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Content

Guava (<i>Psidium guajava</i> L.) Tohumlarında Ekim Öncesi Tohum Uygulamalarının Çıkış ve Ortalama Çıkış Süresi Üzerine Etkisi	10
Emine ERĖAN, Kübra ÖZMEN, Kazım MAVİ	
Papaya (<i>Carica papaya</i> L.) Tohumlarında Priming Uygulamalarının Çıkış ve Fide Kalitesine Etkisi.....	11
Kübra ÖZMEN, Emine ERĖAN, Bünyamin ŞAHİN, Kazım MAVİ	
Bazı Elma Çeşitlerinde Meyve Tutumu ve Anaçların Meyve Tutumuna Etkisi.....	12
Halis KAYA, Derya KILIÇ, Safder BAYAZIT	
Ateş Dikeni (<i>Pyracantha</i>) Çeliklerinin Köklenmesi Üzerine Farklı Uygulamaların Etkileri.....	13
Fulya UZUNOĖLU, Derya KILIÇ, OĖuzhan ÇALIŞKAN, Kazım MAVİ, Safder BAYAZIT	
Burkina Faso'nun Domates Yetiştirme Durumu.....	14
Ousseini KIEMDE.....	14
Agronomic and Socioeconomic Obstacles to Maize Production in Jowhar District, Middle Shabelle, Somalia	15
Yahye Omar MOHAMUD, Musab Abdulkadir ISAK	
Fatty Oil and Fatty Acid Compositions of Fenugreek Cultivar Grown Under Irrigated and Dryland Conditions ..	16
Mahmut CAMLİCA, Gulsum YALDİZ	
Farklı Sulama Seviyelerinin Yerfıstığında (<i>Arachis hypogaea</i> L.) Yağ Asidi Kompozisyonuna Etkisi.....	17
Tahsin BEYÇİOĖLU, Mualla KETEN GÖKKUŞ, Fatih KILLI, Haroon KHAN	
Importance of Beans in Agriculture.....	18
Farkhod KHASHİMOY, Kubayeva Munira TOSHMURODOVNA	
<i>Satureja hortensis</i> Bitkisinde Ontogenetik Varyabilitenin Herba Verimi ve Uçucu Yağ Üzerine Etkisi.....	19
Osman GEDİK, Nurdan Gül KÖRÜK, Ferhat AĖCA, Orçun ÇINAR, Ömer Süha USLU	
Leaf Color Parameters of Selected Basil Genotypes	20
Gülsüm YALDIZ, Mahmut ÇAMLICA	
Dissect of Genetic Architecture in Controlling Phenotypic Variation of Sunflower Traits.....	21
Yavuz DELEN, Gen XU, Semra PALALI DELEN, Jinliang YANG, Ismail DWEIKAT	
Acceptable Ratio and Norm of Nutrient Utilization in Different Growth Phases of Winter Wheat in The Conditions of Irrigated Meadow-Gray Soils if Samarkand Region	22
Mamadiyar KHAİTOV, Dostonbek MIYAZMOV, Fakhridin MO'MİNOV, Bakhtigul TURABOYEVA	
Dissecting The Genetic Linkage Between The Toxic Metal (Cd) And Essential Minerals (Zn – Fe) in Maize.....	23
Semra PALALI DELEN, Gen XU, Jinliang YANG	
Integrated Weed Management in Maize (<i>Zea mays</i> L.).....	24
Muhammad IBRAHİM, Haroon KHAN	
Integrated Weed Management in Okra (<i>Abelmoschus esculentus</i> L.) in Pakistan	25
Haroon KHAN, Ömer Süha USLU, Osman GEDİK	
Process Design and Simulation of Green Ammonia (NH₃) Production in Changing Climate Scenario.....	26
Hadeeq-UZ-ZAMAN, Haroon KHAN	
Challenges and Prospects of Aquatic Weeds Management in Pakistan	27
Haroon KHAN, Ömer Süha USLU, Bakhtiar GUL	
Farklı Kurutma Yöntemlerinin Kahramanmaraş Tipi Kırmızı Biberde Aflatoksin Oluşumu Üzerine Etkileri	28
Mustafa DİDİN, Sercan DEDE	
Sulfur-Doped Graphene Paper Electrode for Pathogen Detection in Food	29
Omer SADAK	
Hatay'da Üretilen Zeytinyağlarında Özgül Absorbans Değerlerinin Belirlenmesi ve Bu Değerlerin Zeytinyağı Tağışındaki Önemi	30
Mustafa DİDİN	
The Interdependence of The Humus and The Effectiveness of Mineral Fertilizers on Irrigated Soils of The Zarafshan Valley	31
Farkhod KHASHİMOV, Otabel TASHKENBAEV, Akhadova CHEKHROZ	
Effects of Some Abiotic Stress Factors on Fruit Trees in Global Climate Change.....	32
Birgül DİKMETAŞ, Bekir Erol AK, Sovetbek KENZHEBAEV, Qutbuddin YAQUBİ	
Yarı Kurak İklim Koşullarında Kabak (<i>Cucurbita pepo</i> L.) Bitkisinin Bitki Su Tüketiminin Belirlenmesi	33
Ali Beyhan UÇAK, Cafer GENÇOĖLAN, Serpil GENÇOĖLAN	

Effect of Ecological Conditions on Petal Color and Different Characteristics of Halfeti Black Rose (<i>Rosa X Odorata</i> 'Louis XIV') Cultivated in Türkiye.....	34
İbrahim Halil HATİPOĞLU, Bekir Erol AK, Lolav RAJAB AL-ZMORI, Ary Taher RASUL	
Bazı Dış Mekan Süs Bitkileri Mini Çeliklerinde Köklenme Ve Kök Kalitesi Üzerine Dışsal İba Dozlarının Etkisi .	35
Hüseyin ÇELİK	
Perspective Varieties of Cherry (<i>Cerasus avium</i> Moench.) in Uzbekistan.....	36
Davlat NORMURADOV, Bakhrom KHALMIRZAEV, Doniyor KHUDAIBERDIEV	
The Usage of Node Culture in Vitro Conditions.....	37
Necla ŞAŞKIN, Bekir Erol AK, Heydem EKINCI	
Bazı Ceviz Çeşitlerinde Meyve ve Kimyasal Özelliklerin Ekolojilere Göre Değişimi	38
Safder BAYAZIT, Oğuzhan ÇALIŞKAN, Mehmet SÜTYEMEZ	
Samsun'da Yetişen Kuzeyli ve Güneyli Yüksek Boylu Maviyemiş Çeşitlerinin Meyve İçeriği, Antosiyanin ve Antioksidan Miktarlarının Tespiti	39
Hüseyin ÇELİK, İlkey KOCA	
Determination of Genetic Diversity of Some Parsley (<i>Petroselinum crispum</i>) Genotypes.....	40
Ömer Faruk COŞKUN, Yakup Fevzi GÜNDÜZ, Seher TOPRAK, Kazım MAVİ	
Determination of Genetic Diversity of Hatay Pepper Genotypes (<i>Capsicum annum</i>) by ISSR Technique.....	41
Ömer Faruk COŞKUN, Vehbi ATEŞ, Seher TOPRAK, Kübra ÖZMEN, Kazım MAVİ	
Hatay İli Bağcılığının Mevcut Durumu ve Son On Yıldaki Gelişimi	42
Özge KAYA DEMİRKEŞER, Ahmet Erhan ÖZDEMİR	
Quality of Grapes of Feteasca Neagra Wine Variety Depending of Grow Region from The Republic of Moldova .	43
Gheorghe NICOLAESCU, Olga MOGİLDEA, Mariana GODOROJA, Cornelia VOINESCO, Valeria PROCOPENCO, Andrei KIMAKOVSKI, Ion DOSCA, Gheorghe MATCU	
The Productivity of The Viorica Variety by Growing in The Southern Grape Wine Region of Moldova.....	44
Ana GRIBCOVA, Serghei CHISILI, Angela DUMITRAŞ, Alvina CEBAN	
Development of The Leaf Surface The Clone R5 Cabernet Sauvignon Variety in The Southern Region The Republic of Moldova	45
Serghei CARA	
Hatay'da Üretilen Zeytinyağlarında Trilinolein (Trigliserit) Değerlerinin Belirlenmesi ve Bu Değerlerin Zeytinyağı Taşıdığındaki Önemi	46
Mustafa DİDİN, Nimet OKAY	
Physicochemical Analysis and Fatty Acid Profile of Olive Oil Extracted from Arbequina Variety and Its Comparison with Selected Commercial Brands	47
Ali Muhammad, Kenan Sinan Dayısoylu, Elife Kaya ³ , Khayam Raza	
Tüketicilerin İşlenmiş Piliç Et Ürünleri Satın Alma ve Tüketim Tercihlerinin Belirlenmesi: Hatay İli Örneği.....	48
Oğuz PARLAKAY	
Photoinitiated Polymers and Graphene - Based Aeorgel for Agricultural Wastewater Pollutants	49
Omer SADAK, Sundaram GUNASEKARAN	
Evaluation of The Organoleptic Characterization of Some Fresh Figs Destination	50
Taťjana KOKAJ	
Örtüaltı Domates Yetiştiriciliğinde Kalsiyum (Ca) Uygulamalarının Verim, Kalite ve Çiçek Burnu Çürüklüğü Üzerine Etkileri.....	51
Tamer SERMENLİ, Sefer BOZKURT, Gülsüm SAYILIKAN MANSUROĞLU, Celil TOPLU	
Yarı Ekstansif Koşullarda Yetiştirilen Akkaraman ve Bafra X Akkaraman G1 Koyunlarda Süt Bileşenlerinin Belirlenmesi ve Karşılaştırılması.....	52
Ömer Faruk GÜNGÖR	
Kolostrum Kalitesinin Tespiti ve Kolostrum Kalitesine Etki Eden Faktörler	53
Songül YÜCA	
The Influence of Non-Traditional Feed Additives on The Tasting Evaluation of Hens Meat Adler Silver	54
Larisa CAISIN, Alla CARA	
Kaplanmış ve Kaplanmamış Esansiyel Yağların Broilerlerde Performansa Etkisi	55
Muhammet GÖREN, Emel GÜRBÜZ	
Kırşehir İlinde Satışı Yapılan Tavuk Yemlerin Besin Madde İçeriklerinin Belirlenmesi	56
Hüseyin ÇAYAN.....	
Kanatlı Hayvanların Beslenmesinde Yosun Türlerinin (Algler) Kullanımı.....	57

5th International Agricultural Congress 5-6 December 2022 (Online)

Mehmet Akif ÖZCAN, Alla CARA

Akkaraman Kuzularda Kulak Uzunluğu ile Besi Performansı ve Bazı Kesim Özellikleri Arasında Korelasyon Var mı?	58
Ömer Faruk GÜNGÖR, Necmettin ÜNAL, Ceyhan ÖZBEYAZ	
‘Zutano’ Avokado Çeşidinin Muhafazasına 1-Methylcyclopropene Uygulaması ve Modifiye Atmosferde Paketlemenin Etkileri	59
Canan AYDINLIOĞLU, Ahmet Erhan ÖZDEMİR, Mustafa ÜNLÜ	
Influence of Foliar Application of Calcium Chloride and Glycine on Yield and Quality of Kiwi Fruit (<i>Actinidia deliciosa</i>).....	60
Ghufran KHAN, Saeed-UL-HAQ	
Aşılı ve Aşısız ‘Paskal’ Karpuz Çeşidinde Hasat Sonrası Meyve Kalitesindeki Değişimler	61
Ahmet Erhan ÖZDEMİR, Veysel ARAS, Mustafa ÜNLÜ, Rıdvan ARSLAN, Çağlar EROĞLU	
Carbonate Meadow Under Gray Soils Conditions Cauliflower (<i>Brassica oleracea</i> var. <i>botrytis</i>) Use of Phosphorus Fertilizers in Cultivation	62
Farkhod KHASHİMOV, Mamadiyor KHAİTOV, Gulmira ELMURODOVA	
1-Methylcyclopropene (1-MCP) Uygulamasının ‘Bebeco’ ve ‘Şahinbey’ Kayısı Çeşitlerinin Soğukta Muhafazasına Etkileri	63
Mustafa ÜNLÜ, Celile Aylin OLUK, Mustafa BİRCAN, Zafer KARASHAHİN, Ebru YAZICI, Ahmet Erhan ÖZDEMİR	
History of Olive Cultivation in Pakistan.....	64
Azhar HUSSAIN, Muhammad Ashraf SUMRAH, Abid MAHMOOD	
Overview of Walnut Cultivation in Uzbekistan	65
Yakup Kadir KÖMÜR, Turan KARADENİZ, Samih KHOLBABAEBEV	
Walnut Garden Management in Uzbekistan; Urgaz Gilam Company Example.....	66
Yakup Kadir KÖMÜR, Turan KARADENİZ, Samih KHOLBABAEBEV	
Phenolic Substance Contents in Two Different Fig Genotypes	67
Turan KARADENİZ, Tuba BAK, Berna Doğru ÇOKRAN, Levent KIRCA, Emrah GÜLER, Tatjana KOKAJ	
Importance of Feed Additives Used in Poultry Rations: Royal Jelly Example.....	68
Yusuf Talha İÇOĞLU, Gürkan SEZMIŞ, Alla CARA	
Action Efficiency of Natural Growth Regulators in The Cultivation of Spring Barley	69
Silvia SECRIERU, Antonina DERENDOVSKAIA, Natalia MASHCHENKO	
ACTION EFFICIENCY OF NATURAL GROWTH REGULATORS IN THE CULTIVATION OF.....	70
SPRING BARLEY.....	70
Silvia Secrieru, Antonina Derendovskaia, Natalia Mashchenko	

Guava (*Psidium guajava* L.) Tohumlarında Ekim Öncesi Tohum Uygulamalarının Çıkış ve Ortalama Çıkış Süresi Üzerine Etkisi

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Özet

Son yıllarda popülerlik kazanan subtropik bir meyve olan guava (*Psidium guajava* L.) fide yetiştiriciliğinde tohum kabuğunun sert yapısından kaynaklanan problemler yaşanan bir tür olarak bilinmektedir. Tohumla çoğaltma yöntemi fide üretimi için uygulanabilirliği yüksek ve ekonomik bir yöntem olarak en çok tercih edilen fide çoğaltma yöntemlerindedir. Guava tohumlarında karşılaşılan bu fiziksel dormansinin kırılması fide üretimi için önem arz etmektedir. Çalışma Hatay Mustafa Kemal Üniversitesi Ziraat Fakültesi fizyoloji laboratuvarı ve ısıtmasız cam seralarında Kasım-Mart aylarında yürütülmüştür. Guava tohumlarına ekim öncesinde, hidropriming (48h, 25°C), GA₃ (1000 ppm, 48h, 25°C), Ferula (0.2g L⁻¹, 48h, 25°C) ve katlama (30 gün, 4°C) uygulamaları yapılmıştır. Uygulamalar sonucunda en yüksek çıkış oranları % 65.33 ile kontrol ve GA₃ uygulamalarından elde edilmiştir. Ortalama çıkış süresi en kısa olan uygulama 67.81 gün ile GA₃ uygulaması olmuştur. GA₃ uygulamasında; ortalama çıkış hızı ve ortalama çıkış hızı kat sayısı değerleri sırasıyla 0.404 ve 1.6 olarak hesaplanmıştır. Bu değerler incelendiğinde diğer uygulamalar ve kontrol grubuna kıyasla öne çıkan GA₃ uygulaması olmuştur. Tohum gücünün bir ifadesi olarak ortalama çıkış oranı ve ortalama çıkış hızı kullanılarak hesaplanan vigor indeks değeri GA₃ uygulamasının 39.6 değeri ile en yüksek hesaplanmıştır. Guava tohumlarına GA₃ uygulaması ekim öncesi tohum uygulamaları olarak kullanıldığında çıkış oranında büyük farklılıklar gözlemlenmese bile ortalama çıkış süresi, ortalama çıkış hızı, ortalama çıkış hızı katsayısı ve vigor indeks değerleri açısından iyileşmelere neden olmuştur. Sonraki çalışmalarda katlama uygulaması için farklı süre ve sıcaklıkların kullanılması, çıkış testi esnasında değişken sıcaklık uygulamalarının yapılması, dormansinin kırılması için fiziksel aşındırma yöntemlerinin kullanılarak türe ait çıkış sonuçlarının artırılabilirliği düşünülmektedir.

Anahtar Kelimeler: Fiziksel dormansi, Hidropriming, GA₃, Katlama

The Effect of Pre-Sowing Seed Treatments on Emergences and Mean Emergences Time in Guava Seeds (*Psidium guajava* L.)

Abstract

Guava (*Psidium guajava* L.), a subtropical fruit that has gained popularity in recent years, is known as a species with problems arising from the hard structure of the seed coat in seedling cultivation. Seed propagation method is one of the most preferred seedling propagation methods as a highly applicable and economical method for seedling production. Breaking physical dormancy encountered in guava seeds is important for seedling production. The research was carried out in Hatay Mustafa Kemal University, Faculty of Agriculture, physiology laboratory and unheated glass greenhouses in November-March. Before pre-sowing, guava seeds were hydroprimed (48h, 25°C), GA₃ (1000 ppm, 48h, 25°C), Ferula (0.2g L⁻¹, 48h, 25°C) and stratification (30 days, 4°C) treatments. As a result of the treatments, the highest emergence percentage with 65.33% were obtained from the control and GA₃ treatment. The treatments with the shortest mean emergence time was the GA₃ treatments with 67.81 days. In GA₃ treatment; variation of emergence speed index and coefficient of velocity of emergence were calculated as 0.404 and 1.6, respectively. When these values were examined, it was the GA₃ treatment that stood out compared to other treatments and the control group. The vigor index value calculated by using the mean emergence percentage and emergence speed index as an expression of seed vigor index was calculated with the highest value of 39.6 in the GA₃ treatments. When GA₃ treatment to guava seeds was used as pre-sowing seed treatments, it caused improvements in terms of mean emergence time, emergence speed index, coefficient of velocity of emergence and vigor index values, even though there was no big difference in emergences percentage. In future studies, it is thought that the emergence results of the species can be increased by using different times and temperatures for the stratification treatment, applying variable temperatures during the emergence test, and using physical scarification methods to breaking dormancy.

Keywords: Physical dormancy, Hydropriming, GA₃, Stratification

Papaya (*Carica papaya* L.) Tohumlarında Priming Uygulamalarının Çıkış ve Fide Kalitesine Etkisi

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Özet

Caricaceae familyasına ait bir tür olan papaya 13 milyon ton ile muz, hindistan cevizi, mango ve ananastan sonra dünyada en çok üretilen tropik meyvelerden biridir. Papaya (*Carica papaya* L.), *Carica*, *Jacaratia*, *Jarilla* ve *Cylicomorpha* başta olmak üzere farklı cinslere sahiptir. Yetiştiricilikte kullanılacak olan fideler genellikle tohumdan çoğaltılmaktadır. Ancak düşük ve homojen olmayan bir çimlenme oranına (%3-70) sahip olması nedeni ile ekim öncesi tohum uygulamaları ile çıkış oranı, homojenite ve fide kalitesinin iyileştirilmesi önem arz etmektedir. Yetiştiriciler tarafından uygulanabilirliği yüksek ve ekonomik olması gibi yönleri ile priming uygulamaları en çok tercih edilen ekim öncesi tohum uygulamalarıdır. Çalışma Hatay Mustafa Kemal Üniversitesi Ziraat Fakültesi ısıtmasız cam seralarında Ağustos-Eylül aylarında yürütülmüştür. Papaya (*Carica papaya* L.) tohumlarına ekim öncesinde, hidropriming, nanopriming ajanı olarak Ca_3PO_4 (0.01 g/ 100 mL), KNO_3 (%3) ve GA_3 (2000 ppm) uygulamaları yapılmıştır. En yüksek çıkış oranı GA_3 (%82) ve kontrol (%83) uygulamalarından elde edilmiştir. Ortalama çıkış süresi Ca_3PO_4 uygulamasında 8.69 gün ile en kısa sürede tamamlanmıştır. Fide kalite parametrelerinden yaş ve kuru ağırlık içeriği (253 mg, 49 mg) KNO_3 uygulamasında öne çıkmıştır. KNO_3 uygulaması 51.3 mm değeri ile en yüksek fide boyuna sahip olduğu belirlenmiştir. GA_3 uygulamasının 1.46 mm gövde çapı ve en yüksek vigor indeks (119.2) değerine sahip olduğu tespit edilmiştir. Papaya tohumlarında KNO_3 ve Ca_3PO_4 uygulamalarının ekim öncesi tohum uygulamaları olarak kullanılabileceği belirlenmiştir ($p<0.05$). Sonraki çalışmalarda nanomateriyallerin etkinliği farklı materyallerin kullanılması, uygulama süresi ve uygulama sıcaklığı gibi farklılıklar ile daha iyi anlaşılacaktır.

Anahtar Kelimeler: Nanopriming, Hidropriming, Ca_3PO_4 , GA_3 , KNO_3

Effect of Priming Treatments on Emergence and Seedling Quality of Papaya (*Carica papaya* L.) Seeds

Abstract

Papaya, a species belonging to the *Caricaceae* family, is one of the most produced tropical fruits in the world with 13 million tons, after banana, coconut, mango and pineapple. Papaya (*Carica papaya* L.) has different genera, mainly *Carica*, *Jacaratia*, *Jarilla* and *Cylicomorpha*. Seedlings to be used in cultivation are generally propagated from seed. However, since it has a low and non-homogeneous germination rate (3-70%), it is important to improve the emergence rate, homogeneity and seedling quality with pre-sowing seed treatments. Priming treatments are the most preferred pre-sowing seed treatments due to their high feasibility and economic aspects by producers. The research was carried out in the unheated glass greenhouses of the Faculty of Agriculture of Hatay Mustafa Kemal University in August-September. Before planting papaya (*Carica papaya* L.) seeds, hydropriming, Ca_3PO_4 (0.01 g/ 100 mL), KNO_3 (3%) and GA_3 (2000 ppm) treatments were made as nanopriming agents. The highest emergences percentage was obtained from GA_3 (82%) and control (83%) treatments. Mean emergence time was completed in the shortest time with 8.69 days in Ca_3PO_4 treatments. Fresh and dry weight content (253 mg, 49 mg) of seedling quality parameters came to the fore in KNO_3 treatments. It was determined that KNO_3 treatments had the highest seedling height with a value of 51.3 mm. It was determined that the GA_3 treatments had the highest stem diameter (1.46 mm) and the highest vigor index (119.2). It was determined that KNO_3 and Ca_3PO_4 treatments could be used as pre-sowing seed treatments in papaya seeds ($p<0.05$). In future research, the effectiveness of nanomaterials will be better understood with the use of different materials, differences such as treatments time and treatments temperature.

Keywords: Nanopriming, Hidropriming, Ca_3PO_4 , GA_3 , KNO_3

Bazı Elma Çeşitlerinde Meyve Tutumu ve Anaçların Meyve Tutumuna Etkisi

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Özet

Bu çalışma, 2017 ve 2018 yıllarında Kahramanmaraş/Göksun ekolojik koşullarında MM106, MM111 ve Çöğür anaçları üzerine aşılı Scarlet Spur, Golden Delicious, Granny Smith ve Fuji elma çeşitlerinde meyve tutum oranlarının saptanması amacıyla yürütülmüştür. Meyve tutumu ve hasada erişen meyve oranı çeşitlere ve anaçlara göre değişmiştir. Araştırmanın 2 yılında da MM111 anacı üzerine aşılı Granny Smith çeşidinde meyve tutum oranının (%63.95 ve %46.15) ve hasa erişen meyve oranının (%33.93 ve %32.50) diğer çeşitlere göre yüksek olduğu belirlenmiştir. MM106 anacında 2017 yılında Scarlet Spur, 2018 yılında Fuji çeşidinde en yüksek meyve tutumu gerçekleşmiştir. Meyve dökümü her iki yılda da en yüksek MM111 anacı üzerinde Scarlet Spur (%64.33, %61.47) çeşidinde gözlemlenirken, MM106 anacı üzerinde Golden Delicious (%50.85, %71.70) çeşidinde yüksek olmuştur. 2017 yılında meyve tutumu ve hasada erişen meyve oranı MM111 anacında (%53.14 ve %30.35) yüksek olmuştur. 2018 yılında ise meyve tutumu MM111 anacında (%42.68) yüksek olurken, hasada erişen meyve oranı MM11 ve MM106 anaçlarında benzer olmuştur.

Anahtar Kelimeler: Göksun, Elma, Çeşit, Anaç, Meyve Tutumu

Fruit Set in Some Apple Cultivars and Effect of Rootstocks on Fruit Set

Abstract

This study was carried out for fruit set characteristics of Scarlet Spur, Granny Smith, Golden Delicious and Fuji apple cultivars grafted on MM106, MM111 and seedling rootstocks grown in Kahramanmaraş/Göksun ecological conditions. Fruit set and fruit rate at harvest varied according to cultivars and rootstocks. It was determined that the fruit set rate (63.95% and 46.15%) and the rate of fruit reaching the harvest (33.93% and 32.50%) in Granny Smith cultivar grafted on MM111 rootstock were higher than other cultivars. MM106 rootstock had the highest fruit set in Scarlet Spur in 2017 and Fuji in 2018. While the highest fruit drop was observed in Scarlet Spur (64.33%, 61.47%, respectively) cultivar on MM111 rootstock in both years, the highest fruit drop was observed in Golden Delicious (50.85%, 71.70%, respectively) cultivar on MM106 rootstock. While the fruit rate was high in MM111 rootstock (53.14% and 30.35%), fruit set was higher in MM111 rootstock (42.68%) in 2018, while the fruit rate at harvest was similar in MM11 and MM106 rootstocks.

Keywords: Göksun, Apple, Cultivar, Rootstock, Fruit set

Ateş Dikeni (*Pyracantha*) Çeliklerinin Köklenmesi Üzerine Farklı Uygulamaların Etkileri

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Özet

Bu çalışma, yüksek boylu (*Pyracantha coccinea*) ve alçak boylu (Bodur; *P. coccinea nana*) iki ateş dikeni çeliklerinin çoğaltılmasında farklı uygulamaların etkilerini belirlemek için yürütülmüştür. Çalışmada, ateş dikeni çelikleri standart olarak hazırlanmış ve bu çeliklere IBA, NAA, Root Power, IBA+NAA ve IBA+NAA+Root Power (%1 bor ve %4 çinko içerir) uygulaması yapılmıştır. Bu çeliklerde, köklenme özelliklerinden köklenme oranı (%), kök sayısı (adet), kök uzunluğu (mm) ve kalınlığı (mm) ve bitkisel özelliklerden sürgün sayısı (adet), sürgün uzunluğu (mm) ve yaprak sayısı (adet) incelenmiştir. Çalışmada, yüksek boylu ateş dikeninde köklenme oranının bodur ateş dikenine göre daha yüksek olduğu belirlenmiştir. Yüksek boylu ateş dikeninde en yüksek köklenme oranı IBA uygulamasından (%33.33) elde edilmiştir. Tüm uygulamaların her iki ateş dikeni çeliklerinde köklenme üzerine olumlu etkileri olduğu tespit edilmiştir. Sonuç olarak, ateş dikeni çeliklerinde IBA, NAA ve IBA+NAA uygulamalarının köklenmeyi olumlu etkilediği belirlenmiştir.

Anahtar Kelimeler: *P. coccinea*, Cutting, IBA, NAA, Köklenme Durumu

The Effects of Different Applications on Rooting of Cuttings in Firethorn (*Pyracantha*)

Abstract

This study was conducted to determine the effects of different treatments on the propagation of cuttings of highbush (*Pyracantha coccinea*) and lowbush (Dwarf; *P. coccinea nana*) firethorn plants. In the study, firethorn (*P. coccinea*) cuttings were prepared as standard and these cutting were applied IBA, NAA, Root Power, IBA+NAA, and IBA+NAA+Root Power (a solution containing 1% boron and 4% zinc). In these cuttings, rooting properties such as rooting rate (%), number of roots (number), root length (mm) and thickness (mm) and vegetative characteristics such as number of shoots (number), shoot length (mm) and number of leaves (number) were investigated. As a result of the study that it was determined that the rooting rate of highbush firethorn was higher than that of lowbush firethorns. Rooting rate was higher in highbush firethorn than lowbush firethorn. It was determined that the highest rooting rate was IBA (33.33%) application in highbush firethorn. All applications have positive effects on the rooting of both shoot thistle cuttings. As a result, IBA, NAA, and IBA+NAA applications in firethorn cuttings had a positive effect on rooting.

Keywords: *P. coccinea*, Cutting, IBA, NAA, Rooting Status

Burkina Faso'nun Domates Yetiştirme Durumu

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Özet

21,5 milyon nüfuslu bir ülke olan Burkina Faso, 274.200 km² yoğunluğa sahip Batı Afrika'nın kalbinde yer almaktadır. Tarım, Burkina Faso'nun ekonomisinde önemli bir yer almaktadır. GSYİH'ya %35-40 oranında katkıda bulunmakta, ve nüfusun %80'inden fazlası kaplanmaktadır. Döviz kaynağında ve nüfusun gıda ihtiyacının karşılanmasına önemli ölçüde katkıda bulunmaktadır. Sebzeçilik sektörü günümüzde ülke ekonomisinde önemli bir yer tutmakta olup ve ana gelir getirici faaliyetlerden biridir. Bu faaliyetler kırsal ve kentsel alanlarda yaygın olarak uygulanmaktadır. Tarımsal büyüme ve yoksulluğun azaltılması için önemli bir kaynak olarak kabul edilmektedir. Burkina Faso'da, sebzeçilik sektöründe domates üretimi, soğandan sonra 2. Sıraya gelmektedir. Genel olarak, sadece kuraklık mevsiminde yetiştirilmektedir. Ama son yıllarında, uygun çeşitleri kullanarak yağışlı mevsimde de domates üretimini başlatmıştır. Yağışlı mevsimde, teknik sulama azaltmak gibi birçok avantajı vardır. Ancak kontrol edilmezse üretici üretiminin neredeyse ¾'ünü kaybedebilmektedir. Üretimi yılda yaklaşık 1.411,237 ton yani toplam sebzeçilik üretiminin %21'i olup, toplam değeri ise 17.469.073.587 FCFA (26.604.570,97 €) dan fazla tahmin edilmektedir. En yüksek üretime sahip bölgeler arasında Centre-Nord (82.463,9 ton) yani ülkenin toplam üretimin %28,5'idir, sonra Hauts-Bassins (43.904,5 ton), Centre-Ouest (31.250 ton), Nord (26.300 ton) ve Centre-Est (20.329,8 ton) izlemektedir. En düşük ise Cascades ve Centre-Sud bölgelerinde kaydetmektedir. Ancak üretimin çoğu Fildişi Sahili, Gana, Nijer, Togo ve Benin'e ihracat edilmekte ve ana alıcısı Gana'dır. Ancak, şu anda ülke genelinde çok etkileyen güvenlik kriziyle birlikte, üreticiler hem üretimle ilgili sıkıntıları, hem de akışla ilgili sorunlarla karşı karşıya gelmektedir.

Anahtar Kelimeler: Sebzeçilik, Domates, Burkina Faso

Agronomic and Socioeconomic Obstacles to Maize Production in Jowhar District, Middle Shabelle, Somalia

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Abstract

Every agricultural community in the Jowhar grows maize, thus it is crucial to the livelihood of the vast majority of Jowhar families. Crop production and the efficiency of agricultural systems are major issues because of agronomical and socioeconomic limits. It is often expected that maize cultivation in the Jowhar region would fail or provide an exceedingly poor yield in the worst-case scenario. The purpose of this research was to examine the impact of production costs on maize production by small-scale farmers in the Jowhar District, as well as the impact of agronomic constraints on such farmers, the impact of extension services on such farmers, and the impact of credit availability on such farmers. Descriptive survey methodology was utilized to gather data for this study, which was then used to provide a narrative account of the phenomenon as it now stands. The district's responders were given a questionnaire consisting of multiple-choice questions. After that, we gathered all of the completed surveys. In the end, every survey was filled out and analyzed. We used descriptive statistics to examine the data. After the data was analyzed, it was presented using frequency tables and percentages. The research showed that the primary challenges to maize production are agronomic, followed by socioeconomic issues. The study authors suggest that the government implements price controls and subsidies for key agricultural products. In addition, we recommend that seed firms and extension agents give training in maize value chain approaches; NGOs should support the expansion of maize agriculture in the region, and the authors argue that government should continue playing a role in the agricultural sector. Farmers, on their own initiative, should seek out extension assistance from public and private sector providers.

Keywords: Agronomic, Socioeconomic, Maize

Fatty Oil and Fatty Acid Compositions of Fenugreek Cultivar Grown Under Irrigated and Dryland Conditions

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Abstract

Fenugreek (*Trigonella foenum-graecum* L.) is an important annual spice plant belonging to Fabaceae family. The seeds of fenugreek contain various biochemical contents. So, fenugreek is used to treatment of some illness such as diabetic retinopathy, gastric disorders and lung infections. The fenugreek fatty oil can be used in food with combination of other fatty acids to has higher quality cooking. Also, it is rich in terms of unsaturated fatty acid compositions.

This study was conducted to determine the fatty oil and its compositions of berkem cultivar grown under irrigated and dryland conditions. Fatty oil content of berkem cultivar were found as 10,10% under irrigated and 7,96% under dryland conditions. Totally, 11 fatty acid compositions (FACs) were determined, and linoleic, linolenic, oleic stearic acids were the main compositions. The linoleic, linolenic, stearic and oleic acids were found as 47,00%, 12,89%, 4,92% and 3,67% under irrigated conditions and observed as 47,55%, 20,83%, 7,72% and 4,92% under dryland conditions. Other FACs showed low values under growing conditions.

The results of the study revealed that berkem cultivar had higher fatty oil content under irrigated conditions. However, it had lower main FACs under irrigated conditions compared to dryland conditions.

Keywords: *Trigonella foenum-graecum* L., Fatty oil, Fatty acid, Linoleic acid

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Farklı Sulama Seviyelerinin Yerfıstığı (*Arachis hypogaea* L.) Yağ Asidi Kompozisyonuna Etkisi

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Özet

Bu çalışmada iki farklı yerfıstığı (*Arachis hypogaea* L.) çeşidinde (NC-7 ve Florispan) dört farklı sulama seviyelerinin (%25, %50, %75 ve %100) beslenme ve sağlık açısından öneme sahip yağ asitleri üzerine etkisi araştırılmıştır. Deneme 2020 yılında Kahramanmaraş Doğu Akdeniz Geçit Kuşağı Tarımsal Araştırma Enstitüsü arazisinde bölünmüş parseller deneme desenine göre 3 tekerrürlü olarak yürütülmüştür. Çalışmada yağ oranı (%), doymuş (palmitik asit, stearik asit, araşhidik asit, eikosenoik asit, behenik asit ve lignoserik asit) ve doymamış (oleik asit ve linoleik asit) yağ asitleri oranı, O/L asit oranı ve iyodin değeri araştırılmıştır. Araştırmada çeşitler arasında, doymuş yağ asitleri palmitik ve behenik asit, doymamış yağ asitlerinde ise oleik ve linoleik asit, bununla birlikte O/L asit oranı ve iyodin değeri yönünden önemli farklılıkların olduğu, sulama seviyelerinin ise yağ oranı, stearik asit, eikosenoik asit, behenik asit, oleik asit, linoleik asit ve O/L asit oranı özelliklerine önemli derecede etkili olduğu belirlenmiştir. Ayrıca yağ oranı, palmitik asit, stearik asit, eikosenoik asit, behenik asit, oleik asit, linoleik asit ve O/L asit oranı bakımından çeşit-sulama seviye interaksyonu önemli çıkmıştır. Sulama seviyesi arttıkça eikosenoik asit, behenik asit ve linoleik asitin arttığı, oleik asit ve O/L asit oranının ise azaldığı, palmitik asit, araşhidik asit, lignoserik asit ve iyodin değerinin ise sulama seviyelerinden etkilenmediği görülmüştür.

Anahtar Kelimeler: Sulama seviyesi, Çeşit, Yağ Asidi

The Effect of Different Irrigation Levels on Fatty Acid Composition in Peanuts (*Arachis hypogaea* L.)

Abstract

In this study, the effects of four different irrigation levels (25%, 50%, 75% and 100%) on fatty acids important for nutrition and health were investigated in two different peanut (*Arachis hypogaea* L.) cultivars (NC-7 and Florispan). The experiment was conducted in Kahramanmaraş Eastern Mediterranean Transitional Zone Agricultural Research Institute in 2020 according to the split-lots trial design with 3 replications. The experiment was carried out in factorial experimental design. with 3 replications, in Kahramanmaraş conditions in 2020. In the study, the effects of different irrigation levels on oil ratio (%), saturated (palmitic acid, stearic acid, arachidic acid, eicosenoic acid, behenic acid, lignoseric acid) and unsaturated fatty acids (oleic acid and linoleic acid), O/L acid ratio, iodine value were investigated. In the study, it was determined that there were significant differences between the varieties in terms of saturated fatty acids, unsaturated fatty acids, O/L acid ratio and iodine value, irrigation levels were significantly effective on oil ratio, stearic acid, eicosenoic acid, behenic acid, oleic acid, linoleic acid and O/L acid ratio properties. In addition, cultivar-irrigation level interaction was significant in terms of oil content, palmitic acid, stearic acid, eicosenoic acid, behenic acid, oleic acid, linoleic acid and O/L acid ratio. As the irrigation level increased, eicosenoic acid, behenic acid and linoleic acid increased, oleic acid and O/L acid ratio decreased, palmitic acid, arachidic acid, lignoceric acid and iodine values were not affected by irrigation levels.

Keywords: Irrigation level, Genotype, Fatty Acid

Importance of Beans in Agriculture

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Abstract

Legumes have three main functions in agriculture: helping to solve the problem of plant protein, grain production and reproduction, and increasing soil fertility. The root system of leguminous crops consists of a main axis root that penetrates up to 2 meters deep into the ground and branched lateral roots. In the roots, there are noticeable swellings, that is, nodules, in which bacteria absorbing air nitrogen are located. The bean belongs to the leguminous family. It is widely used in the field of farming. Beans as a repeat crop on irrigated land, fall grain barley instead of wheat, it is planted after tomorrow's potato and vegetable crops. When beans are placed in crop rotation, they leave behind fertile, weed-free soil, enriched with organic matter and nitrogen. Water-physical properties, biological activity of the soil increases significantly after planting beans. The bean plant is used in food, canning, confectionary production, and fodder. This use of beans depends on the quality of the grain. They added essential amino acids - lysine, tryptophan, methionine, phenylalanine, leucine, isoleucine, which are essential for the human body. Soil fertility increases due to the activity of nodule bacteria that absorb free nitrogen from the air in their roots. Legumes with a growing period of 70-90 days are suitable for replanting in areas freed from winter wheat crops, which absorb atmospheric nitrogen with the help of bacteria in their stems, and collect biological nitrogen that does not have a negative effect on the environment and the quality of the crop. An important factor is the creation of new varieties of beans that do not spill, which allow harvesting with the help of mechanization, and the production of agrotechnics for their cultivation.

Keywords: Bean Nitrogen, Root, Soil, Bacteria, Protein

***Satureja hortensis* Bitkisinde Ontogenetik Varyabilitenin Herba Verimi ve Uçucu Yağ Üzerine Etkisi**

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Özet

Bitkilerde uçucu yağ oranları; bitkinin gelişme dönemi (Ontogenetik Varyabilite), iklim, çevre, topoğrafik koşullara, bitkinin yaşı ve genetik yapısına göre değişim göstermektedir. Bu çalışmada önemli bir kekik türü olan *Satureja hortensis*'te ontogenetik varyabilitenin herba verimi, uçucu yağ oranı ve uçucu yağ bileşenleri üzerine etkisi belirlenmiştir. Çalışma Kahramanmaraş Sütçü İmam Üniversitesi Ziraat Fakültesi Tarla Bitkileri bölümünde yürütülmüştür. Yetiştirilen bitkiler; çiçeklenme öncesi, çiçeklenme başlangıcı, %50 çiçeklenme, tam çiçeklenme (%100) ve tohum oluşum dönemi olmak üzere beş farklı dönemde hasat edilmiştir. Çalışmadan elde edilen verilere bakıldığında; yeşil herba veriminin 710-2300 kg/da aralığında olduğu, en yüksek değer tohum oluşum döneminde elde edildiği, drog herba oranının 175-800 kg/da aralığında olduğu ve en yüksek değer yine tohum oluşum döneminde elde edildiği, uçucu yağ oranının %2.46-4.05 aralığında olduğu ve en yüksek oranın %50 çiçeklenme döneminde elde edildiği belirlenmiştir. Uçucu yağ bileşenlerine bakıldığında başlıca bileşen olan karvakrol %48.43- 55.52 aralığında değişmekte olup en yüksek oran tam çiçeklenme döneminde, gama terpinen %30.85-34.58 aralığında değişmekte olup en yüksek değer çiçeklenme öncesi dönemde elde edilmiştir. Uçucu yağ oranı ve bileşenleri bakımından %50 çiçeklenme ve tam çiçeklenme aralığında hasat edilmesinin uygun olacağı görülmüştür.

Anahtar Kelimeler: Sater, *Satureja*, Ontogenetik varyabilite, Uçucu yağ

The Effect of Ontogenetic Variability on Herbal Yield and Essential Oil in *Satureja hortensis*

Abstract

Essential oil ratios in plants; the development period of the plant (Ontogenetic variability) varies according to climate, environment, topographic conditions, age and genetic structure of the plant. In this study, the effect of ontogenetic variability on herb yield, essential oil content and essential oil components of *Satureja hortensis*, an important thyme species, was determined. The study was carried out in Kahramanmaraş Sutcu Imam University, Faculty of Agriculture, Department of Field Crops. The grown plants; it was harvested in five different periods as before flowering, at the beginning of flowering, 50% flowering, full flowering (100%) and seed formation period. Looking at the data obtained from the study; the green herb yield was between 710-2300 kg/da, the highest value was obtained during the seed formation period, the drog herb ratio was between 175-800 kg/da and the highest value was obtained during the seed formation period, the essential oil ratio of 2.46-4.05%, It was determined that the highest rate was obtained in the 50% flowering period. Looking at the essential oil components, carvacrol, which is the main component, varies between 48.43% and 55.52%, with the highest rate in full bloom, gamma terpinene between 30.85% and 34.58%, and the highest value was obtained in the pre-flowering period. In terms of essential oil content and components, it was found that it would be appropriate to harvest it between 50% flowering and full flowering.

Keywords: Sater, *Satureja*, Ontogenetic Variability, Essential Oil

Leaf Color Parameters of Selected Basil Genotypes

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Abstract

Sweet basil (*Ocimum basilicum* L.) is one of the important medicinal and aromatic plants. It belongs to Lamiaceae family. It is used in foods (fresh herb, dried spice, taste and aroma), medicinal purpose (headaches, coughs, diarrhea, worms, and kidney malfunctions etc.), pharmaceuticals and cosmetics. The leaf color parameters of basil genotypes has different chemical properties, and these parameters can show variability due to changes by environmental conditions. In this study, the leaf color parameters (L^* , a^* , b^* , C^* , h° and WI) of 17 different origin basil genotypes and three local basil cultivars (moonlight, midnight and dino) were determined. Significant differences were found in terms of L^* , b^* and H° parameters. Basil leaves showed L^* values in the range 50,16 and 63,78, a^* values among 5,12 and 12,95, b^* values among 15,49 and 24,31, C^* values among 21,73 and 25,95, h° values among 53,81 and 77,99, and WI values among 45,43 and 50,60. The highest L^* values was found from PI 190100 genotype, and the highest b^* and H° values were obtained from PI 207498 genotype. The highest a^* , C^* and WI values were observed from PI 197442, PI 190100 and PI 531396 genotypes, respectively. Variation in the leaf color parameters of different origin basil genotypes and three cultivars grown under the same ecological conditions was found. As a result of the study, PI 190100 and PI 207498 had the highest leaf color parameters in terms of L^* , C^* and b^* , H° values, respectively.

Keywords: *Ocimum basilicum* L., Leaf Color, Genotype

Dissect of Genetic Architecture in Controlling Phenotypic Variation of Sunflower Traits

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Abstract

Sunflower (*Helianthus annuus* L.) is one of the most important crops as it meets the worldwide demand for edible oil with the high oil content in the seeds. Sunflower seed yield is determined by several yield component traits. Flowering time, plant height, and stem diameter are the three important traits in sunflowers affecting seed and oil yield. The genetic mechanisms controlling the variation of those traits in sunflowers have been studied using many approaches. However, genome-wide association studies (GWAS) have not previously been widely applied to sunflowers. In this study, a set of 342 sunflower accessions were evaluated in incomplete randomized block design in 2019 and 2020 and GWAS was conducted utilizing the mixed linear model (MLM) and the fixed and random model circulating probability unification (FarmCPU) model by using 226,779 SNPs determined by tGBS from 274 sunflower accessions. As a result, GWAS identified 6, 6, and 3 important SNPs in MLM and 13, 12, and 13 SNPs in FarmCPU methods, associated with flowering time, plant height, and stem diameter, respectively. Those SNPs were located close to several genes that may serve as a basis for further sunflower yield improvement.

Keywords: Sunflower, GWAS, SNPs

Acceptable Ratio and Norm of Nutrient Utilization in Different Growth Phases of Winter Wheat in The Conditions of Irrigated Meadow-Gray Soils of Samarkand Region

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Abstract

In order to regularly produce high and quality grain crops from winter wheat, based on the soil and climate conditions, the cultivated variety, biological characteristics of the winter wheat, the requirement for nutrients, the period, the proportion and rate of fertilization learning requires an important profession in grain farming. A microfield experiment was carried out in the conditions of gray soils of the grassland of Samarkand branch educational experimental farm of Tashkent State Agrarian University, Okdarya District, Samarkand Region. Research methods were used in the experiment. In the experiment, the 8th variant N (180), P₂O₅ (162), K₂O (126) obtained the highest values. The highest yield was shown in the 8th option, yield of 63.3 s/ha was achieved. Compared to the control (without fertilizer) option, the productivity indicator was 35.3 s/ha. In this option, the plant height was 91.1 cm, the number of leaves was 7.2, the number of productive stems - 365.3 grains/m², spike length - 11.6 cm, number of grains in spike - 22.3 grains, weight of 1000 grains - 42.1 g. All in options economic efficiency counting released. In this case, in option 6 (N (180), P₂O₅ (108), K₂O (72)) high efficiency was determined. The rest in options fertilizer norm increase with productivity noticeable level did not increase, but expenses increased as a result economic to efficiency could not be reached. In our study, the most optimal variant N (180), P₂O₅ (126) K₂O (90) and fertilizing ratio - 1.0; 0.7; It was found to be 0.5.

Keywords: Meadow gray soil, Winter wheat, Mineral fertilizers, Fertilizer ratios, Standards, Growth phases

Dissecting The Genetic Linkage Between The Toxic Metal (Cd) And Essential Minerals (Zn – Fe) in Maize

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Abstract

Micronutrients, although only required for small amounts in plants, have a profound impact on plant development and human health. Meanwhile, toxic metal accumulation caused by soil pollution due to industrialization increasingly becomes a major challenge in crop production. Cadmium (Cd), as one of the toxic metals, shares chemical similarities with essential micronutrients, such as zinc (Zn) and iron (Fe), making it challenging to improve the mineral composition with high Zn/Fe and low Cd contents. In this study, phenotypic analyses from a maize diversity panel suggest that the mineral composition traits stay constant or slightly decrease in leaves-kernels over the breeding history, albeit the yield-related traits have been improved considerably. Further study reveals the positive correlations between Cd and Zn as well as Cd and Fe in maize kernels. We performed the genome-wide association study (GWAS) to assist dissect the genetic linkage by identifying the loci uniquely associated with Cd, Zn, and Fe. We found n=365 mineral-associated loci, several of which carry alleles that exhibit opposite effects on toxic metal Cd and essential elements Zn and Fe. These candidate loci can potentially be leveraged to decouple the genetic linkage between Cd and Zn/Fe to enhance the nutritional value of maize.

Keywords: Cadmium (Cd), Zinc (Zn), Iron (Fe), Toxic Metal, Mineral nutrition, Genome-wide Association study (GWAS), Genetic decoupling

Integrated Weed Management in Maize (*Zea mays* L.)

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Abstract

Maize, technically known as (*Zea mayz* L.), belongs to the family Gramineae, and is the 3rd most important cereal crop after wheat and rice in Pakistan. In Pakistan maize is cultivated both in spring and summer. It is the source of various valuable raw materials in different food industries such as food grain, bakery products, and fodder for livestock and poultry. Maize crop is considered a top-yielding cereal crop in the world. USA is the highest maize producing country (370.96 Million Metric Tons) annually. Pakistan ranked 22nd globally in maize production. Pakistan produces 0,635 thousand tonnes of maize annually on about 1,653 thousand hectares area. At the national level, maize's average grain yield was 6436 kg ha⁻¹. Maize accounts for 3.2% of agricultural value added and 0.7% of GDP. During critical stages of crop growth, maize crops require the maximum amount of fertilizer, and weed-crop competition should be minimal. To avoid financial losses, weed control is vital during the serious period of crop weed competition. The unfavorable impacts of weed competition on maize seed quality can be reduced by removing weeds at the right time and applying nitrogen in the right amount. The deterioration of the soil cultural conditions causes weed spread, making it difficult to control certain weed species using conventional weed management methods. Although maize can survive weed competition for the first 3-4 weeks after germination. High weed infestation may cause a 45% reduction in maize yield. Weed scientists identified the following major weed species in Khyber Pakhtunkhwa, that are causing severe maize yield losses *Trianthema portulacastrum* L., *Cyperus rotundus* L., *Echinochloa crus-galli* L., *Convolvulus arvensis*, L., *Cynodon dactylon* L., *Dactyloctenium aegyptium* L., *Diger aarvensis* L., *Digitaria sanguinalis* L. One of the key elements of sustainable agriculture is the management of weeds. The impact of various weed management techniques on maize performance and growth has been examined by various scientists. Maize crops are more susceptible to weed competition in the first phases of development because of their slower pace of growth. As a result, utilizing just one approach to manage weeds and increase maize output is less successful. The most efficient methods for weed management in maize fields, according to several studies, include cultural, mechanical, and chemical methods. Hand weeding has endured and continues to be the most efficient way to stop and hinder weed development. The expense of growing and harvesting maize is increased by these weed infestations. These weeds cannot be removed by manual weeding. While mechanical approaches are still useful, they are unable to successfully manage weeds since the necessary equipment isn't available. The prudent and proper application of various herbicide combinations, such as pre-plant, pre-emergence, and post-emergence, could effectively control weeds in maize. To create an effective weed management program, a farmer must combine all these techniques.

Keywords: Maize yields, Weeds, Integrated weed management

Integrated Weed Management in Okra (*Abelmoschus esculentus* L.) in Pakistan

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Abstract

Okra (*Abelmoschus esculentus* L.) is the most popular vegetable and is grown across the world. It is primarily grown for its green fruits, which are cooked, fried in hot oil, or used in salads. The okra fruit is an essential part of the human diet because it contains protein, starch, and different vitamins and minerals, including vitamins A, B complex, and K, as well as calcium, iron, and phosphorus. Because the pods of okra have a high mucilaginous content, it was traditionally cooked for flavor. It is grown commercially for its immature fruits, which can be eaten fresh, canned, or used as seeds. In many developing nations, it is regarded as a vegetable with high nutritional value and is used as a supplement to address the gastrointestinal imbalance. In comparison to developed nations, Pakistan produces less okra. The most detrimental factor considered for Pakistan's low okra yield is weeds infestation. A 60% reduction in the potential yield of okra is the result of weeds' intense competition for nutrients, water, and light. In okra, unchecked weeds can significantly reduce yield. Okra, can struggle to compete with weeds, especially at the beginning of the growing season. One of the most crucial and costly steps in the production of okra is weed control. The most common weed control technique used by farmers in Pakistan is hoe weeding. However, the persistent wetness typical of the start of the rainy season frequently undermines the effectiveness of hoe weeding. In order to keep the crop weed-free and prevent yield losses, hoe weeding under wet conditions frequently encourages weeds to re-grow. But it takes a lot of time, is tedious, inefficient, and requires a lot of labor. Additionally, manual weeding labor is hard to come by and frequently too expensive for the typical farmer to afford. On the other hand, even though it is effective, using an herbicide alone does not guarantee season-long weed control, and it is possible that a single application of an herbicide will not completely eradicate all weeds. Herbicides for weed control also cause weed resistance and environmental pollution when used carelessly. Therefore, combining these weed management strategies is necessary for improved weed control. In the context of integrated weed management, fewer hoe weeding and/or herbicide applications may help to improve weed control effectiveness, lower the high cost of numerous hoe weeding or herbicide applications, and raise okra yield. Farmers are more motivated to adopt agricultural innovation because of the improved weed control effectiveness and greater yields with integrated weed management, economic consideration, and better profit. Implementing integrated weed management will increase okra's weed control, production, and profitability.

Keywords: Okra, Yield, Weeds, Integrated weed management

Process Design and Simulation of Green Ammonia (NH₃) Production in Changing Climate Scenario

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Abstract

Ammonia (NH₃) is one of the most produced inorganic chemicals around the world. Ammonia has a lot of applications. More than 80% of ammonia is used to make fertilizer, and it is also used to make explosives, plastics, textiles, dyes, pesticides, refrigerants, and hydrogen, which is used to transport energy. Therefore, it is crucial to us, but the problem is that we use the "Haber process," a tried-and-true process that has been around for more than a century, to produce ammonia. The problem with the Haber process is that it produces CO₂ during ammonia production which is a "Green House Gas" and is responsible for global warming and climate change. Currently, the production of ammonia is responsible for 1.8% of global CO₂ emissions. Second, it uses a finite, irreversible source called "Methane (CH₄)" The low conversion rate and high pressure and temperature requirements of the Haber process are the other issue. Therefore, in order to address this crucial issue, we would introduce cutting-edge, sophisticated technology that would meet our needs and be an environmentally friendly process (Eco-Friendly). An emerging technology, the production of ammonia via an electrochemical cell should be adopted by nearly all plants by the year 2050. In this method, water (H₂O) is used to produce H₂ instead of methane, with no CO₂ being produced and a higher rate of ammonia conversion than in the Haber method. Ammonia production generates about 500 million tons of CO₂ globally, and 80% of that ammonia is used to make fertilizer. We can stop the production of CO₂ through the electrochemical process, and our method will be environmentally friendly. Additionally, the electrochemical process would assist us in achieving some of the "Sustainable Development Goals" (SDGs), such as access to affordable energy sources, addressing climate change, responsible consumption and production, and environmental friendliness.

Keywords: Ammonia, Climate change, Green technology, Electrochemical process

Challenges and Prospects of Aquatic Weeds Management in Pakistan

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Abstract

The most significant issue facing humanity in the twenty-first century is water scarcity and pollution. The rapidly increasing water pollution, urbanization, industrialization, and the ever-fast invasion of aquatic weeds are a few of the factors reducing the availability of fresh water for intended human use. Our various water bodies will become insufficient, deteriorated, and unfit for their intended use in the near future if the present conditions prevailed as such. Therefore, it is crucial to save water for future generations in order to manage the water crisis, utilize water effectively for agriculture, fisheries, drinking water, home, and industrial uses, and maintain a better environment. Aquatic weeds are one of the leading causes of the future shortage of water and pollution since they are the biggest culprits in the degradation of fresh water and the various ways in which they impede its intended purpose. Along with beautiful and gorgeous rivers, dams, streams, and other natural features, Pakistan boasts one of the greatest canal systems in the world. If effective management measures are not put in place on the plains, where water movement is sluggish and ideal for aquatic weed infestation, the majority of these water bodies will get further infected with aquatic weeds at a quick rate. Weed infestations must be evaluated, and weeds must be classified as native or invasive, in order to create an effective management strategy. It is also important to consider the water's quality and planned application. The purpose of this review is to discuss various freshwater bodies of irrigated plains of Khyber Pakhtunkhwa province for invasive aquatic weeds, to document their infestation and diversity in order to manage this flora, to create awareness among the scientific community about the threats of invasive aquatic weeds to water resource, to devise an integrated weed management plan, to search ways for the utilization of aquatic weeds and their management in freshwater bodies.

Keywords: Aquatic weeds, Water scarcity, Water pollution, Management

Farklı Kurutma Yöntemlerinin Kahramanmaraş Tipi Kırmızı Biberde Aflatoksin Oluşumu Üzerine Etkileri

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Özet

Bu çalışmada Kahramanmaraş piyasasından temin edilen ve 7 farklı yöntemlerle kurutulmuş kırmızıbiberlerde aflatoksin miktarları (B₁, B₂, G₁ ve G₂) araştırılmıştır. Kırmızıbiberlerdeki aflatoksin analizleri yüksek basınçlı sıvı kromatografisi (HPLC) kullanılarak immunoafinite kolon ile ölçülmüştür. Analiz edilen örneklerin arasında mekanik kurutma işlemi ile kurutulan örneklerde aflatoksin bulunmazken; diğer kurutma yöntemlerinde ise farklı konsantrasyonlar aflatoksin bulunmuştur. Örneklerin 25'inde B₁, 5'inde B₂, 2'sinde G₁ bulunurken ve hiçbir örnekte aflatoksin G₂ bulunmadığını tespit edilmiştir. Araştırılan kurutma yöntemlerinden en sağlıklısının mekanik kurutma ve dilimlenerek tepside kurutma işleminin olduğu ve dilimlenerek yerde kurutma işleminin de belli mevsim şartlarında uygun olabileceği sonucuna varılmış, yetersiz mekanik işlem uygulanmayan kırmızıbiberlerin aflatoksin açısından riskli olduğu tespit edilmiştir.

Anahtar Kelimeler: Kırmızıbiber, Kurutma, Aflatoksin, Kahramanmaraş

The Effects of Different Drying Methods on Aflatoxin Formation in Kahramanmaraş Type Red Pepper

Abstract

In this study, the amounts of aflatoxins (B₁, B₂, G₁ and G₂) in red peppers obtained from the Kahramanmaraş market and dried with 7 different methods were investigated. Aflatoxin analyzes in red peppers were measured by immunoaffinity column using high pressure liquid chromatography (HPLC). Among the analyzed samples, there was no aflatoxin in the samples dried by mechanical drying process; In other drying methods, different concentrations of aflatoxin were found. It was determined that 25 of the samples had B₁, 5 of them B₂, 2 of them G₁ and no aflatoxin G₂ was found in any of the samples. It was concluded that the healthiest drying method among the researched drying methods was mechanical drying, and it was determined that red peppers without insufficient mechanical processing were risky in terms of aflatoxin.

Keywords: Red pepper, Drying, Aflatoxin, Kahramanmaraş

Sulfur-Doped Graphene Paper Electrode for Pathogen Detection in Food

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Abstract

Pathogenic bacteria have always posed a serious risk to both public health and the revenue of food producers. As a result, there has been a huge need for advanced detection techniques that can quickly and sensitively find these diseases. Here, we report an electrochemical method to measure concentration of *E. coli* in food using sulfur-doped graphene paper (S-GrP) electrode. First, sulfur-doped graphene was prepared via electrochemical exfoliation of graphite electrode in 0.1 M $\text{Na}_2\text{S}_2\text{O}_3$ and 0.05 M KCl by applying ± 10 V between two graphite electrodes. Then, S-GrP was prepared by simply filtering the sulfur-doped graphene suspension. S-GrP was characterized via analytical (FT-IR, XPS and Raman spectroscopies) and morphological (scanning electron microscopy) techniques. S-GrP was cut into a shape to fit a glassy-carbon electrode (GCE) (diameter of 3 mm) and a silver paste was used to bind S-GrP on the GCE surface. Thereafter, glutaraldehyde and amine functional monoclonal anti-*E. coli* O157:H7 antibodies were administered onto GCE surface. Results showed that *E. coli* can be detected in 101-108 cfu/mL concentration range with a good repeatability and stability.

Keywords: S-Doped graphene, Pathogen Detection, *E. coli*

Hatay'da Üretilen Zeytinyağlarında Özgül Absorbans Değerlerinin Belirlenmesi ve Bu Değerlerin Zeytinyağı Tağşişindeki Önemi

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Özet

Bu çalışmada Hatay'da faaliyet gösteren 21 farklı zeytinyağı işletmesinden temin edilen natürel zeytinyağlarının kalite kriterleri (serbest yağ asitliği, peroksit sayısı, ultraviyole de özgül absorbans) ölçülmüş ve elde edilen değerlerin TSE (Türk Standartları Enstitüsü) ve UZK (Uluslararası Zeytinyağı Konseyi) kriterlerine uygunluğu araştırılmıştır. Bu amaçla her bir işletmeden 0,5 litre zeytinyağı toplanmıştır. Natürel zeytinyağlarına ait kimyasal özellikler incelendiğinde; serbest yağ asitliği % 0,55 - 4,3 arasında, peroksit sayısı değeri 6,47 – 21,73 meqO₂/kg arasında, 232 ve 270 nm' de Ölçülen özgül absorbans ve AK değerleri sırasıyla 1,66 - 3,04, 0,17 – 0,39 ve -0,004 – 0,003 arasında bulunmuştur. Elde edilen veriler, tağşiş oranı (%) arttıkça, AK değerlerinin yükseldiğini göstermiştir. Yapılan çalışma sonucunda toplanan natürel zeytinyağlarının; % 81'inin serbest yağ asitliği, % 90'ının peroksit sayısı, % 100'ünün 232 nm'de Özgül absorbans değeri, % 14'ünün 270 nm'de özgül absorbans değeri ve % 100'ünün AK değerleri TSE'de belirtilen standartlara uygun bulunmuştur.

Anahtar Kelimeler: Natürel zeytinyağı, tağşiş, özgül absorbans, Hatay

Determination of Specific Absorbance Values in Olive Oil Manufactured in Hatay and The Importance of These Values in Olive Oil Adulteration

Abstract

In this study, the quality criteria (free fatty acidity, peroxide number, specific absorbance in ultraviolet) of the natural olive oils obtained from 21 different olive oil enterprises operating in Hatay were measured and the values obtained were compatible with TSE (Turkish Standards Institute) and IOC (International Olive Oil Council) criteria. For this purpose, 0.5 liters of olive oil was collected from each enterprise. When the chemical properties of natural olive oils are examined; free fatty acidity values were between 0.55 - 4.3%; peroxide number values were between 6.47 – 21.73 meqO₂/kg; the specific absorbance and AK values measured at 232 and 270 nm were found to be between 1.66 - 3.04, 0.17 - 0.39, and -0.004 - 0.003, respectively. The data obtained showed that AK values increased as the adulteration rate (%) increased. As a result of the study, free fatty acidity values of 81% of olive oils; peroxide numbers of 90% of olive oils, specific absorbance values of 100% of olive oils at 232 nm; the specific absorbance values of 14% of the olive oils at 270 nm and the AK values of 100% of the olive oils were found to comply with the standards specified in TSE.

Keywords: Virgin olive oil, Adulteration, Specific Absorption, Hatay

The Interdependence of The Humus and The Effectiveness of Mineral Fertilizers on Irrigated Soils of The Zarafshan Valley

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Abstract

The study of the influence of soil fertility in the Zarafshan Valley, differing in soil formation factors, on various agricultural crops was conducted. The influence of the prescription of development (irrigation) and agricultural technology of cultivating agricultural crops was established on the qualitative composition of humus, yield, and product quality. The studies on observational plots located on different types of soils in the Zarafshan Valley showed a clear dependence of crop yields on the genetic properties of soils, humus content and mechanical composition. The effectiveness of the applied fertilizers also depends on these indicators. Cultivating agricultural crops on meadow soils containing more humus, gives a greater effect from the applied fertilizers than on meadow-serozem and typical serozems. The effectiveness of mineral fertilizers, the removal of nutrients, the coefficient of use of mineral fertilizers and crop yields depend on the type, genesis of soils, climatic conditions, and humus content in the soil. The rational use of fertilizers, taking into account these factors, including the humus state of the soils of the examined region, firstly, will reduce the costs associated with their use, secondly, help improve the quality of agricultural products, and thirdly, get additional food products by increasing the yield of agricultural crops.

Keywords: Crop yield, Zarafshan Valley, Irrigation, Soil

Effects of Some Abiotic Stress Factors on Fruit Trees in Global Climate Change

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Abstract

Fruit trees are exposed to many stress factors during their lifetime. Compared to biotic stress factors, overcoming abiotic stress factors can be difficult for both the plant and the producer. We can see the effects of stress factors such as drought, salinity, radiation, high temperature or frost on fruit trees alone or simultaneously. These effects can lead to changes in the normal physiological functions of fruit trees. All these stresses reduce the biosynthetic capacity of plants, change their normal functions and cause damage that can lead to the death of the plant. Stress factors such as drought, lack or excess of water, frost, radiation, salt, etc., which increase due to the shifts in seasonal belts with global climate change, can cause the death of plants by changing the existing growth functions of fruit trees. In modern fruit tree cultivation, stress factors should be avoided and product quality, yield and economic value should be prioritized.

Keywords: Abiotic stress, Fruit trees, Global climate change

Küresel İklim Değişikliğinde Bazı Abiyotik Stres Faktörlerinin Meyve Ağaçları Üzerindeki Etkileri

Özet

Meyve ağaçları yaşamları süresince birçok stres faktörüne maruz kalmaktadırlar. Biyotik stres faktörlerine nazaran abiyotik stres faktörlerinin üstesinden gelmek hem bitki için hem de üretici için zor bir hal alabilmektedir. Kuraklık, tuzluluk, radyasyon, yüksek sıcaklık veya don gibi stres faktörlerinin meyve ağaçlarındaki etkilerini tek başına olduğu gibi eş zamanlı olarak da görebilmekteyiz. Görülen bu etkiler meyve ağaçlarının normal fizyolojik işlevlerinde değişikliklere yol açabilmektedir. Tüm bu stresler bitkilerin biyosentetik kapasitelerini azaltarak, normal fonksiyonlarını değiştirir ve bitkinin ölümüne yol açabilecek zararlara neden olabilir. Küresel iklim değişikliği ile mevsim kuşaklarındaki kaymalardan dolayı artış gösteren kuraklık, su azlığı veya fazlalığı, don, radyasyon, tuz vb., stres faktörleri meyve ağaçlarının mevcut yetiştirme fonksiyonlarını değiştirerek bitkilerin ölümüne yol açabilirler. Modern şekilde yapılan meyve ağaçları yetiştiriciliğinde stres faktörlerinin önüne geçilerek, ürün kalitesi, verim ve ekonomik değer ön planda tutulmalıdır.

Anahtar Kelimeler: Abiyotik stres, Meyve ağaçları, Küresel iklim değişikliği

Yarı Kurak İklim Koşullarında Kabak (*Cucurbita pepo* L.) Bitkisinin Bitki Su Tüketiminin Belirlenmesi

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Özet

Bu çalışmanın amacı doğrudan bitki su tüketimini belirlemeye yarayan su dengesi eşitliği ve iklim parametrelerinden yararlanarak bitki su tüketimini tahmin etmeye yarayan Penman Monteith eşitliği (ET_o miktarına bağlı olarak çeşitli bitkilerin ET_a miktarlarının tahmin edilmesinde kullanılan yöntem) FAO 56 modifikasyonu yöntemini kullanarak kabak bitkisinin Siirt iklim koşullarında bitki su tüketimini belirlemektir. Araştırmada bitki materyali olarak Nevşehir çerçevesi kabak popülasyonu (*Cucurbita pepo* L.) kullanılmıştır. Çalışma 2017 yılı kabak bitkisinin yetiştirme sezonu boyunca Siirt üniversitesi Ziraat Fakültesi deneme arazisinde tarla koşullarında yürütülmüştür. Erken vejetatif dönemde su dengesi eşitliğine göre günlük ET_a değeri 4.8 mm gün⁻¹ arasında değişirken, çiçeklenme öncesinde ve çiçeklenme döneminde 9.4 mm gün⁻¹ olarak belirlenmiştir. Penman Monteith eşitliği ile saptanan referans bitki su tüketimi ise 8.9 mm gün⁻¹ olarak hesaplanmıştır. Aylık olarak (Temmuz ayı) ise su dengesi eşitliğine göre 291.4 mm ay⁻¹, Penman Monteith eşitliğine göre 275.9 (Temmuz ayı) mm ay⁻¹ olarak hesaplanmıştır. Yetiştirme sezonu boyunca kabak bitkisine uygulanan sulama suyu miktarı 573.20 mm olup su dengesi eşitliği yöntemine göre mevsimlik bitki su tüketimi (ET_a) 628.30 mm, Penman Monteith FAO 56 modifikasyonu eşitliğine göre ise ET_o miktarı 607.50 mm olarak tespit edilmiştir. Sonuç olarak çalışmada gerçek su tüketimi ile hesaplanan (kıyas) su tüketimi arasındaki farkın önemsiz olduğu ve daha fazla meteorolojik veri kullanarak bitki su tüketim tahmininde daha gerçekçi sonuçlara ulaşan Penman-Monteith eşitliği kullanılarak kabak bitkisinin yarı kurak iklim koşullarında sulama programlarının hazırlanmasında kullanılabileceği önerilebilir.

Anahtar Kelimeler: Kabak, Bitki su tüketimi, Su dengesi eşitliği, İklim verileri

*Teşekkür: Bu çalışmanın bir kısmı 2022 yılında TR dizin bir dergiye yayınlanmak amacıyla gönderilmiştir.

Effect of Ecological Conditions on Petal Color and Different Characteristics of Halfeti Black Rose (*Rosa X Odorata* 'Louis XIV') Cultivated in Türkiye

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Abstract

Roses have always attracted people's attention with their aesthetic and aromatic properties, scents and colors throughout the historical process. The microclimatic conditions created by the Euphrates caused the Halfeti Rose (*Rosa x odorata* 'Louis XIV'), a hybrid rose species brought to the region many years ago, to acquire its almost black color and scent and to become the production area of this heritage. In addition, as a result of its adaptation to the region, 'Black Rose' received a geographical indication in 2021 in order to contribute to rural tourism and the rural population to turn to different business areas. Halfeti Roses bloom twice a year and take their darkest color when they turn into buds in autumn. If suitable ecological conditions are provided, there are also roses that retain their black color after fully blooming. For example, it has been determined that the chlorophyll content of taxa commonly used in the region such as Halfeti rose, Chinese rose and oil rose, Muhammedi rose are higher than taxa brought from different ecologies such as Van and Gümüşhane. Rose fruits are generally classified as waste and it is stated that the effective use of these waste products is limited. In this context, it is also important to examine the fruit characteristics of Halfeti Roses. Compared with the fruits of Halfeti Rose and other taxa, the average values in pomological parameters except vitamin C; it was determined that the number of nuclei was low. In addition, it has been found that the physiological characteristics of Halfeti Rose have lower stomatal density, higher chlorophyll content and average leaf proportional water content values compared to other taxa. At the same time, the fatty acid values in the seeds were average. Adaptation of the plant to Şanlıurfa ecology in terms of physiological characteristics, dark petal color in this ecology, long flowering time and a habitus with medium growth strength are the main features that can contribute to the spread of Halfeti Rose. In this study, the effective factors in Halfeti Rose's black color and the results of research on its different characteristics were examined.

Anahtar Kelimeler: *Rosa x odorata*, Halfeti Rose, Ecology, *Rosa* L.

Türkiye'de Yetiştiriciliği Yapılan Halfeti Kara Gülü'nün (*Rosa X Odorata* 'Louis XIV') Taç Yaprağı Rengi ve Farklı Özelliklerine Ekolojik Koşulların Etkisi

Özet

Güller tarihsel süreç boyunca estetik ve aromatik özellikleri, kokuları, renkleri ile insanların her zaman ilgisini çekmiştir. Fırat'ın oluşturduğu mikroklima koşulları uzun yıllar önce yöreye getirilmiş, hibrit bir gül türü olan Halfeti Gülü'nün (*Rosa x odorata* 'Louis XIV') siyaha yakın rengini ve kokusunu almasına ve bu mirasın üretim alanı olmasına sebep olmuştur. Ayrıca bölgeye adaptasyonu sonucunda 'Kara Gül' kırsal turizme ve kırsal nüfusun farklı iş alanlarına yönelmesine katkı sağlamak amacıyla 2021 yılında coğrafi işaret almıştır. Halfeti Gülleri yılda iki defa çiçek açmakta ve sonbahar ayında gonca haline iken en koyu rengini almaktadır. Uygun ekolojik koşulların sağlanması halinde tam açtıktan sonra siyah rengini koruyan güller de olmaktadır. Örneğin Halfeti gülü, çin gülü ve yağlık gül, Muhammedi gülü gibi bölgede yaygın olarak kullanılan taksonların klorofil içeriklerinin Van ve Gümüşhane gibi farklı ekolojilerden getirilen taksonlara göre yüksek oldukları belirlenmiştir. Gül meyveleri genelde atık sınıfına girmekte ve bu atık ürünlerin etkin kullanımının sınırlı olduğu belirtilmektedir. Bu kapsamda Halfeti Gülleri'nin meyve özelliklerinin incelenmesi de önemlidir. Halfeti Gülü meyveleri ile diğer taksonlar ile karşılaştırıldığında C vitamini dışındaki pomolojik parametrelerde ortalama değerler; çekirdek sayısında ise düşük değerler aldığı belirlenmiştir. Ayrıca Halfeti Gülü'nün fizyolojik özelliklerinin diğer taksonlara göre düşük stoma yoğunluğu, yüksek klorofil içeriği ve ortalama yaprak oransal su kapsamı değerleri aldığı bulgusuna ulaşılmıştır. Aynı zamanda çekirdeklerinde bulunan yağ asidi değerleri de ortalama eğerler almıştır. Bitkinin fizyolojik özellikler bakımından Şanlıurfa ekolojisine adaptasyonu, bu ekolojide koyu taç yaprak rengi alması, çiçeklenme zamanının uzun olması ve orta düzeyde gelişme kuvvetine sahip habitusu Halfeti Gülü'nün yaygınlaşmasına katkı sağlayabilecek başlıca özellikleridir. Bu çalışmada Halfeti Gülü'nün siyah rengi almasındaki etkili faktörler ve farklı özellikleri ile ilgili yapılmış araştırma sonuçları incelenmiştir.

Anahtar Kelimeler: *Rosa x odorata*, Halfeti Gülü, Ekoloji, *Rosa* L.

Bazı Dış Mekan Süs Bitkileri Mini Çeliklerinde Köklenme Ve Kök Kalitesi Üzerine Dışsal Iba Dozlarının Etkisi

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Özet

Bu çalışma, dış mekan süs bitkilerinden (alev ağacı-*Photinia serrulata* L. Cv. 'Red Robin', defne yapraklı kartopu-*Viburnum tinus* L. ve biberiye-*Rosmarinus officinalis* L.) temmuz ayı ilk haftasında alınan yapraklı mini çeliklerinde köklenme ve kök kalitesi üzerine dışsal indol-3-bütirik asit (IBA) dozlarının (0, 500, 1000 ve 2000 ppm) etkisini araştırmak amacıyla yapılmıştır. Deneme tesadüf blokları deneme desenine göre 3 tekerrürlü olarak tasarlanmış ve her tekerrürde 15 çelik kullanılmıştır. IBA uygulaması sonrasında mini çelikler, steril torf ile doldurulmuş köpük viyöllere (3x3x5 cm) dikilerek %60 gölgeleme ve mistleme sulama altındaki alttan ısıtılmalı (22°C) köklendirme tavalara yerleştirilmiştir. Altı ay sonra yapılan gözlem ve ölçümlerde tüm türler için 1000 ppm IBA en yüksek köklenme oranını (%96.29) ve şaşırtılan bitki oranını (%95,56) verdiği tespit edilmiştir. Ancak 2000 ppm IBA, çelik başına kök sayısı (7.17) bakımından en yüksek değere ulaşmıştır. 1-9 skalasına göre hesaplanan köklenme derecesi bakımından da 1000 ppm IBA dozu 6.24 ile en yüksek değeri vermiştir. Türlerden biberiye mini çelikleri diğer türlere göre çok daha yüksek köklenme oranı (%93.33), köklenme derecesi (8.12), kök sayısı (11.37), kök uzunluğu 5.34 cm ve şaşırtılan bitki oranı (%92.22) vermiştir.

Anahtar Kelimeler: Süs bitkisi, Mini çelik, IBA, Köklenme

The Effect of Externally IBA Doses on Rooting and Root Quality of Mini Cuttings for Several Outdoor Ornamentals

Abstract

This study was conducted to investigate the effect of indole-3-butyric acid (IBA) doses (0, 500, 1000 and 2000 ppm) on rooting and root quality of burning bush (*Photinia serrulata* L. Cv. Red Robin), bay leaf viburnum (*Viburnum tinus* L.) and rosemary (*Rosmarinus officinalis* L.) leafy mini cuttings taken from the first half of July. Experiments were designed as 3 repetitions according to the random blocks design for species and 15 cuttings were used in each replication. The mini cuttings were planted in foamy cell trays (3x3x5 cm) filled with sterile peat moss and placed on rooting benches with bottom heating (22°C) in a glasshouse with 60% shading and over misting. In the observations and measurements made after six months, it was determined that 1000 ppm IBA gave the highest rooting rate (96.29%) and transplanted seedlings rate (95.56%) for all species. But 2000 ppm IBA reach to the top for root number per cutting (7.17). The highest rooting degree calculated over 1-9 scale observed as 6.24 for 1000 ppm IBA. Rosemary cuttings gave much higher rooting rate (93.33%), rooting degree (8.12), root number (11.37), root length 5.34 cm) and transplanted seedling rate (92.22%) compared to other species.

Keywords: Outdoor ornamentals, Mini cutting, IBA, Rooting

Perspective Varieties of Cherry (*Cerasus avium* Moench.) in Uzbekistan

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Abstract

Uzbekistan annually produces more than 100 thousand tons of cherries and exports of sweet cherries to the countries of the world are increasing, according to this indicator, the republic ranks 5th in the world. The products grown here are different with its unique taste and aroma. Based on the studies, it was found that, depending on the variety, the length of the growing season was 237 (Melitopol black) -249 (Melitopol early) days. The highest yield per hectare was obtained when growing the variety Melitopolskaya early - 119.3 centners per hectare, which is 32.2% higher than the control variety. When used against clastoporiosis (*Clasterosporium carpophilum* Aderh.) fungicides Punch (0.10 l/ga) and Falcon (0.40 l/ga) high biological productivity was achieved (on leaves 81.3-83.7%, shoots 84.1% - 86.3% and fruits 83.2% - 85.7%). The highest rates for the average weight of one fruit were obtained when growing sweet cherries Melitopolskaya black (7.8 g), Bakhor (8.2 g) and Russian (8.4 g).

Keywords: Variety, Hybrid, Seedling, Clastoporiosis, Fruit quality, Productivity

The Usage of Node Culture *in Vitro* Conditions

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Özet

A complete plant can be obtained from the organs of the plant such as buds, leaves, shoots and roots. Node culture; It is a tissue culture method in which axillary shoot buds in shoots taken during active or resting period are transferred to artificial nutrient medium and turned into plants. A large number of plants are produced by this method. These organs can be reproduced in a short time when they are cultured in artificial media under sterile conditions. The advantages of this method can be listed as the production of plants free from diseases and pests by the use of nodal culture, the production of plants with homogeneous characteristics, the reproduction of plants that are difficult to produce with this method, and the access to new varieties or genotypes due to somoclonal variation. Although plant cultivation under *in vitro* conditions is costly, a large number of plants can be produced economically in a short time with the use of automation techniques that reduce the labor force.

Keywords: In Vitro, Node culture, Tissue culture

In Vitro Koşullarda Boğum Kültürünün Kullanımı

Abstract

Bitkinin tomurcuk, yaprak, sürgün, kök gibi organlarından tam bir bitki elde edilebilmektedir. Boğum kültürü; aktif ya da dinlenme döneminde alınan sürgünlerdeki koltuk altı sürgün tomurcuklarının suni besi ortamına aktarılıp bitkiye dönüştüğü doku kültürü yöntemidir. Bu yöntem ile çok sayıda bitki üretilir. Bu organlar steril koşullarda suni besi ortamlarında kültüre alındıklarında kısa sürede çoğaltılabilmektedir. Boğum kültürünün kullanımı ile hastalık ve zararlılardan arı bitki üretimi, homojen özellikler gösteren bitki eldesi, üretimi zor olan bitkilerin bu yöntem ile çoğaltılması ve somoklonal varyasyondan ötürü yeni çeşit veya genotiplere ulaşmak bu yöntemin avantajları olarak sıralanabilir. *In vitro* koşullarda bitki yetiştiriciliği masraflı olmasına rağmen iş gücünü azaltan otomasyon tekniklerinin kullanılması ile kısa zamanda çok sayıda bitki üretimi ekonomik olarak elde edilebilmektedir.

Anahtar Kelimeler: *In Vitro*, Boğum kültürü, Doku kültürü

Bazı Ceviz Çeşitlerinde Meyve ve Kimyasal Özelliklerin Ekolojilere Göre Değişimi

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Özet

Ceviz (*Juglans regia* L.), dünyada en çok üretilen ve tüketilen sert kabuklu meyve türlerinden biridir. Önemli miktarlarda protein, yağ ve yağ asidi içeriği tüketimini artırmaktadır. Verim, meyvenin fiziksel ve kimyasal özellikleri çeşidin genetik yapısına bağlı olmakla birlikte çevre koşullarından da önemli ölçüde etkilenmektedir. Gerçekleştirilen bu araştırmada da 9 ceviz çeşidinde meyve özelliklerinin ekolojilere göre değişimi saptanmıştır. Ortalama meyve ağırlığı çeşitlerin genetik özelliklerini göstermiş ve en yüksek 77H1 genotipinden (15.84 g), en düşük Tokat 1 çeşidinden (8.78 g) ek de edilmiştir. Kabuklu meyve özellikleri ekolojilere göre de değişmiş, Hatay ve Yalova illerinde en yüksek meyve ağırlığı 77H1 genotipinden (17.88g; 16.83 g), Kahramanmaraş ilinde ise KR2 (17.60 g) ve Şen 1 (16.67 g) çeşitlerinden elde edilmiştir. Kabuklu ve iç ceviz ağırlığı (14.31 g ve 7.20 g), iç oranı (%50.54), meyve eni, boyu ve yüksekliği değerleri Hatay ilinde yüksek olurken, bu ilde iç ceviz renklerinin daha koyu olduğu belirlenmiştir. Yağ oranı Kahramanmaraş ve Yalova illerinde (%60.12 ve %59.35) yüksek olurken, ceviz çeşitlerinin protein içeriği Hatay ve Yalova illerinde (%18.17 ve %17.95) yüksek olmuştur. Palmitik, stearik ve limolenik yağ asitleri Kahramanmaraş ilinde yüksek olurken, Yalova ilinde Linoleik, Hatay ilinde de oleik asit oranı yüksek olmuştur.

Anahtar Kelimeler: Ceviz, Ekoloji, Pomoloji, Protein, Yağ, Yağ asiti

Variation of Fruit and Chemical Properties According to Ecology in Some Walnut Cultivars

Abstract

Walnut (*Juglans regia* L.) is one of the most produced and consumed nut species in the world. Significant amounts of protein, fat and fatty acid content increase its consumption. Yield, physical and chemical properties of the fruit depend on the genetic structure of the variety and are also significantly affected by environmental conditions. In this study, it was determined that the fruit and chemical content of 9 walnut varieties grown in different ecologies changed according to different ecologies. The average fruit weight showed the genetic characteristics of the cultivars, the highest nut weight was added from the 77H1 genotype (15.84 g) and the lowest from the Tokat 1 variety (8.78 g). Shell fruit characteristics also changed according to ecology, the highest fruit weight was obtained from 77H1 genotype (17.88g; 16.83 g) in Hatay and Yalova provinces, and from KR2 (17.60 g) and Şen 1 (16.67 g) varieties in Kahramanmaraş. While the weight of shelled and kernel walnuts (14.31 g and 7.20 g), kernel ratio (50.54%), fruit width, length and height values were higher in Hatay, it was determined that the color of kernels was darker in Hatay province. Fat content was high in Kahramanmaraş and Yalova (60.12% and 59.35%), protein content was high in Hatay and Yalova (18.17% and 17.95%). While palmitic, stearic and linolenic fatty acids were high in Kahramanmaraş, Linoleic acid was high in Yalova and oleic acid was high in Hatay.

Keywords: Walnut, Ecology, Pomology, Protein, Fat, Fatty acid

Samsun'da Yetiŝen Kuzeyli ve GÜneyli Yüksek Boylu Maviyemiŝ Çeŝitlerinin Meyve İÇeriĐi, Antosiyanin ve Antioksidan Miktarlarının Tespiti

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Özet

Bu Çalıŝma, Samsun ili Atakum ilçesinde saksıda ve açık alanda yetiŝmekte olan bazı maviyemiŝ çeŝitlerinde tane içeriĐi ve antioksidan madde miktarlarının belirlenmesi amacıyla yapılmıŝtır. Bu amaçla 6 litrelik saksılardaki asidik torf ortamına dikilmiŝ olan 6 yaŝındaki kuzeyli yüksek boylu (Nui, Northland, Reka, Hortblue Poppins, Liberty, Aurora, Goldtraube) ve güneyli yüksek boylu (Jubilee, Misty, O'neil ve Sharpblue) maviyemiŝ çeŝitlerinde yüzde kurumadde, suda Çözünebilir kurumadde (SÇKM), pH, titrasyon asitliĐinin yanı sıra toplam fenolik maddeler, antosiyaninler ile antioksidanlar (DPPH ve FRAP) tespit edilmiŝtir. Demede kullanılan maviyemiŝ çeŝitlerinde %'de kuru madde 10.83 (Reka) ile 16.39 (Jubilee) arasında deĐiŝtiĐi saptanmıŝtır. Toplam fenoller 6289.24 mg/kg GAE (Hortblue Poppins) ile 24482.89 mg/kg GAE arasında deĐiŝirken antosiyanin miktarının 333.95 mg/kg Malvidin-3 glikozid (Hortblue Poppins) ile 3474.53 mg/kg Malvidin-3 glikozid (Misty) arasında deĐiŝtiĐi saptanmıŝtır. Öte yandan DPPH ve FRAP olarak saptanan antioksidan kapasite bakımından en yüksek deĐerler Misty çeŝidinde sırasıyla 602.88 ve 642.35 mmol/g trolex eŝdeĐer km olarak tespit edilmiŝtir.

Anahtar Kelimeler: Maviyemiŝ, Kurumadde, DPPH, FRAP, Antosiyanin

Determination of Berry Content, Anthocyanins and Antioxidant Properties of Northern and Southern Highbush Blueberry Varieties Grown in Samsun

Abstract

This study was carried out to determine the berry content and antioxidant substance content of some blueberry cultivars grown in pots and open fields in Atakum, Samsun. For this purpose, 6-year-old northern highbush (Nui, Northland, Reka, Hortblue Poppins, Liberty, Aurora, Goldtraube) and southern highbush (Jubilee, Misty, O'neil and Sharpblue) blueberry cultivars planted in acidic peatmoss medium in 60-liter pots. Water-soluble dry matter (SÇKM), pH, titration acidity, as well as total phenolic substances, anthocyanins and antioxidants (DPPH and FRAP) were determined. It was determined that the percentage of dry matter in blueberry varieties used in research ranged from 10.83 (Reka) to 16.39 (Jubilee). Total phenols ranged from 6289.24 mg/kg GAE (Hortblue Poppins) to 24482.89 mg/kg GAE, while the amount of anthocyanins varied between 333.95 mg/kg Malvidin-3 glycoside (Hortblue Poppins) and 3474.53 mg/kg Malvidin-3 glycoside (Misty). On the other hand, the highest values in terms of antioxidant capacity determined as DPPH and FRAP were determined as 602.88 and 642.35 mmol/g trolex equivalent drymatter in Misty cultivar, respectively.

Keywords: Blueberry, Dry Matter, DPPH, FRAP, Anthocyanin

Determination of Genetic Diversity of Some Parsley (*Petroselinum crispum*) Genotypes

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Abstract

Parsley, a vegetable whose leaves are consumed, also has important advantages in terms of human health. In economic terms, commercial parsley production is increasing day by day. Hatay is the most important parsley producing province in Turkey. There is no data on the genetic structure of parsley cultivars and genotypes grown in Turkey. The first step of parsley breeding is the characterization of existing genotypes. In this study, genetic diversity of 12 different parsley genotypes was determined by ISSR marker system. In the study, 41 of the 130 bands obtained from 16 ISSR primers were found to be polymorphic. Genetic similarity was determined between 0.86-0.99. In the study, the average polymorphism was 31.5%, and the number of bands varied between 4-14. While the genotypes that are genetically closest to each other are the genotypes M5 and M6; The most distant genotypes were determined as M4 and M8 genotypes. Findings from the study showed that there was genetic variation among the parsley genotypes examined. The obtained data will enable more effective use of parsley genotypes whose genetic differences are determined in future breeding programs.

Keywords: *Petroselinum crispum*, Parsley, ISSR, Genetic Characterization

Determination of Genetic Diversity of Hatay Pepper Genotypes (*Capsicum annuum*) by ISSR Technique

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Abstract

Pepper is one of the most important vegetables produced in the world and in our country. Many local populations and commercial varieties are used in pepper cultivation in our country. The success of pepper breeding depends on the availability of sources with high genetic diversity, the characteristics of the genetic material and the creation of combinations with the desired characteristics. Genetic characterization of plant material is the most important step in this process. In this study, 15 different pepper genotypes obtained from the center and districts of Hatay province were characterized by ISSR marker system. In the study, a total of 167 bands were obtained from 17 ISSR primers and 67 of these bands were found to be polymorphic. Genetic similarity was determined between 0.89-0.99. In the study, the mean polymorphism was 40.1%, and the number of bands varied between 4-14. While the genotypes that are genetically closest to each other are the genotypes B6 and B7; The most distant genotypes were determined as B2 and B14 genotypes. The findings obtained from the study showed that there is a genetic difference between the pepper genotypes grown in and around Hatay. The data obtained from this study will enable more effective use of genotypes in future breeding programs and shorten the breeding period.

Keywords: *Capsicum annuum*, Pepper, ISSR, Molecular characterization

Hatay İli Bağcılığının Mevcut Durumu ve Son On Yıldaki Gelişimi

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Özet

Asmanın anavatanı olan Türkiye, bağcılık için yerkürenin en elverişli iklim kuşağı üzerinde bulunmaktadır. Ülkemiz, asmanın gen merkezi olması sebebiyle oldukça eski ve köklü bir bağcılık kültürüne de ev sahipliği yapmaktadır. Bu çalışmada, Hatay ili bağcılığının mevcut durumu, üretim miktarı, bağ alanı ile üzüm veriminin son 10 yıldaki değişimi incelenmiştir. Akdeniz bölgesinde yer alan ve bölgede bağcılık anlamında önemli bir yere sahip olan Hatay ili, sofralık, kurutmalık ve şıralık/şaraplık üzüm gibi farklı değerlendirme şekillerinin tamamında yetiştiriciliğin yapılabildiği ve gelecek vadeden yerel üzüm (Pafi) çeşitlerine sahip bir ilimizdir. Ülkemizde Akdeniz bölgesi ve özellikle sahil kuşağında erkenci sofralık üzüm üretimi yapılmaktadır. Hatay İli, bölgede erkenci sofralık üzüm üretimi bakımından oldukça hızlı bir gelişme gösteren ilimizdir. Hatay'da üretilen toplam üzüm miktarının %98.7'sini çekirdekli sofralık, %1.2'sini çekirdeksiz sofralık üzüm oluştururken, şıralık/şaraplık üzüm üretiminin payı ise %0.1'dir.

Anahtar Kelimeler: Akdeniz Bölgesi, Mersin, Bağcılık, Üzüm Üretimi, Bağ Alanı

The Current Situation and Development of Hatay Province Viticulture in The Last Ten Years

Abstract

Turkey, the homeland of the grapevine, is located on the most favourable climatic zone in the world for viticulture. Being the gene center of the vine, our country has also a very old and deep-rooted viticulture tradition. In this study, the current situation of viticulture, production amount, vineyard area and the change in grape yield in the last 10 years in Hatay province were examined. Located in the Mediterranean region, Hatay has an important place in terms of viticulture in the region where all grape varieties for different uses such as table, raisin and wine can be cultivated. And it also has promising local grape (Pafi) varieties. In our country, early table grapes are mostly produced in the Mediterranean region and especially in the coastal zone. Hatay is a province that shows a very rapid development in terms of early table grape production in the region. 98.7% of the total grape amount produced in Hatay is table seeded grapes, 1.2% is seedless table grapes and the share of grape production for wine is 0.1%.

Keywords: Mediterranean Region, Mersin, Viticulture, Grape Production, Vineyard Area

Quality of Grapes of Feteasca Neagra Wine Variety Depending of Grow Region from The Republic of Moldova

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Abstract

In Moldova wine production is very important for the economic development, because is traditional for local people. The Moldovan Government have a one of the main purpose in their development strategy - to develop and promotion local traditions in the word, inclusive moldavian wines produced from local varieties. In the period from 2017 to 2021, we studied the influence of ecological conditions and grow technology on the quality of grapes of Feteasca Neagra wine variety (local moldavian variety) cultivated in different regions of the Republic of Moldova – South part (Alexandru Ioan Cuza, Cahul district / Bugeac, Comrat district / Leova, Leova District); South-east part (Purcari, Stefan Voda district); Central part (Speia, Anenii Noi district / Nisporeni, Nisporeni district / Mircesti, Ungheni district). Feteasca Neagra synonymous: Coadă Rîndunicii, Coadă Rîndunicii, Mădchentraube Schwarz, Schwarze Mădchentraube, Pasareasca neagra, Fekete Leányka. Feteasca Neagra is a local Moldavian and Romanian wine grape variety of the middle ripening period. The period from the beginning of bud break to the full maturity of berries in the conditions of the south part of Moldova is 125-140 days with a sum of active temperatures of 2700°-2800°C. The leaves are medium, cuneate-round, five-lobed, medium or deeply dissected with the edges of the lobes bent down, glabrous below with sparse bristles along the veins. The petiole notch is open, vaulted or lyre-shaped with a pointed bottom. The flower is bisexual. Clusters are medium, cylindrical or cylindrical, medium dense. The berries are medium, rounded, purple-black. The skin is strong. The pulp is juicy. Shoot maturation is good. Productivity is 7,0-9,5 t/ha. Feteasca Neagra is moderately affected by mildew, and weakly by other diseases and pests. The grapes are used to prepare a well-colored table wine. In our research results we concluded that the quality and quantity of grapes and wine depend directly by the ecological grow conditions. In the south part we obtained early grapes by higher sugar and titratable acidity content in comparison with grapes obtained in the central or north part of Moldova. The distance between south and north experimental vineyards are about 200 km, but the conditions are very different.

Keywords: Feteasca Neagra, Grapes, Local varieties, Republic of Moldova, Viticulture, Wine, Quality

The Productivity of The Viorica Variety by Growing in The Southern Grape Wine Region of Moldova

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Abstract

The vine-growing area of the Republic of Moldova, depending on environmental conditions, is divided into 4 regions - Southern, Central, South-Eastern and Northern. The aim of the research was to study the growth parameters of grape shoots, leaf surface, photosynthetic activity and productivity of the wine variety Viorica when growing in the southern region of the Republic of Moldova on slopes of different exposures. Viorica variety - (Zeibel 13-666 x Aleatico) belongs to autochthonous varieties was bred in 1969 in the Moldavian Scientific Research Institute of Grapes and Wines "Vierul", zoned in 1990. Viorica is a wine grape variety of medium late ripening (145-150 days), with a sum of active temperatures of 2700°C. The leaves are medium in size, rounded, strongly dissected. The flower is bisexual. The mass of the bunch is 250-300 g, cylindrical-conical shape, medium density. The berry is medium, round, white. The skin is dense. The pulp is juicy. On the palate, a light nutmeg aroma. Sugar content 18-20% with acidity 7-9 g/l. Bushes vigorous. Shoot maturation is good. Fruitful shoots 80-90%, the number of clusters per developed shoot 1.2, per fruitful - 1.4. Productivity is 90-100 q/ha. Frost resistance -25°C. The degree of damage by mildew, oidium, anthracnose, gray mold and phylloxera is medium. To protect the Viorica grape variety from diseases, two treatments are sufficient to protect the Viorica grape variety from disease. The variety is suitable for cultivation on a high trunk (70-100 cm). Grapes are used to make table white wines. When a variety is placed in different soil-climatic regions, the characteristics of the variety change. We have found that under the conditions of the Southern region, the parameters of the leaf surface (LS) change depending on the exposure of the slopes and the location of the bushes on them. As a result of the activity of leaves, the total leaf surface (LS) of the shoot, bush, row and vineyard is formed. The morphological parameters of the leaves change in ontogenesis, depending on the exposure of the slope and the location of the bushes on them (top, middle, bottom). The area of the leaf blade during the period of berry growth varies from 176,6 to 186,3 cm², during the ripening period from 215,1 to 268,1 cm². The leaf surface (LS) of the shoot, bush and plantation increases gradually, depending on the number of shoots and the leaves that developed on them. By the end of the growing season (during the maturation phase), adaptive changes are observed associated with an increase in LS during the growth of bushes in the lower parts of the slopes. There is a direct correlation between the development of LS and the yield of bushes. It has been established that the yield of bushes varies, depending on the year of the research, increases when growing in the lower parts of the slope by 1,2-1,3 once.

Keywords: Grapes, Viorica variety, Slope, Environmental Conditions, Leaf area, Grape shoot, Productivity, Viticulture, Republic of Moldova

**Development of The Leaf Surface The Clone R5 Cabernet Sauvignon Variety in The Southern Region
The Republic of Moldova**

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Abstract

The natural conditions of the Southern zone of the Republic of Moldova are generally favorable for the cultivation of technical grade grapes. In the Republic of Moldova, certified virus-free clones of classic European varieties are introduced. However, the physiological characteristics of growth, photosynthetic activity and productivity of European clones of grapes in the conditions of Southern zone of the Republic of Moldova (ATU Gagauzia) have not been sufficiently studied. This article presents the results of many years of research on the physiological processes of the clone R5 Cabernet Sauvignon growing in the Southern region of the Republic of Moldova. It has been established that the development parameters of the Leaf Apparatus of clone R5 of the Cabernet Sauvignon variety depends on the rootstock on which it is grafted and meteorological conditions during the years of research. A strong correlation dependence between the development of the Leaf Surface and the Productivity of the Shoots was revealed.

Keywords: ATU Gagauzia, Cabernet Sauvignon, Clone, Grapes, Leaf area index, Leaves, Republic of Moldova

Hatay'da Üretilen Zeytinyağlarında Trilinolein (Trigliserit) Değerlerinin Belirlenmesi ve Bu Değerlerin Zeytinyağı Tağşişindeki Önemi

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Özet

Bu araştırmada Hatay'da faaliyet gösteren 21 farklı zeytinyağı işletmesinden temin edilen natürel zeytinyağlarının trilinolein değerleri ölçülmüş ve elde edilen değerlerin TSE (Türk Standartları Enstitüsü) ve UZK (Uluslararası Zeytinyağı Konseyi) kriterlerine uygunluğu araştırılmıştır. Bu amaçla her bir işletmeden 0,5 litre zeytinyağı toplanmıştır. Toplanan 0,5'er lt zeytinyağından 20'er ml alınarak homojen bir paçal hazırlanmış ve bu paçal 5 gruba ayrılmıştır. Zeytinyağında tağşişi belirlemek için paçallara sırayla %1, %10, %25, %50 ayçiçek yağı, fındık yağı, mısırözü yağı, pamuk yağı ve soya yağı ilave edilmiştir. Tağşiş edilmiş zeytinyağı numunelerinin trilinolein (LLL) değeri HPLC ile ölçülmüştür. Natürel zeytinyağlarına ait % LLL değerleri 0,16- 0,41 arasında bulunmuştur. Elde edilen veriler, tağşiş oranı (%) arttıkça % LLL değerinin de yükseldiğini göstermiştir. Yapılan çalışma sonucunda toplanan natürel zeytinyağlarının %100'ünün LLL değeri UZK'nın belirlemiş olduğu standartlara uygun bulunmuştur.

Anahtar Kelimeler: Naturel zeytinyağı, Tağşiş, Trilinolein, Hatay.

Determination of Trilinolein (Triglyceride) Values in Olive Oil Manufactured in Hatay and The Importance of These Values in Olive Oil Adulteration

Abstract

In this study, trilinolein values of natural olive oils obtained from 21 different olive oil enterprises operating in Hatay were measured. Compliance of the obtained values with TSE (Turkish Standards Institute) and UZK (International Olive Oil Council) criteria was investigated. For this purpose, 0.5 liters of olive oil was collected from each enterprise and a homogeneous blend was prepared by taking 20 mL from each. The prepared blend is divided into 5 groups. To determine adulteration in olive oil; Sunflower oil, hazelnut oil, corn oil, cottonseed oil and soybean oil were added to all blends at the rates of 1%, 10%, 25%, 50%, respectively. Trilinolein (LLL) value of adulterated olive oil samples was measured by HPLC. The % LLL values of natural olive oils were found to be between 0.16 and 0.41. The data obtained showed that as the adulteration rate (%) increased, the LLL % value also increased. As a result of the study, the LLL value of 100% of the collected natural olive oils were found to comply with the standards determined by IOC.

Keywords: Virgin olive oil, Adulteration, Trilinolein, Hatay

Physicochemical Analysis and Fatty Acid Profile of Olive Oil Extracted from Arbequina Variety and Its Comparison with Selected Commercial Brands

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Abstract

Research work was carried out to analyze and compare Arbequina olive oil with selected commercial olive oil from local market of Peshawar. The samples were Pulp Oil, Pomace Oil extracted from Arbequina and two commercial olive oil). All the samples were analyzed physicochemically for moisture content (%), Specific gravity, refractive index, iodine value, saponification value and fatty acid profile. Results of all the samples were compared with International Olive Oil Council (IOOC), Food and Agriculture Organization (FAO) and World Health Organization (WHO) standards. Percent moisture content was observed in sample Arbequina Pulp oil (0.14), Arbequina Pomace oil (0.17), Commercial oil sample 1 (0.21) and Commercial oil sample 2 (0.2) which showed that Arbequina Pulp and Pomace oil were within the range of standards while Commercial olive oil sample 1 and 2 showed slight variation from recommended standards. Similarly the means values of specific gravity were observed in Arbequina Pulp oil (0.86), Arbequina Pomace oil (0.89), Commercial oil sample 1 (0.94) and Commercial oil sample 2 (0.93) which showed that Arbequina Pulp and Pomace oil were within the range of standards while Commercial olive oil sample 1 and 2 showed slight variation from recommended standards. Refractive index was observed in sample Arbequina Pulp oil (0.45), Arbequina Pomace oil (0.44), Commercial oil sample 1 (1.49) and Commercial oil sample 2 (1.48) which showed that Arbequina Pulp and Pomace oil were within the range of standards while Commercial olive oil sample 1 and 2 showed slight variation from recommended standards. Similarly the values of Iodine were observed in Arbequina Pulp oil (93.3), Arbequina Pomace oil (91.07), Commercial oil sample 1 (73.37) and Commercial oil sample 2 (71.3) which showed that Arbequina Pulp and Pomace oil were within the range of standards while Commercial olive oil sample 1 and 2 showed slight variation from recommended standards. Free fatty value was observed in Arbequina Pulp oil (0.74), Arbequina Pomace oil (0.72), Commercial oil sample 1 (2.2) and Commercial oil sample 2 (2.7) which showed that Arbequina Pulp and Pomace oil were within the range of standards while Commercial olive oil sample 1 and 2 showed slight variation from recommended standards. Similarly peroxide value were observed in Arbequina Pulp oil (15.71), Arbequina Pomace oil (11.22), Commercial oil sample 1 (22.81) and Commercial oil sample 2 (21.81) which showed that Arbequina Pulp and Pomace oil were within the range of standards while Commercial olive oil sample 1 and 2 showed slight variation from recommended standards. Saponification value was observed Arbequina Pulp oil (184.12), Arbequina Pomace oil (188.23), Commercial oil sample 1 (198.36) and Commercial oil sample 2 (199.12) which showed that Arbequina Pulp and Pomace oil were within the range of standards while Commercial olive oil sample 1 and 2 showed slight variation from recommended standards. Fatty acid profile of all the samples were analyzed in which saturated, unsaturated and polyunsaturated Fatty acids of Arbequina pulp and Pomace oil were in the range of standards while Commercial olive oil sample 1 and 2 showed slight variation from recommended standards. Statistical analysis at alpha value (± 0.05) showed that that sample Arbequina pulp and pomace oil found best as compared to commercial olive oil.

Keywords: Fatty acid profile, Saponification value, Moisture, Acid value, Refractive index

Tüketicilerin İşlenmiş Piliç Et Ürünleri Satın Alma ve Tüketim Tercihlerinin Belirlenmesi: Hatay İli Örneği

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Özet

Önemli protein kaynaklarından biri olan tavuk eti işlenmeden veya işlenerek çeşitli şekillerde tüketiciye sunulmaktadır. Her geçen gün yeni bir işlenmiş ürün market raflarında yerini almaktadır. Kırmızı ete göre daha uygun fiyatlarda piyasada yer alması tavuk etinin tüketici tarafından daha fazla talep görmesini sağlamaktadır. Bu çalışma ile tüketicilerin işlenmiş tavuk eti ürünleri satın alma ve tüketim tercihlerinin belirlenmesi amaçlanmıştır. Bu kapsamda, Hatay ilinde 267 tüketiciyle yapılan anketle elde edilen veriler çalışmanın ana materyalini oluşturmaktadır. Verilerin analizinde, frekans tabloları oluşturularak yüzde hesaplamalarından faydalanılmıştır. Ayrıca, tüketicilerin gelir düzeyleri ile bazı sosyo-ekonomik değişkenler arasındaki ilişkiler incelenirken Ki-kare (χ^2) bağımsızlık testi kullanılmıştır. İşlenmiş tavuk eti tercihinde etkili olabilecek faktörler analiz edilirken Likert ölçeği kullanılmıştır. Araştırma bulgularına göre; Hatay ilinde aylık tüketilen işlenmiş tavuk eti miktarı kişi başına yaklaşık 1.07 kg olarak hesaplanmıştır. Tüketicilerin yarıya yakını (%47.6)'sı işlenmiş tavuk etini firmanın tesislerinde hazırlanıp paketlenmiş şekilde satın almayı tercih etmektedir. İşlenmiş tavuk ürünün sağlıklı olması, lezzetli olması, pratik olması ve ekonomik olması tüketicilerin en fazla önem verdikleri faktörlerdir. Günümüzde tüketici tercihlerinin bilinmesi üretici ve pazarlayıcılar açısından önemlidir. Bu nedenle çalışmanın tüketici tercihlerini ortaya koyan ve yol gösteren bir çalışma olduğu söylenebilir.

Anahtar Kelimeler: İşlenmiş tavuk eti, Tercih, Tüketim

Determination of Consumers' Processed Chicken Meat Products Purchase and Consumption Preferences: A Case Study of Hatay Province

Abstract

Chicken meat, which is one of the important protein sources, is presented to the consumer in various ways without being processed or processed. Every day, a new processed product takes its place on the market shelves. In this study, it is aimed to determine consumers' purchasing and consumption preferences of processed chicken meat products. In this context, the data obtained through the survey conducted with 267 consumers in Hatay province constitute the main material of the study. In the analysis of the data, percentage calculations were used by creating frequency tables. In addition, the Chi-square (χ^2) independence test was used when examining the relationships between the income levels of consumers and some socio-economic variables. Likert scale was used to analyze the factors that may affect the preference of processed chicken meat. According to the research findings; The amount of processed chicken meat consumed monthly in the province of Hatay has been calculated as approximately 1.07 kg per person. Nearly half (47.6%) of consumers prefer to buy processed chicken meat as prepared and packaged in the company's facilities. The fact that the processed chicken product is healthy, delicious, practical and economical are the factors that consumers give the most importance. Today, knowing consumer preferences is important for producers and marketers.

Keywords: Processed chicken meat, Preference, Consumption

Photoinitiated Polymers and Graphene - Based Aerogel for Agricultural Wastewater Pollutants

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Abstract

Graphene (Gr) and its derivatives have attracted a lot of research interest for a variety of applications in the sectors of electricity, energy generation and storage, sensors, water purification, medicine, and more because of their exceptional qualities. Several processes, including mechanical cleavage, chemical exfoliation, thermal breakdown, and electrochemical exfoliation, can be used to create gr from graphite. One of these techniques is electrochemical exfoliation, which creates graphene flakes quickly, easily, and environmentally friendly without the use of harmful, corrosive oxidizing or reducing chemicals. Here, we fabricated an aerogel made of polyacrylamide (PAM) and graphene and used for removal of agricultural wastewater pollutants. To prepare the aerogel, first, graphene was prepared by electrochemical exfoliation of graphite in 0.1 M PBS (pH=7.4). Then, an hydrogel was produced by mixing acrylamide, N,N'-methylenebisacrylamide, graphene and N,N,N',N'-tetramethylethylenediamine under sunlight. Then, the hydrogel was freeze-dried to form aerogel. As-prepared aerogel was used for removal of Ni²⁺ and Co²⁺ ions from the agricultural wastewater. The results showed that the aerogel is capable of removal of Ni²⁺ and Co²⁺ ions with a high efficiency.

Keywords: Wastewater treatment, Graphene, Photoinitiated polymers

Evaluation of The Organoleptic Characterization of Some Fresh Figs Destination

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Abstract

The fig species is including in the Mediterranean region. This tree is very old in the world but also in our country. The numerous legends and myths prove its antiquity. Fig fruit has many classification, as edible and nonedible fruit time and two time, fresh consume destination, dry fruit destination and industry destination. The aim of this study has been characterization of best traits of fresh consume fruit and to look quality standards for some fig varieties. In this characteristics fruit are including, good quality, appearance of the produce, presentation, free from defects in shape and development, defects in colouring, damaged the skin, skin defects within limits, longitudinal cracks in the skin, size is determination by the maximum diameter. The minimum size shall be 40 mm. Uniformity in size. Quality tolerance for all class, a total tolerance for weight, split in fruit. Maturity fruit. The development of maturity of fresh fig must continue their ripening. Practically free from pests, free from damage caused by pests, free from damage caused by pest s affecting the fresh fruit. Free of abnormal external moisture. Taste of fruit, resistance of fig fruit transport. The fig fruit classification are in three classes, such are:: Extra class must be supreme class, I Class must be a good quality, II Class must be the minimum requirements for defects of fruit, for quality and presentation. 3. Percent of sugar, temperature influence of soil condition. Origin of varieties, country origin, district where grown national, regional, local, place name. In this study are characterization and determination some varieties from different region different name of varieties. This study show, figs fruit in our country classification in extra class, I class and II class, all classification depend on care in harvesting but and climatic condition and agrotechnical services. The study was guided by statistical analysis mainly with important indexes which have direct influence in quality of fruit for fresh destination.

Keywords: Traits, Characteristic, Pulp, Size, Weight, Defect, Taste, Form

Örtüaltı Domates Yetiştiriciliğinde Kalsiyum (Ca) Uygulamalarının Verim, Kalite ve Çiçek Burnu Çürüklüğü Üzerine Etkileri

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Özet

Ülkemiz seralarında yetiştirilen bitkilerden sebzeler % 95 üretim payına sahiptir. Domates % 59,2 üretim payı ile ilk sırada yer almaktadır. Sebze bitkilerinden domates, biber, patlıcan (*Solanaceae*), karpuz ve kavunun (*Cucurbitaceae*) meyvelerinde fizyolojik bir hastalık olan çiçek burnu çürüklüğü sorunu yaygın olarak görünmektedir. Meyvedeki çiçek burnu çürüklüğünün ana nedeni, toprakta kalsiyum eksikliği veya mevcut kalsiyumun birçok etmenin etkisiyle topraktan alınamamasıdır. Meyveye kalsiyumun (Ca) alınamaması sonucunda meyvenin çiçek burnundaki hücre ve dokular ölmekte, çökük ve batık bir alan oluşmakta ve daha sonra bu alan genişlemektedir. Bu bölge önce kahverengi olmakta, sonra olgun meyve rengine bağlı olarak sarıya, kırmızıya veya saprofit mantarların enfeksiyonu sonrasında siyaha dönüşebilmektedir. Çiçek burnu çürüklüğünün domatesin kalitesini olumsuz etkileyerek pazar değerini düşürmekte ve üründe %50'lere varan kayıplara neden olabilmektedir. Örtü altında yetiştirilen domateste kullanılması gereken Ca dozunun belirlenmesi çiçek burnu çürüklüğünü en az düzeye indirebilmek açısından önemlidir. Bu projede örtü altında yetiştirilen domateste farklı kalsiyum dozlarının (D0:0 kg da⁻¹, D1:10 kg da⁻¹, D2:20 kg da⁻¹ ve D3:30 kg da⁻¹ Ca) çiçek burnu çürüklüğü üzerine etkileri araştırılmıştır. Kalsiyum dozları dikimden sonra ve meyve gelişim döneminde fertigasyonla sulama suyuyla birlikte uygulanmıştır. Hasat döneminde sağlıklı ve çiçek burnu çürüklüğü olan meyveler ile yaprak örneklerinde yapılan element analizleriyle Ca düzeyleri ve Ca'un diğer elementlere oranı belirlenmiştir.

Anahtar Kelimeler: Domates, Ca Dozları, Çiçek

The Effects of Calcium (Ca) Fertigations to Yield, Quality and Blossom-End Rot on Tomato Growing in Greenhouse

Abstract

In our country, vegetables from the plants grown in the greenhouses have 95% production share. From these vegetables, tomatoes are in the first place with 51.9% production rate. Blossom-end rot is a physiological disorder that appears in tomatoes, peppers, aubergines (*Solanaceae*), watermelon and melon (*Cucurbitaceae*) fruits. The main reason of blossom-end rot is the lack of calcium in the soil or the inability of uptake of the existing calcium from the soil by the effect of many factors. Because of the inability to transport calcium (Ca) to the fruit, the cells and tissues of the fruit's blossom end are dying and a collapsed and sinked area is forming, and then this area is expanding. At first, the color of blossom-end rot region becomes brown, and then turns yellow or red according to mature fruit color, and after the infection of saprophytic fungi, it turns into black color. Blossom-end rot reduces the market value of product, affecting the quality of product and can cause up to 50% loss of yield. Knowing the proper Ca amounts will be useful to minimize the blossom-end rot in tomatoes growing in the greenhouse condition. The effects of different Ca doses (D0:0 kg da⁻¹, D1:10 kg da⁻¹, D2:20 kg da⁻¹ and D3:30 kg da⁻¹ Ca) applied with fertigation to blossom-end rot on tomato growing in the greenhouse were investigated in this project. Ca doses were applied by fertigation after transplanting and after fruit set periods. Ca levels and the ratio of other elements to Ca were determined by the elemental analysis of samples of leaves, healthy fruits and blossom-end rot fruits during the harvest period.

Keywords: Tomato, Ca Doses, Blossom End Rot, Yield, Quality

Yarı Ekstansif Koşullarda Yetiştirilen Akkaraman ve Bafra X Akkaraman G1 Koyunlarda Süt Bileşenlerinin Belirlenmesi ve Karşılaştırılması

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Özet

Bu çalışmada, Akkaraman ve Akkaraman koyunların Bafra koçlar ile melezlenmesinden elde edilen BA G1 (Bafra x Akkaraman G1) koyunların bazı süt bileşenlerinin belirlenmesi ve karşılaştırması amaçlanmıştır. Çalışma, Konya'nın Sarayönü ilçesinde bulunan Tarım İşletmeleri Genel Müdürlüğe (TIGEM) bağlı Gözlu Tarım İşletmesinde yürütülmüştür. Çalışmada her bir genotipin ilk ve ikinci laktasyonundaki koyunlarından 15 (toplam 60) baş koyun kullanılmıştır. Çalışmada süte yağ, protein, laktoz ve kuru madde yüzdelerinin ortalamaları sırasıyla 6.37 ± 0.14 , 5.30 ± 0.04 , 5.08 ± 0.02 ve 17.90 ± 0.14 olmuştur. Akkaraman koyunlarda süte yağ, protein, laktoz ve kuru madde oranlarının sırasıyla $\%6.52\pm 0.21$, 5.31 ± 0.06 , 5.05 ± 0.03 ve 18.06 ± 0.20 olduğu belirlenmiştir. Bu oranların BA G1 koyunlarda sırasıyla $\%6.23\pm 0.20$, 5.29 ± 0.05 , 5.10 ± 0.03 ve 17.75 ± 0.19 olduğu tespit edilmiştir. Süt bileşenleri genotip ve laktasyon sayısından (ilk ve ikinci laktasyon) istatistiki olarak etkilenmemiştir. Ancak laktasyon dönemi süte yağ, protein, laktoz ve kuru madde oranlarını yüksek düzeyde etkilemiştir ($P < 0.001$, $P < 0.01$, $P < 0.001$, $P < 0.001$, respectively). Süte yağ, protein, laktoz ve kuru madde oranları laktasyonun erken döneminde sırasıyla 3.52 ± 0.26 ; 5.35 ± 0.07 ; 5.31 ± 0.04 ve 15.31 ± 0.25 ; laktasyonun orta döneminde 6.94 ± 0.25 ; 5.14 ± 0.07 ; 5.16 ± 0.04 ve 18.37 ± 0.24 ; son dönemde ise 8.65 ± 0.24 ; 5.41 ± 0.06 ; 4.77 ± 0.04 ve 20.03 ± 0.23 olmuştur. Sonuç olarak genotipler arasında farklılık olmadığı tespit edilmiştir. Bu durum melezlemenin geleceği açısından olumlu bir sonuç olarak değerlendirilmiştir. Ayrıca çalışmada laktasyon ilerledikçe yağ ve kuru madde yüzdelerinin arttığı, laktozun yüzdesinin ise azaldığı tespit edilmiştir.

Anahtar Kelimeler: Koyun sütü, Melezleme, Yağ, Kuru madde, Protein

Determination and Comparison of Milk Chemical Compositions of Akkaraman and BA B1 Sheep Raised Under Semi-Extensive Conditions

Abstract

This study aimed to determine and compare the milk chemical composition of BA B1 (Bafra x Akkaraman B1) sheep obtained by crossbreeding the Akkaraman ewes to the Bafra sire line, and Akkaraman sheep. The study was carried out in Gözlu state farm of the General Directorate of Agricultural Enterprises (TIGEM) in the Sarayönü district of Konya. A total of 60 sheep constituted 15 sheep for the first and second lactation periods of each genotype were used in this study. The means of the fat, protein, lactose, and dry matter percentages in the milk were 0.37 ± 0.14 , 5.30 ± 0.04 , 5.08 ± 0.02 and 17.90 ± 0.14 , respectively. These percentages were 6.52 ± 0.21 , 5.31 ± 0.06 , 5.05 ± 0.03 and 18.06 ± 0.20 for Akkaraman sheep, and 6.23 ± 0.20 , 5.29 ± 0.05 , 5.10 ± 0.03 and 17.75 ± 0.19 for BA B1 sheep. The milk chemical composition was not affected by genotype and lactation number. The lactation period, however, significantly ($P < 0.001$, $P < 0.01$, $P < 0.001$, $P < 0.001$) affected the fat, protein, lactose, and dry matter percentages of milk. The fat, protein, lactose, and dry matter percentages were 3.52 ± 0.26 , 5.35 ± 0.07 , 5.31 ± 0.04 and 15.31 ± 0.25 for the early lactation period, 6.94 ± 0.25 , 5.14 ± 0.07 , 5.16 ± 0.04 and 18.37 ± 0.24 for middle lactation period, and 8.65 ± 0.24 , 5.41 ± 0.06 , 4.77 ± 0.04 and 20.03 ± 0.23 for last lactation period. As a result, any significant difference was not determined between the genotypes. This finding has been evaluated as a positive result for crossbreeding. It was determined the percentages of fat and dry matter increased, but the percentage of lactose decreased as lactation progressed.

Keywords: Sheep milk, Crossbreeding, Fat, Dry matter, Protein

Kolostrum Kalitesinin Tespiti ve Kolostrum Kalitesine Etki Eden Faktörler

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Özet

İneklerin plasentasının anatomik yapısından dolayı makromoleküller yapıdaki immunglobulinler anne karnında buzağıya aktarılamamaktadır. Bu sebeple buzağılarda pasif bağışıklık oluşmasının tek yolu kolostrumdur. Kolostrum doğum sonrası ineğin memesinden salgılanan ilk sekresyon olup doğum sonrası süreçte en kısa zamanda buzağıya verilmelidir. Buzağıya verilen kolostrumun yeterli miktarda ve iyi kalitede olması önemlidir. Çünkü buzağılarda sağlıklı bir neonatal dönem için yeterli pasif bağışıklığın sağlanması gerekmektedir. Kolostrum; hem buzağılarda pasif bağışıklığın sağlanmasında hem de protein, yağ, vitamin, mineral, büyüme faktörlerini sağlayarak büyüme ve hastalıklara karşı korunmada yardımcı olur. Kolostrum kalitesi; kolostrometre, refraktometre, radyal immunodifüzyon (RID) ve yakın kızılötesi spektrometre (NIRS) gibi yöntemlerle belirlenebilmektedir. Kolostrum kalitesi; hayvanın ırkı, kolostrum miktarı, buzağılama mevsimi, geçirilen hastalık, yaş, gebelik öncesi beslenme düzeyi, aşılama, kuru dönem uzunluğu, laktasyon sayısı, vücut kondüsyon skoru, doğum öncesi memeden kolostrum sızıntısı, buzağılama ve ilk sağım arası süre gibi pek çok faktöre bağlı olarak değişmektedir. Bu derlemede kolostrum içeriği, kolostrum kalitesinin belirlenmesi ve kolostrum kalitesine etki eden faktörlerden bahsedilecektir.

Anahtar Kelimeler: Kolostrum, Kolostrum kalitesi, Kolostrum kalitesinin ölçümü

Determination of Colostrum Qualities and Factors Affecting Colostrum Quality

Abstract

In cows macromolecules can not be transferred to the calves because of the placenta structure. For this reason, the only way to achieve passive immunity by giving colostrum. Colostrum is the first excretion secreted from the nipple after birth and the calves must suck the colostrum as soon as possible. It is important that the colostrum given to the cattle is of good quality. It is necessary to provide enough passive immunity for a healthy neonatal period. Colostrum provides passive immunity on calves. Colostrum helps protect against diseases and provide growth by protein, fat, vitamin, mineral and growth factors. The colostrum quality is determined by colostrometer, refractometer, radial immunodiffusion method (RID) and near-infrared spectrometry (NIRS) methods. Colostrum quality; many factors such as cows's age, amount of colostrum, season, disease prevalence, pre-pregnancy nutrition level, vaccination, dry period length, lactation number, body condition score, prenatal mammary colostrum leakage, and first milking time dependent. In this review we will express in colostrum content, determination of colostrum quality and factors affecting colostrum quality.

Keywords: Colostrum, Colostrum quality, Measurement of colostrum quality

The Influence of Non-Traditional Feed Additives on The Tasting Evaluation of Hens Meat Adler Silver

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Abstract

Recently, one of the ways to increase the intensity of poultry farming has been the search for feed additives that are biologically active, which create incentives for the productivity of the growth rate and viability of the bird. Supplements of natural origin or supplements synthesized from sources that are natural should be chosen. The basis for the search for adaptogens, stimulants that are environmentally safe and characterized by increased efficiency, is the development of approaches to the use of these substances in the treatment of farm animals and poultry. This direction of research is characterized by increased activity in a situation where there is a ban on the use of feed antibiotics in the European Union. Feather meal is a feed product produced from feathers obtained during the slaughter of poultry. Feather meal can serve as a significant reserve in terms of protein content. In recent years, new technologies for processing feathers have been actively developed in order to use the final product as a protein source. Large bird feathers and feather-down production waste contain up to 85 - 88% protein - keratin. The bird feather processed according to the new low-temperature technology is transformed into a feather product that is effectively used by the bird's body. Natural peat is also one of the most promising types of non-food raw materials that can be used in fodder production. Its use in feeding farm animals is appropriate, since it contains organic substances (sugar, nitrogen, amino acids, tannins, balsam) and inorganic substances (calcium, phosphorus, magnesium, chlorine, sulfur, iron oxides, copper, iodine, humus acids) came to harmony, having united in a certain chemical "bouquet". The introduction of non-traditional feed additives into the diet had a positive effect on the formation of meat productivity in general and the slaughter qualities of poultry in the experimental groups compared to the control. In terms of fatness, carcasses from the experimental groups belong to the first grade, and from the control group - to the second, the color of the subcutaneous and internal fat of hens in the experimental groups is yellow, which indicates that the fat is saturated with β -carotene. In the experiment, the mass of the pectoral muscles in the experimental group 1 (EG1) and experimental group 2 (EG2) was higher by 4.9% and 10.2% compared to the control group. The output of the pectoral muscles in relation to the weight of the gutted carcass in the EG 1 amounted to 19.2%, 19.6% in EG 2, and 18.7% in control. The organoleptic evaluation of meat and broth of chickens of all groups had good edible properties, however, the taste of meat in EG1 and EG2 was significantly higher compared to the control group, while meat tenderness was better in EG2 (significance was $p \geq 0.95$). The palatability and richness of the broth were rated higher by the tasters for the products in EG2 compared to the control, which may be due to the high content of protein and fat in it. This allows us to conclude that the additional introduction of the studied feed additives into the diet of meat and egg chickens during the entire growing period does not have a negative impact on the performance of slaughter products analyzed to confirm good quality.

Keywords: Feed additives from feathers and peat, Chickens, Quality, Meat, Pectoral muscles

Kaplanmış ve Kaplanmamış Esansiyel Yağların Broilerlerde Performansa Etkisi

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Özet

Yemden yararlanmayı arttırmak, elde edilen hayvansal ürünlerin miktar ve kalitesini yükseltmek, hayvanların sağlıklarını korumak ve sonuçta elde edilen ürünün maliyetini düşürmek amacıyla yem katkı maddelerinin çeşitlilik göstermesine neden. Bu çeşitlilik alternatif yem katkılarına olan ihtiyacın artmasıyla bitki ekstraktları ve esansiyel yağlar gibi birçok yem katkısını alternatif olarak tercih edilmeye başlanmasını sağlamıştır. Yapılan bu çalışmada broiler civcivlerde kaplanmış ve kaplanmamış esansiyel yağların etkinliğini yem tüketimi, yemden yararlanma oranı, canlı ağırlık, canlı ağırlık artışı, karkas verimi, karkas ağırlığı, karkas kalitesi ve karkas üzerindeki göğüs ve but etlerin de etkilerinin belirlenmesi amacıyla yapılmıştır. Elde edilen sonuçlara göre, rasyona en az %12 cinnamaldehyde, %2,5 carvacrol ve %2,5 thymol içeren kaplanmış esansiyel yağ ve kaplanmamış esansiyel yağ yem katkısının ilavesi; bulgular değerlendirildiğinde, performans verileri, karkas verimi ve karkas et kalite özelliklerine bakıldığında kaplanmış esansiyel yağların etkisi olabildiği tespit edilmiştir.

Anahtar Kelimeler: Broiler, Kaplanmış esansiyel yağ, Karkas verimi, Karkas kalitesi

Coated and Uncoated the Effect of Essential Oils on Performance in Broilers

Abstract

This diversity has led to the diversity of feed additives in order to increase the use of feed, to increase the quantity and quality of the animal products obtained, to protect the health of the animals and to reduce the cost of the resulting product. many feed additives have started to be preferred as an alternative. In this study, it was carried out to determine the effects of coated and uncoated essential oils on feed consumption, feed conversion ratio, live weight, live weight gain, carcass yield, carcass weight, carcass quality and breast and thigh meats on carcass. According to the results obtained, the addition of coated essential oil and uncoated essential oil feed additive containing at least 12% cinnamaldehyde, 2.5% carvacrol and 2.5% thymol to the ration; When the findings were evaluated, it was determined that the coated essential oils could have an effect when the performance data, carcass yield and carcass meat quality characteristics were examined.

Keywords: Broiler, Coated Essential Oil, Carcass Yield, Carcass Meat Quality

Kırşehir İlinde Satışı Yapılan Tavuk Yemlerin Besin Madde İçeriklerinin Belirlenmesi

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Özet

Bu çalışmada, Kırşehir’de satışı yapılan 4 farklı firmaya ait 11 adet kanatlı hayvan (yumurta tavuğu, etlik piliç ve hindi) karma yemlerinin besin madde içerikleri ve karışım homojeniteleri incelenmiştir. Çalışmada kullanılan karma yem örnekleri farklı firmalara ait ve satışa sunulan ambalajlı çuvallardan (açık satış yapılan) 50 kg’ını temsilen her çuvaldan 500’er g olmak üzere yem örnekleri alınmıştır. Alınan örnekler analizler yapılana kadar +4 °C sıcaklıkta muhafaza edilmiştir. Bu amaçla satışı yapılan kanatlı karma yemlerinden alınan örneklerde ham protein (HP), ham yağ (HY), ham selüloz (HS), ham kül (HK), kuru madde (KM), asit deterjan fiber (ADF), nötr deterjan fiber (ADF), asit deterjan lignin (ADL), nişasta ve tuz değerleri belirlenmiştir. Sonuç olarak, Kırşehir’de satışı yapılan kanatlı hayvan yemlerinin besin madde içeriklerinin etiket değerleri ile arasında kısmi olarak istikrarsızlıklar olmakla birlikte genel olarak uyumlu olduğu ve yemlerin homojen bir şekilde karıştırılıp homojenitelerinin varyasyon katsayılarının istenilen düzeyde olduğu belirlenmiştir.

Anahtar Kelimeler: Etlik piliç, Yumurtacı tavuk, Karma yem, Besin madde bileşenleri, Homojenite

Determination of Nutrient Ingredients of Chicken Feeds Sold in Kırşehir Province

Abstract

In this study, nutrient content and mixture homogeneity of 11 poultry (layer chicken, broiler and turkey) mixed feeds belonging to 4 different companies sold in Kırşehir were investigated. The mixed feed samples used in the study were taken from the packaged sacks (open sale) belonging to different companies and offered for sale, and 500 g feed samples were taken from each sack, representing 50 kg. The samples taken were stored at +4 °C until analysis. For this purpose, crude protein (CP), crude oil (EE), crude fiber (CF), crude ash (CA), dry matter (DM), acid detergent fiber (ADF), neutral detergent fiber (ADF), acid detergent lignin (ADL), starch and salt values were determined. As a result, it has been determined that the nutrient content of poultry feeds sold in Kırşehir, although there are partial instability between the label values, is generally compatible and the homogeneity of the homogeneity of the feeds is mixed and the variation coefficients are at the desired level.

Keywords: Broiler, Laying hen, Mixed feed, Nutirent ingredients, Homogeneity

Kanatlı Hayvanların Beslenmesinde Yosun Türlerinin (Algler) Kullanımı

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Özet

Kanatlı hayvanların özellikle de etlik piliçlerin beslenmesinde yoğun olarak kullanılan soya küspesi ve hayvansal protein kaynaklarının hem üretim miktarlarındaki azalma hem hayvansal protein kaynaklarının rasyonlarda kullanımına yönelik son dönemde alınan kararlar hem de bu ürünlerin üretim maliyetlerindeki artışlar alternatif protein kaynakları arayışını zorunlu hale getirmektedir. Buna yönelik olarak son yıllarda yapraklar, deniz yosunları, böcekler ve bakteriler gibi kaynaklardan proteinlerin elde edilmesi ve bunların hayvan beslemede kullanımına yönelik çalışmalar yapılmış ve bunların kanatlı hayvanların performansı üzerine etkileri incelenmiştir. Bu alternatiflerden biri olan yosunlar, özellikle yüksek protein içerikleri nedeniyle pahalı protein kaynaklarının yerine kanatlı hayvanların yemlerinde rahatlıkla kullanılabilir. Yosunlar protein içerikleri nedeniyle kullanılabilirle beraber yüksek mineral içerikleri nedeniyle mineral kaynağı olarak da kullanılabilir. Özellikle demir, fosfor, magnezyum, iyot ve azot ile β -karoten ve retinol gibi karotenoidlerce zengin bir yem maddesidir. Ayrıca karotenoid içeriklerinin yüksekliği nedeniyle yumurta sarısı rengine olumlu etkileri bulunmaktadır. Omega-3 yağ asitlerince de zengin olan yosunlar omega-3 ce zengin fonksiyonel gıda üretimi potansiyeline de sahiptir. Yosunlar değişik türlere sahiptir ve türlere göre de farklı protein içeriklerine sahiptir. Kahverengi, yeşil ve kırmızı yosun (alg) gibi farklı türlere sahip olmakla birlikte kahverengi türlerde protein içeriği diğer türlere göre daha düşüktür. Japonya ve Çin gibi ülkelerde insan gıdası olarak da kullanılan deniz yosunları hızlı gelişme, tekrar üreyebilme gibi özellikleri yanında daha ekonomik ve kolay elde edilebilme avantajlarına sahiptir. Son yıllarda mikro algler ve makro alglerden elde edilen biyomoleküllerin antibiyotik, antiviral, antikanserojenik, antifungal, antibakteriyel, antienflamatuar etkilerinin yanı sıra hipokolestrolemik, enzim inhibisyonu ve diğer bazı farmakolojik etkileri ortaya çıkmıştır. Bu derlemede, özellikle kanatlı hayvan beslemede kullanılan bazı yosun türlerinin hem hayvanlar hem de hayvansal ürünler üzerine etkileri ortaya konulmaya çalışılacaktır.

Anahtar Kelimeler: Etlik piliç, Yumurta tavuğu, Alternatif protein kaynakları, Yosunlar (Algler)

Use of Algae Species (Algae) in Poultry Nutrition

Abstract

The decrease in the production amount of soybean meal and animal protein sources, which are used extensively in the nutrition of poultry, especially broilers, as well as the recent decisions regarding the use of animal protein sources in the rations, and the increase in the production costs of these products make it necessary to seek alternative protein sources. For this purpose, studies on obtaining proteins from sources such as leaves, seaweeds, insects and bacteria and their use in animal nutrition have been carried out in recent years and their effects on the performance of poultry have been examined. Algae, which is one of these alternatives, can be easily used in poultry feeds instead of expensive protein sources, especially due to their high protein content. Although algae can be used due to their protein content, they can also be used as a mineral source due to their high mineral content. It is a feed ingredient especially rich in iron, phosphorus, magnesium, iodine and nitrogen, and carotenoids such as β -carotene and retinol. In addition, due to the high content of carotenoids, they have positive effects on the color of the egg yolk. Algae, which are rich in omega-3 fatty acids, also have the potential to produce omega-3 rich functional food. Algae have different types and have different protein contents according to the species. Although it has different species such as brown, green and red algae, the protein content of brown species is lower than other species. Seaweeds, which are also used as human food in countries such as Japan and China, have the advantages of rapid development and reproduction, as well as more economical and easy to obtain. In recent years, antibiotic, antiviral, anticarcinogenic, antifungal, antibacterial and anti-inflammatory effects of biomolecules obtained from microalgae and macroalgae, as well as hypocholesterolemia, enzyme inhibition and some other pharmacological effects have emerged. In this review, the effects of some algae species used in poultry feeding on both animals and animal products will be tried to be revealed.

Keywords: Broiler, Laying hens, Alternative protein sources, Seaweeds

Akkaraman Kuzularda Kulak Uzunluęu ile Besi Performansı ve Bazı Kesim Özellikleri Arasında Korelasyon Var Mı?

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Özet

Bu çalışma, Akkaraman kuzularda besi, kesim ve karkas özellikleri ile kulak uzunluęu arasındaki korelasyonların düzeylerini belirlemek amacıyla yapılmıştır. Ufak kulaklı Akkaraman kuzuların besiyeye daha elverişli oldukları zootekniyle ilgili yazılan ilk kitaplarda bildirilmiştir. Çalışma, Tarım İşletmeleri Genel Müdürlüğüne (TIGEM) baęlı olarak faaliyet gösteren Gözlı Tarım İşletmesinde yürütülmüştür. Burası Konya'nın Sarayönü ilçesinde bulunmaktadır ve Türkiye'nin en fazla sayıda damızlık Akkaraman koyununa sahip olan tarım işletmesidir. Çalışmada toplam 23 baş kuzu kullanılmıştır. Kuzular ortalama 20 kg canlı ağırlıkta süttten kesilerek iç ve dış parazit uygulaması yapılmıştır. Kuzulara 10 günlük besiyeye alıştırtma dönemi sonrası 84 gün besi uygulanmıştır. Bu kuzulardan 18 başının kesim ve karkas özellikleri tespit edilmiştir. Bu kuzuların kulak uzunlukları ve mide kompartmanlarının boş ağırlığının kesim ağırlığına oranı arasında zıt yönlü, yüksek düzeye yakın (-0,697) ve istatistiki olarak önemli (P= 0,001) bir korelasyonun olduęu tespit edilmiştir. Karkasta et ve yağ oranı arasında ise istatistiki olarak önemli olan (P <0,001), negatif yönlü ve yüksek düzeyde (-0,738) bir korelasyonun olduęu belirlenmiştir. Yemden yararlanma oranı ile kulak uzunluęu arasında istatistiki olarak önemli olmayan, ancak önemlilik seviyesine yakın (P= 0,073), pozitif yönlü ve orta düzeyde bir korelasyonun (0,433) olduęu hesaplanmıştır. Sonuç olarak çalışmanın yapıldığı işletmede Akkaramanlarda kısa kulak uzunluęunun yüksek mide kompartmanları oranına neden olduęu ve besi performansı olumlu etkileyebileceęi söylenebilir. Ancak konu üzerine kesin bir sonuca varabilmek için daha kapsamlı bir araştırmaya gerek vardır.

Anahtar Kelimeler: Akkaraman, Korelasyon, Kuzu, Kulak uzunluęu, performans

Does the Ear Length Correlate With Fattening Performance and Some Slaughter Characteristics in Akkaraman Lambs?

Abstract

This study aimed to determine the correlations among fattening, slaughter, carcass characteristics, and ear length in Akkaraman lambs. The small-eared Akkaraman lambs were reported in Turkey's first animal husbandry books to be more suitable for fattening. The study was carried out in the Gözlı state farm of the General Directorate of Agricultural Enterprises (TIGEM). This farm in the Sarayönü district of Konya is the biggest regarding the number of Akkaraman bloodstock in Turkey. A total of 23 lambs were used in this study. Lambs were weaned an average of 20 kg live weights and applied drugs against internal and external parasites. The lambs had 84 days fattening period after 10 days dietary adaptation period. Slaughter and carcass traits of 18 lambs were determined from these lambs. A negative and close-to-high correlation coefficient (-0.697) between the ear length and the ratio of empty stomach compartments' weight to slaughter weight was calculated as statistically significant (P= 0.001). The high correlation coefficient (-0.738) between the carcass's lean and fat percentages was negative and statistically significant (P <0.001). Additionally, the positive and moderate correlation coefficient (0.433) between the ear length and feed conversation ratio is close to a significant line (P= 0.073). In conclusion, the short ear length in Akkaraman sheep reared in this state farm causes a high rate of stomach compartments and may positively affect the fattening performance. Comprehensive research is, however, needed to identify an exact conclusion on the subject.

Keywords: Akkaraman, Correlation, Lamb, Ear length, Performance

'Zutano' Avokado Çeşidinin Muhafazasına 1-Methylcyclopropane Uygulaması ve Modifiye Atmosferde Paketlemenin Etkileri

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Özet

'Zutano' avokado çeşidinin soğukta muhafazasına modifiye atmosferde paketlenme (MAP), 1-Metilsiklopropan (1-MCP) ve MAP+MCP uygulamalarının etkileri araştırılmıştır. Meyveler 6°C sıcaklıkta ve %85–90 oransal nemde 3 ay depolanmış ve ilaveten 3 gün süreyle 20°C'de %70–75 oransal nem içeren depoda bekletilmiştir. Ayda bir meyvelerin torba içindeki CO₂ konsantrasyonları, ağırlık kayıpları, görünüş, meyve eti sertliği, kabuk ve et rengi, suda çözünebilir toplam kuru madde ve titre edilebilir asit miktarı, pH değeri, yağ içeriği, kuru madde miktarı, mantarsal ve fizyolojik bozulmalar belirlenmiştir. Bulgularımıza göre, MAP+MCP uygulaması başarılı olmuştur. 'Zutano' avokado çeşidi meyveleri 6°C'de ve %85–90 oransal nemde meyveler MAP torbaları içinde veya 1-MCP uygulandıktan sonra muhafaza edildiğinde depolama süresi sadece 2 ay olarak saptanmıştır. 1-MCP uygulanarak MAP torbaları içinde muhafaza edilen 'Zutano' avokado çeşidi meyveleri kalitesinden çok fazla bir şey kaybetmeden 6°C'de ve %85–90 oransal nemde 3 ay depolanmışlardır.

Anahtar Kelimeler: Avokado, 'Zutano', MAP, 1-MCP, Muhafaza, Raf ömrü

The Effects of 1-Methylcyclopropane Treatment and Modified Atmosphere Packaging on Storage of 'Zutano' Avocado Variety

Abstract

The effects of modified atmosphere packaging (MAP), 1-Methylcyclopropane (1-MCP) and MAP+MCP treatments on the cold storage of the 'Zutano' avocado variety were investigated. Fruits, untreated or treated with 1-MCP treatments and/or were packaged in MAP bags and stored at 6 °C with 85–90% humidity in the cold storage for 3 months and in addition to fruits were kept at 20 °C and 70–75% relative humidity for 3 days. CO₂ concentrations in the bag, weight loss, appearance, fruit flesh firmness, skin and flesh color, total soluble solid, titratable acidity, oil and dry weight contents, pH value, fungal decay and physiological disorders were determined in fruits during storage. According to data, MAP+1-MCP application had been successful. 'Zutano' avocado fruits, which untreated and treated with 1-MCP or packaged in MAP bags had also only 2 months of storage life. Fruits after 1-MCP treatment within MAP bags could be kept for 3 months at 6 °C and 85–90% relative humidity without losing much of the quality.

Keywords: Avocado, 'Zutano', MAP, 1-MCP, Storage, Shelf life

Influence of Foliar Application of Calcium Chloride and Glycine on Yield and Quality of Kiwi Fruit (*Actinidia deliciosa*)

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Abstract

The experiment on “Influence of foliar application of calcium chloride and glycine on yield and quality of kiwi fruit (*Actinidia deliciosa*)” was carried out at National Tea and High Value Research Institute Shinkhari Mansihra during summer 2021. The experiment was performed in a randomized complete block design having two factors i.e. four concentrations of glycine (0, 500, 1000, and 1500 mgL⁻¹) and four concentrations of calcium chloride (0, 2, 3, and 4 %) were applied. The results showed that all the yield and quality parameters were remarkably enhanced by the application of glycine and calcium chloride concentrations. The interaction was also significant for some parameters such as fruit length (mm), fruit diameter (mm), fruit volume (cm³), fruit weight (g), total soluble solid (OBrix), ascorbic acid (mg.100g⁻¹) fruit dry matter (%) and fruit yield per plant. The maximum shoot length (104.76 cm), number of leaves shoot-1 (29.53), leaf area (45.63 cm²), chlorophyll a (1.14 mg.g⁻¹ FW), chlorophyll b (0.70 mg.g⁻¹ FW), carotenoid (1.20 mg.g⁻¹ FW), fruit length (80.36 mm), fruit diameter (47.12 mm), fruit volume (70.73 cm³), single fruit weight (68.79 g), fruit firmness (3.83 kg.cm⁻²), fruit total soluble solids (6.810 Brix), fruit titratable acidity (1.71%), ascorbic acids (95.10mg.100g⁻¹), fruit dry matter (24.14 %), fruit reducing sugars (5.80%), fruit non-reducing sugars (3.93%) fruit total sugars (9.44%) and fruit yield per plant (57.69 kg) were found at 1500 mgL⁻¹ glycine as foliar spray. In case of calcium chloride, maximum shoot length (100.65 cm), number of leaves shoot-1 (26.89), leaf area (41.03 cm²), chlorophyll a (1.16 mg.g⁻¹ FW), chlorophyll b (0.77 mg.g⁻¹ FW), carotenoids (1.33 mg.g⁻¹ FW), fruit length (78.12 mm), fruit diameter (43.67 mm), fruit volume (68.86 cm³), fruit weight (66.98 g), fruit firmness (3.79 kg.cm⁻²), fruit total soluble solids (6.97%), fruit titratable acidity (1.82%), ascorbic acids (97.10mg.100g⁻¹), fruit dry matter (25.19 %), fruit reducing sugars (5.80%), fruit non-reducing sugars (4.54%) fruit total sugars (10.04%) and fruit yield per plant (59.10 kg) were registered for 4% CaCl₂. In case of interaction among different concentrations of glycine and calcium chloride, a significant effect on yield and quality parameters of kiwi fruit were recorded for 1500mgL⁻¹ glycine and 4% calcium chloride with maximum shoot length (105.79 cm), number of leaves shoot-1 (30.13), leaf area (46.28 cm²), chlorophyll a (1.20 mg.g⁻¹ FW), chlorophyll b (0.80 mg.g⁻¹ FW), carotenoids (1.37 mg.g⁻¹ FW), fruit length (82.55 mm), fruit diameter (48.78 mm), fruit volume (74.86 cm³), fruit weight (70.42 g), fruit firmness (3.90 kg.cm⁻²), fruit total soluble solids (7.320 Brix), fruit titratable acidity (1.84%), ascorbic acid (101.13 mg.100g⁻¹), fruit dry matter (25.35 %), fruit reducing sugars (5.91%), fruit non-reducing sugars (4.71%) fruit total sugars (10.31%) and fruit yield per plant (61.15 kg). From the present study, it can be concluded that kiwi fruit give good yield and quality attributes at 1500 mgL⁻¹ of glycine and 4% calcium chloride concentrations.

Keywords: Kiwi fruit, Calcium, Amino acid, Growth and Yield, Fruit quality

Aşılı ve Aşısız ‘Paskal’ Karpuz Çeşidinde Hasat Sonrası Meyve Kalitesindeki Değişimler

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Özet

Bu çalışmada aşısız ve Gürdal anacı üzerine aşılı ‘Paskal’ karpuz çeşidinin hasat sonrası meyve kalitesindeki değişimler araştırılmıştır. Karpuzlar Tarım ve Orman Bakanlığı Alata Bahçe Kültürleri Araştırma Enstitüsü (Erdemli/Mersin, Türkiye)’nde yetiştirilmiş ve 4 °C sıcaklık ve %90–95 oransal nemde 5 hafta depolanmıştır. Ağırlık kayıpları, fungal ve fizyolojik bozulmalar, suda çözünebilir toplam kuru madde (SÇKM) ve titre edilebilir asit miktarları, meyve suyu pH değeri, C vitamini, antioksidan aktivite ve toplam fenolik madde miktarları, şekerler, meyve et rengi ve meyve suyu rengindeki değişimler belirlenmiştir. Kalite analizleri, depolama boyunca haftalık aralıklarla belirlenmiştir. Elde edilen bulgulara göre, depolama süresince aşılı ve kontrol meyvelerinde ağırlık kaybı çok düşük (<%1) olmuştur. Muhafaza sırasında aşılı ve kontrol karpuz meyvelerinde fungal ve fizyolojik bozulmalar görülmemiştir. Gürdal üzerine aşılı ‘Paskal’ karpuz çeşidi meyvelerinin C vitamini, antioksidan aktivite ve toplam fenolik madde miktarları kontrol meyvelerinden daha yüksek olmuştur.

Anahtar Kelimeler: Anaç, Hasat sonrası, Karpuz, Gürdal, ‘Paskal’, Soğukta muhafaza

Postharvest Fruit Quality Changes in Grafted and Ungrafted 'Paskal' Watermelon Cultivar

Abstract

In this study, the changes in postharvest fruit quality of grafted on Gürdal rootstock and ungrafted ‘Paskal’ watermelon cultivar were investigated. Watermelons were grown in the Republic of Türkiye Ministry of Agriculture and Forestry Alata Horticultural Research Institute, Erdemli/Mersin, Türkiye and stored at 4 °C and 90–95% relative humidity for 5 weeks. Weight loss (%), fungal decay and physiological disorders, total soluble solid (TSS) and titratable acid amounts, juice pH value, vitamin C, antioxidant activity and total phenolic substance amounts, sugars, fruit flesh color and juice color changes were determined. Quality analyzes were determined at weekly intervals throughout storage. According to the findings, Weight loss in grafted and control fruit were very low (<%1) during storage. Fungal and physiological disorders were not observed in grafted and control watermelon fruit during storage. The contents of vitamin C, antioxidant activity and total phenolic substance of the ‘Paskal’ watermelon variety grafted on Gürdal rootstock were higher than the control fruits.

Keywords: Rootstock, Postharvest, Watermelon, Gürdal, ‘Paskal’, Cold storage

Carbonate Meadow Under Gray Soils Conditions Cauliflower (*Brassica oleracea* var. *botrytis*) Use of Phosphorus Fertilizers in Cultivation

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Abstract

Phosphorous fertilizers are an important nutrient for the growth and development of cauliflower. Inadequate application of phosphorus in the soil leads to a severe phosphorus deficiency. Carbonate salinity of the soil pH alkalinity reduces the availability and uptake of phosphorus by plants. Sufficient amount of phosphorus in the soil is an effective way to increase the yield of cabbage head in cauliflower. Phosphorus is one of the most important plant nutrients affecting the growth and productivity of cauliflower. Inadequate phosphorus in the soil, especially low supply, poses a serious threat to the quantity and quality of the crop. Due to the low efficiency of phosphate fertilization, it is usually necessary to apply a high dose of phosphorus. However, our farmers have little understanding about the use of phosphorus fertilizers, which leads to inefficient use of phosphorus fertilizers and causes problems in productivity. Phosphorus deficiency in cauliflower directly affects the initiation of inflorescences, head formation, cauliflower size and root development. Although several studies have been conducted on the demand of cauliflower, but in this respect, formation in soil conditions is limited. In addition, very little research has been conducted on the different levels of phosphorus supply of cauliflower varieties. Therefore, this study is conducted to determine the effect of different levels of phosphorus nutrition on cauliflower yield. Management of this phosphorus nutrition is critical for production and productivity in different cauliflower cultivars.

Keywords: Product, Fertilizer cabbage cauliflower, Qualities effective phosphate soil

1-Methylcyclopropene (1-MCP) Uygulamasının ‘Bebeco’ ve ‘Şahinbey’ Kayısı Çeşitlerinin Soğukta Muhafazasına Etkileri

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Özet

Bu çalışmada iki farklı olgunlukta derilen kaysılarda soğukta muhafaza sırasında 1-Methylcyclopropene (1-MCP) uygulamasının bazı kalite parametrelerindeki değişimlerin belirlenmesi amaçlanmıştır. Materyal olarak ‘Bebeco’ ve ‘Şahinbey’ kayısı çeşitleri kullanılmıştır. Meyvelerin turuncu sarı renklerini aldığı (1. Dönem) ve yeşilden sarıya hafif döndüğü (2. Dönem) dönemlerde olmak üzere 2 hasat yapılmıştır. Her iki dönemde hasat edilen meyveler; kontrol ve 1-MCP uygulamaları yapılarak 0 °C’de %90–95 oransal nemde 30 gün muhafaza edilmiştir. Çalışma süresince ağırlık kaybı, suda çözünebilir toplam kuru madde (SÇKM) ve titre edilebilir asit (TEA) miktarları, meyve suyu pH değeri, meyve eti sertliği (MES), meyve kabuk rengi, antioksidan aktivitesi, toplam karotenoid, β-karoten, şeker (glikoz, fruktoz ve sakkaroz) bileşen analizleri yapılmıştır. Elde edilen bulgulara göre, ‘Bebeco’ ve ‘Şahinbey’ kayısı çeşitlerinin 0 °C sıcaklık ve %90–95 oransal nemde 30 güne kadar kaliteli olarak muhafazası mümkün olabilecektir. Ancak, sarı olumda derilen meyvelerin, nispeten düşük sertlik değerleri nedeniyle depolamadan sonra ticari olarak uzak pazarlar yerine yerel veya yakın pazarlara gönderilmesi uygun olacaktır. 1-MCP uygulamasının her iki çeşitte de meyve eti sertliğini koruma, TEA kaybını ve renk değişikliklerini yavaşlatmada bariz bir etkisi görülmemiştir.

Anahtar Kelimeler: Kayısı, ‘Bebeco’, ‘Şahinbey’ Soğukta muhafaza, 1-MCP, Kalite

Effects of 1-Methylcyclopropene (1-MCP) Treatment on Cold Storage of ‘Bebeco’ and ‘Şahinbey’ Apricot Varieties

Abstract

In this study, it was aimed to determine the changes in some quality parameters of 1-Methylcyclopropene (1-MCP) treatment during cold storage in apricots harvested at two different maturities. ‘Bebeco’ and ‘Şahinbey’ apricot varieties were used as material. Two harvests were made in the periods when the fruits turn orange yellow (1st period) and when they turn slightly from green to yellow (2nd period). Fruits harvested in both periods; Control and 1-MCP treatments were made and stored at 0 °C at 90–95% relative humidity for 30 days. Weight loss, total soluble solid (TSS) and titratable acid (TA) amounts, fruit juice pH value, fruit flesh firmness, fruit skin color, antioxidant activity, total carotenoid, β-carotene, sugar (glucose, fructose and sucrose) component analyzes were performed during the study. According to the findings, it will be possible to storage ‘Bebeco’ and ‘Şahinbey’ apricot varieties for up to 30 days at 0 °C temperature and 90–95% relative humidity. However, because of the relatively low firmness values, it would be appropriate to send the fruits collected in yellow form to local or nearby markets instead of commercially distant markets after storage. There was no obvious effect of 1-MCP application in preserving fruit flesh firmness, slowing down TA loss and color changes in both cultivars.

Keywords: Apricot, ‘Bebeco’, ‘Şahinbey’ Cold storage, 1-MCP, Quality

History of Olive Cultivation in Pakistan

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Abstract

Olive was introduced in Indo-Pakistan sub-continent during the second half of 19th century. The first consignment of 100 grafted olive plants of various varieties was imported and planted at Rawalpindi in 1866. Later on, olive plantations were extended to other areas. Afterwards, olive plantation on Rawalpindi-Murree road was started in 1935 by top working wild olive trees. This plantation bore the first crop in 1947. Over a period of two decades between 1932 and 1952 a number of olive varieties were imported from Italy, Syria, Turkey, Egypt and Palestine and planted at experimental Fruit Garden, West Pakistan Agricultural University Lyallpur. Among these varieties, Maximum yield was observed in the variety 'Izmir'. During 1986 some olive varieties were imported and introduced by Pakistan Agricultural Research Council under an Italian Project. Under another olive project of federal government 5.5 million olive plants were top worked. First olive plantation at Barani Agricultural Research Institute Chakwal was done during 1991 with 7 Italian varieties. Performance of these varieties was also tested at farmer fields. During 2004, nine more varieties were added to the olive block. At present, Olive Germplasm Unit at Barani Agricultural Research Institute Chakwal is the largest one. A number of olive orchards have been established by the private growers, which have reached at the bearing stage. A number of oil extraction facilities are now available at government and private level. Value added products of olive have gained popularity and giving good returns to the growers.

Keywords: Olive, History of Olive, Pakistan

Overview of Walnut Cultivation in Uzbekistan

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Abstract

Since the land in Uzbekistan belongs to the state, the lands are operated by renting from the state. The state also provides some support for the better operation of the lands. At the beginning of this is the support related to irrigation. Especially the lands that will use drip irrigation system are given tax exemption for 5 years. In addition, support for deep drilling wells was announced in 2020. Accordingly, drilling construction and submersible pump expenses are covered by the state. Uzbekistan has been making significant investments in walnut production after 2000. With government incentives, walnut orchards are established in very large areas by the private sector. One of these gardens was established in Zinak village of Ürgüt Division in Samarkand. Between 2016 and 2017, planting intervals of 8*5 m were established on an area of 240 ha, and the main variety was the Chandler variety. In the garden, which was established as 40 walnut plants per decare, drip irrigation method is used, where water consumption is less since Uzbekistan's water resources are limited. In general, in addition to government incentives, the government gives special incentives to the drip irrigation system. Peak branched finishing is used as the finishing system. In this cultivation, where the intensive system is applied, it is aimed to obtain higher yields than traditional methods by making optimum use of the unit area.

Keywords: Walnut, Samarkand, Cultivation, Drip Irrigation System

Walnut Garden Management in Uzbekistan; Urgaz Gilam Company Example

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Abstract

After the locations of the planting pits were determined with the help of GPS in the lands where a new garden will be established, blasting was carried out with bulldozers. After the blasting process, seedling pits were opened and 300 g of DAP manure, 10 kg of well-burned cattle manure and 500 g of powdered sulfur were thrown into each pit and mixed thoroughly in the planting pit. Saplings belonging to the open rooted chandler walnut variety brought from Turkey were planted in the prepared pits. Then, between 50-100 liters of life water was given. After planting, planting pruning was done over 2-3 eyes upwards from the graft site. In May, the well-developed shoots were left and the other shoots were cut and allowed to develop as a single branch. During the summer season, other developing shoots were controlled and not allowed to grow. Irrigation and fertigation were continued from May until the end of summer. Irrigation started once a week for 6-8 hours in May, continued once every 4 days in June, July and August, and in September, partial irrigation (1-2 hours) was made and irrigation was terminated. Fertilization started in May. Between 15 May and 30 June, 150 gr ammonium sulfate grease was given per tree 4-5 times. In this period, humic acid was applied 4-5 times as 5-7 liters per hectare. Again in this period, 150 g of MAP fertilizer per tree and 2.5-5 kg of micronutrients per hectare were applied once. Humic acid and MAP fertilizer applications were applied at similar rates twice between 30 June and 20 July. 150 gr potassium nitrate per tree was applied 2-3 times in August. In the second year, it was determined that most of the walnut trees in the field developed more than 2 m. In the second year, pruning was made from 2 m. Trees shorter than 2 m were cut from a place close to the graft site and grown as a single branch. Walnut trees, which are longer than 2 m and the top is cut, are branched into 5 main branches and one leader branch in May. Irrigation was continued as in the previous year. Fertilization was increased by 50-70% compared to the previous year, and the amount of humic acid remained unchanged. Between 2016 and 2017, 60000 Chandler walnut varieties and a walnut orchard were established in the 240-ha area of the Urgaz Gilam company in the Zinak village of Ürgüt Division in the province of Samarkand. The purpose of this facility is to export shelled and kernel walnuts. In 2022, 75 tons of walnuts were harvested from the garden, and it is expected to harvest 2400 tons of products from this garden in the following years.

Keywords: Uzbekistan, Walnut Garden Management, Irrigation, Fertilization, Pruning

Phenolic Substance Contents in Two Different Fig Genotypes

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Abstract

Fig is one of the important fruit species grown in Anatolia for centuries. In Türkiye, outside the Aegean region, figs are usually grown mixed with other fruit species or as a border plant on the roadsides. This cultivation is usually done with local varieties or genotypes, and the fruits are evaluated as table and jam. In the Çeltikderesi region of the Seben district of Bolu province, there are natural fig trees as a forest plant, and the local people collect the fruits of these trees and use them as table and jam. In this study, which was carried out to determine the phenolic compounds of the two genotypes monitored for cultivar development, two genotypes with an estimated age of 50 to 150 years, grown at an altitude of 640-675 m in the Ulu Çayı locality of Çeltikderesi village, were evaluated. In the study, 10 different phenolic compounds were detected. Gallic acid and Catechin amounts were richer in both genotypes than other phenolic compounds, Catechin amount was 7 mg/100 g FW in the genotype grown at 675 m altitude and 9.11 mg/100 in the genotype grown at 640 m altitude. g was determined as FW.

Keywords: Fig, Phenolic Compound, Genotype, Çeltikderesi, Ulu Çayı

Importance of Feed Additives Used in Poultry Rations: Royal Jelly Example

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Abstract

Royal Jelly; It is a bee product secreted from the mandibular and hypopharyngeal glands in their heads as a result of the digestion of pollen and nectar by young worker bees aged 5-15 days. It is light beige and yellowish white in color and has an intensely essential and sour taste. An unsaturated fatty acid "10-hydroxy-2-decanoic acid", which is found only in royal jelly in nature, provides royal jelly with unique properties. Royal jelly is a quality feed additive that can be used in poultry rations due to its antibacterial, antimicrobial, antifungal, antiviral, antioxidant, antidiabetic, hypoglycemic and antitumor properties. These effects of royal jelly have been the focus of attention for researchers, and in this direction, some studies have been carried out in rabbits, rats, turkeys, quails and laying and broiler chickens. However, the production of royal jelly by worker bees in small quantities as needed (queen bee production) makes it valuable and therefore prevents it from being used in planned scientific studies. In addition, although studies on bee products such as pollen and propolis and poultry feeding have gained acceleration, there is not enough literature on royal jelly. However, royal jelly can be evaluated as a feed additive that can be used in the field with the performance to be obtained as a result of the correct doses to be determined in poultry feeding and breeding studies and the economic outputs in the field of health being more than the cost value. As a result, it was concluded that more scientific studies are needed to determine the possible positive effects of royal jelly, which is one of the bee products in poultry nutrition, in terms of performance and slaughter characteristics.

Keywords: Poultry, Royal Jelly, Feed additive

Action Efficiency of Natural Growth Regulators in The Cultivation of Spring Barley

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Abstract

The article presents the results of studies on the effect of growth regulators of natural origin of steroid nature on spring barley plants of the Iney variety. It has been shown that genistifoliosides isolated from the aerial parts of *Linaria genistifolia* L, fam. Scrophulariaceae have a regulatory effect on spring barley plants. Under the conditions of a field small-plot experiment, they stimulate the growth and development of plants. They enhance the photosynthetic activity of plants, the accumulation of plastid pigments in the assimilation organs of plants. In the phases of ontogeny responsible for the harvest, in the of exit into the tube and heading phase, stimulate the accumulation in plant organs (leaves, stems, ears) of raw and absolutely dry biomass. Promote to the increase in indicators of productivity and yield of varieties. Under unfavorable conditions (during the period of drought), an anti-stress effect is manifested, an action similar to the drug Ecostim, of steroid origine.

Keywords: Growth regulators, Steroid glycosides, Spring barley, Growth, Plastid pigments, Productivity

ACTION EFFICIENCY OF NATURAL GROWTH REGULATORS IN THE CULTIVATION OF SPRING BARLEY

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