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KAYSERI/TURKEY

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Keynote Speaker 1: Prof. Bajram Berisha (*Physiology Weihenstephan, Technische Universität München, Freising, GERMANY*)
Topic: Angiogenesis in the ovary–the most important regulatory event for corpus luteum formation and function in Ruminants

Keynote Speaker 2: Prof. Dhia Khalil Ibrahim (*Department of Animal Production, College of Agriculture, University of Baghdad, IRAQ*)
Topic: Effect of Cadmium Chloride Pollution and Using Penicillamine on Physiological Performance of Japanese Quail

Keynote Speaker 3: Prof. Asc. Skender Muji (*Faculty of Agriculture and Veterinary, University of Prishtina, REPUBLIC OF KOSOVA*)
Topic: The effect of feed added phytase on decreasing of excretion: N, P, Ca, Mg, Zn and Cu by feces of laying hens

Keynote Speaker 4: Prof. Asc. Abdolreza Salehi (*Department of Animal and Poultry Sciences, University of Tehran, IRAN*)
Topic: Combined Admixture Mapping and Genome Wide Association Study (GWAS) of Cow's Economic Traits

Keynote Speaker 5: Dr. Edo D'agaro (*Department of Agricultural, Food, Environment and Animal Sciences, University of Udine, ITALY*)
Topic: Genetic improvement of functional traits in the Italian Simmental breed

Keynote Speaker 6: Dr. Madalina Albu Kaya (*Collagen Department, Leather and Footwear Research Institute, Bucharest, ROMANIA*)
Topic: Collagen: from animal tissues to 3D printing biomaterials for tissue engineering

Dear Participants,

We are happy to complete "1st International Erciyes Agriculture, Animal and Food Sciences Conference (AgAnFoS®-2019)" that held in 24-27 April 2019 in Erciyes University, Kayseri-Turkiye.

The central aim of this conference is to share knowledge and results in agriculture, animal and food sciences. This conference offers academic researchers, developers and practitioners an opportunity to discuss various aspects of these areas.

This Conference provided a forum for Faculty Members, Engineers and Scientists in academic industry and research institute to address the resulting profound challenges and to present and discuss their new ideas, research results, applications and experience on all fields of agriculture, animal and food sciences.

The proceeding of the conference will be of immense use to the participants. In this conference, academician, technocrats and researchers got an opportunity to interact with eminent persons in all fields of agriculture, animal and food sciences. The topics covered in this International Conference are comprehensive and adequate for developing and understanding about new developments and emerging trends in these areas. The interaction between the participants and the experts who presented their experiences and expertise will be fruitful and objective especially for faculty and students. The presence of eminent scientists, national and international, at a single platform helped in forming networks to facilitate solving inter-disciplinary research problems.

Best regards,

Assoc. Prof. Dr. İsmail ÜLGER

Head of the Organizing Committee

Contents
ORAL PRESENTATIONS

Angiogenesis in the ovary - the most important regulatory event for corpus luteum formation and function in ruminants 10

Effect of Cadmium Chloride Pollution and Using Penicillamine on Physiological Performance of Japanese quail 11

The effect of added phytase on N, P, Ca, Mg, Zn and Cu excretion of laying hens 12

Combined Admixture Mapping and Genome Wide Association Study (GWAS) of Cow's Economic Traits 13

Genetic improvement of functional traits in the Italian Simmental breed 14

Collagen: from animal tissues to 3D printing biomaterials for tissue engineering 15

Comparison of Fattening Performances in Some Cattle Breeds 16

Factors Affecting Sustainability of Local Seeds 17

Evaluation of Mevlana Development Agency Rural Development Supports; a Case Study of Konya 18

The Condition of Apple Production Sector in Karaman from the Perspective of Production, Yield and Foreign Trade 19

"The LEADER Approach" As A Rural Development Strategy; The EU And Turkey Practices 20

Determination of Antibacterial and Antifungal Properties of Chitosan Based Nanocomposite Films Prepared with Borax and Boron Nitride 21

Validation of QuEChERS method for the analyses of acetamiprid, chlorpyrifos and formetanate hydrochloride residues in cucumbers 22

Effects of Melatonin Implants on Reproductive Performance of Tahirova Sheep and Turkish Saanen Goats 23

Tick Infestations and Hematological Changes in Turkish Saanen Goats and Tahirova Sheep 24

Genetic Parameter Estimation of Testday Milk Traits in Turkish Saanen Goats via Gibbs Sampling 25

Investigating the Effect of Onion Juice on Performance and Immunological Parameters in Laying Hens 26

Effect of Different Level of Pomegranate Molasses on Some Performance and Blood Parameters in Older Laying Hens 27

The Results of Scientific Studies in Turkey on Composition of Minerals in the Walnut Kernel 28

The Effects of Foliar Nutrient Applications on Fruit Yield and Qualıty of Kosui Pear (*Pyrus pyrifolia* Nak.) Cultivar 29

Transition from in vivo animal production to in vitro cell production for food supply: from the nutrition of animal to the nutrition of cell 30

Determining of Yield, Yield Components and Some Agricultural Characteristics of Winter Oat (*Avena sativa* L.) Genotypes in Eskişehir Conditions 31

Determination of Grain Yield and Quality Characteristics of Some Barley (*Hordeum vulgare* L.) Genotypes in Eskişehir Conditions 32

Germination and plant growing of F1 hybrid pear genotypes of Deveci x Ankara, Deveci x Akça and Akca x Deveci 33

Effects of SÖ39200, SÖ1669 and SÖ1882 Quince Clonal Rootstocks on Growth of Williams, Beurre Hardy and Passe Crassane Pear Cultivars 34

The Effects of Mycorrhiza Application on Growth and Yield of Cucumber (*Cucumis sativus* L.) Plant in Soilless Culture..... 35

The Effects of Different Planting Methods on Growth and Yield of Tomato (*Solanum lycopersicum* L.) Plant in Soilless Agriculture..... 36

Determination of some quantitative and efficiency parameters of the hibiscus plant (*Malva sylvestris*) grown under different water limitation conditions..... 37

Fish consumption status of adults in Kayseri province center 38

Determination of the Structural State of Cattle Fattening Farms in Siirt Province 39

Determination of Satisfaction and Sustainability in Cattle Fattening Farms in Siirt Province..... 40

The Effects of Lactic Acid Bacteria and Enyzme Mixture Inoculants in Alfalfa Harvested at Different Maturities on Silage Fermentation and Feed Value 41

Determination of Responses of Some Maize Cultivars (*Zea mays* L.) to Salt and Drought Stress at the Early Period 42

Possibilities of Utilizing Endosperm Culture in Plant Breeding 43

The effects of agricultural policies applied in durum wheat cultivation on the farmer's decision: The Case of Gaziantep Province..... 44

Plant Characteristics and Uses of *Paeonia arietina* in Yozgat Flora..... 45

A Study on Correlation between Different Sowing Time and Defoliator Applications in Cotton (*G. hirsutum* L.) 46

A Study on the Determination of Total Chlorophyll, Chlorophyll-a, Chlorophyll-b and Total Carotene in Leaves in the Development Circuits of Candia Cotton (*G. Hirsutum* L.) Varieties Produced in Organic and Conventional Conditions 47

Effect of Alternate Row Spacing on Yield and Yield Components of Silage Corn (*Zea mays* L.) as A Second Crop at Two Locations..... 48

Spider biodiversity in some field crops of Mardin and Şanlıurfa provinces, Turkey 49

Efficacy of different trap types in population monitoring of tomato pest *Tuta absoluta* (Meyrick, 1917) [Lepidoptera: Gelechiidae] 50

Analysis and Identification of Limitation in Small Ruminant Farming System at the Eastern Mediterranean Region of Turkey 51

The Production, Adequacy Level, World Trade and Competition Power of Hazelnut in Turkey..... 52

Effects of Organic Conditioners on Consistency Limits and Erodibility 53

Changes in Bulk Density of Soils Formed on Similar Conditions but Under Different Cropping Systems 54

Biotic Stress Conditions and Reactions in Rice 55

Antifungal effect of boric acid against *Penicillium expansum*, the casual agent of blue mold of apple 56

Ultrasound Treatments for Detachment of Biofilm in Food Industry 57

A Research on the Structural Problems of Buffalo Breeding Enterprises in Bursa Region 58

Evaluation of the effects of animal production on water consumption and pollution in Bursa Region 59

Spanish Bush Training System in Sweet Cherry 60

Effect of the Branch Age on the Ratio of Flowers on Sweet Cherry 61

Increasing Awareness on Poultry and Egg Consumption in Pre-school Students 62

Effects of Wholesaler and Consumer Conditions on Egg Quality Parameters and Microbiology of Four Different Genotypes in Summer Season 63

Determination of zinc and iron fertilizer requirement of siyez wheat (*T. monococcum*) grown in calcareous soil 64

Identification of female of *Heteronychia* (Diptera: Sarcophagidae) species based on vaginal plate morphology 65

The effect of melatonin applications on the some fruit properties of pepper in lime conditions 66

Pathogenicity *of Alternaria solani* (Ell. & G. Martin) Sor. Isolates Isolated in Tomato Areas in Van Province and the Effect of *Trichoderma* spp. Antagonists in Vitro Conditions 67

The Impact on Yield and Some Traits of Different Forage Pea and Annual Ryegrass Mixtures 68

The effects of melatonin applications on some vegetative growth characteristics of strawberry seedling in lime stress conditions 69

Artemisia dracunculus L. alleviaties negative effects of stocking density in laying hens 70

Effects of Fattening Duration on Meat Quality Traits of Saanen x Hair Goat (G_1) Hybrid Male Kids Fattened in Different Fattening Systems 71

Effects of Fattening Duration on Slaughtering and Carcass Characteristics of Saanen x Hair Goat (G1) Hybrid Male Kids Fattened in Different Fattening Systems 72

The Attitudes and Behavior of Women on Food Waste a Case of Tokat 73

Application of Land Consolidation and Evaluation of Expected Effects by Producers: a Case Study of Artova District of Tokat Province 74

Change of Flowering and Harvest Dates of Cherry Varieties with Air Temperature 75

Body Weight Estimation by Different Body Measurements of Calves Using Artificial Neural Networks 76

The Effect of Onion Skin Powder on the Physical, Chemical, Color and Sensory Properties of Beef Patties 77

Suitability of Chicory for Forage Production 78

The Effect of Different Inter and Intra Row Spacing on Yield and Yield Components of Safflower (*Carthamus tinctorius* L.) in Kırşehir Ecological Conditions 79

Use of Artificial Intelligence in Agriculture 80

Use of Modeling and Simulation in Agriculture 81

The Vivaldi effect to Cobb broilers on growing rate and corticosterone levels 82

Evaluation of Blood Glucose Values With myopathy of Anterior *Latissimus Dorsi* muscle On Broilers 83

Microbiological attributes of packaged and unpackaged dried raisin samples sold in Manisa markets 84

Microbiological attributes of "Çiğ Köfte" samples sold in Manisa markets 85

Comparison of the performance of sticky pheromone and funnel traps against *Halyomorpha halys* (Stal) (Heteroptera: Pentatomidae) 86

The Evaluation of the Agricultural Mechanization Level of Samsun Province and Districts between 2007-2017 Years 87

Agro-Morphological Characterisation of Some Local Confectionary Sunflower Populations 88

Determination of Yield and Quality Properties of Some Local Confectionary Sunflower (*Helianthus annuus* L.) Populations 89

Searching for Commercial Scale Latex Producing New Plants 90

The Effects of Lactic Acid Bacteria and Enyzme Mixture Inoculants in Alfalfa Harvested at Different Maturities on Silage Fermentation and Feed Value 91

Water Use of Melatonin Applied Eggplant Seedlings under Drought Stress 92

Evaluation of the Yield and Technological Quality Parameters of Some Bread Wheat (*Triticum aestivum* L.) Genotypes Based on the Augmented Experimental Design 93

A New Pedometer Design for Monitoring the Movement of Dairy Cattle 94

Technological Concepts and Their Differences 95

Determination of performance of disc type silage machines 96

Determination of Adaptation and Quality Characteristics of Some Blackberry Varieties in Pazar District of Rize Province 97

Plum Population in Rize (Turkey) 98

Relationship between Deficit Irrigation and Tuber Yield in Potatoes 99

Usability of Satellite Based Positioning Systems in Precision Irrigation Applications 100

Insecticidal and behavioral effects of different lavender varieties against *Sitophilus granarius* (Coleoptera: Curculionidae) 101

The Effects of Forage Crop Supports on Forage Crops Production and Sustainability in Agri Province 102

Applications of Licensed Warehousing System in the Agricultural Sector of Turkey 103

Effect of Water Spray and Anise Seeds Supplementation on Some Blood Characteristic in Holstein Friesian Cow under Heat Stress 104

Forage Yield and Nutritive Value of Hungarian Vetch Mixtures with Triticale İn Different Seeding Rates 105

Effects of Lentil-By Product and Lentil Straw on Fattening Performance and Some Carcass Characteristics in Male Awassi Lambs 106

Effects of Salinity on Germination, Protein and Proline Ratios in Some Chickpea (*Cicer arietinum* L.) Cultivars 107

Determination of Fungal Diseases Causing Root Rot in Kiwifruit Orchards in Ordu Province 108

Determination of Grain Quality Parameters of Selected Wheat Varieties and Landrace Derived Pure Lines Collected from Various Provinces of Turkey 109

Micro element contents of durum wheat landrace pure lines and varieties in Çanakkale conditions 110

Development of Hybrid Energy System Assisted Industrial Type Dryer and Efficiency Improvement Opportunities 111

Effect of Different Salt Concentrations on Germination and Seedling Development of Two Different Species of Black cumin 112

Assessment of Yield and Quality Traits of Black cumin Populations from Göksun, Kahramanmaraş Region 113

Temporal Variation of Some Digestive Enzymes Activities of Black Sea Trout (*Salmo labrax* Pallas, 1814) 114

Leaf nutrient element contents of some wine grape varieties grown under the ecological conditions of Hatay-Belen 115

A Research on Table Grape Cultivation in Niğde Province 116

Soil Layers' Boron situation of Agricultural Areas close to the Sea and inland of Menemen Plain . 117

The Effects of Soybean Meal, Wheat Gluten and Corn Gluten on Serum Lipid Profile in Male Rats 118

The Effects of Different Protein Resources in Dietary Supplementations on the Levels of Serum, Lipid and Protein Profiles with Some Minerals for Female Rats 119

Evaluation of some quality parameters of gluten-free cookies produced with different legume flours 120

Evaluation of some quality characteristics of couscous samples prepared with partial replacement of quinoa flour 121

The Effect of Sodium Irrigation Waters on Some Soil and Irrigation Characteristics 122

Developing a Weighting Lysimeter Controlled by Programmable Logic Controller (PLC) Based Automation System 123

Development of Hargreaves-Samani Equation Calibration Models for Van Province Conditions 124

Deviations of Feedstuffs Loading in TMR Preparation 125

Using Animal Behavior Charatersitics and Appropriate Equipment for Better Fattening Performances 126

Injuries Caused by Animal Contact in Dairy Farms and Prevention Ways 127

Hatching Traits of Brown Layer Pure Lines and Their Different Combinations 128

Determination of some chemical properties of beetroot chips produced by using different spices 129

The effects of microencapsulated carvacrol+thymol supplementation to diet with low energy and protein content on growth performance and serum some biochemistry parameters of broilers ... 130

Investigating the Factors That Affect Chicken Consumption in Turkey by Different Regression Methods 131

Trigonometric Modelling of the Monthly Changes in Chicken Meat Production in Turkey 132

A hybrid approach of combining factor analysis scores with MARS predictive model for regression problems 133

A R script file improved for calculating goodness of fit criteria of CART and CHAID decision tree algorithms in IBM SPSS software 134

Use of Lidar (Light Detection and Ranging) Sensors in Agriculture 135

Effects of Biochar and Different Iron Forms on Growth of Triticale (*Triticosecale wittmack*) 136

Effects of Quality and Development of Some Nitrogenous and Organomineral Fertilizer on Perennial Grass (*Lolium Perenne* L.) 137

Medicinal and Aromatic Plant Diversity of Turkey 138

The Use of Acidified Milk in Calves 139

The Production, Adequacy Level, World Trade and Competition Power of Hazelnut in Turkey 140

Chinese food heritage and contemporary food trends 141

Use of Image Processing Techniques in Determination of Plant Disease and Pest Levels: The Case Study of Sugar Beet Leaf Disease 142

Structural characteristics of young farmers in Manisa, Uşak, Kütahya 143

The role of gelatin and chitosan edible films and coatings in seafood preservation 144

Color alterations of anchovy (*Engraulis engrasicholus* l., 1758) burgers enriched with garlic peel extract 145

Some Wool Characteristics on the Karacabey Merino Sheep Grown in the Bursa, Turkey 146

Safety of Corn-DDGS in Animal Nutrition 147

The Effects of Oregano, Mint and Sage Essential Oils to Quail Diets on Performance, and Carcass Traits 148

Effect of essential oils on calf immunity 149

Effect of type of pregnancy on the transcriptional and metabolic response in sheep and its further effect on the progeny lambs 150

Effects of Sowing Time on Herbage Yield and Quality of Lupine 151

Determination of Seed Yield and Straw Quality of Some Triticale Varieties 152

Determination of Herbage Yield and Feed Values of Some Triticale Cultivars 153

Comparison of Feed Characteristics in Different Legume Grains 154

Comparison of Feed Characteristics of Different Cereal Grains 155

POSTER PRESENTATIONS

Determination of resistance level against imidacloprid of *Leptinotarsa decemlineata* Say (Coleoptera: Chrysomelidae) populations collected from Afyonkarahisar province 157

Phenotypic Identification of Potential Mycotoxin Producing *Alternaria* Species Isolated from Bozcaada Karalahna and Çavus Grapes 158

Spirodiclofen resistance levels in *Tetrancyhus urticae* Koch (Acari: Tetranychidae) collected from oil rose production areas of Isparta province 159

Heat Stress and Heat Shock Protein Genes Mediated Cellular Responds in *Ovis aries* 160

The Effects of Graded Drying and Storage Conditions on Germination and Emergence Performance of Eggplant (*Solanum melongena* L.) Seeds 161

Effect of graded drying and storage conditions on the viability of watermelon (*Citrullus lanatus* (Thunb.) Matsum. & Nakai) seeds 162

The Effect of Enrichment of Biscuits by Carob Molasses on Physicochemical, Functional and Sensory properties 163

Factors Affecting Semen Production and Thermoregulation in Buck Kept under Adverse Climatic Conditions: A Review 164

Leaf Area Modeling with Linear Measurements in Melon Plant 165

The Effect of Different Doses of Whey on Some Fungi in Vitro Conditions 166

Weeds as Host Plants for Viruses in Second Crop Maize Fields in Hatay-Turkey 167

Main Viruses of Parsley (*Petroselinum crispum*) and Their Natural Hosts and Vectors in Hatay-Turkey 168

Cultivation and Importance of Black Cumin Seed 169

Effects of Different Temperature and Modified Atmosphere Storage on Mulberry *Morus alba* L. Storage 170

Total phenolic, Flavonoid and Antioxidant Activity of Different Citrus Fruits 171

Determination of Essential Oil Components of Endemic *Sideritis vulcanica* Hub-Mor Collected from Elazığ Location 172

Determination of soil productivity situations of agricultural areas close to the seaside in Menemen left bank irrigation systems 173

Effect of soybean oil on industry food 174

General Characteristics of Tree Diseases used in the parks of Baku/Azerbaijan 175

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Angiogenesis in the ovary - the most important regulatory event for corpus luteum formation and function in ruminants

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Abstract

The ovarian cycle in ruminants is characterized by repeated patterns of specific cellular proliferation, differentiation and transformation that accompanies follicular development, ovulation and the formation and function of the corpus luteum. The folliculo-luteal transition is a complex process that requires the development of angiogenesis (the development of new capillaries from pre-existing ones) in early corpus luteum which is closely regulated by a variety of endocrine and autocrine/paracrine factors. The dominant regulators of angiogenesis in ovarian follicles and corpora lutea are the vascular endothelial growth factor (VEGF), fibroblast growth factor (FGF), insulin-like growth factor (IGF), angiopoietin (ANPT) and hypoxia-inducible factor (HIF) family members. The corpora lutea in our study were assigned to the following stages: days 1-2, 3-4, 5-7, 8-12 13-16 and >18 of the oestrous cycle and months 1-2, 3-4, 6-7 and >8 of pregnancy. The dominant regulators were measured at mRNA and protein expression levels; mRNA was quantified by RT-qPCR, hormone concentrations by enzyme immunoassays and their localization by immunohistochemistry. The highest expression for VEGF, FGF, IGF, ANPT and HIF family members was found in corpus lutem during the early luteal phase (period of angiogenesis) followed by a lower plateau afterwards and during luteal regression. The results suggest the importance of these factors for angiogenesis and maintenance of capillary structures during corpus luteum formation, development and function in ruminants.

Keywords: Angiogenesis, Growth factors, VEGF, Corpus luteum, Estrous cycle, Bovine

Effect of Cadmium Chloride Pollution and Using Penicillamine on Physiological Performance of Japanese quail

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Abstract

This experiment was carried out to investigate the effect of cadmium chloride (CdCl2) pollution and using penicillamine (PA) as a mitigation of cadmium toxic effect on some physiological characteristics of Japanes Quail. One hundred and eighty birds 8 weeks old (156 females and 24 males) were used, the birds reared in 4 batteries with 3 floor dimension 60× 60× 50 cm of each floor, feed and water were provide ad-libdum and the diet contain 2892 Kcal/Kg feed and crude protein 20.1%, the bird were exposed to 16: 8 light: dark period, environmental temperature 21-24 °C and relative humidity 50% and the experiment lasted for 8 weeks. Four treatments were used T1 without any addition to drinking water, T2 addition 5mg of CdCl2 /L drinking water, T3 as in T2 plus addition 5mg of PA / 3ml drinking water /day/bird (was given from 900-1000 hour only), T4 as in T2 plus addition 10 mg of PA / 3ml drinking water /day/bird (was given from 900-1000 hour only) all treatments water is withheld for 1 hour from 800-900 hour, birds allocated to 45 birds each treatment 15 birds each replicates (13 females, 2 males). Packed cell volume (PCV%), Hemoglobin (Hb), Total Protein (TP), Glucose, Creatinine, High Density Lipoprotein (HDL), Glutathione Peroxidase (GPX), Glutamic Pyruvic Transaminase (GPT), Glutamic Oxaloacetatic Transaminase (GOT), Alkaline Phosphatase (ALP) were calculated at 4, 8 weeks of experimental period, Cd in blood serum, Red blood cell (RBC), Cd in liver, kidney, testis, ovary, brain, feathers were estimate at the end of the experiment. The result revealed that TP increased significantly ($p \leq 0.05$) at 8 week of experimental period in T4 compared with control T1,while glucose reduced significantly at 4 week in all treatments compared with T1 meanwhile at 8 week the significant reduction in T2,T3 compared with T1,T4, no significant difference in PCV, Hb, HDL creatinine, however at 4week GPX increased significantly ($P \leq 0.05$) in T2 compared with T1, Moreover GOT increase at 8 week in T3 compared with T1,T2 also ALP reduced at 8 week in T2 compared with other treatments, also GPT at 8 week was higher than other treatments, Cd in blood serum, RBC, liver, testis, brain, were higher in T2 compared with other treatments. We can concluded that there were some improvement in about most physiological characters with PA addition to reduce the harm effect of CdCl2.

Keywords: Cadmium chloride, Penicillamine, Japanese quail, Pollution

The effect of added phytase on N, P, Ca, Mg, Zn and Cu excretion of laying hens

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Abstract

Two experiments (8 weeks each) were conducted to study the effect of added phytase (Natuphos® 5000 BASF), in corn-soybean meal based diets on laying hens fed different levels of available phosphorus (AP) (0.12 and 0.46%) and crude protein (CP) (14 and 17%). Two levels of phytase (0 and 600 FTU/kg feed) were used. The experiment used one hundred and forty-four Hysex Brown laying hens in a 2x2 factorial design with four treatments and three replicates per treatment with 12 hens per replicate (total of 36 hens per treatment). N content level of fresh excreta was 1.50 ± 0.04^{a}; 1.23±0.04^{b}; 1.33±0.07^{b} and 1.31±0.04^{b} for exp 1 and 1.07±0.05^{b}; 0.96±0.03^{b}; 1.24±0.02^{a} and 1.07±0.06^{b} for exp 2. Further, total excretion of N expressed in a gram of N/kg egg mass for the first exp was 34.42±4.25; 27.76±0.56; 26.56±0.23 and 28.81±2.70, and 25.66±1.36^{a}; 20.31±0.44^{b}; 25.44±1.37^{a} and 22.45±0.75^{ab}, for the second experiment. The average content of total P in a dry excreta was 1.14±0.01^{b}; 1.03±0.05^{c}; 1.34±0.03^{a}; and 1.37±0.01^{a} during first and 1.68±0.02^{a}; 1.54±0.04^{ab}; 1.61±0.03^{ab}; 1.58±0.03^{b} for second exp. Total P excretion g/kg egg mass was 8.18±1.37; 5.15±0.34; 6.20±0.51 and 7.17±0.60 or 10.09±0.23^{a}; 7.81±0.73^{b}; 8.51±0.25^{b} and 8.45±0.27^{b} for respective experiments. In a both experiments, there was no significant effect of added phytase on excreta Ca content. In a second experiment significantly lower levels of Mg were observed with phytase (3.54±0.19^{a}, 2.48±0.14^{c}, 3.13±0.03^{b}, 2.75±0.07^{c} % for hens fed 14% CP no phytase, 14% CP+phytase, 17% CP no phytase, and 17% CP+phytase respectively). Added phytase significantly decreased Mg level in excreta measured as grams of Mg/kg of egg mass; in exp. 1 (hens fed 0.12%IP + 600 FTU, 0.46% IP no phytase and 0.46% IP + 600 FTU): 18.30±2.93^{a}, 10.42±0.15^{b}, 11.70±0.68^{b}, 11.70±1.92^{b} g Mg/ kg egg mass, and in exp 2 (hens fed 14% CP no phytase, 14% CP+phytase, 17% CP no phytase, and 17% CP+phytase): 21.43±1.59^{a}, 12.47±0.76^{c}, 16.76±0.38$^{b;}$ and 14.75±0.63^{bc} g/kg egg mass. Phytase has a strong effect on Zn levels (387±15.92^{a}, 338.54±8.90^{b}, 402.08±8.33^{a}, and 353.54±3.61^{b} in exp 1, and 438.96±5.66^{a}, 369.17±21.81^{b}, 434.38±8.49^{a} and 374.58±10.53^{b} mg Zn/kg dry excreta in exp 2). Similar results were observed with Cu content during experiment 1: Added phytase significantly reduced excreta Cu levels (38.11±0.74^{a}, 28.64±1.31^{b}, 37.7±0.78^{a} and 29.19±1.28^{b} mg/kg excreta) while the excretion of Cu expressed in mg/kg egg mass was significantly influenced in both experiments (45.99±4.73^{a}, 19.79±1.82^{b}, 25.74±0.72^{b}, 21.84±1.27^{b} mg/kg for the first, and 23.20±1.75^{a}, 15.42±0.83^{b}, 20.24±2.74^{ab}, 15.04±0.68^{b} mg Cu/kg egg mass second experiment). The results of these experiments indicates that adding 600 FTU to corn soybean meal basic layer diets containing 0.12% AP may decrease excretion of N, P, Mg, Zn and Cu. Feeding layers with diets containing 14% CP, decreases the excretion of N, P, Mg, Zn and Cu without any adverse effects on the performance on laying hens.

Keywords: Layer, Phytase, N, P, Ca, Mg, Zn, Cu

Combined Admixture Mapping and Genome Wide Association Study (GWAS) of Cow's Economic Traits

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Abstract

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Genetic improvement of functional traits in the Italian Simmental breed

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Abstract

The use of biotechnology tools and genetic selection of cattle makes it possible in the near future to increase the fertility of the dairy cow without sacrificing milk production and improving economic and sustainability aspects. The antagonistic relationship between fertility and productive characteristics is the main cause of the reduction of fertility in cattle, when reproductive efficiency parameters are not included in the selection programs. Furthermore, even if included among the selection targets, fertility may be reduced due to the low heritability. Current selection strategies for fertility traits are based mainly on the genetic evaluation of offsprings. One of the main problems with reproductive traits is that female fertility is not fully represented by a single trait but rather a complex of characters and, despite its economic importance, the characteristics of fertility are often underestimated. In some cases, the reduced reproductive efficiency derives from a low reliability of the data gathered. The 56 day non-return rate after the first service (NR56) is the most widely used character in the genetic improvement programs of fertility. An important limitation of this value is that it considers the next date of birth. On the other hand, NR56 provides a quick assessment for the fertility of a subsequent event (calf birth). The use of direct fertility measures could lead to more immediate results in breeding programs, considering that the phenotypic data are reliable and correctly modelled. The present study is part of a larger project aimed at the study of fertility for the Italian Simmental population. This research has allowed the development of a procedure for checking the reproductive performance of cows. Since now, the variables selected for a genetic fertility index in the Italian Simmental breed are: the 56-day and 90-day non-return rate, the birth-first insemination interval and the first and last insemination interval.

Keywords: Animal breeding, Fertility, Simmental breed

Collagen: from animal tissues to 3D printing biomaterials for tissue engineering

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Abstract

Processing of animal tissues is still a challenge for obtaining natural biopolymers. The bio-based polymers such as proteins (collagen, keratin, silk fibroin) and glycosaminoglicans (hyaluronic acid, chondroitin sulphate, chitosan) have received increasing attention because of their properties such as high stability, low toxicity, non-immunogenicity, biodegradability, and biocompatibility. Collagen, the most abundant protein of the body can be extracted from skin, bone, cartilage, blood vessels; keratin is found in wool, hairs, quills, hooves, horns, nails and silk fibroin is present in glands of silk producing arthropods (such as silkworms, spiders, scorpions, mites and bees) and spun into fibers during their metamorphosis. Hyaluronic acid is extracted from animal tissues such as cockscombs, vitreous bodies, brain cartilage, and joint fluids; chondroitin sulphate from cow, pig or shark cartilages and chitosan from shrimp, crabs, mussel shells and insect cuticles. They are only some examples of natural biopolymers which have been demonstrated to be excellent candidates in the application of wound healing, tissue regeneration, drug/gene delivery systems. In this study we will focus on collagen biomaterials starting with the animal source of obtaining, the types of collagen, methods of extracting, its processing as biomaterials and their application in medical field. Extracted as solution or gel, type I collagen as such or in combination with other polymers, drugs, natural extracts, ceramics was processed in different forms such as hydrogels, membranes, matrices (spongious), fibers, tubes. According to their applications we developed different collagen composites such as: collagen-natural polymers (dextran, sericin, hyaluronic acid, chondroitin sulphate, cellulose and sodium alginate), collagen-synthetic polymers (PVP, PVA, PLA, PLGA, Na-CMC) for wound healing and as support for cellular therapy, collagen-ceramics/mineral materials (hydroxiapatite, zeolite, zinc oxide, zinc titanate, barium titanate, calcium/magnesium ions, mollusc shells, Na-montmorillonite) for bone regeneration. Some of these biomaterials, seeded with human adipose derived stem cells (hADSC), 3T3-L1 preadipocytes, human epidermal keratinocytes, dermal fibroblasts and osteoblasts proved their ability to build biohybrids for skin, adipose, cartilage and bone tissue engineering. Drug delivery systems based on collagen with antimicrobials (doxycycline, minocycline, metronidazole, tetracycline, chlorhexidine), anti-inflammatory drugs (niflumic acid, flufenamic acid, mefenamic acid, indomethacin, piroxicam), antitumorals (vinblastine), anaesthetic (lidocaine), growth factor for cell culture such as BMP-4, D3 vitamin and dexamethasone were obtained and are in continuing development in order to prove the controlled delivery of drug / active principle at targeted tissue. However, an increased resistance to antibiotics has been recently observed and for these reasons, new drugs and therapies are continuously researched. Starting from this concept collagen in combination of essential oils (of lemon, lavender, laurel, thymus, oregano, eucalyptus) in the form of microcapsules, coating of implants, film/membrane, lyophilized spongious forms were developed and their efficacy were proved to be successfully used as antimicrobial biomaterial for infected tissue. Based on such good results, the promising next generation of engineered tissues is relying on producing natural scaffolds with antimicrobial activity, biocompatibility and also personalized form using 3D-printing technique.

Keywords: Animal tissues, Biomaterials, Collagen, Drug delivery systems

Comparison of Fattening Performances in Some Cattle Breeds

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Abstract

This research was conducted to compare the fattening performances of Limousine, Charolais, Angus and Hereford breed calves imported to Turkey. A total of 200 male fattening calves, aged 10-12 months were used as animal material. The calves were fed ad libitum for 24 weeks of fattening. During the first 12 weeks of fattening, the animals were given fattening development feed with 14.26% crude protein (CP) and 2637 kcal / kg metabolic energy (ME) and in the last 12 weeks, they were given fattening completion feed with 14.11% CP and 2744 kcal / kg ME. The fattening period was completed on the 168 th day of the study (24 weeks). Significant differences were observed among groups in terms of live weight, growth rate and feed consumption. Although the Charolais had the lowest weight at the beginning of the fattening, they reached the highest weight gain with the highest daily live weight at the end. A similar relationship was observed between the Charolais and Herefords in terms of growth performance. In this study, it can be concluded that Charolais and Hereford breed calves would be more profitable than others to be imported to Turkey for fattening. On the other hand, to get more accurate results, more research needs to be done about cattle breeds imported to Turkey.

Keywords: Fattening performance, Limousine, Charolais, Angus, Hereford

Factors Affecting Sustainability of Local Seeds

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Abstract

The aim of the study is to determine the factors that affect the sustainability of biodiversity for agriculture sustainability in Konya and the determination of the types of local seeds, utilization status, conservation, conservation and sustainability. Rural areas are important for the realization of agricultural production and sustainability of resources. The data were obtained by questionnaires from 68 families using 20 seeds produced by local seeds in the "Uncategorized single-step simple random probability sampling based on population ratios" method. It was also aimed at revealing the consumption status of local products and revealing the consciousness levels of the consumers in this subject by means of questionnaire survey. In the survey, characteristics such as population and labor force assets, age, gender, education status of the examined enterprises are calculated. 69% of the villages in the study area are mountainous and 31% are plains. In the research area, 49 local varieties were identified and logistic regression analysis was used for the analysis of the factors affecting the sustainability of the production with local seed for producers. As a result, factors affecting the sustainability of local seeds; awareness, marketing and price, gene resource and organic agriculture. These factors were found to be statistically important at 1% level.

Keywords: Konya Province, Sustainability, Local Seed

Evaluation of Mevlana Development Agency Rural Development Supports; a Case Study of Konya

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Abstract

The main purpose of this study was to assess measures, which will help to increase impact of rural development investment programs. According to Mevlana Development Agency's Rural Development Financial Support Program specified objectives; study mean to evaluate program's relevance, efficiency, effectiveness, impact, sustainability and to suggest recommendations in light of the gained experiences. For this purpose by applying a survey to beneficiaries of Mevlana Development Agency's Rural Development Financial Support Program; problems, accrued during application of program, were determined. By revising success of program in accordance with the planned expectations, suggestions were developed for future programs. Within the context of program; 29 projects from Konya and 17 projects from Karaman, in total 46 projects, were supported. Population of research is supported projects from Konya. Complete counting method was used as a sampling method because of low number of projects and reaching information is easy. Survey data's were evaluated in research findings section by using tables, charts, calculation of averages and percentages, chi-square tests. As a result of study, leading concern of beneficiaries is if the project selection was done fair or not. So it's considered that project selections must be done in accordance with transparency, accountability and equality principles. In conclusion section, other findings and recommendations are presented.

Keywords: Konya, rural development, financial support program, Mevlana Development Agency

Additional Note: This article has been prepared by using the master dissertation entitled "Evaluation of Konya Province Mevlana Development Agency Rural Development Supports", The Graduate School of Natural and Applied Science of Selcuk University.

The Condition of Apple Production Sector in Karaman from the Perspective of Production, Yield and Foreign Trade

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Abstract

The world apple production is about 83 million tons and with 3 million tons Turkey is the third country in World apple production after China and the United States. In this study, sectoral analysis of apple production activity in Karaman which is the second in Turkey's apple production, was done. In the study, firstly, apple production amount and area, number of fructiferous trees, yield value and foreign trade datas in the World and in Turkey were presented. Then the same datas in Karaman were presented. The main material of the study was datas taken from FAO and TSI. By evaluating these datas, the development of the apple production sector in Karaman over time and its current situation were revealed. In addition, the strengths, weaknesses, opportunities and possible threats of the apple production sector were demonstrated by SWOT analysis. According to research results, %16.42 of the total apple production in Turkey was produced in Karaman. Between the years 1980-2017, while apple cultivation areas has increased on a regular basis in Turkey, the amount of production has also increased although the production amount showed fluctuations. In Karaman, while the cultivation areas did not change much in time, the amount of production increased in a fluctuating manner. This is due to the increase of yield over the years with modern cultivation techniques. However, apple yield per fruit-bearing tree in Karaman is 52.74 kg and it is below 54.37 kg which is the average in Turkey. With the results of SWOT analysis, it was aimed to contribute to the development of the apple production activity in Karaman.

Keywords: Apple production, SWOT analysis, Karaman

"The LEADER Approach" As A Rural Development Strategy; The EU And Turkey Practices

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Abstract

The LEADER approach is a local development method, which allows local actors to develop an area by using its endogenous development potential. The implementation of the LEADER approach in the EU and Turkey are carried out under the IPA program in the current situation. In Turkey, the LEADER approach is among the measures covered in the IPARD II Program. The main material of the study was IPARD I program, IPARD II program and official websites of the EC and Ministry. In the study, firstly, key features and implementing methods of LEADER approach were explained and then practices of EU and Turkey were explained. Turkey is very new in applying the LEADER approach as yet compared to the EU's 30 years of the LEADER approach experience. While the EU is applying the fifth generation of the LEADER approach, Turkey is still not accredited in the LEADER approach measure. 2888 local action groups (LAGs) were supported in the EU by the program that is implemented between 2014 and 2020, while 25 LAGs were established in Turkey. Total public aid value of the LEADER approach measure is €26,700,000 and with an EU contribution rate of %90, EU contribution value is €24.030.000 in Turkey.

Keywords: Rural development, the LEADER approach, IPARD program

Determination of Antibacterial and Antifungal Properties of Chitosan Based Nanocomposite Films Prepared with Borax and Boron Nitride

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Abstract

In this study, chitosan-borax, chitosan-boron nitride films were prepared by adding borax and boron nitride in two different concentrations (1, 3 % w/w) to the chitosan polymer. In the prepared films, physical properties such as film thickness, apparent density, humidity (%) and water solubility (%) were determined. The antibacterial effect of the films against the strains of *Staphylococcus aureus* ATCC 25923, *Salmonella* Typhimurium ATCC 51812, *Escherichia coli* 0157:H7 EDL 937 and the antifungal effect of the films against the strains of *Aspergillus flavus*, *Alternaria arborescens*, *Penicillium expansum*, *Penicillium citrinum*, *Penicillium digitatum*, *Saccharomyces cerevisiae* ATCC 9763 and *Candida albicans* ATCC 10231 was determined by application of disk diffusion method. Chitosan film without an antimicrobial agent was used as a control in the analysis. As a result, the increase in the concentration of antimicrobial agent in the film contented to a decrease in film solubility. While the effect of chitosan-borax films on Gram Positive and Gram Negatives did not change, the antibacterial activity of chitosan-boron nitride films was higher in Gram Positive bacteria than Gram Negatives. When the two formulations were compared, the highest antimicrobial effect on Gram Positive bacteria were seen in the chitosan-boron nitride films, however, Films had a similar effect on Gram Negatives. When the antifungal and antibacterial activity of the films were compared, the antifungal effect was found to be higher for both films.

Keywords: Chitosan, Nanocomposite, Borax, Boron nitride, Antibacterial, Antifungal

Additional Note: This study is supported by the Scientific Research Coordination Unit of Canakkale Onsekiz Mart University with the project FYL-2018-1373.

Validation of QuEChERS method for the analyses of acetamiprid, chlorpyrifos and formetanate hydrochloride residues in cucumbers

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Abstract

This study was undertaken to validate the "quick, easy, cheap, effective, rugged and safe" (QuEChERS) method using cucumber matrix spiked at 0.1*maximum residue limit (MRL), 1.0*MRL and 10*MRL levels of the three (acetamiprid, cholorpyrifos and formetanate hydrochloride) pesticides. For the extraction and cleanup, QuEChERS 2007.1 version was followed, then the samples were subjected to LC-MS/MS for chromatographic analyses. For the quantification represenative (apple) matrix matched calibration (MC) was used to compansate matrix effect. Estimated method detection limit of three pesticides blow the EU-MRLs. The recovery ranges were 65.43%-116.67% (mean 87.66%), 66.4%-106.42% (mean 84.14%) and 75%-123% (mean 111.178) for acetamiprid, chlorpyrifos and formetanate hydrochloride, respectively. The overall recovery of the method was 93.33% with a relative standard deviation (RSD) of 19.7% (n=63). These figures are within the recovery limits (60-140%) and the values specified for the repeatability (RSD≤20%). The calibration curves of three pesticides were linear (R≥0.999) at the range of 2.5-50 pg/µl. Some other parameters of the method validation, such as recovery, chromatographic repeatability, precision, accuracy and linearity were found to be within the required ranges. All the required method validation criteria were met in this study. QuEChERS method was found suitable for the analyses of acetamiprid, chlorpyrifos and formetanate hydrochloride residues in cucumber under our laboratory conditions.

Keywords: Cucumber, method validation, pesticide residue, representative matrix

Additional Note: This study was supported by Scientific Research Projects Department of Canakkale Onsekiz Mart University (the project number: FYL-2019-2840), with the title of Master Thesis project "Çanakkale'de Cuma Pazarından farklı Zamanlarda Alınan Hıyar Örneklerinde Bazı Pestisit Kalıntılarının Belirlenmesi".

Effects of Melatonin Implants on Reproductive Performance of Tahirova Sheep and Turkish Saanen Goats

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Abstract

This study investigated the effect of melatonin implants on the reproductive performance of Tahirova dairy ewes and Turkish Saanen dairy goats before the breeding season. Seventy six sheep and 54 goats (including 6 rams and 4 bucks) were used in the research. In half the animals, 18 mg melatonin implants were applied, 1 to females and 3 to males. 15 days after implantation, animals were fed with grain barley for 60 days; females in the milking unit and males in groups (530 g/sheep, 430 g/goats, 660 g/rams and 560 g/bucks). 36 days after the melatonin implant, the rams and bucks were introduced for a period of 45 minutes both in the morning and evening. After 8-12 hours, estrus was observed in the females being mated. Each group of females was matched with an equal number of non-implanted and implanted male animals. The breeding rate, pregnancy rate and birth rate in sheep were 100%. The return rate was 11.7% in the melatonin group and 8.6% in the control group (P=0.6470). While the rate of breeding was 100% in the goats, the rate of pregnancy and birth rate was 96% in both groups implanted with or without melatonin. The return rate in goats was 25.0% in the melatonin group and 8.0% in the control group (P=0.0498). In sheep, the duration of ewes from ram introduction to first estrus and conception was 18.9±1.81 days and 23.9±1.32 days (P=0.0513), 18.7±1.64 days and 28.6±3.11 days (P=0.0219) in the melatonin and control groups, respectively. From ram introduction to lambing, the duration of ewes was 162.5±1.98 days and 171.4±2.66 days in the melatonin and control groups, respectively (P=0.0159). Litter size, in regard to birth, total birth weight and birth weight per lamb in the melatonin group was 1.70±0.08, 7.42±0.42 kg and 4.55±0.09 kg, respectively, whereas it was 1.62±0.10, 7.88±0.45 kg, and 4.85±0.08 kg, in the control group, respectively. The birth weight of lambs significantly differed by group (P=0.0006). In goats, the duration from buck introduction to first estrus, duration of conception, and duration of kidding in the melatonin group was 25.9±1.58 days, 24.9±0.98 days, and 33.2±3.99 days, respectively. In the control group, it was 28.0±3.48 days, 180.8 ±2.08 days and 178.4±0.94 days, respectively (P>0.05). Litter size, total birth weight and birth weight per kid in the melatonin group were 1.55±0.11, 6.27±0.43 kg and 3.90±0.11 kg, and 1.43±0.11, 5.66±0.39 kg and 4.14±0.12 kg in the control group, respectively (P>0.05). The application of melatonin in lactating Tahirova sheep obtained shorter periods of breeding and a shorter duration of pregnancy. In goats, melatonin significantly increased the return rate in terms of other properties, but they were determined to be close to groups. It was observed that the application of melatonin increased the yield of the offspring in sheep and goats. However, it might be said that the application of melatonin gave better results for reproduction in Tahirova sheep than Turkish Saanen goats.

Keywords: Breeding rate, Pregnancy rate, Return rate, Offspring yield, Birth weight

Additional Note: This work was supported by Çanakkale Onsekiz Mart University, The Scientific Research Coordination Unit, Project number FBA-2018-2601.

Tick Infestations and Hematological Changes in Turkish Saanen Goats and Tahirova Sheep

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Abstract

In this study, infestation in Turkish Saanen goats and Tahirova sheep concerning the hematological characteristics of tick species was investigated. The study was carried out with 40 Turkish Saanen goats and 40 Tahirova sheep. The study was conducted between June and March in Çanakkale (Turkey). Ticks on the body of the animals were counted at 21 day-intervals in several zones (ear, head, breast, leg, body). The ticks were collected individually after counting the animals in 10 control groups of each animal species. The species of the collected ticks were identified when the plastic tubes were brought to the laboratory. Hematological parameters were determined in blood samples from *Vena jugularis* after counting the ticks in 30 animals of each species. It was found that while tick infestation was 2.5% in goats, tick infestation ranged from 2.5% to 20.0% in sheep. Tick infestation was higher in summer and autumn, but lower in winter. Only the *Rhipicephalus bursa* tick species was identified in both animal species. In the goats, the ticks gathered in the ear while in the sheep they gathered in the vulva, tail, breast and around the breast. The tick infestation had no significant effect on hematological values in the goats and sheep. Hematological parameters changed significantly according to age and the measurement dates in the goats and sheep ($P \leq 0.05$). Chemicals significantly affected only the basophil values from hematological characteristics in the goats and sheep ($P \leq 0.05$). Higher basophil values were determined in the group treated with chemicals than the group with no chemical struggle in the goats and sheep ($P \leq 0.05$). In conclusion, it was determined that there was no significant tick infestation in the Turkish Saanen goat and Tahirova sheep and there was infestation of only one tick species (*Rhipicephalus bursa*). It can be said that there is no need for chemical treatment because of the lack of tick infestation, but the increase of basophil values in the chemically-treated groups should be studied in more detail in goats and sheep.

Keywords: Age, *Rhipicephalus bursa*, season, antiparasitic, basophil

Additional Note: This work was supported by Çanakkale Onsekiz Mart University Scientific Research Coordination Unit, Project number FBD-2017-1335.

Genetic Parameter Estimation of Testday Milk Traits in Turkish Saanen Goats via Gibbs Sampling

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Abstract

When planning a breeding program in dairy goat production, it is important to acquire the heritability estimates for milk yield and milk content. In this study, the genetic parameters of milk yield and milk content were estimated using an animal model and Gibbs sampling with a flock of Turkish Saanen goats. The data used in the study were obtained between 2001 and 2015 from 368 goats kept in the experimental flock of Canakkale Onsekiz Mart University, Turkey. The pedigree included 452 animals. Milk yields were measured on testdays at 30-day intervals. At the same time, milk samples were taken and the protein and fat ratios were determined; in addition, the milk fat yield and milk protein yield were calculated. Genetic parameter estimates were made using Gibbs samples based on Bayesian statistics and a testday animal model. The analyses were carried out with the program GIBBS2F90. The heritability estimates for daily milk yield (DMY), fat content (FC), protein content (PC), milk fat yield (FY) and milk protein yield (PY) were 0.21, 0.22, 0.20, 0.19 and 0.22, respectively. The genetic correlations between DMY and FC, PC, AF, AP were -0.12, -0.22, 0.82 and 0.96; while the phenotypic correlations were -0.28, -0.11, 0.83, and 0.90, respectively. The genetic correlations between FC and PC, FY, PY were 0.67, 0.44 and -0.02, respectively; whereas the phenotypic correlations were 0.21, 0.21 and -0.21, respectively. Genetic correlations between PC and FY, PY were 0.19 and 0.01, respectively. The phenotypic correlations were 0.02 and 0.29. Results showed that the genetic correlation and phenotypic correlation between FY and PY were 0.85 and 0.77, respectively. As expected, a negative genetic correlation between DMY and FC was determined. The genetic correlation between DMY and PC was also negative. In contrast, genetic correlations between DMY and FY and PY were highly positive.

Keywords: Daily milk yield, Milk fat, Milk protein, animal model, heritability, genetic correlations

Investigating the Effect of Onion Juice on Performance and Immunological Parameters in Laying Hens

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Abstract

Antibiotic resistance has been a big issue for the last decade impairing human health. Some research has been done to improve performance and immune system by using phytobiotics. This study was conducted to evaluate the effect of onion juice in drinking water on the performance, hematological and immune parameters in laying hens. The study program follows as: 240 Babcock white laying hens (40 weeks old) with 5 groups (48 birds in each) and each group with 8 replicates, consisting of 6 birds in each replica. Group A is the control no supplemented group however, group B, C, D, E were given 0.25mg/L, 0.5mg/L, 1.0mg/L and 2mg/L of onion juice in water respectively for 12 weeks. 16 hours light and 8 hor dark period is given. No effect was observed on egg production, and feed conversion ratio. The group E produces higher amount of IgG during the second and third month of study against the Newcastle virus vaccination. The hematological parameters like Hb concentration increase in group D. It is concluded that onion juice affect the immune system. Further detailed study with multiple dose levels should be done to explore the benifits of onion juice in laying hens.

Keywords: Onion juice, laying hen, immunity, hemoglobin

Effect of Different Level of Pomegranate Molasses on Some Performance and Blood Parameters in Older Laying Hens

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Abstract

The objective of the present study was to investigate the effects of pomegranate molasses on performance and some blood parameters in layer hen. A total of 240 Babcock white layers (58 weeks old) were divided into 5 subgroups (n=48) and 8 subgroups with 6 hens in each. Five groups contains 1 control and 4 treatment groups in which pomegranate mollases doses were added at rate of 0.1%, 0.25 %, 0.5%, and 1% respectively during 4 weeks. Non-significant result (P>0.05) were shown on egg production and FCR. The blood parameters RBC remained non-significant while hemoglobin level increased in all groups over control. Further detailed studies with multiple dose levels need to be investigated.

Keywords: Pomegranate molasses, laying hen, egg yield, blood parameters

The Results of Scientific Studies in Turkey on Composition of Minerals in the Walnut Kernel

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Abstract

Walnut (*Juglans regia* L.) is an important fruit species for Turkey in terms of economic value, and commonly consumed as part of the Mediterranean diet since ancient times. Due to its positive effects on nutrient content and human health, its importance is increasing nowadays. The scientific studies have been revealing that it has rich nutrient content to positively affecting human body. The beneficial effects of walnut consumption for prevention, management and treatment of diseases related to diet are proven and well-documented, and include protection from cardiovascular disease and diabetes, reduction of adiposity and low grade systemic inflammation and the improvement of blood lipid profile. Therefore, many studies have been made on minerals of walnut up to now. The aim of this article was to evaluate the results of scientific studies about composition of minerals in the different walnut cultivars and genotypes.

Keywords: Walnut, Minerals, Human Health, Scientific Studies

The Effects of Foliar Nutrient Applications on Fruit Yield and Qualıty of Kosui Pear (*Pyrus pyrifolia* Nak.) Cultivar

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Abstract

The pears are one of the species that is cultivated and best loved in many countries around the world. The pears are grown in all regions of Turkey. Especially in the arid and semi-arid regions and calcareous soils, micro element deficiency is very common. In this study, the effects of foliar micro element fertilizer applied different frequency on fruit yield and quality characteristics of Kosui pear (*Pyrus pyrifolia* Nakai) cultivar were investigated in Uşak conditions. According to the results of the study, foliar nutrient application did not cause any significant differences on fruit yield. Especially 3 times applications were increased fruit weight by 53%. The total soluble solids (TSS) rised from 12.1% to 14.4% with the increased foliar application, but the fruit flesh hardness were significantly reduced. The application of foliar fertilizer yielded dark-colored fruits.

Keywords: Pear, micro element, fertilizer, yield, fruit quality

Transition from in vivo animal production to in vitro cell production for food supply: from the nutrition of animal to the nutrition of cell

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Abstract

There have been successful recent scientific studies conducted by leading companies and non-profit organizations from many years to culture meat to serve for the nourishment of human beings. Their proposed reasons for this production are to feed millions of people safely and eliminate the negative consequences of animals on global warming, to minimize land usage, and not to feel guilty in animal welfare issues. There has been a continuous discussion on its consumption with respect to religious and legislation matters, but it will be on sale on soon. In vitro cell production named "cellular agriculture" is a multi-disciplinary branch of science encompassing animal agriculture, tissue engineering, biotechnology, medicine, and material sciences. This technology allows meat and other agricultural products to be cultured from cells in a bioreactor rather than harvested from livestock on a farm. Cellular agriculture can be used to create any kind of agricultural product, including those that never involved animals, to begin with, eggs, leather, milk, fragrances, gelatin and silk. Cellular agriculture uses methods of tissue engineering to food production to create meat and dairy products that are molecularly similar to those made via conventional means. Instead of feeds for animal, nutrients such as amino acids, fatty acids, sugars, ions, vitamins, cofactors, inorganic salts, and other substances are provided for the cells either in natural or synthetic media. The ideal criteria for the cells to be used for culturing include proliferative nature, immortality, and ability to grow independent of any surface and serum and tissue forming ability. Also, cell type is very important criterion itself. For instance, cells like myoblasts are ideal which have already differentiated to an extent and also have the ability to divide. To conclude, inevitably, some leading companies are going to produce animal products in vitro, suggesting that our next generation agricultural engineers, zootechnycians must be able to formulate serum or media with respect to its nutrient composition as well, to be ready to hybrid jobs, for example, cellular engineering, bioreactor engineering, serum production engineer, and in vitro nutritionist.

Keywords: Cellular agriculture, cell nutrition, animal farming, bioreactor, hybride jobs

Determining of Yield, Yield Components and Some Agricultural Characteristics of Winter Oat (*Avena sativa* L.) Genotypes in Eskişehir Conditions

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Abstract

There is a need for new cultivars of oat which has high yield and resistant to winter for meeting demand livestock and food sector in the Central Anatolia and Transitional Zones. The aim of this study is to develop winter oat varieties which will meet this need of the region. Field trial was carried out on rainfed conditions in the 2017-2018 growing season in Eskişehir Center Sultanönü Campus. The trial was set up randomized complete block design with 3 replications. 17 lines from Transitional Zone Agriculture Research Institute and 7 oat cultivars were used as control. The parameters of grain yield, days of mature, plant height, thousand-grain weight, panicle number m^{-2}, grain number $panicle^{-1}$, grain weight $panicle^{-1}$ and panicle lenght were investigated. Result of the variance analysis, it was seen that the differences among genotypes were significant ($p<0.01$) for all parameters examined. As a result, when all parameters were evaluated, it was found that lines 8, 10, 13, 14, 16, 18, 23, 24 were found to be prominent in terms of yield, earliness, lodging and quality characteristics. It should be considered that these lines can be registered as varieties or used as parent in oat breeding programs.

Keywords: Oat breeding, grain yield, quality

Determination of Grain Yield and Quality Characteristics of Some Barley (*Hordeum vulgare* L.) Genotypes in Eskişehir Conditions

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Abstract

Barley breeding program has been conducted in the Transitional Zone Agriculture Research Institute (TZARI) for long years. The priorities of the program are to develop adaptable cultivars to Central Anatolia and Transitional Zones of Turkey with high grain yield, meet the animal feeding needs and malt industry quality needs. The objective of this study was to evaluate grain yield and some quality parameters of barley genotypes in yield trial. The field trials were planted with three replicates in Triple Lattice Design under two rainfed environmental conditions in TZARI Sultanönü and Hamidiye Campus in 2016-2017 crop season. The trials have consisted of 64 barley genotypes with 6 cultivars (Ince, Larende, Burakbey, Ünver, Erginel, and Sabribey) as control and 58 lines. The parameters of grain yield (GY), thousand-grain weight (TGW), grain size (GS), protein content (PC), starch content (SC), acid detergent fiber (ADF) and neutral detergent fiber (NDF) were investigated. In the result of variance analysis, significant differences were found in terms of GY, TGW, GS, and PC among genotypes in Eskişehir Sultanönü location. In Sultanönü location average value of GY was 6.05 tons ha-1, TGW was 49.6 g, GS was 86.1%, PC was 12.37%, SC was 56.6%, ADF was 6.56% and NDF was 31.3%. In Hamidiye location average value of GY was 3.96 tons ha-1, TGW was 50.1 g, GS was 84.0%, PC was 11.95%, SC was 58.19%, ADF was 6.77% and NDF was 31.9%. According to results from two locations, it was found that the lines 37, 56, 62 and 63 are prominent for GY; the lines 56, 60, 61 and 63 are remarked for TGW and GSH; the lines 9, 11, 28 and 58 are remarked for PC; the lines 26, 46, 62 and 63 are promising for SC; 24, 35, 41 and 57 are prominent for ADF; 28, 37, 47 and 64 are prominent for NDF. As a result of this study the lines 14, 19, 21, 26, 30, 33, 35, 37, 41, 42, 44, 46, 49, 50, 51, 56, 57, 62 and 63 were selected to multi locations yield trial.

Keywords: Barley breeding, yield, protein ratio, starch ratio, thousand grain weight

Germination and plant growing of F1 hybrid pear genotypes of Deveci x Ankara, Deveci x Akça and Akca x Deveci

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Abstract

This study was carried out to examine plant development and germination ratio of F1 hybrid seeds in combinations of Deveci × Ankara (DE × AN), Deveci × Akca and Akca × Deveci. Seeds were stratificated in moistened perlite at 4 °C for a period of 60 days prior to germination. Plant development was determinated by measuring trunk diameter at 5 cm above root collar, stem height and number of nodes. The germination ratio of hybrid seeds was 76.2% in DE × AN combination, 94.8% in DE × AK combination and 7.0% in AK × DE combination. Recent measurements by taking into account their size plants were divided into 3 groups as I) shorter than 20cm, II) between 20 to 40cm and III) longer than 40cm. Plant ratio in I., II. and III. group was 25,9%, 44,4% and 29,7% in DE × AN combination; 11,1%, 55,6% and 33,3% in DE × AK combination, 12,5%, 56,3% and %31,2% in AK × DE combination, respectively. According to these groups, the trunk diameters were 5,2 mm, 7,3 mm and 8,9 mm in DE × AN combination; 6,4 mm, 7,9 mm and 8,2 mm in DE AK combination. The number of nodes was 11 to 48 units in DE × AN combination, 17 to 43 units in DE x AK combination, 11 to 50 units in AK × DE combination.

Keywords: Pyrus, pear, hybrid, germination, plant development

Effects of SÖ39200, SÖ1669 and SÖ1882 Quince Clonal Rootstocks on Growth of Williams, Beurre Hardy and Passe Crassane Pear Cultivars

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Abstract

The SÖ (Prof. Dr. Sabahattin Özbek) clonal quince rootstocks were registered by Faculty of Agriculture, Ankara University in 2017. In this study, vegetative and generative growth of young trees of Williams, Beurre Hardy and Passe Crassane European pear cultivars (Pyrus communis L.) grafted on SÖ39200, SÖ1669 and SÖ1882 quince clonal rootstocks (Cydonia oblonga Mill.) were evaluated (in 2017). Dwarf quince clonal rootstock of EMA (East Malling A) was used as control. Plant height (cm), canopy diameter (cm), annual shoot length (cm), cross section area (cm2), internode length (cm), fruit bearing shoot number and fruit bearing shoot number per cross section area (no/cm2) were determined. The results showed that Beurre Hardy and Passe Crassane pear cultivars grafted on SÖ39200 had lower vigor than those grafted on SÖ1669 and SÖ1882SÖ rootstocks. Initial results revealed that SÖ39200 rootstock had the same or more vigorous growth characteristics than EMA.

Keywords: SÖ rootstocks, pear cultivars, graft combinations, growth

The Effects of Mycorrhiza Application on Growth and Yield of Cucumber (*Cucumis sativus* L.) Plant in Soilless Culture

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Abstract

This study was conducted to determine the effects of mycorrhizal vaccination applied on seedling period on growth and yield of cucumber (*Cucumis sativus* L.) plants in cocopeat substrate. The experiment was planned with 3 treatment groups (0, 100 and 200 spores plant^{-1}) each including four replicates in randomized plots design. Each replicate included 3 plants. The plants were grown in cocopeat slabs in the greenhouse, which had gothic type and timed automation system. The plants were irrigated with modified solution from Hoagland nutrient solution prepared for cucumber plant during the trial. Mycorrhiza application increased plant height, stem diameter, fruit firmness, fruit juice pH and EC values significantly compared to control. Mycorrhiza treatment did not affect the chlorophyll a value in leaf tissues and plant fresh weight. However, in leaf tissues of plants subjected to mycorrhiza; chlorophyll b, total chlorophyll and carotenoid amounts were significantly lower than control ones. The highest yield was determined in 200 spores plant^{-1} mycorrhiza application with 10.71 kg plant^{-1}. The yields were determined in control and 100 spores plant^{-1} mycorrhiza applications as 7.98 and 7.94 kg plant^{-1} respectively. To conclude, 200 spores plant^{-1} mycorrhiza application significantly enhanced growth with affecting morphological parameters and yield, except the leaf pigment values, suggesting that mycorrhiza can be applied in soilless culture production system.

Keywords: Mycorrhiza, soilless culture, cocopeat, cucumber

The Effects of Different Planting Methods on Growth and Yield of Tomato (*Solanum lycopersicum* L.) Plant in Soilless Agriculture

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Abstract

This study was conducted to determine the effects of different planting methods on yield and development of tomato (*Solanum lycopersicum* L.) cultivated with cocopeat substrate in soilless culture. In the study, four different planting methods (1. Planting plants directly to cocopeat slabs (U1), 2. Planting as a single plant on rockwool cubes placed on cocopeat slabs of plants (U2), 3. Planting as double plant on rockwool cubes placed on cocopeat slabs of plants (U3), 4. Planting single plant and creating two stems on it in the rockwool cubes placed on the cocopeat slabs (U4)). Trial was planned with 4 treatment groups (U1, U2, U3 and U4) each including 4 replicates in randomized block design. Each replicate included 3 plants. Different planting methods were statistically significant on the other parameters, except plant height. The highest plant biomass value was determined in U4 treatment with 3984.3 g, the thickest stem diameter was determined in U1 treatment. The chlorophyll content in leaves and TSS value in fruits were higher in U1 and U2 treatment groups than those of U3 and U4 treatments. The highest yield per plant was obtained in U3 treatment groups with 6943.9 g, while the lowest yield was determined in U4 treatment group with 3775.8 g. To conclude, it was determined that rockwool cubes placed on cocoopeat slabs tended to increase plant biomass, yield, TSS and chlorophyll content without statistical significance, however U3 treatment solely increased plant yield significantly.

Keywords: Soilless culture, planting methods, tomato, substrate

Determination of some quantitative and efficiency parameters of the hibiscus plant (*Malva sylvestris*) grown under different water limitation conditions

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Abstract

Drought is the most important factor restricting plant development in areas where precipitation or irrigation water remains insufficient. The decrease in the soil moisture depends upon the severity and duration of the drought. Long-term drought causes Plant death. Plant development is also restricted and yield decreases as a result of the short-term effect of the drought. In this study, the effect on the yield and quality of Hibiscus plants grown under different water deficit conditions were examined. 5 different irrigation water levels (S1 = 25%, S2 = 50%, S3 = 75%, S4 = 100% and S5 = 118%) were applied. For this study, plant yield, number of leaves, body diameter, soil weight, soil dry weight, root dry weight, dry weight of leaves and dry weight of the plant were examined. Result of the study indicated that except for the leaf dry weight, S1 has the lowest value for all the parameters examined. Other parameters except the number of leave and stem diameter were at the highest values at S5. For the statistical analysis, yield was divided into 3 different groups. There was no statistically significant difference between S4 and S5 treatments. The highest yield was obtained for S5. S4, S3, S2 and S1 subjects were decreased by 1.5%, 19.2%, 21.9% and 48.8% respectively. In conclusion, drought significantly limited plant development and yield.

Keywords: Water deficit, drought, leaching fractions, yield, hibiscus

Fish consumption status of adults in Kayseri province center

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Abstract

This study was planned to evaluate the fish consumption status and related factors of adults in Kayseri province. The study population was 630 participants and data were gathered by a questionnaire form between October and November 2012. Frequencies, percentage, mean, standard deviation and chi-square test was used for evaluating data. The mean age of the research group was 36.1 ± 13.04 years, 31.3% were male, 68.3% were married and 36.3% had chronic diseases. The fish consumption rate of the participants was 86.8%. The most common reason for rejecting fish consumption was; "not liking its taste" (86.8%). The most consumed fishes were anchovy (69.0%), trout (9.0%) and salmon (4.0%). The median of the weekly fish consumption of the participants was 125 g and 4.8% of them consumed adequate fish and 44.1% of the participants stated that they consumed fish at least once a week. Women's consumption of adequate fish was higher. The most preferred methods for cooking fish was frying (43.1%). Only 18.2% of the participants stated that they consumed frozen fish. Although the fish consumption rate of adults living in the city center of Kayseri was high, the amount they consumed was below the recommended level.

Keywords: Adults, fish consumption, optimal nutrition

Determination of the Structural State of Cattle Fattening Farms in Siirt Province

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Abstract

This study was carried out to determine the structural and demographic characteristics of beef cattle farms in Siirt province. The data were obtained from the province center of Siirt, Pervari, Baykan and Şirvan with 93 breeders. The educational status of the farmers is primary school (46.2%), secondary school (28%), high school (12.9%) and illiterate (12.9%). The average age of the farmers was 42.24 years, the number of individuals in the household was 7.36 and the period of livestock breeding was 18 years. Of cattle being in the farms consist of 34.2% domestic, 18.2% culture, 21.6% crosbreed breeds, 14.2% crosbreed-culture and 14.8% are crosbreed -native breeds of them. The average number of animals in the farm was 11.17. While 55.9% of the enterprises only feed, 44.1% of them make milk production in addition to food. 69.6% of the farmers stated that Siirt province was suitable for livestock and that it was not suitable. As a reason, they stated that the feed was expensive, there was no pasture area, climate and market conditions. Farmers expect support from farmers mostly (26.4%). The average number of animals to provide livelihood was found to be 24 head. As a result, in Siirt province, fattening is not widespread and the fattening enterprises have been found to do this work extensively with less animals. In order to increase the income of the farmers and to increase the contribution of the business to the economy and the country's economy, the infrastructure of the enterprises should be improved, the knowledge level of the growers should be increased and encouraged by various measures.

Keywords: Siirt province, cattle fattening, structural status, demographic characteristics

Determination of Satisfaction and Sustainability in Cattle Fattening Farms in Siirt Province

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Abstract

This study was carried out in order to determine the satisfaction of the farmers in the fattening farms in Siirt province. The data were obtained by a face-to-face survey with 93 farmers in Siirt province, Pervari, Baykan and Şirvan districts. SPSS package program was used for statistical analysis. Overall, it is determined that 59.8% of the farmers are satisfied with livestock and 87% want to maintain their livestock. The reason for the continuation of the farmers was that they did not have any other jobs (37.9%), followed by sufficient income (26.4%), loving fattening (20.7%) and being profitable (14.9%). 83.3% of the farmers who were not satisfied with the fattening and did not want to continue the work stated that the fattening was not profitable. It was determined that the satisfaction level of the farmers according to their age levels changed and the rate of those who wanted to maintain their fattening increased as the age increased. As there is no other job to do, 34.8%, 37.5% and 43.8% of the farmers want to maintain their livelihood. When evaluated in general terms, it was determined that the farmers did not pursue fattening very willingly and that there was no other job to be done by the farmers in order to maintain their fattening. As a result, it was determined that the farmers were not very satisfied with then nourishment, and they continued to breed because they had no other work to do.

Keywords: Siirt province, cattle fattening, satisfaction and sustainability

The Effects of Lactic Acid Bacteria and Enyzme Mixture Inoculants in Alfalfa Harvested at Different Maturities on Silage Fermentation and Feed Value

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Abstract

This study was carried out to determine the effects of lactic acid bacteria+enzyme (LAB+E) inoculants addition into alfalfa harvested at three maturity stages on the fermentation and in vitro organic matter digestibility (OMD) characteristics of alfalfa silages. Alfalfa was harvested at the early, middle and late flowering stages. Sil-All (Alltech, UK) were used as LAB+E inoculants. Inoculants were applied to the silages at the rates of $1x10^5$, $5x10^5$ and $1x10^6$ cfu/g levels. Control and additives applied alfalfa were ensiled in 1 liter capacity plastic bags. The bags were stored at 20±2°C under the laboratory conditions. Three bags from each group were sampled for chemical and microbiological analyses 45th day after ensiling. In addition in vitro OMD and metabolizable energy (ME) of those silages were determined. The results showed that LAB+E inoculants reduced pH values and ammonia-nitrogen (NH3-N) content, whereas increased lactic acid, acetic acid contents and lactobacillus count of alfalfa silages. High doses LAB+E inoculant decreased neutral detergent fiber and acid detergent fiber content; increased in vitro OMD and ME of alfalfa silages. It has been demonstrated that the most effective application of LAB+E inoculant to improve fermentation and feed value of alfalfa silage was $1x10^6$ cfu/g levels, but application of $1x10^5$, $5x10^5$ cfu/g levels can also be found effective.

Keywords: Alfalfa, fermentation, feed value, lactic acid bacterial inoculants

Determination of Responses of Some Maize Cultivars (*Zea mays* L.) to Salt and Drought Stress at the Early Period

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Abstract

This study aimed to determine the responses of four maize (*Zea mays* L.) varieties grown in Turkey (Dekalb-5741, Fito, Pioneer 0573 and Royal) to drought and salinity stresses applied in early stage at various severities. In the study that used pure water as the control group, 4 doses of NaCl (3 g/l, 6 g/l, 9 g/l and 12 g/l), which is the most commonly found salt form in the soil, were used, and 4 doses of high molecular weight polyethylene glycol (PEG-6000) (5%, 10%, 15% and 20%), which is not toxic for plant tissues, were used for drought stress In line with the ISTA rules, germination power, root length, shoot length, fresh weight and dry weight parameters of the varieties were determined on the 12th day of the experiment. The variance analysis performed with the obtained data revealed that both the difference between the varieties and doses in the parameters examined under salinity and drought stress at different severities and the variety x dose interaction were statistically significant. Dekalb-5741 and Pioneer 0573 has been determined as the varieties with more tolerance to drought and salinity stress. In the experiments, maize varieties were observed to exhibit higher tolerance to salinity stress than their tolerance to drought stress.

Keywords: Zea mays, maize, germination, drought, salinity

Possibilities of Utilizing Endosperm Culture in Plant Breeding

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Abstract

In addition to being an essential step for the successful implementation of biotechnological methods, the field of tissue culture is also useful in plant breeding programs as it helps shorten the breeding time, and ensure intra- and inter-species variation. Endosperm is a tissue formed by double fertilization with a chromosome number of 3n that provides the embryo with nutrients. In plant breeding works, doubling the plants chromosome numbers is the most commonly used methods. In the production of triploid and polyploid plants, endosperm culture shortens the time compared to conventional methods, as well as enhancing the plant quality and yield. At the same time, plant gene pools can be expanded by increasing the genetic diversity with endosperm culture. The study explores the advantages and potential usability of, and the elementary and current studies on endosperm culture, and presents the methods used.

Keywords: Plant breeding, endosperm culture, polyploidy, triploid plant, chromosome number

The effects of agricultural policies applied in durum wheat cultivation on the farmer's decision: The Case of Gaziantep Province

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Abstract

In the most of the areas devoted to wheat production in our country, durum wheat production can be made. However, in our country, pasta and durum wheat industry can not be produced to meet the needs. Therefore, durum wheat is imported although it varies according to years. The majority of durum wheat cultivation areas in our country are; Southeast Anatolia Region, Central Anatolia and Passage Regions and our coastal regions. Gaziantep, which is chosen as the study area, is an important province in terms of durum wheat production and industry. Increasing the durum wheat production in the province will contribute to the development of pasta and bulgur industry, the export of pasta products, national income and employment. In this study, factors that limit the production of durum wheat and determination of farmers' problems are discussed. The sample size was determined as 240 farmers by stratified sampling from the farmer registration system. In this study, a questionnaire was applied to face-to-face interviews with farmers and the data of agricultural provincial directorates, agricultural chambers and agricultural cooperatives were used as secondary data. As a result, the increase of durum wheat cultivation areas; reduction of agricultural input prices (81.4%), profitability of durum wheat production (77.1%), gaining more profit from wheat production (65.7%), determination of bread and durum wheat prices before planting (60.3%) and prevention of deficiencies in marketing (18.5%) has been determined to make an impact. It was determined that the most important factors affecting the reduction of durum wheat cultivation areas were the profitable (61.2%) of the other plants in the production pattern and the higher net profit obtained from bread wheat (64.3%). As a result of the analysis; It was determined that there was no statistically significant ($p < 0.05$) relationship between durum wheat production and non-agricultural income, total net income of the enterprise, land width and product prices. In the region, it has been determined that wheat and barley cultivation areas are replaced in place of decreasing plantation areas. In addition, as a result of shifting of durum wheat production to watery areas, significant increase was observed in yield. As a result, it was determined that the gross profits obtained from other plants in durum wheat production, the low price of durum wheat and the high input prices were effective. By solving these problems at the farmers level, it has been determined that the desired level can be reached in durum wheat production.

Keywords: Agricultural policies, durum wheat, farmers decisions, Gaziantep

Plant Characteristics and Uses of *Paeonia arietina* in Yozgat Flora

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Abstract

Paeonia species have therapeutic properties, including anti-inflammatory, hepatoprotective, anti-cancer, anti-microbial and nephroprotective effects. Wound-healing properties of the roots is support its use as herbal medicine. Also, these species is the important for its use as ornamental plants due to pleasant color of flowers and flower size. In this study, plant characteristics of *P. arietina* belonging to the Paeoniaceae family were investigated, and these plant characteristics were compared for two different locations. One of the locations, location 1, the natural distribution area (Gelin Kayası) while the other, location 2, the cultural area. The highest plant length (72.05 cm) and diameter (77.00 cm) were observed on location 2. Number of seed and seed weight per plant was determined the highest on location 2 (97.73 number and 75.07 g, respectively) While maximum thousand grain weight was obtained from plants on location 1 with 113.42 g. The highest seed length (7.46 mm) and diameter (5.38 mm) were observed on location 1. As a result, in addition to the plant characteristics of P. arietina, usability of Paeonia spp. in landscaping, textile, food and pharmacy were discussed.

Keywords: *Paeonia arietina*, Yozgat, Gelin Kayası, plant characteristics, locations

A Study on Correlation between Different Sowing Time and Defoliator Applications in Cotton (*G. hirsutum* L.)

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Abstract

In 2016 and 2017, various quality characteristics of the fibers obtained as a result of different sowing time and defoliant applications in two cotton varieties were examined. Fiber fineness (mic), fiber length (mm), short fiber index (%), fiber strength (str, g / tex), elasticity (elg) and brightness (Rd) fiber quality properties were investigated. In the correlation analysis, several (1%) and (5%) significance results were found among these characteristics. According to 2016 data; positive and significant correlation (r = 0.5719 **) was found between the short fiber index and fiber fineness (mic), and a negative and significant (r = -0.4435 *) correlation between short fiber index (%) and fiber length (mm) was found. There was a positive and significant correlation between fiber brightness and fiber fineness (mic) (r = 0.5320 **). According to 2017 data; a negative and significant (= -0.4875*) correlation was found between the uniformity index (UI) and the fiber fineness (mic) and a positive and significant (=0.5149*) correlation between the uniformity index (UI) and fiber length (mm) was found. It was also found a negative and significant (r = -0.5124) correlation between short fiber index (SFI%) and fiber length (mm), a positive and significant (r = 0.5291 **) correlation between fiber strength (g / tex) and fiber length (mm), a negative and significant (r = -0.4304 *) correlation between fiber strength (g / tex) and short fiber index (SFI), and a negative and significant (r = -0.4755 *) correlation between fiber elasticity and fiber fineness (mic). Moreover, it was found a positive and significant correlation(r = 0.6143 **) between fiber brightness (Rd) and fiber fineness (mic), a negative and significant (r = -0.4579 *) correlation between fiber luster (Rd) and fiber length (mm), and a positive and significant(r = 0.5008 *) correlation between fiber brightness (Rd) and short fiber index. Correlations in the degree of materiality between fiber quality properties yielded meaningful and significant results for cotton, which is the raw material of textile.

Keywords: Cotton, sowing time, fiber quality, correlation

A Study on the Determination of Total Chlorophyll, Chlorophyll-a, Chlorophyll-b and Total Carotene in Leaves in the Development Circuits of Candia Cotton (*G. Hirsutum* L.) Varieties Produced in Organic and Conventional Conditions

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Abstract

This study was carried out according to organic and conventional methods by using Candia cotton varieties in Harran Plain conditions. In this study, the effects of chlorophyll and total carotene on the physiological circuits of cotton and its effect on various fiber quality properties were investigated. Physiological development of the plant; the total chlorophyll content of the leaves was determined with the help of SPAD device, chlorophyll-a, chlorophyll-b and total carotene content were determined with the help of acetone solution. Total chlorophyll was determined in the study, which was at the beginning of flowering with the lowest value of 24.05 and fiber maturation period between 40.07. In the study of chlorophyll-a, during the cocoon formation period, it took values between 0.07 and 0.68 during the cocoon opening period. In the interaction of cotton production and cotton development circuits; organic cotton x cocoon formation (0.065) and organic cotton x cocoon opening (0.96) took values. Chlorophyll-b in the study examined the development of the cocoon formation circuit in the circuit between 0.20 and 1.27 in the cocoon opening period. In the study where the interaction of the development of cotton and the developmental circuits was examined, conventional cotton x took 1.69 values during the ripening period between 0.11 and organic cotton x cocoon. Total carotene was examined in the period of cocoon formation, which is the plant development period, the carotene amount (0.22) and cocoon opening (1.33) values between the values. Chlorophyll-b in the study examined the development of the cocoon formation circuit in the circuit between 0.20 and 1.27 in the cocoon opening period. In the study where the interaction of the development of cotton and the developmental circuits was examined, conventional cotton x took 1.69 values during the ripening period between 0.11 and organic cotton x cocoon. Total carotene was examined in the period of cocoon formation, which is the plant development period, the carotene amount (0.22) and cocoon opening (1.33) values between the values. In the study which examined the interaction of development of cotton and developmental pathways; the interactions between the conventional cotton x maturation period interaction (0.21) and the organic cotton x cocoon period (0.96). As a result of the study; in the physiological development of the plant, it has been observed that there is different levels of chlorophyll-a, chlorophyll-b and total carotene. This is because chlorophyll is used in the production of cellulose, the building block of the fiber. It was also concluded that this amount of chlorophyll affects the rate of photosynthesis and affects the amount of starch, which is the raw material of fiber. According to the organic and conventional conditions of cotton production, the amount of chlorophyll in the leaves is changed.

Keywords: Alfalfa, fermentation, feed value, lactic acid bacterial inoculants

Effect of Alternate Row Spacing on Yield and Yield Components of Silage Corn (*Zea mays* L.) as A Second Crop at Two Locations

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Abstract

This research was carried out to determine alternate row spacing in the silage corn cultivated as second crop in two locations in Bursa Uludag University Agricultural Faculty Agricultural Aplication and Research Center and Karacabey. Experiments were established according to randomized block design with three replication in 2018 July both locations. A variety of silage type corn (DKC-7211) was sown 4 different row spacing (70:70, 70:30, 85:35, 65:40). Care was taken to ensure that maintenance operations such as hoeing, weed control, irrigation and fertilization were carried out at both locations. In the study, the spacing distances affected some morphological features and significant differences were determined in terms of forage yield between locations. As a result, forage yield at the location of Karacabey was found 7987-11484 kg/da, while it was found as 5356.77-6586.113 kg/da at Bursa Uludag University Faculty of Agriculture.

Keywords: *Zea mays*, alternate row spacing, yield, yield components

Spider biodiversity in some field crops of Mardin and Şanlıurfa provinces, Turkey

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Abstract

Spider diversity is an important pillar of biological control in agriculture, which has attracted the ecologists' attention globally. Despite the economic and ecological importance of spider diversity in agriculture, limited works are available in Turkey regarding spider diversity. Therefore, the current study was designed to investigate the spider species' diversity in Mardin and Şanlıurfa provinces of southeastern Anatolia region in Turkey during 2014-2015. Exploratory surveys were conducted in different cereals, legume and vegetable crops grown in both provinces to record the spider species' diversity. The spider samples were collected with the help of sweep net and insect suction machine (i.e., D-VAC). The collected samples were brought to laboratory, killed, put into 96% alcohol, labeled and identified. As a result, total 21 species belonging to 17 genera and 6 families were identified. The highest spider diversity was found in vegetable crops (13 species) whereas the lowest spider diversity was recorded in legume crops (3 species). The spider species recorded in cereal and legume crops were Hypsosinga albovittata (Westring, 1851) (Araneidae), Linyphia triangularis (Clerck, 1757) (Linyphiidae), Philodromus sp., Thanatus sp. (Philodromidae), Runcinia grammica (C.L.Koch, 1837), Synema globosum (Fabricius, 1775), Synema sp., Thomisus onustus Walckenaer, 1805, Xysticus bufo (Dufour, 1820), Xysticus acerbus Thorell, 1872 (Thomisidae). Similarly, the spider species identified from vegetable crops were Neoscana sp. (Araneidae), Zora sp. (Ctenidae), Thanatus sp., Philodromus lividus Simon, 1875, Philodromus cespitum (Walckenaer, 1802) (Philodromidae), Evarcha sp., Heliophanus mordax (O.P.-Cambridge, 1872), Heliophanus cupreus (Walckenaer, 1802), Phlegra sp., Aelurillus sp. (Salticidae), Heriaeus hirtus (Latreille, 1819) Ozyptila praticola (C.L.Koch, 1837) Thomisus onustus Walckenaer, 1805 (Thomisidae). The current study improves the knowledge on spider diversity of Turkey.

Keywords: Spider fauna, Araneae, cereal, vegetables, Şanlıurfa, Mardin

Efficacy of different trap types in population monitoring of tomato pest *Tuta absoluta* (Meyrick, 1917) [Lepidoptera: Gelechiidae]

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Abstract

Tomato moth [*Tuta absoluta* (Meyrick, 1917)] is regarded as a dangerous pest for tomato production in Turkey. The current study was conducted to determine the efficacy of different trap types in monitoring the population of the pest in Şanlıurfa province, Turkey during 2014-2015. Three different trap types (delta, water pheromone trap and ferolite) were established in three different fields, which are around tomato-cultivated areas in the Harran plain of the province. The traps were established during the month of May and monitoring was continued until January. The pest population was monitored weekly during the whole monitoring period. The highest average number of adults caught in Ferolite traps were 278 adult/week, whereas delta traps caught the lowest number of the adults (60 adults/week). The water pheromone traps also caught similar number of adults (79 adults/week) to delta traps. The highest population density was observed during the month of September, whereas the population density was lowest during the months of July and August. Overall, ferolite trap type exhibited higher efficacy in trapping and monitoring the adults compared to the rest of the trap types included in the study. Hence, ferolite traps can be effectively used to monitor the population dynamics of tomato moth under field as well as greenhouse conditions.

Keywords: Tomato moth, population monitoring, Ferolite, delta, water pheromone trap

Analysis and Identification of Limitation in Small Ruminant Farming System at the Eastern Mediterranean Region of Turkey

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Abstract

Sheep and goats make a substantial contribution to household livelihoods' notably those living in rural area. Small ruminants contribute to the reduction food insecurity which is a very important issue in impoverished local communities, as well. This study was undertaken to investigate and identify the challenges restricting to sustainable development of sheep and goat production in East Mediterranean region of Turkey. Questionnaires were administered to 54 farmers located in province of Adana and Mersin. Questionnaire was designed to collect data related to the socio demographic information of farmers, management characteristics, major problems encountered by stakeholders. The results indicated that 98.1% of animal keepers declared as male while only 1.9 % is female. In fact it has been known that, women responsible of small ruminant production vast majority of area. The majority of farmers (53.7%) had completed primary school. Most part of animals were local native breeds, that of adapt to harsh production and environmental conditions. Small ruminants were kept in multipurpose farms i.e. animals were reared for two or more products (e.g. meat, milk, manure and wool). Results showed that, 25% of farmers moved to the high lands during summer. Vaginal sponges were used to hormonal control of estrus of ewes in 18.5% of farms. Most ewes (87.3%) gave birth once per year and twinning rate is quite low. Small ruminants keepers interviewed indicated that the high cost of concentrate feed, the lack of water, limited pasture and of land dedicated to agricultural activities due to prolonged drought season and increasing urbanization were the main constraints.

Keywords: Sheep, goats, farming system, Mediterranean, social aspects

The Production, Adequacy Level, World Trade and Competition Power of Hazelnut in Turkey

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Abstract

Hazelnut is a species of fruit that is consumed because of the important nutrients it contains. In this study, the amount of hazelnut production, adequacy level, foreign trade and competition power of Turkey were examined. In 2017, 1,006,178 tons of hazelnuts were produced in the world. Turkey met a large 70% of this production with 675,000 tons. Italy (131,281 tons), Azerbaijan (43,000 tons), USA (29,030 tons) and China (27,044 tons) are other important hazelnut producers. Turkey's hazelnut adequacy level was 993.2% in 2007 and 413.1% in 2016. Hazelnut export quantity was 133,755 tons according to the data of 2016 and the import quantity was 1,590 tons in Turkey. In the same year, the world's total export quantity was reported as 220,388 tons. The world's most important importer countries are Germany, Italy, and Canada. Turkey met 60% of world exports with this quantity. For this reason, Turkey is the country that directs the global economy in hazelnut world trade. This situation also shows the importance of hazelnut in terms of our country's economy. In this research, the competition power of hazelnut in Turkey between 2009 and 2018 was calculated and it was determined that it has an important advantage in these periods. As a result, Turkey is an important country in terms of production, adequacy level and export potential of hazelnut. It is obvious that Turkey is leading to the world hazelnut market and will continue this mission in many years.

Keywords: Hazelnut, production, adequacy level, foreign trade, competition power

Effects of Organic Conditioners on Consistency Limits and Erodibility

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Abstract

This investigation has been undertaken in order to find out the effect of incorporation various organic matter sources such as manure, wheat straw, dried-ground, vetch and compost into soil on the consistency limits and erodibility of soils. Samples of the three soil groups are treated with the organic matter sources at five different levels including the control treatment and each treatment is replicated three times in a randomized factorial blocks design. The soil samples are incubated for a period of ten weeks under this condition. Treated soil samples have been crushed by hand in the end of incubation period and sieved from 2 mm sieve. Some properties of the experimental soils can be summarized as fine to medium fine in texture, low in organic matter content, low to medium in lime content, and free of alkalinity problem. These kinds of soils which are low in structural stability are quite sensitive to erosion. Organic matter treatments increased significantly consistency limits values. Effectiveness of the organic matters varied depending on the type of the organic matter used and the great soil groups in investigated. Effectiveness of the compost was considerably lower compared to the other organic materials used.

Keywords: Organic conditioners, incubation, consistency limits, erodibility

Changes in Bulk Density of Soils Formed on Similar Conditions but Under Different Cropping Systems

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Abstract

The objective of this study was to evaluate changes in bulk density of soils under different crop management systems. Soil samples collected from the Agricultural Farmland province of Tokat under different plant management systems; sunflower, wheat, vegetables, fruit garden, sugar beet, meadow, pasture and alfalfa were analyzed for physical, chemical and mechanical properties and bulk density were evaluated based upon plant patterns. The results indicated that soil structural characteristics significantly changed depending on plant patterns. The best structural conditions was obtained in soils under meadow crops, but the worst structural conditions in soils under sugar beet production.

Keywords: Plant management, bulk density, soil properties

Biotic Stress Conditions and Reactions in Rice

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Abstract

In this review, biotic stress factors affecting the growth, development, yield and quality of rice will be examined. Rice is the second most commonly produced plant, after wheat in the world. One-third of the world's population is nourished with rice. In Turkey, rice ranks 4th in terms of production and 5th in terms of cultivation area. The average consumption is 7-8 kg per person in our country. Turkey ranks 59th in terms of cultivation area, 44th in terms of production and 3rd in terms of yield of rice among 121 countries producing rice. Biotic stress causes significant physiological and metabolic changes that adversely affect growth, development, quality and quantity of plant as well as the plant can lose some parts eventually death of plant can occur. Stress in plants is classified as biotic and abiotic. Also, abiotic stress adversely affects and slows down normal growth and development as well as the physiological process in plants. In this present review, biotic stress has great negative effects in terms of the yield and quality with poor struggling with plant diseases and weed management. In this case, the importance of cultivation technique system becomes prominent. Because of abiotic stress, rice doesn't show its genetic potential in terms of grain yield and plant view that affects consumer demand negatively. As a result of biotic stress, the quality of rice decreases in half shares.

Keywords: Stress, biotic, rice, yield, disease, weed

Antifungal effect of boric acid against *Penicillium expansum*, the casual agent of blue mold of apple

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Abstract

Penicillium expansum, which causes blue mold disease, is one of the most important postharvest pathogens of pome fruits and is a necrotrophic fungus that requires wounds to infect the fruit. In this study, the efficacy of boric acid against *P. expansum* was evaluated under both *in vitro* and *in vivo*conditions. In *in vitro*, increased boric acid concentrations (0.0625, 0.125, 0.250, 0.500 and 1.0%, v/v) strongly reduced mycelial growth, spore germination and germ tube elongation of *P. expansum*. Boric acid completely inhibited the spore germination and germ tube elongation of the fungus at 0.125% concentration, but completely inhibited the mycelial growth at a higher concentration (0.25%). In addition, the EC50, minimum inhibitory concentration (MIC) and minimum fungicidal concentration (MFC) values of the salt were defined as 0.09 %, 0.25 % and >1%, respectively. In *in vivo* treatments, 3% boric acid exhibited both protective (98.80%) and curative (95.71%) activity against *P. expansum*, significantly reducing the severity of blue mold in comparison to pathogen-inoculated controls ($P<0.05$). These results indicate that boric acid can be used as alternative to synthetic fungicides for control of blue mold disease caused by *P. expansum*in apples.

Keywords: Apple, postharvest, blue mold, boric acid, alternative control

Ultrasound Treatments for Detachment of Biofilm in Food Industry

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Abstract

Colonization of pathogen and spoilage microorganisms on food products, food processing equipment and areas etc. can result in biofilm formation. Biofilm structure protects microorganisms against adverse conditions and disinfectants and ensure more resistance than their planktonic form. On this sense, removal of biofilms on surfaces of processing equipment and foods is a major challenge in food industry. Recently, ultrasound, one of the physical inactivation methods, was reported with its antiadhesive potential and attracts attention as a nonchemical and environmentally friendly technology. This novel technique provides microbial inhibition without destroying the dietary and sensorial characteristics of food products. The inhibitory mechanism of ultrasound includes mechanical effects and sonochemical reactions produced by acoustic cavitation. Ultrasound effectiveness on biofilm detachment is dependent on ultrasound frequency and intensity, the bacterial species involved, the material used for ultrasound diffusion, the presence of cavitation effects. In general sonication alone is not very effective on microbial inactivation and thus ultrasound technology is combined with other inactivation methods for the purpose of decontamination. This review highlighted the importance of ultrasound applications in food industry with regard to antiadhesion or detachment of biofilms on biotic or abiotic surfaces.

Keywords: Ultrasound, biofilm, adhesion, antiadhesion, food industry

A Research on the Structural Problems of Buffalo Breeding Enterprises in Bursa Region

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Abstract

Although carcasses meat and milking yield are less common than live cattle, it is seen that buffalo farming is an activity that should not be ignored, due to factors such as high consumption of low quality roughage feeds and high utilization of feed, resistance to difficult climate conditions and diseases, milk and meat quality. Since 1980, water buffalo breeding in Turkey has begun to decline greatly as it is in other animal production areas. Factors such as the introduction of the economic stabilization measures put into practice and the removal of animals and animal products from others, and the intensification of migration from the village to the city were the factors. The animal assets within the 1 million successes for decades-long production declined to 84 thousands in 2007 and reached 138 thousands in 2018. The increase in recent years, interest has been increasing along with the support and buffalo milk. However, it seems that producers dealing with buffalo farming, traditional production methods, small capitals, inadequate shelter conditions have not provided adequate maintenance and feeding facilities. In this study, the enterprises that were engaged in the cultivation of buffalo at the Karaoglan district of Mustafakemalpaşa town in Bursa were examined. This settlement is located on the banks of the Uluabat Lake and the main production area is directed to the production of buffalo milk and only Anatolian buffalo is grown in the enterprises. Milk yields of enterprises are quite low in the winter season and vary between 3-5 liters on average. In the study, the operating structures were evaluated from the structural direction as a result of in situ measurements, and temperature, relative humidity, air velocity and various gas measurements were performed in order to determine the indoor environment conditions in the three operations. As a result of the research, it has been reached that the shelters used are not suitable for animal desire and welfare, and the shelters need to be rearranged. Accordingly, the models of buffalo shelters designed to suit the conditions of the region and the operational capacity were evaluated and suggestions were presented.

Keywords: Barn, air quality, business, buffalo, buffalo milk

Evaluation of the effects of animal production on water consumption and pollution in Bursa Region

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Abstract

In parallel with the increase in the world population, people's need for food increases rapidly. In order to meet this requirement, intensive agricultural production has become a necessity. Agriculture is the largest consumer of world water resources. Animal production affects 70 percent of all agricultural areas and 30 percent of the earth's surface. Animal breeding is one of the first three sectors contributing to the most serious environmental problems from local to global, including water quality deterioration. Animal production, which is densely made in small areas today, leads to rapid consumption of resources and significant pollution. Bursa has an important position animals being with 235 thousand cattle and 525 thousand sheep breeding in Turkey. In this study, the amount of water required by animal production depending on the number of animals indicated was tried to be determined and the factors that cause possible water pollution depending on production and the extent of water pollution were evaluated. Especially during the summer period, the need for water increased and in the winter there was a big increase in surface water and groundwater pollution in combination with precipitation. It can be said that the waste of animals grazing in the pasture and manure used in the land are important causes of surface pollution. In spite of the water pressure created by industrial production in the region, it can be said that animal production can cause significant problems.

Keywords: Animal production, water consumption, water pollution, Bursa

Spanish Bush Training System in Sweet Cherry

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Abstract

Turkey, producing 21,3 % (480.748 tons) of world's total sweet cherry outcome, is number one country in world sweet cherry production. The fact that requirements of modern cultivation are not met properly leads to problems such as low yield per acre and low quality in produced fruit in Turkey. Modern sweet cherry orchards are established employing dense planting, appropriate training systems and dwarf rootstocks to limit the vegetative growth of the grafted variety to maximize yield per unit area. However, these dwarf rootstocks are not preferred by farmers in Turkey due to factors such as early deaths, lacking of fruit at the desired level and quality in the dwarf rootstocks and they prefer the MaxMa 14 and SL 64 rootstocks. These rootstocks usualy create high trees, which grow vigorous and have narrow angle branches. The fruit yield and quality of such trees are low, and the labor cost of harvesting is high. Therefore, in sweet cherry, pruning and training system appled is greatly sinificant. In recent years, the desire for high yield and efficient harvest have led to the development of many different training systems such as Spanish Bush (SB), Kym Green Bush (KGB), Steep Leader (SL), Super Slender Axe (SSA), Tall Spindle Axe (TSA), Upright Fruiting Offshoots (UFO), ve Vogel Central Leader (VCL). In this study, the Spanish Bush training system, which are suitable for the traditional pruning habits of the growers in our country and which can be used with vigorous rootstocks, and its application stages were discussed.

Keywords: Sweet cherry, pruning, rootstock

Effect of the Branch Age on the Ratio of Flowers on Sweet Cherry

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Abstract

The study was carried out 2013 in Susehri, a district of Sivas, Turkey. As a plant material in the study, the trees, which beleong to 0900 Ziraat cultivar grafted on Gisela 5, Gisela 6 and MaxMa 14 rootstocks and trained to Spanish bush (SB), Steep leader (SL) or Vogel central leader (VCL) systems, were used. The number of flowers according to branch age was determined by counting flowers in one, two and three aged branches of the trees belong to combination of each rootstock x training system. The tree canopy was divided to three parts as base, middle and upper, and the number of flowers according to the part of the canopy was determined by counting the flowers in these sections. In the study, it was observed that flowers were concentrated in old branches, and there was a negative correllation between branch age and number of flowers and that the number of flowers decreased as the age increased. It was recorded that the differences between the rootstocks in terms of values in the number of flowers was significant. It has been determined that dwarf rootstocks have higher values in terms of the number of the flowers on one and two aged branches compared to vigorous rootstocks. The effect of the rootstock in the number of flowers on three old branches was not significant. While the effect of training systems on number of flowers according to branch age was not significant, the rootstock x training system interaction had a significant effect on these values.

Keywords: Prunus avium, Spanish bush, vogel central leader, step leader, gisela rootstocks

Increasing Awareness on Poultry and Egg Consumption in Pre-school Students

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Abstract

The egg, presented by nature into its package, is a unique and excellent food. Because of high nutritional and digestibility value, low calorie value and promoting substances for growth it is an important food for in growth children's diet. Because it is healthy and a balanced nutrition, it is necessary to tell the children that egg is an indispensable protein source, to emphasize the importance of consumption. The aim of this project is acquiring and fostering the intended egg consumption habit. Target audience was a total of 50 pre-school students (two schools) within the age group of 5-6 years, consisting of children whose socio-economic and educational levels are low in Adana province. In this context, it was aimed to develop awareness about the importance of eggs in terms of nutrition, health, growth and brain development in the work carried out, to raise curiosity by bringing chickens and eggs together with children, to stimulate interest in children through field trips, observations and examinations of stages from the farm to the table, to stimulate the meaning by animating them with dramas, to transfer them to the children through interactive applications, so as to make the children love egg and to give them consumption habits. In line with the aim of the project; poultry farms were visited belonging to university and private firm who are producing in different poultry production systems. With this visit, the children were informed about the chicken and egg, and offered physical contact so that the children have fun and learned. Experiments were done in the laboratory and classrooms, was reinforced with information obtained through different teaching methods such as drama and games, and creativity aspects was improved with painting and different activities so that the presentation of the egg and the awareness was improved. The pre-test and last-test applications were determined whether the project has been achieved for the specified purpose. The result of the current project, pre-school students participating in the project was improved their knowledge and awareness of about chicken and eggs, in addition improved egg consumption habits.

Keywords: Egg, pre-school kids, laying hen, feeding, consumption

Additional Note: This study was supported by the The Scientific and Technological Research Council of Turkey (TUBITAK - Project Number: 118B342).

Effects of Wholesaler and Consumer Conditions on Egg Quality Parameters and Microbiology of Four Different Genotypes in Summer Season

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Abstract

The present study was conducted to investigate whether effects of wholesaler and consumer conditions on egg quality parameters and microbiology of four different genotypes in summer season. This experiment was carried out with a total of 880 eggs obtained from Lohman Brown, Decalb, Nick Chick and Atabey hens, 56 weeks old age in summer season (average temperature 36 °C). The quality criteria and microorganism level were evaluated the eggs stored under different temperature conditions. Each genotype eggs were divided into two groups which were stored in wholesaler conditions (WS, +29 °C) and consumer conditions (C, + 4 °C) for 4 weeks. External and internal quality traits of eggs were measured weekly. Egg weight loss (%), albumen index, yolk index, Haugh unit, ΔE (yolk colour differences) and albumen pH value, L, a, b value, total bacteria and mold-yeast levels were measured. The results of the experiment, egg weight loss increased linearly with storage time and highest at wholesaler condition ($p<0.05$). Best results were obtained at Lohman eggs 3.68 % and 5.90 % respectively at 4th week for consumer and wholesaler conditions. Egg yolk and albumen widths, albumen lengths ($p<0.01$) and ΔE value ($p<0.05$) increased with storage time; as a result Haugh unit, albumen and yolk indexes were decreased at all conditions ($p<0.01$). Best results for albumen index were obtained from Nick eggs as 12.33 and end of the storage time at WS condition as 1.66, at consumer condition as 8.87 from Decalp eggs. For highest yolk index 49.76 obtained from Lohman eggs, end of the storage time at WS as 15.65, at consumer condition as 45.37. Haugh unit obtained best as 95.33 at Nick eggs and end of the period at WS condition as 42.00 at Atabey, at consumer condition as 83.77 from Decalp eggs. Best results for L, a, b and ΔE values obtained from Lohman eggs at the beginning of the period as 59.15, 17.70, 59.33, 85.68, at the end of the period for WS condition as 60.39, 18.52, 77.38, 99.97 and for consumer conditions as 57.66, 19.03, 65.21, 89.23 respectively. Total bacteria and mold-yeast level were obtained 4.99 and 4.34 log CFU/egg and at 4th week as 3.94 and 3.98 log CFU/egg for WS condition and as 4.99 and 4.11 log CFU/egg at consumer condition respectively. Egg quality criteria results suggest that Lohman eggs affected less than Nick at wholesaler condition. Microorganism load of egg shell results suggest that total load not increased at wholesaler and consumer conditions.

Keywords: Egg quality, storage temperature, egg microbiology, shelf life

Determination of zinc and iron fertilizer requirement of siyez wheat (*T. monococcum*) grown in calcareous soil

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Abstract

Siyez wheat is one of the important gene sources in our country which is cultivated in a narrow area around Kastamonu and Sinop. In countries such as Italy, Germany and Spain, it is known as einkorn and are cultivated on unproductive mountainous areas which soil fertility decreases with time. Being the raw material of the essential nutrients in the human diet, wheat cultivation in Turkey and the World in a whole compared to other agricultural products is of particular importance. Micronutrient deficiencies, and the deficiencies of zinc and iron which are the subject of this study, have a great impact on human health. The main reason for this is that people greatly consume a very small amount of micronutrient cereal-based foods. This study is aimed to increase the concentration of Zn and Fe in siyez wheat grains and investigated how to be able to cultivate it at other city of Turkey besides Kastamonu. In this study, determination of Siyez wheat (*T. monococcum*) cultivation in calcareous soil conditions in Konya, and the requirement of phosphorous fertilization as well as iron and zinc fertilization were investigated. In the experiment, 2 different phosphorus doses (0 and 4 kg P_2O_5 / da), 4 different Zn doses (0, 1, 2, 4 kg Zn / da) and 4 different Fe doses (0, 1, 2, 4 kg Fe / da) were applied to the siyez wheat sown in pots of greenhouse conditions. The experiment was conducted between November 2017 and July 2018 according to the factorial design of randomized plots in greenhouses of the Faculty of Agriculture at Selçuk University. Phenological characteristics of the siyez wheat were determined in the experiment. According to the results, the average plant height, spike number, spike length, biomass yield and grain yield were determined as 82.67-102.44 cm, 21.33-29.00 pieces / pot, 2.90-4.03 cm, 18.42-25.08 g / pot and 4.55-6.47 g / pot respectively. Applications of Fe, Zn and P, and the interaction Fe * Zn * P were found to be statistically significant at $p < 0.01$. As a result of the experiment, it was determined that siyez wheat could be grown easily in unproductive areas under calcareous soil conditions in Konya.

Keywords: Iron, lime soil, phosphorus, siyez wheat, zinc

Identification of female of *Heteronychia* (Diptera: Sarcophagidae) species based on vaginal plate morphology

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Abstract

Heteronychia Brauerand Bergenstamm 1889 is the largest subgenus of the most-diverse genus *Sarcophaga Meigen* 1826 (Diptera: Sarcophagidae), which is represented by 118 valid species mainly with Palaearctic distribution worldwide and 29 species have hitherto been recorded in Turkey. This subgenus is widely known as the natural parasitoids or predators of terrestrial snails. The adults of the both sex possess rather uniform external morphological characters like three striped thorax and checkerboard patterned abdomen as in the most members of the Sarcophaginae. Thus, genital examinations of the specimens offer crucial advantages to the taxonomists for the exact identifications of the species. In the *Heteronychia* females, the terminal structures are characterised by the presence of undivided first genital tergite (TG1) and well sclerotized vaginal plate with the absence of signum and the second genital tergit (TG2). If the vagina is being more or less sclerotized just before the epiproct it is called as "vaginal plate" of which also occurs in some females of *Sarcophaga*. But especially for *Heteronychia*, vaginal plate seems to be the most various and unique sclerite of the terminalia for female identification. This study aims to focus the variety and morphology of the vaginal plate and its significance in the identification of the *Heteronychia* females at species level.

Keywords: Heteronychia, identification, vaginal plate, morphology

The effect of melatonin applications on the some fruit properties of pepper in lime conditions

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Abstract

The aim of this study is to determine the effects of different doses of melatonin (MEL) applications (0, 5 µM) on certain biochemical characteristics of the pepper fruit in the calcareous environment. Pepper seedlings of 'Miray' (Biotek) were purchased from seedling production company. Plants were grown peat perlite at the rate of 1:1in the pots with the lime-added mixture at the rate of 0%, 1% and 4%. In the fruits at different development stages (immature, green and red mature), the content of TSS, % acidity, vitamin C, total phenolic content, and carotenoid levels determined. Among the examined criteria highest TSS, titratable acid and carotenoid levels determined in the stage red mature. In general, amounts of vitamin C were found to be higher in the small fruit and red mature stages. Mostly, Melatonin applications have decreased the amount of vitamin C. As a result, MEL applications found to decrease the amounts of vitamin C and total phenolics while increasing the amount of carotenoid, titratable acid and TSS in the stages of fruit being evaluated.

Keywords: Melatonin, pepper, TSS, vitamin C, karotenoid, phenolic compound

Pathogenicity *of Alternaria solani* (Ell. & G. Martin) Sor. Isolates Isolated in Tomato Areas in Van Province and the Effect of *Trichoderma* spp. Antagonists in Vitro Conditions

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Abstract

The tomato plant, which can be grown in almost all of our country, has a very important place for the province of Van. It is inevitable that fungal problems will be seen in the tomatoes whose cultivation is so high. In particular, *Alternaria solani* causes serious problems if the struggle is not done. Most of the struggles are limited to chemical struggle. In the scope of this study, surveys were carried out in areas of tomato cultivation in Van province and A. *solani* isolates were determined and selected to represent regions. After the selected A. *solani* isolates were applied to the plants, the disease severity was determined at the 3rd, 4th and 5th weeks and their averages were taken. As a result of the pathogenicity test, A. *solani* GATd1 and EAb 1 were determined as the most virulent isolates with 35,61 % and 31,06 %, respectively. In total, 8 *Trichoderma* spp. antagonists were used in vitro conditions against A. *solani* EAb 1 and GATd 1 isolates by double culture technique. Five of these 8 *Trichoderma* spp. antagonists were isolated from the survey and 3 were selected from the culture stocks. As a result of this study, *Trichoderma* spp. NTC 2 isolate was found to be the most effective antagonist against A. *solani* EAb 1 isolate by 53.98% and against GATd 1 isolates by 58.74%. In conclusion, *Trichoderma* antagonists were effective at different rates in A. *solani* pathogens in vitro.

Keywords: Tomato, pathogenicity, biological control, *Trichoderma* spp., A. *solani*

The Impact on Yield and Some Traits of Different Forage Pea and Annual Ryegrass Mixtures

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Abstract

This study was carried out in order to determine hay yield and some quality parameter of yield and the best mixture ratio in randomized block design with three replications throughout 2017-2018 growing season in Çarşamba/Samsun conditions. The seeds were sowed at November, 16, 2017 and harvesting was made constitute of lower pods of pea plants at May 1, 2018. Cultivar "Caramba" of annual ryegrass (*Lolium multiflorum* var. *westervoldicum* L.) (ARG), leafed "Gölyazı" cultivar of forage pea (*Pisum arvense* L.) (LFP) and semi-leafless forage pea cultivar "Kirazlı" (SLFP) were used in the study. Besides the solely plots of the cultivars, different mixture ratios of annual ryegrass with forage pea cultivars (20% ARG+80% LFP, 30% ARG+70% LFP, 40% ARG+60% LFP, 50% ARG+50%LFP, 60% ARG+40% LFP, 70% ARG+30% LFP, 80% ARG+20% LFP; 20% ARG+80% SLFP, 30% ARG+70% SLFP, 40% ARG+60% SLFP, 50% ARG+50% SLFP, 60% ARG+40% SLFP, 70% ARG+30% SLFP, 80% ARG+20% SLFP) were experimented. Total plot numbers were 17 in the same block. While fresh herbage yields varied from 9.04 t ha-1 (40% SLFP+60% ARG) to 3.05 t ha-1, hay yields were ranged between 1.79 t ha-1 (40% SLFP+ 60% ARG) and 0.66 t ha-1 (100% ARG). The highest crude protein ratio was determined as 17.04% for 80% LFP+20% ARG plots. While ADF ratio of hays were 28% (100% ARG) to 38% (100% SLFP), NDF ratios ranged from 43.05% (20% LFP + 80%ARG) to 50.40% (%100 SLFP).

Keywords: Forage pea, annual ryegrass, mixture rates, hay yield

The effects of melatonin applications on some vegetative growth characteristics of strawberry seedling in lime stress conditions

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Abstract

The aim of this study was determined the effects of different doses of melatonin (MEL) (0, 5, 10 µM) grown in lime medium of on some vegetative growth characteristics in strawberry seedlings. The experiment was carried out in the pots filled 1: 1 ratio of peat perlite mixture and 1% lime added with frigo seedlings belonging to Albion strawberry variety. In order to investigate the effects of MEL application against lime stress, exogenous MEL has applied to the root area of seedlings 2 times and the seedlings removed at the end of the experiment. In our experiment, SPAD, leaf area, body diameter, leaf, stem and root fresh and dry weight were examined in the removed seedlings. In control and calcareous medium, maximum leaf area (111.10 and 92.40 cm^2 / plant respectively) was determined in 5 µM MEL application. When the SPAD value of the leaves examined, it observed that it was the highest result of 10 µM in control and calcareous environments (45.40 and 42.09 respectively). The highest anthocyanin content in control and calcareous medium (10.33 and 8.75 ACI) determined in 10 µM MEL applied plants. When the other criteria examined, it was determined that 5 µM MEL application causes positive increases. We believe that MEL application can be used to reduce lime stress conditions in strawberry cultivation by supporting vegetative growth in lime stress conditions.

Keywords: Strawberry, melatonin, vegetative growht, lime stress

Artemisia dracunculus L. alleviaties negative effects of stocking density in laying hens

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Abstract

In the study conducted to determine the effects of the addition of tarragon (*Artemisia dracunculus* L.) at different four levels to the laying hen diets (0, 1.2, 6 and 12 g/kg feed) housed in two different stocking density (5 or 7 layers/cage), on performance, some shell quality, serum, liver, egg yolk and small intestine bacteria parameters. Experiment was continued for 8 weeks, with 192 Lohman Brown layered commercial hybrids at 50 weeks age. During the experiment, a 16-hour lighting program was applied and feed and water were given as ad-libitum. It was determined that stocking density did not affect the weight gain, FCR, damaged egg average egg weight, examined egg shell quality properties. While increased stocking density reduced daily feed intake (FI; $P<0.01$) and egg production ($P<0.05$), did not affect examined egg shell quality properties. The addition of tarragon decreased daily FI and damaged egg level ($P<0.01$), and improved egg production and FCR ($P<0.01$). Increasing stocking density reduced ($P<0.05$) amount of serum total antioxidant and increased ($P<0.05$) corticosterone (CORT) and total oxidant of serum (TOS). The addition of tarragon to the diet decreased linearly the amount of serum CORT and TOS ($P<0.05$). All doses of tarragon enhanced increasingly serum total immunoglobulin levels ($P<0.05$). Malondialdehyde amounts of serum, liver and eggs were decreased with the addition of different tarragon doses ($P<0.05$). The addition of tarragon to the diets decreased numerically ($P>0.05$) the number of *E. coli* and the total number of mesophilic aerobic bacteria decreased ($P<0.05$) in the intestine. As a result, tarragon used in the diet showed that it is generally effective in improvement performance parameters, alleviating the stress-induced results, reducing lipid peroxidation, regulating the immune system, controlling intestine some microorganisms.

Keywords: Bacteria, laying hens, performance, tarragon

Effects of Fattening Duration on Meat Quality Traits of Saanen x Hair Goat (G_1) Hybrid Male Kids Fattened in Different Fattening Systems

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Abstract

This study was conducted to investigate the effects of fattening duration on meat quality traits of Saanen x Hair Goat (G1) hybrid male kids fattened in intensive, semi-intensive and extensive fattening systems. The weaned 30 Saanen x Hair Goat (G1) hybrid singleton male kids at 2.5-3 months of age were used in present study. The 120 and 150-days fattening periods were applied in intensive, semi-intensive and extensive systems. At the end of the fattening, all the animals belonging to each group were cut off with the aim of determining the carcass characteristics and meat quality of the groups. Post-slaughter pH variations, color parameters of *M. longissimus dorsi* samples (L*, a*, b*), marbling, water holding capacity, passive water loss, Warner-Bratzler shear force and cooking loss were investigated as meat quality traits. With regard to meat quality traits of pH24, pH45, water holding capacity, passive water loss, cooking loss and *M. longissimus dorsi* cross-sectional area, significant differences were not observed between fattening systems and between fattening durations. The highest Warner-Bratzler peak shear force was obtained in 120-day extensive fattening system and the lowest shear force was obtained in 150-day intensive fattening system.

Keywords: Saanen x Hair Goat (G1), fattening systems, meat color, meat quality

Effects of Fattening Duration on Slaughtering and Carcass Characteristics of Saanen x Hair Goat (G1) Hybrid Male Kids Fattened in Different Fattening Systems

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Abstract

This study was conducted to investigate the effects of fattening duration on slaughtering and carcass characteristics of Saanen x Hair Goat (G1) hybrid male kids fattened in intensive, semi-intensive and extensive fattening systems. Two different slaughter times (120 and 150 days) were applied. Slaughterhouse weights of the kids for 120 and 150-days were measured as 31,22 kg and 31,03 kg in intensive fattening, as 30,08 kg and 27,26 kg in semi-intensive fattening and as 28,69 kg and 28,72 kg in extensive fattening system respectively. Hot carcass weights were measured as 15,29 kg and 15,98 kg in intensive fattening, as 14,48 kg and 12,85 kg in semi-intensive fattening and as 13,85 kg and 13,8 kg in extensive fattening system respectively. As a result, it can be said that 120 days semi-intensive fattening method is a more appropriate fattening method.

Keywords: Saanen x Hair Goat (G1), fattening systems, fattening duration, carcass components

The Attitudes and Behavior of Women on Food Waste a Case of Tokat

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Abstract

Foods produced for human consumption may lose their quantity and quality in the process from the field to the table. This is defined as food waste and food loss. Approximately one third of the food produced every year in the world, in other words 1.3 billion tons is lost or wasted. At various stages of consumption, the rate of loss or wasted food is 30% for cereals, 40-50% for fruit and vegetables, 20% for oilseeds, 35% for meat and milk and fish products. According to the United Nations October 16 2017 World Population Forecast Report, the population of 7.6 billion in the world is expected to reach 8.6 billion in 2030, to 9.8 billion in 2050 and 11.2 billion in 2100. In the near term, there will be 1 billion population increases in the world in 2030. In this case by an increase in food production or reduction in food wastage and food will be provided for an increasing population. In developing countries, 40% of losses occur in post-harvest and processing levels and in industrialized countries more than 40% of losses occur in retail and consumer levels. On the basis of rates, more food loss or waste is seen in retail and consumer levels. It is stated that food wastage at the consumer level generally occurs within the house. The aim of the study is to determine the sensitivity and behavior of consumers about food waste in Tokat. The study was carried out at household level and female consumers in households because women played a more active role in domestic food. The number of samples was determined as 270 by using proportional sampling method of 163 197 households in Central District in Tokat. The surveys were conducted face-to-face with the women of the families. Food wastage by a segment of society in Turkey is a delicate issue in terms of religious and moral considerations. However, consumers do not care about this issue in terms of home economy, but are not very interested in the environmental, economic and social impacts at national and global levels and do not behave accordingly. The most important debates of the new century were the cold war, the change of power balances, economic crisis, poverty and hunger. Reducing food waste has many positive environmental and socio-economic contributions. In Turkey public awareness and transformation into behavior towards waste prevention for take measures of incentive or coercive, that is important for the economic strength of the country.

Keywords: Female, food waste, consumer, domestic economy

Application of Land Consolidation and Evaluation of Expected Effects by Producers: a Case Study of Artova District of Tokat Province

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Abstract

While population and food needs are increasing rapidly, it is not possible to increase agricultural areas to meet this need at the same speed. For this reason, in order to obtain more products and income from existing lands, it is necessary to choose more accurate and appropriate methods and evaluate the lands in a way that provides the highest economic and technical benefit. Land consolidation is one of the important tools needed to correct these agricultural problems. In general, land consolidation is defined as the transfer of dispersed and small agricultural lands to optimum operating size by various methods. Land consolidation projects have many benefits, such as access to parcels, efficient use of Water Resources, consolidation of parcels, reducing the costs of irrigation and drainage projects. Unfortunately, despite the initiation of land consolidation efforts in Turkey in 1961, it was not successful enough. The aim of this study is to measure and evaluate the knowledge, confidence, expectation and attitudes and behaviors of local farmers regarding land consolidation practices in some villages of Artova District of Tokat province. The consolidation study in Artova District of Tokat Province was carried out. In the village of Iğdır, Taşpınar and Aşağıgüçlü, 175 producers registered in ÇKS were identified. The sample volume from this population was determined as 62 producers using the proportional sampling method. The surveys were conducted in the form of face-to-face interviews.

Keywords: Land consolidation, producer, population

Change of Flowering and Harvest Dates of Cherry Varieties with Air Temperature

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Abstract

Sweet cherry is a valuable fruit species that can generate high prices in both export and domestic market. The growing of this species includes the dates of flowering and harvesting for the management of natural risks and quality within important periods. It was examined interactions between full bloom and harvest dates of 23 different sweet cherry varieties and their orchard air temperatures in 2006-2011. For this purpose; full bloom and harvest dates of varieties were recorded. In addition; air temperature values of the trial orchard were measured. Based on the beginning of the year (1 January), the date of flowering and harvest was determined the day of the year. Based on the same starting point, average daily temperature was determined. The average and total temperatures recorded in the period until flowering and harvest dates of the varieties on the basis of years. Temperatures and date changes were subjected to regression analysis. The average change between the flowering dates and average of the mean daily temperatures (4.5-6.5 ^{o}C) is a 4-day phenological difference with a degree temperature changing. Similar correlation was found between harvest time and temperature. The time of harvest changed in average 8 days with a degree changing in the average temperature (between 8-11 ^{o}C). Parallel to climate changes, the effect of temperatures on floral and harvest time changes will also affect the management of natural risks and quality. It is of great value to make feasibility studies by evaluating the climatic conditions in the growing for many years.

Keywords: *Prunus avium*, phenology, cultivar

Body Weight Estimation by Different Body Measurements of Calves Using Artificial Neural Networks

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Abstract

The aim of this study was to estimate the body weights at 12 months of age according to different body measurements by using artificial neural network (ANN) model at Holstein male calves that born at "Development Of Anatolian Friesian Cattle Type Project" was in the of Eastern Mediterranean Agricultural Research Institute. For this purpose, total of 495 measurement for male calves were used and 396 data analyzed as training set and 99 data analyzed as test sets with artificial neural networks. In this research body weight at 12th month of age taken as output variable, age of dam, body weight, body length, chest girth, front ankle circumference and rump height measurements were used as input variables in the neural network. In the network estimation, the number of hidden layers was taken 1 and the number of hidden nodes in the hidden layer is three. In addition, convergence criterion was 1.10-6, numbers of iteration were maximum 50, and the algorithm was terminated with 10 epoch for each run. As a result of the analysis, R2 value was calculated as 0.969 for the training set and 0.997 for the test set, respectively. Accordingly, it was concluded that the artificial neural network model could be used in the 12-month body weight estimation of calves.

Keywords: Artificial neural network (ANN), body measurement, multi-layer network

The Effect of Onion Skin Powder on the Physical, Chemical, Color and Sensory Properties of Beef Patties

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Abstract

The purpose of this study is to investigate the effects of onion skin powder (OSP) on the physical, chemical, color and sensory properties of beef patties. For this purpose, four different beef patty formulations (contains 0, 1.5, 3.0 and 6.0% OSP) were prepared. After the patties were shaped into molds, they were cooked at 180 °C for 18 minutes. pH, moisture, fat analyses were carried out raw and cooked samples. Moreover, free fatty acids, cooking yield, diameter reduction, color and sensory analyses were performed in cooked beef patties. The addition OSP significantly ($p<0.05$) affected the physical, chemical, color and sensorial properties of beef patties. The pH and moisture values of raw and cooking samples decreased with the use of 3.0 and 6.0% OSP. While the addition of OSP caused a decrease in fat content of raw samples, fat content in cooked samples increased with addition of OSP. The effect of 6.0% OSP on the free fatty acid content of cooked samples was found to be significant ($p<0.05$). a and b values of cooked samples increased with the addition of OSP. The use of OSP positively affected the technological properties of the patties. However, the addition of OSP adversely affected the sensory characteristics of the patties.

Keywords: Beef, beef patties, onion skin

Suitability of Chicory for Forage Production

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Abstract

Researchers and farmers have paid more attention to chicory (*Cichorium inthybus* L.) recently, because of its palatability, high yield, nutritive value, digestibility, kept greenery throughout the summer period, deep and strong root system and drought resistant ability. In addition, it has some positive effects on animal health. Chicory is very common in natural areas of Turkey. This study was conducted according to randomized block design with three replicates for two years during 2017 and 2018 growing seasons in Samsun conditions. In the study, chicory (C), orchardgrass (OG) and red clover (RC) were grown as solely and binary mixture in rain fed conditions. Binary mixtures were 80% C + 20% OG, 60% C +40% OG, 40% C + 60% OG, 20% C + 80% OG, 80% C + 20% RC, 60% C + 40% RC, 40% C + 60% RC, 20% C + 80% RC. Harvests were made when chicory plants reach to budding stage (just prior to blossoming). One cut was performed (at June, 29) in 2017 and two cuts was made (May 3 and June 5) in 2018. There was no irrigation. While the highest fresh yield was obtained from 40% C + 60% RC mixture as 65.60 t ha-1 in 2017, the same values were 70.55 and 37.51 t ha-1 for 60% C +40% OG mixture at the first and second cuts, respectively in 2018. The highest hay yields were obtained from the same mixtures in 2017 and 2018 and the values are 17.71, 10.31 and 8.96 t ha-1, respectively. Compare to the first year, the share of chicory in the yield was high both the first and second cut in the second year. Average crude protein ratios were 21.17 – 14.44% in 2017 year; 21.86 – 13.21% for the first cut and 23.59 – 15.18 % for the second cut in 2018. Average ADF ratios ranged from 23.02% to 35.07% in 2017 and those were 30.19 – 23.69 % and 34.59 – 26.88% for the first and second cuts, respectively in 2018. NDF contents were 59.05 – 33.33% and 51.79 - 34.85%, 61.49 - 38.86% in 2017 and for the first and second harvest in 2018, respectively.

Keywords: Chicory, hay yield, mixture ratios

The Effect of Different Inter and Intra Row Spacing on Yield and Yield Components of Safflower (*Carthamus tinctorius* L.) in Kırşehir Ecological Conditions

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Abstract

The aim of this study was to determine the effect of different inter and intra row spacing on yield and yield parameters of safflower in the experimental area of Ahi Evran University in 2017. Experiment design was in a split plot of randomized complete blocks with three replications and Balcı variety was used as seed material. The treatments consisted of two inter row spaces (15 and 30 cm) as the main plots and four intra row spaces (5, 10, 15 and 20 cm) as the subplots. Days to emergence, days of rosette stage, flowering date, days of maturity, plant height, number of side branches, number of tables, thousand seeds weight, seed yield per plant, seed yield, crude oil rate and oil yield were investigated. According to the results, inter and intra row spaces changes has important significant effects on all parameters except days of rosette stage. The number of side branches, and tables, thousand seeds weight, seed yield per plant and crude oil rate were decreased with both inter row and intra row spacings narrowed. The highest yield was determined from 15*10 and 30*5 cm inter and intra row space as 1773.8 kg ha-1 and 1704.2 kg ha-1 respectively.

Keywords: Safflower, *Carthamus tinctorius* L., yield, oil content, row space

Use of Artificial Intelligence in Agriculture

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Abstract

The technical processes emerged in line with the technological advances contribute to the economical, sustainable and productive industry, which are the goals of plant and animal production. Artificial intelligence techniques have become an important tool in facilitating agricultural operations and in bringing alternative solutions to the problems that need to be solved or improved. Thanks to the developed algorithms and software, numerous studies have been carried out by researchers on plant production planning, classification of plants, yield estimation, detection of plant disease, pests and weeds, determination of route in agriculture robots, determination of appropriate environmental conditions in the greenhouse, enterprise decision making, irrigation management, determination of product rotation, selection of optimum fertilizer and instrument in agricultural production. In this study, especially considering the recent developments, artificial inteligence applications which are applied successfully in animal production as well as crop production were described.

Keywords: Artificial intelligence, expert system, fuzzy logic, genetic algorithm, artificial neural networks

Use of Modeling and Simulation in Agriculture

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Abstract

The rapid development of science and technology brings with it the difficulty and complexity of learning. Learning and keeping up with new scientific and technological developments that have emerged day by day has become a must for development. Modeling and simulation are applications that make these systems simpler to facilitate the learning of complex systems that have an important place in human life. These applications allow the estimation of experiments and results a system that are difficult to obtain in a computer environment. Modeling and simulation in the field of agriculture offers easier research opportunities to producers in terms of time and space, in precision agricultural applications, in herbal / animal production and in agricultural technology in general. In this study, a general information about modeling and simulation applications are given, how it affects agricultural activities, how to contribute to agricultural production, and academic studies in agriculture by these methods are included.

Keywords: Modeling, simulation, agricultural production

The Vivaldi effect to Cobb broilers on growing rate and corticosterone levels

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Abstract

The aim of this study, to evaluate Vivaldi music effect to growing rate and corticosterone level one day before from slaughter on 42 days old Cobb broiler. Vivaldi music (60-70dB) were played to Cobb broilers for 42 days with 4 hour period per a day. There are 50.000 broilers in 2 flocks consisting of a control (n= 25.000) and one experimental group (n=25.000). At the end of each week, randomly selected broilers of 200 was checked by weight. One day before to slaughter, 30 broilers selected from control group and 70 broilers from experimental group were taken 5-6 ml blood samples. Corticosterone levels were measured in these blood samples by Enzyme linked immunosorbent assay (ELISA) test. At the 42nd day, the final weight between the control group and the experimental group and the level of corticosterone in the blood were compared. The both of group's results was statistically compared by the T test. The results were considered to be significant when P value lower than 0.05 ($p < 0.05$) was the result of statistical analysis. At the end of this study we found that experiment group's weight significant higher than control group statically. At the end of this study we observed that experiment group's corticosterone levels lover than control group statically.

Keywords: Corticosterone, growing rate, Vivaldi effect

Evaluation of Blood Glucose Values With myopathy of Anterior *Latissimus Dorsi* muscle On Broilers

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Abstract

Myopathy disease has a significant economic role on poultry industries. The aim of this study to investigate interaction between blood glucose level and myopathy of Anterior Latissimus Dorsi muscles of broilers 42 days old, Cobb 500 broiler chickens total capasity 500.000, in pair of Marmara region. Antibiotic administiration free 10 broiler flocks visited which appear walking disability with lameness semptoms by Bristol Gate Score (BGS). 20 Broiler have clinic symptom of lameness selected at each flock and saperated to box place reach under tunnel ventilation condition on ad libitium way. We took blood sample of animals for evaluation glucose levels belonging groups lameness (n=200) at farm with BG strip machine 1.4-2.5µl doses whole blood obtain from wing ven each. All animals sent processing plant of slaughterhouse for determining anterior latissimus dorsi muscles. Results were evaluate statistically t test. The results were considered to be significant when P value lower than 0.05 ($P < 0.05$). According to the study broilers which have myopathy, blood glucose levels higher then standar values.

Keywords: Broiler, blood glucose level, *Latissimus dorsi* muscle, myopathy

Microbiological attributes of packaged and unpackaged dried raisin samples sold in Manisa markets

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Abstract

Dried raisin which has a high economic value is an important product of Eagean Region, especially in Manisa. In this study, it was aimed to determine the microbiological attributes of unpackaged or packaged dried raisin samples from different locations of Manisa region. Total of 62 different dried raisin samples were collected and brought into Manisa Celal Bayar University, Microbiology Laboratory and were taken under microbiological investigation. Average microbiological attributes of 43 unpackaged and 19 packaged dry raisin samples were determined and were compared to values given in Communication for Microbiological Criteria for Dried Fruits and Vegetables of TSE.

Keywords: Dried raisin, microbiology, package

Microbiological attributes of "Çiğ Köfte" samples sold in Manisa markets

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Abstract

"Çiğ köfte"(raw meatball) is a traditional Turkish snack food prepared by using bulgur, onion, garlic and different varieties od spices by adding or without adding minced beef. It is generally consumed as a fast – food within a short time but, leftovers of it can be kept in refrigerator or in room temparature until they are consumed. In this study, total of 63 raw meatball it was determined that, total mezophilic aerobic bacteria, coliform bacteria, *Listeria* spp., *Staphylococcus aureus*, *E. coli* O157:H7 and *Salmonella spp.* counts of the samples were determined.

Keywords: Fast food, microbiology, raw meatball

Comparison of the performance of sticky pheromone and funnel traps against *Halyomorpha halys* (Stal) (Heteroptera: Pentatomidae)

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Abstract

Halyomorpha halys (Stal) (Heteroptera: Pentatomidae) is an important invasive pest that causes problems in agricultural lands. In addition, they cause problems by invading houses to find an environment they can take shelter during the winter months. This pest is originated from Asia. It was first detected in Turkey in 2017 and infected Georgia's Adjara autonomous region of the Eastern Black Sea Region through Batumi in the same year. Adults and nymphs damage many cultivated plants including fruits and vegetables. In this study, performance of a sticky pheromone trap [Pherecon Treece BSMB (Treece)] used in the USA and a prototype funnel trap designed in the Black Sea Agricultural Research Institute in trapping the adults of *H. halys* was compared between 3 September - 26 October 2018. The study was conducted in Kemalpaşa, Hopa, Borçka and Arhavi towns of Artvin in the Eastern Black Sea Region. Present findings revealed that the prototype funnel trap was able to entrap 23 times greater number of adults than the sticky pheromone trap licensed in the USA that is mostly used for monitoring purposes. Funnel traps were also been found to be more practical and appropriate for entrapping *H. halys* adults. It was concluded that the funnel trap was more suitable and could be widely used by manufacturers if the pheromone sold with pheromone traps is provided independently of the trap.

Keywords: *Halyomorpha halys*, East Black Sea, sticky pheromone trap, funnel trap

The Evaluation of the Agricultural Mechanization Level of Samsun Province and Districts between 2007-2017 Years

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Abstract

This study was carried out by using TÜİK data to determine the changes in the agricultural mechanization level of Samsun province and its districts between 2007-2017.In determination of the agricultural mechanization level of Samsun province and districts; the criteria such as tractor power per cultivated land unit (kW/ha), tractor number per 1000 ha cultivated land unit (tractor/1000 ha) and cultivated land per tractor number (ha/tractor) has been identified. The highest level of mechanization among the districts was Bafra and Çarşamba, and the district with the lowest level of mechanization was Canik.

Keywords: Agricultural mechanization, mechanization level, Samsun

Agro-Morphological Characterisation of Some Local Confectionary Sunflower Populations

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Abstract

Turkey is a very rich country in terms of plant diversity. The conservation of genetic diversity in plant genetic resources of the cultivated species is extremely important for the sustainability of crop production. In Turkey, when examined climate and soil characteristics, in terms of confectionary sunflower production where has a huge potential. The aim of this study; characterization is done by examining the frequency values of agro-morphological features of the some local confectionary sunflower populations collected from different regions, from the characters specified in the UPOV definition list, in Tokat-Kazova conditions of Turkey. In the reserach, forty local population of confectionary sunflower were used and two registered varieties were used as standard. The experiment was conducted according to the lattice trial plan in 2016 on the land belonging to the Directorate of Middle Black Sea Transition Zone Agricultural Research Institute. In this study, leaf size, leaf color, leaf blistering, leaf serration, leaf shape, leaf auricules, leaf wings, leaf angle of lowest lateral veins, leaf height of the tip of the blade compared to insertion of petiole, stem hairiness, disk flower shape, disk flower color, branching status, branching style, head attitude, head shape, grain shape, grain color, grain streaking status and self-fertilization characteristics were observed. According to the research results; in the evaluations made, high variations were determined in terms of agro-morphological features in confectionary sunflower populations. These definitions will be useful to researchers in the future.

Keywords: Confectionary Sunflower, *Helianthus annuus* L., local population, morphological features

Determination of Yield and Quality Properties of Some Local Confectionary Sunflower (*Helianthus annuus* L.) Populations

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Abstract

Confectionary sunflower production does not meet our needs in our country as it is in sunflower oil, it is covered by imports. Due to the use of local populations in the confectionary sunflower production, low yield is obtained from the unit area and production is not enough. It is great importance to breeding of confectionary sunflower varieties which have higher quality than the unit area and which have the desired quality characteristics according to the market demands. In this study, Turkey's collected from different regions of some local confectionary sunflower populations was conducted to determine the yield and quality properties in Tokat-Kazova conditions. In the reserach, forty local population of confectionary sunflower were used and two registered varieties were used as standard. The experiment was conducted in 2016 on the land belonging to the Directorate of Middle Black Sea Transition Zone Agricultural Research Institute. In the study, the output time, flowering time, number of days of physiological growth, plant height (cm), table diameter (cm), 1000 grain weight (g), grain size (mm), grain width (mm), seed yield (kg / da), crust ratio (%), oil content (%), free fatty acids composition (%) were determined. According to the research results; plant height from134,4 to 294,5 cm, table diameter from 17,9 to 22,4 cm, grain width from 8,1 to 10,1 mm, grain size from 21,1 to 26,2 mm, 1000 grain weight from 126,8 to 186,6 g, seed yield from 160.2 to 558.7 kg/da and oil content varied between from 24.09 to 33.56% were found in population and varieties. These definitions will be useful to researchers in the future.

Keywords: Confectionary sunflower, *Helianthus annuus* L., local population, yield, quality

Searching for Commercial Scale Latex Producing New Plants

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Abstract

Plants develop various means to protect themselves. A release of specially formulated dense liquid, called latex, against potential harms of wounds, insects or infections is a good example to those means. Mankind has been using these latexes for numerous reasons varying from as chewing gum and food additives to protective coverage and components of composites. Rubber is a strategic material used by space, aviation, military and protection to vehicle and textile industries. This commonly used material is obtained by a chemical modification of the latex produced from rubber trees (Hevea brasiliensis). The locations to produce natural rubber are limited since these trees require hot and humid environments for productive growth. Consequently, the limitations on the production are affecting the availability and price of natural rubber. There are many plants generating liquids for similar purposes in almost all kinds of environmental conditions. This presentation covers a literature survey and the findings of a preliminary experimental study to explore the potential for latex producing annual and perennial plants for the Middle Belt climate zones like that of Turkey.

Keywords: Rubber, rubber production, vulcanization, latex, latex producing plants

The Effects of Lactic Acid Bacteria and Enyzme Mixture Inoculants in Alfalfa Harvested at Different Maturities on Silage Fermentation and Feed Value

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Abstract

Soil salinity and sodicity are one of the major causes of the land degradation in the arid and semiarid regions of the world. Low rainfall and high evapotranspiration in these regions promote the upward movement of salts in the soil solution which adversely affect soil's physical, chemical and biological properties. Thus, resource-use efficiency has a crucial role in agriculture as the shortage of water, nutrients, and land threaten the sustainability of the sector. Saline and sodic soils have numerous economic impacts on agriculture. There has been a considerable amount of research that has resulted in the development of methods to reclaim saline and sodic soil with pyrite, sulfuric acid, and gypsum. However, due to their limited availability and economic considerations, applying such practices has been limited at a large scale basis. Thus, research is being performed to use low-priced materials to have more feasible methods for amelioration of large infertile areas. Therefore, many researchers have turned to organic matter obtained from solid waste, recognized for its high capacity to improve the physico chemical and biological properties of soils for practical, economic and sustainable solutions. In this study, the literature review related to the subjects were evaluated and practical suggestions were developed.

Keywords: Saline-sodic soil, waste material, soil ameliortion, organic matter

Water Use of Melatonin Applied Eggplant Seedlings under Drought Stress

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Abstract

Drought stress is one of the most common environmental stress factors responsible to yield loss in several crops worldwide. Successful crop management under drought depends on better agricultural management and understanding of water productivity. Increasing water productivity without causing severe yield reduction has been found successful under limited water supply conditions. Therefore, improving methods and strategies to cope with deleterious effects of drought stress has received considerable attention recently. In this context, an eggplant seedling experiment was conducted in the greenhouse with the application of six different doses of melatonin (0, 5, 25, 50, 100, 150 µM) to investigate response of plants under drought conditions (100 and 60% of water to reach the field capacity). Plant fresh weight was used to determine water use efficiency of the eggplant. We found that water use efficiency decreased by roughly 23% with drought as compared to control. And foliar application of melatonin slightly improved the water use efficiency of the eggplant at the concentrations of 25 µM. The result of this experiment indicates that using melatonin as an ameliorative amendment under drought conditions could be useful to improve the eggplant drought tolerance.

Keywords: Abiotic stress, yield, melatonin, water deficit

Evaluation of the Yield and Technological Quality Parameters of Some Bread Wheat (*Triticum aestivum* L.) Genotypes Based on the Augmented Experimental Design

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Abstract

This study was conducted under rainfall conditions in experimental field of Diyarbakır during 2014-2015 growing season. Sixty bread wheat lines including five check cultivars were used as genetic material. This experiment was conducted under Augmented Experimental Design consisting of three blocks of which every block has twenty five plots. The purpose of the study is to determine genotypes with high yield, large adaptation ability and high quality. According to result of analysis of ANOVA, significant differences was determined for thousand grain weight (TGW) and test weight (TW) at the level of 1%. Grain yields of genotypes ranged from 491.7-974.9 kg da-1, thousand grain weight (TGW) 27.4-44.6 g, protein content %8.1-14.7, test weight (TW) 78.9-86.3 kg hl-1 and zeleny sedimentation 16.3-41.3 ml. In the study, G7 and G10 in terms of thousand grain weights, G14 and G28 in test weight and G5 and G33 lines in grain yield were prominent. It was determined that the G5, G7, G10, G14, G28 and G33 lines were promising lines. In addition, it has been concluded that these lines should be tried again in advanced stages and under different environmental conditions.

Keywords: Augmented, bread wheat, grain yield

A New Pedometer Design for Monitoring the Movement of Dairy Cattle

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Abstract

The main factors affecting the profitability of dairy cattle breeding are semination performance. The most important factor on the effect of semination performance is the correctly determining oestrus. If the oestrus could not be determined in time causes delay to insemination, decline of pregnancy rates and the birth interval prolongation. Animals in oestrus are more active than others. This mobility can be measured by a testing device called "pedometer". Developed pedometer with this project was designed to taking into account the activity of movement of animals to determine oestrus. In this study, high sensitivity, low power consumption, digital accelerometer was used to provide the opportunity for the three – axis measurement. The pedometer with an acceleration sensor can be used to count separately the number of steps and mounting performed by a cow since acceleration values were different for its walking and mounting activities. RF communications method was used to transfer data the computer. For the successful transfer of mobility data in the short time period (i.e. once every two hours), the mobility data cordlessly sent to computer while the animals walk freely without visiting a milking parlour.

Keywords: Pedometer, herd management system, oestrus, animal health, automation

Technological Concepts and Their Differences

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Abstract

Today, there are many techniques and new concepts raised by the development of technology. These concepts can be used incorrectly instead of one another because of the fact that these concepts are new, too many in number, have important agricultural practices developed by different disciplines and contain technical details. The aim of this study is to explain concepts such as precision agriculture, autonomous, robot, automatic steering, automation, unmanned aerial vehicle, drone, industry 4.0, artificial intelligence, and to explain the differences between their applications that can be confused as concept.

Keywords: Precision agriculture, autonomous, artificial intelligence, machine learning, deep learning

Determination of performance of disc type silage machines

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Abstract

This study was carried out to determine the average fuel consumption (l/h), energy consumption (kW), field energy consumption (kW/da) of the silage machine used in the harvesting of first crop silage maize plant in Konya in 2018. t), minced meat size distribution (mm) was made to determine the values. The machine used in the study, three different knife-counter knife opening (clearance) (1, 3 and 5 mm) is an adjustable corn silage machine. In addition, the average silage minced meat distribution, 1. clearance (1 mm) the size of plants with a size smaller than 20 mm to 30 mm in size is more but the power and fuel consumption of the machine increased. The power and fuel consumption of the 2 rd clearance (3 mm) was less than that of the other type. The silage machine with 2 clearance has little space-to-product energy consumption. 2. clearance in the direction of the mean's others have found that particularly favorable results.

Keywords: Silage, silage machine, knife-counter knife opening (clearance), fuel consumption, power consumption, mincing size distribution

Determination of Adaptation and Quality Characteristics of Some Blackberry Varieties in Pazar District of Rize Province

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Abstract

The research was conducted between 2014-2015 at the Recep Tayyip Erdogan University Faculty of Agriculture and Natural Sciences, Department of Horticulture, Blackberry Experimental Unit and Pomology Laboratory. In 2014, Bursa 3, Bartin, Ness, Jumbo, Navaho, Waldo In 2015, Ness, Jumbo, Navaho, Waldo varieties were used. The pomological characteristics of the 6 blackberry varieties (Bursa 3, Jumbo, Navaho, Waldo and Ness) grown in Pazar / Rize conditions; Fruit weight, titratable acidity and soluble dry matter were compared. As a result, the cultivation of blackberry varieties in trial conditions is advisable for the region.

Keywords: Adaptation, blackberry, Rize

Plum Population in Rize (Turkey)

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Abstract

Rize is in Eastern Black Sea area and tea is major cultivated plant in the region. In this province, except for tea, fruit species such as apples, pears, mandarins, cherries, hazelnuts and walnuts also was grown. Many plums are grown in different ecological zones in the region. Consists of water-resistant plum tree was also ensures continued presence in the region. Plum varietes showed differences regarding to maturation time and fruit characteristics. This study was carried out in Rize Province to investigate local plum varieties. Selected eight local plum varieties were examined for pomological characteristics during 2015-2016 and differences were revealed.

Keywords: Plum, population, Rize, Eastern Black Sea Region, Turkey

Relationship between Deficit Irrigation and Tuber Yield in Potatoes

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Abstract

Water is the most important compounds in an active plant and constitutes more than 80% of the growing tissue. Because it is essential for most plant functions, the amount of water applied during irrigation, the time and method of water application, the quality of the irrigation water, and prevailing micro-meteorological conditions are important in plant health and yield. The development time of potato plants is 120 - 150 days according to the climatic conditions. In order to achieve high efficiency, water consumption should be between 450 and 700 mm. The potato crop (*Solanum tuberosum* L.) is very sensitive to water stress and the total available soil water should not be depleted by more than 30–50% to optimize yields. The soil should be maintained at a relatively high moisture content. Irrigation at 40% of field capacity (Fc) is adequate for seed grade tubers, while "processing/table" crops benefit from irrigation at 65% Fc. At all stages of growth, water stress reduces photosynthetic efficiency, but the drought during the periods of tuber initiation and bulking has the most drastic effect on the yield. Limited soil water availability at different stages of growth results in earlier crop maturity, decreases plant growth, tuber yield, the number of tuber per plant, and tuber size and quality. Irrigation requirements differ with locations, soil types, and cultural practices. Under the condition of limited water supply, higher benefits may be achieved by adopting suitable irrigation and planting techniques. Due to the reduction of water resources and the use of water in different areas other than irrigation, water saving in agriculture has become mandatory. Therefore, optimum use of irrigation water is required. The water requirement of the plant is not fully supply with deficit irrigation and the soil moisture away from the root zone is allowed. Plants are exposed to some water constraints by knowing that the yield will decrease. The purpose of the deficit irrigation is to reduce the amount of irrigation water or the number of irrigations and to examine and increase the water use efficiency of the plant. In this study, the literatures covering the effects of deficit irrigation on potato plants were investigated.

Keywords: *Solanum tuberosum*, deficit irrigation, soil water, yield

Usability of Satellite Based Positioning Systems in Precision Irrigation Applications

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Abstract

Precision agriculture technologies (PF) is a technology that aims to prevent the application of new technologies to the analysis of the variability in agricultural area by not applying the desired amount of agricultural inputs to the place where it is needed. Although widely used in many areas of agriculture, precision irrigation, which is part of this technology is not yet known that at the inception level. Therefore, there are no favorable conditions for research, development, implementation and adaptation of these technologies. The advancement and use of agriculture by technological developments is only possible with precision agricultural technologies. Satellite based positioning systems (GNSS) are one of the most important of these technologies. The satellite based positioning systems is used in many processes in the agricultural field. Mapping of soil properties and yield, determination of land boundaries, variable-level application control, such systems and the location data of the land are converted into maps and these maps are used during the application. These systems consist of space, control and user units. The space unit has satellites turning around the earth and receiving continuous signals to the world. The control unit is the ground stations controlling the system. Receptors receiving signals from satellites form the user unit. Location, velocity and time information can be received every hour of the day all over the world with this system, Precision irrigation is the simultaneous irrigation to improve the use of water resources and make them economical by controlling the water demand of the plant according to the soil moisture and plant growth periods. According to the traditional irrigation methods, water with different proportions is applied to the areas where variability occurs in the sensitive irrigation and the water cost is reduced. Sensitive irrigation can be used and applied in all irrigation systems and is used more and more for irrigation applications. The aim of the PF is to apply the desired level of agricultural input to the place where it is needed by using the variability in the land in order to obtain more efficiency with less agricultural input. In this way, the cost of input decreases and the environment is protected at the same time. In this study, literatures and current developments are examined in order to determine the usability of global positioning systems in sensitive irrigation applications.

Keywords: Precision agriculture, irrigation, GNSS, positioning

Insecticidal and behavioral effects of different lavender varieties against *Sitophilus granarius* (Coleoptera: Curculionidae)

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Abstract

Stored grains are often subjected to quality and quantity losses of varying magnitude during the storage. Grain deterioration which caused by several biotic and abiotic factors can be occurred in various ways, such as germination, clumping, self-heating, burning, baking quality, color and many others. In this study, the insecticidal and behavioral effects of three different lavender varieties (Hemus, Raya, Yubileina) which are produced commercially against Granary Weevil [*Sitophilus granarius* (Col: Curculionidae)], were tested under laboratory conditions. In addition, the essential oil contents of three different lavender varieties were determined by using GC-MS. Fumigant activity trials were carried out in 10ml volumetric rubber capped glass bottles and LC50, LC90 values were calculated at the end of 24 hours. In addition, contact activity tests were carried out for the purpose of the application of essential oil in the dorsal part of the abdomen of the Granary weevil and the activities of the essential oils at the end of 24 hours were determined. Finally, repellent activity experiments were conducted. At the end of the study, LC50 values of Hemus, Raya and Yubileina varieties were calculated as 0.094 µl/ml, 0.091 µl/ml and 0.079 µl/ml, respectively. LC90 values for these oils were calculated as 0.157 µl/ml, 0.139 µl/ml and 0.118 µl/ml, respectively. In the contact activity tests, all of the tested oils had similar effects and no treatment showed significant activity after 24 hours. Repellent activity tests showed significant repellent activity due to the application dose of all oils, which were not significantly different in activity between oils, as in other activity tests. These results indicated that plant essential oils have a singinificant potential in the control of *Sitophilus granarius*.

Keywords: Essential oil, fumigant activity, repellent activity, GC-MS, Stored product

The Effects of Forage Crop Supports on Forage Crops Production and Sustainability in Agri Province

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Abstract

In 2017, 49.505.025 tonnes of forage crops were produced from 19.545.969 decares in Turkey. Agri province took 1.5% share from Turkey with 757.327 tons of forage crops production. Agri province remains below the average of Turkey in forage yield with 5,800 kg/hectare common vetch, 6.910 kg /hectare Hungarian vetch, 10.200 kg/decare alfalfa, 7.360 kg/hectare sainfoin yield, but above the average of Turkey with 49.090 kg/decare silage corn yield. Total agricultural area in Agri province is 354.417 hectares, of which 23,16 % are forage crops. According to the years in the province, the average fodder crop sown area changed between 80.000-82.000 hectares. Since livestock is a vital source of income, forage crops increase their importance in the region. In this context, technical and economical field researches are needed for forage crops. In this study, it is aimed to determine the importance of fodder crop production in Agri province, to assess the effect of government subsidies on the production and sustainability of forage crops.

Keywords: Agri, forage crops, subsidies, sustainability

Applications of Licensed Warehousing System in the Agricultural Sector of Turkey

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Abstract

Law No. 5300 on Agricultural Products Licensed Warehousing was published in the Official Gazette on 17/02/2005 and come into force. With the law, it was aimed to determine the standards of primary and processed agricultural products which are suitable for storage and standardisation, to store these products in warehouses of licensed warehouse enterprises under safe and healthy conditions and to carry out the trade of these products through a receipt issued by these enterprises. According to this law, 6 regulations and 6 communiqués have been issued so far. With licensed warehousing system; - Preventing price decreases caused by the accumulation of agricultural products in harvesting periods and balancing the market, - Small farmers and product owners, especially those who are in a lack of financing, should provide loans and aid from banks through product receipts received in exchange for the products they give to licensed warehouses, - Making the trade of agricultural products through the products, which are accepted by everyone, to promote quality production, to establish a safe market, - Registration of agricultural products trade, - Trade of agricultural products utilising product receipts or electronic product stocks without the need of showing and delivering physical goods and samples, -Transition to the futures and options markets of farm products through a standardised product and licensed warehouse system, - Creation of new business areas in terms of product storage, banking and insurance sector was targeted. As of early 2019, there are 153 licensed ware houses in Turkey. Sixty-four of them are authorised and working actively. 86 warehouses are under construction. Seventy warehouses signed a protocol with Turkish Grain Board. The total installed capacity of the licensed warehouses is 13.076.620 tons, of which 3.343.327 tons are authorised. In this study, the establishment and operation of the licensed warehousing system will be explained and examples of the applications in the agricultural sector will be given.

Keywords: Agricultural products, licensed warehouse, product receipt, Turkey

Effect of Water Spray and Anise Seeds Supplementation on Some Blood Characteristic in Holstein Friesian Cow under Heat Stress

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Abstract

This study was carried out at the Animal Farm pertaining to the Department of Animal Resources, College of Agriculture, University of Baghdad in Iraq. Using 18, multiparous Holstein Friesian cows following their beak milk production. The cows were randomly divided into two main groups (with and without spraying body with water). Each group was sub-divided into three sub groups including 3 cows each representing treatment of anise (0 and 30 gm of formaldehyde- treated anise as well as 30 gm. Formaldehyde untreated anise to the concentrate diet/cow/day). The field part of the experiment was continued for the period from 1/7/2012 to 2/10/2012 to study the effect these treatments on the productive and physiological performance under heat stress conditions in summer. Results revealed that the experimental cows were exist under severe heat stress during the experiment which negatively affected on some studied traits. Significant ($P<0.05$) effect of anise was observed on some blood characteristics (cholesterol, cortisol and thyroxin hormones). Excluding data of cortisol hormone which was declined ($P<0.05$) in spraying group at the end of the experiment, the influence of water spraying on blood attributes lacked significant. The interaction between the anise treatment and water spraying was positively significant ($P<0.05$) on most studied traits. The formaldehyde 30 gm/cow/day anise treated group was always better than untreated group during the experiment. It seems clear that exposure of dairy cattle to heat stress in summer had a negative effect on productive and physiological performance. The formaldehyde treated and untreated anise supplementation (30 gm/cow/ day) to concentrate diet and water spraying during afternoon led to the mitigate the adverse effect of heat stress of these cows and enhanced their performance.

Keywords: Anise seed, blood characteristic, heat stress, cows

Forage Yield and Nutritive Value of Hungarian Vetch Mixtures with Triticale İn Different Seeding Rates

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Abstract

The aim of the study was to investigate the forage yield, quality and rumen degradability characteristics of Hungarian vetch (*Vicia pannonica* Crantz.) mixtures with triticale (*XTriticosecale Wittmack*) in different seeding rates (HV100%, 75HV:25T, 50HV:50T, 25HV:75T and T100%). The research plant material was carried out in the experimental lands of Gaziosmanpaşa University Agricultural Application and Research Center during the 2015-2016 vegetation period. Field experiment was designed as Randomized Block Design with three replications. Besides, three rumen cannulated Karayaka ram (3 year old) were used to determine dry matter degradablity characteristics of pure and mixture forage by using in situ method according to randomized design. Forage samples were incubated for 24, 48 and 96 h. in to the rumen. The results that dry matter yield were not different between the groups, in addition, In terms of effective dry matter degradablity HV50:50T experimental group, was found to have the highest dry matter degradability. Additionally, relative feed value (RFV) was determined that there was no difference among the experimental groups. As a result, in the case of mixed planting of Hungarian vetch and triticale, it is thought that more digestible dry matter yield can be obtained than pure planting.

Keywords: Hungarian vetch, in situ, nutritive value, seeding ratio, triticale

Effects of Lentil-By Product and Lentil Straw on Fattening Performance and Some Carcass Characteristics in Male Awassi Lambs

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Abstract

This study was carried out to investigate the effect of lentil-by product on in vivo nutrient digestibility, fattening performance and some carcass characteristics in Awassi male lambs in Diyarbakir International Training and Research Center. In vivo digestion trial, in order to determine digestibility of some nutrients of the rations used in the group, 2.5-3 months of weaning, average live weight 22.48±05 kg, 24 lamb distrbuted 6 groups. The digestibility experiment was carried out for a total of 25 days including 15 days of eating practice and 10 days of manure collection period. In addition, to determine the effect of lentil straw on fattening performance, 66 lambs were distributed to 6 groups.The experiment was carried out for 60 days to determine the fattening performance of the lambs. Lentil by product increased the digestibility of crude protein. Also lentil-by product increased dry matter and digestible organic matter intake significantly ($P<0.05$). İn addition, lentil-by product increased daily gain, cold carcass weight and dressing percentage ($P<0.05$). However lentil-by product in diet did not alter feed intake. As a result, when the lentil-by product was used at 20-25 % in the Awassi lambs concentrate feeds, the daily live weight gain increased. But lentil-by product did not adversely affect feed consumption and feed utilization.

Keywords: Awwasi lamb, lentil-by product, fattening performance, carcas characteristics

Effects of Salinity on Germination, Protein and Proline Ratios in Some Chickpea (*Cicer arietinum* L.) Cultivars

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Abstract

Global climate change makes itself felt in each day. As a highly likely the drought, which is the result of this change, will increase its violence in the future. Salinity with drought will become an important problem in our country as well as in the World. Species and varieties that adapt to changing conditions will be more important in future projection of country agriculture. This study was carried out under the conditions of Greenhouse (Pots) of Uşak University Faculty of Agriculture and Natural Sciences. The experiment was established according to randomized plot design. Tehere was used four chickpeas genotypes, five salt saturated water dosages and four replication. In the experiment, germination (Emergence Speed) at 7th day, germination at 14th (Emergence vigor) and germination rates at 21st day were examined. As a result of study, while there was very significant difference of 14. and 21. day germination rate between the varieties it was significant ($p < 0,05$) for 7 days. Among the salt doses, there were significant differences ($p < 0.01$) in all germination parameters. While there was no significant difference between varieties in terms of protein ratios, there was a significant difference between salt doses ($p < 0.01$). While there was no difference between the varieties of the proline ratios, the differences between the salt doses were significant ($p<0.01$).

Keywords: Chickpea, *Cicer arietinum*, salt stress, protein ratio, proline ratio

Additional Note: This study constitutes part of the study supported by the Tübitak 2209A support program.

Determination of Fungal Diseases Causing Root Rot in Kiwifruit Orchards in Ordu Province

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Abstract

This study was carried out in order to define fungal diseases that cause root rot in kiwifruit orchards in Ordu province, and to determine their pathogenicity. For this purpose, a total of 123 kiwifruit orchards in Altınordu, Perşembe, Gülyalı, Fatsa, Ünye, İkizce, Ulubey, Kabadüz and Çaybaşı districts, where contain approximately 97% of commercial kiwifruit cultivation of Ordu province, were investigated in 2013-2014. As a result of the study, a total of 214 fungal isolates were obtained from the diseased plants in the kiwifruit orchards. It was determined that %37.38 (80) of the isolates belong to *Fusarium oxysporum*, 10.75% (23) to *F. solani*, 16.82% (36) to *Fusarium* sp., 7.94% (17) to *Rhizoctonia* sp., 3.74% (8) to *R. solani*, 5.61% (12) to *Pythium* sp., 3.74% (8) to *Macrophomina phaseolina*, 2.80% (6) to *Cylindrocarpon* sp., 1.4% (3) to *Verticillium* sp., 2.34% (5) to *Acremonium* sp., 2.34% (5) to *Clonostachys* sp., 1.87% (4) to *Rhizopus stolonifer* and 3.27% (7) to *Trichoderma* sp. In the pathogenicity tests carried out using approximately 13% of the isolates on kiwifruit seedlings, it was found that the virulence of the isolates ranged between 0.67 to 5.0. Of the isolates used in this test, Cyb-1, İkz-3 and İkz-4 (*F. solani*); AO-11 and AO-12 (*R. solani*); and Cyb-4 and Üny-7 (*Pythium* sp.) were the most virulent isolates. The difference between the virulence of AO-4 (*Clonostachys* sp.), Ulu-11 (*Rhizopus stolonifer*) and Prs-15 (*Trichoderma* sp.) isolates, and that of the above-mentioned isolates was statistically significant ($P<0.05$). In addition, all isolates of *F. solani*, *R. solani*, *Pythium* sp., *M. phaseolina* and *Cylindrocarpon* sp. and some isolates of *F. oxysporum* (Gül 1 and Ulu-4), *Fusarium* sp. (Gül-2) and *Rhizoctonia* sp. (AO-11 and Gül-8) significantly reduced root length, and root fresh and dry weights compared to control plants ($P<0.05$).

Keywords: Kiwifruit, root rot fungal diseases, pathogenicity

Determination of Grain Quality Parameters of Selected Wheat Varieties and Landrace Derived Pure Lines Collected from Various Provinces of Turkey

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Abstract

Bread wheat landraces are considered among important gene sources for quality breeding programs. This study aims to compare thousand kernel weight (TKW), crude protein ratio, dry gluten ratio, grain hardness (PSI) and zeleny sedimentation results of 20 bread wheat pure lines selected from landraces to 5 selected varieties, in order to determine future candidates for quality breeding programs. Field experiments were conducted in the consequent 2012-2013 and 2013-2014 growing seasons in Çanakkale (Turkey), according to randomized complete block design with three replications. ANOVA results indicated significant difference among genotypes, means were compared with Duncan's test. Additionally, genotype x growing season interaction were significant for all parameters due to varying precipitation regimes of both years. Our findings suggested that bread wheat varieties had higher TKW compared to landrace pure lines when pure lines had higher crude protein ratio, dry gluten ratio, sedimentation value with softer grains. Landraces were concluded as being important variation sources and could be valuable for quality breeding programs.

Keywords: Landrace, Bread Wheat, Quality Breeding, crude protein, zeleny sedimentation, Çanakkale

Additional Note: This research has been funded by TUBITAK (Project No: 111O255).

Micro element contents of durum wheat landrace pure lines and varieties in Çanakkale conditions

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Abstract

Durum wheat is one of the major staple foods in our country: therefore its microelement contents have great impact on our nutrition. This research aims to compare 54 durum wheat genotypes (25 landrace derived pure lines and 29 varieties) by their B, Ca, Cu, Fe, K, Mg, Mn, Na, Ni, P, S and Zn contents. Field trials are designed according to randomized complete block desing with four replications and were conducted in 2015-2016 and 2016-2017 growing seasons. Results of one-way anova analysis suggested that the differences between durum landraces and varieties are found statistically significant for their microelement contents, thousand kernel weights (TKW) and percentages of yellowberry kernels (PYK) ($p<0.01$). According to our findings, durum varieties generally had higher contents of Mg, P and S with higher TKW when durum landrace pure lines had higher B, Fe and Zn contents; indicating that certain durum landrace pure lines such as Genotypes 7, 8 and 14 were promising candidates for biofortification. Correlation analysis results showed that P contents were significantly and positively associated with K contents of landraces and Cu contents of varieties. In addition to the notable variance observed in their microelement contents, PYK of durum wheat genotypes varied between %2,75 and % 9 among landrace pure lines and %3,25 and %16,75 among varieties. Obtained PYK were lower than %25, which is the upper limit for durum wheat to be considerable for pasta production. In general, our findings provided positive indications about the future of durum wheat cultivation in Çanakkale conditions.

Keywords: Durum wheat, micro element, Çanakkale, biofortification

Additional Note: Authors thank to COMU BAP commission for their financial support under the project number: FBA-2018-2608.

Development of Hybrid Energy System Assisted Industrial Type Dryer and Efficiency Improvement Opportunities

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Abstract

The increasing demand for energy can be met with the use of high renewable energy resources potential in industry and agriculture. From non-fossil resources, solar and wind energies do not work effective individually. Therefore, hybrid systems are used to obtain uninterrupted energy. Drying of agricultural products is an energy-intensive process. To overcome of drying energy cost, energy efficient dryers with using renewable energies are necessary. In this study; an alternative to conventional drying methods at the industrial level, portable, shelf and drum type dryer was manufactured. The dryer mainly contains solar panels, wind turbine, drying cabinet, heater, fan and control unit. The width, length and height dimensions are 246, 326 and 216 cm, respectively. Based on drying experiments, the efficiency of the developed dryer can be improved with the following opportunities. The use of more efficient panels with tracking system will increase energy production and utilizing from thermal power of the sun will decrease energy consumption of resistance. Both solar and wind energies production will positively be affected by proper location choose. Also, heat leakage will be prevented by insulating the drying cabinet. As a conclusion, agricultural products will be dried in energy-efficient with the improvement of the developed dryer.

Keywords: Drying, energy consumption, photovoltaic panels, wind turbine

Effect of Different Salt Concentrations on Germination and Seedling Development of Two Different Species of Black cumin

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Abstract

In this study, the effect of different concentrations of $NaCI_2$ on black cumin's germination and seedling growth were investigated. *Nigella sativa* and *Nigella damascena* seeds were collected as genetic material and different $NaCI_2$ concentrations (0, 250, 750, 2250, 5000 and 10000 ppm) were used. Experiment was designed as completely randomized design (CRD) with three replications in Medicinal and Aromatic Plants Laboratory, Department of Field Crops, Faculty of Agriculture, Kahramanmaras Sutcu Imam University. Seeds were allowed to grow for 14 days in growth chamber (20°C) and development process was measured such as germination rate, seed length, root length, plumule length, fresh and dry seed weight and seed vigour index. Mean differences were found to be statistically significant for all measurements with different salt concentrations and also mean difference for cultivars was statistically significant. Among all the salt concentrations levels best growth was reported at 750 ppm for both cultivars. Above 750 ppm with the increasing of salt concentration negatively influenced the different parameters considered in this study. The highest germination rate and vigour index were found N. sativa and N. damascena as 93.33% and 89.33%, 1004 and 1119 at 750 ppm respectively.

Keywords: Germination, *Nigella*, salt concentration, vigor index

Assessment of Yield and Quality Traits of Black cumin Populations from Göksun, Kahramanmaraş Region

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Abstract

This study was carried out to determine the yield and quality properties of three different black cumin populations cultivated in Göksun ecologic conditions. The populations of *Nigella sativa* obtained from Urfa, Antep and Denizli provinces and were used as sowing materials. The study was conducted at Göksun region in the winter season and established according to randomized plot factorial experiment design with 3 replications. Laboratory measurements were done in Medicinal and Aromatic Plants Laboratory, Field Crops, Faculty of Agriculture, Kahramanmaras Sutcu Imam University. Saturated fatty acid compositions were measured in Center for University and Industry Collaboration (ÜSKİM) laboratory. Agronomic traits were measured such as plant height, number of branches in plant, seed number in capsule, 1000 seed weight and seed yield. The difference between the means was statistically significant. Among all the populations the samples that were collected from Antep exhibited highest saturated fatty acid rate with 35.65%. The palmitic acid (12.35%) from fatty acid components was higher in Antep population whereas linoleic acid (55.16%) and oleic acid (28.78%) was higher in Urfa population.

Keywords: Black seed, fatty acid, *Nigella*, yield, yield component

Temporal Variation of Some Digestive Enzymes Activities of Black Sea Trout (*Salmo labrax* Pallas, 1814)

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Abstract

This study was carried out at fifth generation Black Sea trout (*Salmo labrax* Pallas, 1814) in freshwater Recirculating Aquaculture Systems at Central Fisheries Research Institute, Trabzon, Turkey. The fish (3.52±0.01g) were manually fed 3 % live weight for 120 days. At the end of the trial, stomach, intestine and pyloric caeca tissues from the fish were taken together at 45th minute, 3rd, 6th, 9th, 12th, 24th, 36th, 48th and 72nd hours after feeding. The tissues were put into 70% ethanol, and were stored at -20°C until analyzed. Trypsine, pepsin, α-amylase and lipase enzymes were analysed in these tissues. The results suggested that the highest enzyme activity of Black Sea trout was obtained at 45th minute after feeding, and this situation was decreased by time. Among these enzymes, the highest enzyme activity was obtained in trypsine enzyme. This was followed pepsin and α-amylase enzymes. The lowest enzyme activity was obtained in lipase enzyme. According to these results, Activity of digestive enzymes in the stomach, pyloric caeca and intestine in nutrition studies on juvenile Black Sea trout can be taken at 45th minute after feeding. To better understand of digestive enzyme activity of this species, stomach, pyloric caeca, and anterior, middle and posterior intestines should be separately investigated by supported with nutrition studies at different ages, different weights, and in different environmental conditions.

Keywords: Stomach, intestine, pyloric caeca, enzyme, time

Leaf nutrient element contents of some wine grape varieties grown under the ecological conditions of Hatay-Belen

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Abstract

In this study, nutrient content of leaf in Syrah, Merlot, Sangiovese, Cabernet Sauvignon, and Sauvignon Blanc wine grape varieties were investigated in ecological conditions of Belen province of Hatay for 2 consecutive years (2016-2017). In the samples taken during veraison period of two years, average macronutrient contents range were found 1,01-1,28% (N), 0,11-0,51% (P), 0,71-0,91% (K), 2,89-3,37% (Ca), 0,54-0,69% (Mg) and contents of the micronutrients: 117,1 -134,3 ppm (Fe), 85,3-183,8 ppm (Mn), 27,3-30,0 ppm (Zn) and 13,9-18,7 ppm (Cu). In the study area, the physical and chemical properties of the soil are; loamy in 0-30 cm, clay-loamy in 30-60 cm, nonsaline, slightly basic at both depths, and the amount of useful potassium was sufficient, the total amount of calcium and magnesium were high and the organic matter was poor.

Keywords: Leaf blade, nutrients, soil, wine grapes

A Research on Table Grape Cultivation in Niğde Province

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Abstract

This study was carried out in a vineyard consisted of grape varieties grafted on 1103 P rootstock covered with net and planted 2,5x3,0 m distance in the province of Niğde. In the study, some of the performances and practices were examined from the establishment time until harvest. Although it varies according to years, it was determined that the blooming period started in June and lasted for 10 to 12 days. While it changes according to the varieties, the maturity period was between the last week of August and the third week of September. The yield was found to be 25,58-810,69 kg/decare and the yield per vine was 0,15-4,90 kg. The shortest period of from blooming to maturity was 65-70 days in Early Gold variety, 70-75 days in Centennial Seedless and Superior Seedless varieties and the longest with 95-100 days in Red Globe, Black Pearl and Corrin Seedless varieties.

Keywords: Table grape, rootstock, harvest, cultivation, yield

Soil Layers' Boron situation of Agricultural Areas close to the Sea and inland of Menemen Plain

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Abstract

In terms of sustainability; physical, chemical and productivity characteristics of soils need to be determined. This research was conducted to determine of agricultural areas' boron situation close to the sea and inland parts of Menemen Left Irrigation Bank in the Aegean Region located west of Turkey. For this purpose; two villages' soils were investigated; one of them Tuzçullu Village, where is close the sea, and the other one is inland of Menemen Plain. In both regions, 1*1 km grids were formed in the direction of East to West and in the direction of North to South. 25 points were determined in Tuçullu Village (close to the sea), and 23 points weredetermined in Menemen (inland of Menemen Plain). The physical and chemical properties of the soils were analysed in the samples taken from 0-30, 30-60, 60-100, 100-150, 150-200 and 200-250 cm layers of the soil profile. As a result of the research, it was determined that the first four soil layers were loamy (L), last two soil layers were sandy loam (SL) in Tuzçullu Village (close to the sea) areas. In Menemen (inland), soil structure was determined as sandy loam (SL) in all soil layers. The average amount of boron in the agricultural areas close to the sea according to the soil layers, respectively, 0,43 – 0,42 – 0,61 – 0,69 – 0,48 and 0,41 mg kg^{-1}, and the areas inland of Menemen Basin were 0,45 – 0,41 – 0,33 – 0,30 and 0,28 mg kg^{-1}. The boron content of soils is within acceptable limits.

Keywords: Menemen Plain, boron, soil profile

The Effects of Soybean Meal, Wheat Gluten and Corn Gluten on Serum Lipid Profile in Male Rats

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Abstract

The present study was aimed to investigate the effect of dietary soybean meal, wheat gluten and corn gluten of rats on serum triglycerides, total cholesterol, high density lipoproteins (HDL), low density lipoproteins (LDL) and very low density lipoproteins (VLDL). In this study, a total of 24 male rats were used which were 20 days old aged. In the study, groups were designed in 3 groups; Soy group which used of soybean meal as a protein source in diet, Corn group which used of corn gluten as a protein source in diet and Wheat group which used of wheat gluten as a protein source in diet as respectively. Blood samples were taken from the animals at the end of the experiment and analyses were performed. In this study, the levels of serum cholesterol and HDL were decreased significantly in the Corn group ($P<0.05$). Furthermore, the levels of serum triglycerides and VLDL were significantly increased in the Wheat group ($P<0.05$), while the level of serum LDL was found similarly in all groups ($P>0.05$). As a conclusion, it is thought that the dietary corn and wheat gluten may affect the lipid profile of the male rats.

Keywords: Corn, gluten, lipid profile, rat, wheat

The Effects of Different Protein Resources in Dietary Supplementations on the Levels of Serum, Lipid and Protein Profiles with Some Minerals for Female Rats

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Abstract

This study was carry out to determine the impact of different protein sources dietary supplementations on some minerals, lipid and protein profiles in serum for female rats. As a material of this study 96 twenty-day-old female rats were formed as three groups which were control group (Soybean meal), wheat gluten and corn gluten groups. The fattening period continued 45 days and the study was terminated when the animals reached 65 days of age. At the end of the study, blood samples were taken from 8 animals randomly selected from each group and levels of calcium, phosphorus, magnesium, cholesterol, HDL, LDL, total protein and albumin were analysed via autoanalyzer. As a result of, it was determined that the level of total protein was increased significantly in the soybean meal group ($P<0.05$). In other parameters were not statistically different between groups ($P>0.05$). It was detected that the effect of soybean meal, corn and wheat gluten on the levels of other parameters except the total protein level in the serum was similar. As a conclusion, it has no negative effect of using gluten instead of soybean meal in ration. These results are very important for higher rate of use of wheat and corn gluten in ration. Thus, dependence on the soybean which is inadequate in production in our country and a large portion of which is imported will decrease and alternative sources of protein can be formed.

Keywords: Mineral, blood parameters, protein profile, female rat

Evaluation of some quality parameters of gluten-free cookies produced with different legume flours

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Abstract

The aim of this study was to evaluate the physical (colour, diameter, thickness, and spread value) and sensory properties (appearance, taste, texture, and overall acceptibility) of gluten-free cookies with different legume flours. In cookie formulation, faba bean flour (FBF), lentil flour (LF) and chickpea flour (CF) replaced gluten-free mixture (rice flour and corn starch 1:1, 20%) used in cookie formulation. Some physical and sensory properties of the gluten-free cookies with legume flour were compared with the control sample with no added legume flour. The control sample had the highest brightness value (78.37), while the use of legume flour reduced the brightness value of cookies ($p<0.05$). Cookie samples containing CF samples had the highest yellownes values ($p<0.05$). CF and control samples had the highest diameter (66.13 and 66.79 mm, respectively) and spread value (8.48 and 8.63, respectively). The use of faba bean flour decreased appearance and taste scores, while the use of lentil flour only decreased appearance scores. CF samples gained higher sensory scores from the panellists than other samples. Considering the results of physical and sensory evaluation, it is thought that chickpea flour (20%) can be used successfully in gluten-free cookie formulation.

Keywords: Gluten-free, cookie, chickpea, faba bean, lentil

Evaluation of some quality characteristics of couscous samples prepared with partial replacement of quinoa flour

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Abstract

This study focused on the agricultural production in Nigerian, challenges and future directions of Agricultural production in the country. Efforts were made to highlight factors affecting domestic agricultural production. Descriptive statistics and regression analysis were the major tools of analyses in this study. The study showed that the overall agricultural production has about 20.85% of Nigeria's GDP. This study recommended the need to increase per-capital productivity through the introduction of improved technology in agricultural production.Getting the agricultural system back to its best will speed up the reduction of poverty and rapidly improved the economy. Some of these constrains include lack of interest in agriculture by the population, lack of good infrastructure, marketing problems, unstable prices, the environment and the economy. Policies and programmes that should be put in place to tackle this problems must include environmental management, effective agricultural spending, increase funding dedicated to agriculture and sustainable farming. Since most to the agricultural activities are carried out in the rural area, the government must turn to the rural area and invest a lot in the infrastructure and development of the rural area as this will greatly help in combating the constraints.

Keywords: Agricultural sector, GDP, Nigeria, production

The Effect of Sodium Irrigation Waters on Some Soil and Irrigation Characteristics

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Abstract

One of the most important factors in the formation of sodium soils is the sodium level in irrigation waters. Thus, sodium accumulation in agricultural areas changes many physico-chemical properties of soils such as pH, changeable sodium percentage (ESP), soil electrical conductivity (ECe), hydraulic conductivity of soil (Ks), and the amount of usable irrigation water (AWC). In this study, the salinity values were similar, but the sodium adsorption values were different 5 irrigation water (Control Application, SAR5, SAR15, SAR30 and SAR40) used. As parameters, the percentage of exchangeable sodium in the soil for different layers (ESP), irrigation water amounts (IW), soil salinity (ECe), soil pH value, drainage water salinity (ECdw) and drainage water pH values were measured. Cabbage was used as plant and 5 replicates were designed from each pot. Significant differences were observed in each parameter statistically. When we look at the soil ESP values, the first and second layer were statistically different groups for all applications. The highest ESP value was set to 9.39 in the second layer of the SAR40 application, while the lowest value was determined to be 2.42 in the first layer of the control application. As a result, the increase in SAR values in irrigation waters caused significant changes in both soil and irrigation water characteristics.

Keywords: Sodium, soil alkalinity, ESP, SAR

Developing a Weighting Lysimeter Controlled by Programmable Logic Controller (PLC) Based Automation System

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Abstract

In this study, it is aimed to develop a weighting lysimeter which can be controlled by the programmable Logic Controller (PLC) based automation system which can be used to measure the amount of actual crop water consumption (Evapotranspiration-ETc). For this purpose, a lysimeter tank which was formed from stainless steel sheet in 3 mm thickness with a diameter of 113 cm and 130 cm height, was produced. This lysimeter tank was placed on an electronic weighbridge with an RS 232 output with 5 tons capacity, 4 load sensors and a converter card, capable of measuring 1.5x1.5 m surface dimensions with a precision of ± 200 g. To measure the amount of water (Dp), which is filtered deeply through drainage, a pluviometer was used. For this purpose, Ø 25 was given to the bottom of the tank and the drained water was transferred to the pluviometer with a pipe of the same diameter. Another pluviometer was used to measure the precipitation. Water budget equality was used to determine the amount of ETc. The electronic weighbridge and the pluviometers were controlled by a PLC based automation system with the drip irrigation system that will apply irrigation water to the crop in the lysimeter tank. After that, work flow charst were created. Then, in the CODESYS-ST language, lysimeter, precipitation measure, drainage measure, irrigation and SD card data wiriting programs were written, depending on the work flow charts. PLC controlled lysimeter system has been tested on the walnut seedling of the Maraş-18 type and it was concluded that high accuracy ETc values can be obtained with this system.

Keywords: CODESYS-ST, drainage, evapotranspiration, PLC, weighting lysimeter

Development of Hargreaves-Samani Equation Calibration Models for Van Province Conditions

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Abstract

In order to determine the amount of evapotranspiration (ET_C), reference evapotranspiration (ET_O) and plant coefficient (k_c) based methods are more preferred. The United Nations Food and Agriculture Organization proposes FAO 56 Penman Monteith (PM) equality to estimate the amount of ET_C to be used irrigation projects. With this equation, ET_O can be estimated depending on the air temperature, relative humidity, extraterrestrial radiation, solar radiation, daily sunshine duration, wind speed, heat flux change in the soil and altitude. As an alternative to the FAO 56 PM equation, with the Hargreaves-Samani (HS) equation, ET_O can only be estimated using the maximum, minimum air temperatures and extraterrestrial radiation. The results obtained from various calibration studies shows that the consistency of the ET_O values estimated by the HS equation can be increased. In this study, it is aimed to develop the HS equation calibration models for Van conditions. $K_1=0.989+0.0040T$, $K_2=0.967+0.0038T_{max}$, $K_3=1.007+0.0048T_{min}$ and $K_4=1.245–0.0038R_H$ models were created depending on the average, maximum and minimum air temperatures and relative humidity. The ET_O values estimated by FAO 56 PM equality have been accepted as real ET_O values in study. The ET_O values estimated by the HS equation were corrected by multiplying the calibration coefficients (K). Thus, The ET_O values estimated by the Hargreaves-Samani (HS) equation were reduced by 50-62% in the amount of deviation from the real ET_O values.

Keywords: FAO 56 penman monteith, hargreaves-samani, calibration, reference evapotranspiration

Deviations of Feedstuffs Loading in TMR Preparation

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Abstract

Serving the right amounts of TMR (Total Mixed Ration) to dairy cattle is very important in terms of profitability, animal health and performance. In this study, it was aimed to determine the variations between the TMR theoretically calculated and TMR served in the feed bunk to dairy cattle. The study was carried out in a dairy cattle farm with 1.500 milking cows. In the TMR preparation process, planned and loaded quantity data of feedstuffs were evaluated. Data collection was done by means of weighing system and software program on mixer wagons. In this scope; 13.276 loading into mixer wagons were examined. From the obtained data; the calculated deviation ratio for each loading operation is matched with the possible error factors given below. Weight deviation values of feedstuffs loading were found to be different according to 1-TMR preparing operators, 2-type of loader, 3-physical property of feedstuffs, 4-feedstuffs loading methods, 5-measure of the amount of feedstuffs in TMR, 6-type of ration and 7-type of feedstuffs. In the evaluated TMR, the mean and standard deviation of the actual TMR load was 8.95±18.38%. The deviation rates (%) of five TMR preparation operators working in the farm were compared. The mean and standard deviation rates of these operators were different (in the order of 12.23±25.11%, 10.32±17.70%, 8.76±17.63%, 7.86±17.36%, and 5.48±11.44% - $p<0.0001$). The mean and standard deviation values according to the three different loaders used in the loading process was 10.44±17.72%, 9.04±22.64% and 7.43±17.35%, respectively ($p<0.0001$). Feedstuffs were divided into four groups according to their physical characteristics as roughage, concentrated, pulp and silage. Mean and standard deviation rates were 12.66±23.90%, 7.71±14.64%, 8.17±16.19% and 2.77±4.92%, respectively with roughage group was being the most deviation among the others ($p<0.0001$). The concentrate feedstuffs group can be loaded into the mixer wagons in two different ways: spiral or loader. Deviation values of loading methods (spiral or loader) of concentrate feedstuffs were found as 2.35±2,83% and 5.70±8,67%, respectively ($p<0.0001$). The feedstuffs amount range within the TMR was divided into eight groups. According to the feedstuffs amounts in TMR formulations, mean and standard deviation varied between 15.74±27.35% and 1.48±1.67% ($p<0.0001$). Eight different TMR deviation rates were evaluated, deviation rates ranged between 18.68±30.73% and 4.59±6.83% for close-up cow ration and finishing beef ration groups ($p<0.0001$). For fourteen different feedstuffs used in TMR formulations, the deviation rates between the types of feedstuffs ranged between 20.55±25.19% and 2.77±4.92% with variations of the physical characteristics (bale form, humidity, fluidity, particles size etc.) of the feedstuffs. In conclusion, the deviation rates of each factor evaluated at the present work differed significantly from each other. According to the data analyzed in this study, the above mentioned factors are considered to have significant effects on the accuracy of deviations in feedstuffs loading into mixer wagons in dairy farms.

Keywords: Total mixed ration, mixer feeder wagons, feedstuffs deviation, operators, feedstuffs loaders

Using Animal Behavior Charatersitics and Appropriate Equipment for Better Fattening Performances

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Abstract

The last twenty years, many important developments have occurred in Turkey beef production, big scales, market, housing, nutrition, and weight given to health protection measures have been many technological advances in this area. It is now being tried to be done in a small number of large and specialized farms operated according to production entrepreneurship criteria. However, yields per animal have not been achieved. Failure to achieve the desired feed performance in imported culture breeds and hybrids may be considered as indicators of administrative and maintenance problems. Animal feed, weighing, control and managemental problems are experienced in large fattening enterprises. Ignoring issues such as human animal contact in large-scale fattening enterprises and animal equipment used in the management of animals, which are not in accordance with animal behavior characteristics, increase the losses. The cattle senses characteristics effect tehir reflex and natural behaviors. Cattle can seriously injure or kill people. Being careless or in the wrong place at the wrong time can be costly. Livestock are a major cause of farm accidents. Nearly half of all cattle handling injuries involve gates and other physical barriers that handlers were pushed into or had pushed into themTherefore, appropriate management and aproach prevent losses. Thus, with the approach to animal nature and the use of tool equipment, better cattle performance, fattening and profitability can be achieved. Therefore, in this study, the approaches and the measures to be taken during the observation of intensive fattening enterprises will be discussed for aspect of profitabiliy.

Keywords: Fattening, behavior, equipment, losses, profitability

Injuries Caused by Animal Contact in Dairy Farms and Prevention Ways

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Abstract

The systematic work carried out in order to protect from the health hazards caused by various reasons at the workplaces during the execution of the works is called occupational health and safety In accordance with the Law No. 6331 on Occupational Health and Safety, the obligation to perform a risk assessment of all workplaces has started as of January 1, 2012. In this respect, dairy cattle farms have a high risk factor. The hardware and technological infrastructure of the enterprises, ergonomic conditions in terms of employee and animal management, the skill level of the personnel, the job description and organization of the works, the routine controls, the operating environment conditions are linked with the production stages. 98% of occupational accidents and occupational diseases can be prevented considering that awareness is a very important sateg of the prevention. The number of people employed by economic activity decreased by 71 thousand people in the agricultural sector, 60 thousand in the industrial sector, 3 thousand in the construction sector and 49 thousand people in the service sector. 1.444.000 enterprises (284.000 beef, 1.160.000 breeder) are present in our country. 72.5% of the cattle breeders were 10 head and six (27% of the number of animals), 10-49% of them were 25% (47% of the number of animals), and 2.5% of the number of animals (50%). 26 of them have the number of animals (Anonymous, 2018). People tend to move away from agriculture, in particular from livestock. In the last 40 years, the rural population has fallen below 20% from 40% and the rural population is getting older. This situation constitutes a significant risk in terms of production increase and sustainability in livestock sector. According to accident reports, agricultural machinery, tractors (18%) and animals (17%) often cause accidents. The sum of hand tools and power tools causes accidents as much as other machines (14%). In this study, a survey study was conducted in order to determine the risk factors of animal contact-related injury in animal husbandry enterprise employees.

Keywords: Injuries, animal contact, farms, prevention

Hatching Traits of Brown Layer Pure Lines and Their Different Combinations

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Abstract

The aim of this study is to determine of the hatching traits of the brown egg pure lines and their different combinations in the Poultry Research Institute. For this purpose, a total of 9900 eggs from 22 genotypes were used. The study was carried out according to completely randomized design with three replicates. 150 breeding eggs were used in each replication. In the study, fertility rate, hatchability of fertile eggs and hatchability traits of genotypes were determined. Difference between the means of the treatment groups was determined by variance analysis. There are significant differences between genotypes in terms of these traits. It was concluded that the hatchability of fertile eggs of breeding eggs obtained from Colombian and Rhode Island Red 2 pure lines is lower than other genotypes.

Keywords: Genotype, hatchery, hatchability of fertile eggs, hatchability

Determination of some chemical properties of beetroot chips produced by using different spices

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Abstract

Beetroot is a root vegetable rich in bioactive components becauase of its high antioxidant content widely grown in Aegean and Marmara Regions. It also contains betaxanthin and betalain pigments and it is also known that beet contains iron which has a regulatory effect on blood pressure. In this study, because of it is rich in phenolic substances, it was aimed to produce beetroot chips using different spices in formulation. At this point of view, this new healthy snack product has been developed without any pretreatment and any chemical additive. In this study, the effect of the spices used in formulation on antioxidant activity, total phenolic substance, total betalain and total flavonoid amounts were investigated. For this purpose, fresh beets which were supplied from a local producer in Manisa during its own season, were prepared in chips form and flavored with various spice (thyme, coriander, garlic powder, red pepper powder). Then they were dried at a rotary tray dryer at 60^{o}C/390 minutes. According to the results of the analysis the antioxidant activity values of the samples (DPPH and FRAP) were found to be higher than the control group and spices added to red beet chips had a statistically significant effect on the total phenolic content ($p<0.01$), total amount of flavonoid ($p<0.05$).

Keywords: Antioxidant, beet chips, betalain, drying, phenolic compound, spice

The effects of microencapsulated carvacrol+thymol supplementation to diet with low energy and protein content on growth performance and serum some biochemistry parameters of broilers

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Abstract

The study investigated the effects of microencapsulated carvacrol+thymol supplementation to diet with low metabolisable energy and protein on performance and serum some biochemistry parameters of broilers. A total of 672 day-old Ross 308 male broiler chicks were randomly distributed into seven treatments with 4 replicates of 24 chicks each. The diets included: PC: a positive control diet with normal metabolisable energy and protein; NC2.5: the diet reduced the metabolisable energy and protein at the level of 2.5 %; NC5.0: the diet reduced the metabolisable energy and protein at the level of 5.0 %; NC2.5+50NEXT; NC2.5+100NEXT; NC5.0+50NEXT and NC5.0+100NEXT diets were prepared by supplementation of microencapsulated carvacrol+thymol (Next Enhance) at the levels of 50 and 100 g/ton to the NC2.5 and NC5.0 diets, respectively. The results demonstrated that the PC diet increased final body weight ($P<0.05$) and body weight gain ($P<0.05$) and improved feed conversion ratio ($P<0.001$) of broilers from 0 to 6 weeks compared to the other diets. The broilers fed the PC, NC2.5 and NC2.5+50NEXT diets consumed higher feed than the other diets ($P<0.01$). The NC2.5+50NEXT diet reduced serum glucose, triglyceride and uric acid levels of broilers ($P<0.05$). Broilers' serum albumin level was decreased by the PC diet ($P<0.01$).

Keywords: Broiler, energy, protein, microencapsulated carvacrol+thymol, performance, serum biochemistry

Investigating the Factors That Affect Chicken Consumption in Turkey by Different Regression Methods

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Abstract

This study investigated the effects of chicken meat production amounts (X1), per capita national income (X2) and beef prices (X3) on chicken consumption (Y). The study used the data that covered the period of 2000-2018 (TÜİK, 2018). The study used per capita chicken consumption (Y) as the dependent variable, while the other variables (X1, X2 and X3) were the independent variables. Robust regression model was applied. Robust regression model, the M, S and MM estimators were examined. According to the results that were obtained, the respective R2 values of these were 0.821, 0.879 and 0.819, while their respective Adj. R2 values were 0.786, 0.854 and 0.782. The most suitable model in the robust regression model was the S estimator. Accordingly, all parameters in the model were found to be statistically significant ($P<0.05$ and $P<0.01$). According to this model, when there is an increase in the annual chicken meat production by 10.000 kg, per capita chicken consumption increases by 1 kg. When the per capita income in the country increases by 10.000 dollars, per capita chicken consumption increases by 4 kg, while it increases by 0.2 kg with an increase of 1 lira in the kg price of beef. As a result, it was determined that per capita chicken consumption is significantly affected by chicken meat consumption, per capita national income and beef prices.

Keywords: Chicken meat, production, consumption, Robust regression, national income

Trigonometric Modelling of the Monthly Changes in Chicken Meat Production in Turkey

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Abstract

This study aimed to model the changes in chicken meat production in Turkey by using a trigonometric curve. For this purpose, the monthly chicken meat production amounts for the period between January 2011 and December 2018 were used. According to the results, the changes in production had increasing trends in some months, while they had decreasing trends in others. This change continued periodically. The seasonal effect on chicken meat production was noticeable. In order to express this effect more clearly, regression analysis was conducted by fitting a sinusoidal curve as $Y_t = a_0 + b_o t + b_1 sin\theta + b_2 cos\theta + \varepsilon$. As a result of the analysis, a model was obtained as $Y_t = 131659.798 + 522.469t + 2361.446sin\theta - 10686.66cos\theta + \varepsilon$. As the coefficient of the parameter in the model sinθ was statistically insignificant, it was removed from the model and another regression analysis was conducted. The new model turned out to be $Y_t = 131938.282 + 516.727t - 10680.915cos\theta + \varepsilon$. The coefficient of determination or the model (R^2) was found as 0.673, and the Adj. R^2 was 0.666. No autocorrelation and multi-connection problems were found in the model. It was seen that the model that was applied in the study was suitable, and future production estimations were made. The monthly chicken meat production amounts for the period of January 2019 to December 2019 were projected in the following order: 172.768, 177.237, 183.094, 188.951, 193.420, 195.325, 194.454, 191.018, 186.195, 181.371, 177.936 and 177.064 tons. Consequently, both for the examined and projected periods, there was an increase in chicken meat production from January to June, while there was a decrease from July to December.

Keywords: Chicken meat, meat production, regression, sinusoidal curve

A hybrid approach of combining factor analysis scores with MARS predictive model for regression problems

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Abstract

This study deals with a hybrid approach of combining factor analysis scores with multivariate adaptive regression splines for regression problems. As an extension of classification and regression tree (CART) algorithm, MARS is an influential machine learning algorithm that describes the relationship between a dependent variable and a set of independent variables. The earth package provides analysts an opportunity of occurring MARS solution in R software. Due to the fact that there is a need of understanding the package, more exhaustive information on its related calculations was given in the current study. Factor analysis is one of the most popular multivariate statistical techniques that help to reduce the dimension of the handled variables. Suitability of the independent variables to factor analysis was determined on the basis of KMO and Bartlett's Sphericity tests. To derive latent-uncorrelated variables, raw independent variables were exposed to factor analysis and the derived new latent variables were implemented as new independent variables in order to predict a continuous variable in the predictive model of MARS, also known as a modified recursive separating approach. Model evaluation criteria i.e. Pearson's correlation coefficient in the response variable between actual and predicted values (r), coefficient of determination (R2), adjusted coefficient of determination (Adj.R2), Akaike information criterion (AIC), the corrected Akaike information criterion (AICc), root-mean-square error (RMSE), mean error (ME), mean absolute deviation (MAD), standard deviation ratio (SDratio), global relative approximation error (RAE), coefficient of variation (CV%), mean absolute percentage error, (MAPE) and performance index (PI)) were computed for revealing predictive performance of the hybrid approach of the factor analysis-MARS through R free software. In conclusion, joint use of factor analysis scores and MARS machine learning algorithm may be a good preference for the high predictive accuracy in the regression problems.

Keywords: MARS, factor analysis, machine learning, regression, recursive partitioning

A R script file improved for calculating goodness of fit criteria of CART and CHAID decision tree algorithms in IBM SPSS software

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Abstract

There are challenges for calculating goodness of fit (GOF) criteria measuring predictive performances of Classification and Regression Tree (CART), Chi-square Automatic Interaction Detector (CHAID) and Exhaustive Chi-square Automatic Interaction Detector (Exhaustive CHAID) decision tree algorithms, which are specified for nominal, ordinal and continuous variables in IBM SPSS Software. It is time-consuming to calculate GOF criteria of the mentioned algorithms by hand. Herewith, the present study was conducted to solve the problem encountered in estimating GOF criteria of the algorithms handled. Due to these reasons, the R script file was constructed for computing GOF criteria of the decision tree algorithms in the prediction of a continuous dependent variable. The constructed R script file was explained step-by-step for readers and analysts. GOF criteria included in the present study were Pearson's correlation coefficient in the response variable between actual and predicted values (r), coefficient of determination (R2), adjusted coefficient of determination (Adj.R2), Akaike information criterion (AIC), the corrected Akaike information criterion (AICc), root-mean-square error (RMSE), mean error (ME), mean absolute deviation (MAD), standard deviation ratio (SDratio), global relative approximation error (RAE), coefficient of variation (CV%), mean absolute percentage error, (MAPE) and performance index (PI), respectively. Minimum numbers of experimental units in parent and child nodes for the tested algorithms were described as 4:2 with the objective to achieve the desirable predictive accuracy-minimum error variance. Decision tree depths were taken as 3 for the CHAID and Exhaustive CHAID, and 5 for CART by default. After the best final decision tree diagrams were achieved for these algorithms in the IBM SPSS software, the predicted values of the dependent variable for all experimental units in the evaluated data set were computed for the algorithms, and then the observed values and predicted values derived by all the algorithms were copied to a notepad file where point was used as decimal. The data set was defined as "d=read.table("C:/filename.txt", header=T)" in the R script file of R Studio program. Number of significant predictors (k) was entered manually into the R script file. As a result, it is hoped that this new R script file constructed to calculate GOF criteria used for measuring predictive performances of the tree-based algorithms will be a noteworthy reference for analysts having a difficulty for estimating GOF criteria.

Keywords: CART, CHAID, data mining, regression trees, model evaluation statistics, R studio

Use of Lidar (Light Detection and Ranging) Sensors in Agriculture

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Abstract

Nowadays, by using unmanned airborne and land vehicles, multispectral, thermal, hyperspectral and lidar images can be obtained and modeling, estimation and analysis are performed with these images for remote sensing applications. Lidar determines the distance of an object or a surface by using laser beams, and can be obtained the 3 dimensional point information of the measured area in a very short time, at the desired frequency and with high accuracy. Lidar sensors, which are based on distance measurement and remote sensing methods, have been started to be used in agricultural activities and studies have been carried out on many subjects such as leaf area index, 3D plant size modeling, canopy volume determination, soil surface roughness estimation, flood modeling, tractor suspension control, prevention of agricultural machine accidents and control of autonomous agricultural vehicles. In this study, the case studies of lidar sensors for agricultural applications were investigated.

Keywords: Lidar, agriculture, modeling

Effects of Biochar and Different Iron Forms on Growth of Triticale (*Triticosecale wittmack*)

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Abstract

In this study, effects of biochar and different iron forms applications on growth of triticale (*Triticosecale wittmack*) were investigated. The experiment was carried out according to randomized blocks experimental design as three replications in 54 parcels. Biochar (BC) was applied in two different doses as 0-2 ton da^{-1}. Nano iron (Fe_n) (0-7-15 mg kg^{-1}), $FeSO_4.7H_2O$ (Fe_i) (0-15-30 mg kg^{-1}) and FeEDDHA (Fe_{org}) (0-15-30 mg kg^{-1}) were used as different iron forms. The experiment was ended after eight months following sowing. The following plant growth criteria were determined in harvested plants. It was determined that the biochar applications had positive effects on plant growth criteria. The highest spike length, seconder spike number in spike and grain number in spike were determined in $BC1Fe_n2$ application as 10.97 cm, 16.67 and 32.23 respectively. The highest plant length, plant number per square meter and grain yield were found in $BC1Fe_{org}2$ application as 69.30 cm, 297.00 and 291.87 kg da^{-1}, respectively. The lowest means belong referred parameters were obtained in control parcels except plant length. The lowest and highest thousand grain weight were found as 25.69 and 29.51 g in $BC0Fe_i2$ and $BC0Fe_n1$ applications respectively.

Keywords: biochar, iron, soil, growth, triticale (*Triticosecale wittmack*)

Effects of Quality and Development of Some Nitrogenous and Organomineral Fertilizer on Perennial Grass (*Lolium Perenne* L.)

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Abstract

This research was established in randomized complete block with split split plot design on three replications in the year 2011-2012 at Ankara University, Faculty of Agriculture, Department of Field Crops, Research Farm. Perennial Ryegrass (*Lolium perenne* L.) varieties Bizet-1, Kokomo and Esquire were sowed in main plots, 0, 2.5, 5 g/m^2 nitrogen fertilizer doses and 4 g/m^2 two different organomineral fertilizers were used in sub-plots. According to the result obtained from research, Kokomo germinated earliest in terms of ground cover speed and covered 75% of the soil ground. Varieties and fertilization doses did not effect the ground cover rate. It was understood that when the fertilization doses increased, the leaf colour darkened. Fertilizer applications to perennial ryegrass varieties were statistically significant in terms of tillering number. The most beautiful view occurred in spring time in the plots that had given 2.5 g/m^2/month nitrogen. According to the result obtained from research, with increasing doses of nitrogen and organomineral fertilizer doses, "Kokomo" showed a better development than other cultivars.

Keywords: Turf grasses, fertilizing, general view

Medicinal and Aromatic Plant Diversity of Turkey

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Abstract

Turkey's having different climatic and geographical features, comprises a plurality of plant species endemic flora and the high rate is a major source of medicinal and aromatic plants. Approximately 3,000 plant taxa are endemic. One in every three plants in the Florida has the potential to be considered as a medicinal and aromatic plant. Based on these data, the flora of Turkey about 4,000 plant taxa, medicinal and aromatic plants have the potential to be assessed. It is possible to say that we have a very rich source for increasing the share of fast growing medicinal and aromatic plants in the world. In 1979, the national Medicinal and Aromatic Plants Genetic Resources Project was initiated for the conservation and sustainable use of rich genetic resources in medicinal and aromatic plants. Within the scope of this project, it is aimed to collect production materials such as seed, tuber and rhizome with the herbarium samples of the medicinal and aromatic plants found in the flora of our country. To date, 2.560 seed samples and 3.250 vegetative specimens have been collected and preserved in the National Gene Bank and land gene bank with 2.654 herbarium samples. Collected seed samples are taken from the gene bank over time and characterization and production renewal is done. As a result of these studies, studies are carried out on promising materials. As a result of the studies carried out to date, 150 types of characterization studies have been carried out, and improvement studies are underway. In the coming period, it is planned to continue the genetic resources and production renewal studies in medicinal and aromatic plants. In the conservation studies, priority is given to in-situ conservation and plant collectors are supported by educational activities.

Keywords: Medicinal and aromatic plant, genetic resources, conservation

The Use of Acidified Milk in Calves

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Abstract

It is one of the oldest occupations and livelihoods of people, by using animals to domesticate them. By developing the means of production, the man who manufactures the animals has both sought the technique and is in search of technique to increase their productivity. This is still the case today. Because animal husbandry is the source of indispensable nutrients, essential amino acids. Animal husbandry will continue to be necessary in line with the need for animal products for the increasing population. Nowadays, developing technology and increasing scientific researches allow the growers to reach their goals more easily as well as making more profit. In particular, reducing workload and labor force, and in the meantime to increase the chances of survival of newborn babies by making a healthy feeding is very important for the profitability of the enterprise. Cattle breeders aim to get at least one calf per year from cows and grow healthy. This target is much more important for a breeding business. It is reported that loss of calves is 5% even in developed countries and some of these losses are caused by diseases caused by E. coli-induced diarrhea. Considering that this rate is even higher in developing countries, reducing diarrhea and diarrheal diseases remains important. In many countries and enterprises, calves are fed with milk called acidified milk, in order to protect the young from less troubled nutrition and nutrition-related diseases. In this study, the possible use of acidified milk in calf feeding and possible benefits will be explained.

Keywords: Calf, diarrhea, acidified milk disease

The Production, Adequacy Level, World Trade and Competition Power of Hazelnut in Turkey

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Abstract

Hazelnut is a species of fruit that is consumed because of the important nutrients it contains. In this study, the amount of hazelnut production, adequacy level, foreign trade and competition power of Turkey were examined. In 2017, 1.006.178 tons of hazelnuts were produced in the world. Turkey met a large 70% of this production with 675.000 tons. Italy (131.281 tons), Azerbaijan (43.000 tons), USA (29.030 tons) and China (27.044 tons) are other important hazelnut producers. Turkey's hazelnut adequacy level was 993,2% in 2007 and 413,1% in 2016. Hazelnut export quantity was 133.755 tons according to the data of 2016 and the import quantity was 1.590 tons in Turkey. In the same year, the world's total export quantity was reported as 220.388 tons. The world's most important importer countries are Germany, Italy, and Canada. Turkey met 60% of world exports with this quantity. For this reason, Turkey is the country that directs the global economy in hazelnut world trade. This situation also shows the importance of hazelnut in terms of our country's economy. In this research, the competition power of hazelnut in Turkey between 2009 and 2018 was calculated and it was determined that it has an important advantage in these periods. As a result, Turkey is an important country in terms of production, adequacy level and export potential of hazelnut. It is obvious that Turkey is leading to the world hazelnut market and will continue this mission in many years.

Keywords: Hazelnut, production, adequacy level, foreign trade, competition power

Chinese food heritage and contemporary food trends

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Abstract

Chinese cuisine is widely seen as representing one of the richest and most diverse culinary heritages in the world. It originated in different regions of China and has been introduced to other parts of the world- from Southeast Asia to North America and Western Europe. A meal in Chinese culture is typically seen as consisting of two general components: (1) a carbohydrate source or starch, known as 主食 in the Chinese language (Pinyin: zhǔshí; lit. "main food", staple)- typically rice, noodles, or mantou (steamed buns), and (2) accompanying dishes of vegetables, fish, meat, or other items, known as 菜 (Pinyin: cài; lit. "vegetable") in the Chinese language (This cultural conceptualization is in some ways in contrast to Western meals where meat or animal protein is often considered the main dish). As is well known throughout the world, rice is a critical part of much of Chinese cuisine. However, in many parts of China, particularly North China, wheat-based products including noodles and steamed buns (饅頭) predominate, in contrast to South China where rice is dominant. Despite the importance of rice in Chinese cuisine, at extremely formal occasions, it is sometimes the case that no rice at all will be served; in such a case, rice would only be provided when no other dishes remained, or as a token dish at the end of the meal. Soup is usually served at the end of a meal to satiate one's appetite. Owing to western influences, serving soup in the beginning of a meal is also quite normal in modern times.

Keywords: Chinese food, heritage, culture

Use of Image Processing Techniques in Determination of Plant Disease and Pest Levels: The Case Study of Sugar Beet Leaf Disease

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Abstract

Image processing techniques have been widely used in many agricultural activities. Studies have been carried out on many subjects such as disease, pest and weed detection, determination of plant stresses, yield estimation, monitoring of product development, modeling of irrigation methods, determination of soil properties, monitoring of animal growth, determination of lameness, determination of pain points and body temperatures of animals. In this study, separation process of objects according to their color and shape is investigated in the case studies which are used in the determination of plant disease and damage levels. Then, the segmentation process for the determination of the sugar beet leaf spot disease is explained practically.

Keywords: Image processing, sugar beet, leaf spot disease, plant diseases, plant pests

Structural characteristics of young farmers in Manisa, Uşak, Kütahya

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Abstract

The aim of this study is to determine the characteristics and demographic structure of young farmers who prefer to remain in agricultural production. Manisa, Uşak and Kütahya provinces were chosen as a survey area for the study where agricultural employment is concentrated between the ages of 18-40 within the scope of Sub-Integrated Project of "Determination of the parameters that could be criteria for young farmer support and young people's tendency to stay in agriculture". A survey was conducted with 180 farmers. The data on the socio-demographic characteristics of the enterprises were analyzed with various descriptive statistics. According to the results of the study, when the social insurance status of young farmers is examined, it is seen that 59.4% of them do not have social insurance. For young farmers, it is quite important to be able to connect to the internet in the countryside. 98.3% of the farmers stated that they will continue to do farming and the primary reason of inhabit to the ruralside is that they provide livelihoods there. However, according to the responds given by the young farmers about whether they would like to migrate from the village to the city, it was observed that 24.4% of them tended to migrate from the village to the urbanside.

Keywords: Young farmer, characteristics, remain in agriculture, migration

The role of gelatin and chitosan edible films and coatings in seafood preservation

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Abstract

Seafood is perishable product which has limited shelf-life. During the storage period physical, chemical, and microbiological reactions occur in seafood which accelerate the deterioration and reduce their quality. Different preservation techniques have been used to improve the quality and prolong the shelf life of seafood. Nowadays, edible films and coating are possible opportunities to extend the shelf-life and enhance the quality of food products which are vulnerable to spoilage such as fish fillets. Edible films are thin layered structures of biopolymer composition which are applied onto the surface of food products. Edible films and coatings can retard microbial growth, reduce lipid oxidation and moisture loss. Additionally, this materials can functioning as a carrier of food additives such as antimicrobial and antioxidant agents. Natural polysaccharides and proteins are widely investigated that are currently being explored for the production of films and edible coatings. Chitosan is a biodegradable and biocompatible polymer which is formed by the conversion of chitin. Chitosan exhibits desired chemical properties, antibacterial and antifungal properties that make it suitable for the protection of food products. Gelatin is a biodegradable polymer which has efficient barrier properties against lipids, and ability to form films. Edible films and coating can include antioxidant and antimicrobial agents to increase shelf-life of food. Therefore, edible films and coatings are promising packaging materials for the improvement of food quality and functionality.

Keywords: Fish quality, shelf life, edible films, edible coatings

Color alterations of anchovy (*Engraulis engrasicholus* l., 1758) burgers enriched with garlic peel extract

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Abstract

The effect of garlic peel extract (GPE) on the color properties of fish burgers produced from anchovy was evaluated during storage. Burger formulations comprised 88.2 % minced anchovy meat, 6 % corn flour, 4 % wheat flour, 1.2 % salt, 0.6 % sugar. GPE (prepared from 80% ethanol), along with other ingredients, was added to the fish burgers in concentration of 2% (G2) and 4% (G4). Control group did not contain GPE. The results of the study indicated that addition of GPE effected the *L**, *a** and *b** values of fish burgers during storage period. According to results of study, it can be concluded that addition of GPE influenced the color property of fish burger.

Keywords: Fish burger, garlic peel extract, color property, anchovy

Some Wool Characteristics on the Karacabey Merino Sheep Grown in the Bursa, Turkey

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Abstract

This study was carried out to determine some of the wool characteristics of Karacabey Merino sheep reared in the city of Bursa. In this study, wool samples from 114 Merino sheep (40 male and 74 female) with 1.5, 2.5, 3.5 years age was used for this study. The sheep were distributed to 23 different flocks search of which were located in different regions of Bursa. Wool samples were collected from March to April. Staple length, real fiber length, fiber diameter, clean wool percentage, elasticity, and breaking strength from samples were analyzed at wool-mohair analysis laboratories in Lalahan International Livestock Research and Education Center. The average staple length, real fiber length, fiber diameter, clean wool percentage, elasticity, breaking strength were found to be 6,13±0,134 cm, 7,58±0,149 cm, 25,86±0,239, 46,46±0,777%, 26,79±0,515%, 12,80±0,386 g respectively. The average staple length of female and male sheep was found to be 5.91±0.137 and 6.54±0.279 cm, respectively. There wasn't any significant difference regarding age and gender groups considering all wool traits. Despite the fact that wool quality of Karacabey Merino in Bursa are suitable for textile industry, it may not have enough standards to meet demands of fine and quality wool. Low results in this study to compare other similar studies, most of which were improvement studies and used materials from elite flocks might be attributed to material and methods differences.

Keywords: Karacabey Merino Sheep, Lalahan, wool characteristics, quality

Safety of Corn-DDGS in Animal Nutrition

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Abstract

Distiller's dried grains with solubles (DDGS) is a by-product produced by the use of corn for production of ethanol. Ethanol production increased by 760% between 2000 and 2015, up by 48.8 billion liters and most of this increase was realized after 2007. This increase in ethanol production caused an increase of 37.75 million tons in DDGS production and the increase rate was realized as 1.646%. Turkey imported DDGS in 2015 with 3.6 million tons from the USA, and ranked after China, Mexico and Korea. During the fermentation of corn to ethanol, not only produce ethanol producing microorganisms, but also the other microorganisms in the environment and a significant amount of toxin is produced during the fermentation process. As a matter of fact, in the USA studies showed that there was at least 3-fold mycotoxin in DDGS and serious weight loss occurred in pigs fed with DDGS-induced toxins. In another studies, it was determined that almost all DDGSs examined in the USA in 2010 were contaminated with aflatoxin, deoxynivalenol, zearalenone and fumonisin whereas in these samples deoxynivalenol was 3.5 times higher than normal. On the other hand, corn-derived DDGS contains about 10% crude oil, the majority of which are unsaturated. Unsaturated fats can easily oxidize and cause the body to quickly deplete its antioxidant sources. In addition, a large number of studies showed that the use of 15% DDGS in broiler rations was safer, and the performance values decreased at higher levels of use. During the drying of DDGS at high temperature, the lysine is damaged and its usefulness is significantly reduced.

Keywords: DDGS, GMO, mycotoxins, oxidation, lysine

The Effects of Oregano, Mint and Sage Essential Oils to Quail Diets on Performance, and Carcass Traits

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Abstract

The present study was conducted to determine effects of oregano, sage and mint essential oils on performance carcass traits meat quality and serum antioxidant activity in Japanese quail (*Coturnix coturnix Japonica*). A total of 160 7-day old quail chicks were divided into 4 treatment groups with 4 replicate and of 10 chicks each subgroup. The treatment groups as follows: 1: Control (C, basal diet, no essential oil addition), 2, 3 and 4 groups basal diets contained 30 mg/kg oregano (OEO, *Origanum vulgare*), sage (SEO, *Salvia officinalis*) and mint (MEO, *Mentha piperita*) essential oils, respectively. The body weight (BW), feed consumption, feed conversion ratio, carcass and part yield, meat dry matter, crude protein, crude ash, pH, color were determined. The addition of oregano, sage and mint essential oils in the diets of the quail had no significant effect on the BW, gain, feed intake (except 27 to 34 d), feed conversion ratio, carcass and parts' weight and yield, meat pH, dry matter, crude protein, crude ash, thawing loss, redness (a*) were not influenced by the treatments. However, cooking loss of meat increased in MEO group compared to other groups. Oregano and mint EO addition to quail diets caused a decrease in meat L* and b* values compared to C group. It was concluded that the 30 mg/kg oregano, sage and mint addition to growing quail diets may not affect performance traits, however, it may change meat color and cooking loss.

Keywords: Quail, mint, oregano, sage, essential oil, performance, carcass

Effect of essential oils on calf immunity

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Abstract

The immune system of calves is the body's defense against infectious organisms and it is made difference system including adaptive cell, neutrophil and macrophage functions. Specific adaptive functions of immune system develop 4-5 weeks after the birth, but this is the most likely time for calves to experience diseases. This study will be show benefits of essential oils to immune system of calves that decrease mortality rate, increase calf growth and to find the best response essential oil for immune system that suitable to solve this challenge. I will use different essential oils such as = rosemary, oregano and cinnamon essential oil that benefits Analgesic, antibacterial, anti-infectious, anti-inflammatory and antioxidant. Researches continue to understand the complex immune system of the dairy calf and the absorption of essential oil provides the required immunity for the dairy calf. There are many factors affecting IgG absorption but there's not many data explained or improve ability to increase immune function in the dairy calf so when calves fed deference essential oils had the highest numerical IgA, IgM and IgG titers corresponding well with growth performance data show healthier calves. Consequently, this study will carry out to determine the effect of essential oils on calf immunity and growth performance.

Keywords: Calf, immunity, herbal essential oils

Effect of type of pregnancy on the transcriptional and metabolic response in sheep and its further effect on the progeny lambs

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Abstract

The trial was carried out to determine the effect of type of pregnancy on the transcriptional expression of genes involved in angiogenesis and cell turnover/ lactogenesis in ewe mammary gland during lactation, plus its effect on the performance and muscle transcriptional expression in the progeny lambs. Thirteen Ile de France sheep, 6 twin- and 7 single-bearing ewes were assigned to a diet based *ad libitum* naturalized pasture from day -45 pre- to +70 post-partum, keeping their lambs on the same diet until 60 d after weaning. Samples were collected at different times and analyzed by qRT-PCR. The data was processed using package of R and SPSS version 23.0. The results showed the twin-bearing ewes overexpressed VEGFR1 during angiogenesis and BCL2 during cell turnover/ lactogenesis, however, the single-bearing ewes overexpressed CAIV during angiogenesis and IGF1 during cell turnover/ lactogenesis. The lambs showed similar performance getting also similar transcriptional expression of genes involved in lipid metabolism in the *Longissimus* muscle. In summary, although the type of pregnancy influenced the transcriptional expression of genes involved in angiogenesis and cell turnover/ lactogenesis in the mammary gland, it did not influence the performance or the muscle transcriptional expression in their lambs.

Keywords: Angiogenesis, lactogenesis, transcriptional expression, lamb muscle

Effects of Sowing Time on Herbage Yield and Quality of Lupine

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Abstract

The present study was conducted to investigate the effects of different sowing times on herbage yield and quality of lupine. Experiments were conducted for two years in 2014-2015 with four different sowing dates (1 April, 15 April, 1 May and 15 May) in randomized blocks design with three replications. Effects of sowing date on herbage yield and quality of lupine were found to be highly significant ($P<0.01$). While the years did not have significant effects on green and dry herbage yields, effects of years on plant height were found to be significant ($P<0.05$), and the effects on chemical composition were found to be highly significant ($P<0.01$). The greatest plant height, crude protein yield, green herbage yield, dry herbage yield and crude ash contents were observed in the first sowing date and the lowest values of the same parameters were observed in the fourth sowing date. The greatest crude protein content was observed in the fourth sowing date and the lowest value was seen in the first sowing date. The greatest ADF and NDF ratios were seen in the third sowing date and the lowest values were observed in the fourth sowing date. The greatest digestible dry matter, dry matter intake and relative feed value were observed in the fourth sowing date and the lowest values were seen in the third sowing date. Considering the yield and quality values, the first sowing was considered as the best sowing date for lupine.

Keywords: Lupine, sowing time, yield, quality, relative feed value

Determination of Seed Yield and Straw Quality of Some Triticale Varieties

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Abstract

The research was carried out in randomized block design with three replications during the 2015-2016 growing season under Elazığ conditions. 10 triticale varieties were used in the experiment. Triticale samples were determined in the period of physiological yield and yields were determined. Chemical analyzes were performed on the straws. Biological yield, harvest index, seed yield, straw yield, thousand grain weight, crude protein ratio, crude protein yield, crude ash ratio, ADF (Acid detergent fiber), NDF (Neutral detergent fiber), DMD (Dry matter digestibility), DMI (Dry matter intake) and NYD (relative feed value) properties were examined in this research. The results of variance analyses showed that there were statistically significant differences among some characters [biological yield, harvest index, seed yield, straw yield, thousand grain weight, crude protein ratio, crude protein yield, crude ash ratio, NDF and dry matter intake ($P \leq 0.01$)]. According to the research results; Biological yield ranged between 795.67 and 1392.00 kg/da, harvest index between 21.70 and 36.36%, seed yield between 262.27 and 491.80 kg/da, straw yield between 531.80 and 987.00 kg/da and a thousand grain weight between 31.57 and 42.80 g. On the other hand, the crude protein ratio of the straw obtained after the harvest ranged between 2.22 and 2.94%, crude protein yield between 14.02 and 27.79 kg/da, crude ash ratio between 6.01 and 8.38%, ADF ratio between 50.22 and 53.23%, NDF ratio between 75.42 and 79.03%, DMD ratio between 47.44 and 49.78%, DMI ratio between 1.52 and 1.59% and NYD value between 56.80 and 61.06. According to the research findings; Karma and Umran Hanım varieties, which have high values in terms of seed yield, can be cultivated. On the other hand, in terms of the quality of the straw obtained, it is recommended that Ayşe Hanım cultivates the high protein content, protein yield and dry matter consumption and low NDF ratio.

Keywords: Triticale, seed yield, straw yield, ADF, NDF

Determination of Herbage Yield and Feed Values of Some Triticale Cultivars

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Abstract

The study was conducted to determine green and herbage yield and chemical composition of triticale cultivars. Ten different cultivars of triticale (Melez, Ümran Hanım, Mehmet Bey, Ayşe Hanım, Mikham 2002, Alper Bey, Presto, Tacettin Bey, Tatlıcak 97 and Karma) were used as plant material in the study. Experiment was carried out in randomized block design with 3 replications during the growing seasons of 2015-2016 under Elazığ conditions. The experimental plots were harvested at flowering stage of the plants. Green herbage yield, dry herbage yield, crude protein yield and chemical composition were investigated in triticale cultivars. Cultivars had a significant ($P \leq 0.01$) effect on yield and chemical composition. Results revealed that green herbage yield of the triticale cultivars between 1781.60 kg/da and 3323.70 kg/da, dry herbage yield between 642.07 kg/da and 1264.07 kg/da, crude protein yield between 34.82 kg/da and 139.32 kg/da, crude protein content between 5.43% and 11.39%, crude ash content between 4.37% and 5.62%, neutral detergent fiber (NDF) content between 33.37% and 42.74%, acid detergent fiber (ADF) content between 14.36% and 18.88%, digestibility of dry matter (DDM) between 74.19% and 77.71%, dry matter intake (DMI) between 3.30% and 3.36%, relative feed value (RFV) between 189.65 and 202.69, depending on the cultivars. It was concluded that all triticale cultivars could be used as a quality for animal feeding. Presto cultivar was found to be prominent with crude protein yield and Ümran Hanım cultivar was found to be prominent with relative feed value.

Keywords: Triticale cultivars, hay yield, crude protein yield, feed value, relative feed value

Comparison of Feed Characteristics in Different Legume Grains

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Abstract

The primary objective of the present study is to compare feed characteristics of different grain legumes. For this purpose, common vetch, grass pea, soybean, narbon vetch, forage pea, bitter vetch, lupine and black chickpea were used as the plant material of the study. Samples were analyzed in randomized plots design with 3 replications. The differences in nutritional composition of the present grain legumes were found to be highly significant (P≤0.01). The ADF ratios of the samples varied between 7.90% and 13.53%, NDF ratios between 17.50% and 28.89%, crude ash contents between 2.23% and 3.92%, crude protein contents between 21.01% and 28.81%, crude oil contents between 0.50% and 13.98%, resistant starch contents between 4.90% and 12.9%, non-resistant starch contents between 7.47% and 41.25%, total starch contents between 12.36% and 47.33%, total phenolic contents between 0.11 and 3.30 GAE/g and finally antiradical activity varied between 3.56% and 9.47%. Present findings revealed that soybean and lupine were prominent with their crude protein and crude oil contents, bitter vetch and common vetch were prominent with their starch contents and lupine was found to be prominent with total phenolics and antiradical activity.

Keywords: Grain legumes, protein, total phenolics, NDF, crude oil

Comparison of Feed Characteristics of Different Cereal Grains

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Abstract

This study was conducted to compare nutritional compositions of cereal grains commonly used in animal feeding (maize, triticale, sorghum, wheat, barley and oat). Cereal grain samples were analyzed in randomized plots design with 3 replications. The differences in nutritional compositions of the cereal grains were found to be highly significant at 1% level. ADF ratios of the samples varied between 3.62% and 13.50%, NDF contents varied between 10.86% and 49.43%, crude ash contents varied between 1.40% and 2.86%, crude protein contents varied between 8.76% and 15.50%, crude oil contents varied between 1.10% and 3.36%, resistant starch contents varied between 4.83% and 6.54%, non-resistant starch contents varied between 44.25% and 67.38%, total starch contents varied between 49.29% and 72.64%, total phenolic varied between 0.37GAE/g and 1.31 GAE/g and antiradical activity varied between 7.65% and 12.81%. Oat was found to be prominent with crude protein content, maize with crude oil content and sorghum with total starch and antiradical capacity.

Keywords: Cereal grains, nutritional composition, total phenolics

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Determination of resistance level against imidacloprid of *Leptinotarsa decemlineata* Say (Coleoptera: Chrysomelidae) populations collected from Afyonkarahisar province

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Abstract

Colorado potato beetle, *Leptinotarsa decemlineata* Say (Coleoptera: Chrysomelidae) is one of the major pest that cause significant problems in potato production areas. In order to control the pest and to prevent losses, the chemical control method is the most preferred control method. However, insecticide resistance in the pest makes the chemical control difficult. In this study, imidacloprid resistance levels of Colorado potato beetle populations collected from Afyonkarahisar province which is one of the important potato production areas in our country was determined by topical application method. In all experiments, 3rd instar larvae of Colorado potato beetle were used. Five or six doses were used for each population. Preliminary experiments were carried out to determine the doses that cause 90% mortality rate for the populations. The other doses were obtained from the first dose by serial dilutions of 50% with pure water. The concentrations were applied as 1 µl to the thorax of the larvaes. Three replications for each dose and five individuals in each replication were used. After the application, the larvaes placed Petri dishes which have perforated covers for the fresh air and kept in a climate room in a condition of 16:8 h (L/D) photoperiod, 26 ± 1 °C temperature, and 60-65% relative humidity for seventy-two hours. Fresh potato leafs provided as food in this period and after seventy-two hours dead-live counts were made. The experiments were repeated if 90% mortality ratio at the highest dose and 90% live ratio at the lowest dose were not provided. For this purpose, 3, 3, 1, 1, 1, 1 populations were collected from Sandikli, Suhut, Dinar, Central, Bolvadin, Emirdag districts, respectively, which have the highest potato production areas in Afyonkarahisar province, and the populations were brought to Acarology Laboratory, Department of Plant Protection, Faculty of Agricultural Sciences and Technologies, Isparta University of Applied Sciences. The adults of the colorado potato beetle were collected from the field and cultured in cages in a climate room where 25 ± 2 °C temperature, 60 ± 10, 16: 8 hours photoperiod conditions were provided. The 3rd instar larvaes used in experiments were obtained from these adults. A susceptible Colorado potato beetle population obtained from Agriculture and Agri-food Canada (London Development and Research Center) and cultured in our climate room was used as a reference population. The susceptible population has been rearing for more than 20 years and over 190 generations in climate rooms without any insecticide exposure. Resistance rates of populations were calculated by ratio the LD50 values of the field populations to the LD50 value of the susceptible population. Resistance rates determined for imidacloprid in Sandikli 1, Sandikli 2, Sandikli 3, Suhut 1, Suhut 2, Suhut 3, Dinar, Cental, Bolvadin, Emirdag populations as 3.96, 7.43, 11.33, 14.33, 27.31, 25.08, 9.12, 2.34, 7.46, 8.72-fold, respectively.

Keywords: Leptinotarsa decemlineata, Imidacloprid, Resistance, LD50

Phenotypic Identification of Potential Mycotoxin Producing *Alternaria* Species Isolated from Bozcaada Karalahna and Çavus Grapes

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Abstract

Alternaria spp. is an important plant pathogen that causes leaf and bunch decay in grapes. Severe infections cause to loss of product by spillage of leaves and drying in grapes. In this study, 125 Alternaria spp. isolated from Bozcaada Karalahna and Çavus grapes were investigated. The potential mycotoxigenic status of the isolates were evaluated on Coconut Cream Agar (CCA) medium by the ability to irradiate *Alternaria* toxins (AME, AOH, ATX-1 and ALT) at a wavelength of 366 nm. It was determined that eight isolates gave intense, 13 isolates gave moderately intense, and 30 isolates gave less intense fluorescence. Also, the percentage of isolate distribution by grape type is determined. In Çavuş grapes, 6% of the *Alternaria* species showed strong fluorescence, while 10% and 26% of them gave moderate and weak fluorescence respectively. In *Alternaria* species isolated from Karalahna grapes, these ratios were determined as 8%, 13% and 20% respectively. Almost 60% of the isolates in both grapes indicate no fluorescence. For the identification of possible mycotoxigenic isolates, the phenotypic description was made according to the colour, shape and diameter of the colony in Potato Carrot Agar (PCA), Czapek Yeast Extract Agar (CYA), Dichloran Rose Bengal Yeast Extract Sucrose Agar (DRYES) and Dichloran Glycerol Agar (DG18) media. As a result, among the 21 isolates giving strong and medium fluorescence; eight species were identified as *Alternaria alternata*, four species as *Alternaria tenuissima* and nine species as *Alternaria infectoria*.

Keywords: *Alternaria*, Karalahna, Çavuş, coconut cream agar

Spirodiclofen resistance levels in *Tetrancyhus urticae* Koch (Acari: Tetranychidae) collected from oil rose production areas of Isparta province

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Abstract

Two spotted-spider mite, *Tetrancyhus urticae* Koch (Acari: Tetranychidae) is a one of the most commonly polyphagous insect species in agricultural areas around the world. In order to control the insect and to prevent losses, the chemical control method is the most preferred control method. These pests facilitate the development of resistance to acaricides after several experiment due to their phytophagous structure, high reproductive potential and a short life cycle. In this study, spirodiclofen resistance levels was determined by bioassay methods in the two-spotted spider mite populations collected from oil rose production areas of Isparta province which is one of the important oil rose production areas in our country. In this study, 3, 3, 2, 2, populations were collected from Deregumu, Ardicli, Atabey, Gonen districts, respectively, which have the most oil rose production areas in Isparta province, and the populations were collected and brought to the Acarology Laboratory, Department of Plant Protection, Faculty of Agricultural Sciences and Technologies, Isparta University of Applied Sciences. The rose leafs containing *T. urticae* were collected from field and cultured on fresh bean plants placed in water-filled cuvettes in 25 ± 2 °C temperature, 60-70% humidity and 16:8 h photoperiod conditions were provided. A reference population of *T. urticae* GSS (german susceptible strain) obtained from Rothamstad Experimental Station (England) in 2001 and cultured in a climate room in Toxicology Laboratory, Department of Plant Protection, Faculty of Agricultural Sciences and Technologies, Isparta University of Applied Sciences. Seven doses and three replicates were used in the experiments. Preliminary experiments were carried out to determine the doses that cause 90-99% death of the populations. The other doses were obtained from the first dose by series dilutions of 50% with pure water. The doses were conducted between 10% and 95-99% death rates in populations and LC50 values were determined. Prepared spirodiclofen concentrations were applied to 9 cm diameter Petri dishes under 1 atm pressure using a spraying-tower each Petri dish containing 3 cm diameter bean leaf-disc and humidify cotton on the base. Twenty-five individuals used in each replicate. After the application, Petri dishes with perforated lids for fresh air were kept in the 16: 8 s (L / D) photoperiod, 25 ± 2 ° C temperature and 60-70% relative humidity for twenty to four hours and counts were made. The experiments were repeated if 90-95% dead ratio at the highest dose and 90% live ratio at the lowest dose were not provided. Resistance rates of populations were calculated by ratio the LD50 values of the field populations to the LD50 value of the susceptible population. Resistance rates determined for spirodiclofen in Deregumu 1, Deregumu 2, Deregumu 3, Atabey 1, Atabey 2, Ardicli 1, Ardicli 2, Ardicli 3, Gonen 1, Gonen 2 populations as 1.91, 1.17, 1.17, 1.37, 1.71, 1.61, 2.02, 1.97, 1.91, 1.91-fold, respectively.

Keywords: *Tetranychus urticae*, spirodiclofen, LC50, oil rose

Heat Stress and Heat Shock Protein Genes Mediated Cellular Responds in *Ovis aries*

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Abstract

Humanity in the process of the sixth mass extinction confronts a problem with the effects of global climate change, which has been accelerated by its own activities and is considered to be the greatest threat to date. The decrease in agricultural areas and grassland due to global warming and the change of climate zones cause many problems and negatively affect the agricultural and livestock activities of the countries. The sheep breeding is of great importance in order to provide the nutritional and economic need, especially meat and milk, in changing climate conditions. Because sheep can convert low quality feed to high quality animal protein and adapt to a wide range of climates. The effects of heat stress on animal production yields are observed in domestic animals especially, ruminants as well as wild animals. Although there are many studies on the physiological response to heat stress, the information on the cellular and genetic level is not clear. One of the most important elements of the cellular response is the heat shock protein (HSP) genes. The aim of this study is to investigate the gene ontology and pathway analyses of HSP40, HSP70, HSP90, and HSP110 (NEF) superfamily based on the Heat Shock Proteins (HSP) which play an active role against heat stress in sheep. KEGG and Reactome web-based databases were used for pathway analysis. According to the pathway analysis results, HSP90AA1 has been found to play an important role in cell cycle progression and cell survival. Also, in Reactome analysis, HSP gene superfamily of sheep showed high homology with *Bos taurus* and *Homo sapiens*.

Keywords: Heat Shock Protein, Heat Stress, Sheep

The Effects of Graded Drying and Storage Conditions on Germination and Emergence Performance of Eggplant (*Solanum melongena* L.) Seeds

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Abstract

Water is extensively involved in the life cycle of seeds and in the environment, either as a vapor or liquid, directly affects seed moisture status. Since the change of seed moisture content affects the rate of seed viability, it is important for seed quality and viability. Moisture content is an important variable in most studies related to seed germination and early seedling growth physiology. Seed drying up to a certain level of moisture in the seed are important for storage. The study was carried out in the research laboratory of the Faculty of Agriculture and Natural Sciences of the University of Uşak with the seeds of the Aydın Siyahı eggplant variety. Drying applications; 20 hours at 20-30 °C, seeds were left on the surface 5 ml of pure water then for a quick drying application in one seed group of saturated $CaCl_2$ solution was kept for 48h and weighed every 2 hours. The other group was incubated for 24 hours in the saturated KNO_3 solution for a slow drying and then 24 hours in saturated $CaCl_2$ solution and weighed every 2 hours. After the control and drying groups were stored at 5 °C and -20 ° C for 1 month, germination (4x25 seeds, 18 and 25 °C, 14 days) and emergence (4x25 seeds, 18 and 25 °C, 21 days) tests were established. According to the results; at the germination test seeds viability were ranged between 100-8% and seedling rate were 92-8%. The mean germination time was varied between 2.5-13.5 days and emergence time was 8.0-18.8 days. As a result of all applications, seeds were exposed to rapid drying application which maintained the highest viability among the groups.

Keywords: Eggplant, drying, storage, moinsture content, germination and emergence performance

Effect of graded drying and storage conditions on the viability of watermelon (*Citrullus lanatus* (Thunb.) Matsum. & Nakai) seeds

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Abstract

Watermelon seeds can maintain their vitality between 5-8 years and they have a germination and emergence performance in the range of 10-30 °C. Water is essential for whole life stages and seed moisture content has a major role in the ecology life cycle of seeds. Beside that moisture content plays a major role in maintaining the quality of stored seeds. It is important to determine the level of moisture content in stored seeds to reduce quality loss. The seed's ability to withstand desiccation after hydration is according to the hydration phase. In the study, the viability of the seeds of Crimson Sweet variety were compared with different drying processes. In this context drying practices; 20 hours at 20-30 °C, seeds were left on the surface 5 ml of pure water then for a quick drying application in one seed group of saturated $CaCl_2$ solution was kept for 48h and weighed every 2 hours. The other group was incubated for 24 hours in the saturated KNO_3 solution for a slow drying and then 24 hours in saturated $CaCl_2$ solution and weighed every 2 hours. After the control and drying groups were stored at 5 °C and -20 °C for 1 month, germination and emergence tests were established. Germination (4x25 seeds, 18 and 25 °C, 14 days), emergence (4x25 seeds, 18 and 25 °C, 21 days) tests were conducted. According to the results; in the germination test, the viability of the species was ranged 100-4% and the seedling emergence rate varied between 44-1%. The mean germination time was ranged between 1.6-10.6 days and the mean emergence time was 3.9-17.4 days. As a result of all applications, the group that maintains its vitality was stored at 5 and -20 °C after slow drying.

Keywords: Watermelon, drying, moisture content, storage, seed viability

The Effect of Enrichment of Biscuits by Carob Molasses on Physicochemical, Functional and Sensory properties

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Abstract

This study was to investigate the effects of replacing sugar partially (50%) or completely (100%) with carob molasses in biscuit formulation on physicochemical, sensory and functional properties. The composition (moisture, ash, fat, sugar, protein and mineral) of the biscuits produced was determined; pH, aw, color properties and hardness were measured. The antioxidant properties of the biscuits and total phenolic content were determined. Smell, color, texture, flavor and overall acceptability of biscuits were determined by consumer test and the sweetness level by descriptive sensory test. The increase in the amount of molasses resulted in a decrease in L* and an increase in a* and b* values. When the %100 of sugar was replaced with carob molasses, the hardness value was reduced from 24,67 N to 16,70 N compared to the control sample. Protein content increased from %6,33 to %7,61 when sugar was completely replaced with carob molasses. While control contained %24,47 sugar, sugar content was reduced to % 17,45 by replacing sugar totally with carob molasses. The total phenolic content of the control sample was 1,11 mg GAE/g, whereas the replacement of sugar totally with carob molasses resulted in an increase in the total phenolic content of the biscuit sample to 2,40 mg GAE/g. Sensory analysis showed that partial replacement of sugar resulted better sensory scores than the control for all attributes. Addition of cinnamon to samples with total sugar replacement improved their scores to the level of partially replaced samples by masking undesirable flavors from carob. Thus, biscuits with enhanced nutritional profile and lower sugar content were produced without decreasing sweetness.

Keywords: Carob molasses, phenolic, sensory, sugar substitution

Factors Affecting Semen Production and Thermoregulation in Buck Kept under Adverse Climatic Conditions: A Review

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Abstract

Climate change associated with heat stress impairs negatively on reproductive functions in both male and female animals, particularly to farm animals. In buck, the exposure to harsh climatic conditions, namely, elevated temperature and solar radiation causes detrimental changes in biochemical, physiological parameters of blood and endocrinal system. These changes induce important impairment of spermatogenesis process associated with low quality and quantity of semen. To be able to live in this uncomfortable thermal condition, bucks develop some physiological and behavioral adaptation by reducing their heat production, through increasing heat loss. In addition, increase in body temperature decrease feed intake while water consumption increase. To alleviate heat stress some strategies such as use of sprinklers in feedlots, evaporative cooling and feeding techniques may be used. The aim of this review is to determine factors affecting semen production and thermoregulation of bucks in hot and humid regions.

Keywords: Heat stress, buck, spermatogenesis, semen, alleviation, thermoregulation

Leaf Area Modeling with Linear Measurements in Melon Plant

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Abstract

Simple, accurate and non-destructive methods used in the determination of leaf area of plants have an important place in many experimental comparisons. In this study, different calcium levels (0, 5, 10, 20 and 30 kg / da) of melon plants grown in greenhouses, and different amounts of irrigation water (I50, I75, and I100) leaf area models have been developed and these models are aimed to determine leaf areas without damaging the plants. For this purpose, 30 pieces of leaves were collected from each application (total 1350 pieces) and wide (W), length (L) and areas (LA) of these leaves were determined. The area measurements were made by digital planimeter while the width and height measurements were made by digital calipers. The mathematical estimation models between leaf wide, leaf length and leaf area values are; It was created according to MLR method in Unscrambler software. For the comparison of the models, RMSEP and R2 values obtained from Unscrambler software were used for each model. Mean leaf area values of plants grown at I50Ca0 and I100Ca30 irrigation and calcium levels (100.3 cm^2 and 165,4 cm^2) were found. The most successful model obtained in the research; Leaf Area (cm^2) = 0.3375 * (W2 + L2) - 0.3579 (RMSEP = 15.76 and R2 = 0.97) was determined. Thus, plant leaf areas and Leaf Area Index (LAI) values which can be realized by using very expensive devices and / or plant removal in all agricultural researches related to plant development have become possible by simple direct measurements. It is also possible to take measurements on the same leaf during the growing season.

Keywords: Leaf area, growth model, leaf area index

The Effect of Different Doses of Whey on Some Fungi in Vitro Conditions

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Abstract

Whey is rich in nutrient content and it is the excess liquid remaining after cheese production. Whilst the cost of whey is high, a large proportion is disposed of as waste to environment. Recently, however, the use of whey in agricultural areas has become widespread. Therefore, in this study, the effects of whey on some pathogen and antagonist fungi in different doses were investigated in vitro conditions. *Alternaria solani, Fusarium oxysporum, Sclerotinia sclerotium* were determined as pathogen fungi and Trichoderma harzianum fungus was determined as the antagonist. 5%, 10%, 15% and 20% doses of whey were used against these fungi. For this purpose, sterile whatman papers with diameters of 5mm were maked suck with liquid whey doses. Sterile distilled water was applied to the control applications. The fungi, taken in 5 mm diameter with a cork borer from one-week cultures, were planted in the center of the petri dishes. The papers, which were impregnated with whey, were placed on both sides of the fungal discs at intervals of 3 cm. After 7 days, the measurements were calculated as %. As a result of the calculations, doses of the determined were found to have a low effect to *S. sclerotium*. On the other hand, the 20% doses was found to be the most effective dose against *A. solani* with a rate of 44.66% and with a rate of 37.87% against *F. oxysporum*. It was also found that the 10% dose was the second best dose with 43.34% ratio to A. solani and 33.34% to *F. oxysporum*. The effects of whey on pathogens as well as the absence of any dose against the *Tharzianum* antagonist were an important result in terms of agricultural struggle.

Keywords: Whey, whey doses, fungi

Weeds as Host Plants for Viruses in Second Crop Maize Fields in Hatay-Turkey

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Abstract

Hatay is one of the most important provinces as a growing area for vegetable and industrial crops such as corn=maize (*Zea mays* L.) in Turkey. Maize is an important source of food and industrial raw materials. Maize is generally grown as main crop, but also grown as second crop after harvesting winter wheat in Hatay as well as in other many growing regions of Turkey. Biological indexing (sap inoculation onto test plants) and serological (DAS-ELISA) methods were used investigate some important viruses in different weed species exhibited symptoms associated with viruses in maize fields in Hatay. Maize dwarf mosaic virus (MDMV), Sugarcane mosaic virus (SCMV), Maize chlorotic mottle virus (MCMV), and Cucumber mosaic virus (CMV) and Potato virus Y (PVY). CMV and PVY which are known as problem in vegetable crops in the region were identified as main viruses in common weeds in maize fields in Hatay by using bioassay and DAS-ELISA methods. The incidence rates of both CMV and PVY were determined as 2/16 and 4/16 in symptomatic *Solanum nigrum*, and 4/20 and 6/20 in *Physalis angulata* samples, respectively. Investigated viruses were not detected in symptomatic *Amaranthus retroflexus, Chenopodium album, Portulaca oleracea* and *Xanthium strumarium* samples collected from maize fields. CMV and PVY were able to transmit to healthy test plants (*Nicotiana tabacum, N. glutinosa, Vigna unguiculata* etc.) by aphid, Myzus persicae adults. Weeds play a role as host plants for important viruses such as CMV and PVY for spreading to other important crops as vegetables from second crop corn fields in the same region during summer period. Investigation of viruses on weed species belonging to grass family (*Poaceae*=Gramineae) such as *Sorghum halepense, Cynodon dactylon* etc in maize fields is in progress.

Keywords: Bioassay, corn, maize, vector, virus, weed

Additional Note: This study was supported by Hatay Mustafa Kemal University Scientific Research Projects Coordination Unit (Project No. 18.YL.080).

Main Viruses of Parsley (*Petroselinum crispum*) and Their Natural Hosts and Vectors in Hatay-Turkey

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Abstract

Hatay is the main parsley production area of Turkey. Viruses which cause diseases in parsley plants and their natural hosts and vectors in parsley cultivated areas in Hatay province were investigated in 2017-2018. A total of 220 symptomatic parsley samples were collected from suspected plants and examined by using symptomological, biological (sap inoculation) and serological (DAS-ELISA) methods. The most common symptoms were observed as severe stunting, mosaics, yellow blotches or necrotic spots, crinkling, vein clearing, chlorosis, or reddening of leaves. PVY (18.6%), CeMV (14.1%) and CMV (7.7%) infections were determined in suspected parsley plants. These virus infections were also found to be mixed infections as double (PVY+CeMV), (PVY+CMV) or triple (PVY+CeMV+CMV) infections in parsley plants. Amongst the co-infections, most of the mixed virus infection was PVY+CeMV (3.2%). In suspected parsley samples, AMV, ArMV, BBWV, EMDV, TBRV, TMV, TSWV and TYLCV infections were not found. *Myzus persicae, Aphis fabae* and *Macrosiphum euhorbia* colonies were inspected on parsley plants during spring and autumn periods. *Helix* spp., *Nezara viridula*, *leafhopper* spp., red mite, thrips and their damages on parsley plants were also inspected in the fields. PVY was positively tested in *Urtica dioica* and *Solanum nigrum*. CeMV was detected in *Dacus carota* (wild carrot) and *Mercurialis annua*. *Malva sylvestris*, *Mercurialis annua* and *Orabanche ramosa* samples were found to be infected with CMV. AMV was detected in Stellaria media. CeMV and PVY infections were firstly detected in parsley plants in Turkey. This is the first report of CMV infection in parasitic plant *Orabanche ramosa* which was one of the main weed species in many parsley fields, and CeMV infection in *Daucus carota* (wild carrot) and *Mercurialis annua* samples in parsley growing areas in Turkey.

Keywords: Parsley, *Petroselinum crispum*, pest, vector, virus, weed

Additional Note: This study was supported by Hatay Mustafa Kemal University Scientific Research Projects Coordination Unit (Project No. 17.YL.006).

Cultivation and Importance of Black Cumin Seed

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Abstract

Black cumin is a traditional spice plant from ancient civilizations. Black seed (Black cumin) is annual, herbaceous plant, which belongs to *Ranunculaceae* family and growns especially in Eastern Mediterranean countries and other parts of the World. *Nigella sativa* is native to Eastern Mediterranean countries and East- South Europe. In Turkey, it cultivates in Isparta, Istanbul, Amasya, Mersin, Gaziantep, Kahramanmaraş and Thrace region. Due to its small seeds, soil bed preparation should be done carefully as early as possible in spring. 1.5-2 $kg.da^{-1}$ seed enough with seeder machine. Harvest starts when fruits turns dark browm. Seeds are the most important part of the plant and the shape is ovoid, triangular and 3 mm length. Black seeds were using for the cure of headache, nasal congestion, tooth pain, intestinal worms, expectorant and lactation enhancer in ancient Greek and Egypt medicine; bronchial asthma, headache, dysentery, infection, obesity, backpain, hypertension and gastrointestinal problems in East and Far East. Cure for egzema is accepted in all over the World.

Keywords: Black cumin, cultivation, seed, medicine

Effects of Different Temperature and Modified Atmosphere Storage on Mulberry *Morus alba* L. Storage

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Abstract

In this study, the physical and biochemical changes of the Mulberry *Morus alba L.* were investigated during 9 days of preservation at Different Temperature and Modified Atmosphere Storage. The Mulberry *Morus alba L.* used in the study was taken to preservation at 90-95% relative humidity at 0°C and 2°C immediately after the harvest. Samples stored in Modified Atmosphere were analyzed daily. During the study period, weight loss (g), color (L*, a*, b*, C*, h°), water soluble dry matter (SCCM). In addition, sugar (fructose, glucose) quantities (mg/100ml) were determined using high pressure liquid chromatography (HPLC).

Keywords: HPLC, *Morus alba* L., mulberry, sugar

Total phenolic, Flavonoid and Antioxidant Activity of Different Citrus Fruits

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Abstract

Citrus is one of the most important horticultural crops in the world because of their nutritional value and special flavour. Citrus fruits contain significant amount of antioxidants, such as vitamin C, flavonoids, carotenoids, coumarins and limonoids, which appear to have biological activities and health benefits. The aim of this investigation was to evaluate the antioxidant properties of some whole citrus fruits. The contents of total phenolics, flavonoids and DPPH radical scavenging activity of bergamot, sweet orange, blood orange, lemon, grapefruit and bitter orange were determined. Total phenolic contents were ranged from 209.46 to 529.19 mg GAE/100 g fresh weight (FW). Total flavonoid contents were varied between 10.81 and 24.47 mg CE/100 g FW and IC50 values were varied from 13.82 to 44.82 mg/mg DPPH FW. The highest content of total phenolic and flavonoid were found in blood orange, while sweet orange had the highest DPPH radical scavenging activity.

Keywords: Antioxidant activity, citrus, flavanoid, phenolic

Determination of Essential Oil Components of Endemic *Sideritis vulcanica* Hub-Mor Collected from Elazığ Location

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Abstract

Sideritis L. which is a member of *Lamiaceae* family, is one of the common and most deployed plants of the world. Sideritis species are naturally grown in Turkey as 45 species and 55 taxas. Sideritis vulcanica is an endemic plant which grows in Turkey and is used as folk medicine. In this study, Sideritis vulcanica Hub-Mor was collected from Elazığ location. After the drying of the plant, essential oil was obtained at Clevenger device and essential oil components were determined in GC-MS/FID device at Bati Akdeniz Agricultural Research Institute. As a result, borneol (22.75%), β-caryophyllene (13.57%), β-bisabolene (11.99%), β-pinene (10.03%) and α-pinene (7.38%) were determined as the main essential oil components.

Keywords: Sideritis, essential oil components, GC-MS/FID

Determination of soil productivity situations of agricultural areas close to the seaside in Menemen left bank irrigation systems

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Abstract

In point of sustainability, it is necessary to determine physical, chemical and fertility properties of agricultural land. Soil fertility refers to the ability of soil to sustain agricultural plant growth, i.e. to provide plant habitat and result in sustained and consistent yields of high quality. This study was carried out to determine some physical and chemical properties of the agricultural land close to the seaside of Menemen left bank irrigation system which is located in western Aegean Region. For this purpose, 1x1 km grids were created in North-South and West-East direction around the Süzbeyli and Tuzcullu villages located in close to the seaside of Menemen Plain. Totally 25 points were determined. Soil texture, pH, available phosphorus, available potassium, organic matter analyses and total nitrogen were analysed in the samples taken from 0-20 cm and 20-40 cm soil layers each 25 points. With this analyses and calculations, 0-20 cm and 20-40 cm layers of soil respectively; texture is loamy, pH is 7,8-8,0 (weak alkaline), available phosphorus 11,9–7,0 kg/1000m^2 (high), available potassium 143–116 kg/1000m^2 (high), organic matter % 1,4–1,1 (low) and total nitrogen % 0,070-0,056 (low) were found.

Keywords: Soil productivity parameters, Menemen plain, irrigation

Effect of soybean oil on industry food

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Abstract

Soybean is an important vitamin-like food, containing biotin, which is one of the vitamins important to the body, it also contains proteins and other substances with high nutritional value. Soybean reduces harmful cholesterol in the human body and protects against Alzheimer's disease, soybean useful in regenerating skin cells and strengthening hair follicles. It has many other important benefits to human health because it contains amino acids basic in the human body, proteins and other chemicals that reduce the protein changes in the brain. Due to the importance of soybean for its essential food ingredients, it has been used in important food industries. Oil is extracted from soybean seeds, due to the great benefits of this oil, which is useful for the health of bones and skin, helps to balance the level of cholesterol and reduce harmful cholesterol, is an oil rich in antioxidants help to regenerate cells and tissue growth and are used as food additives to prevent food oxidation, helps to improve remembering functions, and many other benefits that made it from oils used in the food industry widely. Despite the many benefits of soybean oil, foods containing soybean oil should not be consumed in large quantities to avoid health damage, unless it takes evenly balanced.

Keywords: Soybean, soybean oil, food industries, human health

General Characteristics of Tree Diseases used in the parks of Baku/Azerbaijan

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Abstract

Disease, its constituent trees symptoms and weakness. Fighting measures that are similar to the symptoms of the disease, but are not parasitic or infectious, are different from the infections. As a result, similar external and internal signs of infections and non-infections diseases are grouped according to their forms. Disease forms are multiply, but the partial spread of the disease is not much. Decay - is the splitting and mitigating of plant tissue created by fungi and bacteria. Fruit and seeds have decay and fatigue, as well as root and corpus decay. Root decay prevents the soil water from expelling the roots from the foodstuffs to the ground surface of the plant and causes the trees to dry. Necrosis is the death of separate organs and tissues. Mumination - fruit is a disease that occurs by the formation of skletocytes in the seeds or their transformation into fungi stroma. Dullness occurs in various shapes, sizes and colors from the effects of fungus, bacteria, virus infections, gas poisonings, chemicals and solar rays. As a result of this disease, the growth process is weakening, the leaf dries out, and the strength of the branches is weakened by resistance to infectious diseases and non-parasitic factors.

Keywords: Tree diseases, bacteria, fungi