). Glutaraldehyde was used as cross-linking agents. After 12 reuses, the residual activity of combi CLEA (GA+GI) was about 23% of its initial activity. Combi CLEA (GA+GI) was protected 78% and 61% of its original activity at 5 ºC and 25 ºC respectively for four weeks. The activity remaining in incubation for 24 hours at 60 and 80 of Combi CLEA (GA + GI) is 74% and 54% respectively. Combi CLEA (GA + GI) has been found half life 33.3 and 21.5 hours at 60 and 80 ˚C, respectively.

Keywords: Combi-CLEA, HFS, enzyme immobilization, Glucoamylase, Glucose isomerase

ARUNDO DONAX AS A BIOMONITORING TOOL FOR DETERMINATION OF HEAVY METAL POLLUTION IN BISHKEK-KYRGYZSTAN

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Abstract:

Bishkek, economic and financial center of Kyrgyzstan is suffering from a widespread pollution as a result of industrial development and urban growth. In present work, Arundo donax as study material was used in a monitoring research for the evaluation of the heavy metal pollution in the region. The leaves (washed and unwashed), stems and roots of the plant and co-located soil samples were taken from the chosen stations along Alamedin River that runs through Bishkek. The Al, Ca, Cr, Cu, Fe, K, Mg, Ni, Pb and Zn contents of the plant and co-located soil samples were determined using ICP-MS. According to our data, the normal ranges were exceeded or found to be in toxic ranges in the plant for Cr, Fe, Ni, Pb and Zn in some stations located in the city whereas the levels of Al, Ca, Cu, K and Mg were found to be lower than normal ranges in some stations located in the city in comparison with literature. Also, the levels of Al, Fe, K, Ni and Zn whereas the normal ranges were exceeded in the co-located soil samples for Ca, Mg, Cr, Cu and Zn in stations, mostly located in the city. Our data showed that there is anthropogenic pressure in the city at least for some heavy metals; therefore, environmental pollution in Bishkek is getting being a problem in terms of accumulations of some heavy metals.

Keywords: Arundo donax, Biomonitoring, Heavy metal pollution, Bishkek

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INVESTIGATION OF THE EFFECT OF USING ULTRASONIC SOUND WAVES IN BIODIESEL PRODUCTION FROM CANOLA AND SAFFLOWER OILS

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Abstract:

Especially the technological development in chemistry and biotechnology has brought environmental pollution together. In order to overcome this, researches on environmentally sensitive production methods have been increased for about half a century and new products and production processes have started to be developed as green chemistry. The world's increasing energy demand faces a serious limitation with the decline in oil inventories. For this reason, studies are being undertaken to meet energy needs from alternative and sustainable sources that are not based on petroleum. One of them is to produce biodiesel by transesterification reactions using vegetable oils. Biodiesel can be inferior in performance as an environmentally friendly fuel in terms of sulphur and carbon emissions compared to petroleum-based diesel. For this reason, it is used after mixed with the diesel at certain ratios. In this study, the effect of ultrasonic sound waves on the physical properties of biodiesel is investigated by obtaining biodiesel from the canola and safflower vegetable oils by transesterification reaction in base catalysis. For this purpose, biodiesel was obtained from vegetable oils and methyl alcohol at 55°C by NaOH-catalyzed. The process was carried out in different exposure times within the water bath

Keywords: Biodiesel, Canola oil, Safflower oil, Transesterification, Ultrasonic water bath

HEAVY METAL AND MINERAL NUTRIENT STATUS OF WIDELY USED MEDICINAL PLANTS' SEEDS MARKETED IN TURKEY; INVESTIGATING THE HEALTH AND SAFETY

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Abstract:

Herein work investigated the mineral element contents and heavy metal levels in seeds of 67 different medicinal plants using ICP-MS. Seeds were obtained from herbalists located at "Eminönü", "Fatih" and "Kadıköy" districts in Istanbul/Turkey. Among seeds were white lupine, bitter almond, anise, pistachio, juniper, barley, horse chestnut, sunflower, almond, fava bean, okra, white pepper, pea, wheat, walnut, pine nuts, rye, fenugreek, black cumin, bay tree, dill, thistle, beans, basil, hazelnut, black mustard, Indian mustard, white mustard, poppy, carrot, chaste tree, coconut, nettle, pumpkin, coffee, cashew nut, cardamom, black pepper, hemp, celery, chestnut, linen, red pepper, cumin, coriander, rosehip, lettuce, parsley, lentil, maize, nutmeg, pomegranate, chickpea, rice, fennel, rocket, purslane, sorghum, soybean, sesame, broom, harmal, grape, green pepper, peanut, oat and olive. Detected highest average amounts included 49,072±14,309 mg/kg for B (horse chestnut), 25719.291±5764.367 mg/kg for Ca (juniper). 0.911±0.370 mg/kg for Cd (grape), 30.570±4.691 mg/kg for Cu (lettuce), 38.610±19.101 mg/kg for Fe (lettuce), 25505.100±2073.220 mg/kg for K (fennel), 6610.740±1487.244 mg/kg for Mg (parsley), 1002.165±214.608 mg/kg for Mn (lupine), 3391.729±1538.133 mg/kg for Na (sesame), 9.381±4.107 mg/kg for Ni (parsley), 14.089±10.176 mg/kg for Pb (green pepper) and 88.615±5.923 mg/kg for Zn (lettuce). Comparing herein findings with relevant literatures revealed that Cd in grape seeds and Pb in green pepper seeds are above the acceptable limits, while the remaining plants were within the safe limits. Overall, it can be said that studied medical plants mostly appear not to cause any toxic effects for human health.

Keywords: Heavy metal, mineral element, medicinal plant, ICP-MS, toxicity

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HEAVY METAL AND MINERAL NUTRIENT STATUES OF *Populus nigra* USED FOR THE EVALUATION OF ENVIRONMENTAL POLLUTION IN BISHKEK-KYRGYZSTAN

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Abstract:

Bishkek situated at an elevation of 750-900 meters is the capital and the largest city of Kyrgyzstan. Bishkek is the most populated city and home to small scale industrial plants, and showing a rapid development causing pollution exceedingly, especially in the city center. Heavy metals accumulation mostly because of human activities can contaminate environments. In present work, Populus nigra was used for the evaluation of environmental pollution in Bishkek. For the assessment of the rate of pollution in the region, the Al, Ca, Cr, Cu, Fe, K, Mg, Ni, Pb and Zn contents of the plant and co-located soil samples were determined using ICP-MS. Leaf, bark and root samples of the plant and its co-located soil samples were collected from different localities through Bishkek. The lowest and highest heavy metal contents of the plant samples (in mg.kg-1) were found to be as: 4.281 (in washed leaves) and 544.828 (in roots) for Al in stations 2 and 6; 0.302 (in barks) and 16.51 (in unwashed leaves) for Cr in stations 4 and 7; 0.383 (in barks) and 14.511 (in unwashed leaves) for Cu in stations 1 and 6; 3.551 (in roots) and 1679.544 (in roots) for Fe in stations 1 and 9; and 0.190 (in washed leaves) and 12.683 (in barks) for Ni in stations 1 and 5; 0.321 (in barks) and 49.466 (in barks) for Pb in stations 1 and 7; 7.95 (in roots) and 91.594 (in unwashed leaves) for Zn in stations 5, and 10, respectively. Our data showed that the levels of Cr, Fe, Ni, Pb and Zn are found to be above the allowable limits, especially in stations where located in the city in comparison with literature. This indicates that anthropogenic pressure in the city is getting being a serious problem.

Keywords: *Populus nigra*, Heavy metals, Contamination, Bishkek

Oral presentation / II. International Eurasian Agriculture and Natural Sciences Congress

MONITORING HEAVY METAL POLLUTION IN YALOVA COAST OF THE SEA OF MARMARA USING EELGRASS PLANTS

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Abstract:

Eelgrass (*Zostera marina* L) is a marine angiosperm and it serves as habitat and provides nutrient media for many marine species. Many analytical techniques have been available to monitor the pollution levels in aquatic environments. Use of plants as biomonitor organisms has been a powerful way to figure out the presence of certain heavy metals and their relative concentrations in an environment. Herein work attempted to investigate the heavy metal levels and mineral nutrient contents in eelgrass samples brought to the Yalova Coast of the Sea of Marmara. Thus, pollution levels and biomonitoring potential of eelgrass plants have been evaluated. According to our results, the heavy metal and mineral nutrient concentrations (in µg/l) were measured in the surface water of the Sea of Marmara are as follows; Al-183.02, As-2.06, B-3,012.9, Be-0.02, Ca-367.4, Cd-0.06, Co-0.10, Cr-2.71, Cu-0.92, Fe-49.30, K-322.0, Li-112.27, Mg-888.58, Mn-3.04, Mo-9.58, Na-23406.71, Ni-3.90, P-1.64, Pb-0.26, Sb-0.06, Tl-0.01, Zn-19.99. However, the same elements in plant samples (in µg/l dw) are; Al-3097.63, As-3.41, B-565.05, Be-0.07, Ca-27139.88, Cd-0.43, Co-4.22, Cr-13.88, Cu-13.88, Fe-3006.53, K-22024.27. Li-2.95, Mg-5890.06, Mn-487.3, Mo-1.65, Ni-1.65, P-1877.88, Pb-4.23, Sb-0.29, Tl-0.04 and Zn- 122.92 respectively. When the results were examined and compared with the relevant literature, it was observed that the heavy metals above the normal in the sea water were also above the normal limits in the plant samples. Nevertheless, this situation has affected the mineral nutrition status of the plant. However, the results showed that eelgrass plant can be used as a good biomonitor for showing heavy metal pollution.

Keywords: Heavy metal, mineral nutrient, biomonitoring, coastal pollution, eelgrass, marine

ASSESSMENT OF RADIATION INDUCED GENOTOXIC DAMAGE İN PEROVSKİA ABROTANOİDES KAR. GROWN IN THE AREA OF FORMER MINE TAILINGS LOCATED NEAR KAJI-SAI VILLAGE IN KYRGYZSTAN USING ISSR-PCR ANALYSIS

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Abstract:

Excessive radioactivity by mine tailings arisen during the past practices of uranium enrichment processes is still primary concern due to dangers of radioactive materials causing extreme adverse effects on all living organisms in the environment. In the past, the radioactive materials needed by the Soviet Union in the past were provided from Kyrgyzstan; thereby, there are at least 50 abandoned areas used as mine tailings in the country. One is located on the southern shore of Issyk-Kul Lake near Kaji-Sai Village. At present, the structural integrity of mine tailing is gradually disappearing due to the pressure of natural and anthropogenic reasons. Therefore, our research aimed to reveal current state of radioactive contamination using *Perovskia abrotanoides* Kar. as a biomonitor organism. Determination of existent mutations on genetic material in the plant caused by leakages from uranium mine tailings is done by using ISSR marker technique. Also, radioactivity readings were recorded using Geiger counter and the level of uranium in the plant is determined by employing ICP-MS. In experimental procedures, the leaf, stem and root parts of the plant and their co-located soils collected from 5 different localities were used. The data revealed that the levels of radiation (in mR/h) were found to be in ranges of 36-100 but leakages were even very strong (between 200-300) where the soil structure disturbed. The levels of uranium in the plant and their co-located soil samples were found to be high in comparison with the control. Also, the results indicated that changes in ISSR profiles from exposed plant leaf samples included variation in band intensities, losses of normal bands, and the appearances of new bands compared to unexposed (control) plant leaf sample.

Keywords: *Perovskia abrotanoides* Kar., Radioactive contamination, Genotoxicity, Kaji-Sai, Kyrgyzstan

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ENVIRONMENTAL IMPACTS OF POLLUTION CAUSED BY URANIUM RADIATION AT THE FORMER URANIUM WASTE DUMP

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Abstract:

Nuclear contamination releases radiation posing serious problems on all living organisms in the environment. One of the main problems for Kyrgyzstan coming from the past is related with the mining and enrichment practices done by the Soviet Union. There are at least 50 abandoned areas used as radioactive mine waste dumps in the country. Due to the pressure of natural and anthropogenic reasons, the structural foundation of mine waste dumps are gradually losing their integrities. Here, particular interest of our research is to reveal current state of radioactive contamination and to make evaluation on the radiological impacts of pollution caused by uranium mine waste dump, one is situated near Kaji-Sai Village in Issyk Kul region-Kyrgyzstan. In this study, the leaf, stem and root parts of Caragana laeta and their co-located soils as study materials collected from 5 different localities was used for investigation of existent alterations on mineral element uptake and for determination of the levels of uranium in the plant using ICP-MS. Also, radioactivity readings were recorded using Geiger counter. The data showed that the levels of radiation (in mR/h) were found to be significantly high in comparison with normal acceptable limits and also the levels of uranium in the plant parts and their co-located soil samples were in ranges of higher than known normal limits. Uptake pattern of certain mineral elements in *C. laeta* grown in the uranium waste dump site was modified extensively as reductions on the uptake pattern of certain mineral elements and increments on that of others due to strong radioactive leakage in comparison with the control.

Keywords: *Caragana laeta*, Radioactive contamination, Kaji-Sai, Kyrgyzstan

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DETERMINATION OF WATER QUALITY PARAMETERS AND CYTOTOXICITY IN INCESU POND (KASTAMONU/TURKEY)

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Abstract:

Incesu Pond is located in Incesu Village in Taşköprü district in Kastamonu province and it is formed with the purpose of irrigating agricultural lands and gardens. Within the scope of the project, it was aimed to make investment, projects and activities to be applied in the medium and long-term and to become an attraction centre by uncover potentials of Incesu Pond. In this direction, it was aimed to observe the monthly and seasonal changes of physicochemical parameters and heavy metal content of Pond, to determine the water quality properties and the level of suitability in terms of aquatic life. It was also aimed to determine the side-effect of the water in other living-organisms, especially people using it directly or indirectly, by cell culture based cytotoxic analyses. In total, 21-physicochemical parameters and 7-heavy metals were investigated for water quality. *In vitro* cytotoxic assays were performed by MTT assay with using rat bone marrow mesenchymal stem cells (MSCs). For determination of IC50 value, seven different doses were investigated into the account our previous studies for similar ponds taking. It has been observed that the range of heavy metal concentrations in the pool is below the acceptable limits. The physicochemical parameters were found to vary seasonally, and content of phosphate in the water was found to be high. Cytotoxic assays haven't been seen to promote cell-death in healthy MSCs, as opposed to data from similar studies, but on the contrary, they have been shown to stimulate survival in the range of113-137%.

Keywords: Incesu Pond, Kastamonu, water quality, cytotoxicity, IC50 value.

PROPERTIES OF COMMERCIAL WHEAT GERM

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Abstract:

Wheat germ is one of the richest sources of α-tocopherol and linoleic acid. Because of its high linoleic acid content, germ oil is highly susceptible to oxidation. Thus, wheat germ is stabilized by different methods, mainly heating, before marketing. In this study, some physicochemical, microbiological and enzymatic characteristics of stabilized wheat germ, in addition to its total phenolic content and antioxidant activity, were determined. Moreover, fatty acid composition, α-tocopherol content and some oxidation parameters of oil extracted from wheat germ were determined. Moisture, fat and protein contents of wheat germ were 6.0, 9.30 and 23.77%, respectively. Color parameters including L*, a*, b* values were 66.79, 3.70 and 24.93, respectively. DPPH, TEAC and total phenolic content were 67.80%, 12.26 mmol trolox/g and 262.28 mg GAE/100 g, respectively. Activity of lipase enzyme, which is the indicator of oxidative stability, was found to be 6.42 U/g. Linoleic acid was the most abundant fatty acid in commercial germ oil, followed by oleic, palmitic and linolenic acids. The α-tocopherol content was 1429.84 mg/kg. Free fatty acid content, peroxide and thiobarbituric acid values of stabilized samples were 5.53%, 13.57 meqO2/kg and 0.31 mg MA/kg, respectively. The count of TMAB was determined to be 2.14 log-cfu/g while no yeast and mold development was observed. It is concluded that further study is needed for characterization and standardization of wheat germ and its oil.

Keywords: Commercial wheat germ, Wheat germ oil, Total phenolic content, Antioxidant activities

ARDAHAN'DA YETİŞEN YABANİ ÇİLEK ÇEŞİTLERİNİN ANTİMİKROBİYAL, ANTİOKSİDAN VE ANTİMUTAJENİK AKTİVİTELERİNİN ARAŞTIRILMASI

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Özet:

Çilek (*Fragaria*), Rosaceae familyası ait bir bitki cinsi olup, bu cins içinde yer alan türlere ait meyvelerin ortak adıdır. Bu çalışmada Ardahan Merkez ve Posof ilçesinde yetişen çileklerin bazı biyolojik özellikleri ve tıbbi açıdan değerlendirile bilirliğini ortaya koymak ve doğal ortamlardan toplanan bu çileklerin ticari olarak satılan çilekle karşılaştırılması amaçlanmıştır. Yapılan analizler sonucunda çilek meyvelerinde en yüksek toplam askorbik asit, toplam fenolik bileşik ve toplam flavanoid miktarı Ardahan Merkez'den alınan dağ çileğinde tespit edilmiştir. Antioksidan kapasite tayini DPPH, FRAP ve ABTS olmak üzere üç farklı metod ile analiz edilmiş olup, antioksidan aktivite FRAP metodu ile Merkez dağ çileğinde (475,1 mmol/g), DPPH ve ABST metodu ile Posof dağ çileğinde (sırasıyla %487,3 ve %55,9) daha yüksek tespit edilmiştir. En yüksek toplam antosiyanin miktarı ise sırasıyla ticari çilek (72,8 mg/100g), Posof dağ çileği (65.9 mg/100g) ve Merkez dağ çileğinde (54.6 mg/100g) belirlenmiştir. Çalışmada antimikrobiyal aktivite tayini disk difüzyon yöntemine göre yapılmış olup, çeşitli test mikroorganizmaları kullanılmıştır. Çilek ekstraktlarının test mikroorganizmaları üzerinde değişen oranlarda antibakteriyal aktiviteye sahip oldukları tespit edilmiş olup, antifungal aktiviteye sadece Posof dağ çileğinde rastlanmıştır. Ekstraktların antimutajenik aktiviteleri AMES/Salmonella mikrozom testi ile Salmonella typhimurium TA 98 ve TA 100 suşları kullanılarak tespit edilmiştir. Buna göre Merkez dağ çileği ve ticari çilek ekstralarının denenen dozlarının TA 98 suşunda antimutajen özellik göstermediği, Posof dağ çileğinin ise denenen en yüksek iki dozu olan 80 µl/Plak ve 40 µl/Plak'ta antimutajen özellik gösterdiği belirlenmiştir. TA 100 suşlarında ise hiçbir dozda antimutajenik özellik gözlemlenmemiştir. Sonuç olarak çilek meyve ekstraktlarının önemli antioksidan ve antimikrobiyal özellikleri mevcuttur.

Anahtar Kelimeler: *Fragaria*, Çilek, Ames test, Posof, Fenolik, Antimutajen, antimikrobiyal

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LOCAL SEED USAGE AND IMPORTANCE OF RURAL AREA; CASE STUDY OF KONYA PROVINCE

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Abstract:

Rural areas are important for the realization of agricultural production and sustainability of resources. Providing to sustainable usage of resources is possible by conservation of local originated seeds which act on principle of agriculture and inputs besides cause to an increase ratio of 25-40% in production. The data were obtained from the family farms making production with 68 local seeds using the "Unclassified single-step simple random probability sampling based on population ratios" method in 20 villages. The obtained table was created and the chi-square analysis was performed on the percentage ratios and the bilateral relations. As a result of the research, 49 local seed varieties were identified. Consequently, it is necessary to encouragement of young people for agricultural activities, a better data transfer among the stakeholders and project production for conservation of local originated seeds.

Keywords: Local seed, Rural area, family farms, Konya

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THE ROLE OF ZIRAAT BANK IN THE DEVELOPMENT OF AGRICULTURAL SECTOR IN TURKEY IN LIGHT OF ARCHIVE DOCUMENTS (1923-1950)

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Abstract:

This study deals with Ziraat Bank's activities for the development of agricultural sector in Turkey from the first years of the Republic to 1950 and the reflections of these activities on economy. The study is limited to Ziraat Bank's activities in Turkey in the period from 1923 to 1950. That is, it focuses on a single period. Evaluations on the bank's agricultural activities and the contributions of these activities to economy have been made based on numeric data. Though the main source material of the study consists of Republic archive document, the study has also benefited from official publications such as proceedings of memorandum, laws, journals of official reports, official gazettes, and statistical annuals. The relevant evaluations have been made considering the steps taken by Ziraat Bank to solve the credit, tool, and machinery problems of agricultural sector. The study has found out that Ziraat Bank, which maintained its operations as a joint-stock company as of 1924, turned into an independent state enterprise under the name of Türkiye Cumhuriyeti Ziraat Bankası [The Republic of Turkey Ziraat Bank] with the Law no. 3202 accepted on 12 June 1937. Right after its foundation, the bank stopped being only an enterprise providing agricultural credit and started to be an enterprise engaged in the agriculture of the country in the first degree. The bank contributed to the national economy by helping farmers whose products were damaged due to insect pests and natural disasters such as frost, flood, hail, and drought and purchasing agricultural tools and machines from foreign countries.

Keywords: Ziraat Bank, Agricultural Credit, Agricultural Tools, Natural Disasters, Agricultural Development

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TRENDS IN FOREIGN TRADE OF CHERRY AND TURKEY'S COMPARATIVE ADVANTAGE

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Abstract:

Global cherry demand has increased and the market has grown. Turkey is the fourth largest exporter country in the world for cherry. The objective of this study is to analyze the Turkish cherry sector's competitive power in International trade. In the study, Balassa's Revealed Comparative Advantage (RCA) and Vollrath's indexes were used. The cherry trade data is obtained from the International Trade Center (ITC-TRADEMAP) database and calculated for the years between 2001 and 2017. For this purpose, USA, Chile, Hong Kong, China, Turkey, Spain Austria, Uzbekistan, New Zealand, Canada, Greece, Netherlands, Italy and Australia were taken into account as the most exporter countries in the world. Turkey's world cherry export is around 124 million dollars on avarage for the period of 2001-2017. When the shares of the exporting countries are examined; EU countries seem to be a significant market. At the same time, The Russian Federation for the last ten years has become an important country for Turkey. According to calculated Balassa's and Vollrath's indexes, Turkey has a significant comparative advantage in the cherry export. However, Turkey's comparative advantage has relatively been decreasing in recent years. From this point of view, it is very important to develop new markets for existing market demands.

Keywords: Turkish cherry sector, Export and import, Competitiveness, World.

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IMPORTANCE OF FORAGE LEGUMES IN SUSTAINABLE AGRICULTURE

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Abstract:

Agriculture is a considerable participant of global climate change already owing to deforestation, greenhouse gas emissions and soil erosion. As an important part of agriculture, grasslands and meadows are the primary sources of global food production besides feed for livestock where develops fertility and structure of soil, keeps water resources, promising for bio-fuel industry, reducing to soil erosion, being source of biodiversity and act on climate change owing to storage of carbon in addition to protection of biodiversity by non-use of pesticides which are main components of sustainable agricultural systems. Hence, those areas support to sustainability of farmer economic outputs and supply in agro ecosystem. Forage legumes are essential elements of farming systems and directly contribute to all the mentioned sustainability components in addition to human and animal health, welfare and hence quality as well. Main principles of breeding programs in forage legume are focused on variety and diversity, yield and resistance for disease which are main factors of quality and therefore environmental sustainability facts. It is clear that agricultural activities are mandatory to feed the world whereas requirement for lower and/or never damaging side-effects. Due to increasing demand for management of sustainability and economic challenges, present paper was prepared to highlight necessity of forage legumes and persistent grasslands by higher and better agronomic characteristics in agricultural systems.

Keywords: Agricultural sustainability, forage quality, global climate change, pasture legume, sustainable system

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CLIMATE CHANGE AND LEGUME NITROGEN FIXATION

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Abstract:

Increase in the world population is directly related with requirement of fossil energy and production of fertilizer as well. The truth in this condition is economic difficulty and environmental damage. Intensive agriculture systems cause to huge amount of nitrogen fertilizer usage which led to concern on N cycle over the soil-water nitrate accumulation and nitrogen oxide in atmosphere. Change in climate over the world is an essential issue for humankind. Scientific researches on plant response to environmental factors are a topic which increasingly takes attention due to concern on resources of plants, biodiversity and global food security. Legume family known as eco-friend and health-care plants which are fundamental crops for sustainability besides presenting second major crop of agricultural importance over the world. Depending on environmental changes, response of legume nitrogen fixation varies by view of drought, salinity, heat stress, carbon dioxide concentration and soil acidity. Present paper describes the main environmental factors which are directly connected with climatic changes and their major effects on N^2 fixation and legume production worldwide. Additionally, suggestions for adaptation of symbiotic legumes to climatic variability on production quantity are given depending on recent studies by view of molecular and biotechnological efforts over the world. Therefore, aim of the paper is improvement of healthy food supply consider to sustainable agricultural system.

Keywords: Eco friendly, global warming, grain legumes, *Rhizobium*, sustainable agriculture.

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POSSIBILITIES OF USING SWEET SORGHUM AS AN ENERGY PLANT

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Abstract:

Sorghum (*Sorghum bicolor* L.), that is a member of the Poaceae family, is a plant with high adaptability to different climate and environmental conditions and it uses different purposes. Sorghum seeds are used for human and animal nutrition and stems are used for silage. Besides, it is used in the production of paper, sugar, biogas and bioethanol production. Compared to other plants, sorghum has high biomass yield and it uses less fertilizer, water and pesticide. It is also highly tolerant of drought and water stress. Sorghum; when compared to energy plants such as corn, sugar cane, sugar beet; it has low production cost, short growing period, and ability to grow in marginal areas, high sugar and ethanol yields. So, it is considered as important biofuel plants in the world. Nowadays, because of the restrictions on fossil resources, environmental pollution problems, research and innovation of renewable and environmentally friendly sources is gaining importance. Biomass energy, a renewable energy source, is an important source of energy to be developed. The sweet sorghum, a variety of the sorghum, is an important energy plant that contains C5 and C6 sugars that are efficiently converted into bioethanol. In this study, the possibility of using sweet sorghum as an energy plant has been tried to be compared with other energy plants in terms of efficiency and economics.

Keywords: Sorghum, Sweet sorghum, Energy plant,

NUTRITIONAL VALUES OF SWEET CORN GRAIN (*Zea mays* var. saccharata) IN PRODUCED WITH GOOD AGRICULTURAL IMPLEMENTATION

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Abstract:

Sustainable organic agriculture development and yield maximization of crops can be achieved through restoration and scientific management of land productivity. The focus of this work is on grain yield, nutritional value, vitamins and micro elements content of different sweet corn cultivars. This work was carried out in Düzce cropland in the years 2016-2017 growing season. The field has not been planted at least 8 years and without any chemicals and others. The maximum number of organic agriculture in the transition process only annual plants 2, perennial plant is 3 years due to the duration of the transition period in terms of regulations for organic production with other appropriate conditions lack aspects of possessing good agricultural practices can be evaluated in this study according to designed as a randomized complete block design with 3 replications April 15, is founded in. As the material 4 hybrid sweet corn (Vega, Merit, and Lincoln) 1 piece variations of composite has been used in sweet corn of Sakarya. Result of the research, the highest yield of 9806.2 kg ha-1with variation of the grain from Vega, is the lowest yield of 7924.7 kg ha-1 with grain has been obtained from the Sakarya composite types. Among other varieties have been found in the differences. These differences are in terms of the efficiency of different genotypic structure of varieties sand is due to different environmental conditions. Corn varieties, quality and nutritional values in terms of analyses have been conducted. Accordingly, Sakarya corn sweet in different parts of the grain (endosperm, embryo, and shell). Although the average 13% water, fat 4.6%, proteins 11.2 % and 72.3% starch higher than any others, but in terms of fiber Merit varieties of approximately 8.2% have the same values. According to the results of the analysis of vitamin it was found out that corn is a vitamin store; the grain A, B and C vitamins and zinc, iron and magnesium minerals such as molasses has been identified. In this study, good agricultural practices with Corn without the use of any chemicals production. Similarly, it was seen that organic farming can be done under contract.

Keywords: Good agricultural practices, sweet corn, nutritional values

EFFECTS ON YIELD AND QUALITY PARAMETERS IN DRY BEAN CULTIVATION OF SOME BIOLOGICAL PRODUCT (SALICYLIC ACID, NAPHTALYN ASCETIC ACID AND GLYCINE BETAINE) APPLICATIONS

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Abstract:

The bean (*Phaseolus vulgaris* L.) is at present regarded as one of the most important field crops in Central Anatolia, Turkey on account of its high protein content and human nutritional benefits. A continuous effort is being made to obtain higher production per unit area in order to increase profitability, and to meet the ever-increasing demand for food. In this study, it was aimed to produce high yield and high quality crops by growing healthy plants by using Salisilik asit (SA), Naftalen Asetik Asit (NAA) and Glisin Betain (GB) and their combinations on bean cv. Alberto. All chemicals were applied from leaf in the period of 7-8 leaves and 2 times a week interval, only water was sprayed to the control plants. The research was set up as three repetitions according to the random blocks trial design. As a result of the evaluations were obtained about the yield and quality parameters of bean, such as the plant height (cm), number of branches (number plant-1), number of beans (number of plants), number of beans per grain, number of seeds per plant, 100 grain weight (g), grain yield (kg da-1), protein yield (kg da-1) and protein ratio (%).The data were analyzed and interpreted by MINITAB and MSTAT statistics programs. In beans under biotic and abiotic stresses, the plant ages earlier with significant metabolic events such as decreased protein degradation or increased degradation, chlorosis, and necrosis. Significant differences were determined in the study compared to the control plants using SA, NAA, GB and their combined use. As the trends towards ecological, sustainable and organic agriculture increase, phytochemicals will be more needed as the most suitable materials for the purpose of good agricultural practices.

Keywords: Bean, plant growth regulators, yield, eco-friendly agriculture

THE EFFECT OF DIFFERENT IRRIGATION LEVELS ON ETHANOL, YIELD, AND SUGAR CONTENT OF SORGHUM UNDER SUBSURFACE DRIP IRRIGATION CONDITIONS

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Abstract:

This study was conducted to determine the effect of water stress under five different drip irrigation levels designated as full irrigation (W100) with no water stress and slight (W75), mild (W50), severe water stress (W25) and no irrigation (W0) treatments under Mediterranean conditions, Antalya, Turkey. The results showed that water stress levels applied have statistically significant effects on ethanol, sugar content (glucose, fructose, and sucrose), yield and yield components. Water stress significantly ($P \leq 0.01$) increased glucose, fructose, and sucrose contents while it decreased ethanol content. The maximum yield was obtained from full irrigation, slight, mild, severe and full water deficit stress as much as 115, 98, 73, 67 and 56 t ha−1, respectively. The highest ethanol was found in W100 as 2045.3 L ha^{-1} and the lowest one was found in W0 as 1471.8 L ha^{-1}. The results from this study showed that the ethanol amount of sorghum was sensitive to water stress.

Keywords: Irrigation, Ethanol, Sorghum, Sugar content

EDIBLE LEGUMES AND GLOBAL CLIMATE CHANGE

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Abstract:

Global climate changes resulted by various harms such as acidification of soil or hurricane, drought, flooding etc. factors that are affecting all the living organisms by direct or indirect ways. By view of sustainability, water consumption is 11 times more in chicken meat and 18 times more in pork while CO2 footprint is 0.5 kg in legumes and 9.5 kg in cows. Water efficiency of pulses compared by the other protein sources that 50 liters for 1 kg while that value is 4325 lt for chicken, 5520 lt for mutton and 13000 lt for beef. Pulses are able to fix nitrogen by symbiotic living with Rhizobium bacteria. So, pulses need to less organic and synthetic fertilizer which act an essential part to decrease in greenhouse gas emissions. It is estimated that, almost 190 million hectares of pulses in worldwide provide to 5-7 millions of tonnes of nitrogen in soils. Rotation programs including pulses decreases depletion and erosion risk of soil. Rotation of crops or intercropping with pulses presents more soil carbon sequestration potential than mono-crop growing. Additionally, pulses are known as "climate smart" plants that are simultaneously adapt to change in climate and reducing its effects. Furthermore, there is a broad genetic diversity of pulses which provides and makes it easy to improvement of the desired varieties. It is mandatory to take precautions for climate change which affects agricultural ecosystems and production, global food security, environment etc. components of sustainability, immediately. Present paper describes importance of legumes on changing

Keywords: Agro-ecosystem, agricultural sustainability, global climate change, legume, nitrogen fixation.

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SUSTAINABLE CROP AND LANDSCAPE SYSTEMS

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Abstract:

All the human activities have diverse effects on natural world. Attempt to combine various ecological theories in common, and by tightly-acceptable design method under a connected form is an essential phenomenon and necessity of people over the world. Designing of landscape provides to human and nature conjugate between health and basic requirements as well as production of field crops. Today, demand for food and gardening has been an increased and growing necessity. There is need for new goals on landscape modelling such as food and/or other products, ecosystem based renewing, natural-green fertilizing and soil improvement, self-protective plant patterns to achieve sustainable agricultural systems. The mentioned tasks are so hard, but essential for new targets of worldview. Potential of landscape as a component of agricultural production area is evaluated by view of its potential on high yield by lower energy-time and cost. In that view, main components of over-yielding polycultures on landscape areas may summarize by; high-diverse yield, maximum self-maintenance and minimum cost, maximum ecological health, healthy plants and minimum competition, over fertility, minimum weed-disease-insect problem and pesticide application, organic fertilizing, sustainable water demand, effective labor which may realize by creating better design factors and management activities. Present paper describes and highlights some strategies, tools, builds a bridge between ecology and garden, and offers specific issues about landscape designing by using field crops. Main purpose of the paper is to give suggestions to ecological principles on landscape designing for health, food and thus sustainability as a whole by considering of

Keywords: Agricultural sustainability, landscape designing, landscape management, renewable ecology, sustainable resources.

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CAN-BUS BASED POWER AND ENERGY DEMAND FOR TRACTOR-IMPLEMENT FIELD OPERATIONS

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Abstract:

Modern agricultural production continues to become more technology driven with the greater use of information technology on-board tractors. Controller Area Network (CAN) Bus technology has improved tractor diagnostics and enabled tractor-implement management to be easier through ISOBUS. Direct measurement of CAN-Bus messages contains average operating speed, engine load, engine torque, and fuel consumption. Furthermore, analysis of these messages provide a direct assessment of the power and energy demand for specific tractor-implement field operation and can be used for monitoring performance and management decision. In this study, CAN Bus technology is being discussed and comprehensively reviewed. A CAN Bus interface was used for measuring and recording messages of Massey Ferguson 7485 DYNA agricultural tractor. Actual field data was successfully collected for chiseling and harrowing at various travel speeds and tillage depths. CAN-Bus data were also compared to ASAE standards and OECD test by NTTL. The power predicted by ASABE was in the range of 16.8-32.6% higher than the power obtained by CAN-Bus for harrowing operation, while for OECD test was in the range of 59–90%. The Fuel consumption predicted by ASAE (2003) equation was in the range of 60–126% higher than the power obtained by CAN-Bus for harrowing operation, while for ASABE (2015) equation and OECD test was in the range of 31–40% and 71–81%, respectively. Shift up Throttle down Technique was used and a saving of 21% of fuel was achieved. New categories of tractor loading ranges are proposed as heavily (75-97%), moderately (50-75%) and lightly (26.4-50%), and they are compatible with OECD test. Fuel consumption on tractor-implement operation was affected by tillage implement and depth, and soil condition and was successfully demonstrated by CAN-Bus messages study in this study. A saving of 75% of fuel was achieved when tillage depth reduced from 40 cm chiseling to 25 cm harrowing on the absence of soil compaction.

Keywords: CAN-Bus, Tractor, ASABE Standards, OECD Test, Power and Energy Demand

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THE IMPACT OF VIBRATIONS OF TRANSPORTATION VEHICLES ON ANGELINO PLUM (*Prunus salicina L.*) FRUIT

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Abstract:

In the world market, demand and sales of plums are increasing day by day. Angelino plum (*Prunus Salicina* L.) is consumed fresh and dry. In the fresh product market, the freshness and continuousness of products affect the continuity of the market, because of products must be put on market at high quality consistently. Because of product quality must be conserved, and in order too deliver the products to the market at high quality, due to for should be avoided vibrations of generaded by transport vehicles. During transport of products by transport vehicles, vibrations generated by the road cause deformations on fruits and vegetables. Deformation on the product under the influence of vibration lowers the market value of the products.

Fresh plums are exposed to certain vibrations in transportation and transmission of market and lokal market, by being placed in the wood transport boxs from the production gardens. One of the vibrations that products are exposed to is the transport vibrations created by the road while transporting the Products by means of transport vehicles. These vibrations cause damage to the fresh product. In this study, an attempt was made to reduce for the effects of vibration on fresh plums fruits, transporting with transport boxs coated with different paper, sponge and plastic. In this study, wood transport boxs of dimensions of 40x55x20 cm was coated with paper, sponge and plastic material and then Angelino varieties plum fruits placed thees transporting boxs.

Then, three floors of the transport boxs were exposed to transport vibrations by connecting them on the road simulation vibration platform. The experiments were carried out three times. As a result of the study, it was determined that the fruit damage rates of the products coaded with sponge (%9) are lower than those coaded with paper (15%) and plastic (11%).

Keywords: Plum, vibration, road, damage, fruit, trasport vehicles.

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EFFECT OF ENHANCED ELEMENTAL SULPHUR DOSES ON PH VALUE OF AN EXCESSIVE CALCAREOUS SOIL

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Abstract:

Due to the excessive lime content, the high pH of the soils usually can limited the availability other plant nutrients including phosphorus in the soil. Elemental sulfur applications are one of the methods used to reduce high soil pH. Elemental sulfur application is an economically resource used for reducing the root zone pH. Particularly recommended elemental sulfur doses are often ineffective in reducing soil pH. For this reason, this study was carried out to investigate the effects of both the recommended sulphur doses and the intense doses of sulphur additions on soil pH. The effect of elemental sulphur (S) on soil pH treated with different elemental S doses (0-0.01-0.02-0.04-0.08 elemental S% and 0.16-0.32-0.64 elemental S%) was determined in the pots. The soil was taken from a depth of 0-30 cm at Selcuk University of Agricultural Faculty Sarıcalar Experimental area in Konya. The soil used in the study is mild alkaline (pH 7.97), limy (12.25%), less salty, little organic matter and its useful phosphorus concentration is very little. Soil samples were brought to field capacity with pure water after sulfur addition, and incubated at 28 ° C for 10 weeks. Weekly pH measurements were made throughout the incubation period and pure water additions were made to ensure that the soil was in field capacity. All treatments led to a decrease in soil pH though pH tended to increase again during course of time in pot experiments.

Keywords: Elemental sulphur, pH in soil, calcareous soil.

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USING CONTAMINATION INDICES FOR ASSESSMENTS OF HEAVY METALS STATUS OF SOILS AROUND MERCURY MINE, IN KURŞUNLU, (KONYA)

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Abstract:

The objective of this study was to establish contamination level for, Pb, Zn, Cu, Ni, Cr, , As, Hg, Sb, Co, and Cd in soils around the old Hg mine area, central part of Turkey.. Surface samples of 34 soil profiles from areas were collected. Samples were digested and the metals were determined by ICP-OES and assess metal contamination in soils by using Enrichment factor (EF), contamination factor (Cf), Geoaccumulation index (Igeo), hazard quotient (HQ) (individual metal), contamination index (Cd), modified contamination index (mCd), pollution load index (PLI), and hazard load index (HLI) (multi metal).

Enrichment factor (EF), contamination factor (Cf), Geoaccumulation index (Igeo), hazard quotient (HQ) indicate that the soil in the most of studied points were unpolluted, slightly polluted or moderate degree of pollution) with respect to Pb, Cr, Cd, Zn, Cu, Co and Ni, while the soils in all studied stations were extremely contaminated) with respect to Hg, Sb and As. When the obtained result to by evaluated the cumulative effect of metal pollution load index (PLI), the contamination degree (Cd) and modified Contamination Degree (mCD), and hazard load index were found to be very high , high pollution, ultra-high degree pollution and medium pollution respectively indicating that the studied soils in were polluted by total of studied heavy metals.

Keywords: Mercury mine, soil pollution, contamination index

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INFILTRATION RATE UNDER DIFFERENT SOIL WATER CONTENT CONDITIONS

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Abstract:

Infiltration is known as the rate of penetration of water through the soil surface into the soil. The rate of infiltration is a fundamental and very important hydrological factor used in agricultural production, especially in the design of irrigation systems. For this reason, the infiltration rate of the soil is determined before irrigation systems are projected on the agricultural lands. Different methods can be used to determine the infiltration rate of the soil. For this purpose, double-cylinder infiltrometers are generally preferred to find out the infiltration rate of the soil. The infiltration test is continued until the water level in the infiltration region is gradually decreasing over time. Then, the relationship between time and the decreasing water level determines the rate of infiltration. In this hydrological event, the initial water content of the soil during the infiltration test is thought to be influential on the infiltration event and the duration of the infiltration. For this reason in this article, it was aimed to find out the values regarding the infiltration rate in the soil with different soil water contents.

Keywords: Soil water content, infiltration test, infiltration rate

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SOIL SALINITY PROBLEM AND ITS REMOVAL

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Abstract:

Water is one of the scarcest natural resources in today's world. As the pressure on these scarce resources keeps increasing due to the global climate change, the quality of water resources is gradually deteriorating. Beside this, soil salinity has been one of the most important problems in sustainable irrigated agriculture. On the other hand, no matter how good the quality of the soil and irrigation water is, salt accumulation occurs in the plant root zone at the end of the agricultural production season if the salinity is not removed from the soil. The salt can rise above the tolerance threshold of the plants as years pass. Under these conditions, salt accumulation in the soil can cause a significant decrease in the yield in agricultural production. In addition, the increasing salt accumulation leads the cultivated lands with good quality to becoming non-agricultural lands by time. In this article, the possibilities of salt accumulation and desalination methods are discussed in detail. As a result of this study, it is suggested that an effective soil washing should be applied in the soil salinity removal.

Keywords: Soil fertility, salinity estimation, excess irrigation, drainage, leaching

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THE IMPROVING OF WATER HOLDING CAPACITY IN SANDY SOILS

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Abstract:

Soil moisture content plays an important role in determining irrigation time and amount of water to be applied in each irrigation. Field capacity, defined as the amount of moisture that grains hold against gravity under free drainage conditions, varies depending on many factors, especially; the soil texture, structure, organic matter content and porosity. A soil with a high organic matter content has a greater water holding capacity than a low organic matter content. As the organic waste increases the pores of the soil rich in water, the soil capacity of the soil supports higher values. Particularly for the sandy soils low water holding capacity is a big problem in terms of both plant breading and irrigation managements. Taking this problem into consideration, it is aimed to increase the water holding capacity of the sandy soil by using farm manure, leonardite, blood flour (dust) and water retaining polymer materials. A study has been carried out on the determination of the most effective dose of these materialsant their effects on the bulk density, porosity, field capacity and wilting point of soil. The results obtained emphasize that water holding capacity can be increased in sandy soils with different soil conditioners but further studies should be conducted based on reducing evaporation and deep seepage losses.

Keywords: Field capacity, wilting point

ASSESSMENT OF NUTRIENTS IN HUMIC ACID AFFECTING THE FERTILITY OF SOIL

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Abstract:

Soil organic matter contains humic acid (HA) which is performing important role in ion exchange. Plants need a constant supply of necessary minerals in order to maintain healthy cell function. Soil samples were collected from various areas of Tehsil Sobhodero District Khairpur, during the summer season. pH, EC, moisture contents of soil were determined. IHSS method for isolation and purification of HA was used. UV/Vis spectra of HAs were recorded between 200-700 nm and absorbance was noted at 254, 436, 465 and 650 nm. HAs extracted were complexed with K+1, Zn+2 and Fe+3 ions at the optimized pH 8, 7, 6 respectively for each ion. The concentration of metal ions after digestion was determined by Atomic Absorption Spectrophotometer. Moisture content shows a reasonably good water holding capacity of soil. pH and EC shows alkaline nature of soil. The value of optical parameters E4/E6 of humic acid found less than 5.0, therefore, HAs may be of higher molecular weight with increased hydrophilic structures. K^{+1}, Zn^{+2} and Fe^{+3} metal ions shows strong binding ability with Humic Acid at pH 8, 7 and 6 respectively. HAs by complexing with metal ions increases their solubility and availability to the plants.

Keywords: Agriculture soil, Humic Acid, nutrient ions, UV/Vis, AAS,

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FULVIC ACIDS ROLE IN THE GROWTH OF THE PLANTS

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Abstract:

All agriculture soils contain adequate amounts of fulvic acids produced within the soil by degradation of plants and animals. Fulvic acids help the plants to obtain their complete nutrition. Fulvic acid isolated from the agriculture soils of Sindh, Pakistan by IHSS method and characterized for the assessment of nutrient contents (N. P, K, Ca, Mg, Fe and Zn) by using the Atomic Absorption spectrophotometer (AAS). For spectroscopic analysis UV-Vis, FT-IR and NIR spectra of isolated compounds were obtained. Moisture as well as texture shows good water holding capacity and silt- loam type of soil. pH and EC are indicators of the fertility of soil to be beneficial for plantation. The spectral data (UV-Visible, FT-IR and NIR) showed the characteristic functional groups (-COOH, C=O, -OH, -NH2, C=C, CH2 and Polysaccharides) present in Fulvic acids. E4/E6 values depict its hydrophilic nature, having less aromatic and more aliphatic groups. The data has been compared with the literature and correlated with the fertility of the soil and ultimately to the growth of plants cultivated over there.

Keywords: Fulvic acids, agriculture soils, AAS, UV-Visible, FT-IR and NIR

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ESTIMATION OF CROWN DIMENSIONS FOR CRIMEAN PINE IN THE KASTAMONU REGION OF TURKEY

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Abstract:

In this study, it is aimed to develop models to predict crown diameter (CD), crown projection area (CPA), crown length (CL) and crown height (CH) for Crimean pine (Pinus nigra J.F.Arnold subsp. pallasiana (Lamb.) Holmboe) stands in Kastamonu region, Turkey. For this purpose, field measurements were made on 107 sample trees taken from the stands at different densities, ages and sites. The data obtained from 75 sample trees (70% of total data) were used for model fitting, while the data obtained from 32 sample trees (30% of total data) were used to test the validity of the fitted models. While the equations using various tree parameters such as diameter at breast height (dbh) and tree height (h) as independent variables were fitted and evaluated, the equations using only dbh as an independent variable were found the most appropriate models to estimate CD, CPA and CL with coefficients of determination of 0.905, 0.905 and 0.475, respectively. In the development of model for CH estimation, the equation using h as an independent variable was found the most successful model with the coefficient of determination of 0.835. With the help of these models developed, crown dimensions of Crimean pine can be reliably estimated in Kastamonu region of Turkey.

Keywords: Crown diameter, Crown projection area, Crown height, Crown length, Pinus nigra

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ESTIMATION OF BARK THICKNESS AND BARK VOLUME FOR CRIMEAN PINE IN THE KASTAMONU REGION OF TURKEY

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Abstract:

In forestry applications, tree stems of Crimean pine (Pinus nigra J.F.Arnold subsp. pallasiana (Lamb.) Holmboe) are produced and evaluated without bark, and volumes of tree stems are calculated as under-bark for commercial trades in Turkey. In harvesting process of tree stem, bark is abandoned to forest land. Even if bark is not evaluated as a product, it plays very important role to protect tree stem from insects and fire, and it is essential to contribute to soil as a humus material. Beside, tree bark is one of the potential non-wood products in forestry and can be used in many areas such as landscape, medicine, etc. Because of these aspects, correct estimations of tree bark thickness and bark volume have great importance. In this study, a total of 227 sample trees were selected and felled from Crimean pine stands representing available range of sites, densities and ages in the studied region. Regression equations using diameter at breast height (dbh) as independent variable to estimate bark thickness (b) and bark volume (Vb) were fitted and evaluated. The equations fitted accounted for about the 79% and 95% of the total variance in dbh-b and dbh-Vb relationships, respectively. The selected equations were also investigated in respect to residual distributions and other realistic growth patterns, and found to be appropriate.

Keywords: Tree bark, Volume of bark, Under-bark volume, Allometric equations, Pinus nigra

EVALUATION OF PRIMARY SCHOOL YARD DESIGNS IN KASTAMONU

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Abstract:

Break time has an important function in order to relief children from the effects of the past lecture and to enable them to participate more actively in the next lesson. Active break time is the complement of the school experience and learning process. In break time, school yards are extremely important to relieve mental tiredness during classes. School yards should be organized as areas that allow pupils to feel comfortable, have experience and adventure, increase communication power, and experience different kinds of physical mobility. Within the scope of this study, the current situation of primary school yards in Kastamonu and the opportunities that they provide to students were examined. For this purpose, 8 primary school yards located in Kastamonu city center were identified as study material. These schools are Abdülhamit Primary School, Ali Fuat Darende Primary School, Candaroğulları Primary School, Cumhuriyet Primary School, Gazi Primary School, Isfendiyar Primary School, Mehmet Akif Ersoy Primary School, Toki Primary School. These school yards have been examined in line with the criteria of access-connection, safety, material reinforcement, plant arrangement and efficiency of space. As a result, it has been determined that school yards do not have sufficient regulation to allow extracurricular activities during breaks, the lack of greenary, and the concrete or asphalt flooring can not respond to the needs of the students such as social learning, physical movement and rest. Another situation was observed that the landscape design in the school yards is very similar.

Keywords: school yard, children's perception, school yard activity, school yard design criterias

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VANDALISM IN KASTAMONU

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Abstract:

Maslow's hierarchy of needs is a motivational theory in psychology comprising a five-tier model of human needs, often depicted as hierarchical levels within a pyramid. Human needs are grouped under main three headings (basic needs, psychological needs and self-fulfillment needs) in Maslow's Hierarchy of Needs. A person who can not fulfill these five needs can not be a normal healthy individual and one side is missing. Vandalism can be described as exploitation. Today, vandalism can be defined as aggression towards public goods or a tendency to exist in aggressive behavior against the properties of other people. In this context, these people make vandalism at high level. In this study, it is revealed that what kind of vandalism is widespread in Kastamonu and why people need vandalism. What will be done as a landscape architect to reduce the rate of vandalism and the tendency of the people of Kastamonu to vandalism will be revealed through this study. For this, a questionnaire study was conducted with the users of Kastamonu open green area (100 persons). In the questionnaire, it was questioned demographic characteristics of users, whether the users had any tendency of Vandalism in the past and the reason for the tendency to vandalism. As a result, people's tendency to vandalism has arisen since the needs of people have not been met.

Keywords: Social dimension of vandalism, hierarchy model of human needs, varieties of vandalism, vandalizm in Kastamonu

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STUDYING OF SUSTAINABLE DESIGN PROCESS IN UNIVERSITY CAMPUSES AND SUGGESTION FOR SUSTAINABLE CAMPUS DESIGN IN SELÇUK UNIVERSITY

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Abstract:

Human beings, who aim to develop and improve during centuries, change and develop themselves bath to live more comfortable life and to keep more secure life in consequence of technological developments and increasing needs. Development of technology has advantage and disadvantage sides, and causes to run out of raw materials and appear environmental pollution. Resources consumed as if they didn't run out of, so these resources can't renovate because of unconscious consumption although nature has the ability renovating. Sustainable means habitualness. İt comes into existence to reduce the negative effects of environmental problems and to find long term solutions for environmental problems. Universities have significant importance effect for social and financial problems because they are one of the institutions which provide for sustainable developing targets. These institutions provide important effects for sustainable developing process by the way of education, investigation and collaborative venture. In this study, it is showed that the historical development of sustainable campus design Turkey and all over the world, how to do the sustainable campus landscape, implementation of green designs in university campuses, comparisons to ASLA and LEED's criterions, sustainable campus landscape planning and design examples, and suggestions of sustainable campus design for Selçuk University.

Keywords: campus sustainable, criterions of ASLA and LEED, green design, landscape implementation, landscape planning, sustainable.

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INVESTIGATION OF THE LANDSCAPE DESIGN IN THE EXAMPLE OF KONYA JAPAN PARK FOR ELDERLY INDIVIDUALS

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Abstract:

Landscape Architecture is a profession working on the design of natural and cultural resources and physical environment within the aesthetic and scientific principles for human benefit, happiness, safety, health and comfort. It has to take care of the needs of all living things that use the environment for their physical needs. The elderly have spent their lives for the welfare of the society and therefore deserve a more special interest. This research is to examine and evaluate the landscape design of the elderly people using the park in the Japanese park of Konya city. In the preparation of questionnaires, the accessibility check form of open spaces and the Green Therapy Criteria were used to assess the elderly of the Konya Japanese Park. The volunteer-based questionnaire study was conducted at different times of the day, with elderly individuals using the park in April-May-June 2015. An oral interview was held with 120 elderly people. In terms of elderly individuals, the park was evaluated and recommendations were made taking into account the survey results. The demographic data included in the questionnaire included negative effects of health problems caused by old age in the marital status of some users. Our research; it has been revealed that in the designs made considering the fact that all of us are elderly candidates throughout life, the technical standards for comfort related to old age and its health problems should never be ignored.

Keywords: Elderly individual, landscape design, Konya Japan Park

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SOFT-BOTTOM MOLLUSCS DIVERSITY OF THE SOUTHWESTERN BLACK SEA (ISTANBUL-IĞNEADA) IN AUTUMN

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Abstract:

Macrobenthic communities show variations in composition and structure across different enviromental conditions and habitats. Benthic samples were collected by RV Karadeniz Araştırma of the Recep Tayyip Erdoğan University. Soft bottom macro-zoobenthic communities were determined at 4 depths (≤10-15m, ≥25-30m, ≥45-50m, 70-m≥) of four stations along Southwestern Black Sea (İstanbul-İğneada) in Autumun 2017. A total of 28 molluscan species belonging to 2 classes were identified in 4 transects (including depths of 10, 30, 50, 70, 100 m) located in Şile, Anadolu Feneri, Karacaköy and İğneada. Overall, no significant difference in community parameters such as diversity index, evenness index, and species richness was found among transects. The species abundance showed depth-wise variations. This research supported by "TUBİTAK 116Y150" project.

Keywords: Black Sea, Macrobenthic communities, Soft-Bottom Molluscs Diversity

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INSULIN-LIKE GROWTH FACTOR-I (IGF-I) IN LIVESTOCK

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Abstract:

Insulin-like growth factors (IGFs) are known as peptides that have important metabolic effects necessary for cellular growth and its metabolism. In the process of growth hormone (GH) to accelerate growth, IGF-I have an important role. IGF-I has important role after birth and has a glucose–regulative feature at insulin-like doses. IGF-I is synthesized in liver tissue under control of GH and released to blood. Animal studies clearly showed the important effects of IGF-I on growth. Especially on farm animals, the relationship of IGF-I with many yield traits was reported. Therefore, in animal husbandry, since Animal studies clearly showed the important effects of IGF-I on growth are directly related to, it can be used as an important selection parameters.

Keywords: Insulin-like growth factor, Livestock, Growth hormone

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FISH SPECIES DISTRIBUTION IN DADAY (KASTAMONU, TURKEY) BROOK

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Abstract:

Main purpose of this study is determining the fish biodiversity of Daday brook placed in Kastamonu province. Daday brook is unites with Gökırmak river, which is one of the main branch of Kızılırmak. Also, Gökırmak unites with Kızılırmak after passing the Sinop province. Daday brook, branch of the Kızılırmak basin, is now used for agricultural irrigation and recreational fishing nowadays. Samples collected in various dates were fixed in 4% formaldehyde solution. After a while, samples which passed through alcohol series were kept in 70% ethanol for long-term preservation. Fixed samples were measured, counted and various indexes were calculated. After measuring, counting and calculating processes, distribution of *Capoeta baliki*, *Squalius cf. pursakensis*, *Alburnus chalcoides*, *Alburnoides tzanevi, Oxyneomachilus banerescui, Oxyneomachilus kosswigi* and *Oxynoemachailus angarae* species was determined.

Keywords: Kastamonu Water Resources, Fish Taxonomy, Fish Systematic, Biodiversity, Brook.

NANNOCHLOROPSİS SP: HISTORY OF CULTURE, ANALYSES AND LAST SITUATION OF THE LIMITS

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Abstract:

Microalgae are a fertile source of valuable biomolecules such as poly unsaturated fatty acids (PUFA), vitamins and pigments. These biomolecules are used in different fields; aquaculture, human nutrition, fertilization, feed, pharmaceutical and bioenergy. *Nannochloropsis* sp. belongs to the class of *Eustigmatophyceae* and is a green microalgae species commonly used in marine fish hatcheries. Its small size (2-4 μ), sufficient protein and lipid concentrations, high amount of polyunsaturated fatty acids (PUFAs), especially eicosapentaenoic acid (EPA), arachidonic acid (ARA) and docosahexaenoic acid (DHA) increase the importance of Nannochloropsis sp. in aquaculture industry. Also, as a result of its high lipid ratio, it has become a subject of biodiesel research. Therefore, researchers have focused on increase its production efficiency and alter the biochemical composition to get higher amounts of desired metabolites. In this purpose, varied production methods, culture systems, environmental conditions and nutrient media have been tested. The information achieved to date will help to show us the point where we stand today. In the light of information from previous studies, this article gives an overview on the past and now of Nannochloropsis sp., then evaluates the future projection of this algae. Thus, it is believed that will provide useful information to the next studies.

Keywords: Microalgae, Fatty Acid, Aquaculture, *Eusigmatophyceae*, Biodiesel.

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COMPARISON OF GROWTH CURVE MODELS IN HAIR GOAT KIDS

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Abstract:

This study was carried out to determine growth curve parameters with Brody, Logistik, Gompertz and von Bertalanffy models by using body weights of Hair goat kids from birth to 12 month ages. The growth curve parameters (A, B and K) were determined as 30.08±0.99, 3.35±0.09 and 0.34±0.01 for females and 31.63±0.71, 3.54±0.22 and 0.37±0.01 for males in Gompertz model, respectively; as 44.30±3.40, 1.07±0.01 and 0.13±0.01 for females and 40.51±2.43, 1.09±0.01 and 0.16±0.01 for males in Brody model, respectively; as 27.98±0.83, 12.20±0.61 and 0.54±0.02 for females and 30.08±0.63, 13.40±1.58 and 0.58±0.02 for males in Logistic model, respectively; as 31.74±1.16, 0.75±0.02 and 0.27±0.01 for females and 32.77±0.80, 0.78±0.04 and 0.30±0.01 for males in von Bertalanffy, respectively. In terms of model selection criteria with a high degree of accuracy coefficients of determination (R2) and a low degree of Mean Square Predicted Error (MSPE), correlation between live weight and residuals (RESC), Akaike Information Criteria (AIC) and Schwarz's Bayesian Information Criteria (BIC) Logistik model was found to be mathematically adequate for describing the growth in Hair goat kids.

Keywords: Goat, Growth Curve Models, Gompertz, Logistic, von Bertalanffy

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EFFECTS OF MEDETOMIDINE/ISOFLURANE ANESTHESIA ON HEART AND RESPIRATORY RATES, AND BODY TEMPERATURE IN THE COMMON BUZZARD (*Buteo buteo*)

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Abstract:

The purpose of this study was to investigate characteristics of induction; clinical parameters while anesthetized; and timing and quality of induction and recovery with medetomidine/isoflurane anesthesia in the young adult common buzzard (*Buteo buteo*) (n=14). Heart rate (HR), respiratory rate (RR), and body temperature (BT) were measured before and 10 minutes after pre-medication with the parenteral agent and at 5, 15, 30, 60, 120 and 360 minutes during the intubateed and extubated periods. Compared to baseline values, a decrease in RR between 5 and 120 minutes was observed in MED-ISO group. Compared to baseline values, decrease in HR between 5 to 360 minutes was noted in animals. Compared to baseline values, a decrease in BT was noted between 5 and 120 minutes in MED-ISO group. The anesthetic effect of the isoflurane started between 2 and 3 minutes (2.35 ± 0.13) after inhalation started. The length of time at deepest anesthesia level ranged from 4 to 7 minutes (5.35 ± 0.24) for group MED-ISO. The medetomidine/isoflurane regime provided a rapid and effective anesthesia and thus might be preferable for raptors requiring urgent anesthesia.

Keywords: Anesthesia, common buzzard, isoflurane, medetomidine

TRICHOEPITHELIOMA IN TWO AMERICAN AND COCKER SPANIEL DOGS: A CLINICOPATHOLOGICAL STUDY

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Abstract:

Trichoepitheliomas (TEs) are benign follicular appendage tumors with differentiation to all three segments of the hair follicle. To the author's knowledge, this is the first report of trichoepithelioma use in dogs in Kyrgyzstan. In this paper, it reports occurrence of a trichoepthelioma in 2 American and Cocker spaniel dogs. A 12-year-old male, Cocker Spaniel dog during physical examination observed ulcerated two lesions between ear and eye one of tumor was 0.5 cm diameter, and the other one was 1.0 cm, fistulized and round-oval shape pinkish colored with no other pathological findings. The second case is an American Cocker Spaniel, male 10 years old dog, tumor located under the chin 3 cm diameter, yellow to pinkish colored, firm consistency. During hospitalization, we performed completely tumors extirpation. Neoplastic tissue was fixed in 10% neutral buffered formalin and processed with a series of alcohol grades. Paraffin-embedded, four-five microns tissue sections were dewaxed, dehydrated and stained with hematoxylin and eosin method (H&E) for microscopic diagnoses. In conclusion, histopathology remains the best method for the differential diagnosis for TE. Additionally, TE can be removed in dogs with long hair, such as spaniels.

Keywords: Trichoepithelioma, Tumor, Dog

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THE RELATIONSHIPS BETWEEN CHICK QUALITY AND SOME PERFORMANCE CHARACTERISTICS IN JAPANESE QUAIL

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Abstract:

This study was carried out to assess the relationship between some performance traits such as body weight, feed intake, feed efficiency, carcass yield and Tona score used to determine chick quality. A total of 77 Japanese quails were used in the study. Tone scores were appraised by two operators in order to determine the chick quality after chicks hatched and dried. Body weights at 6 weeks of age, feed intake and feed efficiency from 3 to 6 weeks of age, and carcass yield were measured, and birds separated to three groups with regard to Tona scores (Group 1:<95, Group 2: 95-99.5, Group 3: 100). There were no statistical differences for performance characteristics between the groups according to the study results ($P>0.05$ for all traits). It is not possible to say that there are significant relationships between chick quality and performance characteristics in Japanese quail when study findings are evaluated.

Keywords: Chick quality, Performance characteristics, Quail, Tona Score

BODY MEASUREMENTS OF SAANEN KIDS RAISED UNDER INTENSIVE CONDITIONS IN KONYA / TURKEY

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Abstract:

In this research, body measurement in Konya, a private company in Saanen kids reared in intensive conditions in the province were examined. Average body lengths, withers heights, dorsal heights, rump heights, widths between paddles, chest depths, shank circumference, chest circumference, leg girths of kids at seven months of age were 54.35, 60.65, 58.60, 60.54, 21.44, 28.40, 8.04, 68.03 and 51.84 cm respectively. All of the values found in phenotypic correlations between features of body measurements are statistically significant ($P<0.01$). When phenotypic correlations between body measurements were examined, the highest phenotypic correlations were found between DH and RH (0.985), and the lowest phenotypic correlations were between SC and WH, DH and RH (0.698, 0.684 and 0.692) ($P<0.01$. Since the Saanen goats are a goat breed with a milk yield, the body structures carry the general characteristics of dairy types.

Keywords: Saanen Kids, Body Measurements, Phenotypic Correlation

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COMPARISON OF FATTENING PERFORMANCE AND BODY MEASUREMENTS OF AKKARAMAN AND AWASSI MALE LAMBS

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Abstract

This research was carried out to compare fattening performance Akkaraman and Awassi sheep breeds. In this research, a total of 16 lambs were used and each genotype group was consisted of 8 male lambs about 3 months of age of which beginning live weight averaged 20 kg. They were fed up with ad libitum concentrated feed and given 150 g alfalfa to each animal for a fattening period of 70 days. Feed conversion ratios were found as follows; 4.93, 4.61 and total feed intakes (FI) were; 106.8 and 89.9 kg for Akkaraman and Awassi respectively. Daily live weight gains were 314, 284 g respectively. There were significant differences between groups in respect of total live weight gains (LWG), daily live weight gains (DLWG) ($p<0.05$) and feed consumption rates ($p<0.01$). Whereas there is no significant differences in feed conversion ratios.

Keywords: Lamb, Akkaraman, Awassi, fattening performance, body measurements

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THE RED-LEGGED PARTRIDGE IN TURKISH CULTURE

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Abstract:

Red-legged partridge (RLP), (Alectoris Chuckar) has an important place in Turkish culture and is a well-known, popular, beautiful-looking and singing, impressive bird. The edges of the eyes, the feet, the legs, and the beak are red, which is why they are called red-legged partridge. In The Divanü Lûgati't Turks, RLP is defined as a hunting and songbirds named ‘tawır’, while the male partridge is referred to as 'ular'. The birds that find both the old Turkish belief world and wide spread in the mythological events have been subject to various imagery by the divan poets after Islam. In Divan poetry, the first priority areas of RLP are as a hunting bird and it is generally referred to as being a feed for falcons. Partridge, the symbol most commonly used in folk songs, is described in some places as a game bird, but the most of the symbol of girlfriend or girl. Henna hands of your lover are likened to the feet of partridge. Feridüddin-i Attâr expresses for the beauty of Partridge in the famous work Mantıku't-Tayr "don’t touch evil eye, what a beautiful partridge. As a result, partridge continues its importance in folk music, folk dances, handicrafts and hunting subjects with our folk literature products such as lyric, epic, mania, lullaby, folk song, fairy tale, proverb, idiom and riddle for centuries as a motive in Turkish culture. It is not possible to find another animal as much as the RLP that has taken place in the Turkish people.

Keywords: Red-legged partridge, RLP, hunting, Turkish Culture, folks music, poem

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POTATO AGRICULTURE IN TURKEY IN THE REPUBLIC PERIOD (1923-1950)

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Abstract:

This study deals with the amount of production and cultivation areas of potato, which is among the tuber crops grown in various regions of Turkey, from 1923 to 1950 and its reflections on economy. The subject is limited to and addressed under the title of potato production activities in Turkey from 1923 to 1950. Evaluations on potato production activities have been made based on numeric data. The source material of the study consists of Republic archive documents and official publications such as statistical annuals and articles from various economy and agriculture magazines of the period. The relevant evaluations have been made considering the species of potato cultivated in Turkey in that period. The study has found out that attention was paid to growing potato, which was regarded as one of the necessary industrial crops for nutrition of the people and the army, in different regions of Turkey in terms of climate and soil characteristics in the 27-year period from 1923 to 1950. While some of those potatoes, which were economically important, met the nutrition requirements of the families producing them, the rest were placed on the market to earn income. The suitability of Turkey's climate and soil characteristics for potato production both encouraged all regions of the country to grow potato and allowed meeting the nutrition needs of both the people and the army in the process and aftermath of the World War II.

Keywords: Potato Agriculture, Tuber Crops, Industrial Crops, Nutrition, Republic Period

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DEPONİ ALANLARINDA GAZ HESAPLAMA YÖNTEMLERİ

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Özet:

Bu çalışmada belediyelerin mücavir alan sınırları içerisinde oluşan kentsel katı atıkların (evsel, endüstriyel, tıbbi atıklar ile arıtma çamuru) düzenli olarak depolandığı Katı Atık Düzenli Depolama Alanı'nda, deponi gazı oluşumu ve gaz toplama sistemi ile ilgili mevcut koşulların ortaya konulması ve oluşan deponi gazının bertaraf ve değerlendirme seçenekleri araştırılmıştır. Deponi alanlarındaki enerji potansiyeline karar vermedeki en önemli faktör, deponi alanındaki metan gazı miktarıdır. Deponi gazının miktarını belirlemede kullanılan çeşitli yaklaşımlar vardır. çalışmada, deponi gazının miktarını belirlemede 3 farklı metot ve literatür tabanlı bir yaklaşımı kullanılmıştır. Kullanılan metotlar; Tabasaran/Rettenberger, Multi-Phase, Scholl Canyon metotlarıdır.

Teorik olarak, tam kapasite çalışan katı atık deponilerindeki metan gazı potansiyeli 50-400 L/kg (m^3/ton) arasındadır. Verilen aralığın bu kadar geniş olması (minimum ve maksimum değerler arası 8 kat fark bulunmaktadır) yukarıda belirtildiği gibi çöp karakteristiği, iklim ve depolama sahasına özgü diğer özelliklerin çıkacak gaz miktarını etkilediğinin bir başka göstergesidir.

Anahtar Kelimeler: Düzenli Depolama Alanı, Deponi Gazı, Potansiyel Hesaplama Metotları.

DETERMINATION OF YIELD AND YIELD COMPONENTS OF SOME F1 HYBRID PUMPKIN CULTIVAR CANDIDATES

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Abstract :

This study was carried out to determine of yield and yield components of 79 genotypes of candidates of F1 edible pumpkin in Konya and Antalya regions. the characteristics of the seeds such as shape of the seed, seed color and hint easiness, thousand seed weight, and the total yield of seeds per plant (g/plant) of these genotypes were examined. The obtained results were analyzed to the "Weighted Grading Method". Among the evaluated types of edible pumpkin candidates, the ones with the score of 420 and over were found to be important. As a result of the weighted grading conducted in both regions, the candidates with the number of 13, 22, 26, 28, 34, 66, 71, 73, and 77 were found to be promising. Moreover, taken the seeds from the Konya region were analyzed for oil rate and seed oil rate of the genotypes were ranked from high to low, number 5 line (50,3%), 28 (53.85%), 35 (50,2%), 43 (53.36%), and 76 (50,72),respectively while the lowest rate was number 47 (31.3%).

Keywords: edible pumpking, genotype, Weighted Grading Method.

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COLOR VALUES AND HMF CONTENT OF MIRRA

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Abstract:

Coffee is the second most consumed beverage after water. Coffee consumed in Ethiopia for the first time and then spread in Arabic peninsula. In the Ottoman Empire, coffee has been brought to Istanbul in 1555, since then by applying special preparation method, coffee has become popular and named as Turkish coffee. The similar cooking method has been used in the Middle East, North Africa, Caucasus, Balkans and Eastern Europe. In the south eastern Anatolia, there is another kind of coffee that is called Mırra. There are some differences in preparation of Mırra. Coffee beans for Mırra are more roasted and ground less than those of Turkish coffee. The Mırra beverage is prepared more concentrated than Turkish coffee. Nowadays, Mırra has been prepared from both ground (traditional method) and classical instant coffee. In this study, Hunter color values (L, a and b), HMF and brown pigment contents of the different Mırra samples obtained from Mardin and Şanlıurfa were investigated. Hunter color values of Mırra samples made by traditional and classical instant coffee were very similar. While HMF values of Mırra samples made by traditional process varied from 0.96 to 202.69 mg/L, HMF values of Mırra samples made with classic instant coffee were ranged from 43.69 to 658.94 mg/L. It was found that the values of analyzed parameters of Mırra samples varied over a wide range. It is concluded that this variation could be due to the lack of standards and limits for the processes applied in preparation of Mırra.

Keywords: Coffee, Mırra, Color Values, HMF

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APPLICATION OF POLYMER-BASED NANO-SIZED MATERIALS FOR LIMITATION OF MESOPHILIC BACTERIA IN FISH FILLETS

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Abstract:

The whole fish samples (n=3) were filleted to be skinless and covered with electrospun nanofibers, which were fabricated using electrospinning technique, following optimization process. Optimization parameters were determined to be 0.4 mL/h flow rate, 25 kV electrical voltage and 12 cm as the distance between the collector and Taylor cone. Nano-sized materials obtained were characterized in terms of morphological properties and thermal behaviors. After revealing characterization parameters of nano-sized materials, fabrication series began and nano-sized samples were collected on aluminum foil that would be used for covering of fish samples. In this sense, average diameter of nano-sized materials was defined to be lower than 400 nm. Also, thermal decomposition (loss weight in mass <1%) at 4ºC was not significant. After fabrication and characterization, fish samples (150 g) were covered by aluminum foils containing nano-sized material (obtained from 0.5% chitosan and 10% PVA) and then fish samples were stored at 4ºC. The samples were tested in terms of microbiological growth. According to the results, in the 3rd day of cold storage, fish fillets covered by nano-sized materials had lower TMAB count (3.78 log CFU/g) compared to control (4.41 log CFU/g) (15% decrease). It is concluded that such materials may provide promising applications for prolonged fish quality.

Keywords: Fish, mesophilic bacteria, microbial safety, nanotechnology, nano-sized material.

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DETERMINATION OF SOME QUALITY AND FUNCTIONAL CHARACTERISTICS OF GELATIN EXTRACTED FROM CHICKEN SKIN

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Abstract:

In this study, chicken skin was used for gelatin extraction under predetermined extraction conditions. Some of the quality and functional characteristics of the resultant gelatin were investigated in comparison with commercially available gelatins from different sources. In this regard; gel strength, viscosity, gelling and melting temperatures, water holding and fat binding capacity, foaming and emulsion characteristics were evaluated. Based on the results obtained, chicken skin gelatin showed similar quality and functional characteristics as commercial gelatins in general, although some of the parameters were lower in chicken skin gelatin mostly due to insufficient isolation of gelatin and the presence of high amount of impurities. While the most of commercial gelatins showed a gel strength over 400 g, that was about 300 g in chicken skin gelatin obtained. Similarly, its viscosity was lower compared to that of commercial gelatins while its gelling and melting temperatures were practically the same. It is concluded that gelatin extraction under laboratory conditions may require further isolation and purification steps to remove impurities, which greatly interfere with the quality and functional characteristics. On the other hand, chicken skin was proven to be an alternative raw material in gelatin manufacturing for a high quality gelatin when its fat and water was able to be effectively and sufficiently separated.

Keywords: Gelatin, Chicken Skin, Quality, Functional Characteristics

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CHEMICAL AND PHYSICAL PROPERTIES OF KEFIR ENRICHED WITH CHICORY EXTRACT (NATURAL INULIN SOURCE) AND QUINOA FLOUR

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Abstract:

Kefir has an important place in the fermented dairy products after the yogurt and and is a product preferred by most consumers. Quinoa is a plant that can be used in different products. Chicory (*Cichorium intybus*) is one of the major sources of inulin production. Dietary fibers help support the digestive and immune system. In this study, the physical and chemical properties of kefir using chicory extract (inulin) and quinoa flour were investigated. The dry matter content of the control samples was lower than that of the other samples. Viscosity values of the samples were slightly increased during storage. All samples had negative a (greenness) value and positive b (yellowness) value. In particular, it was observed that inulin addition had a reducing effect on serum separation. The use of chicory extract (inulin) and quinoa flour can be promising for kefir production.

Keywords: quinoa, chicory extract, kefir, inulin

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SAFFRON: A VALUABLE MEDICINAL FOOD PRODUCT*

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Abstract:

Saffron is a plant belonging to the Iridaceae family. It has been cultivated different countries such as Iran, Greece, Morocco, India, Spain, Italy and Turkey. Saffron is a spice obtained by drying according to the technique of stigmata of *Crocus sativus* L. (Iridaceae). It has antioxidant, antityrosinase, and antidepressant, antinociceptive, anti-inflammatory and antifungal activity. The saffron spice has its own unique flavor. At the same time, the golden yellow gives a color when the food is added. It can be used for different purposes such as flavoring, coloring and aromatizing in the food production. It is reported that there are more than 150 compounds in the stigma of the saffron. Saffron has 3 main compounds as safranal, crocetin esters and picrocrocin. In addition, it includes carbohydrates, raw fiber, proteins, fats, anthocyanins, flavonoids, vitamins, minerals and many other elements.

Keywords: Saffron, therapeutic properties, functional food

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EFFECT OF LIGHT EXPOSURE WITH DIFFERENT WAVELENGTHS ON OXIDATION CRITERIA IN HERBY CHEESES

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Abstract:

In this study, the effect of storage under light on lipid oxidation in Herby cheeses was investigated. The cheeses which have traditionally produced and having herbs at different ratios (0%, 1%, 2% and 4%) were stored for 30 days in the dark, and under fluorescence light, white, blue, green, yellow and red led lights. In the days 1, 7, 15 and 30 of the storage, general composition analyzes, oxidation analyzes, volatile components and sensory analyzes were carried out in the samples. Both dry matter and the constituents of dry matter of cheese samples increased during storage. During the storage period, the pH values of the cheeses changed a little and the acidity values increased significantly. At all herb levels, chlorophyll content decreased considerably during storage. The highest average peroxide values were found in the cheeses stored under white led, fluorescence and blue led lights and the highest TBA values were occurred in the cheeses exposed fluorescence, yellow led and white led lights. The effect of herb content and type of lighting in the formation of aldehydes was found important. Cheeses with a low herb ratio and stored under short wavelength lights had a high aldehyde formation; however the amount of aldehyde was low in cheeses having high herb ratio and stored in dark, yellow led and green led conditions. The most common aldehydes in Herby cheeses were Pentanal and Hexanal. Sensorially, the most appreciated samples were the cheeses with 2 % and 4 % herbs.

Keywords: Herby cheese, Oxidation, Sensory properties, Volatile components, Wavelength

NOT: Bu çalışma Van Yüzüncü Yıl Üniversitesi Bilimsel Araştırma Projeleri Birimi tarafından FYL-2016-5271 nolu proje olarak desteklenmiştir.

INVESTIGATION OF THE EFFECT OF HUMIC SUBSTANCES ON MYCELIUM GROWTH OF *Pleurotus ostreatus*

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Abstract:

In this study, the effect of humic substances on mycelial development of *Pleurotus ostreatus* (Jacq.) P. Kumm. 1871 was investigated. Malt extract agar (MEA) and potato dextrose agar (PDA) were used as feedstock in the study. Malt extract agar and potato dextrose agar were sterilized by autoclaving at 121 °C for 15 min with the addition of specific doses of agaric material. In the Pasteur oven, nutrients were poured into sterile petrel in the sterile safety cabinet. After the feedstock sites solidified, the transfer of the media containing the micelle was carried out in the same cabin. After this process, the petals were removed from the oven. At certain intervals mycelial developments are plotted spatially. As preliminary study, humic substances were added at 0%, 1%, 3%, 5%, 7%, 9% However, according to the results of the applications made at these rates, it has been decided to make the working trials at 0%, 0.5%, 1%, 1.5%. In this study, malt extract agar and potato dextrose agar supplemented with 0%, 0.5%, 1% and 1.5% of humic substance were applied to petroleum, *Pleurotus ostreatus* tissue culture was done and the growth rates and densities of misplants were examined. The experiments were done in 3 replicates. According to the results of the experiment, it was found that the cultures of the feeder with 1.5% humic substances were slower, while the rate of growth and the amount of humic substances were not correlated at rate below 1.5%. It was observed that the micelle density was

Keywords: *Pleurotus ostreatus*, Humic Substance, Mycelium Development, MEA, PDA

Oral presentation / II. International Eurasian Agriculture and Naturel Sciences Congress

EVALUATION OF YIELD AND QUALITY CHARACTERISTICS OF SOME ORGANICALLY AND CONVENTIONALLY GROWN APRICOT VARIETIES

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Abstract:

This study is based on Kabaasi, Hacihaliloglu and Cataloglu varieties which are located in two different parcels of organic and conventional aquaculture located. The trial was first received in 2013 and the trial was repeated in 2015 because the product was not available in 2014 due to the late spring frost injury. It was tried to determine the effects on the phenological and pomological properties of the cultivars. In phenological observations, the total flowering period is between 11 and 19 days in 2013 and 2015, and between 95 and 120 days in fruit development, and the first harvest was carried out in the organic Hacihaliloglu variety. The highest yield was determined in organic Kabaasi type with 240,2 - 260,3 kg / tree in 2013 and 2015 respectively. As a result of pomological analyzes, fruit weight was higher in the organic Kabaasi variety. In 2013, the highest value of SÇKM was found in the range of conventional Çataloğlu with 24.8% and in organic Hacıhaliloğlu with 24.53% in 2015.

Keywords: *Prunus armeniaca* L., phenology, pomology, yield

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PROSPERITY OF COMPLEX USE OF TRITICALE IN KYRGYZSTAN.

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Abstract:

Triticale plantings in the world taking more place from year to year. Thus, in year of 2000 these crop was planted on 1,2 million hectares, in a year of 2002 – 3 million hectares, in 2010 – 4, 4,6 million hectares. Among the countries of "Custom's Union" in Belorussia big fields (more than 350 thousand hectares) are planted for the triticale.

Wide dissemination of triticale happened in the world because of high yield and its unpretentiousness in cultivation (resistant to diseases and lodging, high overwintering and draught resistance), slightly increased compared with wheat, the content of lysine and universality in use. That is why triticale widely used for forage production and grain production. In order to get green mass, granular andbriquettes (valuable type of forage).

However, in the agriculture of Kyrgyzstan, triticale remains an undeservedly forgotten agricultural crop.

Keywords: Triticale, use, intermediate crop, grain.

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KYRGYZ HONEYBEES AND ITS PERSPECTIVES

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Abstract:

Kyrgyzstan possesses high mountaineous area where medical herbs and honeys are gathered and majority of the territory is pasture land. Low mountaneous areas, flat land at the mountaneous edges grow dragonhead, wild strawberries, dog rose and other different plants which produces honey. Above mentioned plants are strong, rich forage value founded together, honey production development is essential and each year country can produce 100 thousand tons of high quality honey. For that country possesses all conditions. For the first time bees were introduced in 60s and 70s of the twenties century to Kyrgyzstan from abroad. According to the information of beekeepers union "Kyrgyz Honey" was awarded second as a high quality honey in the world. In 2015 in the Sounth Korea was conducted Apimondiya (World Honey Association) where was international congress in which union association of "Kyrgyz Honey Union" grand prix was awarded, obtained one gold medal, two silver and four bronx medals. In 2013 in the Kiev city was conducted expo and "Kyrgyz Honey Union" was awarded to three golden medal and two silver medals were obtained. Therefore, further bee adaptation was conducted to the climatic conditions and improved honey production.

Keywords: Kyrgyz honeybees, adaptation

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SPATIO-TEMPORAL CHANGES OF SOME PHYSICO-CHEMICAL PARAMETERS IN THE SOUTH-WESTERN BLACK SEA DURING AUTUMN AND WINTER CRUISES

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Abstract:

Seasonal dynamics of physico-chemical parameters in autumn 2017 and winter 2018 in the south-western Black Sea surface waters were investigated. Measurements were conducted by using SBE 19 V2 Plus CTD probe on board R/V KARADENIZ ARASTIRMA. During the study period, stations revealed a great range of differences in terms of sea surface temperature (SST), salinity, dissolved oxygen (DO) and chlorophyll-a (Chl-a). SST varied from 7.59ºC to 9.50 ºC, and from 14.29ºC to 17.02 ºC in winter and autumn, respectively. Overall, a well-mixed water column was detected in winter, whereas seasonal thermocline was observed in autumn. Salinity values revealed typical characteristic of the Black Sea, ranged from 17.31% to 18.39 along the stations. The presence of low salinity values especially at the western stations clearly indicates effect of Danube inflow along the area. DO values were generally high along the stations, and varied between 9.16 mg/l and 10.38 mg/l. Chl-a in winter was higher than in autumn. Their values range from 0.46 µg/l to 2.14 µg/l, and from 0.58 µg/l to 3.59 µg/l in autumn and winter, respectively. Overall, the results imply that physico-chemical parameters in the south-western Black Sea were controlled by seasonal dynamics of the Black Sea.

Keywords: South-Western Black Sea, Sea Surface Temperature, Chlorophyll-a, Seasonal

Acknowledgment: Present work was funded by TUBITAK [The Scientific and Technological Research Council of Turkey; Project number: 116Y150].

II. INTERNATIONAL EURASIAN AGRICULTURE AND NATURAL SCIENCES CONGRESS

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INVESTIGATION OF THE EFFECTS OF SALT APPLICATION ON TOTAL PHENOLIC COMPOUNDS AND TOTAL ANTIOXIDANT AMOUNT IN SOME BEAN (*Phaseolus vulgaris* L.) GENOTYPES FROM LAKE VAN BASIN

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Abstract:

This study aimed to investigate total phenol and antioxidant contents in the leaves of 19 common bean genotypes and one runner bean genotype exposed to 25 and 50 mM salt (NaCl) doses. The plants were grown in non-drainage 3-liter pots containing peat-perlite in a 2:1 ratio according to the completely randomized experimental design in the climate chamber at 24±2 ºC. The bean seedlings were grown under stress-free conditions until reaching the 3-leaf stage and then were exposed to salt stress with irrigation water at the same time for 4 days. Total phenol content in the leaves was measured by the Folin-Ciocalteureactive method at a wavelength of 700 nm and the results were expressed as the equivalent of gallic acid (mg eq. GA g−1 DW). The antioxidant capacity was determined according to the FRAP method at a wavelength of 593 nm and signified as Trolox Equvalent (µmol Trolox g-1 DW). It has been found that only the effect of salt doses on the amount of antioxidant was important, while the effect of salt applications and genotypes were significant on the total amount of phenolic compounds. As the salt stress increased, both total phenolic and antioxidant content decreased. It was found that, total phenolic increased in 30% of genotypes in 25 mM salt application, but decreased in all genotypes in 50 mM NaCl. Similarly, antioxidant capacity increased in some genotypes (15%) in 25 mM NaCl and decreased in all genotypes with increasing salt stress (50 mM NaCl).

Keywords: Bean, Salt stress, Total phenolic, Total Antioxidant

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DEVELOPING FUNCTIONAL AND ANTIOXIDANT-RICH TABLE GRAPE CULTIVARS BY CROSSING ALPHONSE LAVALLEE X ALICANTE BOUSCHET.

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Abstract:

The main aim of this study is to develop new table grape cultivars with high antioxidant capacity and functional properties. Recently, red or black colored grape cultivars are getting more popular due to anthocyanins in the skin and flesh of berries which is called tenturier grapes. But there is no a tenturier table grape cultivar in Turkey. Alphonse Lavallee which is a table grape cultivar with colorless berry flesh and Alicante Bouschet which is a wine grape cultivar with red colored berry flesh (tenturier) were crossed to obtain new grape genotypes with high antioxidant capacity and high table grape quality. Alphonse Lavalle flowers were castrated before blooming and pollinated with the pollens of Alicante Bouschet in May. Hybrid seeds were extracted from berries in September. Seeds were stratified in dampf perlite for 3 months at 5oC followed by germination at 25oC in plastic boxes which contain small pots containing perlite:peat. Germination characteristics and plant growth were recorded. Germination percentage was 56.5% in hybrid seeds. Red colored patches were observed in cotyledon leaves and hypocotyls of some offsprings. Anthocyanin coloration was studied in the young leaves of seedlings whether or not to detect the early selection of tenturier genotypes.

Keywords: Grapevine, vinifera, table grape, antioxidan

EVALUATION OF FRUIT DRYING SUSCEPTIBILITY OF NEW APRICOT CULTIVARS

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Abstract:

In order to increase the quality and quantity of dried apricot crop, a two-year experiment was carried out based on the factorial statistic design on fruit drying ability of high yielding and new native cultivars of apricot at Sahand Horticultural Research Station of Tabriz. The levels of factor A were seven high yielding cultivars included; Ordubad (90), Tasouj (190), Asgharabad, Kashk-saray (269), Jolfa (390), Oskou (414) and Ajab-shir (464) and also, burned sulfur in 2 and 4 grams rates for each kilograms of fruit were considered as factor B levels. The assessment of main physical and biochemical traits of dried fruit samples showed that their humidity range varied from 20 to 40 percent causing their firmness that ranged from 7.1 to 3.8 kg/cm2. Total soluble solids (TSS), active acidity (pH) and total organic acids (O.A) as the main indicators of dried fruit taste were very variable. So, the panel test method was used to determine the best taste. The results of statistical analysis revealed the significant differences between cultivars ($p<0.05$) but the difference between sulfur levels was non-significant. The remained sulfur content in the cultivars affected by 2 g/kg sulfur was at least 800 ppm while the most rate of sulfur in the cultivars affected by 4 g/kg was 2600 ppm. According all results, Ordubad (90) and Kashk-saray (269) cvs. fruit were the high and low susceptible for drying consumptions respectively.

Keywords: Firmness, Native Cultivars, Organic Acids, Total Soluble Solids, Sulfur

Poster presentation / II. International Eurasian Agriculture and Natural Sciences

EFFECT OF DIFFERENT PLANT SPACE ON FRESH EAR YIELD AND QUALITY OF SWEET CORN UNDER TEKIRDAG ECOLOGICAL CONDITIONS

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Abstract:

Sweet corn production and consumption are increasing in Turkey as well as in the world. The present study was conducted to have knowledge about some agronomic traits of sweet corn grown under Tekirdağ ecological conditions. For this purpose, the seeds of four sweet corn varieties (Challenger, SF 201, Vega and Merit) were sown at 5 different distance between plants (14, 18, 22, 26 and 30 cm) while row space was constant (70 cm). The experiment was set up as randomized complete block design with 4 replications and conducted in grower field located Tekirdağ. There were significant differences among varieties and spacing for ear length, ear diameter, yield of fresh ear (husked & dehusked), fresh kernel weight per ear, number of kernel per ear, fresh kernel yield. At 30 cm plant spacing, the highest fresh ear yield (husked & dehusked) were obtained from Vega (respectively 2894.1 kg da-1, 2311.2 kg da-1), while Challenger had highest fresh kernel weight (1385.7 kg da-1). The most suitable planting spacing was determined as 30 cm for all used varieties. The differences in the total soluble solid content of corn (TSS) were found significant only among varieties. Vega variety can be recommended in term of fresh ear yield (husked & dehusked) and TSS for consumption purpose, while Challenger can be preferred for fresh kernel yield.

Keywords: *Zea mays* L. saccharate Sturt, sowing distance, variety, kernel

CARROT PRODUCTION IN TURKEY

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Abstract:

Carrot (*Daucus carota* L.) is one of the most important vegetables which have been cultivated for thousands of years in the world. Carrots are grown commercially for fresh market and processing worldwide. According to the Food and Agriculture Organization of the United Nations (FAO), the world carrot production in 2016 was approximately
42.7 million metric tons and Turkey produces approximately 1.3% of the world carrot production in 2016. According to the Turkish Statistical Institute (TUIK) in 2017, carrot production in Turkey was 569.553 tons on 10.848 ha consisted of orange carrots. In addition, Konya (62.4%), Ankara (23.3%) and Hatay (%9.3) provinces had the majority of this production. The aim of this study is to summarize the statistical data about carrot production and emphasize the importance of carrots among vegetable crops in Turkey.

Keywords: *Daucus carota* L., orange carrots, root vegetable, trade statistics

EFFECTS OF EMS AND ELECTRIC APPLICATIONS IN SOME VEGETABLES

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Abstract:

The purpose of this study was to investigate the effects of mutagenic ethyl methanesulfonate (EMS) and electric current applications in tomato and spinach. The experiments were carried out with two genotypes in each vegetable species in 2017-2018. A total of 8 treatments (EMS and electric current) were designed at different doses and the study was carried out on 3 replicates. EMS doses of 0%, 0.5%, 0.75% and 1% were used. The electric current was 1.5V, in the form of present or absent. For each application, 50 seeds were prepared and placed in petri dishes. In plants, the traits such as seedling emergence, plant weight, leaf color, root length were determined. In particular, it has been observed that electrical applications especially in spinach caused significant differences in percentage of emergence, plant weight, root growth and leaf color. EMS applications created different mutations in both species.

Keywords: Ethyl methanesulfonate, Electric current, Mutation, Spinach, Tomato

EXOGENOUS FERTILIZER APPLICATIONS IN SPINACH

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Abstract:

The purpose of this study was to evaluate the effects of different fertilizer treatments humic acid, vermicompost, amino acid on the quality parameters of spinach cv. Matador. Changes in vegetative growth, total chlorophyll content in leaves and total phenol were determined after treatments. The number of leaves per plant value was quite high in all treatments and the highest mean leaf height value was obtained from humic acid treatment. The results of humic acid treatments in plant weight were found to be higher when compared to other application results. The same result applies in plant root and stem lengths. No significant impacts of treatments on leaf colour contents were observed. Humic acid prompted leaf production, delayed leaf senescence, and enhanced growth of spinach. It also favorably influenced spinach quality.

Keywords: Amino acid, humic acid, organic fertilizer, *Spinacia oleraceae* L., vermicompost

EVALUATION OF THE STABILITY OF PHYSICOCHEMICAL AND MICROBIOLOGICAL QUALITIES OF A SOFT CHEESE, TYPE: CAMEMBERT, AFTER STORAGE FOR THREE WEEKS AT DIFFERENT TEMPERATURES

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Abstract:

Background: Cheese has always been a safe source for human nutrition. Stabilizing cheese technology, used for the acidification and maturation of thermophilic starters. Stability of the products during storage and/or marketing is controversial subject. Study aimed to assess the physicochemical and microbiological characteristics stability of a Camembert cheese collected in the North- East of Algeria (Provinces: Setif and Bordj Bou Arreridj). Fifty two samples, collected during February, March and April 2018: half (26 samples) were kept at temperature 04 °C the rest were stored at 23 °C for three weeks. Analyzes were carried out either at the end of each week and after opening the packaging and exposure of their contents to the ambient air for two hours at the end of the 3rd week. Results: Physico- chemical tests, after storage life, at 04 ° C and 23 ° C gave the average values: pH: (5.54- 5.62), Titratable acidity: (16.72D- 18.18D °), Conductivity (4.41ms/cm-4.53ms/cm), Total Dry Extract (53.66%-55.6%), Relative Humidity (46.4%-44.46%) respectively. Results of the tests carried out, after the direct opening of packaging at the end of the 3rd week, were respectively: pH: (5.68- 5.57), Titratable acidity: (16.72- 20.24ºD), Conductivity: (4.48 ms/cm- 4.69 ms/cm), total dry extract: (57.8%- 61%), relative humidity: (42.2%- 39%). Microbiological analyzes, by counting floras revealed stability and compliance of the product with national standards, during the first and second week at 4°C and 23°C. However, an increase in total mesophilic flora (FTAM) estimated at 02×104 CFU/g for both temperature storage (04ºC and 23ºC) at the end of the third week. Conclusion: All the samples had a stability of the physicochemical parameters. High numbers in mesophilic aerobic flora were recorded at the end of the third week of storage at 04ºC and 23ºC. The study deserve to be deepened by a more representative sampling plan and by more physicochemical and bacteriological analysis.

Keywords: Camembert cheese, Stability, Storage, Physicochemical tests, Microbiological analysis

NON-THERMAL FOOD PRESERVATION TECHNOLOGIES

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Abstract:

Foods are perishable or deteriorative by nature. Major food preservation techniques can be listed as: slowing down or inhibiting chemical deterioration and microbial growth; directly inactivating bacteria, yeast, moulds and enzymes and avoiding recontamination before and after processing. Food preservation is a continuous fight against microorganisms that causes food spoiling or making it unsafe. Consumers are increasingly aware of the health benefits and risks associated with consumption of food. To meet consumers' expectations, the food industry is investigating more and more the replacement of traditional food preservation techniques (intense heat treatments, salting, acidification, drying and chemical preservation) by new preservation techniques. Production of safe food includes scrutinizing materials entering the food chain, suppressing microbial growth and reducing or eliminating the microbial load by processing and preventing post-processing contamination. Consumer trends and food markets are changing and will change more in future towards foods with high quality and more fresh like attributes, consequently fewer external treatments and/or fewer additives will be used. This means less heat and chill damage, more freshness, less acid, salt, sugar and fat, etc. To satisfy these demands some changes in the traditionally used preservation techniques must be achieved. The most investigated non-thermal preservation technologies can be listed as pulsed electric field, high hydrostatic pressure, Irradiation preservation, modified and controlled atmospheres, preservation by organic acids, ultraviolet radiation, ultrasound, natural antimicrobial compounds and biopreservation (application of bacteriocins) and preservation by low water activity (aw).

Keywords: Non-thermal preservation, Food preservation, Radiation, High pressure, Bacteriocins

BENEFICIAL EFFECT OF ZINC SUPPLEMENTATION ON ANTIOXIDANT PARAMETERS IN SEVERAL TISSUES OF DIABETIC RATS

OZLEM SACAN[1], ISMET BURCU TURKYILMAZ[1], BERTAN BORAN BAYRAK[1], NURİYE AKEV[2*], NURTEN OZSOY[2], AYSE CAN[2], OZGUR MUTLU[1], REFİYE YANARDAG[1]

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Abstract:

Zinc (Zn) is one of the essential metals required for the maintenance of body homeostasis. Clinical and epidemiological studies suggest that Zn deficiency is associated with diabetes and metabolic syndrome. As zinc is required for the actions of many enzymes, including superoxide dismutase (SOD) and catalase (CAT), a lack of zinc will lead to further damage of cells under oxidative stress such as diabetes. We aimed to asssess the effects of zinc supplementation in diabetic rats, using reliable biomarkers of oxidative damage. Female Swiss albino rats were divided into 4 groups. Group I, control; Group II, zinc sulfate; Group III, diabetic; Group IV, diabetic + zinc sulfate. Diabetes was induced by intraperitoneal injection of streptozotocin (STZ; 65 mg/kg). Zinc sulfate was given daily by gavage at a dose of 100 mg/kg, every day for 60 days, to groups II and IV. At the last day, rats were sacrificed and liver, kidney and lung tissues were taken. Tissue CAT, SOD activities and protein carbonyl contents (PCC) were significantly modified in STZ-diabetic rats. Administration of zinc reversed significantly these effects. As a result, the ameliorative effect of zinc administration on tissue injury was demonstrated through biochemical parameters of oxidative damage.

Keywords: Zinc, antioxidant, diabetes, liver, kidney, lung

Petroselinum crispum INHIBITS ADENOSINE DEAMINASE AND ACETYLCHOLINESTEREASE ACTIVITIES

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Abstract:

Petroselinum crispum commonly known as English Parsley is a culinary and medicinal herb. The plant (leaves, stems and seeds) have been employed in food, pharmaceutical and cosmetic industries. Parsley is used as a carminative, stomachic, emmenagogic emmenagogue, abortifacient and nutritive agent. Studies have shown that parsley has also hypoglycemic, diuretic, hypolipidemic, antimicrobial, anticoagulant and hypouricemic effects. Adenosine deaminase (ADA) which is a key enzyme in the metabolism of purine nucleosides plays important roles in diverse diseases, such as tuberculosis, diabetes, liver disorders and cancer. Alzheimer's disease (AD) is a progressive neurodegenerative disorder clinically characterized by loss of memory and cognition. Acetylcholinesterases (AChE) are key enzymes which participate in the pathogenesis of AD and also in tumorigenesis. The aim of this study is to investigate the inhibition activities of parsley extract on ADA and AChE enzymes activities. Our results suggest that parsley extract shows inhibitory activity on both enzymes. The enzyme inhibitory activities were found to increase dose dependently. Parsley may provide nutritional support to medical therapy through inhibiting key enzymes in cancer and AD metabolisms.

Keywords: *Petroselinum crispum*, Adenosine Deaminase, Acetylcholinesterase

ANTIGLYCATION ACTIVITIES OF SOME PLANT EXTRACTS

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Abstract:

Advanced glycation end products (AGEs) are a complex and heterogeneous group of compounds that have been implicated in diabetes related complications. Their blood concentration increases with age. The AGEs are closely associated with hyperglycemia. Several synthetic and natural products have been tested as inhibitors as AGEs formation and AGEs breakers as potential therapeutics for management of diabetic complications. This pharmaceutical shows some adverse effects. For this reason, there is a need for the development of new efficacious drugs, with minimal or no side effects. In our study we have examined antiglycation activities of aqueous extracts prepared from different 17 plants such as laurel leaf, mulberry leaf, Melissa officinalis leaf, mallow leaf, Pistacia atlantica Desf. All the plant extracts exhibited antiglycation activites. The antiglycation activities of these plant extracts were found to increase dose depently. *Pistacia atlantica* Desf. extract was found as the most effective extract among the plant extracts.These data indicate that these plant extracts could be used to prevent glycation associated complicatons in diabetes.

Keywords: Antiglycation Activities, Plant Extracts

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VIRUSES OF SOME FUNGI, MYCOVIRUSES

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Abstract:

Viruses have different types of hosts. Like some of them infect plants, some of them can infect plant pathogenic fungi. This kind of viruses is generally called mycoviruses. They infect many fungi, including plant and forest tree pathogens, and can reduce or increase virulence, as well as bring about differences in the development and phenotypic structure of infected fungi. Fungus-infecting viruses have a dsRNA genome and make it difficult to detect these particles because they do not cause any symptoms in the hosts they infect. However, nowadays, with the development of nucleic acid-based methods, it has become possible to detect the presence of virus by means of methods such as dsRNA extraction and enzymatic cleavage of dsRNA by nuclease. The families Narnaviridae, Chrysoviridae, and Hypoviridae, infect only fungi, while members in other families, for example, the families Metaviridae, Pseudoviridae, Reoviridae, Totiviridae, and Partitiviridae, infect fungi, protozoa, plants, or animals. Except for the rhizidiomyces virus with dsDNA genome, almost all other mycoviruses have RNA genomes and many have dsRNA genomes. Viruses with (–)-strand RNA or ssDNA genomes have yet to be found in fungi. Fungi, like other living organisms, can be infected by a number of viruses, and mycoviruses are found in all the major groups of fungi. Although mycoviruses are widely prevalent, only those infecting a limited number of fungal host species have been studied, for example, the yeast Saccharomyces cerevisiae, edible mushroom, and phytopathogenic fungi. Given the predicted vast number of fungal species, it is expected that a greater number of unrecognized mycoviruses occur in nature. Support for this idea comes from recent extensive searches of field fungal isolates that showed relatively high frequencies of virus infection, for example, approximately 65%, 20%, and 2–28% of *Helicobasidium mompa*, *Rosellinia necatrix*, and *Cryphonectria parasitica* isolates were found to be infected, respectively. In this review, biological properties, transmission ways, diagnoses, and using for controlling in some fungal diseases were summarized.

Keywords: Control, *Cryphonectria parasitica*, Diseases, Fungi, Mycoviruses.

ANTIOXIDANT ACTIVITIES OF *Ornithogalum umbellatum*

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Abstract:

Ornithogalum (Asparagaceae) species are consumed both as a food and as a therapeutic agent for their medicinal properties in many countries, including Turkey. The aim of the study was to investigate the in vitro antioxidant activities in aerial parts and bulbs of *Ornithogalum umbellatum* comparatively. The plant materials were collected from Agva (Istanbul). Methanol and water extracts were prepared from the aerial parts and bulbs of the plant. Antioxidant capacities of the extracts were evaluated by using DPPH radical scavenging activity and ferric reducing antioxidant power assays along with the determination of total phenolic compounds. Quercetin was used as a standard antioxidant and total phenolic compounds were estimated as gallic acid equivalents. The results showed that the methanol extracts from the aerial parts of O. umbellatum have the highest total phenolic content and the strongest antioxidant activity. However, the water extracts from bulbs of the plant did not possess any antioxidant activity. We can conclude that, in view of the antioxidant effect of O. umbellatum, the plant may be a natural source of antioxidant.

Keywords: Free radical, Antioxidant activity, *Ornithogalum umbellatum*

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